

**RCA TUBE
HANDBOOK
HB-3**

**RECEIVING
TUBE
SECTION—Part 2**

Type 6A3 and beyond



In this section, data are given for those types of RCA tubes employed primarily in broadcast and home-television receivers. These types are also used in many other applications.

*For further Technical Information, write to
Commercial Engineering, Tube Department,
Radio Corporation of America, Harrison, N. J.*



6A3

POWER AMPLIFIER TRIODE

Filament	Coated	
Voltage	6.3	a-c or d-c volts
Current	1.0	amp.
Maximum Overall Length		5-3/8"
Maximum Seated Height		4-3/4"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base		Medium 4-Pin
Pin 1 - Filament		Pin 3 - Grid
Pin 2 - Plate		Pin 4 - Filament
Mounting Position		Any



BOTTOM VIEW (4D)

SINGLE-TUBE AMPLIFIER

Typical Operation and Characteristics - Class A₁ Amplifier:

Plate	250 max.	volts
Grid*	-45	volts
Plate Cur.	60	ma.
Amp. Factor	4.2	
Plate Res.	800	ohms
Transcond.	5250	μmhos
Load Res.	2500	
Second Har. Dist.	5	%
Power Output	3.2	watts

PUSH-PULL AMPLIFIER

Unless otherwise specified, values are for two

<i>Typical Operation:</i>	<u>Fixed Bias</u>	<u>Cathode-Bias</u>	
Plate	325 max.	325 max.	volts
Grid*	-68	--	volts
Cathode-Bias Resistor	-	850	ohms
Zero-Sig. Plate Cur.	80	80	ma.
Load Res. (per tube)	750	1250	ohms
Effective Load Res. (plate to plate)	3000	5000	ohms
Total Har. Dist.	2.5	5.0	%
Power Output	15	10	watts

If a single 6A3 is operated cathode-biased, the cathode-biasing resistor should be 750 ohms approx.

The type of coupling used should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.05 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

* Grid voltage referred to mid-point of a-c operated filament.

Curves for the 6A3 are essentially the same as those shown for type 2A3.

May 1, 1941

RCA RADIONRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

CLASS B TWIN AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.8	amp.
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 7-Pin
Pin 1-Heater	③ ④ ⑤	Pin 5-Grid (Triode T_1)
Pin 2-Plate (Triode T_2)	② ⑥	Pin 6-Plate (Triode T_1)
Pin 3-Grid (Triode T_2)	① ⑦	Pin 7-Heater
Pin 4-Cathode		
	BOTTOM VIEW	

For convenience, one triode unit is identified as T_1 ; the other as T_2 .

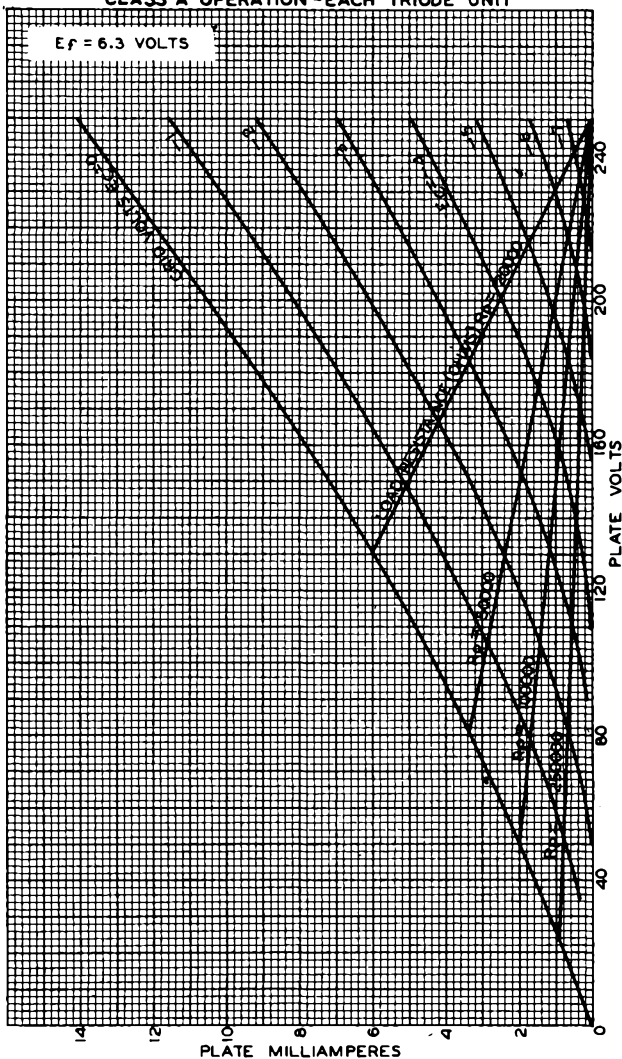
For additional curves and data, see Types 6N7 and 53, and the RESISTANCE-COUPLED AMPLIFIER CHART. The operating conditions and characteristics of the 6A6 are identical with those of the 6N7 and 53.

← Indicates a change

6A6

RCA **Cunningham** **Radiotron** RADIO TUBES
RCA-6A6

AVERAGE PLATE CHARACTERISTICS
CLASS A OPERATION - EACH TRIODE UNIT



FEB. 5, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4375



6A7

6A7

**PENTAGRID CONVERTER**

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Grid #4 to Plate	0.30	μf
Grid #4 to Grid #2	0.150	μf
Grid #4 to Grid #1	0.150	μf
Grid #1 to Grid #2	1.0	μf
Grid #4 to All Other Electrodes (R-F Input)	8.5	μf
Grid #2 to All Other Electrodes (Osc. Output)	5.5	μf
Grid #1 to All Other Electrodes (Osc. Input)	7.0	μf
Plate to All Other Electrodes (Mixer Output)	9.0	μf
Overall Length	4-9/32" to 4-17/32"	
Seated Height	3-21/32" to 3-29/32"	←
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Small Metal	
Base	Small 7-Pin [▲]	
Pin 1 - Heater	Pin 5 - Grid #1	
Pin 2 - Plate	Pin 6 - Cathode	
Pin 3 - Grids #3 & #5	Pin 7 - Heater	
Pin 4 - Grid #2	Cap - Grid #4	
Mounting Position	BOTTOM VIEW (7C)	Any



Maximum Ratings, Typical Operating Conditions, and Curves are the same as for type 6A8.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- With shield-can connected to cathode.
- ▲ Requires different socket than medium 7-pin base.

← Indicates a change.

July 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



6A7S

6A7S
6A8-G
6A8-GT**PENTAGRID CONVERTER**

RENEWAL TYPE FOR MAJESTIC RECEIVERS

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Overall Length	4-9/32" to 4-17/32"	
Seated Height	3-21/32" to 3-29/32"	
Maximum Diameter (without shield)	1-9/16"	
Bulb (with form-fitting shield)	ST-12	
Cap	Small Metal	
Base [▲]	Small 7-Pin	

[■] In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
[▲] Requires a different socket than the medium 7-pin base.
[○] Basing arrangement is the same as for the 6A7, except that the external shield on the 6A7S is connected to cathode.

Typical Operating Conditions and Curves for the 6A7S are the same as for Type 6A8.



6A8, 6A8-G, 6A8-GT

PENTAGRID CONVERTER

Heater [■]	Coated Unipotential Cathode		
Voltage	6.3 a-c or d-c volts		
Current	0.3 amp.		
Direct Interelectrode Cap. [○]	6A8	6A8-G	6A8-GT
Grid #4 to Plate	0.06	0.26	0.26 $\mu\mu\text{f}$
Grid #4 to Grid #2	0.1	0.19	0.19 $\mu\mu\text{f}$
Grid #4 to Grid #1	0.09	0.16	0.16 $\mu\mu\text{f}$
Grid #1 to Grid #2	0.8	1.1	1.1 $\mu\mu\text{f}$
Grid #4 to All Other Electrodes (R-F Input)	12	9.5	9.5 $\mu\mu\text{f}$
Grid #2 to All Other Electrodes Except Grid #1 (Osc. Output)	5	4.6	4.6 $\mu\mu\text{f}$
Grid #1 to All Other Electrodes Except Grid #2 (Osc. Input)	6.5	6	6 $\mu\mu\text{f}$
Plate to All Other Electrodes (Mixer Output)	12	12	12 $\mu\mu\text{f}$
Overall Length	{ 3-1/8" max.	{ 4-7/32" to 4-15/32"	{ 3-5/16" max.
Seated Height	{ 2-9/16" max.	{ 3-21/32" to 3-29/32"	{ 2-3/4" max.
Maximum Diameter	1-5/16"	1-9/16"	1-5/16"
Bulb	Metal Shell, MT-8	ST-12	T-9
Cap	Miniature	Skirted Min.	{ Skirted Min. Style C

[■] In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
[○] With shell of 6A8 connected to cathode, and with close-fitting shield on 6A8-G and 6A8-GT connected to cathode.

← Indicates a change.

Dec. 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6A8
6A8-G
6A8-GT



6A8, 6A8-G, 6A8-GT

PENTAGRID CONVERTER

(continued from preceding page)

	6A8	6A8-G	6A8-GT
Base	{ Small Wafer { Octal 8-Pin	{ Small Shell { Octal 8-Pin	{ Small Wafer { Octal 8-Pin, Sleeve
Basing Designation	8A	G-8A	GT-8A
Pin 1	{ 6A8, Shell 6A8-G, No Con. 6A8-GT, Base Sleeve		Pin 5 - Grid #1
Pin 2 - Heater			Pin 6 - Grid #2
Pin 3 - Plate			Pin 7 - Heater
Pin 4 - Grids #3 & #5			Pin 8 - Cathode
Mounting Position			Cap - Grid #4
			Any
	BOTTOM VIEW		

CONVERTER SERVICE

Plate Voltage		300 max. volts
Screen (Grids #3 & #5) Voltage		100 max. volts
Screen Supply Voltage		300 max. volts
Anode-Grid (Grid #2) Voltage		200 max. volts
Anode-Grid Supply Voltage		300 max. volts
Control-Grid (Grid #4) Voltage		0 min. volts
Plate Dissipation		1.0 max. watt
Screen Dissipation		0.3 max. watt
Anode-Grid Dissipation		0.75 max. watt
Total Cathode Current		14 max. ma.
Typical Operation:		
Plate Voltage	100	250 volts
Screen Voltage	50	100 volts
Anode-Grid Voltage	100	- volts
Anode-Grid Supply Voltage	-	250* volts
Control-Grid Voltage	-1.5	-3 volts
Osc.-Grid (Grid #1) Resistor	50000	50000 ohms
Plate Resistance	0.6	0.36 approx. ohms
Conversion Transconductance	360	550 μ mhos
Conver. Transcond. (approx.) with Control-Grid Bias of -20 volts	3	- μ mhos
Conver. Transcond. (approx.) with Control-Grid Bias of -35 volts	-	6 μ mhos
Plate Current	1.1	3.5 ma.
Screen Current	1.3	2.7 ma.
Anode-Grid Current	2	4 ma.
Oscillator-Grid Current	0.25	0.4 ma.
Total Cathode Current	4.6	10.6 ma.

NOTE: The transconductance of the oscillator portion (not oscillating) is 1150 micromhos under the following conditions: plate volts, 250; screen volts, 55; control-grid volts, -2; anode-grid volts, 100; and oscillator-grid volts, -1.

* Anode-grid supply voltages in excess of 200 volts require use of 20000-ohm voltage-dropping resistor by-passed by 0.1 μ f condenser.

For Typical Circuit and Coil Design Details, refer to Type 2A7.

← Indicates a change.

Dec. 1, 1941

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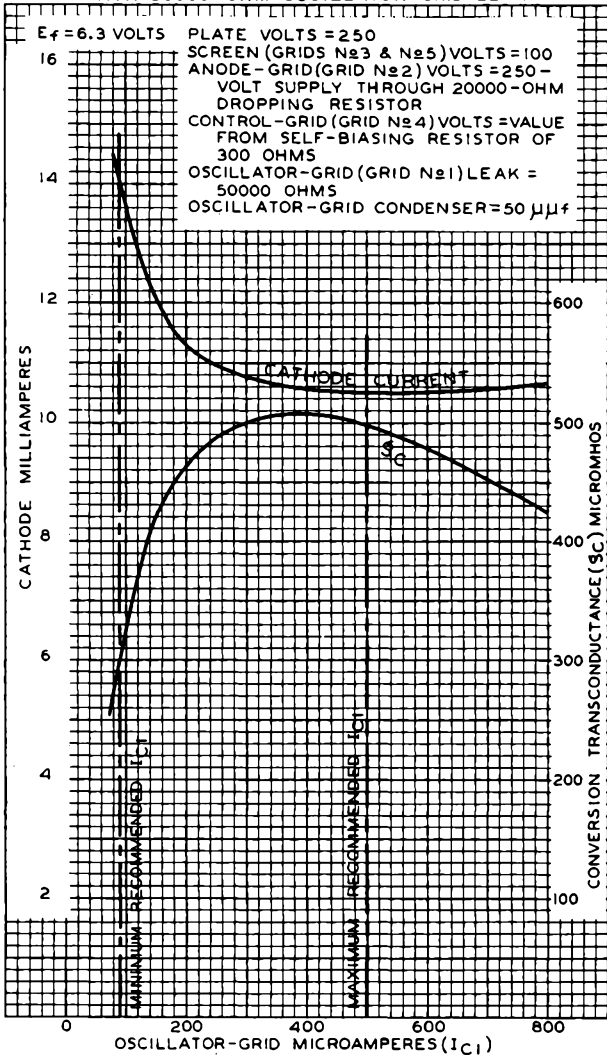
DATA



6A8

6A8

OPERATION CHARACTERISTICS WITH 50000-OHM OSCILLATOR-GRID LEAK



DEC. 5, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4521



6AB4

HIGH-MU TRIODE

MINIATURE TYPE PARTICULARLY SUITABLE FOR CATHODE-DRIVE CIRCUITS

6AB4

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.15	amp

Direct Interelectrode

Capacitances:

	<i>Without</i>	<i>With External</i>	
	<i>External</i>	<i>Shield No. 316</i>	
	<i>Shield</i>	<i>Tied to Cathode</i>	

Grid to Plate	1.5	1.5	μmf
Grid to Heater and Cathode.	2.2	2.2	μmf
Plate to Heater and Cathode.	0.5	1.4	μmf
Heater to Cathode	2.9	2.9	μmf
Plate to Cathode.	0.24	0.2	μmf
Cathode to Heater and Grid.	5.0	5.2	μmf
Plate to Heater and Grid.	1.7	2.6	μmf

Mechanical:

Mounting Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip) 1-1/2" \pm 3/32"

Maximum Diameter. 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No. E7-1)

Basing Designation for BOTTOM VIEW. 5CE

Pin 1-Plate
Pin 2-Internal
Shield
Pin 3-Heater
Pin 4-Heater



Pin 5-No
Connection
Pin 6-Grid
Pin 7-Cathode

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID VOLTAGE:		
Negative bias value	50 max.	volts
Positive bias value	0 max.	volts
PLATE DISSIPATION	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Characteristics:

Plate Voltage	100	250	volts
Cathode-bias Resistor	270	200	ohms
Internal Shield	Connected to ground		
Amplification Factor.	60	60	

← indicates a change

MAY 1, 1952

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AB4



6AB4

HIGH-MU TRIODE

Plate Resistance (Approx.)	15000	10900	ohms
Transconductance	4000	5500	μ hos
Grid Bias (Approx.) for plate current of 10 μ amp.	-5	-12	volts
Plate Current	3.7	10	ma

CURVES
for the 6AB4 are the same
as those for each unit of Type 12AT7



6AB5



6AB5/6N5

ELECTRON-RAY TUBE

INDICATOR TYPE WITH TRIODE UNIT

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Overall Length		3-13/16" to 4-3/16" ←
Maximum Seated Height		3-9/16" ←
Maximum Diameter		1-3/16" ←
Bulb		T-9 ←
Base		Small 6-Pin ←
Pin 1 - Heater		Pin 4 - Target
Pin 2 - Plate		Pin 5 - Cathode
Pin 3 - Grid		Pin 6 - Heater
Mounting Position		BOTTOM VIEW (6R)	Any

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

Plate-Supply Voltage		180 max. volts
Target Voltage		{ 180 max. volts
		{ 100 min. volts
Typical Operation:		
Plate and Target Supply	135	135 volts
Series Triode-Plate Resistor [□]	0.25	1.0 megohm
Target Current † ^Δ	2	1.9 ma.
Triode-Plate Current ^Δ	0.5	0.13 ma.
Triode-Grid Voltage (approx.)		
For shadow angle of 0°	-10	-15.5 volts ←
For shadow angle of 90°	0	0 volts

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

□ Designated as R in circuit diagram under Type GE5.

† Subject to wide variations.

Δ For triode-grid bias of 0 volts.

← Indicates a change.

April 15, 1940

DATA

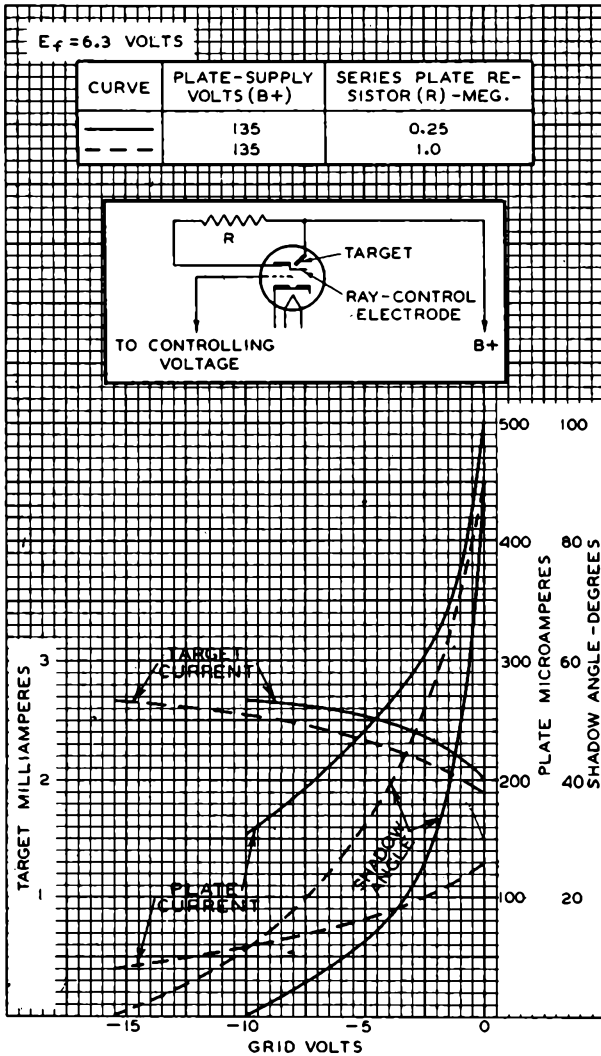
RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

6AB5



6AB5

AVERAGE CONTROL CHARACTERISTICS



MAY 7, 1940

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4890R1



6AB7/1853

6AB7

**TELEVISION AMPLIFIER PENTODE**

SINGLE-ENDED METAL TYPE

Heater*	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.45	amp.
Direct Interelectrode Capacitances:°		
Grid to Plate	0.015 max.	µuf
Input	8	µuf
Output	5	µuf
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal 8-Pin
Pin 1 - Shell		Pin 5 - Cathode
Pin 2 - Heater		Pin 6 - Screen
Pin 3 - Suppressor		Pin 7 - Heater
Pin 4 - Grid		Pin 8 - Plate
Mounting Position	BOTTOM VIEW (8N)	Any

**AMPLIFIER**

Plate Voltage	300 max.	volts
Screen Voltage	200 max.	volts
Screen-Supply Voltage	300 max.	volts
Plate Dissipation*	3.75 max.	watts
Screen Dissipation	0.65 max.	watt

Typical Operation and Characteristics - Class A₂ Amplifier:Condition I^a Condition II^{aa}

Heater*	6.3	6.3	volts
Plate	300	300	volts
Suppressor [□]	0	0	volts
Screen-Supply [#]	200	300	volts
Series Screen Resistor	-	3000	ohms
Grid ^{•••}	-3	-3	min.volts
Plate Res.	0.7	0.7	approx.megohm
Transcond.	5000	5000	µmhos
Grid Bias for transcond. = 50 µmhos	-15	-22.5	volts
Plate Cur.	12.5	12.5	ma.
Screen Cur.	3.2	3.2	ma.

° with shell connected to cathode.

^a Condition I is with fixed screen supply.^{aa} Condition II is with series screen resistor.[#] Screen-supply voltages in excess of 200 volts require the use of a series-dropping resistor to limit the voltage at the screen to 200 volts when the plate current is at its normal value of 12.5 milli-amperes.[•] May be obtained with cathode-bias resistor having a minimum value of 190 ohms.^{•••} The d-c resistance in the grid circuit should not exceed 0.25 megohm with fixed bias, or 0.5 megohm with full cathode bias and a series screen resistor.^{••••} Precautions should be taken to insure that dissipation rating is not exceeded with expected line-voltage fluctuations, especially in the case of fixed-bias operation.[□] The suppressor should be connected in r-f and i-f stages directly to ground to minimize feedback.^{*} The potential difference between heater and cathode should be kept as low as possible.

Note: It is characteristic of a high gm tube to show appreciable changes of input capacitance and input conductance with plate current. In high-frequency circuits, it is necessary to take precautions to minimize this effect.

← Indicates a change.

Dec. 1, 1941

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

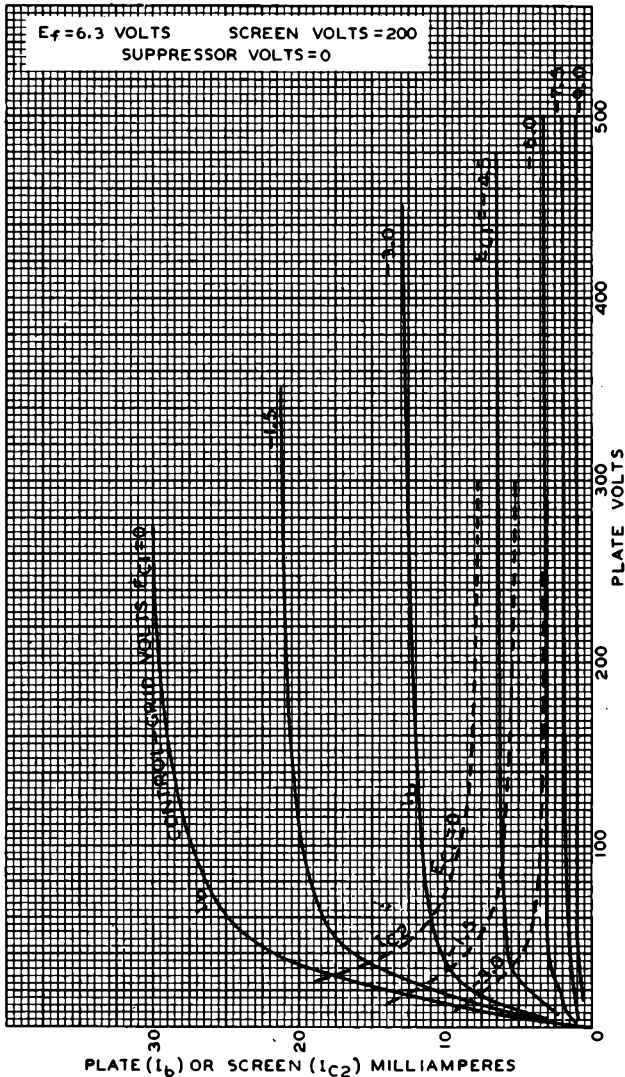
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6AB7



6AB7

AVERAGE PLATE CHARACTERISTICS



JUNE 21, 1938

 RCA RADIOTRON DIVISION
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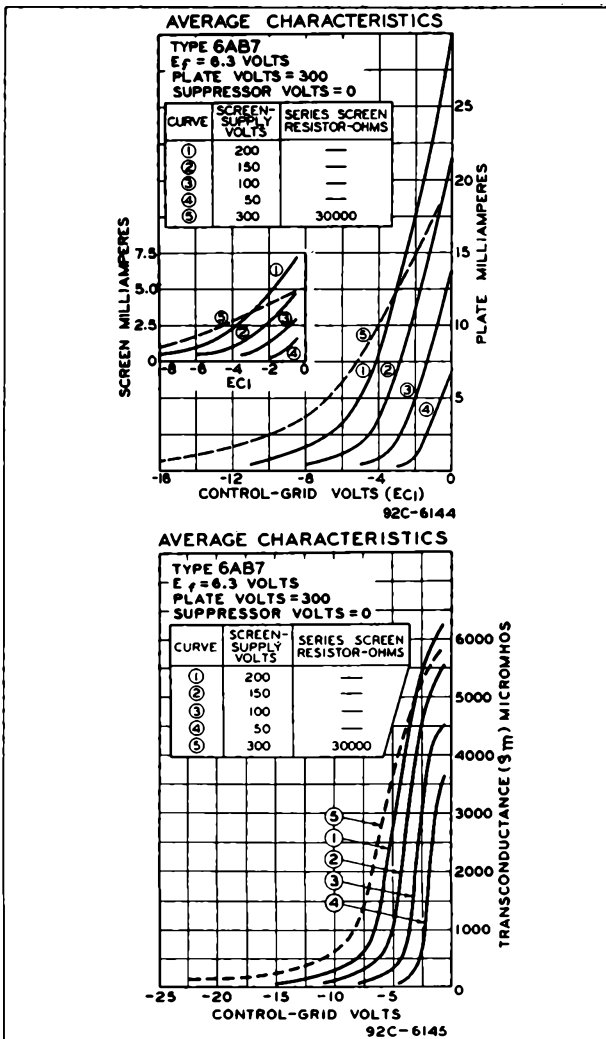
92C-6140



6AB7

6AB7

TELEVISION AMPLIFIER PENTODE



April 15, 1940

RCA RADIOTRON DIVISION
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92C-6144
92C-6145

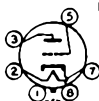


6AC5-GT/6AC5-G

6AC5-GT
★

HIGH-MU POWER AMPLIFIER TRIODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.4	amp.
Maximum Overall Length		3-5/16"
Maximum Seated Height		2-3/4"
Maximum Diameter		1-5/16"
Bulb		T-9
Base		Intermed. Shell Octal 6-Pin
Pin 1 - No Connection		Pin 5 - Grid
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Mounting Position		Any



BOTTOM VIEW (G-60)

Characteristics

Plate Voltage	250 max.	volts
Grid Voltage	+13	volts
Amplification Factor	125	
Plate Resistance	36700	ohms
Transconductance	3400	μmhos
Plate Current	32	ma.
Grid Current	5	ma.

Amplifier

Plate Voltage	250 max.	volts
Peak Plate Current (per tube)	110 max.	ma.
Average Plate Dissipation	10 max.	watts

Typical Operation - Class B Power Amplifier:

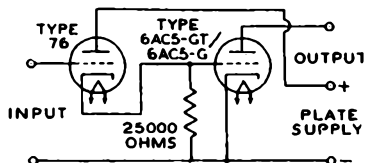
Unless otherwise specified, values are for 2 tubes

Plate Voltage	250	volts
Grid Voltage	0	volts
Peak A-F Grid-to-Grid Voltage	70	volts
Zero-Signal D-C Plate Current	5	ma.
Effective Load Res. (plate to plate)	10000	ohms
Peak Power Input	950	mW.
Power Output	8 approx.	watts
Dynamic-Coupled Class A ₁ Amplifier - With Type 76 as Driver:		
Plate-Supply Voltage	250	volts
Grid Voltage	▲	volts
Average Plate Current	32	ma.
Average Plate Current of Driver	5.5	ma.
Input Signal to Driver (RMS)	16.5	volts
Driver Grid Resistor	1.0 max.	megohm
Load Resistance	7000	ohms
Harmonic Distortion	10	%
Power Output *	3.7	watts

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ Bias voltages for both the 6AC5-GT/6AC5-G and the driver is developed by the Dynamic-Coupled connection, shown in the circuit arrangement. The total d-c resistance in the grid circuit of the driver should not exceed 1.0 megohm. The main purpose of the 25000-ohm resistor is to prevent a current surge occurring while the tube is warming up.

* When driver is operated up to the grid-current point, it is possible to obtain power output of 4.3 watts with approximately 16% distortion.

DYNAMIC-COUPLED CONNECTION

←Indicates a change.

The license extended to the purchaser of tubes appears in the license notice accompanying them. Information contained herein is furnished without assuming any obligations.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

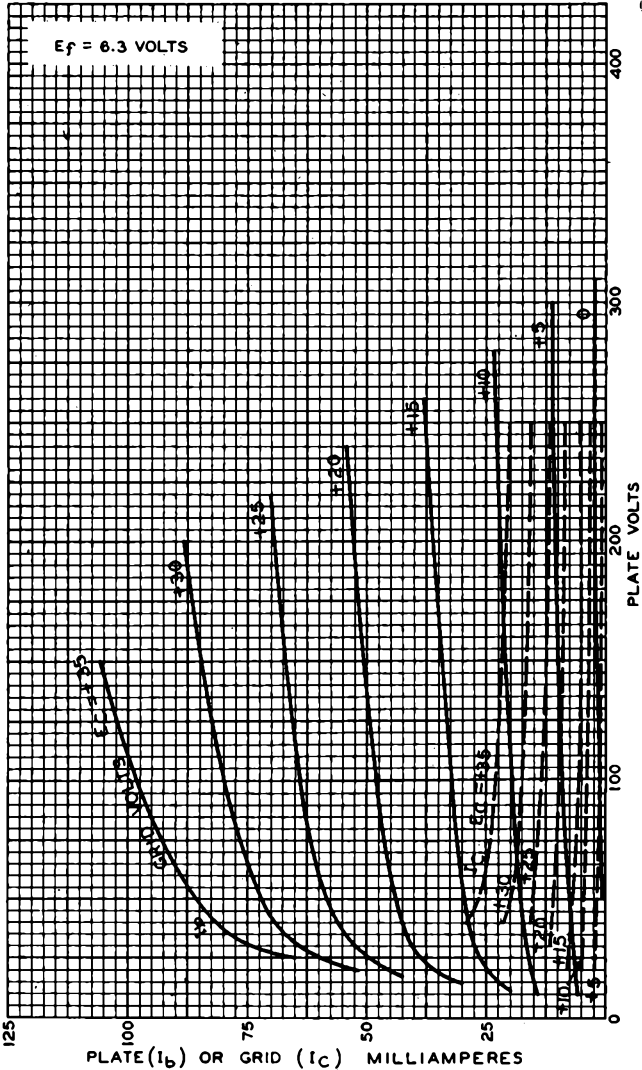
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6AC5-GT



6AC5-GT

AVERAGE PLATE CHARACTERISTICS



OCT. 18, 1937

RCA RADIORON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4840



6AC7/1852

6AC7



TELEVISION AMPLIFIER PENTODE

SINGLE-ENDED METAL TYPE

Heater \star	Coated Unipotential Cathode	a-c or d-c volts
Voltage	6.3	amp.
Current	0.45	
Direct Interelectrode Capacitances: ^o		
Grid to Plate	0.015 max.	μ f
Input	11	μ f
Output	5	μ f
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal 8-Pin
Pin 1 - Shell		Pin 5 - Cathode
Pin 2 - Heater		Pin 6 - Screen
Pin 3 - Suppressor		Pin 7 - Heater
Pin 4 - Grid		Pin 8 - Plate
Mounting Position	BOTTOM VIEW (8N)	Any



AMPLIFIER

Plate Voltage	300 max.	volts
Screen Voltage	150 max.	volts
Screen-Supply Voltage	300 max.	volts
Plate Dissipation	3.02 max.	watts
Screen Dissipation	0.38 max.	watt

Typical Operation and Characteristics - Class A₂ Amplifier:

	Condition I ^a	Condition II ^{b,c}	
Plate Voltage	300	300	volts
Suppressor ^d	0	0	volts
Screen-Supply #	150	300	volts
Screen Series Resistor	-	60000	ohms
Cathode-Bias Resistor ##	160	160	min.ohms
Plate Res.	1.0	1.0	approx.megohm
Transcond.	9000	9000	μ mhos
Plate Cur.	10	10	ma.
Screen Cur.	2.5	2.5	ma.

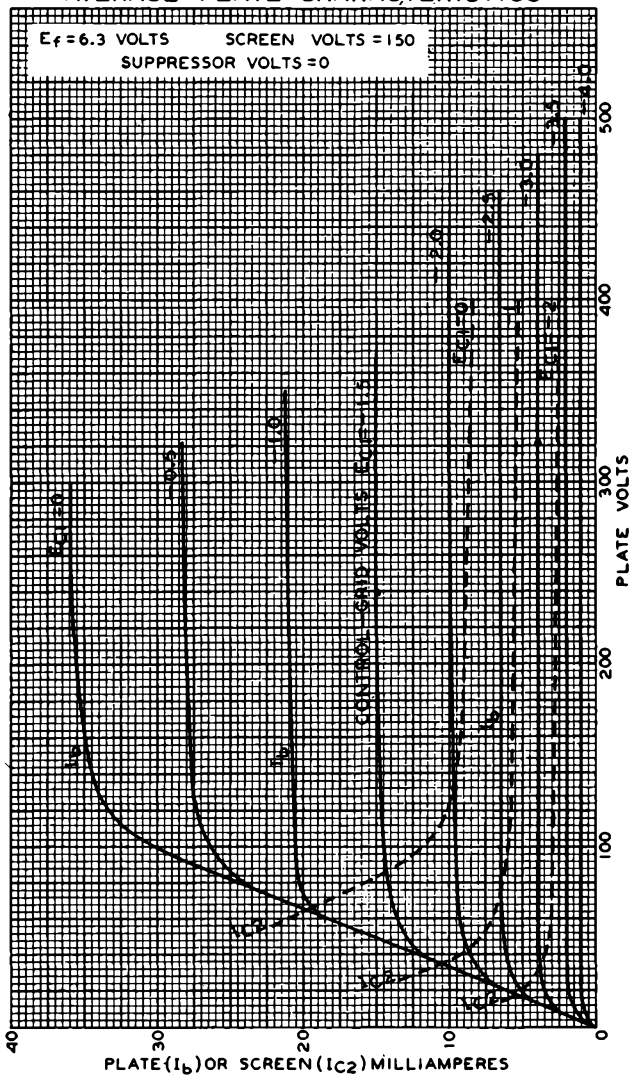
- ^o With shell connected to cathode.
- # Screen-supply voltages in excess of 150 volts require the use of a series-dropping resistor to limit the voltage at the screen to 150 volts when the plate current is at its normal value of 10 milliamperes.
- ^a Condition I with fixed screen supply gives a sharp cut-off characteristic.
- ^{b,c} Condition II with series screen resistor gives an extended cut-off characteristic for applications where gain is controlled by variation of grid bias.
- ## Cathode-bias resistor should be adjusted to give a plate current of 10 ma. The d-c resistance in the grid circuit should not exceed 0.25 megohm when the screen voltage is obtained from a fixed source. When a series screen resistor is used with full cathode bias, the d-c resistance in the grid circuit may be as high as 0.5 megohm.
- ^d The potential difference between heater and cathode should be kept as low as possible.
- ^e The suppressor should be connected in r-f and i-f stages directly to ground to minimize feedback.
- NOTE: It is characteristic of a high gm tube to show appreciable changes of input capacitance and input conductance with plate current. In high-frequency circuits, it will be necessary to take precautions to minimize this effect. The use of the 6AC7 as a high-gain audio amplifier is not recommended unless the heater is operated from a battery source.
- \leftarrow Indicates a change.

6AC7



6AC7

AVERAGE PLATE CHARACTERISTICS



JUNE 17, 1938

 RCA RADIIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-6139

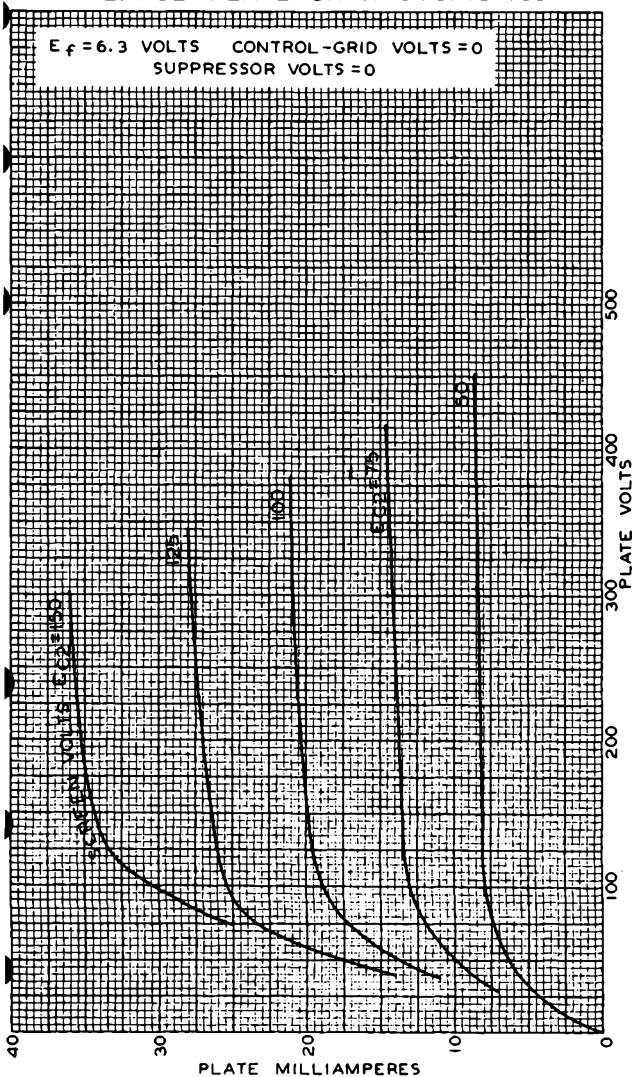


6AC7

6AC7

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS CONTROL-GRID VOLTS = 0
SUPPRESSOR VOLTS = 0



DEC. 5 1942

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

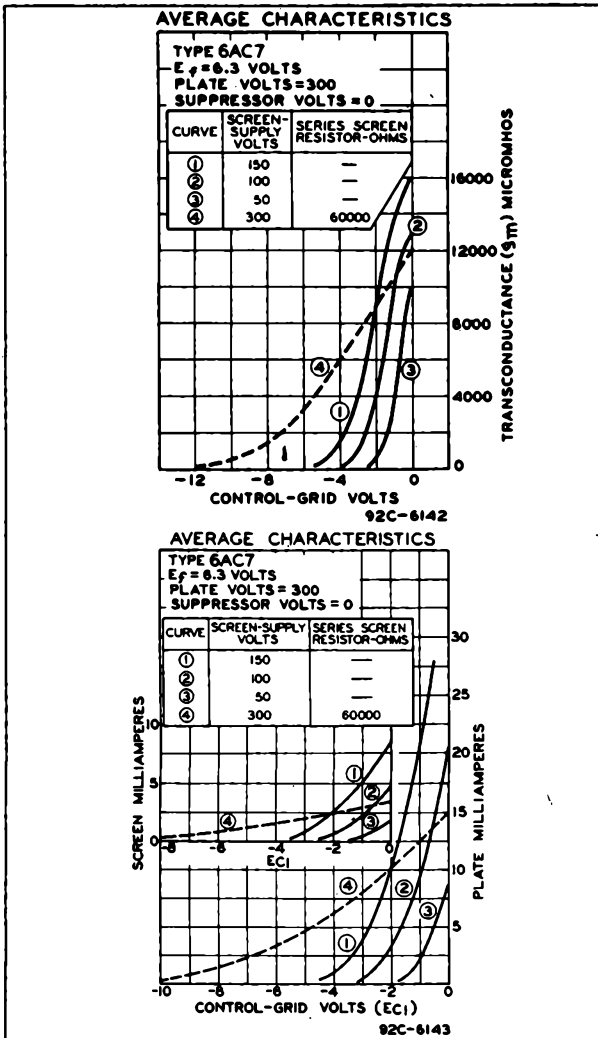
92C-6146R1

6AC7



6AC7

TELEVISION AMPLIFIER PENTODE



Jan. 1, 1943

RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-6142

92C-6143



6AD7-G

**TRIODE-POWER AMPLIFIER PENTODE**

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.85	amp.
Maximum Overall Length		4-5/8"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium Shell Octal 8-Pin
Pin 1-Triode Grid		Pin 5-Pentode Grid
Pin 2-Heater		Pin 6-Triode Plate
Pin 3-Pentode Plate		Pin 7-Heater
Pin 4-Pentode Screen		Pin 8-Cathode
Mounting Position		Any



BOTTOM VIEW (8AY)

TRIODE UNIT

Plate Voltage	285 max.	volts	←
Plate Dissipation	1.0 max.	watt	
<i>Characteristics - Class A₁ Amplifier:</i>			
Plate Voltage	250	volts	
Grid Voltage	-25	volts	
Amp. Factor	6		
Plate Res.	19000 approx.	ohms	
Transcond.	325	μmhos	
Plate Current	4	ma.	

PENTODE UNIT

Plate Voltage	375 max.	volts	←
Screen Voltage	285 max.	volts	←
Plate Dissipation	8.5 max.	watts	
Screen Dissipation	2.7 max.	watts	
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>			
Plate Voltage	250	volts	
Screen Voltage	250	volts	
Grid Voltage	-16.5	volts	
Peak A-F Grid Voltage	16.5	volts	
Zero-Sig. Plate Current	34	ma.	
Max.-Sig. Plate Current	36	ma.	
Zero-Sig. Screen Current	6.5	ma.	
Max.-Sig. Screen Current	10.5	ma.	
Plate Resistance	80000 approx.	ohms	
Transconductance	2500	μmhos	
Load Resistance	7000	ohms	
Total Harmonic Distortion	8	%	
Max.-Signal Power Output	3.2	watts	

PUSH-PULL AMPLIFIER

Pentode Unit of 6AD7-G and a separate 6F6-G

Plate Voltage	375 max.	volts	←
---------------	----------	-------	---

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

← Indicates a change.

Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6AD7-G



6AD7-G

TRIODE-POWER AMPLIFIER PENTODE

(continued from preceding page)

Screen Voltage	285 max.	volts
Plate Dissipation	8.5 max.	watts
Screen Dissipation	2.7 max.	watts

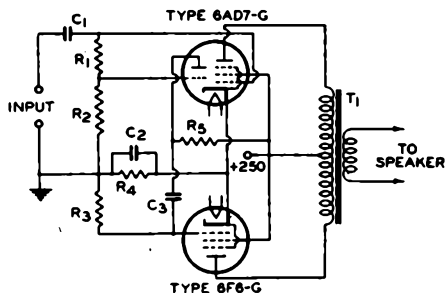
→ Typical Operation with Cathode Bias - Class AB_1 Amplifier:

Values are for pentode unit of 6AD7-G and 6F6-G together

Plate Voltage	250	285	375	volts
Screen Voltage	250	285	250	volts
Cathode Resistor	560	470	470	ohms
Peak A-F Grid to Grid Volt.	59	64	55	volts
Zero-Sig. Plate Current	36	47.5	41	ma.
Max.-Sig. Plate Current	41	54.5	50	ma.
Zero-Sig. Screen Current	6.7	8.2	6.7	ma.
Max.-Sig. Screen Current	11.7	13.7	9.2	ma.
Effec. Load Resistance (plate to plate)	14000	12000	16000	ohms
Total Harmonic Dist.	4	4	2	%
Max.-Sig. Power Output	6	8.5	9	watts

For curves of the pentode unit, refer to Type 6F6.

TYPICAL PUSH-PULL CIRCUIT WITH PHASE INVERTER USING 6AD7-G AND 6F6-G



$R_1 = 330000$ OHMS
 $R_2 = 120000$ OHMS
 $R_3 = 470000$ OHMS
 $R_4 = 560$ OHMS
 $R_5 = 150000$ OHMS

$C_1 = 0.01$ μ f
 $C_2 = 25$ μ f
 $C_3 = 0.01$ μ f

$T_1 =$ OUTPUT TRANSFORMER;
 PLATE-TO-PLATE LOAD, 14000 OHMS

← Indicates a change.

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

Sept. 2, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

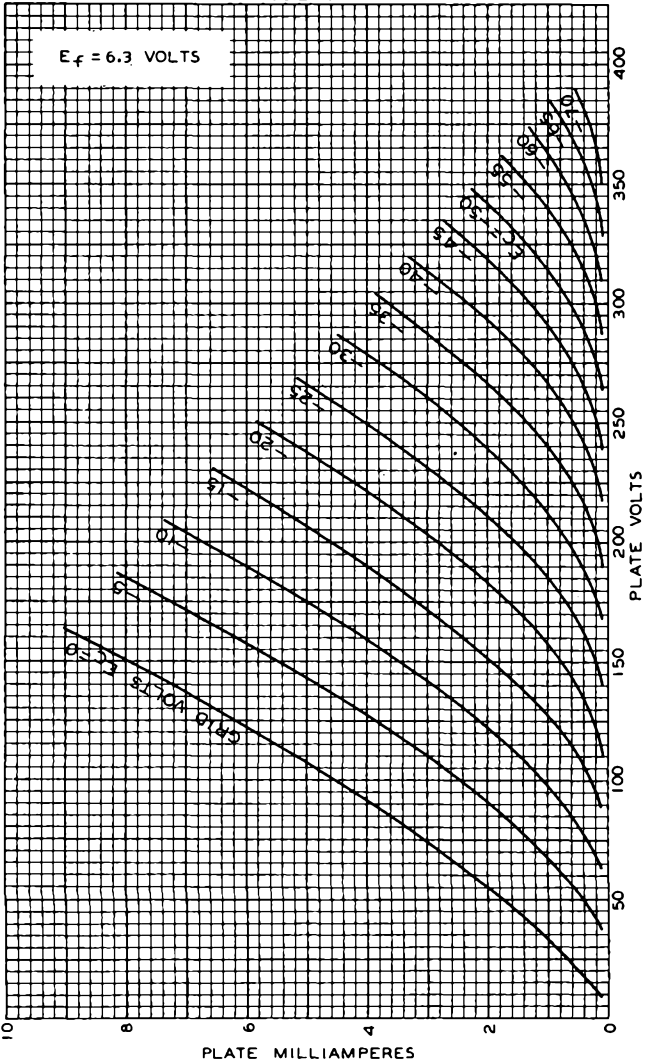
DATA



6AD7-G

6AD7-G

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT



APRIL 17, 1940

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.


92C-6153



6AE6-G

6AE6-G

TWIN-PLATE CONTROL TUBE

Heater [□]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Maximum Overall Length		4-1/8"
Maximum Seated Height		3-9/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small Shell Octal 7-Pin
Pin 1 - No Connection		Pin 4 - Plate (Sharp Cut-off Triode)
Pin 2 - Heater		Pin 5 - Grid
Pin 3 - Plate (Remote Cut-off Triode)		Pin 6 - Heater
		Pin 7 - Cathode
Mounting Position	BOTTOM VIEW (7AH)	Any

REMOTE CUT-OFF TRIODE

Plate Voltage					250 max. volts
Characteristics:					
Plate	250	250	250	250	volts
Grid	-35	-15	-6	-1.5	volts
Amp. Fact.				25	
Plate Res. (approx.)				25000	ohms
Transcond.				1000	μmos
Plate Current	0.01	0.8*	2.8	6.5	ma.

SHARP CUT-OFF TRIODE

Plate Voltage					250 max. volts
Characteristics:					
Plate		250	250		volts
Grid		-9.5	-1.5		volts
Amp. Fact.				33	
Plate Res. (approx.)				35000	ohms
Transcond.				950	μmos
Plate Current		0.01	4.5		ma.

[□] in circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

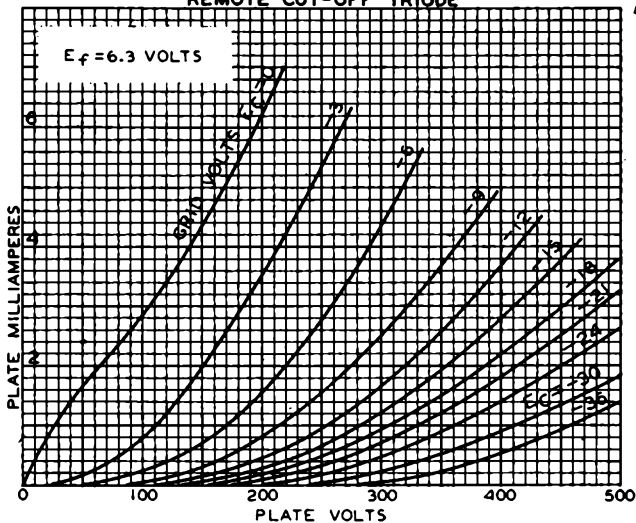
The 6AE6-G provides in effect two triodes with different cut-off characteristics and is intended for use as a control tube for twin-type electron-ray tubes, such as the 6AF6-G. With a-c voltage applied to the common grid in suitable circuits, one ray-control electrode serves for strong signals and the other for weak signals.

6AE6-G

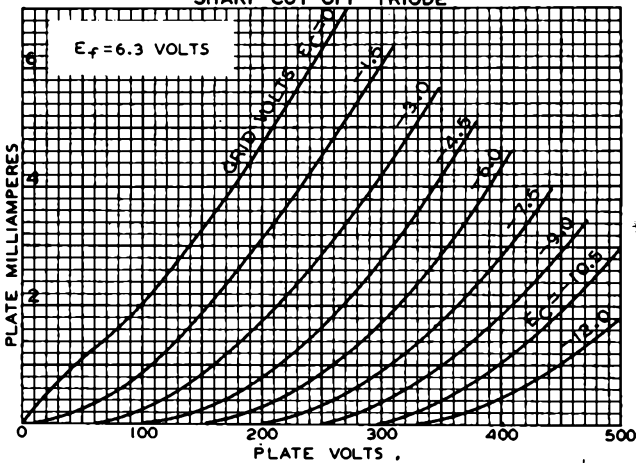


6AE6-G

AVERAGE PLATE CHARACTERISTICS
REMOTE CUT-OFF TRIODE



AVERAGE PLATE CHARACTERISTICS
SHARP CUT-OFF TRIODE



MAR. 18, 1940

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6138



6AF4

MEDIUM-MU TRIODE

MINIATURE TYPE

For UHF TV service

6AF4

The 6AF₄ is the same as the 6AF₄-A except for the following mechanical dimensions:

Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip).	1-1/2" ± 3/32"



6AF4-A

6AF4-A MEDIUM-MU TRIODE

MINIATURE TYPE
For UHF TV service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.225	amp

Resonant Frequency (Approx.) 1000 Mc

Direct Interelectrode Capacitances (No external shield):

Grid to Plate	1.9	μ f
Grid to Cathode and Heater	2.2	μ f
Plate to Cathode and Heater	0.45	μ f

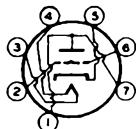
Characteristics - Class A₁ Amplifier:

Plate Voltage	80	100	volts
Cathode-Bias Resistor	150	150	ohms
Amplification Factor	15	16	
Plate Resistance	2270	2130	ohms
Transconductance	6600	7500	μ mhos
Plate Current	16	20	ma

Mechanical:

Mounting Position	Any
Maximum Overall Length	1-3/4"
Maximum Seated Length	1-1/2"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/8" \pm 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No. E7-1)
Basing Designation for BOTTOM VIEW	7DK

- Pin 1 - Plate
- Pin 2 - Grid
- Pin 3 - Heater
- Pin 4 - Heater



- Pin 5 - Cathode
- Pin 6 - Grid
- Pin 7 - Plate

OSCILLATOR IN UHF TELEVISION RECEIVERS

Maximum Ratings, Design-Center Values:

DC PLATE VOLTAGE	150 max.	volts
DC GRID VOLTAGE	-50 max.	volts
DC GRID CURRENT	8 max.	ma
PLATE INPUT	2.5 max.	watts
PLATE DISSIPATION	2.25 max.	watts
DC CATHODE CURRENT	28 max.	ma
PEAK HEATER-CATHODE VOLTAGE: [♠]		
Heater negative with respect to cathode	50 max.	volts
Heater positive with respect to cathode	50 [♠] max.	volts

[♠], [♣]: See next page.

NOV. 5, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AF4-A



6AF4-A

MEDIUM-MU TRIODE

Typical Operation as Oscillator at 950 Mc:

DC Plate Voltage	100	volts
DC Grid Voltage	-4	volts
<i>From a grid resistor of</i>	10000	ohms
DC Plate Current	22	ma
DC Grid Current (Approx.)	400	μ amp
Useful Power Output	160	mW

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation	Not recommended
For cathode-bias operation	0.5 max. megohm

◆ It is recommended that the heater be kept at cathode potential to minimize the effects of variation in the heater-to-cathode capacitance between tubes.

▲ The dc component must not exceed 25 volts.

OPERATING CONSIDERATIONS

The *mounting arrangement* should insure that the tube is held secure by its socket. Unless this recommendation is followed, the generated frequency may change by as much as 10 megacycles per second. A conventional miniature tube shield and an external clamping arrangement are recommended.

The *base pins* of the 6AF4-A fit the miniature 7-contact socket. The *socket* should be of the mica-filled, rubber, or ceramic type

NOV. 5, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



6AF4-A

6AF4-A

AVERAGE PLATE CHARACTERISTICS



FEB. 20, 1952

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

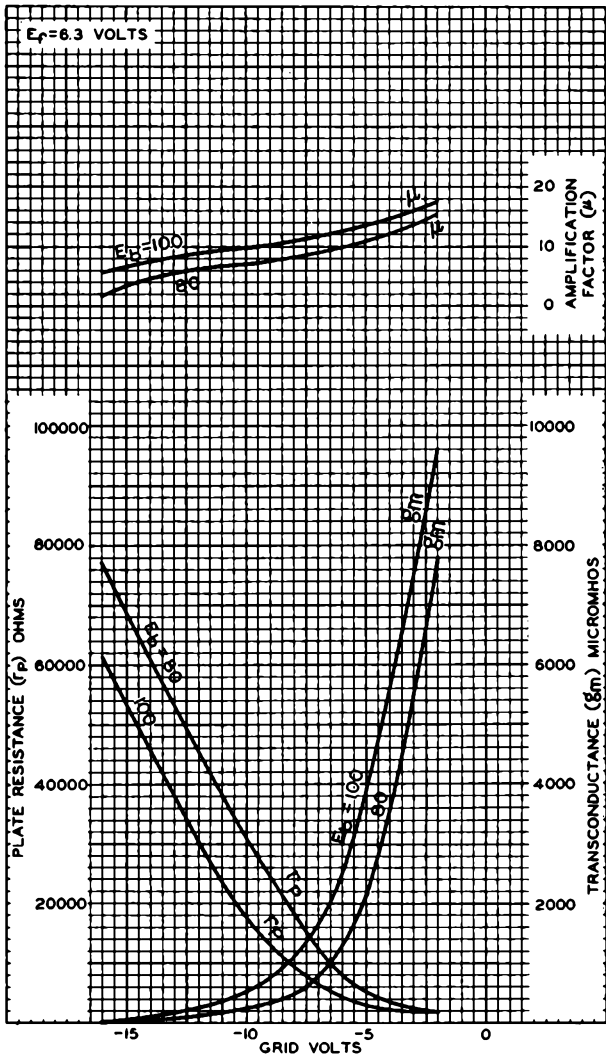
92CM-7756

6AF4-A



6AF4-A

AVERAGE CHARACTERISTICS



FEB. 26, 1952

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

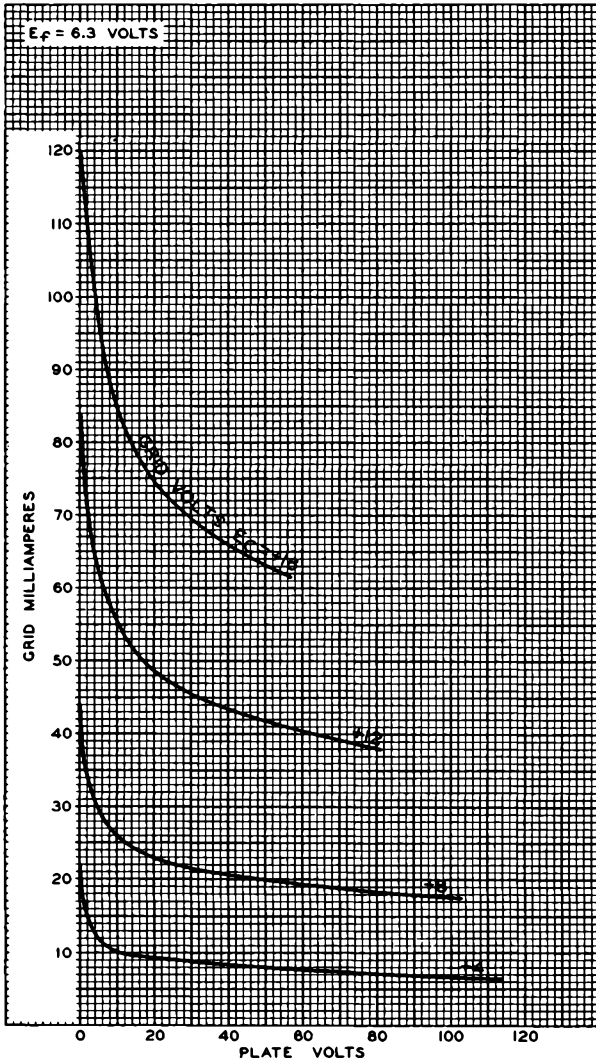
92CM-7758



6AF4-A

6AF4-A

AVERAGE CHARACTERISTICS



MAR. 19, 1952

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

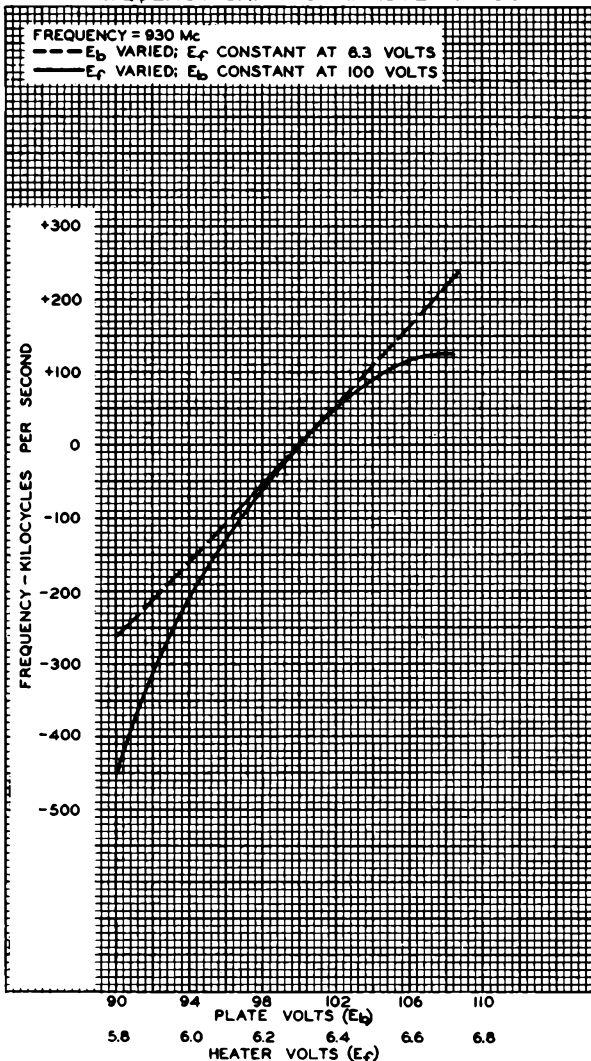
92CM-7759R1

6AF4-A



6AF4-A

FREQUENCY SHIFT CHARACTERISTICS



FEB. 29, 1952

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7762



6AF6-G

6AF6-G

ELECTRON-RAY TUBE

TWIN-INDICATOR TYPE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Overall Length	2-1/4"	{ +1/16" ← -1/4" ←
Seated Height	1-11/16"	{ +1/16" ← -1/4" ←
Maximum Diameter		1-5/16"
Bulb		T-9
Base		Intermed. Sh. Octal 7-Pin
Pin 1 - No Connection		Pin 4 - Ray-Control
Pin 2 - Heater		Electrode, Unit No. 1
Pin 3 - Ray-Control		Pin 5 - Target
Electrode, Unit No. 2		Pin 7 - Heater
		Pin 8 - Cathode



Mounting Position BOTTOM VIEW (7AG) Any**

Maximum and Minimum Ratings Are Design-Center Values

INDICATOR SERVICE

Target Voltage	{ 250 max. volts ← 125 min. volts ←
Ray-Control Electrode Supply Voltage	250 max. volts ←
D-C Heater-Cathode Potential	90 max. volts ←

Typical Operation:

Target Voltage	125	250	volts
Series Resistor [⊙]	0.5	1.0	megohm
Target Current*	0.65	2.2	ma.
Ray-Control Electrode Voltage †	80	160	approx. volts
Ray-Control Electrode Voltage ††	0	0	approx. volts

** The plane of the ray-control electrodes passes through pins No. 3 and No. 7.

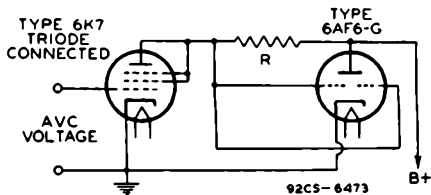
[⊙] Designated R in circuit diagram below.

* With 0 volts on ray-control electrodes. Subject to wide variations.

† For shadow angle of 0° produced by either ray-control electrode.

†† For shadow angle of 95° produced by either ray-control electrode.

TYPICAL CIRCUIT USING TYPE 6AF6-G WITH RAY-CONTROL ELECTRODES IN PARALLEL



The license extended to the purchaser of tubes appears in the License notice accompanying them. Information contained herein is furnished without assuming any obligations. ← Indicates a change.

DEC. 15, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

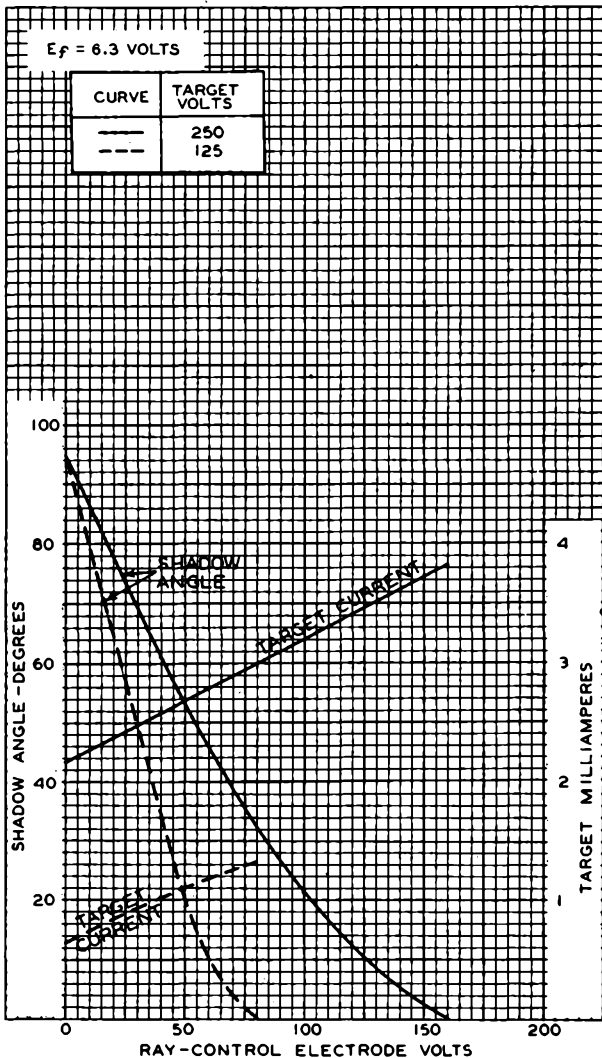
DATA

6AF6-G



6AF6-G

AVERAGE CHARACTERISTICS



SEPT. 25, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4909R1



6AG5

6AG5

SHARP-CUTOFF PENTODE

MINIATURE TYPE

Useful at Frequencies up to 400 Mc

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	. . . . .	ac or dc volts
Current	0.3	. . . . .	amp

Direct Interelectrode Capacitances:

<i>Without Shield</i>	<i>With Shield^o</i>
-----------------------	--------------------------------

Pentode Connection:

Grid No.1 to plate	0.030 max.	0.020 max.	μf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater. .	6.5	6.6	μf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater . .	1.8	3.1	μf

Triode Connection, Grid No.2 tied to Plate:

Grid No.1 to plate and grid No.2.	2.5	2.5	μf
Grid No.1 to cathode & grid No.3 & internal shield, and heater . . .	3.6	3.6	μf
Plate and grid No.2 to cathode & grid No.3 & internal shield, and heater	3	4.3	μf

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip).	1-1/2" \pm 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7B0

- Pin 1 - Grid No.1
- Pin 2 - Cathode, Grid No.3, Internal Shield
- Pin 3 - Heater
- Pin 4 - Heater



- Pin 5 - Plate
- Pin 6 - Grid No.2
- Pin 7 - Cathode, Grid No.3, Internal Shield

^o With external shield JETEC No.316 connected to pin No.7.

←Indicates a change.

6AG5



6AG5

SHARP-CUTOFF PENTODE

AMPLIFIER - Class A₁

Pentode Connection

→ **Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE.	300 max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300 max.	volts
GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section	
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value.	0 max.	volts
PLATE DISSIPATION.	2 max.	watts
GRID-No.2 INPUT:		
For grid-No.2 voltages up to 150 volts	0.5 max.	watt
For grid-No.2 voltages between 150 and 300 volts.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section	
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

→ **Typical Operation and Characteristics:**

Plate Voltage.	100	125	250	volts
Grid-No.2 Voltage.	100	125	150	volts
Cathode-Bias Resistor.	180	100	180	ohms
Plate Resistance (Approx.)	0.6	0.5	0.8	megohm
Transconductance	4500	5100	5000	μmhos
Plate Current.	4.5	7.2	6.5	ma
Grid-No.2 Current.	1.4	2.1	2.0	ma
Grid-No.1 Voltage (Approx.) for plate current = 10 μamp	-5	-6	-8	volts

AMPLIFIER - Class A₁

Triode Connection - Grid No.2 Connected to Plate

→ **Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE.	300 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value.	0 max.	volts
PLATE AND GRID-No.2 DISSIPATION (TOTAL).	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

→ **Typical Operation and Characteristics:**

Plate Voltage.	180	250	volts
→ Cathode-Bias Resistor.	330	820	ohms
→ Plate Resistance (Approx.)	0.008	0.01	megohm
Amplification Factor	45	42	
Transconductance	5700	3800	μmhos
Plate & Grid-No.2 Current (Total).	7	5.5	ma

→ indicates a change.

JAN. 3, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

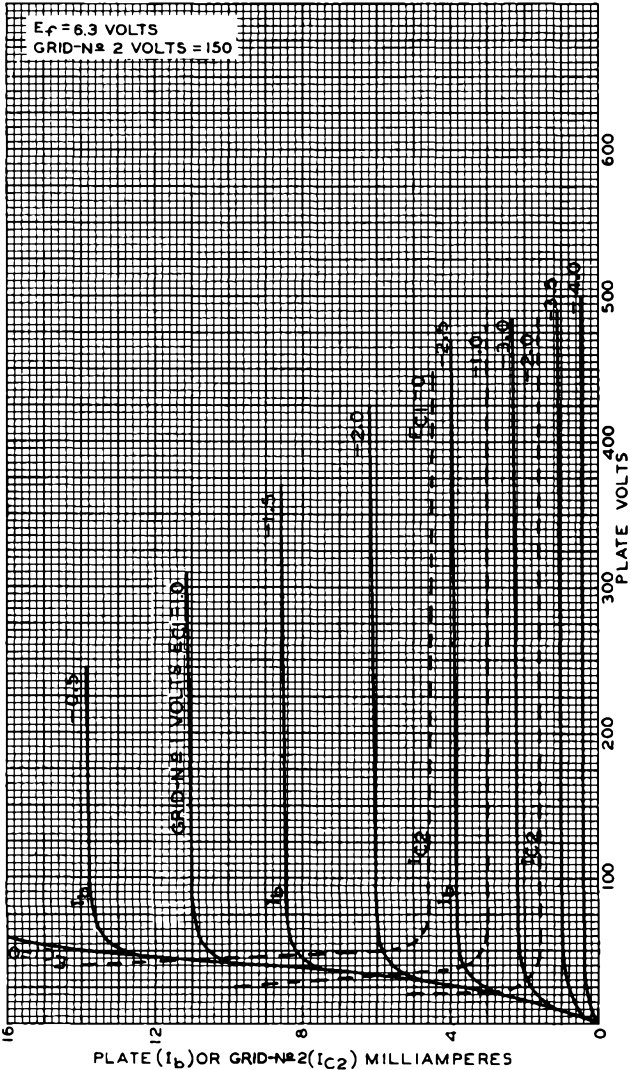
DATA



6AG5

AVERAGE PLATE CHARACTERISTICS

6AG5



DEC. 27, 1954

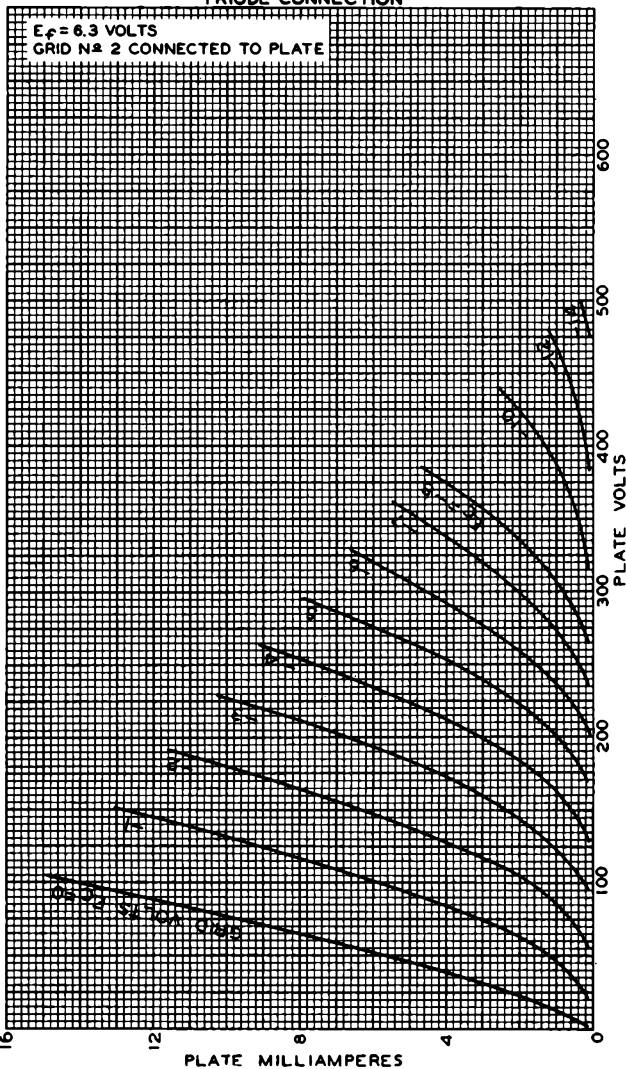
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6399 R2

6AG5



6AG5 AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



DEC. 28, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM - 6464RI



6AG7

6AG7 POWER PENTODE SINGLE-ENDED METAL TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.65	amp

Direct Interelectrode Capacitances:

With Pin No.1 and Pin No.3 connected to Pin No.5

Grid No.1 to Plate	0.06 max.	$\mu\mu\text{f}$
Input	13	$\mu\mu\text{f}$
Output	7.5	$\mu\mu\text{f}$

Characteristics, Amplifier Class A₁

Plate Voltage	300	volts
Grid-No.2 Voltage	150	volts
Grid-No.1 Voltage	-3	volts
Peak AF Grid-No.1 Signal Voltage	3	volts
Zero-Signal DC Plate Current	30	ma
Max.-Signal DC Plate Current	30.5	ma
Zero-Signal DC Grid-No.2 Current	7	ma
Max.-Signal DC Grid-No.2 Current	9	ma
Plate Resistance (Approx.)	0.13	megohm
Transconductance	11000	μmhos
Load Resistance	10000	ohms
Total Harmonic Distortion	7	per cent
Max.-Signal Power Output	3	watts

Mechanical:

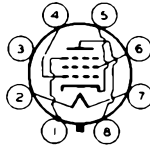
Mounting Position	Any
Maximum Overall Length	3-1/4" ←
Seated Length	2-19/32" ± 3/32" ←
Maximum Diameter	1-5/16" ←
Bulb	Metal Shell, MT-8
Base	Small-Wafer Octal 8-Pin (JETEC No.8B-21)
Basing Designation for BOTTOM VIEW	8Y ←

Pin 1 - Shell,
Grid No.3

Pin 2 - Heater

Pin 3 - No
Connection

Pin 4 - Grid No.1



Pin 5 - Cathode

Pin 6 - Grid No.2

Pin 7 - Heater

Pin 8 - Plate

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	300 max.	volts

← Indicates a change

6AG7



6AG7 POWER PENTODE

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value 0 max. volts

PLATE DISSIPATION 9 max. watts

GRID-No.2 INPUT 1.5 max. watts

→ PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation in 4-Mc Bandwidth Video Amplifier
Circuit of Fig. 1:
With Grid-Resistor Bias
Used where dc restoration is accomplished in grid-No.1 circuit of the 6A07

Plate Supply Voltage 300 volts

Grid-No.2 Voltage† 115 volts

Zero-Signal Grid-No.1 Voltage 0 volts

Grid-No.1 Resistor 0.25 to 0.5 megohm

Grid-No.1 Signal Voltage (Peak to Peak) 4 volts

Zero-Signal Plate Current 45 ma

Zero-Signal Grid-No.2 Current 13 ma

Load Resistor 3500 ohms

Voltage Output (Peak to Peak) 135 volts

With Cathode-Resistor Bias

Plate Supply Voltage 300 volts

Grid-No.2 Voltage° 125 volts

from series resistor of 25000 ohms

Grid-No.1 Voltage -2 volts

 Cathode Resistor (Bypassed with
capacitor of 250 μ f, approx.) 57 ohms

Grid-No.1 Signal Voltage (Peak to Peak) 4 volts

Zero-Signal Plate Current 28 ma

Zero-Signal Grid-No.2 Current 7 ma

Load Resistor 3500 ohms

Voltage Output (Peak to Peak) 140 volts

Maximum Circuit Values:
Grid-No.1-Circuit Resistance:

For fixed-bias operation 0.25 max. megohm

For cathode-bias operation 1.0 max. megohm

† obtained from supply having good regulation.

° obtained preferably from 300-volt plate supply through resistor of value shown.

→ indicates a change

NOV. 1, 1952

TUBE DEPARTMENT

DATA 1

- RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

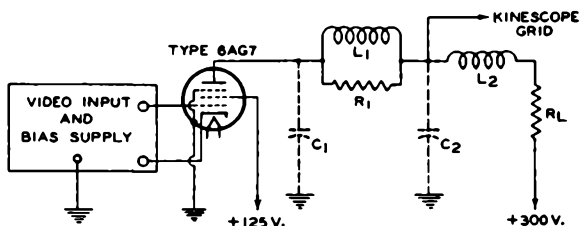


6AG7

6AG7

POWER PENTODE

Fig. 1 - Typical Video Voltage Amplifier Circuit
Having Bandwidth of 4 Mc.



$C_1 = 9.5 \mu\text{mf} =$ Tube Output Capacitance + Socket Capacitance + Wiring Capacitance + Coil Capacitance

$C_2 = 19 \mu\text{mf} =$ Kinescope Capacitance + Socket Capacitance + Wiring Capacitance + Coil Capacitance

$L_1 = 250 \mu\text{h}$ Filter Inductor

$L_2 = 125 \mu\text{h}$ Filter Inductor

$R_1 = 20000\text{-Ohm}$, Non-Reactve Resistor

$R_L = 3500\text{-Ohm}$, 10-Watt, Non-Reactve Resistor

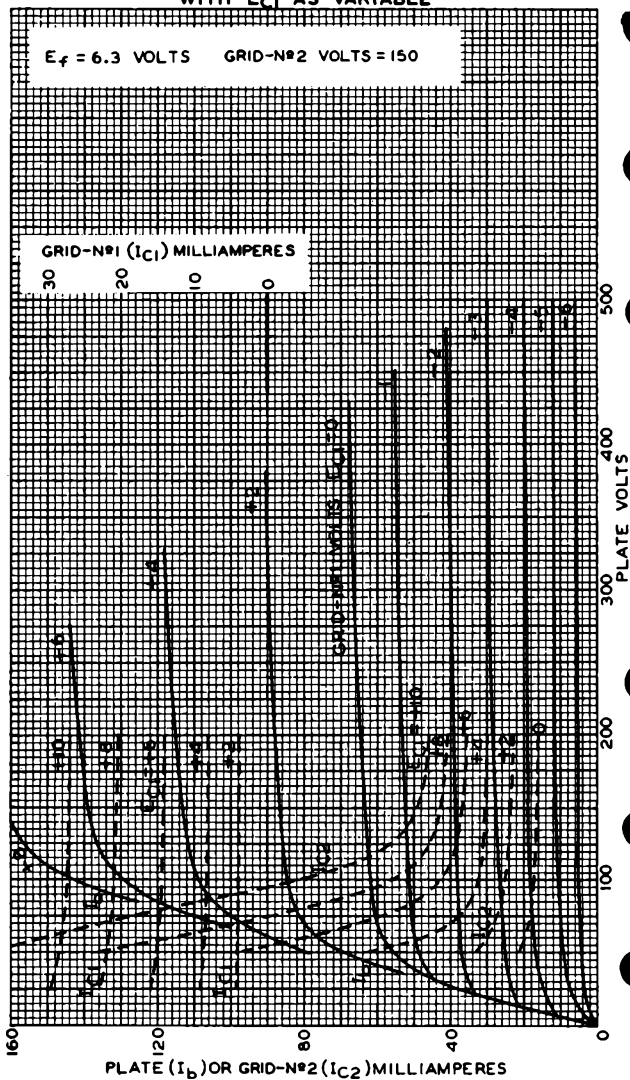
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6AG7



6AG7

AVERAGE PLATE CHARACTERISTICS WITH E_{c1} AS VARIABLE



OCT. 2, 1952

TUBE DEPARTMENT

92CM-6034R2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

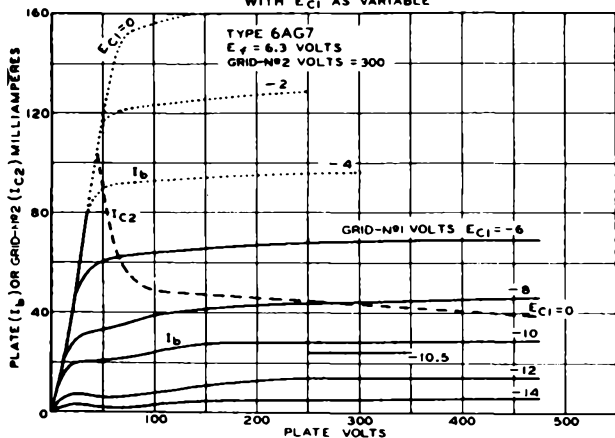


6AG7

POWER PENTODE

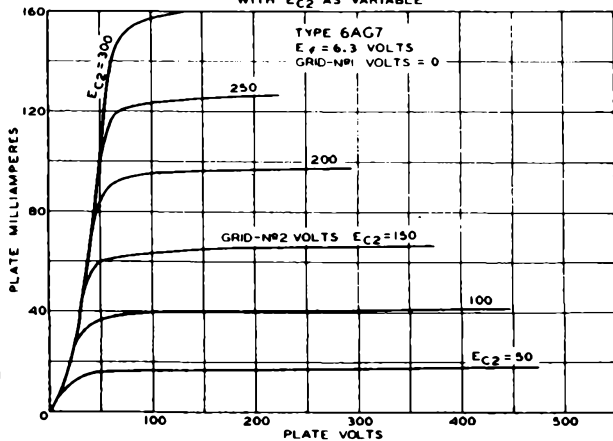
6AG7

AVERAGE PLATE CHARACTERISTICS
WITH E_{C1} AS VARIABLE



92CM-6035T1

AVERAGE PLATE CHARACTERISTICS
WITH E_{C2} AS VARIABLE



92CM-6036T1

NOV. 1, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6035T1
CE-6036T1

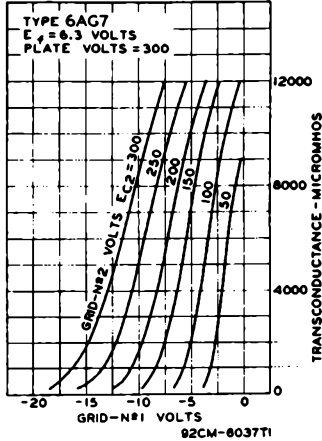
6AG7



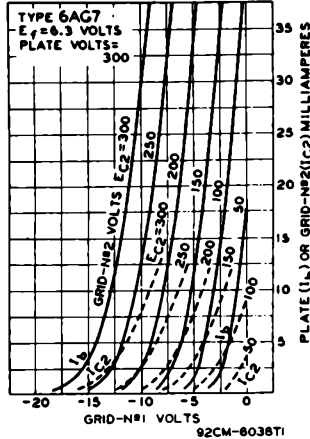
6AG7

POWER PENTODE

AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



NOV. 1, 1952

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6037T1
 CE-6038T1



6AH4-GT

MEDIUM-MU TRIODE

6AH4-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.75	amp

Direct Interelectrode Capacitances (No external shield):

Grid to Plate	4.4	μmf
Input	7	μmf
Output	1.7	μmf

Characteristics, Amplifier Class A₁:

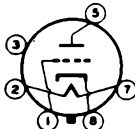
Plate Voltage	250	volts
Grid Voltage	-23	volts
Amplification Factor	8	
Plate Resistance	1780	ohms
Transconductance	4500	μmhos
Plate Current	30	ma
Grid Volts (Approx.) for plate current of 0.5 ma	-40	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	Short Intermediate-Shell Octal 6-Pin (JETEC No. B6-60)

Basing Designation for BOTTOM VIEW 8EL

- Pin 1-Grid
- Pin 2-Heater
- Pin 3-No
Conn.



- Pin 5-Plate
- Pin 7-Heater
- Pin 8-Cathode

VERTICAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except As Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	500 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE*	2000 [Ⓜ] max.	volts
DC POSITIVE GRID VOLTAGE	0 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	-200 max.	volts

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[Ⓜ] The duration of the voltage pulse must not exceed 15% of one vertical scanning cycle. In a 525-line, 30-frame system, 15% of one vertical scanning cycle is 2.5 milliseconds.

[Ⓝ] Under no circumstances should this absolute value be exceeded.

6AH4-GT



6AH4-GT

MEDIUM-MU TRIODE

CATHODE CURRENT:

DC	180 max.	ma
Peak	60 max.	ma
PLATE DISSIPATION	7.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance	2.2 max.	megohms
-----------------------------------	----------	---------

▲ The dc component must not exceed 100 volts.

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



6AH6

SHARP-CUTOFF PENTODE

MINIATURE TYPE

6AH6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.45 amp

Direct Interelectrode Capacitances:⁰

Grid No.1 to Plate 0.030 max μ f

Input. 10 μ f

Output 2 μ f

⁰ with no external shield.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip). 1-1/2" \pm 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin

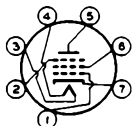
Basing Designation for BOTTOM VIEW 7BK

Pin 1-Grid No.1

Pin 2-Grid No.3

Pin 3-Heater

Pin 4-Heater



Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Cathode

AMPLIFIER-Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 150 max. volts

TOTAL CATHODE CURRENT. 13 max. ma

PLATE DISSIPATION. 3.2 max. watts

GRID-No.2 DISSIPATION. 0.4 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Characteristics:

Pentode Connection

Plate Voltage. 300 volts

Grid No.3 (Suppressor) Tied to cathode at socket

Grid-No.2 Voltage. 150 volts

Cathode Resistor 160 ohms

Plate Resistance (Approx.) 0.5 megohm

Transconductance 9000 μ mhos

Grid-No.1 Bias (Approx.) for
plate current of 10 μ amp -7 volts

Plate Current. 10 ma

Grid-No.2 Current. 2.5 ma

NOV. 15, 1949

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TENTATIVE DATA

6AH6

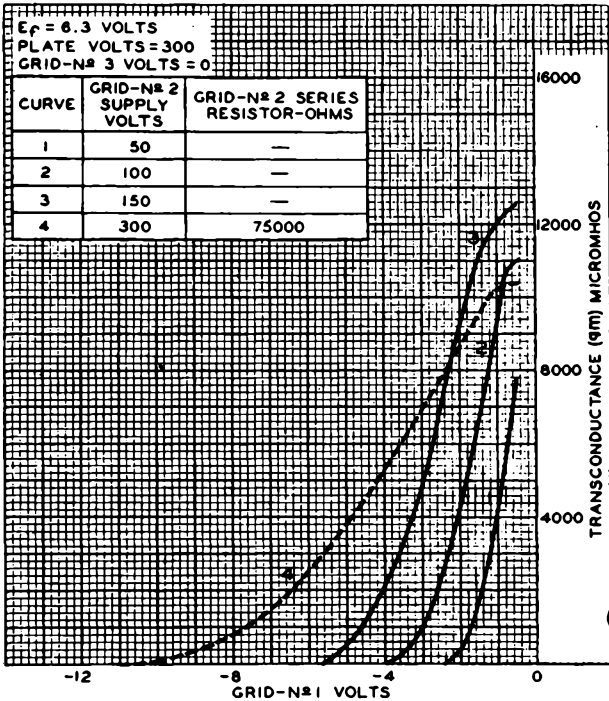


6AH6

SHARP-CUTOFF PENTODE

Triode Connection Grid No. 2 and Grid No. 3 Tied to Plate		
Plate Voltage	150	volts
Cathode Resistor	160	ohms
Amplification Factor	40	
Plate Resistance (Approx.)	3600	ohms
Transconductance	11000	μ mhos
Grid-No.1 Bias (Approx.) for plate current of 10 μ amp	-7	volts
Plate Current	12.5	ma

AVERAGE CHARACTERISTICS



92CM-7334

NOV. 15, 1949

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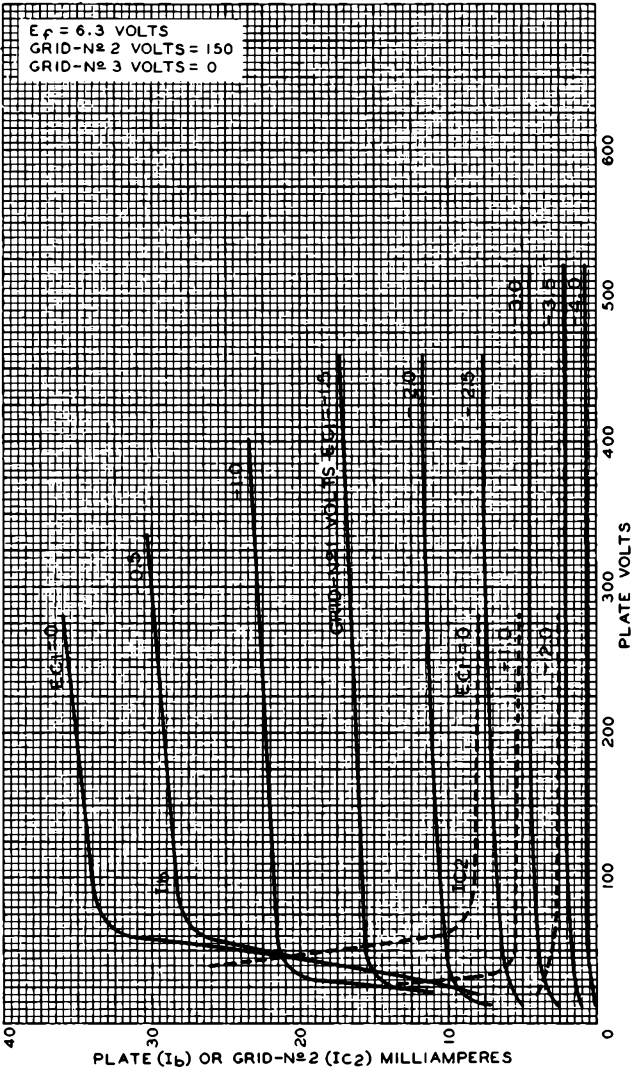
CE-7334



6AH6

6AH6

AVERAGE PLATE CHARACTERISTICS



AUG. 5, 1949

TUBE DEPARTMENT

92CM-7339

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AH6

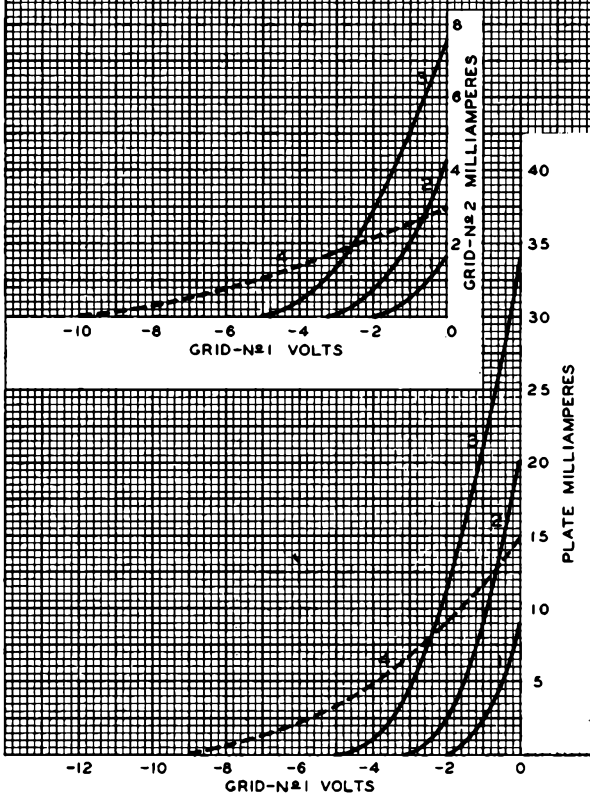


6AH6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 300
 GRID-N^o 3 VOLTS = 0

CURVES	GRID-N ^o 2 SUPPLY VOLTS	GRID-N ^o 2 SERIES RESISTOR-OHMS
1	50	—
2	100	—
3	150	—
4	300	75000



AUG. 4, 1949

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7337



6AK5

6AK5

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

Useful at frequencies up to 400 Mc

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.175 amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Grid No.1 to plate	0.03 max.	0.02 max.	μf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater	4	4	μf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater	2.1	2.8	μf

Characteristics, Class A₁ Amplifier:

Plate Voltage	120	180	volts
Grid-No.2 (Screen) Voltage	120	120	volts
Cathode-Bias Resistor	180	180	ohms
Plate Resistance (Approx.)	0.30	0.50	megohm
Transconductance	5000	5100	μmhos
Plate Current	7.5	7.7	ma
Grid-No.2 Current	2.5	2.4	ma
Grid-No.1 Voltage (Approx.) for plate current of 10 μamp	-8.5	-8.5	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	1-3/4"
Maximum Seated Length	1-1/2"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/8" \pm 3/32"
Maximum Diameter	3/4"
Dimensional Outline	See General Section
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No.E7-1)
Basing Designation for BOTTOM VIEW	7BD

- Pin 1 - Grid No.1
- Pin 2 - Cathode,
Grid No.3,
Internal
Shield
- Pin 3 - Heater



- Pin 4 - Heater
- Pin 5 - Plate
- Pin 6 - Grid No.2
- Pin 7 - Same as
Pin 2

^o With external shield JEDEC No.316 connected to cathode.

← Indicates a change.

6AK5



6AK5

SHARP-CUTOFF PENTODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	180 max. volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	180 max. volts
GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
GRID-No.1 (CONTROL-GRID) VOLTAGE:	
Positive bias value.	0 max. volts
PLATE DISSIPATION.	1.7 max. watts
GRID-No.2 INPUT:	
For grid-No.2 voltages up to 90 volts.	0.5 max. watt
For grid-No.2 voltages between 90 and 180 volts.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
CATHODE CURRENT.	18 max. ma
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode.	120 max. volts
Heater positive with respect to cathode.	120 max. volts

→ Indicates a change.

SEPT. 1, 1955

DATA

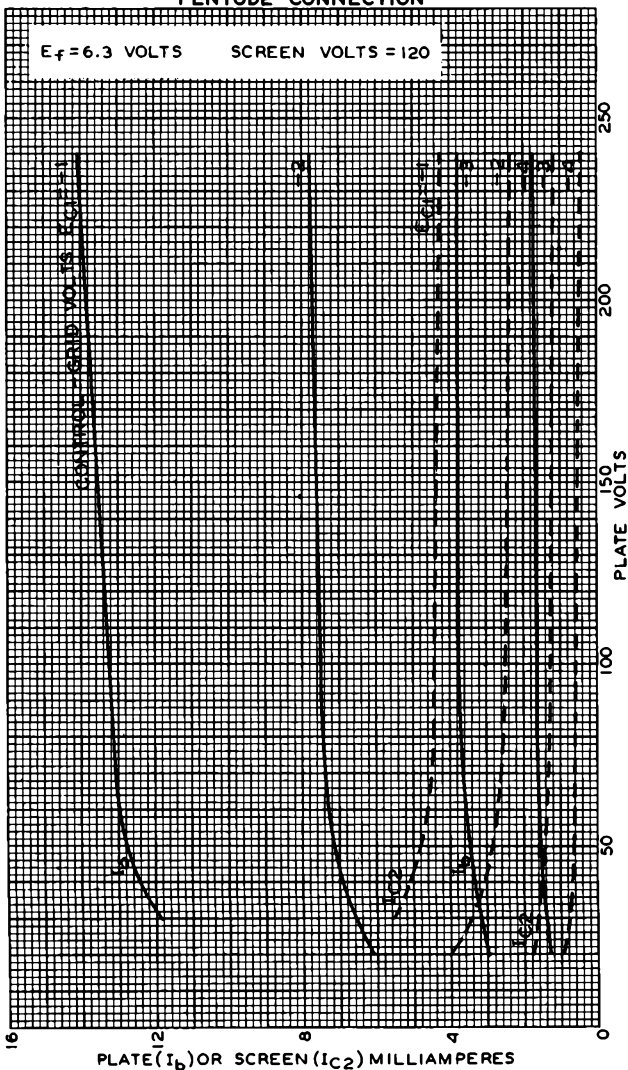
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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AK5

AVERAGE PLATE CHARACTERISTICS
PENTODE CONNECTION

6AK5



FEB. 15, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

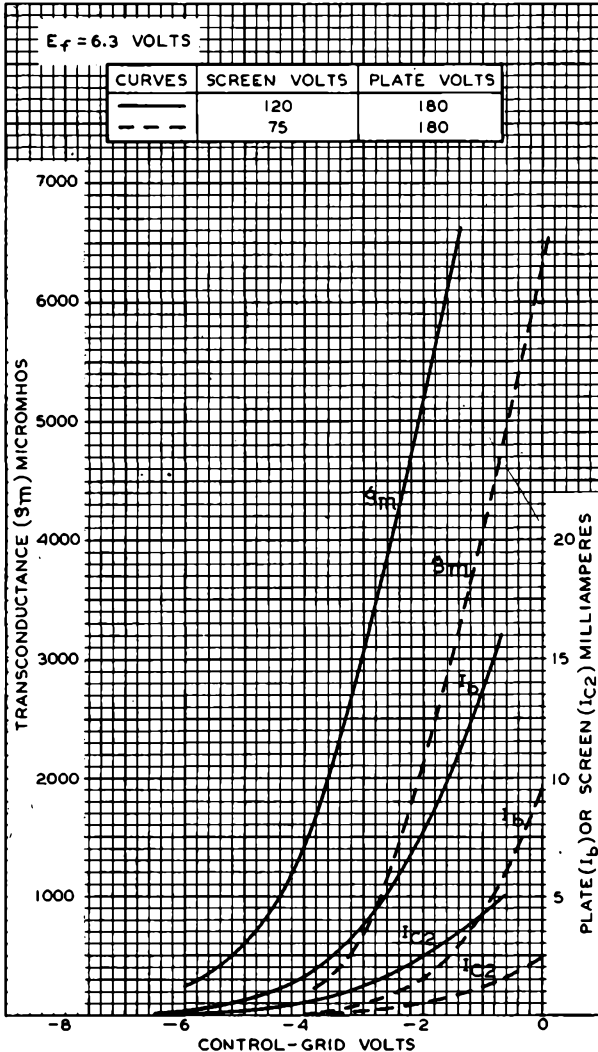
92CM-6504

6AK5



6AK5

AVERAGE CHARACTERISTICS PENTODE CONNECTION



FEB. 19, 1945

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 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6505



6AK6

6AK6

POWER AMPLIFIER PENTODE

MINIATURE TYPE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances (Approx.):*		
Grid to Plate	0.12	μf
Input	3.6	μf
Output	4.2	μf
Maximum Overall Length		2-1/8"
Maximum Seated Height		1-7/8"
Length from Base Seat to Bulb Top (excluding tip)		1-1/2" \pm 3/32"
Maximum Diameter		3/4"
Bulb		T-5-1/2
Base Δ		Miniature Button 7-Pin
Pin 1 - Grid No. 1		Pin 5 - Plate
Pin 2 - Grid No. 3		Pin 6 - Grid No. 2
Pin 3 - Heater		Pin 7 - Cathode
Pin 4 - Heater		



RCA Socket

Stock No. 9914

Mounting Position

BOTTOM VIEW (7BK)

Any

Maximum Ratings Are Design-Center Values

A-F AMPLIFIER

Plate Voltage	300 max. volts
Screen Voltage (Grid No. 2)	250 max. volts
Plate Dissipation	2.75 max. watts
Screen Dissipation	0.75 max. watt
D-C Heater-Cathode Potential	100 max. volts

Typical Operation and Characteristics - Class A₁ Amplifier:

Plate Voltage	180	volts
Suppressor (Grid No. 3)	Connected to cathode at socket	
Screen Voltage	180	volts
Grid Voltage (Grid No. 1) \blacklozenge	-9	volts
Peak A-F Grid Voltage	9	volts
Zero-Signal Plate Current	15	ma.
Zero-Signal Screen Current	2.5	ma.
Plate Resistance	0.2	megohm
Transconductance	2300	μmhos
Load Resistance	10000	ohms
Total Harmonic Distortion	10	%
Max.-Sig. Power Output	1.1	watts

* With no external shield.

\blacklozenge The d-c resistance in the grid circuit under maximum rated conditions should not exceed 0.5 megohm for cathode-bias operation and 0.1 megohm for fixed-bias operation.

Δ The center hole in sockets designed for this base provides for the possibility that this tube type may be manufactured with the exhaust-tube tip at the base end. For this reason, it is recommended that in equipment employing this tube type, no material be permitted to obstruct the socket hole.

OCT. 1, 1943

RCA VICTOR DIVISION

TENTATIVE DATA

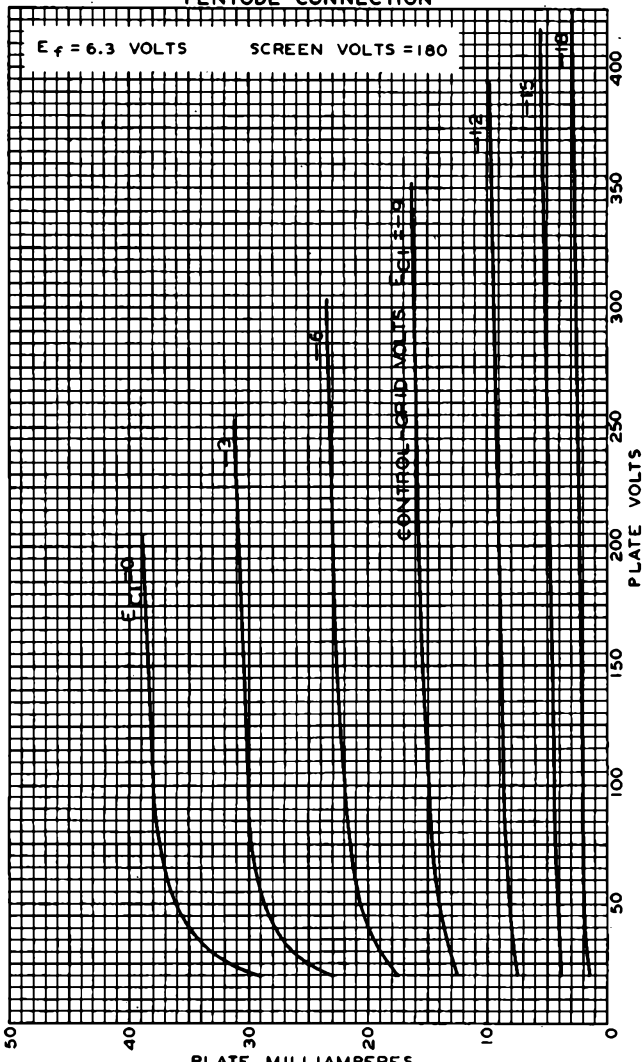
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6AK6



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AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



AUG. 11, 1943

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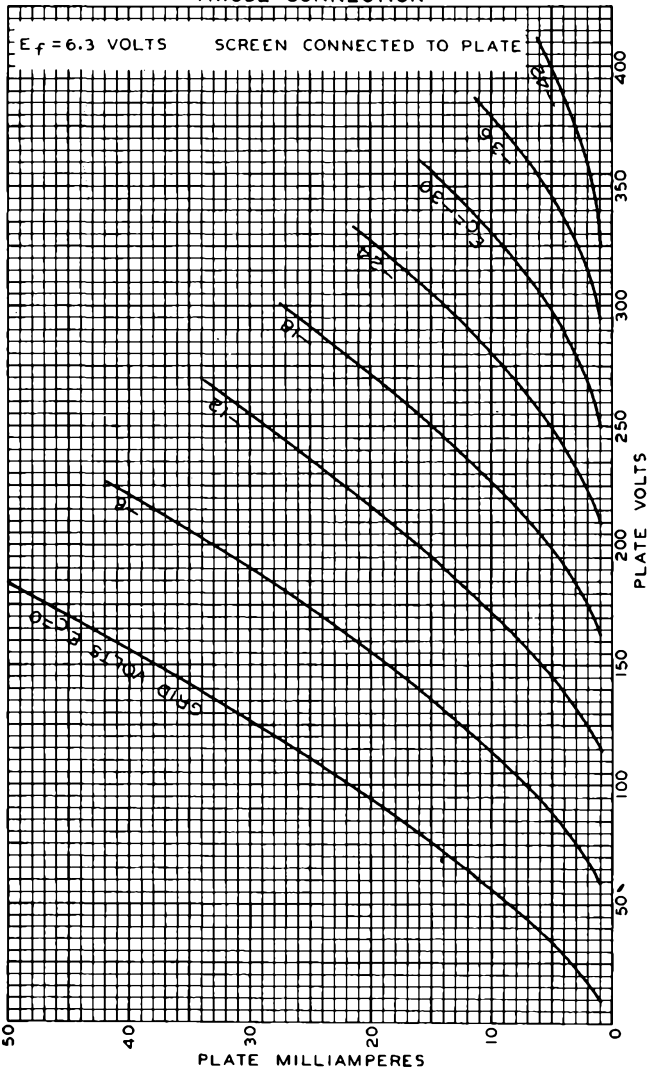
92C-6450



6AK6

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AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



AUG. 11, 1943

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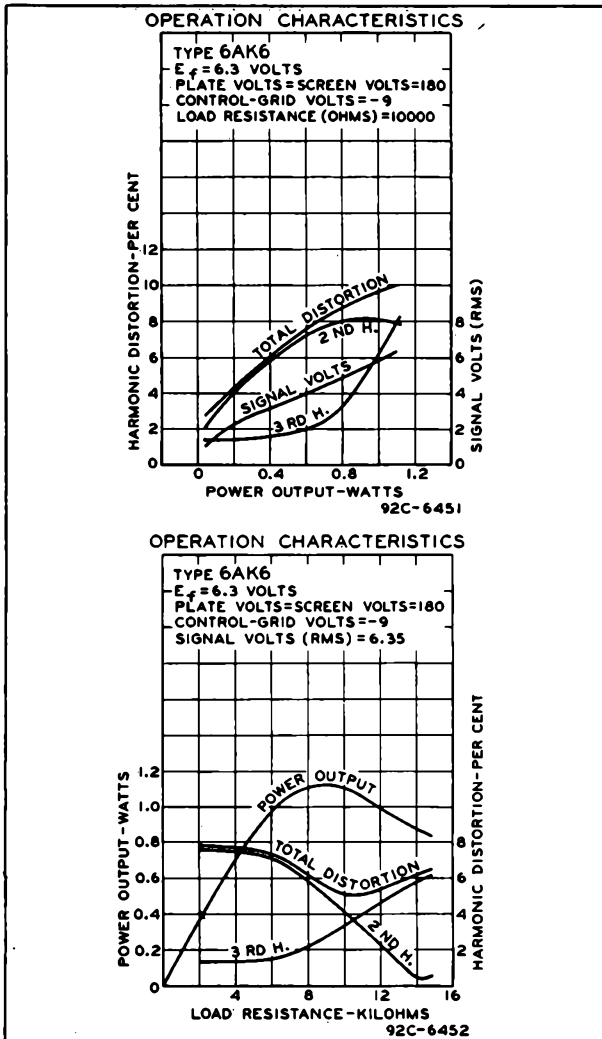
92C-6449

6AK6



6AK6

POWER AMPLIFIER PENTODE



OCT. 1, 1943

RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6451
 CE-6452



6AL5

TWIN DIODE

MINIATURE TYPE

6AL5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances (Approx.):^o

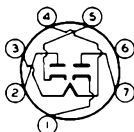
Plate No. 1 to Cathode No. 1, Heater, and Internal Shield*	2.5	μ f
Plate No. 2 to Cathode No. 2, Heater, and Internal Shield*	2.5	μ f
Cathode No. 1 to Plate No. 1, Heater, and Internal Shield*	3.4	μ f
Cathode No. 2 to Plate No. 2, Heater, and Internal Shield*	3.4	μ f
Plate No. 1 to Plate No. 2 ^d	0.068 max.	μ f
Cold Resonant Frequency (Each Unit, Approx.)	700	Mc

- ^o with no external shield.
- * with plate and cathode of unit No.2 grounded.
- with plate and cathode of unit No.1 grounded.
- ^d with all other electrodes and internal shield grounded.

Mechanical:

Mounting Position	Any
Maximum Overall Length	1-3/4"
Maximum Seated Length	1-1/2"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/8" \pm 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	6BT

- Pin 1 - Cathode of Diode No.1
- Pin 2 - Plate of Diode No.2
- Pin 3 - Heater
- Pin 4 - Heater



- Pin 5 - Cathode of Diode No.2
- Pin 6 - Internal Shield
- Pin 7 - Plate of Diode No.1

RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	330 max.	volts
PEAK PLATE CURRENT PER PLATE	54 max.	ma
DC OUTPUT CURRENT PER PLATE	9 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	330 max.	volts
Heater positive with respect to cathode.	330 max.	volts

<- Indicates a change.

MAY 3, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6AL5



6AL5

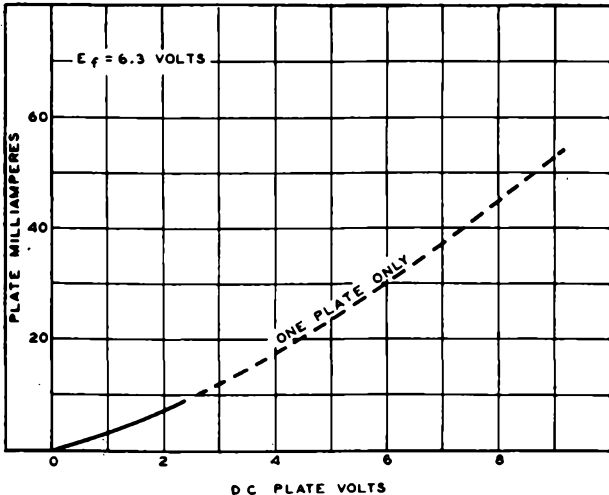
TWIN DIODE

Typical Operation as Half-Wave Rectifier:

The Two Units May Be Used Separately or in Parallel

AC Plate Voltage per Plate (RMS)	117	volts
Min. Total Effect. Plate-Supply Impedance per Plate	300	ohms
DC Output Current per Plate	9	ma

AVERAGE PLATE CHARACTERISTIC



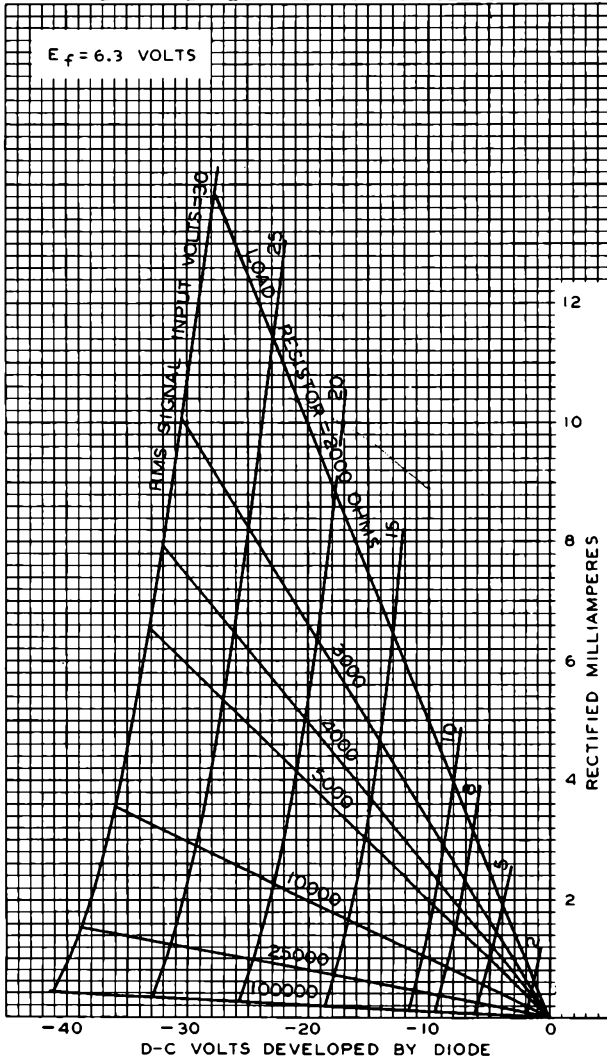
92CM-6560T



6AL5

6AL5

AVERAGE CHARACTERISTICS
HALF-WAVE RECTIFICATION-SINGLE DIODE



JUNE 7, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6561



6AL7-GT

6AL7-GT ELECTRON-RAY TUBE

INDICATOR TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.15 amp

Mechanical:

Mounting Position Any

Maximum Overall Length 3-1/16"

Maximum Seated Length 2-1/2"

Maximum Diameter 1-9/32"

Bulb T-9

Base Intermediate-Shell Octal 8-Pin

Basing Designation for BOTTOM VIEW 8CH

Pin 1-Grid

Pin 2-Heater

Pin 3-Target

Pin 4-Deflecting
Electrode
No. 2



Pin 5-Deflecting
Electrode
No. 3

Pin 6-Deflecting
Electrode
No. 1

Pin 7-Heater
Pin 8-Cathode

INDICATOR SERVICE

Maximum Ratings, Design-Center Values:

TARGET VOLTAGE { 365 max. volts
220 min. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Target Voltage 315 volts

Deflecting-Electrode-No. 1 Voltage* 0 volts

Deflecting-Electrode-No. 2 Voltage* 0 volts

Deflecting-Electrode-No. 3 Voltage* 0 volts

Grid Voltage 0 volts

Cathode-Bias Resistor (Approx.) 3300 ohms

Grid Voltage for

Pattern cutoff (Approx.) -7 volts

Deflection Sensitivity (Approx.)* 1 mm/volt

* with tube mounted horizontally and pins # 4 & 8 in vertical plane (Pin 4 on top), deflecting electrode No. 1 controls top left-hand section of pattern, deflecting electrode No. 2 controls top right-hand section of pattern, deflecting electrode No. 3 controls bottom section of pattern.

For first mm deflection (Deflecting Electrodes No. 1 & No. 2).

6AL7-GT



6AL7-GT ELECTRON-RAY TUBE

PATTERN SEQUENCE DURING TUNING

CONTROL VOLTAGE SOURCE	CIRCUIT (NEXT PAGE)	OFF CHANNEL (-)	ON CHANNEL OFF TUNE (-)	ON TUNE	ON CHANNEL OFF TUNE (+)	OFF CHANNEL (+)
DISCRIMINATOR (FM)	FIGS. 1 AND 2					
DISCRIMINATOR AND SQUELCH (FM)	FIG. 3					
DISCRIMINATOR AND LIMITER (FM)	FIG. 4					
AVC (FM)	FIG. 5					

FEB. 2, 1949

92CS-7171



6AL7-GT ELECTRON-RAY TUBE

6AL7-GT

TYPICAL CIRCUITS

FIG. 1

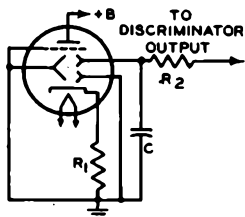


FIG. 2

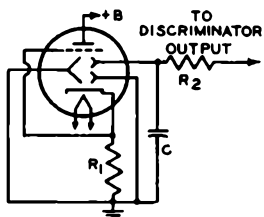


FIG. 3

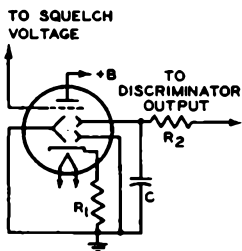


FIG. 4

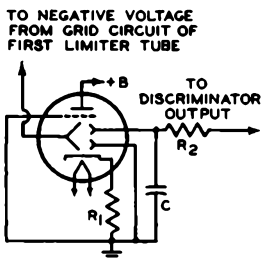
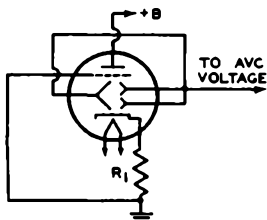


FIG. 5



+B = 315 VOLTS APPROX.
C = 0.05 μ F

R₁ = 3300 OHMS
R₂ = 1.0 MEGOHM

92CS-7169



6AM8

6AM8

DIODE—SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current 0.45 amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield*	
<i>Diode Unit:</i>			
Plate to cathode, internal shield, and heater . . .	1.7	2.3	μf
Cathode to plate, internal shield, and heater . . .	4	4	μf
<i>Pentode Unit:</i>			
Grid No.1 to plate . . .	0.015 max.	0.015 max.	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater	6	6	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater	2.6	3.4	μf
Pentode grid No.1 to diode plate	0.006 max.	0.005 max.	μf
Pentode plate to diode cathode	0.15 max.	0.15 max.	μf
Pentode plate to diode plate	0.1 max.	0.035 max.	μf

Mechanical:

- Mounting Position Any
- Maximum Overall Length 2-3/16"
- Maximum Seated Length 1-15/16"
- Length, Base Seat to Bulb Top (Excluding tip) 1-9/16" \pm 3/32"
- Maximum Diameter 7/8"
- Bulb T-6-1/2
- Base Small-Button Noval 9-Pin (JETEC No. E1-9)
- Basing Designation for BOTTOM VIEW 9CY

- Pin 1 - Pentode Cathode
- Pin 2 - Pentode Grid No.1
- Pin 3 - Pentode Grid No.2
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Pentode Plate
- Pin 7 - Diode Cathode
- Pin 8 - Diode Plate
- Pin 9 - Pentode Grid No.3, Internal Shield



* with external shield JETEC No.315 connected to cathode of unit under test.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AM8



6AM8

DIODE—SHARP-CUTOFF PENTODE

PENTODE UNIT - Class A₁ Amplifier

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300	max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE	0	max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300	max.	volts
GRID-No.2 VOLTAGE.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>		
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive bias value.	0	max.	volts
PLATE DISSIPATION.	2.8	max.	watts
GRID-No.2 INPUT:			
For grid-No.2 voltages up to 150 volts	0.5	max.	watt
For grid-No.2 voltages between 150 and 300 volts.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>		
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 [▲]	max.	volts

Typical Operation and Characteristics:

Plate-Supply Voltage	200	volts
Grid No.3.	<i>Connected to cathode at socket</i>	
Grid-No.2 Supply Voltage	150	volts
Cathode-Bias Resistor.	120	ohms
Plate Resistance (Approx.)	600000	ohms
Transconductance	7000	μmhos
Grid-No.1 Voltage (Approx.) for		
plate current of 10 μamp	-8	volts
Plate Current.	11.5	ma
Grid-No.2 Current.	2.7	ma

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:		
For cathode-bias operation	1.0	max. megohm
For fixed-bias operation	0.25	max. megohm

DIODE UNIT

Maximum Ratings, Design-Center Values:

DC PLATE CURRENT	5	max.	ma
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 [▲]	max.	volts

[▲] The dc component must not exceed 100 volts.

MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

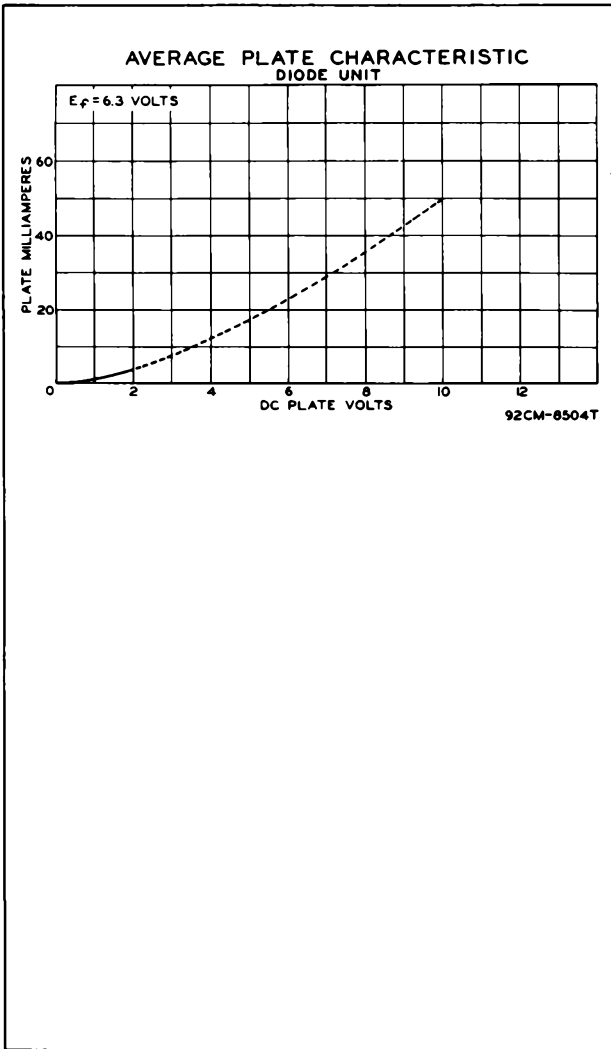
TENTATIVE DATA



6AM8

6AM8

DIODE-SHARP-CUTOFF PENTODE



MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

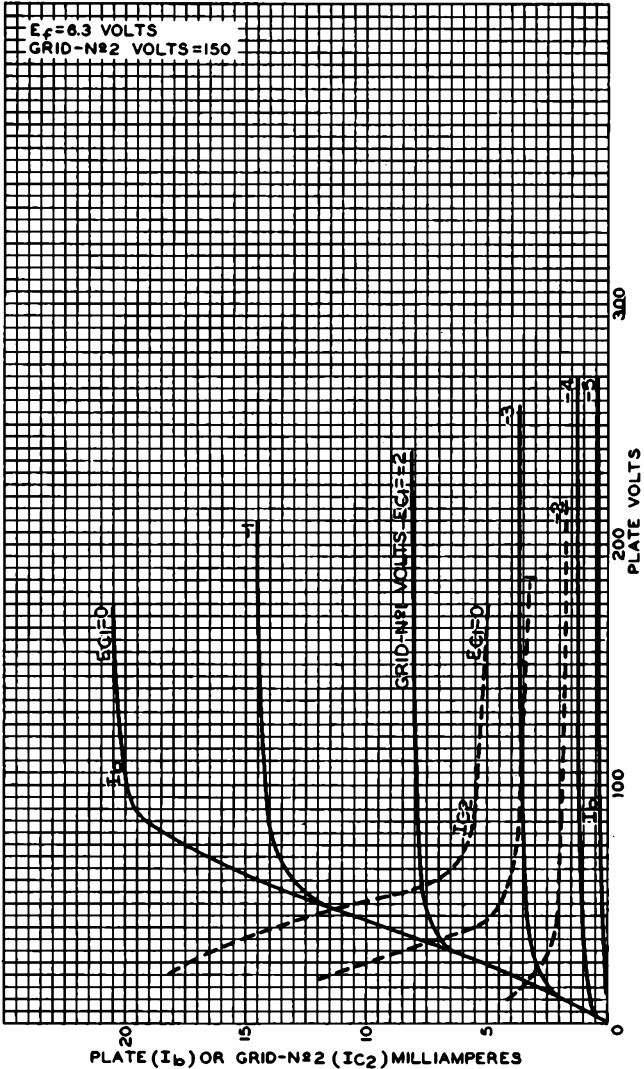
CE-8504T

6AM8



6AM8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



JAN. 14, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8503



6AN8

6AN8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.45	amp

Direct Interelectrode Capacitances
(Without external shield):

Triode Unit:

Grid to Plate	1.5	μf
Input	2.0	μf
Output	0.27	μf

Pentode Unit:

Grid No.1 to Plate	0.04 max.	μf
Input	7	μf
Output	2.3	μf
Triode Grid to Pentode Plate	0.005	μf
Pentode Grid No.1 to Triode Plate	0.006	μf
Pentode Plate to Triode Plate	0.045	μf

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" \pm 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)

BOTTOM VIEW

Pin 1: Triode Plate
 Pin 2: Triode Grid
 Pin 3: Triode
 Cathode
 Pin 4: Heater
 Pin 5: Heater
 Pin 6: Pentode
 Plate



Pin 7: Pentode
 Grid No.2
 Pin 8: Pentode
 Grid No.1
 Pin 9: Pentode
 Grid No.3,
 Pentode
 Cathode,
 Int. Shield

Characteristics:

	Triode Unit	Pentode Unit	
Plate Supply Voltage	200	200	volts
Grid-No.2 Supply Voltage	-	150	volts
Grid-No.1 Voltage	-6	-	volts
Cathode-Bias Resistor	-	180	ohms
Amplification Factor	19	-	
Plate Resistance (Approx.)	5750	300000	ohms

MARCH 1, 1954

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AN8



6AN8

MEDIUM-MU TRIODE - SHARP-CUTOFF PENTODE

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Transconductance	3300	6200	μ mhos
Grid-No.1 Bias (Approx.) for Plate Current of 10 μ amp	-19	-8	volts
Plate Current	13	9.5	ma
Grid-No.2 Current	-	2.8	ma

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
PLATE VOLTAGE	300 max.	300 max.	volts
GRID-No.2 SUPPLY VOLTAGE . .	-	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	-	<i>See Rating Curve at front of this Section</i>	
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive bias value	0 max.	0 max.	volts
PLATE DISSIPATION	2.5 max.	2 max.	watts
GRID-No.2 INPUT	-	0.5 max.	watt
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	200 [▲] max.	volts

Maximum Circuit Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Grid-No.1-Circuit Resistance: [*]			
For cathode-bias operation	1.0 max.	1.0 max.	megohm
For fixed-bias operation	0.5 max.	0.25 max.	megohm

^{*} If either unit is operating at maximum rated conditions, grid-No.1-circuit resistances for both units should not exceed the stated values.

[▲] The dc component must not exceed 100 volts.

MARCH 1, 1954

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

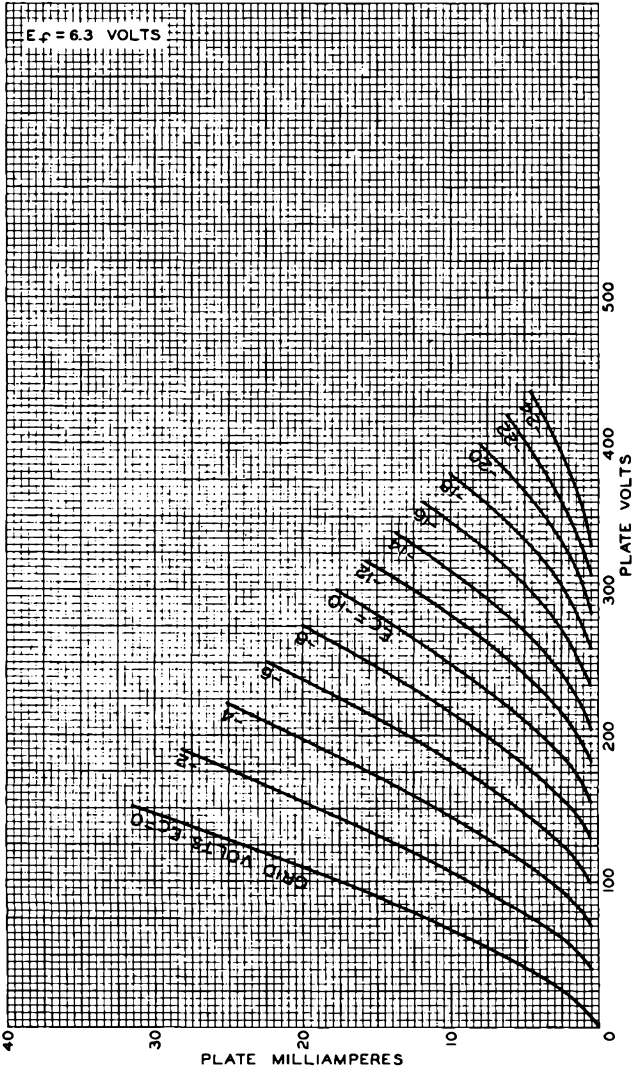
TENTATIVE DATA



6AN8

6AN8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



DEC. 23, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

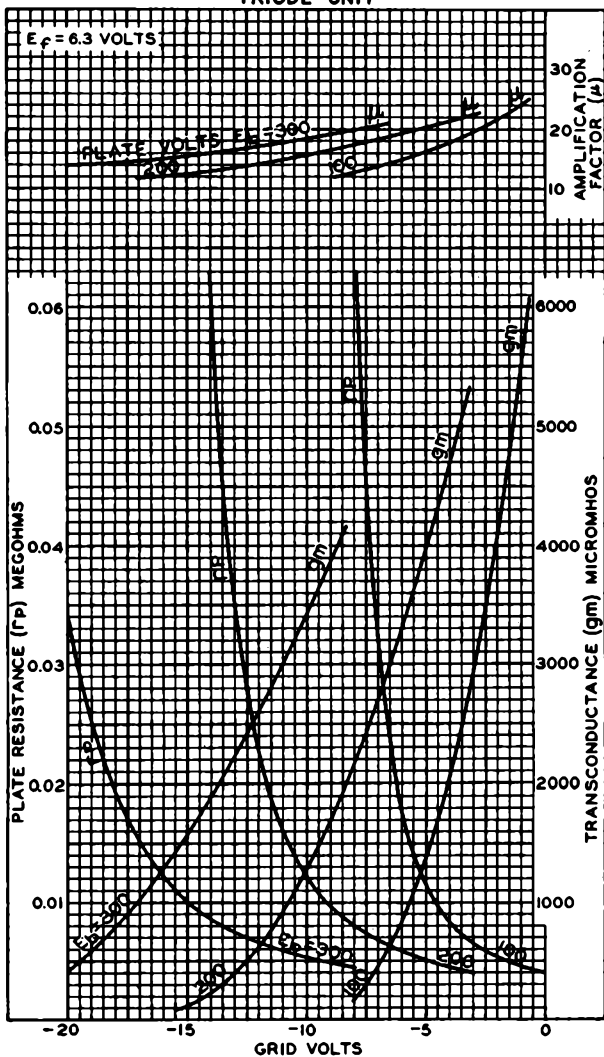
92CM - 8209

6AN8



6AN8

AVERAGE CHARACTERISTICS TRIODE UNIT



DEC. 23, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

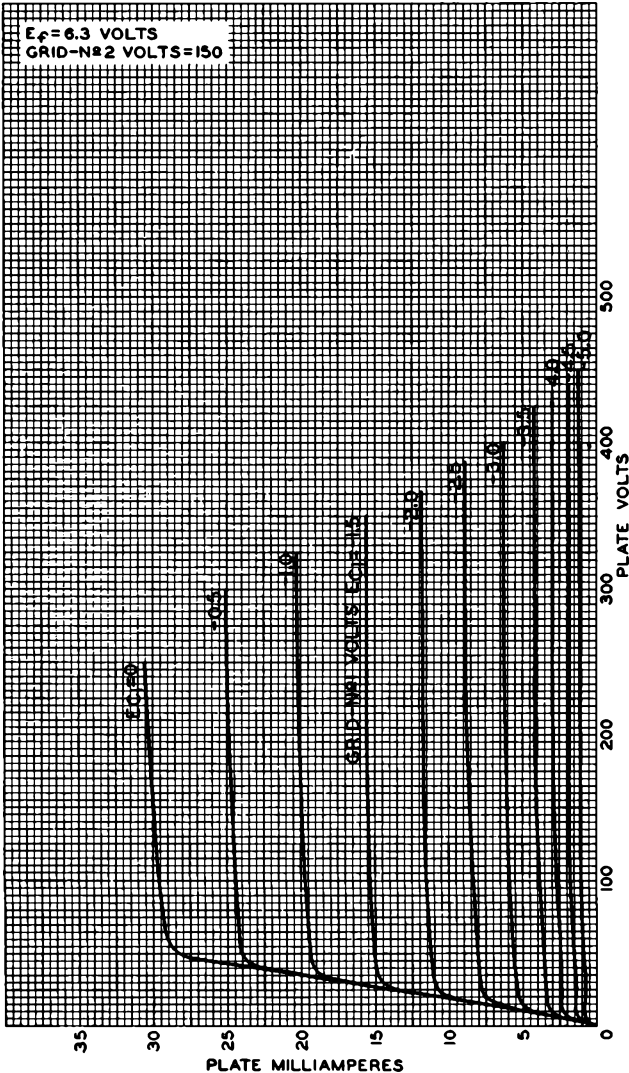
92CM-8207



6AN8

6AN8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



DEC. 23, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

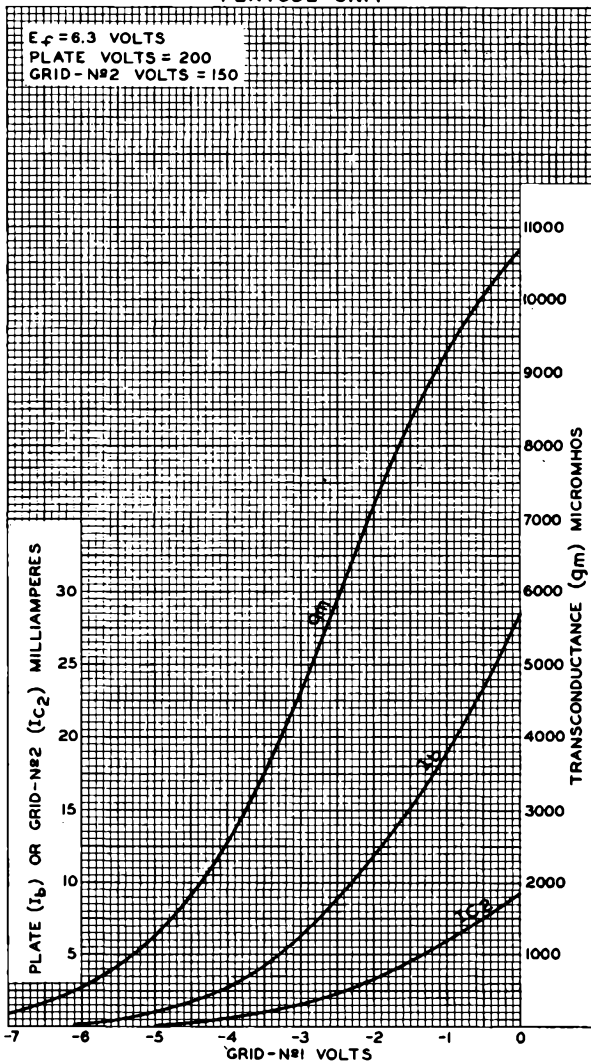
92CM-8206

6AN8



6AN8

AVERAGE CHARACTERISTICS PENTODE UNIT



DEC. 23, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6208



6AQ5

6AQ5 BEAM POWER AMPLIFIER

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

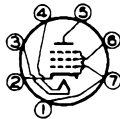
Voltage	6.3	ac or dc volts
Current	0.45	amp
Direct Interelectrode Capacitances (Approx.):**		
Grid No.1 to Plate.	0.35	μmf
Input	8.3	μmf
Output.	8.2	μmf

** with no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length.	2-5/8"
Maximum Seated Length	2-3/8"
Length from Base Seat to Bulb Top (Excluding tip)	2" $\pm 3/32$ "
Maximum Diameter.	3/4"
Bulb.	T-5-1/2
Base.	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW.	7B2

- Pin 1 - Grid No.1
- Pin 2 - Cathode,
Grid No.3
- Pin 3 - Heater



- Pin 4 - Heater
- Pin 5 - Plate
- Pin 6 - Grid No.2
- Pin 7 - Grid No.1

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 max.	volts
GRID-No.2 VOLTAGE	250 max.	volts
PLATE DISSIPATION	12 max.	watts
GRID-No.2 INPUT	2 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts
BULB TEMPERATURE (At hottest point)*.	250 max.	$^{\circ}\text{C}$

Typical Operation and Characteristics:

Plate Voltage	180	250	volts
Grid-No.2 (Screen) Voltage.	180	250	volts
Grid-No.1 (Control-Grid) Voltage.	-8.5	-12.5	volts
Peak AF Grid-No.1 Voltage	8.5	12.5	volts

* High ambient temperature and shielding may necessitate a reduction in operating dissipation. When tube shields are used, it is advisable to paint the inside and outside surfaces of the tube shield a dull black and to provide ventilation slots to reduce operating temperature.

← Indicates a change

MAY 1, 1952

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TUBE DEPARTMENT

DATA

6AQ5



6AQ5

BEAM POWER AMPLIFIER

Zero-Sig. Plate Current	29	45	ma.
Max.-Sig. Plate Current	30	47	ma.
Zero-Sig. Grid-No.2 Cur. (Approx.) . .	3	4.5	ma.
Max.-Sig. Grid-No.2 Cur. (Approx.) . .	4	7	ma.
Plate Resistance (Approx.)	58000	52000	ohms
Transconductance	3700	4100	μmhos
Load Resistance	5500	5000	ohms
Total Harmonic Distortion	8	8	%
Max.-Sig. Power Output	2.0	4.5	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias.	0.1	megohm
For cathode bias.	0.5	megohm

AF POWER AMPLIFIER - Class AB₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 max.	volts
GRID-No.2 VOLTAGE	250 max.	volts
PLATE DISSIPATION	12 max.	watts
GRID-No.2 DISSIPATION	2 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	90 max.	volts
Heater positive with respect to cathode .	90 max.	volts

→ BULB TEMPERATURE (At hottest point)®. 250 max. °C

Typical Operation and Characteristics:

Unless otherwise specified, values are for 2 tubes

Plate Voltage	250	volts
Grid-No.2 (Screen) Voltage	250	volts
Grid-No.1 (Control-Grid) Voltage	-15	volts
Peak AF Grid-to-Grid Voltage	30	volts
Zero-Signal Plate Current	70	ma.
Max.-Signal Plate Current	79	ma.
Zero-Signal Grid-No.2 Current	5	ma.
Max.-Signal Grid-No.2 Current	13	ma.
Plate Resistance (per tube)	60000	ohms
Transconductance (per tube)	3750	μmhos
Effective Load Resistance (Plate to plate). .	10000	ohms
Total Harmonic Distortion	5	%
Max.-Signal Power Output	10	watt

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias.	0.1	megohm
For cathode bias.	0.5	megohm

Curves for the 6AQ5, within its ratings, are the same as those shown for type 6Y6.

® See preceding page.

→ indicates a change

MAY 1, 1952

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AQ6

6AQ6

DUPLEX-DIODE HIGH-MU TRIODE

MINIATURE TYPE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances - Triode Unit: ^o		
Grid to Plate	1.8	μf
Grid to Cathode & Heater	1.7	μf
Plate to Cathode & Heater	1.5	μf
Maximum Overall Length	2-1/8"	
Maximum Seated Height	1-7/8"	
Length from Base Seat		
to Bulb Top (excluding tip)	1-1/2" ± 3/32"	
Maximum Diameter	3/4"	
Bulb	T-5½	
Base [▲]	Miniature Button 7-Pin	
Pin 1 - Triode Grid	Pin 5 - Diode Plate No. 2	
Pin 2 - Cathode	Pin 6 - Diode Plate No. 1	
Pin 3 - Heater	Pin 7 - Triode Plate	
Pin 4 - Heater		
RCA Socket	Stock No. 9914	
Mounting Position	Any	



BOTTOM VIEW (7BT)

Maximum Ratings Are Design-Center Values

TRIODE UNIT

Plate Voltage	300 max. volts	
D-C Heater-Cathode Potential	90 max. volts	
<i>Characteristics - Class A₁ Amplifier:</i>		
Plate Voltage	100	250 volts
Grid Voltage	-1	-3 volts
Amplification Factor	70	70
Plate Resistance	61000	58000 ohms
Transconductance	1150	1200 μmhos
Plate Current	0.8	1.0 ma.

Typical Operation with Resistance Coupling:
Same as for Type 6T7-G in RESISTANCE-COUPLED AMPLIFIER CHART.

DIODE UNITS - Two

For consideration of these units, see Type 6ST7.

^o With close-fitting shield connected to cathode.

[▲] The center hole in sockets for this base provides for the possibility that this tube type may be manufactured with the exhaust-tube tip at the base end. For this reason, it is recommended that in equipment employing this tube type, no material be permitted to obstruct the socket hole.

JUNE 30, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

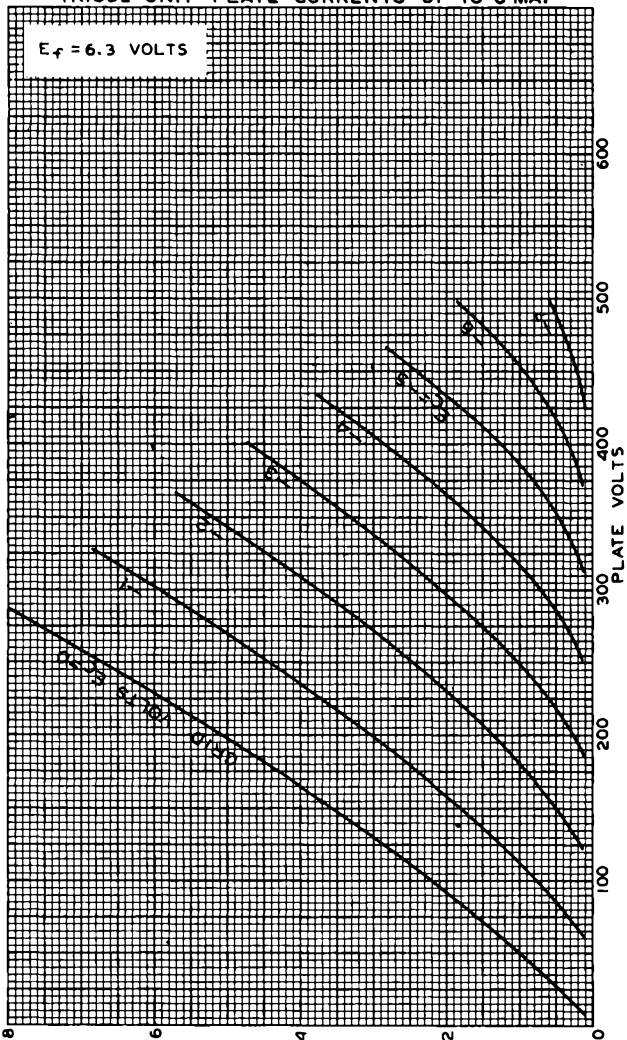
TENTATIVE DATA

6AQ6



6AQ6

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT—PLATE CURRENTS UP TO 8 MA.



APR. 7, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

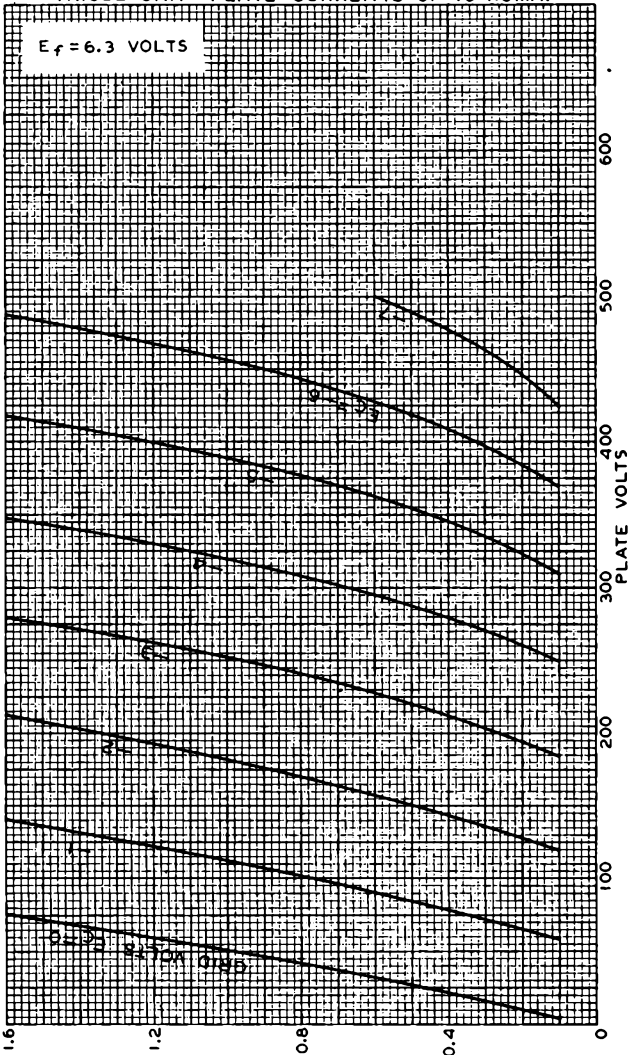
92CM-6551



6AQ6

6AQ6

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT—PLATE CURRENTS UP TO 1.6 MA.



APR. 8, 1944

PLATE MILLIAMPERES

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6552



6AQ7-GT

6AQ7-GT TWIN DIODE-HIGH-MU TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances:

Triode Unit:		
Grid to Plate	3.0	μf
Grid to Cathode	2.8	μf
Plate to Cathode	3.2	μf
Grid to Diode Cathode ^o	0.25 max.	μf
Diode-No.1 Plate to		
Diode Cathode*	2.2	μf
Diode-No.2 Plate to		
Diode Cathode*	2.4	μf
Diode-No.1 Plate to		
Diode-No.2 Plate*	0.5	μf

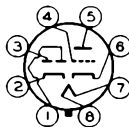
^o with external shield No.308 connected to Pin No.6.

* with external shield No.308 connected to Pin No.2.

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	Intermediate-Shell Octal 8-Pin
Basing Designation for BOTTOM VIEW	8CK

- Pin 1 - Diode-No.2 Plate
- Pin 2 - Cathode of Diode Units
- Pin 3 - Diode-No.1 Plate



- Pin 4 - Triode Grid
- Pin 5 - Triode Plate
- Pin 6 - Cathode of Triode Unit
- Pin 7 - Heater
- Pin 8 - Heater

TRIODE UNIT AMPLIFIER - Class A₁

Maximum Ratings. Design-Center Values:

PLATE VOLTAGE	250 max.	volts
GRID VOLTAGE:		
Positive bias value	0 max.	volts
PLATE DISSIPATION	1 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	100	250	volts
Grid Voltage	-1	-2	volts

6AQ7-GT



6AQ7-GT TWIN DIODE—HIGH-MU TRIODE

Amplification Factor	79	70	
Plate Resistance (Approx.)	64000	44000	ohms
Transconductance	1250	1600	μ mhos
Plate Current	1.1	2.3	ma

Typical Operation as Resistance-Coupled Amplifier:

See *RESISTANCE-COUPLED AMPLIFIER CHARTS*
at front of this Section.

DIODE UNITS - Two

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For Each Diode) 0.9 max. ma

MAY 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6AR5

POWER PENTODE

MINIATURE TYPE

6AR5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.4	amp

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (excluding tip)	2" ± 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin
Basing Designation for BOTTOM VIEW	6CC

Pin 1 - Grid No.1
 Pin 2 - Cathode,
 Grid No.3
 Pin 3 - Heater
 Pin 4 - Heater



Pin 5 - Plate
 Pin 6 - Grid No.2
 Pin 7 - No
 Connection

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	250 max.	volts
PLATE DISSIPATION	8.5 max.	watts
GRID-No.2 DISSIPATION	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	250	250	volts
Grid-No.2 Voltage	250	250	volts
Grid-No.1 (Control-Grid) Voltage	-16.5	-18	volts
Peak AF Grid-No.1 Voltage	16.5	18	volts
Zero-Signal Plate Current	34	32	ma
Max.-Signal Plate Current	35	33	ma
Zero-Signal Grid-No.2 Current	5.7	5.5	ma
Max.-Signal Grid-No.2 Current	10	10	ma
Plate Resistance (Approx.)	65000	68000	ohms
Transconductance	2400	2300	μmhos
Load Resistance	7000	7600	ohms
Total Harmonic Distortion	7	11	%
Max.-Sig. Power Output	3.2	3.4	watts

(continued on next page)

6AR5



6AR5

POWER PENTODE

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias. 0.1 max. megohm
For cathode bias. 0.5 max. megohm

*Curves for the 6AR5 are the same as those
shown for type 6X6-GT.*



6AS5

6AS5

BEAM POWER AMPLIFIER

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.8 amp

Direct Interelectrode Capacitances (Approx.):⁰

Grid No.1 to Plate 0.6 μ f

Input 12 μ f

Output 6.2 μ f

⁰ With no external shield.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length, Base Seat to Bulb Top (excluding tip) 2" \pm 3/32"

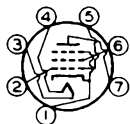
Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin

Basing Designation for BOTTOM VIEW 7CV

- Pin 1 - Cathode, Grid No.3
- Pin 2 - Grid No.1
- Pin 3 - Heater



- Pin 4 - Heater
- Pin 5 - Grid No.1
- Pin 6 - Grid No.2
- Pin 7 - Plate

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 150 max. volts

GRID-No.2 (SCREEN) VOLTAGE 117 max. volts

PLATE DISSIPATION 5.5 max. watts

GRID-No.2 DISSIPATION 1 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 150 volts

Grid-No.2 Voltage 110 volts

Grid-No.1 (Control-Grid) Voltage -8.5 volts

Peak AF Grid-No.1 Voltage 8.5 volts

Zero-Signal Plate Current 35 ma

Max.-Signal Plate Current 36 ma

Zero-Signal Grid-No.2 Current 2 ma

Max.-Signal Grid-No.2 Current 6.5 ma

Transconductance 5600 μ hos

Load Resistance 4500 ohms

MAR. 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6AS5



6AS5

BEAM POWER AMPLIFIER

Total Harmonic Distortion.	10	%
Max.-Sig. Power Output	2.2	watts
Maximum Circuit Values (for maximum rated conditions):		
Grid-No.1-Circuit Resistance:		
For fixed bias	0.1	megohm
For cathode bias	0.5	megohm

MAR. 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA

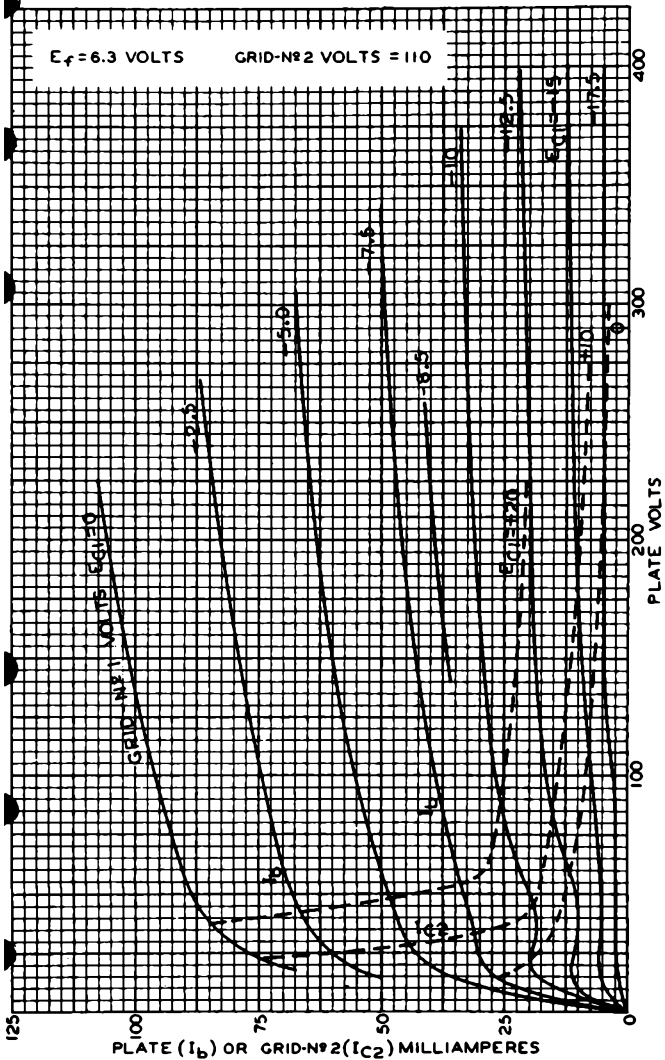
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AS5

6AS5

AVERAGE PLATE CHARACTERISTICS



FEB. 17, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

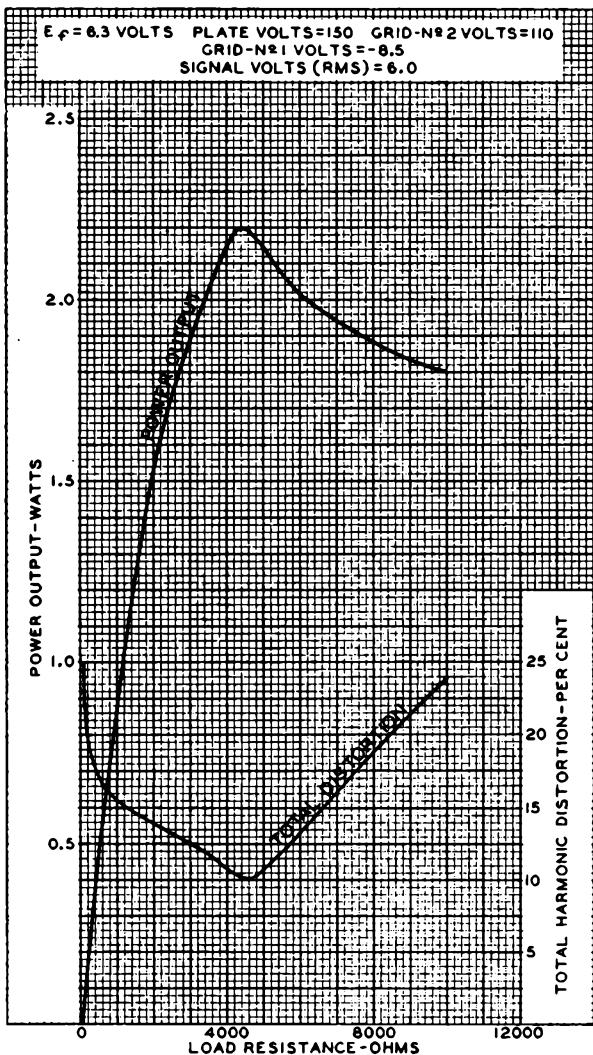
92CM - 6921R1

6AS5



6AS5

OPERATION CHARACTERISTICS



JAN. 12, 1948

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6922



6AS8

DIODE-SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

6AS8

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current 0.45 amp

Direct Interelectrode Capacitances (Approx.):*

Diode Unit:

Plate to heater and cathode and internal shield 3.0 μ f

Pentode Unit:

Grid No.1 to plate 0.04 max. μ f

Input 7 μ f

Output 2.2 μ f

Pentode grid to diode plate 0.005 max. μ f

Pentode plate to diode cathode 0.15 max. μ f

Pentode plate to diode plate 0.10 max. μ f

Characteristics, Class A₁:

Plate-Supply Voltage 200 volts

Grid No.3 Connected to cathode at socket

Grid-No.2 Supply Voltage 150 volts

Cathode-Bias Resistor 180 ohms

Plate Resistance (Approx.) 300000 ohms

Transconductance 6200 μ mos

Grid-No.1 Bias (Approx.) for Plate

Current of 10 μ amp -8 volts

Plate Current 9.5 ma

Grid-No.2 Current 3 ma

Mechanical:

Mounting Position Any

Maximum Overall Length 2-3/16"

Maximum Seated Length 1-15/16"

Length, Base Seat to Bulb Top (Excluding Tip) 1-9/16" \pm 3/32"

Maximum Diameter 7/8"

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JETEC No.E9-1)

Base Designation for BOTTOM VIEW 9DS

Pin 1 - Pentode Grid No.2

Pin 2 - Pentode Grid No.1

Pin 3 - Pentode Cathode

Pin 4 - Heater

Pin 5 - Heater



Pin 6 - Diode Plate

Pin 7 - Pentode Grid No.3, Int.Shield

Pin 8 - Diode Cathode

Pin 9 - Pentode Plate

* With no external shield.

6AS8



6AS8

DIODE-SHARP-CUTOFF PENTODE

PENTODE UNIT - Class A₁ Amplifier

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max. volts
GRID-No.3 (SUPPRESSOR) VOLTAGE	0 max. volts
GRID-No.2 SUPPLY VOLTAGE	300 max. volts
GRID-No.2 (SCREEN) VOLTAGE	See Rating Curve at front of this Section

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value	0 max. volts
PLATE DISSIPATION	2.5 max. watts
GRID-No.2 INPUT	0.5 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max. volts
Heater positive with respect to cathode	200*max. volts

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:

For cathode-bias operation	1.0 max. megohm
For fixed-bias operation	0.25 max. megohm

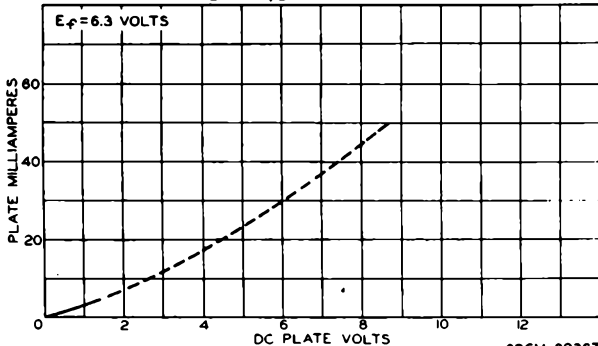
DIODE UNIT

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	330 max. volts
PEAK PLATE CURRENT	50 max. ma
DC PLATE CURRENT	5 max. ma
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode	200 max. volts
Heater positive with respect to cathode	200*max. volts

* The dc component must not exceed 100 volts.

AVERAGE PLATE CHARACTERISTIC



92CM-8236T

MAY 3, 1954

TUBE DIVISION

TENTATIVE DATA

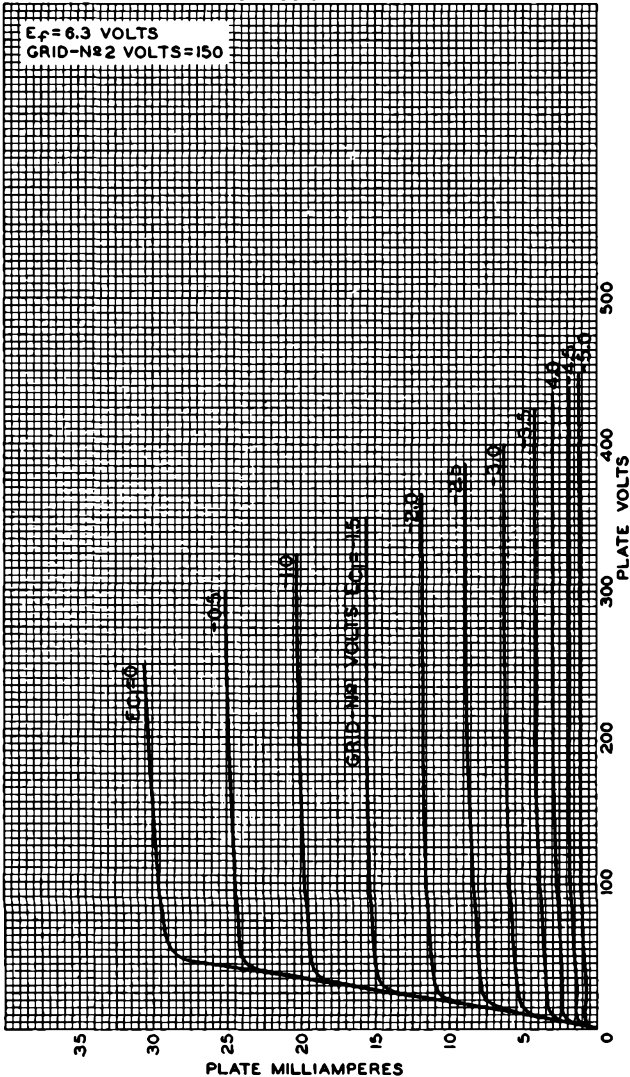
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AS8

6AS8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



DEC. 23, 1953

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

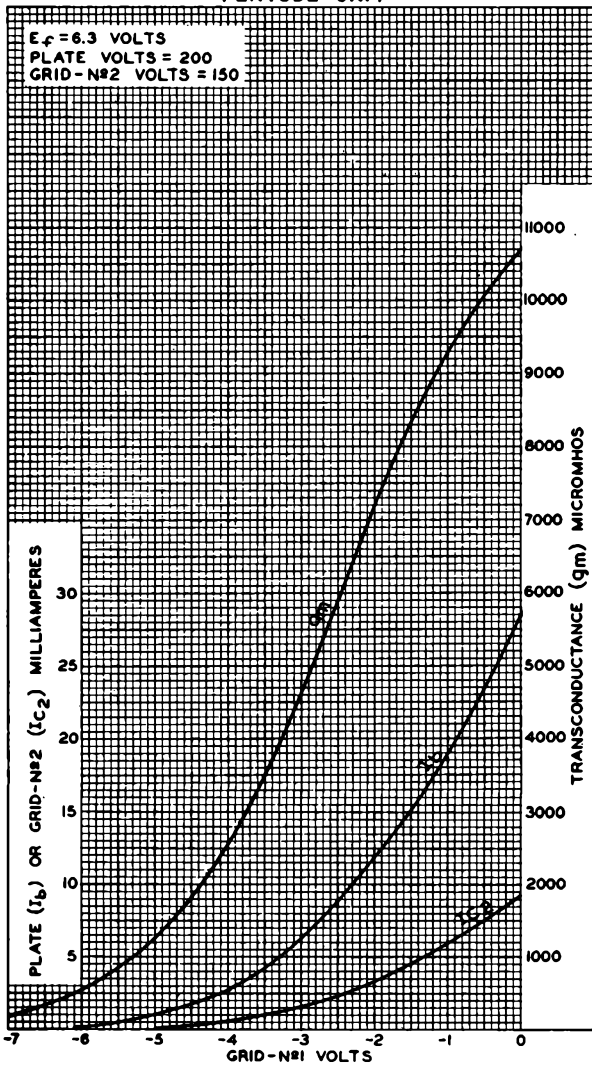
92CM-8206

6AS8



6AS8

AVERAGE CHARACTERISTICS
PENTODE UNIT



DEC. 23, 1953

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8208



6AT6

6AT6 TWIN DIODE—HIGH-MU TRIODE

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:
 Voltage 6.3 ac or dc volts
 Current 0.3 amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Grid to triode plate.	2.0	2.0	μf
Grid to cathode and heater. . .	2.2	2.2	μf
Plate to cathode and heater . .	0.8	1.2	μf
Plate of diode unit No.2 to triode grid.	0.04 max.		μf

Characteristics, Class A₁ Amplifier (Triode Unit):

Plate Voltage	100	250	volts
Grid Voltage.	-1	-3	volts
Amplification Factor.	70		
Plate Resistance (Approx.). . . .	54000	58000	ohms
Transconductance.	1300	1200	μmhos
Plate Current	0.8	1	ma

Mechanical:

Mounting Position Any
 Maximum Overall Length. 2-1/8"
 Maximum Seated Length 1-7/8"
 Length, Base Seat to Bulb Top (Excluding tip) 1-1/2" \pm 3/32"
 Maximum Diameter. 3/4"
 Dimensional Outline See General Section
 Bulb. T-5-1/2
 Base. Small-Button Miniature 7-Pin (JETEC No. E7-1)

Basing Designation for BOTTOM VIEW. 7BT

- | | | |
|---------------------|---|----------------------|
| Pin 1 - Triode Grid |  | Pin 5 - Diode |
| Pin 2 - Cathode | | Plate No.2 |
| Pin 3 - Heater | | Pin 6 - Diode |
| Pin 4 - Heater | | Plate No.1 |
| | | Pin 7 - Triode Plate |

TRIODE UNIT—AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID VOLTAGE:		
Positive bias value.	0 max.	volts
PLATE DISSIPATION.	0.5 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

^o With external shield JETEC No.316 connected to cathode.

← Indicates a change.

6AT6



6AT6

TWIN DIODE—HIGH-MU TRIODE

→ **Typical Operation as Resistance-Coupled Amplifier:**
See *RESISTANCE-COUPLED AMPLIFIER CHART No. 7*
at front of this Section

→ **DIODE UNITS**

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For each diode). 1.0 max. ma

Diode Considerations:

Consideration of these units, including typical circuits and diode curves, is given at the front of this Section. Diode biasing of the triode unit of the 6AT6 is not suitable.

→ Indicates a change.

SEPT. 1, 1955

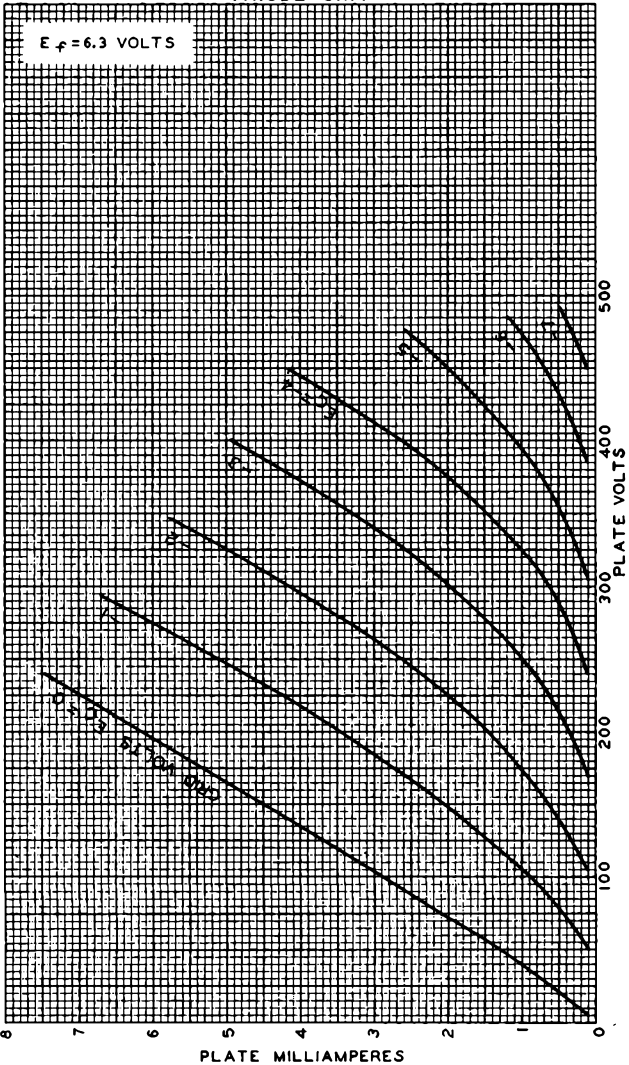
DATA



6AT6

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT

6AT6



OCT. 19, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6610



6AT8

TRIODE-PENTODE CONVERTER

9-PIN MINIATURE TYPE

6AT8

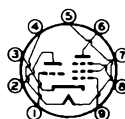
The 6AT8 is the same as the 6X8 except for the following items:

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Triode Unit:			
Grid to plate	1.5	1.5	μf
Grid to cathode and heater	2	2.4	μf
Plate to cathode and heater	0.5	1	μf
Pentode Unit:			
Grid No.1 to plate . .	0.025 max.	0.016 max.	μf
Grid No.1 to cathode, grid No.3, grid No.2, and heater	4.5	4.7	μf
Plate to cathode, grid No.3, grid No.2, and heater	0.9	1.6	μf
Pentode grid No.1 to triode plate	0.05 max.	0.04 max.	μf
Pentode plate to triode plate	0.05 max.	0.007 max.	μf
Heater to cathode. . . .	6.5	6.5 [•]	μf
Pentode Unit Connected as Triode:[▲]			
Grid No.1 to plate and grid No.2.	1.3	1.3	μf
Grid No.1 to cathode, grid No.3, and heater	3	3.3	μf
Plate to cathode, grid No.3, and heater . .	1.7	2.5	μf

Basing Designation for BOTTOM VIEW 9DW

- Pin 1 - Triode Grid
- Pin 2 - Triode Plate
- Pin 3 - Cathode
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Pentode Plate



- Pin 7 - Pentode Grid No.2
- Pin 8 - Pentode Grid No.3
- Pin 9 - Pentode Grid No.1

^o with external shield JEDEC No.316 connected to pin No.3, except as noted.

[•] with external shield JEDEC No.316 connected to ground.

[▲] Grid No.3 connected to cathode, and grid No.2 connected to plate.

Curves shown under Type 6X8 also apply to the 6AT8

← Indicates a change.



6AU4-GT

6AU4-GT

HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	1.8	amp

Direct Interelectrode Capacitances (Approx.):^o

Plate to Heater and Cathode	8.5	μ f
Cathode to Heater and Plate	11.5	μ f
Heater to Cathode	4.0	μ f

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-13/16"
Maximum Seated Length	3-1/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	Short Intermediate-Shell Octal 5- or 6-Pin with External Barriers (JEDEC Nos. B5-85 or B6-60)
Basing Designation for BOTTOM VIEW	4CG

- | | | |
|--|--|----------------|
| Pin 1: No Connection-
Do Not Use;
or Omitted | | Pin 3: Cathode |
| Pin 2: No Connection-
Do Not Use | | Pin 5: Plate |
| | | Pin 7: Heater |
| | | Pin 8: Heater |

DAMPER SERVICE

Maximum Ratings, Design-Center Values Except as Noted:
For operation in a 525-line, 30-frame system[▲]

PEAK INVERSE PLATE VOLTAGE (Absolute Maximum) [§]	4500 [●] max.	volts
PEAK PLATE CURRENT	1050 max.	ma
DC PLATE CURRENT	175 max.	ma
PLATE DISSIPATION	6.0 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode (Absolute Maximum)	4500 [●] max.	volts
Heater positive with respect to cathode	300 [†] max.	volts

^o With no external shield.
[▲] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.
[§] This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.
[●] under no circumstances should this absolute value be exceeded.
^{*} The dc component must not exceed 900 volts.
[†] The dc component must not exceed 100 volts.

MARCH 1, 1954

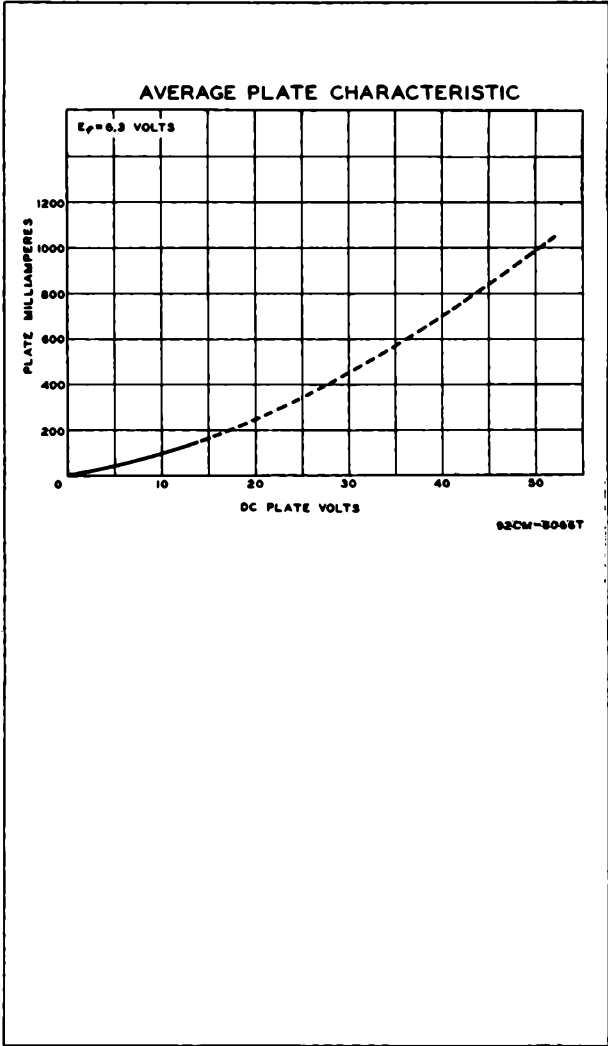
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6AU4-GT



6AU4-GT HALF-WAVE VACUUM RECTIFIER



MARCH 1, 1954

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8066T



6AU4-GTA

6AU4-GTA HALF-WAVE VACUUM RECTIFIER

For Television Damper Service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 1.8 amp

Direct Interelectrode Capacitances (Approx.):^o

Plate to heater and cathode. 8.5 μμf

Cathode to heater and plate. 11.5 μμf

Heater to cathode. 4 μμf

Mechanical:

Mounting Position. Any

Maximum Overall Length. 3-13/16"

Maximum Seated Length. 3-1/4"

Maximum Diameter. 1-9/32"

Bulb T-9

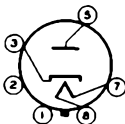
Base Short Intermediate-Shell Octal 5-Pin
with External Barriers (JETEC No. B5-B5),
or Short Intermediate-Shell Octal 6-Pin
with External Barriers (JETEC No. B6-60)

Basing Designation for BOTTOM VIEW 4CG

Pin 1 ♦ - Same as

Pin 2

Pin 2 - No Connec-
tion - Do
Not Use^o



Pin 3 - Cathode

Pin 5 - Plate

Pin 7 - Heater

Pin 8 - Heater

DAMPER SERVICE

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-Line, 30-frame system^o

PEAK INVERSE PLATE VOLTAGE
(Absolute maximum)* 4500[■] max. volts

PEAK PLATE CURRENT 1150 max. ma

DC PLATE CURRENT 190 max. ma

PLATE DISSIPATION. 6 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode
(Absolute maximum) 4500^{■▲} max. volts

Heater positive with respect to cathode. 300[#] max. volts

^o without external shield.

♦ On the 5-pin base, pin 1 as well as pins 4 and 6 is omitted.

• Socket terminals 1, 2, 4, and 6 should not be used as tie points.

□ AS described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

* This rating is applicable when the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

■, ▲, # : See next page.

SEPT. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

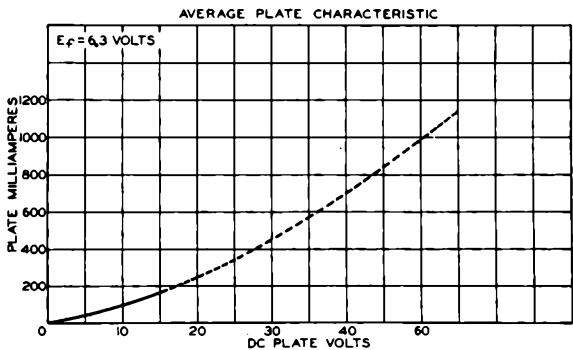
6AU4-GTA



6AU4-GTA

HALF-WAVE VACUUM RECTIFIER

- Under no circumstances should this absolute value be exceeded.
- ▲ The dc component must not exceed 900 volts (Absolute maximum).
- # The dc component must not exceed 100 volts.



SEPT. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8651T



6AT8

TRIODE-PENTODE CONVERTER

9-PIN MINIATURE TYPE

6AT8

The 6AT8 is the same as the 6X8 except for basing arrangement and capacitances, as indicated below:

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield*	
Triode Unit:			
Grid to plate	1.6	1.6	μf
Input	2.0	2.4	μf
Output	0.45	0.9	μf
Pentode Unit:			
Grid No.1 to plate	0.08 max.	0.06 max.	μf
Input	4.3	4.5	μf
Output	0.8	1.5	μf
Pentode grid No.1 to triode plate	0.05 max.	0.04 max.	μf
Pentode plate to triode plate	0.05 max.	0.007 max.	μf
Heater to cathode	5.5	5.5 [•]	μf
Pentode Unit Connected as triode:[▲]			
Grid No.1 to plate	1.3	1.25	μf
Input	3.1	3.4	μf
Output	1.5	2.3	μf

Basing Designation for BOTTOM VIEW 9AK

- Pin 1 - Triode Grid
- Pin 2 - Triode Plate
- Pin 3 - Cathode
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Pentode Plate



- Pin 7 - Pentode Grid No.2
- Pin 8 - Pentode Grid No.3
- Pin 9 - Pentode Grid No.1

- * JETEC shield No.315 connected to cathode except as noted.
- JETEC shield No.315 connected to ground.
- ▲ Grid No.3 connected to cathode; grid No.2 connected to plate.

Curves for the 6AT8 are the same as those shown for Type 6X8.

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AU5-GT

BEAM POWER TUBE

6AU5-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	1.25	amp

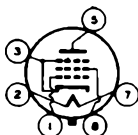
Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate	0.5	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	11.3	μf
Plate to cathode & grid No.3, grid No.2, and heater	7	μf
Transconductance [#]	5600	μmhos
Mu-Factor, Grid No.2 to Grid No.1 [■]	5.9	

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	Intermediate-Shell Octal 6-Pin (JETEC No. B6-8) or Short Intermediate-Shell Octal 6-Pin (JETEC No. B6-60)
Base Designation for BOTTOM VIEW	6CK

Pin 1 - Grid No.1
Pin 2 - Heater
Pin 3 - Cathode,
Grid No.3



Pin 5 - Plate
Pin 7 - Heater
Pin 8 - Grid No.2

HORIZONTAL DEFLECTION AMPLIFIER

For operation in a 525-line, 30-frame system^o

Maximum Ratings, Design-Center Values:

DC PLATE VOLTAGE	550 max. volts
PEAK POSITIVE-PULSE PLATE VOLTAGE* (Absolute maximum)	5500 ^o max. volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE*	-1250 max. volts
DC GRID-NO.2 (SCREEN) VOLTAGE [†]	200 max. volts

^o with no external shield.

[#] For plate volts = 115, grid-no.2 volts = 175, grid-no.1 volts = -20.

[■] For plate volts = 100, grid-no.2 volts = 100, grid-no.1 volts = -4.5.

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

^{*} The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[•] under no circumstances should this absolute value be exceeded.

[†] preferably obtained through a series dropping resistor of sufficient magnitude to limit the grid-no.2 input to the rated maximum value.

← indicates a change.

6AU5-GT



6AU5-GT

BEAM POWER TUBE

PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE	-300 max.	volts
CATHODE CURRENT:		
Peak	400 max.	ma
Average.	110 max.	ma
GRID-No.2 INPUT	2.5 max.	watts
PLATE DISSIPATION ^o	10 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 max.	volts
BULB TEMPERATURE (At hottest point) [▲]	210 max.	°C

Maximum Circuit Values:

→ Grid-No.1-Circuit Resistance	0.47 max.	megohm
--	-----------	--------

VOLTAGE REGULATOR SERVICE*Triode Connection--Grid No.2 Connected to Plate***Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE	300 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Negative bias value	125 max.	volts
Positive bias value	0 max.	volts
CATHODE CURRENT	110 max.	ma
PLATE & GRID-No.2		
DISSIPATION (Total)	10 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 max.	volts

^o An adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

[◆] The dc component must not exceed 100 volts.

[▲] For tube in vertical position with base down in free space and with natural ventilation, the hottest point on the bulb is in the center of the dome just above open end of cathode sleeve.

→ Indicates a change.

NOV. 5, 1954

TUBE DIVISION

DATA 1

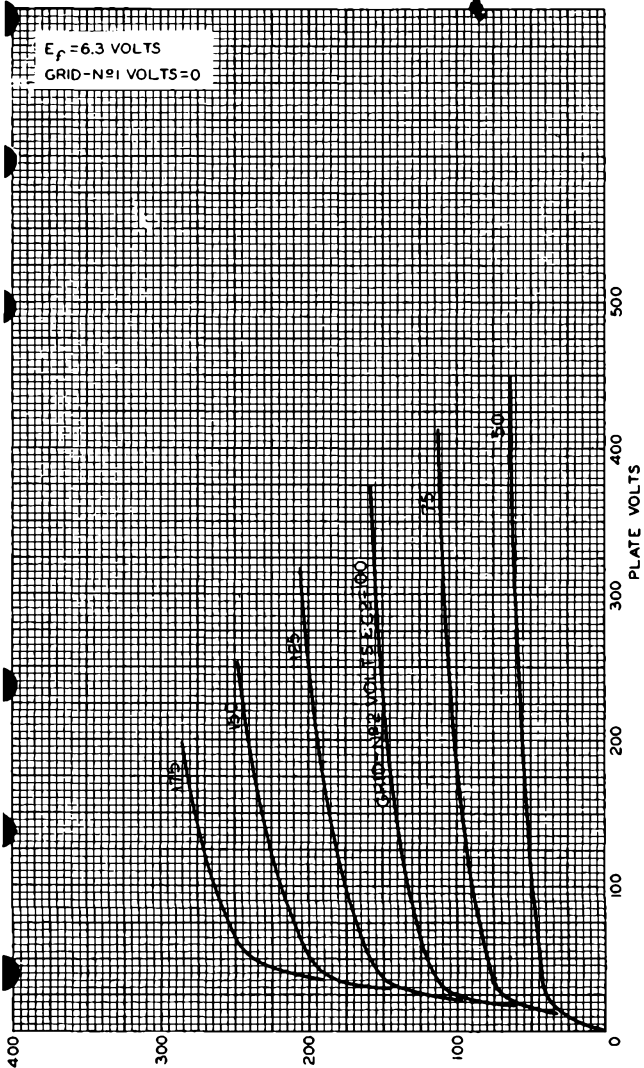
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AU5-GT

6AU5-GT

AVERAGE PLATE CHARACTERISTICS



SEPT. 8, 1949

PLATE MILLIAMPERES
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

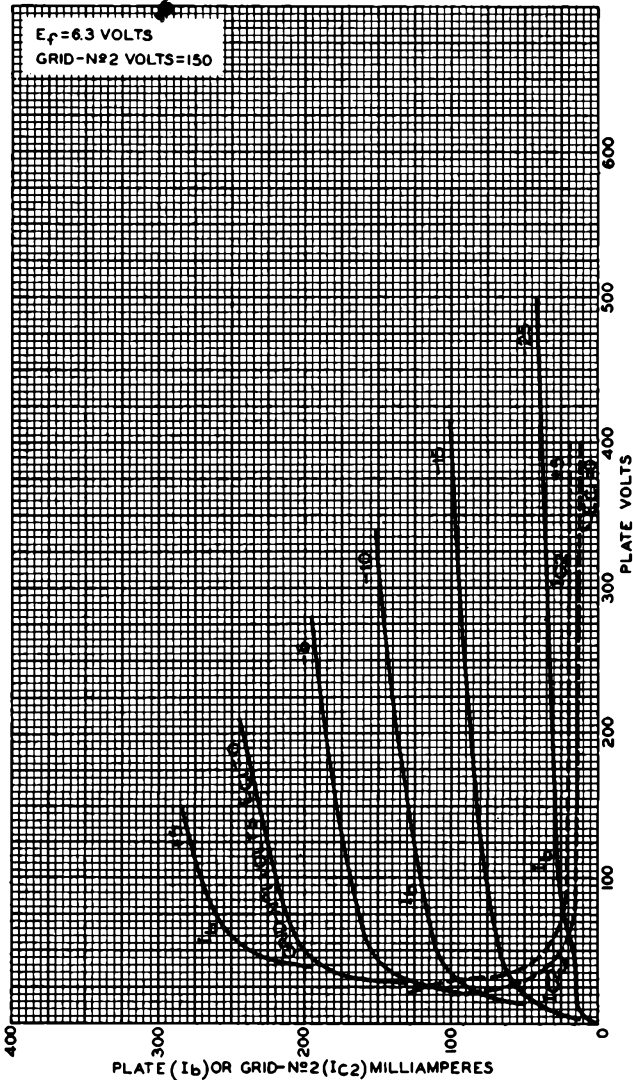
92CM-7355

6AU5-GT



6AU5-GT

AVERAGE PLATE CHARACTERISTICS



AUG. 29, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7349



6AU6

SHARP-CUTOFF PENTODE

MINIATURE TYPE

6AU6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances (No external shield):

Pentode Connection:

Grid No.1 to plate	0.0035 max.	μf
Grid No.1 to cathode, heater, grid No.2, and grid No.3 & internal shield	5.5	μf
Plate to cathode, heater, grid No.2, and grid No.3 & internal shield . . .	5	μf

Triode Connection, Grids No.2 & No.3 tied to plate:

Grid No.1 to plate, grid No.2, and grid No.3 & internal shield	2.6	μf ←
Grid No.1 to cathode and heater	3.2	μf ←
Plate, grid No.2, and grid No.3 & internal shield to cathode and heater	1.7	μf

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" \pm 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2 ←
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1) ←
Basing Designation for BOTTOM VIEW	7BK1

Pin 1 - Grid No.1
Pin 2 - Grid No.3,
Internal
Shield
Pin 3 - Heater



Pin 4 - Heater
Pin 5 - Plate
Pin 6 - Grid No.2
Pin 7 - Cathode

AMPLIFIER - Class A₁

Pentode Connection

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max. volts
GRID-No.3 (SUPPRESSOR) VOLTAGE	0 max. volts
GRID-No.2 (SCREEN) VOLTAGE	See Rating Curve at front of this Section
GRID-No.2 SUPPLY VOLTAGE	300 max. volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:	
Positive bias value	0 max. volts
PLATE DISSIPATION	3 max. watts
GRID-No.2 INPUT	0.65 max. watt

← Indicates a change.

6AU6



6AU6

SHARP-CUTOFF PENTODE

→	PEAK HEATER-CATHODE VOLTAGE:				
	Heater negative with respect to cathode	180 max.	volts		
	Heater positive with respect to cathode	100 max.	volts		
→	Typical Operation and Characteristics:				
	Plate Supply Voltage	100	250	250	volts
	Grid-No.3 (Suppressor)	Connected to cathode at socket			
	Grid-No.2 Voltage	100	125	150	volts
	Cathode-Bias Resistor	150	100	68	ohms
	Plate Resistance (Approx.)	0.5	1.5	1.0	megohms
	Transconductance	3900	4500	5200	μmhos
	Grid-No.1 Voltage (Approx.)				
	for plate current of 10 μamp	-4.2	-5.5	-6.5	volts
	Plate Current	5.0	7.6	10.6	ma
	Grid-No.2 Current	2.1	3.0	4.3	ma

AMPLIFIER - Class A₁

Triode Connection - Grids No.2 and No.3 tied to Plate

Maximum Ratings, Design-Center Values:

	PLATE VOLTAGE	250 max.	volts
→	GRID-No.1 (Control-Grid) VOLTAGE:		
	Positive bias value	0 max.	volts
	PLATE DISSIPATION (Total)	3.2 max.	watts
→	PEAK HEATER-CATHODE VOLTAGE:		
	Heater negative with respect to cathode	180 max.	volts
	Heater positive with respect to cathode	100 max.	volts

Typical Operation and Characteristics:

→	Plate Supply Voltage	250	volts
	Cathode-Bias Resistor	330	ohms
	Amplification Factor	36	
	Plate Resistance (Approx.)	7500	ohms
	Transconductance	4800	μmhos
	Plate Current (Total)	12.2	ma

→ Indicates a change.

AUG. 16, 1954

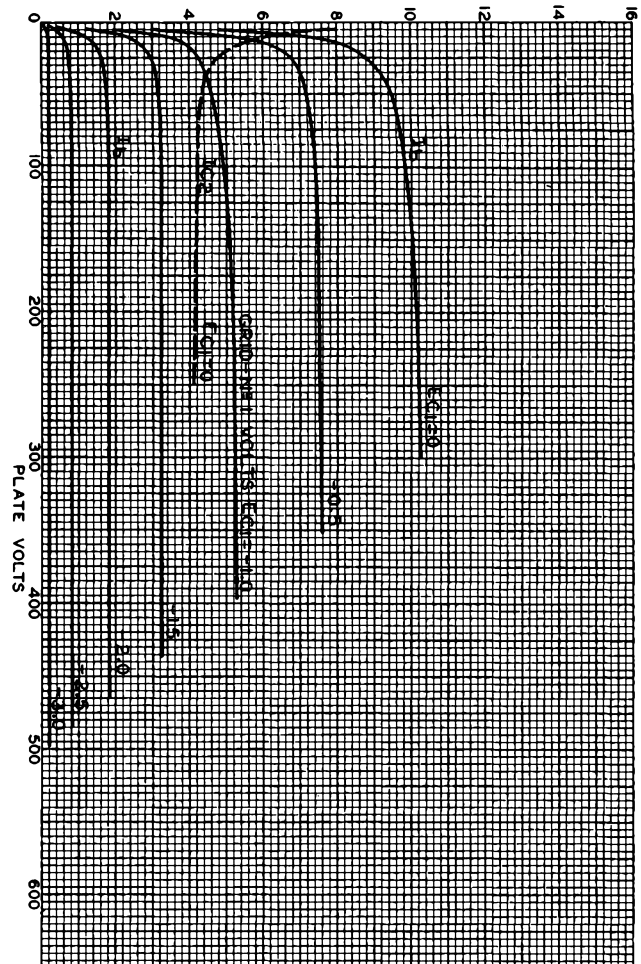
TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

AVERAGE PLATE CHARACTERISTICS

PENTODE CONNECTION
 GRID-№2 VOLTS = 100
 GRID-№3 VOLTS = 0



OCT. 23, 1945
 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
 92CM-6611

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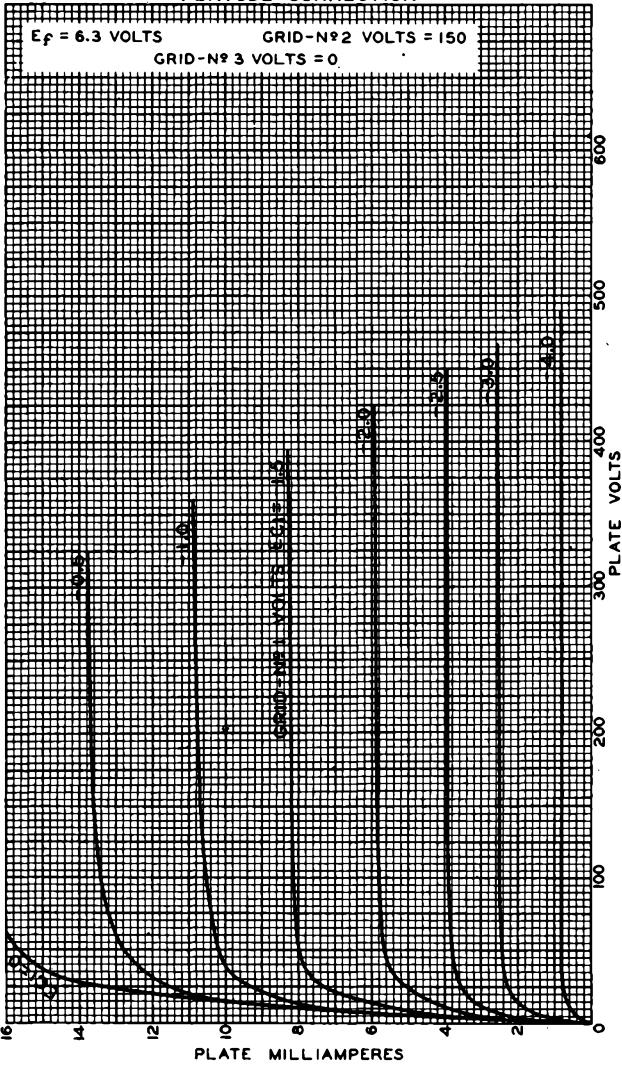
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AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



OCT. 24, 1945

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6613



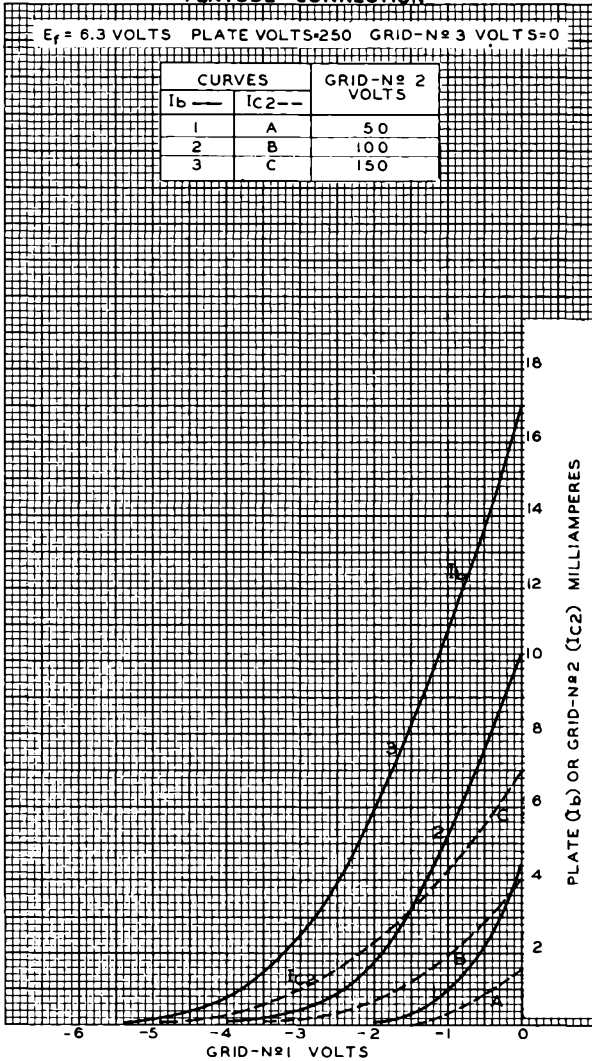
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AVERAGE CHARACTERISTICS PENTODE CONNECTION

$E_f = 6.3$ VOLTS PLATE VOLTS = 250 GRID-N° 3 VOLTS = 0

CURVES		GRID-N° 2 VOLTS
I_b —	I_{c2} --	
1	A	50
2	B	100
3	C	150



NOV. 12, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

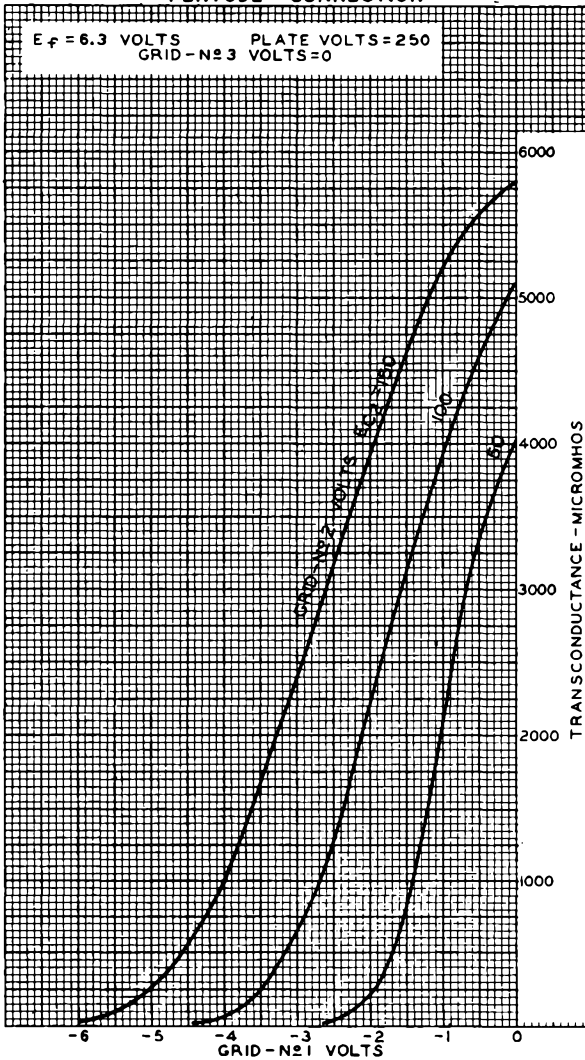
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AVERAGE CHARACTERISTICS PENTODE CONNECTION



OCT. 26, 1945

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

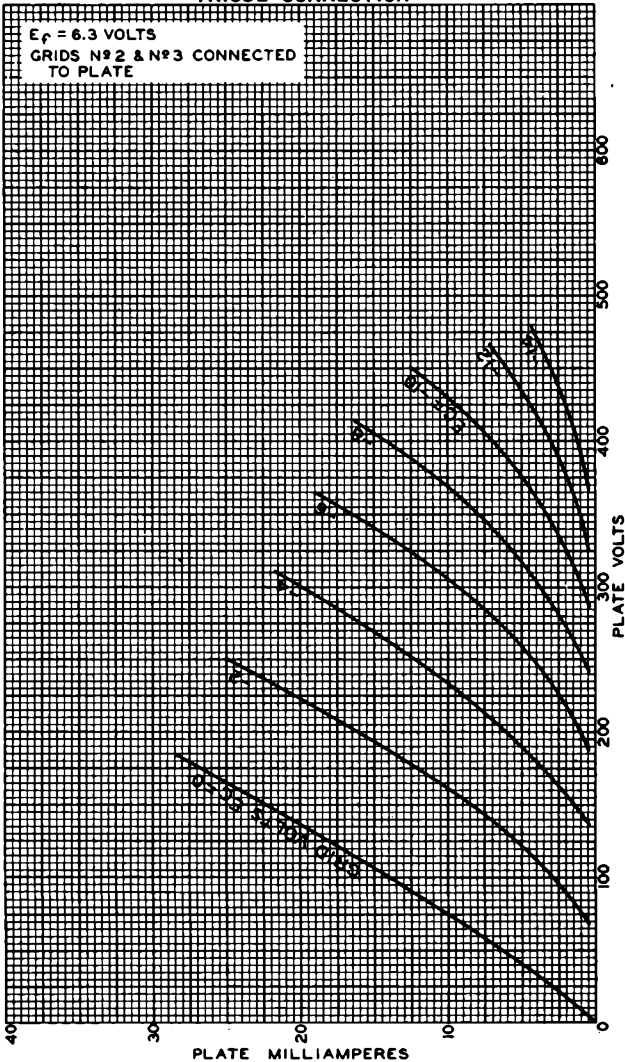
92CM - 6614



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6AU6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



MAR. 26, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6654



6AU8

6AU8 MEDIUM-MU TRIODE- SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE
Intended for use in equipment having
series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.6	amp
Warm-up time (Average)	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARN-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:^o

Triode Unit:

Grid to plate	2.2	$\mu\mu\text{f}$
Grid to cathode and heater.	2.6	$\mu\mu\text{f}$
Plate to cathode and heater	0.34	$\mu\mu\text{f}$

Pentode Unit:

Grid No.1 to plate.	0.044	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater.	7.5	$\mu\mu\text{f}$
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater.	2.4	$\mu\mu\text{f}$
Triode grid to pentode plate.	0.022 max.	$\mu\mu\text{f}$
Pentode grid No.1 to triode plate	0.006 max.	$\mu\mu\text{f}$
Pentode plate to triode plate	0.12 max.	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

	Triode Unit	Pentode Unit	
Plate-Supply Voltage.	150	200	volts
Grid-No.2-Supply Voltage.	-	125	volts
Cathode Resistor.	150	82	ohms
Amplification Factor.	40	-	
Plate Resistance (Approx.)	8200	150000	ohms
Transconductance.	4900	7000	μmhos
Plate Current	9	15	ma
Grid-No.2 Current	-	3.4	ma
Grid-No.1 Voltage (Approx.) for plate current of 100 μamp	-6.5	-8	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length.	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" \pm 3/32"

^o without external shield.

6AU8



6AU8

MEDIUM-MU TRIODE - SHARP-CUTOFF PENTODE

Maximum Diameter 7/8"
 Dimensional Outline. See General Section
 Bulb T-6-1/2
 Base Small-Button Noval 9-Pin (JETEC No. E9-1)
 Basing Designation for EOTTOM VIEW 9DX

Pin 1 - Triode
 Cathode
 Pin 2 - Triode
 Grid
 Pin 3 - Triode
 Plate
 Pin 4 - Heater
 Pin 5 - Heater



Pin 6 - Pentode
 Cathode,
 Grid No. 3,
 Internal
 Shield
 Pin 7 - Pentode
 Grid No. 1
 Pin 8 - Pentode
 Grid No. 2
 Pin 9 - Pentode
 Plate

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

	Triode Unit	Pentode Unit	
PLATE VOLTAGE.	300 max.	300 max.	volts
GRID-No. 2 (SCREEN) SUPPLY VOLTAGE.	-	300 max.	volts
GRID-No. 2 VOLTAGE.	-	See Grid-No. 2 Input	

Rating Chart at front of Receiving Tube Section

GRID-No. 1 (CONTROL-GRID) VOLTAGE:			
Positive bias value. . .	0 max.	0 max.	volts
PLATE DISSIPATION.	2.5 max.	3 max.	watts
GRID-No. 2 INPUT:			
For grid-No. 2 voltages up to 150 volts.	-	1 max.	watt
For grid-No. 2 voltages between 150 and 300 volts.	-	See Grid-No. 2 Input	

Rating Chart at front of Receiving Tube Section

PEAK HEATER-CATHODE

VOLTAGE:

Heater negative with respect to cathode . . .	200 max.	200 max.	volts
Heater positive with respect to cathode . . .	200 [▲] max.	200 [▲] max.	volts

[▲] The dc component must not exceed 100 volts.



6AU8

6AU8

MEDIUM-MU TRIODE - SHARP-CUTOFF PENTODE

Maximum Circuit Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Grid-No.1-Circuit Resistance:			
For fixed-bias operation. .	0.5 max.	0.25 max.	megohm
For cathode-bias operation.	1.0 max.	1.0 max.	megohm

OPERATING CONSIDERATIONS

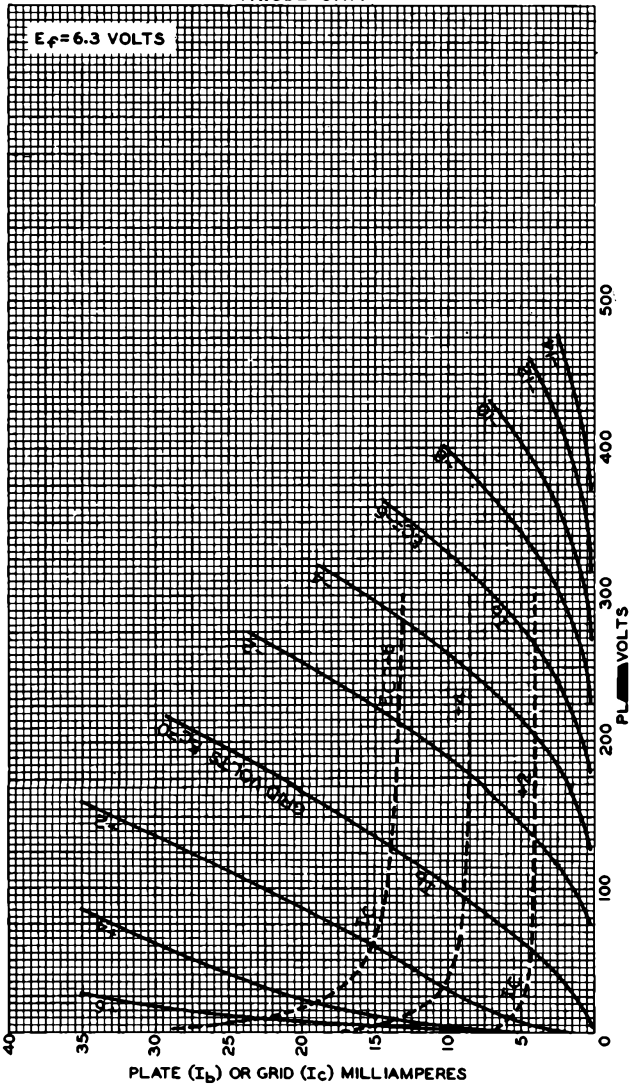
Because the *internal shield* is connected to the cathode and grid No.3, the impedance in the cathode circuit should be kept as low as possible to minimize cross-coupling effects.

6AU8



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AVERAGE CHARACTERISTICS TRIODE UNIT

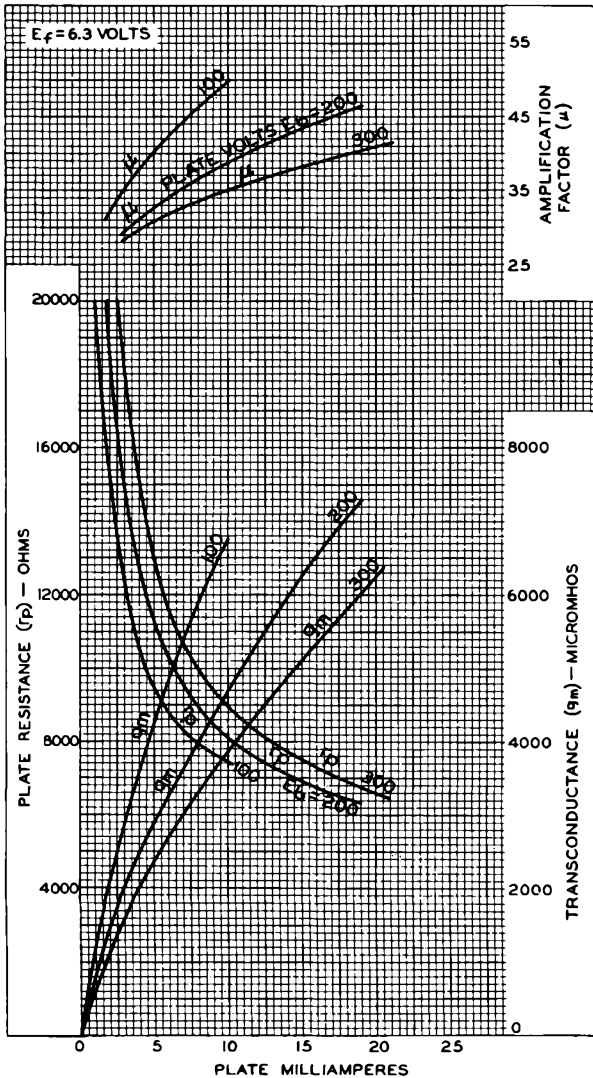




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AVERAGE CHARACTERISTICS
TRIODE UNIT

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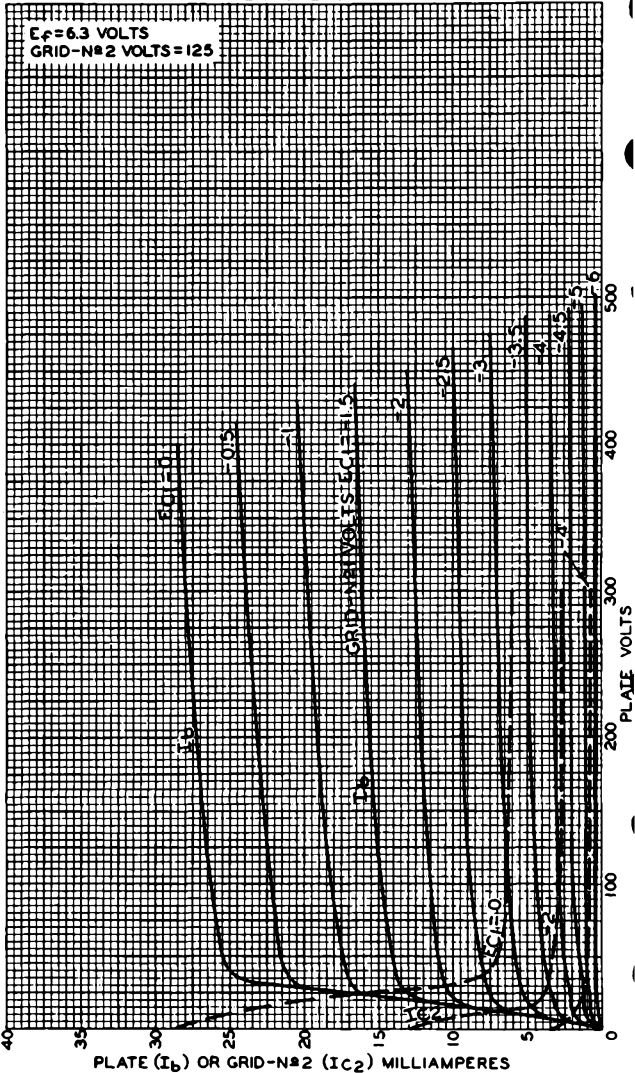


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AVERAGE CHARACTERISTICS PENTODE UNIT



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

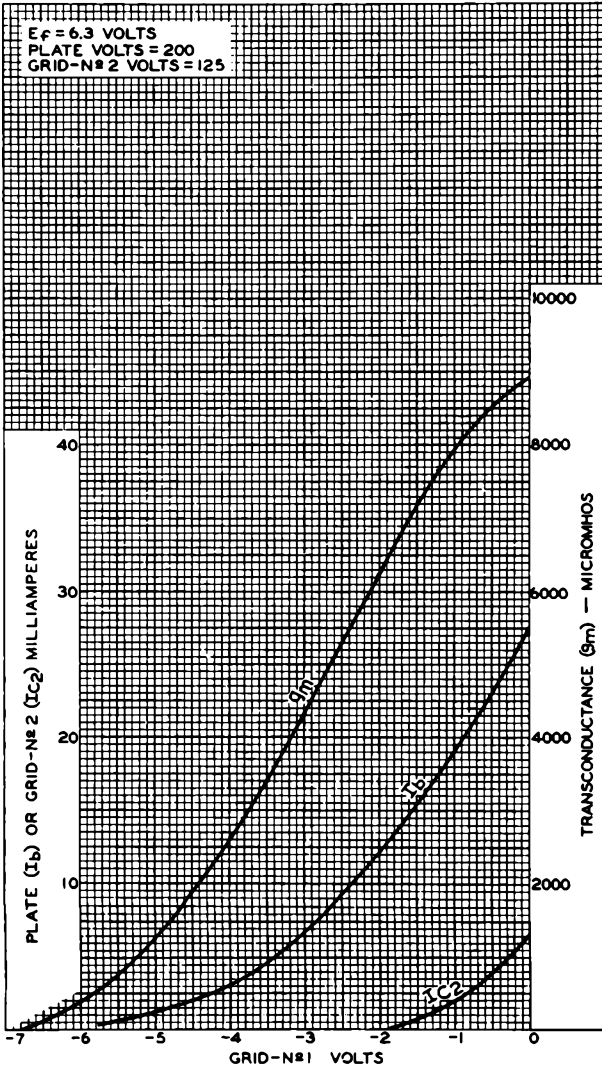
92CM-8804



6AU8

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AVERAGE CHARACTERISTICS FOR PENTODE UNIT





6AV5-GA

6AV5-GA

BEAM POWER TUBE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3	ac or dc volts
Current.	1.2	amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate	0.5	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.3, grid No.2, and heater	14	$\mu\mu\text{f}$
Plate to cathode & grid No.3, grid No.2, and heater	7	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

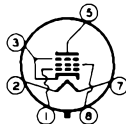
Plate Voltage.	60	150	250	volts
Grid-No.2 Voltage.	150	150	150	volts
Grid-No.1 Voltage.	0	-22.5	-22.5	volts
Mu-Factor, Grid No.2 to				
Grid No.1.	-	4.3	-	
Plate Resistance (Approx.)	-	-	20000	ohms
Transconductance	-	-	5500	μmhos
Plate Current.	225*	-	55	ma
Grid-No.2 Current.	25*	-	2.1	ma
Grid-No.1 Voltage (Approx.) for plate current of 1 ma.	-	-	-4.6	volts

Mechanical:

Mounting Position.	Any
Maximum Overall Length	4"
Maximum Seated Length.	3-7/16"
Maximum Diameter	1-9/16"
Bulb	T-11, or T-12
Base:	

- For T-11 bulb. Short Medium-Shell Octal 6-Pin with External Barriers, Style A (JETEC No.86-112)
- For T-12 bulb. Short Medium-Shell Octal 6-Pin with External Barriers, Style B (JETEC No.86-120)
- Basing Designation for BOTTOM VIEW 6CK

- Pin 1 - Grid No.1
- Pin 2 - Heater
- Pin 3 - Cathode, Grid No.3



- Pin 5 - Plate
- Pin 7 - Heater
- Pin 8 - Grid No.2

^o Without external shield.

* These values can be measured by a method involving a recurrent wave form such that the cathode current, grid-No.2 input, and plate dissipation will be kept within ratings in order to prevent damage to the tube.

6AV5-GA



6AV5-GA

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	550 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [●]	5500 [■] max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1250 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	175 max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	300 max.	volts
CATHODE CURRENT:		
Peak	400 max.	ma
Average	110 max.	ma
GRID-No.2 INPUT	2.5 max.	watts
PLATE DISSIPATION [†]	11 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	210 max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For grid-resistor-bias operation[‡] 0.47 max. megohm

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[●] Under no circumstances should this absolute value be exceeded.

[■] The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[†] It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

[▲] The dc component must not exceed 100 volts.



6AV5-GT

BEAM POWER AMPLIFIER

6AV5-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:			
Voltage	6.3	. . . . .	ac or dc volts
Current	1.2	. . . . .	amp
Direct Interelectrode Capacitances: ^o			
Grid No.1 to Plate	0.7	. . . . .	$\mu\mu\text{f}$
Input	14	. . . . .	$\mu\mu\text{f}$
Output	7	. . . . .	$\mu\mu\text{f}$

^o With no external shield.

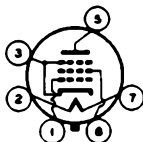
Characteristics, Amplifier Class A₁:

Plate Voltage	60 ^a	150	250	volts
Grid-No.2 (Screen) Voltage	150 ^a	150	150	volts
Grid-No.1 (Control-Grid) Voltage	0	-22.5	-22.5	volts
Mu-Factor, Grid No.2 to Grid No.1	-	4.3	-	
Plate Resistance	-	-	20000	ohms
Transconductance	-	-	5500	μmhos
Plate Current	225	-	55	ma
Grid-No.2 Current	25	-	2.1	ma
Grid-No.1 Voltage (Approx.) for plate current of 1 ma	-	-	-46	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	{ Intermediate-Shell Octal 6-Pin (JETEC No. B6-8) or Short Intermediate-Shell Octal 6-Pin (JETEC No. B6-60)
Basing Designation for BOTTOM VIEW	6CK

- Pin 1 - Grid No.1
- Pin 2 - Heater
- Pin 3 - Cathode,
Grid-No.3



- Pin 5 - Plate
- Pin 7 - Heater
- Pin 8 - Grid No.2

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system^{*}

DC PLATE SUPPLY VOLTAGE (Including Boost Voltage)	550 max. volts
--	----------------

^a Applied for very short interval so as not to damage tube.

^{*} As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

APRIL 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6AV5-GT



6AV5-GT

BEAM POWER AMPLIFIER

PEAK POSITIVE-PULSE PLATE VOLTAGE*	5500 max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE*	1250 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	175 max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE*	300 max.	volts
CATHODE CURRENT:		
Peak	400 max.	ma
DC	110 max.	ma
GRID-No.2 INPUT	2.5 max.	watts
PLATE DISSIPATION#	11 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	210 max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	0.47 max.	megohm
------------------------------	-----------	--------

- * Under no circumstances should this absolute value be exceeded.
- # The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.
- † It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.
- ▲ The dc component must not exceed 100 volts.

APRIL 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

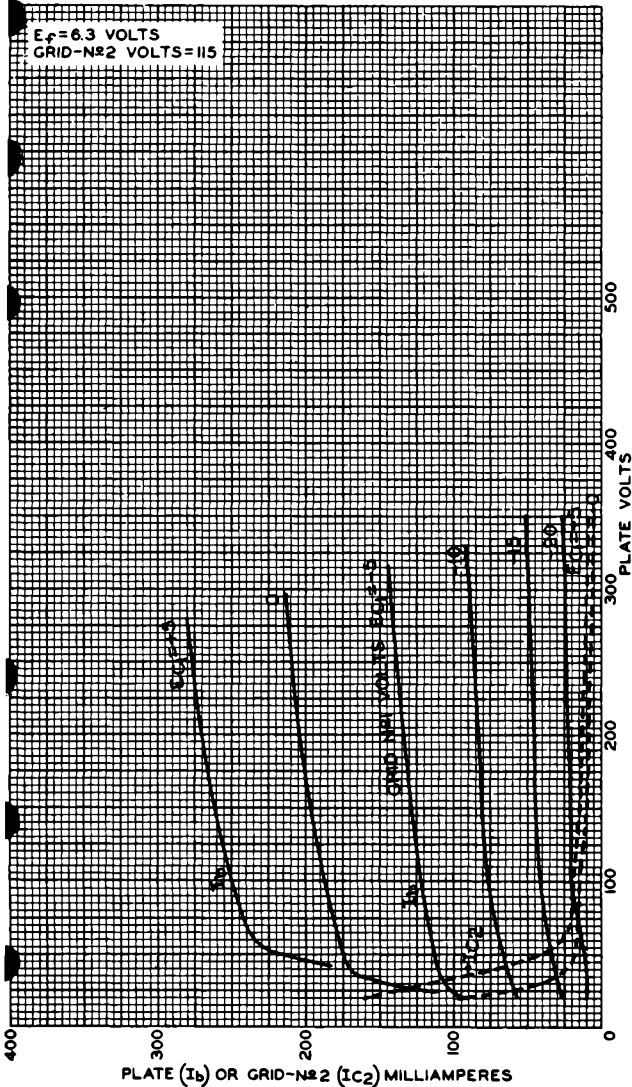


6AV5-GT

6AV5-GT

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-N \approx 2 VOLTS = 115



MAR. 10, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7941



6AV6

TWIN DIODE—HIGH-MU TRIODE

MINIATURE TYPE

6AV6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances (No external shield):

Grid to plate	2	μf
Grid to cathode and heater	2.2	μf
Plate to cathode and heater	0.8	μf
Plate of diode unit No.2 to triode grid	0.04 max.	μf

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" $\pm 3/32$ "
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	7BT



Pin 1—Triode Grid
 Pin 2—Cathode
 Pin 3—Heater
 Pin 4—Heater

Pin 5—Diode Plate No.2
 Pin 6—Diode Plate No.1
 Pin 7—Triode Plate

TRIODE UNIT — AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID VOLTAGE:		
Positive bias value	0 max.	volts
PLATE DISSIPATION	0.5 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	100	250	volts
Grid Voltage	-1	-2	volts
Amplification Factor	100	100	
Plate Resistance	80000	62500	ohms
Transconductance	1250	1600	μmhos
Plate Current	0.5	1.2	ma

← Indicates a change

6AV6



6AV6

TWIN DIODE—HIGH-MU TRIODE

Typical Operation as Resistance-Coupled Amplifier:

*See RESISTANCE-COUPLED AMPLIFIER CHART
at front of this Section*

DIODE UNITS

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For each diode) 1.0 max. ma

Diode Considerations:

Consideration of these units, including typical circuits and diode curves, is given at the front of this section. Diode biasing of the triode unit of the 6AV6 is not suitable.

*Curves for the Triode Unit of the 6AV6 are the same as
those shown for Type 12AX7.*



6AW8

6AW8

HIGH-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

Intended for use in equipment having
series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.6	amp
Warm-up time (Average)	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
<i>Triode Unit:</i>			
Grid to plate	2.2	2.2	μμf
Grid to cathode and heater	3.2	3.4	μμf
Plate to cathode and heater	0.32	1.7	μμf
<i>Pentode Unit:</i>			
Grid No.1 to plate	0.036 max.	0.03 max.	μμf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater	11	11	μμf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater	2.8	3.6	μμf
Triode grid to pentode plate	0.03 max.	0.008 max.	μμf
Pentode grid No.1 to triode plate	0.008 max.	0.005 max.	μμf
Pentode plate to triode plate	0.2 max.	0.05 max.	μμf

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" ± 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2

^o With external shield JEDEC No.315 connected to cathode of unit under test.

6AW8



6AW8

HIGH-MU TRIODE— SHARP-CUTOFF PENTODE

Base Small-Button Noval 9-Pin (JETEC No.E9-1)
 Basing Designation for BOTTOM VIEW 9DX

Pin 1 - Triode
 Cathode
 Pin 2 - Triode
 Grid
 Pin 3 - Triode
 Plate
 Pin 4 - Heater
 Pin 5 - Heater



Pin 6 - Pent. Cath.,
 Grid No.3,
 Internal
 Shield
 Pin 7 - Pentode
 Grid No.1
 Pin 8 - Pentode
 Grid No.2
 Pin 9 - Pent. Plate

TRIODE UNIT - Class A₁ Amplifier

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
PLATE DISSIPATION.	1 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Typical Operation and Characteristics:

Plate Voltage.	200	volts
Grid Voltage	-2	volts
Amplification Factor	70	
Plate Resistance (Approx.)	17500	ohms
Transconductance	4000	μmhos
Grid Voltage (Approx.) for plate current of 10 μamp	-5	volts
Plate Current.	4	ma

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias operation	0.5 max.	megohm
For cathode-bias operation	1.0 max.	megohm

PENTODE UNIT - Class A₁ Amplifier

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300 max.	volts
GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section	
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Negative bias value.	50 max.	volts
Positive bias value.	0 max.	volts
PLATE DISSIPATION.	3 max.	watts

[▲]: See next page.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AW8

6AW8

HIGH-MU TRIODE— SHARP-CUTOFF PENTODE

GRID-NO.2 INPUT:

For grid-No.2 voltages up to 150 volts	1 max.	watt
For grid-No.2 voltages between 150 and 300 volts.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Typical Operation and Characteristics:

Plate Voltage.	200	volts
Grid-No.2 Voltage.	150	volts
Grid-No.1 Voltage.	0	volts
Cathode-Bias Resistor.	180	ohms
Plate Resistance (Approx.)	0.4	megohm
Transconductance	9000	μmhos
Grid-No.1 Voltage (Approx.) for plate current of 10 μamp	-10	volts
Plate Current.	13	ma
Grid-No.2 Current.	3.5	ma

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.25 max.	megohm
For cathode-bias operation	1.0 max.	megohm

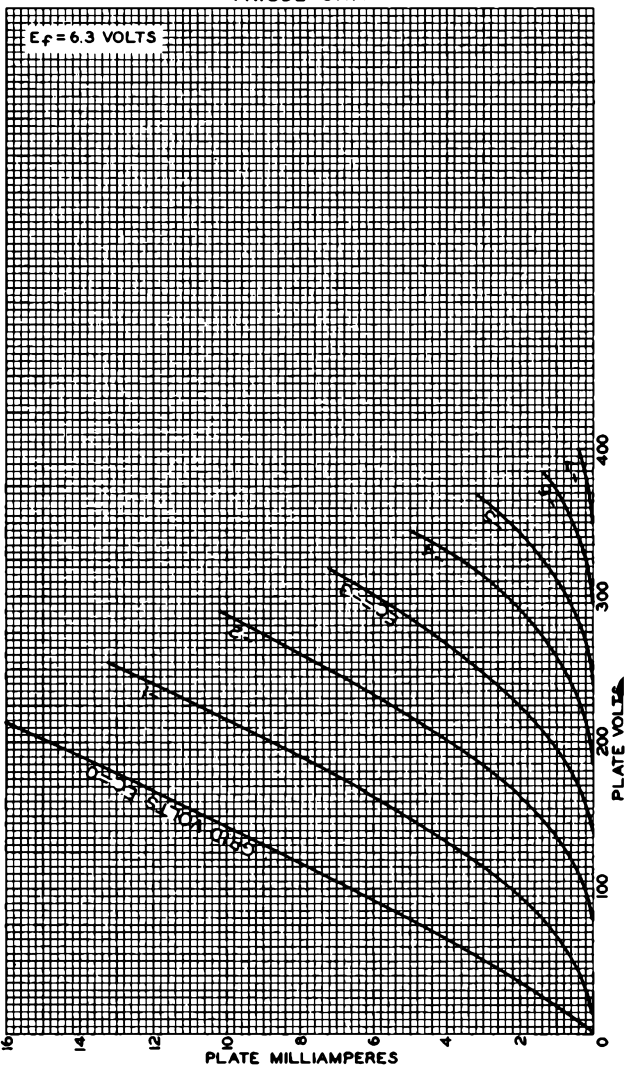
[▲] The dc component must not exceed 100 volts.

6AW8



6AW8

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT



JUNE 14, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

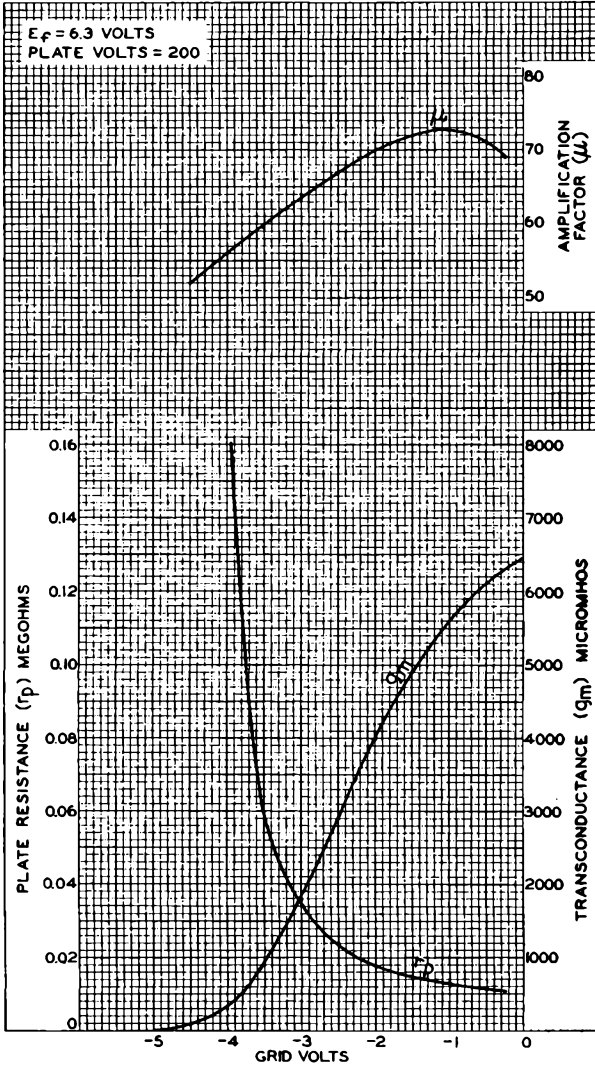
92CM-8644



6AW8

AVERAGE CHARACTERISTICS
TRIODE UNIT

6AW8



JUNE 16, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

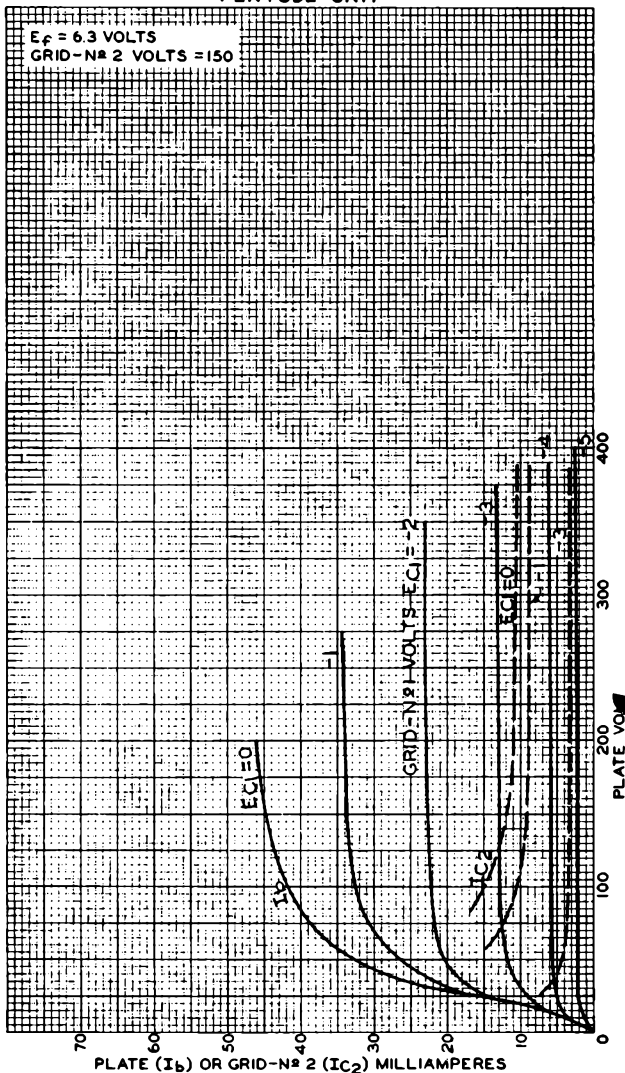
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6AW8



6AW8

AVERAGE CHARACTERISTICS PENTODE UNIT



JUNE 14, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

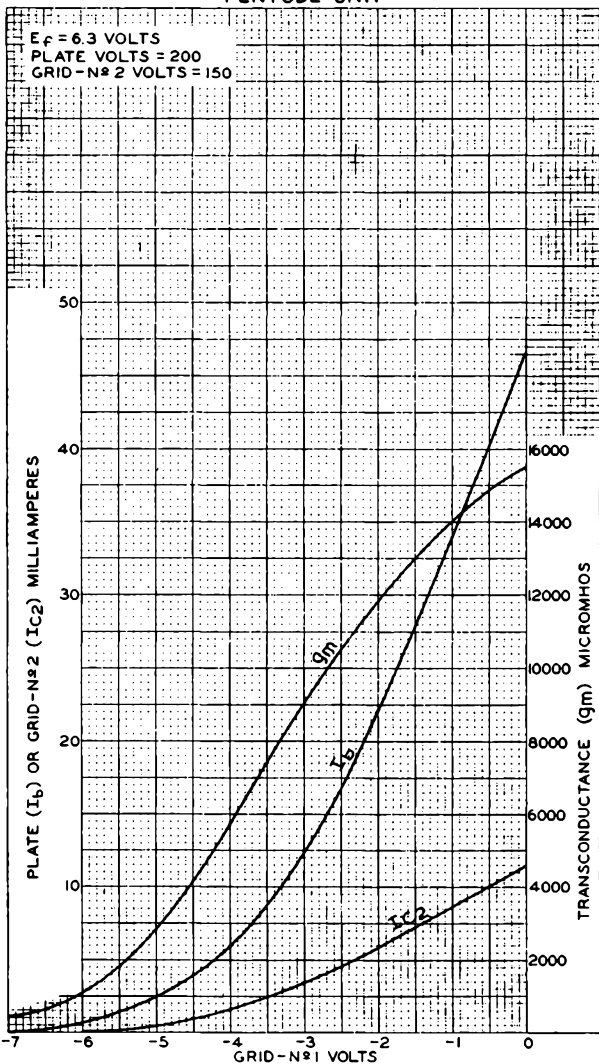
92CM-8645



6AW8

6AW8

AVERAGE CHARACTERISTICS PENTODE UNIT



JUNE 15, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8646



6AX4-GT

6AX4-GT HALF-WAVE VACUUM RECTIFIER

For Television Damper Service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	1.2	amp

Direct Interelectrode Capacitances (Approx.):^o

Cathode to plate and heater	8.5	μ mf
Plate to cathode and heater	5	μ mf
Heater to cathode	4	μ mf

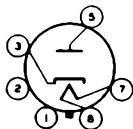
Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9

Base Intermediate-Shell Octal 6-Pin (JETEC No. B6-8),
 Short Intermediate-Shell Octal 6-Pin (JETEC No. B6-48),
 Intermediate-Shell Octal 5-Pin (JETEC No. B5-82),
 or Short Intermediate-Shell Octal 5-Pin with
 External Barriers (JETEC No. B5-85)

Basing Designation for BOTTOM VIEW 4CG

Pin 1 \blacklozenge - Same as
 Pin 2
 Pin 2 - No Connection - Do
 Not Use \bullet



Pin 3 - Cathode
 Pin 5 - Plate
 Pin 7 - Heater
 Pin 8 - Heater

DAMPER SERVICE

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-Line, 30-frame system^o

PEAK INVERSE PLATE VOLTAGE (Absolute maximum) [*]	4400 [■]	max.	volts
PEAK PLATE CURRENT	750	max.	ma
DC PLATE CURRENT	125	max.	ma
PLATE DISSIPATION	4.8	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode (Absolute maximum)	4400 ^{■▲}	max.	volts
Heater positive with respect to cathode	300 [#]	max.	volts

^o Without external shield.

\blacklozenge On the 5-pin bases, pin 1 as well as pins 4 and 6 is omitted.

\bullet Socket terminals 1, 2, 4, and 6 should not be used as tie points.

^o As described in "Standards of Good Engineering Practice concerning television Broadcast Stations", Federal Communications Commission.

^{*} This rating is applicable when the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle, in a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

^{■, ▲, #}: See next page.

\leftarrow Indicates a change.

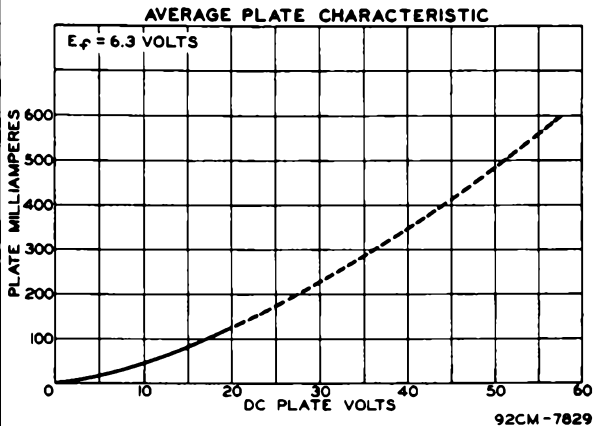
6AX4-G



6AX4-GT

HALF-WAVE VACUUM RECTIFIER

- Under no circumstances should this absolute value be exceeded.
- ▲ The dc component must not exceed 900 volts (Absolute maximum).
- * The dc component must not exceed 100 volts.



MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7829



6AX5-GT

FULL-WAVE VACUUM RECTIFIER

6AX5-GT

GENERAL DATA

Electrical:

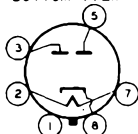
Heater, for Unipotential Cathode:

Voltage	6.3	ac volts
Current	1.2	amp

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	Short-Intermediate-Shell Octal 6-Pin
Basing Designation for BOTTOM VIEW	G-6S

Pin 1 - No Connection
 Pin 2 - Heater
 Pin 3 - Plate of Diode No. 2



Pin 5 - Plate of Diode No. 1
 Pin 7 - Heater
 Pin 8 - Cathode

FULL-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	1250 max.	volts
PEAK PLATE CURRENT PER PLATE	375 max.	ma
HOT-SWITCHING TRANSIENT PLATE CURRENT		
For duration of 0.2 second maximum	2.6 max.	amp
AC PLATE SUPPLY VOLTAGE (RMS) PER PLATE	See Rating Chart	
DC OUTPUT CURRENT PER PLATE	See Rating Chart	
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	450 max.	volts
Heater positive with respect to cathode	450 max.	volts

Typical Operation with Capacitor-Input Filter:

AC Plate-to-Plate Supply			
Voltage (RMS)	700	900	volts
Filter-Input Capacitor [▲]	10	10	μf
Effective Plate-Supply Impedance			
Per Plate	50	105	ohms
DC Output Voltage at Input to Filter (Approx.):			
At half-load cur. of	{ 62.5 ma. 395 40 ma. -	-	volts
		540	volts
At full-load cur. of	{ 125 ma. 350 80 ma. -	-	volts
		490	volts
Voltage Regulation (Approx.):			
Half-load to full-load current	45	50	volts

[▲] Higher values of capacitance than indicated may be used but the effective plate supply impedance may have to be increased to prevent exceeding the maximum rating for hot-switching transient plate current.

6AX5-GT

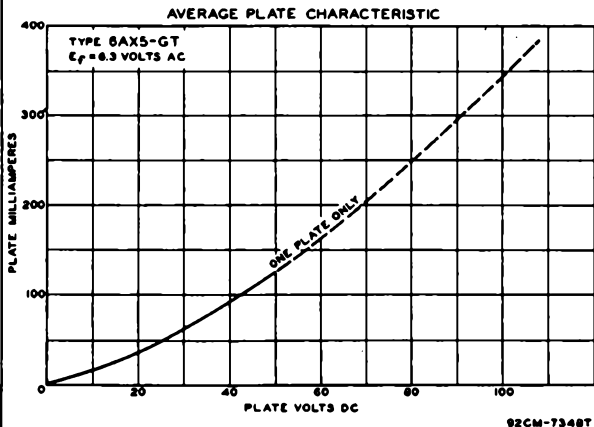


6AX5 - GT

FULL-WAVE VACUUM RECTIFIER

Typical Operation with Choke-Input Filter:

AC Plate-to-Plate Supply			
Voltage (RMS)	700	900	volts
Filter-Input Choke	10	10	henries
DC Output Voltage at Input to			
Filter (Approx.):			
At half-load cur. of	{ 75 ma. 270	-	volts
	{ 62.5 ma. -	365	volts
At full-load cur. of	{ 150 ma. 250	-	volts
	{ 125 ma. -	350	volts
Voltage Regulation (Approx.):			
Half-load to full-load Current . .	20	15	volts



RATING CHART and OPERATION CHARACTERISTICS

The *Rating Chart* presents graphically the relationships between maximum ac voltage input and maximum dc output current derived from the fundamental ratings for conditions of capacitor-input and choke-input filters. This graphical presentation gives the equipment designer considerable latitude in choice of operating conditions.

The *Operation Characteristics for Full-Wave Circuit with Capacitor-Input Filter* show not only the typical operating curves for such a circuit, but also show by means of boundary lines "ADK" the limiting current and voltage relationships presented on the Rating Chart.



6AX5-GT

6AX5-GT

FULL-WAVE VACUUM RECTIFIER

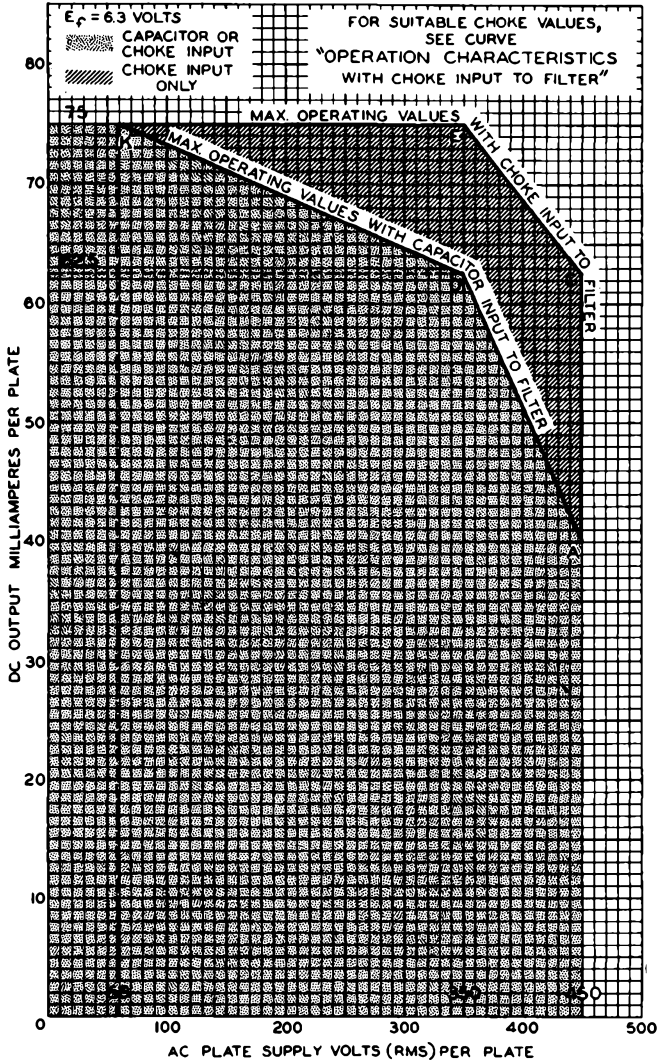
The *Operation Characteristics for Full-Wave Circuit with Choke-Input Filter* show the typical operating curves for such a circuit. They not only show by means of boundary line "CEK" the limiting current and voltage relationships presented on the *Rating Chart*, but also give information as to the effect on regulation of various sizes of chokes. The solid-line curves show the dc voltage outputs which would be obtained if the filter chokes had infinite inductance. The long-dash lines radiating from the zero position are boundary lines for various sizes of chokes as indicated. The intersection of one of these lines with a solid-line curve indicates the point on the curve at which the choke no longer behaves as though it has infinite inductance. To the left of the choke boundary line, the regulation curves depart from the solid-line curves as shown by the representative short-dash regulation curves.

6AX5-GT



6AX5-GT

RATING CHART



OCT. 7, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7383



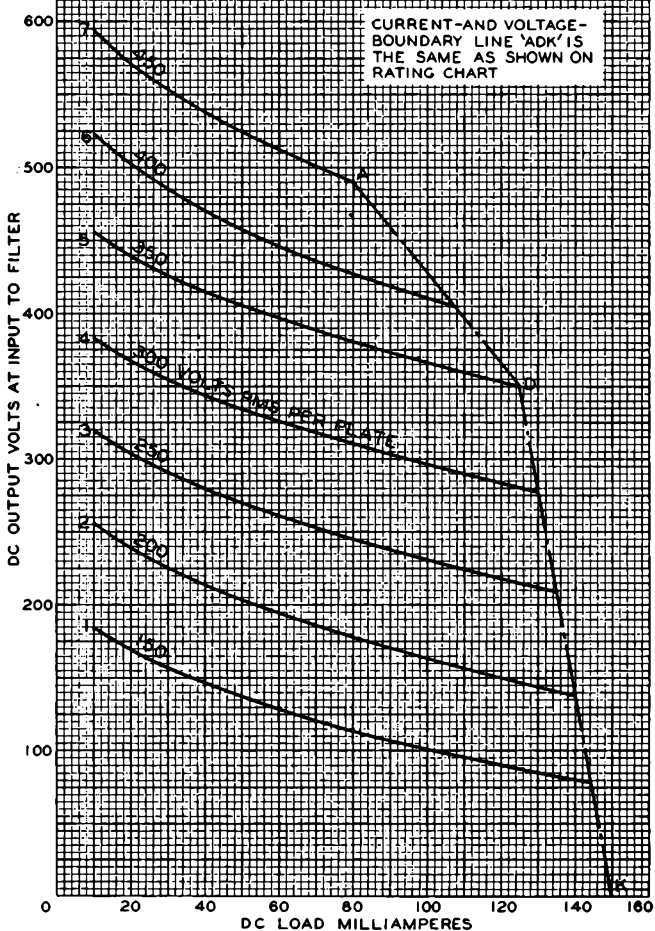
6AX5-GT

6AX5-GT

OPERATION CHARACTERISTICS

FULL-WAVE CIRCUIT, CAPACITOR INPUT TO FILTER

$E_f = 6.3$ VOLTS
CAPACITOR (C) INPUT TO FILTER: $C = 10 \mu F$;
TOTAL EFFECTIVE PLATE-SUPPLY IMPEDANCE
PER PLATE $\begin{cases} 50 \text{ OHMS FOR CURVES 1-5} \\ 105 \text{ OHMS FOR CURVES 6 \& 7} \end{cases}$
SUPPLY FREQUENCY = 60 CPS



OCT. 7, 1949

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7362

6AX5-GT



6AX5-GT

OPERATION CHARACTERISTICS

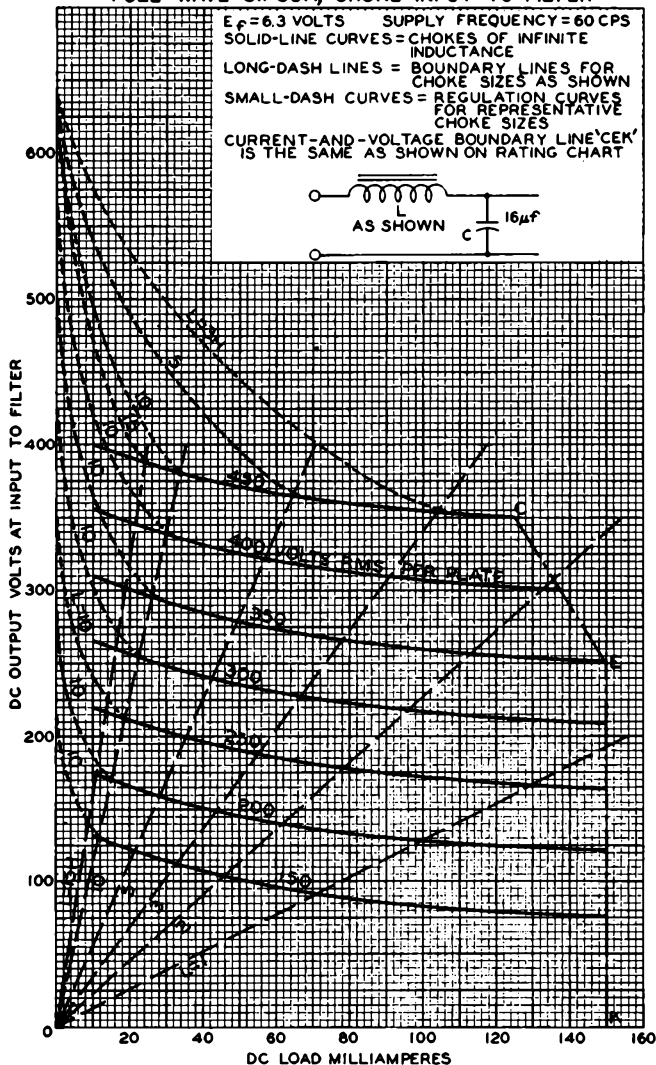
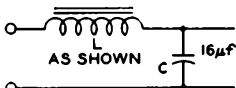
FULL-WAVE CIRCUIT, CHOKE INPUT TO FILTER

$E_p = 6.3$ VOLTS SUPPLY FREQUENCY = 60 CPS
 SOLID-LINE CURVES = CHOKES OF INFINITE INDUCTANCE

LONG-DASH LINES = BOUNDARY LINES FOR CHOKE SIZES AS SHOWN

SMALL-DASH CURVES = REGULATION CURVES FOR REPRESENTATIVE CHOKE SIZES

CURRENT-AND-VOLTAGE BOUNDARY LINE 'CEK' IS THE SAME AS SHOWN ON RATING CHART





6AZ8

MEDIUM-MU TRIODE—

SEMIREMOTE-CUTOFF PENTODE

9-PIN MINIATURE TYPE

6AZ8

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts
Current. 0.45 amp

Direct Interelectrode Capacitances:°

Triode Unit:

Grid to plate. 1.7 μμf
Grid to cathode, internal shield & heater. 2 μμf
Plate to cathode, internal shield & heater. 1.7 μμf

Pentode Unit:°

Grid No.1 to plate 0.02 μμf
Grid No.1 to cathode, grid No.2, grid No.3 & internal shield & heater 6.5 μμf
Plate to cathode, grid No.2, grid No.3 & internal shield & heater 2.2 μμf
Triode grid to pentode plate 0.027 max. μμf
Pentode grid No.1 to triode plate. 0.020 max. μμf
Pentode plate to triode plate. 0.045 max. μμf

Characteristics, Class A1 Amplifier:

Table with 3 columns: Parameter, Triode Unit, Pentode Unit, and Value/Unit. Rows include Plate Supply Voltage, Grid-No.2 Supply Voltage, Grid-No.1 Voltage, Cathode-Bias Resistor, Amplification Factor, Plate Resistance, Transconductance, Plate Current, Grid-No.2 Current, Grid-No.1 Voltage (Approx.) for plate current, Grid-No.1 Voltage (Approx.) for transconductance, and 10 μmhos.

Mechanical:

Mounting Position. Any
Maximum Overall Length 2-3/16"
Maximum Seated Length. 1-15/16"
Length, Base Seat to Bulb Top (Excluding tip) 1-9/16" ± 3/32"

° Without external shield.
• See next page.

6AZ8



6AZ8

MEDIUM-MU TRIODE— SEMIREMOTE-CUTOFF PENTODE

Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No. E9-1)
Basing Designation for BOTTOM VIEW	9ED

Pin 1 - Pentode Plate		Pin 6 - Pentode
Pin 2 - Pentode		Grid No.1
Pin 3 - Pentode		Grid No.2
Pin 3 - Pentode		Cathode
Pin 4 - Heater		Pin 7 - Triode
Pin 5 - Pentode Grid		Pin 8 - Triode
No.3, Internal		Plate
Shield, Heater		Pin 9 - Triode
		Grid

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

	Triode Unit	Pentode Unit*	
PLATE VOLTAGE.	300 max.	300 max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE.	-	See Operating Considerations	
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	-	300 max.	volts
GRID-No.2 VOLTAGE.	-	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section	
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive bias value.	0 max.	0 max.	volts
PLATE DISSIPATION.	2.5 max.	2 max.	watts
GRID-No.2 INPUT:			
For grid-No.2 voltages up to 150 volts.	-	0.5 max.	watt
For grid-No.2 voltages between 150 and 300 volts.	-	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section	
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	▲	volts
Heater positive with respect to cathode	200#max.	▲	volts

* The pentode unit is provided with a separate base pin for the cathode and for grid No.3 and internal shield which are connected internally to one of the heater leads. This arrangement facilitates the use of an unbypassed cathode resistor to minimize changes in input resistance and input capacitance with bias without causing oscillation which otherwise might occur if grid No.3 were internally connected to the cathode.

The dc component must not exceed 100 volts.

▲: See next page.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6AZ8

6AZ8
MEDIUM-MU TRIODE—
SEMIREMOTE-CUTOFF PENTODE

Maximum Circuit Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Grid-No.1-Circuit Resistance:*			
For fixed-bias operation. . .	0.5 max.	0.25 max.	megohm
For cathode-bias operation. .	1.0 max.	1.0 max.	megohm

OPERATING CONSIDERATIONS

Because *grid No.3* is connected within the tube to one side of the heater (pin No.5), it is important that pin No.5 be connected to ground to maintain grid No.3 at ground potential. If this precaution is not observed and pin No.5 is connected to the ungrounded side of the heater supply, grid No.3 will operate at the heater-supply voltage. As a result, tube characteristics will be changed. Furthermore, if an ac heater supply is used, ac voltage will be applied to grid No.3 with resulting amplitude modulation of the grid-No.3 voltage.

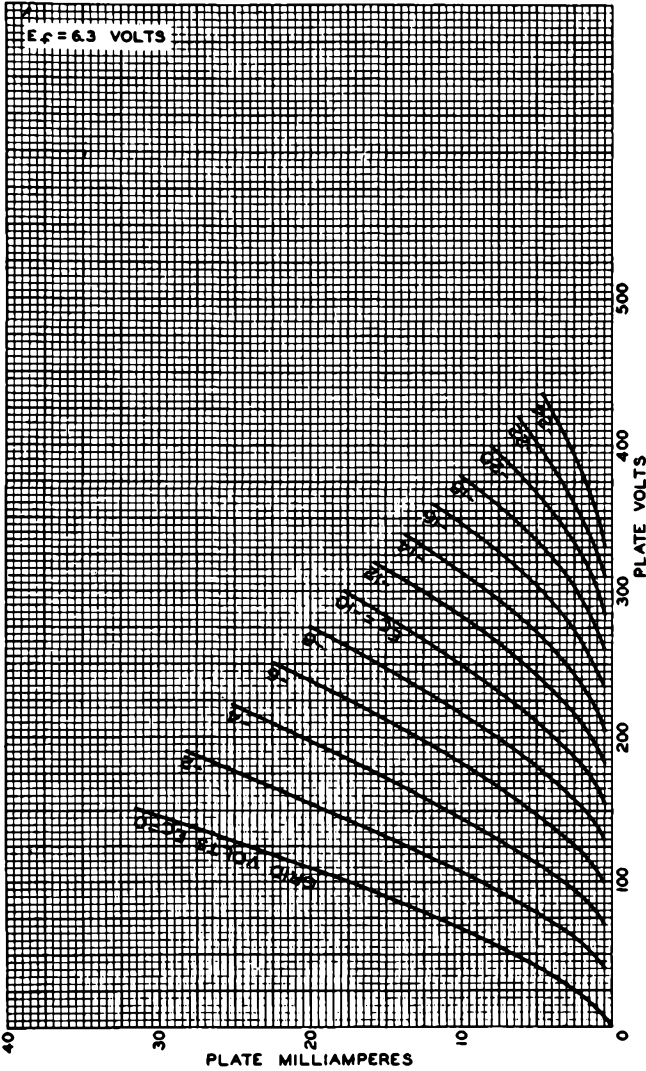
- ▲ The heater-cathode voltage should not exceed the value of the operating cathode bias. If the heater-cathode voltage exceeds the operating cathode bias value, grid No.3 will be made negative with respect to cathode, and thus possibly cause a change in tube characteristics.
- * If either unit is operated at maximum rated conditions, grid-No.1-circuit resistances for both units should not exceed the stated values.

6AZ8



6AZ8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



FEB. 2, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

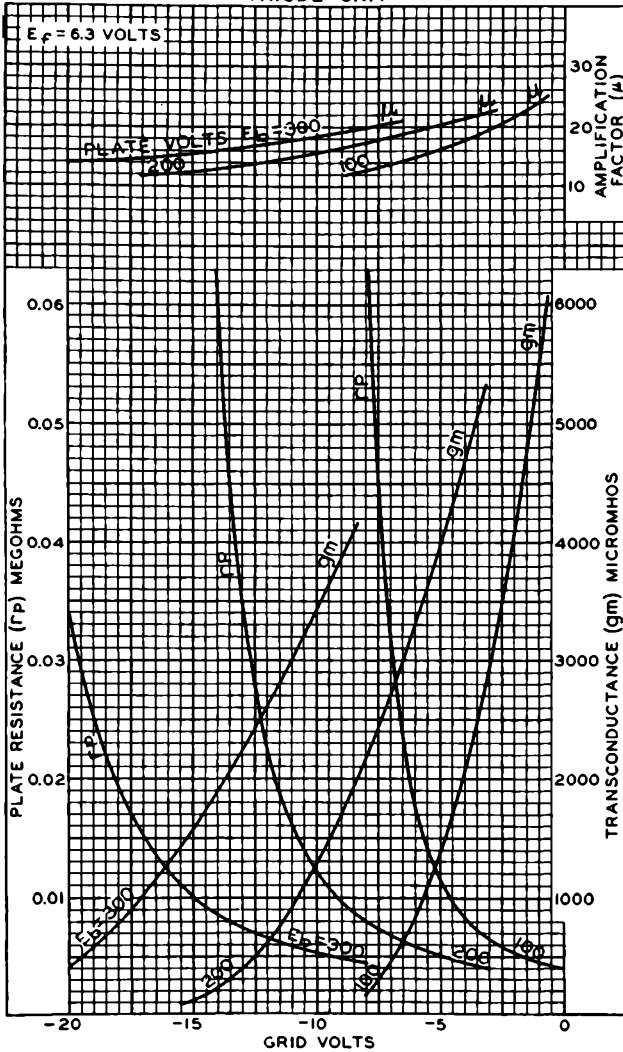
92CM-8520



6AZ8

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AVERAGE CHARACTERISTICS TRIODE UNIT



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TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

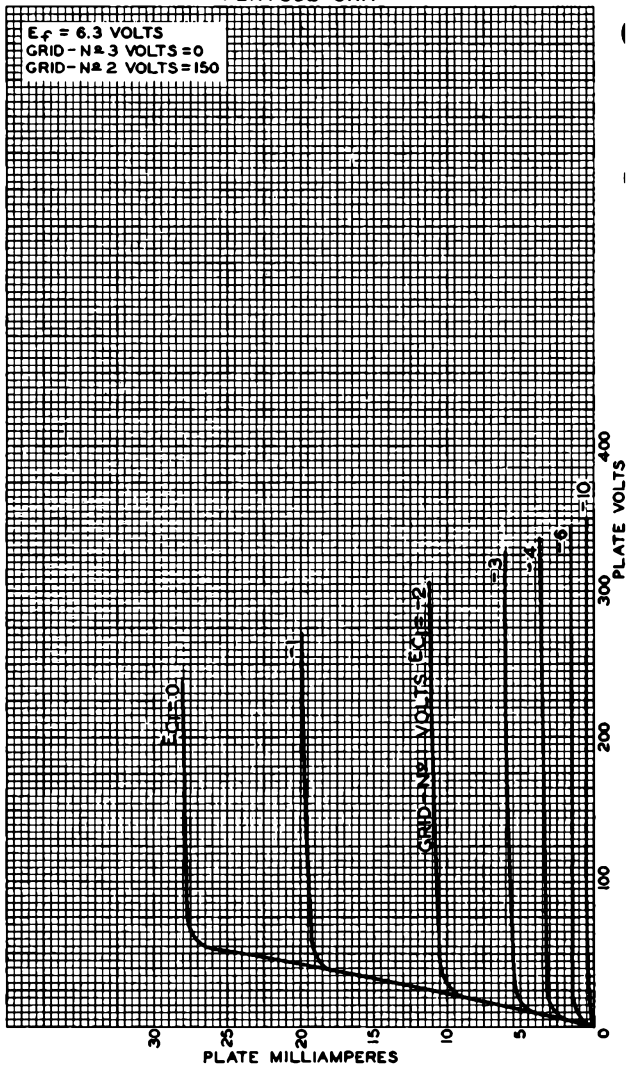
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6AZ8



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AVERAGE PLATE CHARACTERISTICS
PENTODE UNIT



FEB. 3, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

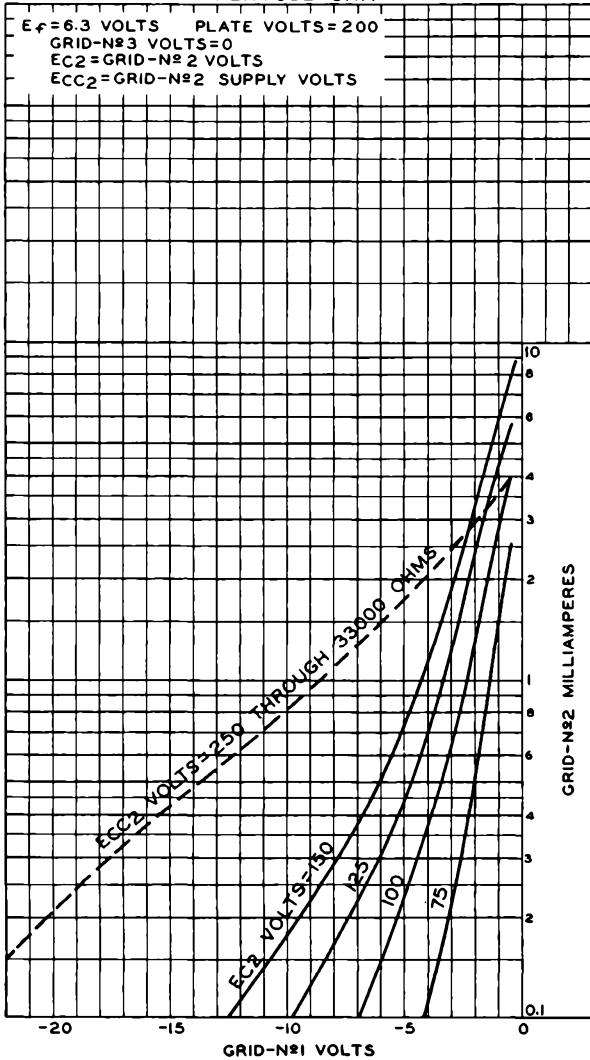
92CM - 8525



6AZ8

6AZ8

AVERAGE CHARACTERISTICS PENTODE UNIT



FEB. 2, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

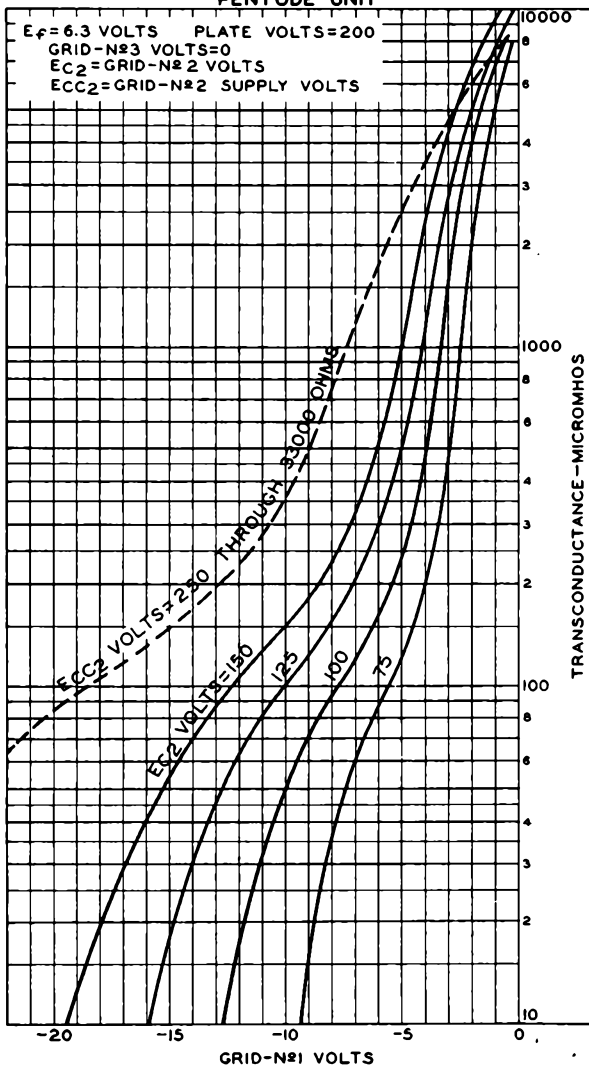
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6AZ8



6AZ8

AVERAGE CHARACTERISTICS PENTODE UNIT



FEB. 2, 1955

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 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

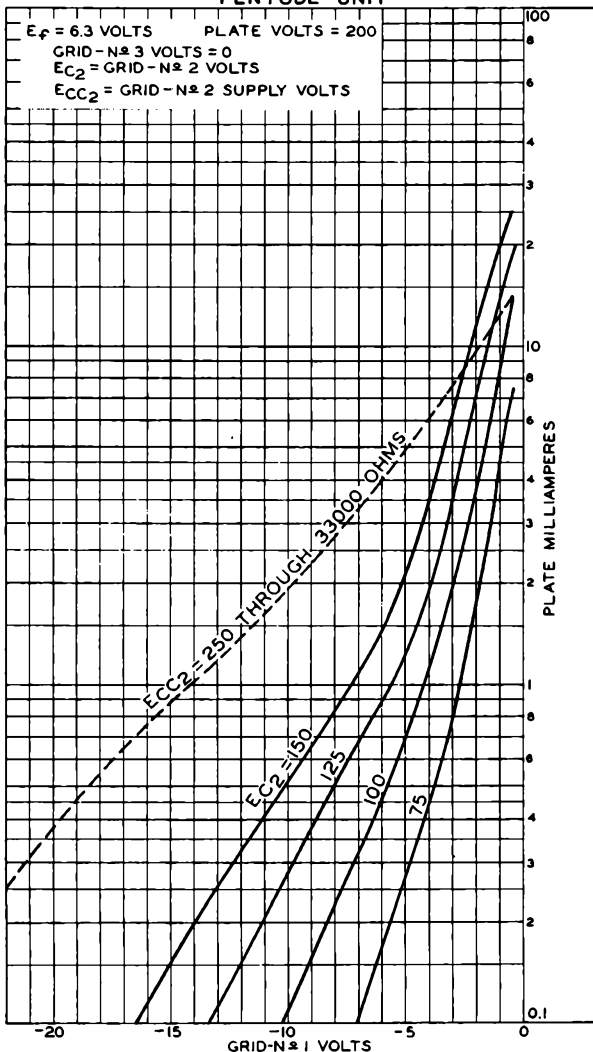
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6AZ8

6AZ8

AVERAGE CHARACTERISTICS PENTODE UNIT



FEB. 2, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8523



6B4-G

6B4-G
6B5

POWER AMPLIFIER TRIODE

Filament	Coated	
Voltage	6.3	a-c or d-c volts
Current	1.0	amp.
Maximum Overall Length		5-5/16"
Maximum Seated Height		4-3/4"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base		Medium Shell Octal 8-Pin
Pin 1 - No Connection		Pin 5 - Grid
Pin 2 - Filament		Pin 6 - No Connection
Pin 3 - Plate		Pin 7 - Filament
Pin 4 - No Connection		Pin 8 - No Connection
Mounting Position		Any

BOTTOM VIEW (G-5S_B)

Maximum Ratings, and Typical Operating Conditions for the 6B4-G are the same as for the Type 6A3.

Curves for the 6B4-G are essentially the same as those shown for Type 2A3.

6B5



DIRECT-COUPLED POWER AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.8	amp.
Maximum Overall Length		4-11/16"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 6-Pin
Pin 1 - Heater		Pin 4 - Input-Triode
Pin 2 - Output-Triode		Grid
Pin 3 - Input-Triode		Pin 5 - Cathode
Plate		Pin 6 - Heater
Mounting Position		Any

BOTTOM VIEW (6AS)

For additional data, refer to Type 6N6-G.

← Indicates a change.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



6B7

6B7

TWIN DIODE—REMOTE-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances (Pentode Unit):

Grid No.1 to Plate ^o	0.007 max.	μf
Input	3.5	μf
Output	9.5	μf

^o With external shield connected to cathode.

Mechanical:

Mounting Position	Any
Maximum Overall Length	4-17/32"
Seated Length	3-25/32" \pm 1/8"
Maximum Diameter	1-9/16"
Bulb	ST-12
Cap.	Small
Base	Small-Shell Small 7-Pin

Basing Designation for BOTTOM VIEW 7D

Pin 1 - Heater
 Pin 2 - Pentode Plate
 Pin 3 - Pentode Grid No.2
 Pin 4 - Diode No.2 Plate



Pin 5 - Diode No.1 Plate
 Pin 6 - Cathode, Pentode Grid No.3
 Pin 7 - Heater Cap - Pentode Grid No.1

PENTODE UNIT AMPLIFIER—Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	125 max.	volts
GRID-No.2 SUPPLY VOLTAGE	300 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value	0 max.	volts
PLATE DISSIPATION	2.25 max.	watts
GRID-No.2 DISSIPATION	0.3 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Characteristics:

Plate Voltage	100	180	250	250	volts
Grid-No.2 Voltage	100	75	100	125	volts
Grid-No.1 Voltage	-3	-3	-3	-3	volts
Plate Resistance (Approx.)	0.3	1.0	0.8	0.6	megohm
Transconductance	950	840	1000	1125	μmhos

(continued on next page)

←Indicates a change.

6B7



6B7

TWIN DIODE—REMOTE-CUTOFF PENTODE

Grid-No.1 Bias (Approx.) for					
Cathode-Current Cutoff	-17	-13	-17	-21	volts
Plate Current.	5.8	3.4	6	9	ma
Grid-No.2 Current.	1.7	0.9	1.5	2.3	ma

DIODE UNITS

Maximum Ratings, Design-Center Values:

→ PLATE CURRENT (For Each Diode) 1.0 max. ma

Diode Considerations:

See front of this Section.

*For additional data, refer to RESISTANCE-COUPLED
AMPLIFIER CHARTS at the front of this Section.*

*The curve shown under type 2B7 also applies to
the pentode unit of the 6B7.*

→ Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

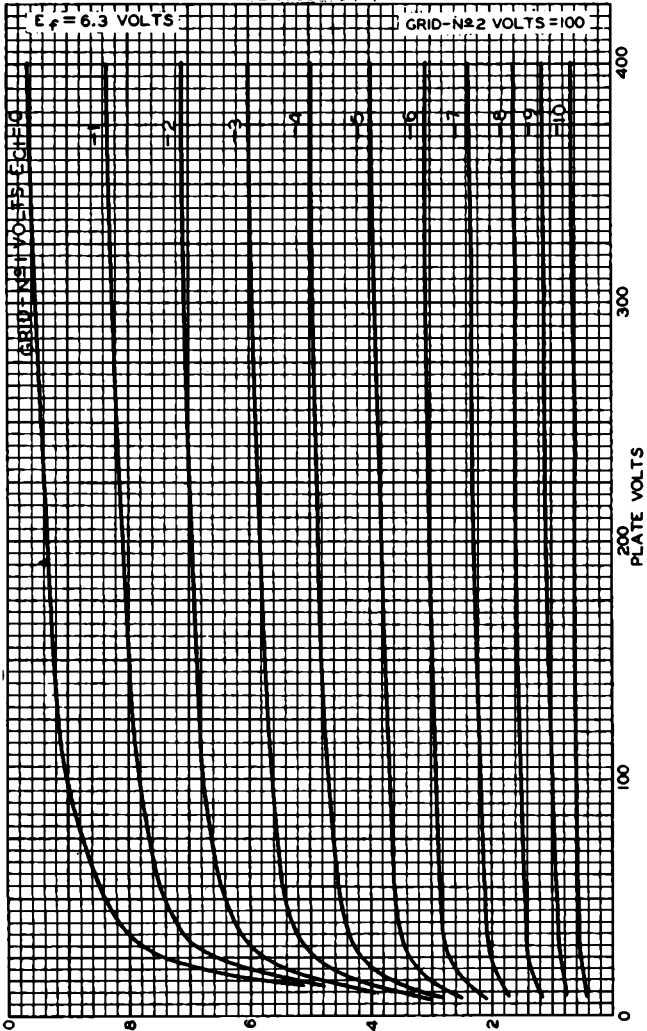
DATA



6B7

6B7

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



FEB. 17, 1938

TUBE DEPARTMENT

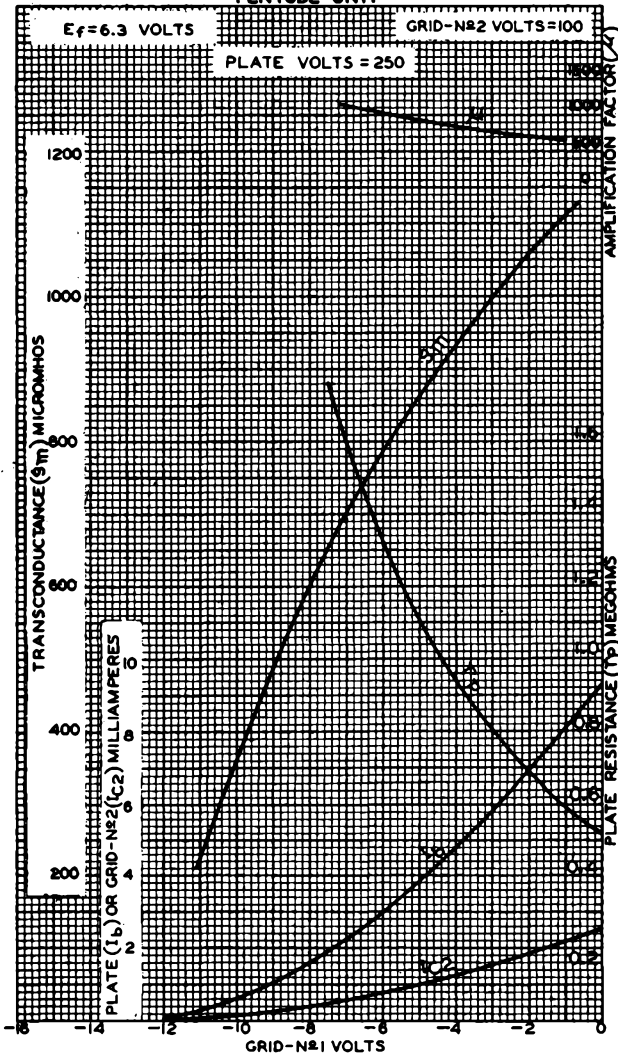
92CM-4880

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6B7



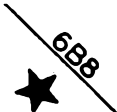
AVERAGE CHARACTERISTICS PENTODE UNIT



FEB. 25, 1937

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4745



DUPLEX-DIODE PENTODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:	°	
<i>Pentode Unit:</i>		
Grid to Plate	0.005 max.	μf
Input	6	μf
Output	9	μf
Maximum Overall Length		3-1/8"
Maximum Seated Height		2-9/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Cap		Miniature
Base		Small Wafer Octal 8-Pin
Pin 1 - Shell		Pin 6 - Screen
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Pin 4 - Diode Plate #2		Cap - Grid
Pin 5 - Diode Plate #1		
Mounting Position		Any



BOTTOM VIEW (8E)
PENTODE UNIT

Plate Voltage	300 max.	volts
Screen Voltage	125 max.	volts
Screen Supply Voltage	300 max.	volts
Grid Voltage	0 min.	volts
Plate Dissipation	2.25 max.	watts
Screen Dissipation	0.3 max.	watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate	250	volts
Screen	125	volts
Grid	-3	volts
Plate Res.	0.6 approx.	megohm
Transcond.	1325	μmhos
Grid Bias for cathode-current cut-off	-21 approx.	volts
Plate Cur.	10	ma.
Screen Cur.	2.3	ma.

DIODE UNITS - Two

Consideration of these units is given under Type 6B8-G. Circuits will be similar to those shown for Type 2B7.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- ° With shell connected to cathode.

For Diode Curves, see Type 6B7. For additional data, see RESISTANCE-COUPLED AMPLIFIER CHART.

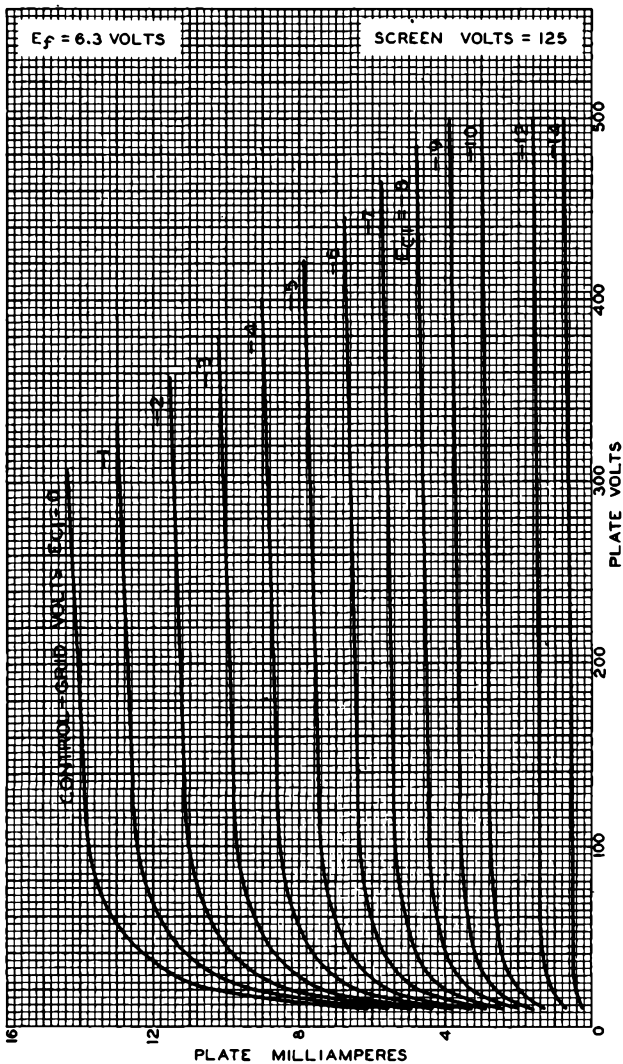
← Indicates a change.

6B8



6B8

AVERAGE PLATE CHARACTERISTICS

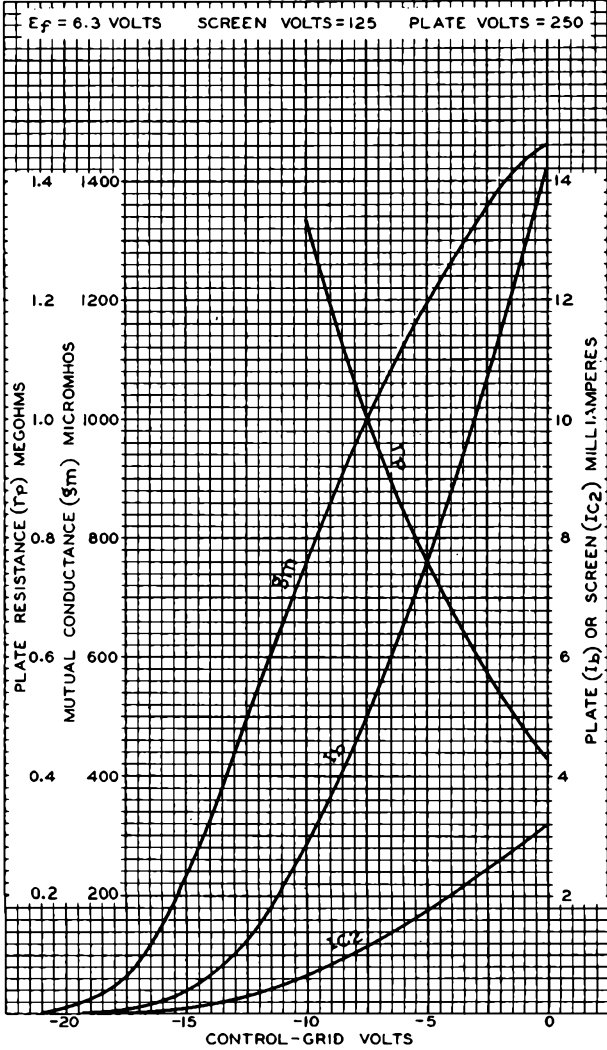


AUG. 14, 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4657

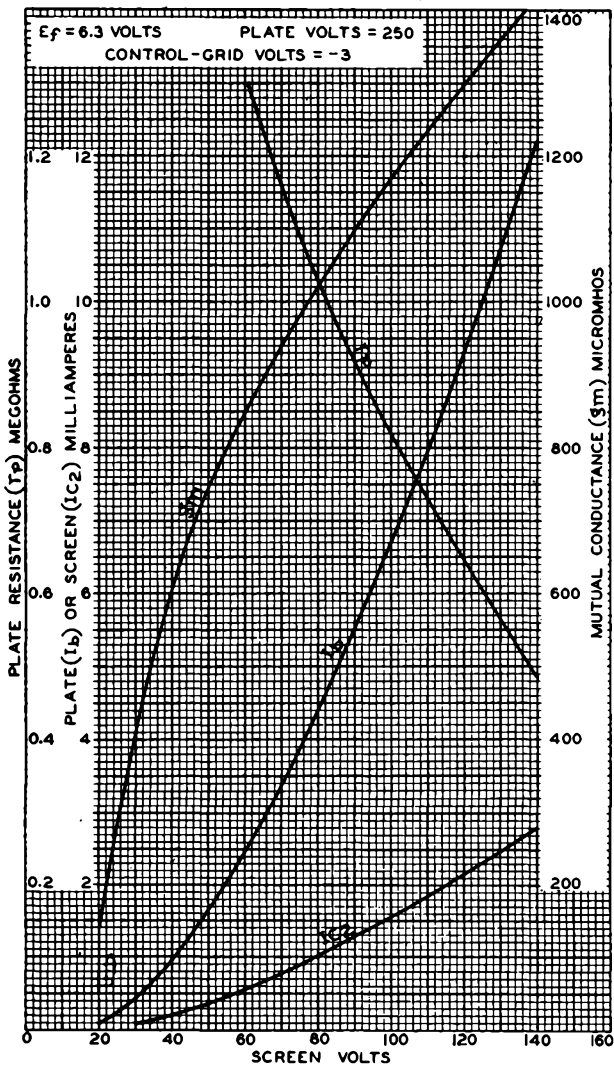
AVERAGE CHARACTERISTICS



6B8


Cunningham
Radio Tubes
 RCA-6B8

AVERAGE CHARACTERISTICS



AUG. 18, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4661



6BA6

REMOTE-CUTOFF PENTODE

MINIATURE TYPE

6BA6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp.

Direct Interelectrode Capacitances:^o

Grid No.1 to Plate	0.0035 max.	μf
Input	5.5	μf
Output	5.0	μf

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length from Base Seat to Bulb Top (Excluding tip)	1-1/2" ± 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	7BK1

Pin 1-Grid No.1

Pin 2-Grid No.3,
Internal Shield

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Cathode

CLASS A₁ AMPLIFIER

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	See Rating Curve at front of this Section	←
GRID-No.2 SUPPLY VOLTAGE	300 max.	volts
PLATE DISSIPATION	3 max.	watts
GRID-No.2 DISSIPATION	0.6 max.	watt
GRID-No.1 (CONTROL GRID) VOLTAGE:		
Negative Bias Value	50 max.	volts
Positive Bias Value	0 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	100	250	volts
Grid No.3 (Suppressor)	Connected to cathode at socket		
Grid No.2 Voltage	100	100	volts
Cathode-Bias Resistor	68	68	ohms

^o With no external shield.

← Indicates a change

MAY 3, 1954

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BA6



6BA6

REMOTE-CUTOFF PENTODE

→ Plate Resistance (Approx.) . . .	0.25	1 . . .	megohm
Transconductance	4300	4400 . . .	μhos
Grid-No.1 Bias (Approx.) for transconductance of 40 μhos .	-20	-20 . . .	volts
Plate Current.	10.8	11 . . .	ma.
Grid-No.2 Current.	4.4	4.2 . . .	ma.

→ indicates a change

MAY 3, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

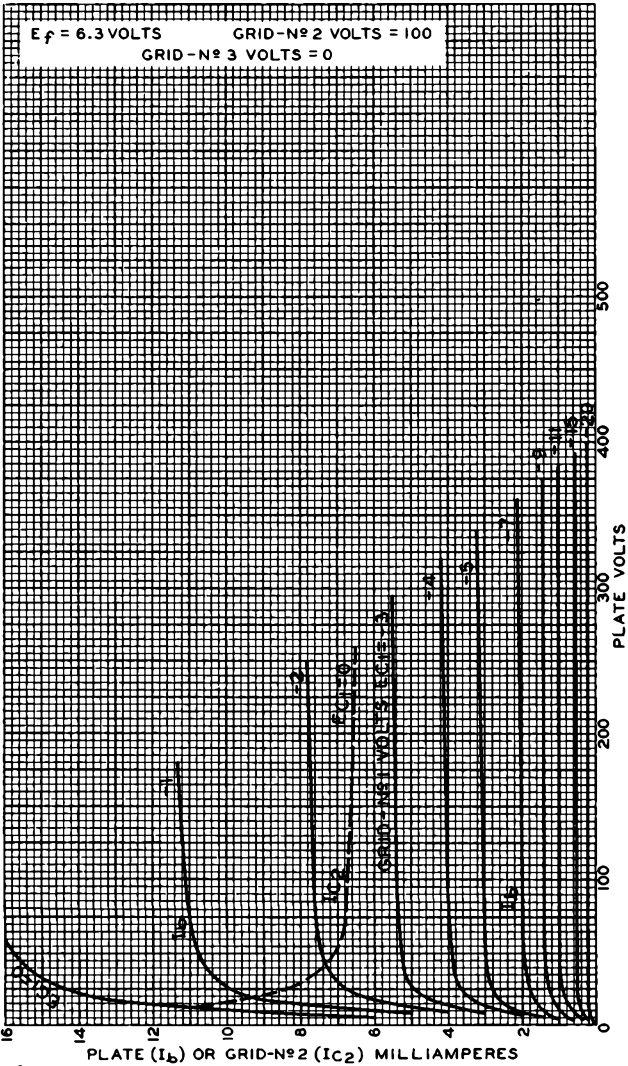
DATA



6BA6

6BA6

AVERAGE PLATE CHARACTERISTICS



OCT. 22, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

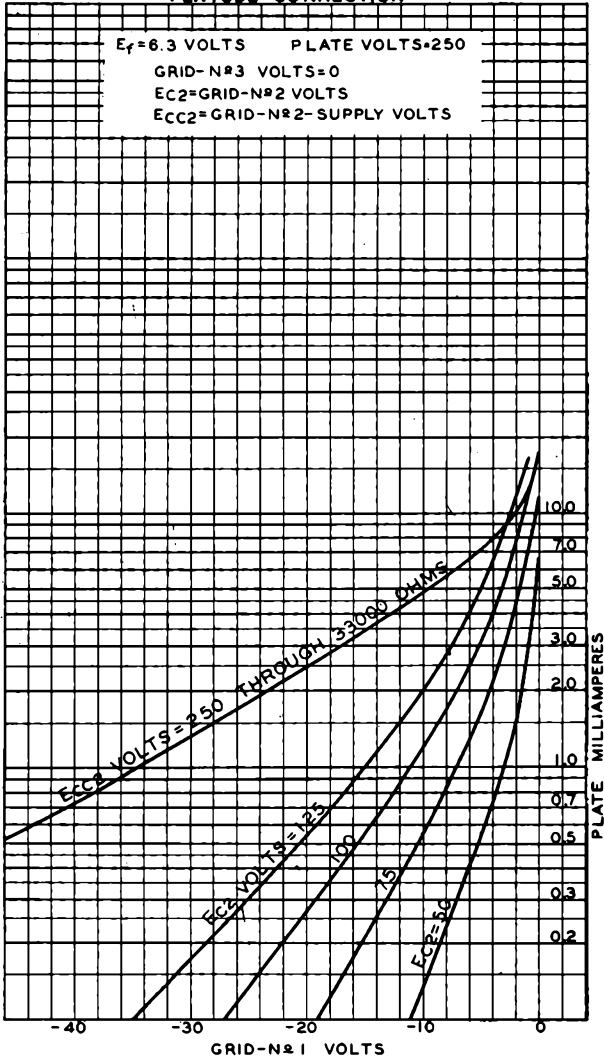
92CM-6809

6BA6



6BA6

AVERAGE CHARACTERISTICS PENTODE CONNECTION



NOV. 12, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

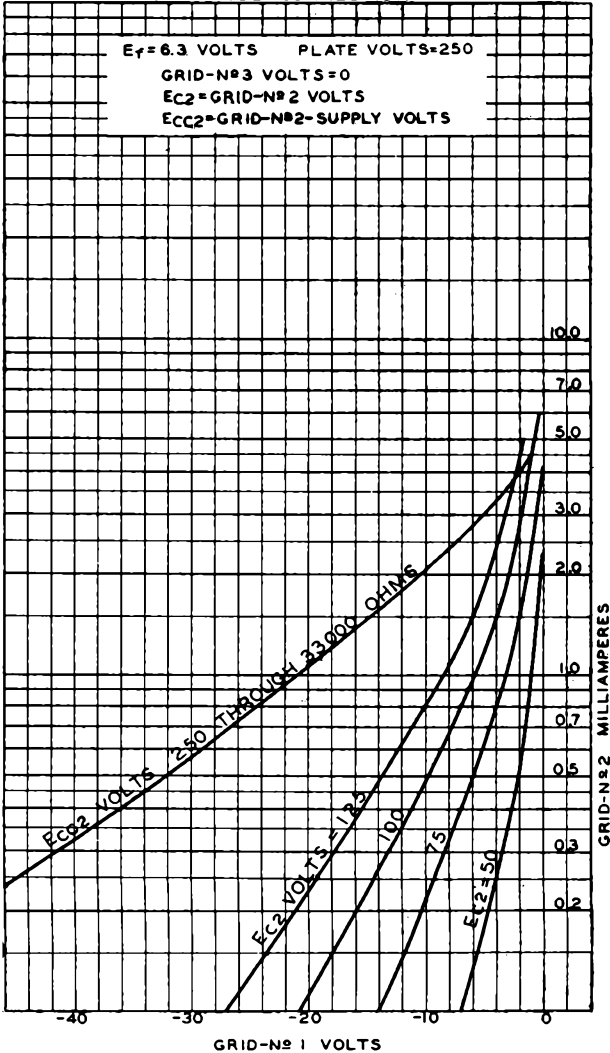
92CM-6622



6BA6

6BA6

AVERAGE CHARACTERISTICS
PENTODE CONNECTION



NOV. 12, 1945

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

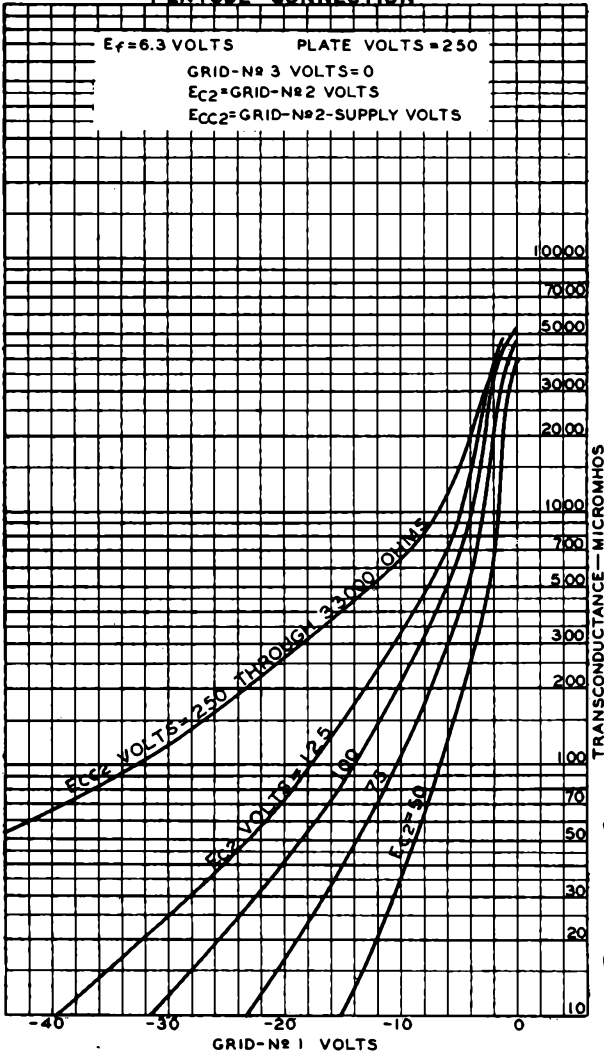
92CM-6620

6BA6



6BA6

AVERAGE CHARACTERISTICS PENTODE CONNECTION



DEC. 10, 1951

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6621R1



6BA7

PENTAGRID CONVERTER

9-PIN MINIATURE TYPE

6BA7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances:^o

Grid No.3 to All Other Electrodes
(RF Input) 9.5 μf

Plate to All Other Electrodes
(Mixer Output) 8.3 μf

Grid No.1 to All Other Electrodes
(Osc. Input) 6.7 μf

Grid No.3 to Plate 0.19 max. μf

Grid No.3 to Grid No.1 0.1 max. μf

Grid No.1 to Plate 0.05 max. μf

Grid No.1 to All Other Electrodes
Except Cathode 3.4 μf

Grid No.1 to Cathode 3.3 μf

Cathode to All Other Electrodes
Except Grid No.1 4.0 μf

^o With no external shield.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length, Base Seat to Bulb Top (excluding tip) 2" \pm 3/32"

Maximum Diameter 7/8"

Bulb T-6-1/2

Base Small-Button Noval 9-Pin

Basing Designation for BOTTOM VIEW 8CT

Pin 1-Grids No.2
& No.4

Pin 2-Grid No.1

Pin 3-Cathode

Pin 4-Heater

Pin 5-Heater



Pin 6-Grid No.5,
Internal

Shield

Pin 7-Grid No.3

Pin 8-Internal

Shield

Pin 9-Plate

CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID-No.5 & INTERNAL-SHIELD VOLTAGE [▲] 0 max. volts

GRIDS-No.2 & No.4 VOLTAGE 100 max. volts

GRIDS-No.2 & No.4 SUPPLY VOLTAGE 300 max. volts

PLATE DISSIPATION 2.0 max. watts

GRIDS-No.2 & No.4 DISSIPATION 1.5 max. watts

TOTAL CATHODE CURRENT 22 max. ma

[▲] See next page.

6BA7



6BA7 PENTAGRID CONVERTER

GRID-NO. 3 VOLTAGE:

Negative bias value.	100 max.	volts
Positive bias value.	0 max.	volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Characteristics - Separate Excitation:^{*}

Plate Voltage.	100	250	volts
Grid-No. 5 & Internal Shield.	Connected directly to ground		
Grids-No. 2 & No. 4 (Screen) Voltage	100	100	volts
Grid-No. 3 (Control Grid) Voltage	-1	-1	volt
Grid-No. 1 (Oscillator Grid) Resistor	20000	20000	ohms
Plate Resistance (Approx.)	0.5	1	megohm
Conversion Transconductance	900	950	μ mhos
Conversion Transconductance (Approx.) [#]	3.5	3.5	μ mhos
Plate Current.	3.6	3.8	ma
Grids-No. 2 & No. 4 Current.	10.2	10	ma
Grid-No. 1 Current.	0.35	0.35	ma
Total Cathode Current.	14.2	14.2	ma

NOTE: The transconductance between grid No. 1 and grids No. 2 & No. 4 connected to plate (not oscillating) is approximately 8000 micromhos under the following conditions: signal applied to grid No. 1 at zero bias; grids-No. 2 and No. 4 and plate at 100 volts; grid No. 3 grounded. Under the same conditions, the plate current is 32 milliamperes and the amplification factor is 16.5.

[▲] Internal shield (Pins No. 6 and No. 8) connected directly to ground.

^{*} The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

[#] With grid-No. 3 bias of -20 volts.

SEPT. 30, 1948

TUBE DEPARTMENT

TENTATIVE DATA

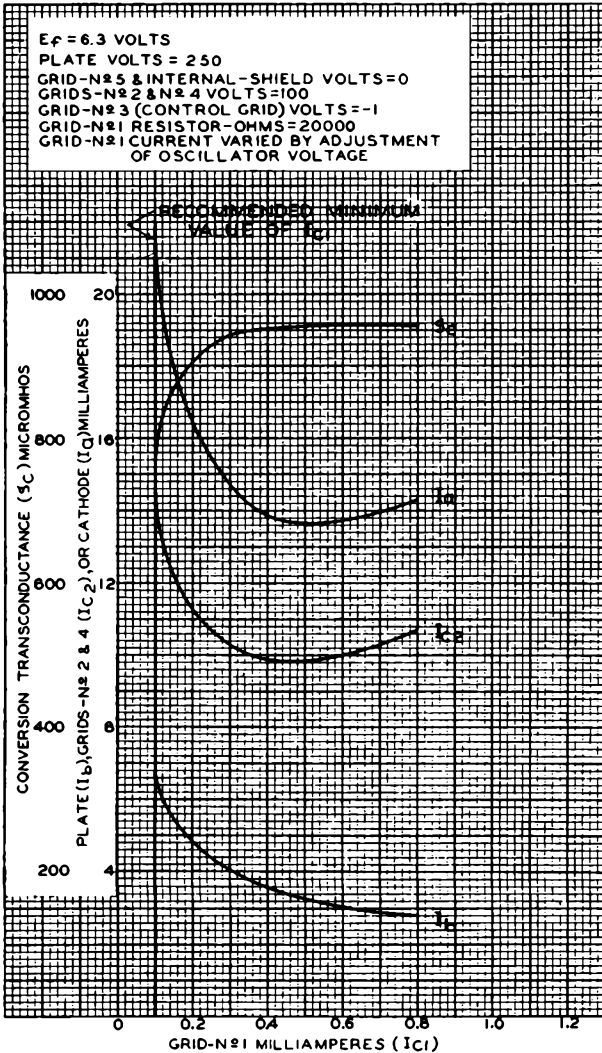
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BA7

6BA7

OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION



SEPT. 30, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

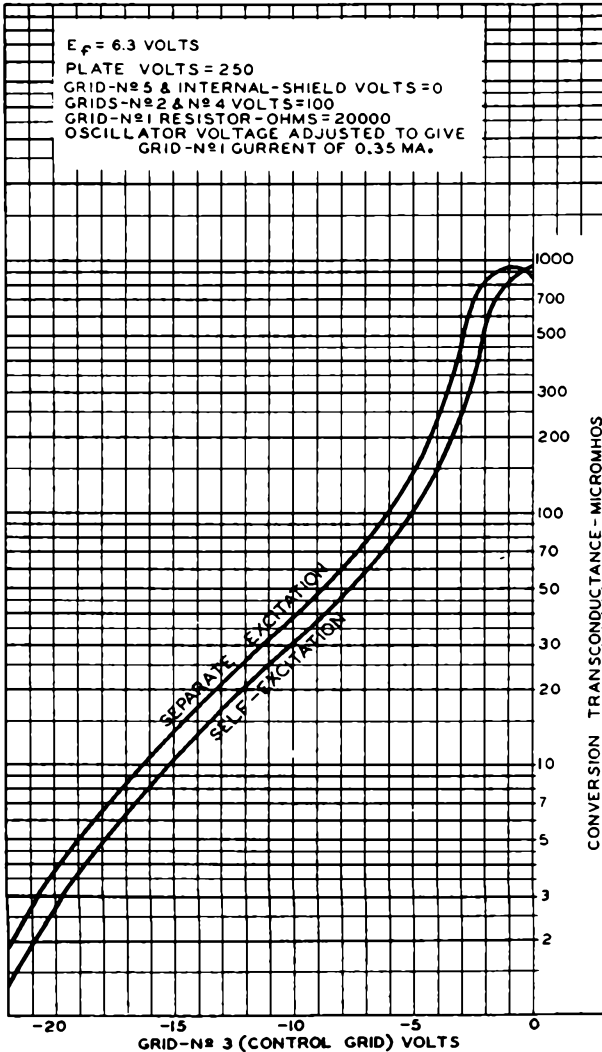
92CM-6980R2



6BA7

6BA7

OPERATION CHARACTERISTICS



AUGUST 27, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6962RI

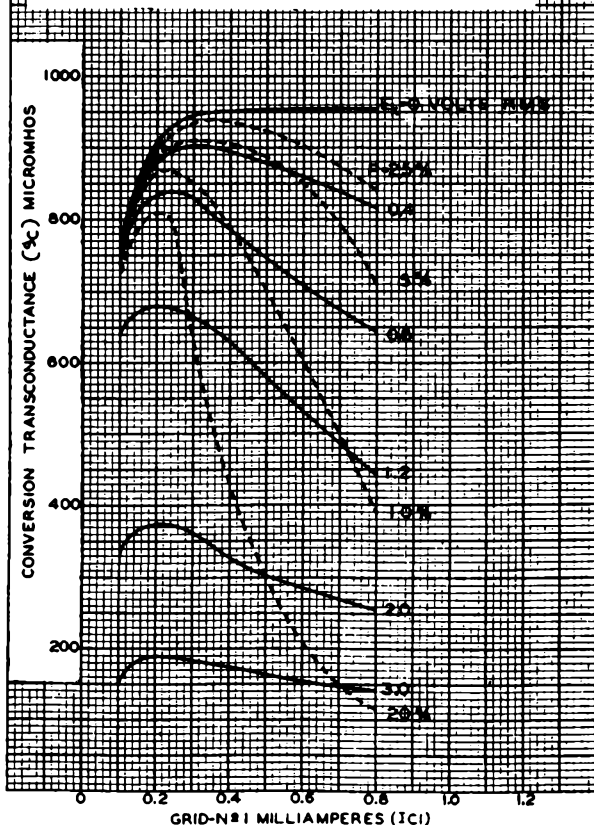
6BA7



6BA7

OPERATION CHARACTERISTICS WITH SELF-EXCITATION

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 250
 GRID-NR 5 & INTERNAL-SHIELD VOLTS = 0
 GRIDS-NR 2 & NR 4 VOLTS = 100
 GRID-NR 3 (CONTROL GRID) VOLTS = -1
 GRID-NR 1 RESISTOR-OHMS = 20000
 P-PERCENTAGE RATIO OF E_k TO $E_k + E_g$, WHERE
 E_k = VOLTAGE ACROSS OSCILLATOR-COIL SECTION
 BETWEEN GROUND AND CATHODE AND
 E_g = OSCILLATOR VOLTAGE BETWEEN CATHODE
 AND GRID



AUGUST 25, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6981R1



6BC4

6BC4

MEDIUM-MU TRIODE

9-PIN MINIATURE TYPE

For use as rf amplifier in cathode-drive circuits
of TV tuners covering range of 470-890 Mc

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.225	amp

Direct Interelectrode Capacitances (Approx.):*

Grid to plate	1.6	$\mu\mu\text{f}$
Grid to heater and cathode	2.9	$\mu\mu\text{f}$
Plate to heater and cathode	0.26	$\mu\mu\text{f}$
Heater to cathode	2.7	$\mu\mu\text{f}$

Characteristics - Class A₁ Amplifier:

Plate Supply Voltage	150	volts
Cathode-Bias Resistor	100	ohms
Amplification Factor	48	
Plate Resistance	4800	ohms
Transconductance	10000	μmhos
Grid Voltage (Approx.) for plate current of 10 μamp	-10	volts
Plate Current	14.5	ma

Mechanical:

Mounting Position	Any
Maximum Overall Length	1-3/4"
Maximum Seated Length	1-1/2"
Length, Base Seat to Bulb Top (Excluding Tip)	1-1/8" \pm 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2"
Base	Small-Button Noval 9-Pin (JETEC No. E9-1)
Basing Designation for BOTTOM VIEW	9DR

Pin 1 - Plate
Pin 2 - Grid
Pin 3 - Grid
Pin 4 - Heater
Pin 5 - Heater



Pin 6 - Cathode
Pin 7 - Grid
Pin 8 - Grid
Pin 9 - Plate

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 max.	volts
PLATE DISSIPATION	2.5 max.	watts
CATHODE CURRENT	25 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	75 max.	volts
Heater positive with respect to cathode .	75 max.	volts

* With no external shield.

6BC4



6BC4

MEDIUM-MU TRIODE

Maximum Circuit Values (For maximum rated conditions):

Grid-Circuit Resistance:

For cathode-bias operation 0.5 max. megohm
For fixed-bias operation not recommended

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

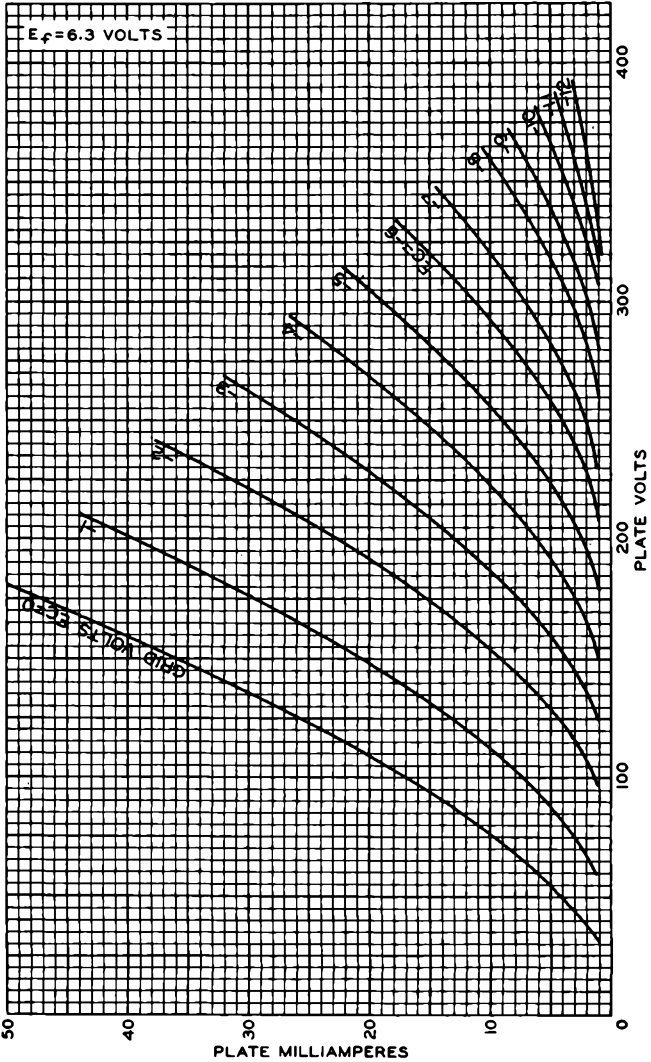
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BC4

6BC4

AVERAGE PLATE CHARACTERISTICS



FEB. 12, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

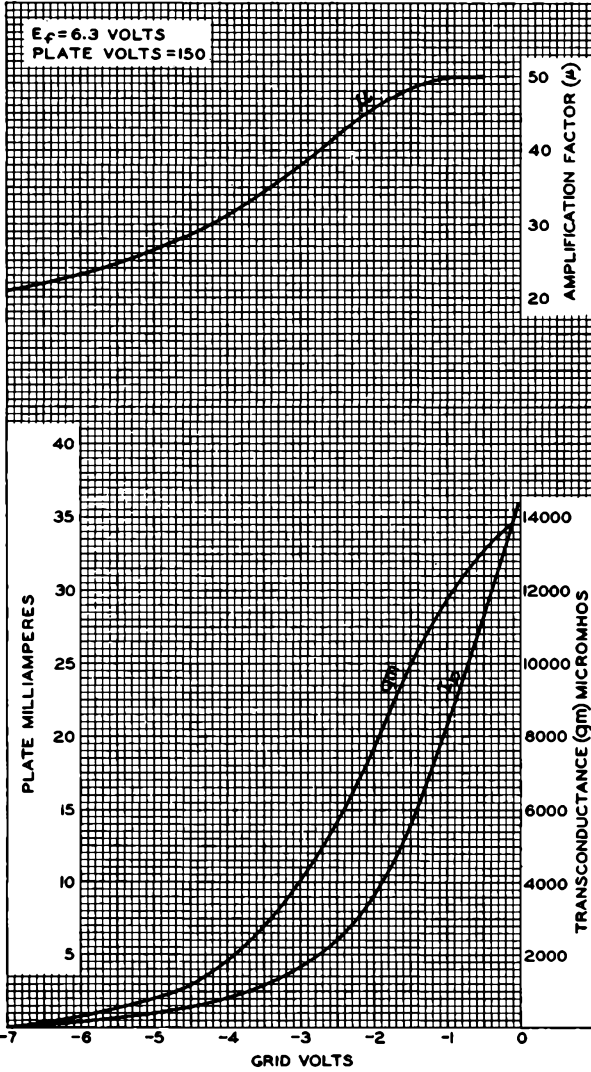
92CM-6241

8BC4



6BC4

AVERAGE CHARACTERISTICS



FEB. 12, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8240



6BC5

SHARP-CUTOFF PENTODE

MINIATURE TYPE

Useful at Frequencies up to 400 Mc

6BC5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:-

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^o</i>	
Pentode Connection:			
Grid No.1 to plate . . .	0.030 max.	0.020 max.	μ f
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater	6.5	6.6	μ f
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater	1.8	2.6	μ f
Triode Connection, Grid No.2 connected to plate:			
Grid No.1 to plate and grid No.2	2.5	2.5	μ f
Grid No.1 to cathode & grid No.3 & internal shield, and heater . . .	3.9	4.0	μ f
Plate and grid No.2 to cathode & grid No.3 & internal shield, and heater . . .	3.0	4.3	μ f

Mechanical:

Mounting Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip) . . 1-1/2" \pm 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No. E7-1)

Basing Designation for BOTTOM VIEW 7BD

- Pin 1 - Grid No.1
- Pin 2 - Cathode,
Grid No.3,
Internal
Shield
- Pin 3 - Heater



- Pin 4 - Heater
- Pin 5 - Plate
- Pin 6 - Grid No.2
- Pin 7 - Same as
Pin 2

^o With external shield JETEC No.316 connected to cathode.

← Indicates a change.

6BC5



6BC5

SHARP-CUTOFF PENTODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300 max.	volts
→ GRID-No.2 VOLTAGE.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value.	0 max.	volts
PLATE DISSIPATION.	2 max.	watts
→ GRID-No.2 INPUT:		
For grid-No.2 voltages up to 150 volts	0.5 max.	watt
For grid-No.2 voltages between 150 and 300 volts.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	100	125	250	volts
Grid-No.2 Voltage.	100	125	150	volts
Cathode-Bias Resistor.	180	100	180	ohms
Plate Resistance (Approx.)	0.6	0.5	0.8	megohm
Transconductance	4900	6100	5700	μmhos
Grid-No.1 Voltage (Approx.)				
for plate current of 10 μamp	-5	-6	-8	volts
Plate Current.	4.7	8	7.5	ma
Grid-No.2 Current.	1.4	2.4	2.1	ma

AMPLIFIER - Class A₁

Triode Connection - Grid No.2 Connected to Plate

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value.	0 max.	volts
PLATE & GRID-No.2 DISSIPATION (TOTAL).	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	180	250	volts
Cathode-Bias Resistor.	330	820	ohms
Amplification Factor	42	40	
Plate Resistance (Approx.)	6000	9000	ohms
Transconductance	6000	4400	μmhos
Plate & Grid-No.2 Current (Total).	8	6	ma

→ Indicates a change.

MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6BC7

TRIPLE DIODE

9-PIN MINIATURE TYPE

6BC7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts
Current 0.450 amp

Direct Interelectrode Capacitances (Approx.):^o

Plate No.1 to Cathode No.1,
Heater, and Internal Shield 3.5 μ f
Plate No.2 to Cathode No.2,
Heater, and Internal Shield 5.5 μ f
Plate No.3 to Cathode No.3,
Heater, and Internal Shield 3.5 μ f

^o with no external shield.

Mechanical:

Mounting Position Any
Maximum Overall Length 2-3/16"
Maximum Seated Length 1-15/16"
Length, Base Seat to Bulb Top (Excluding tip) 1-9/16" \pm 3/32"
Maximum Diameter 7/8"
Bulb T-6-1/2
Base Small Button Noval 9-Pin (JETEC No.E9-1)
Basing Designation for BOTTOM VIEW 9R

Pin 1 - Cathode of Diode No.3
Pin 2 - Plate of Diode No.3
Pin 3 - Internal Shield
Pin 4 - Heater
Pin 5 - Heater



Pin 6 - Plate of Diode No.2
Pin 7 - Cathode of Diode No.2
Pin 8 - Plate of Diode No.1
Pin 9 - Cathode of Diode No.1

EACH DIODE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 330 max. volts
PEAK PLATE CURRENT^o 54 max. ma
DC OUTPUT CURRENT 12 max. ma
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode 200 max. volts
Heater positive with respect to cathode 200 max. volts

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Av.	Max.	
Heater Current	1	0.410	0.450	0.490	amp
Plate Current (1) (Each Unit)	1,2	-	15	21	μ amp

^o In rectifier service, the minimum total effective plate-supply impedance per plate is 560 ohms.

MARCH 1, 1954

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BC7



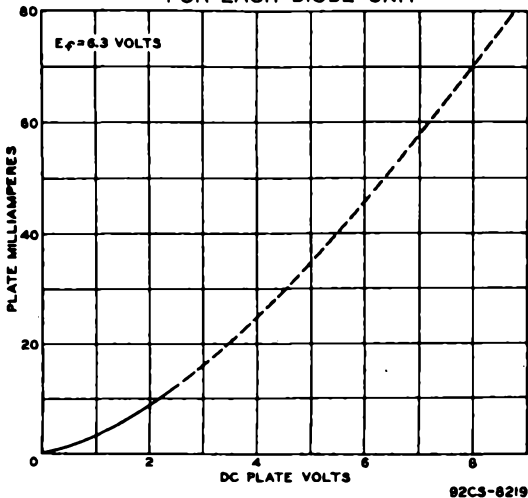
6BC7

TRIPLE DIODE

	Note	Min.	Average	Max.	
Plate Current (2) (Each Unit)	1,3	18	35	65	ma
Ratio of Plate Current of Unit No.3 to Plate Current of Unit No.1 .	1,3	0.77	1	1.3	

Note 1: With 6.3 volts ac or dc on heater.
Note 2: With plate voltage of 0 volts, and plate load resistance of 40000 ohms. Each unit tested separately.
Note 3: With plate voltage of 5 volts and no plate load resistance. Each unit tested separately.

AVERAGE PLATE CHARACTERISTIC
FOR EACH DIODE UNIT



MARCH 1, 1954

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



6BC8

6BC8

MEDIUM-MU TWIN TRIODE With Semiremote-Cutoff Characteristic

9-PIN MINIATURE TYPE

For use in cascode-type circuits of VHP TV tuners

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.4	amp

Direct Interelectrode Capacitances:^o

	Unit No. 1	Unit No. 2	
Grid to plate	1.4	1.4	μf
Grid to cathode, heater, and internal shield. . . .	2.5	2.5	μf
Plate to cathode, heater, and internal shield. . . .	1.3	1.3	μf
Heater to cathode ^o	2.3	2.3	μf
Grid of unit No.1 to grid of unit No.2		0.007 max.	μf
Plate of unit No.1 to plate of unit No.2		0.015 max.	μf

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	150	volts
Cathode Resistor	220	ohms
Amplification Factor	35	
Transconductance	6200	μmhos
Plate Current	10	ma
Grid Voltage (Approx.) for transconductance of 50 μmhos	-13	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" \pm 3/32"
Maximum Diameter	7/8"
Dimensional Outline	See General Section
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW	9AJ

- Pin 1 - Plate of Unit No. 2
- Pin 2 - Grid of Unit No. 2
- Pin 3 - Cathode of Unit No. 2
- Pin 4 - Heater
- Pin 5 - Heater



- Pin 6 - Plate of Unit No. 1
- Pin 7 - Grid of Unit No. 1
- Pin 8 - Cathode of Unit No. 1
- Pin 9 - Internal Shield

^o with external shield JEDEC No. 315 connected to cathode of unit under test, except as noted.
[•] with external shield JEDEC No. 315 connected to ground.

6BC8



6BC8

MEDIUM-MU TWIN TRIODE
With Semiremote-Cutoff Characteristic

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	250 max.	volts
CATHODE CURRENT.	20 max.	ma
PLATE DISSIPATION.	2 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode . .	200 max.	volts
Heater positive with respect to cathode . .	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:		
For cathode-bias operation	0.5 max.	megohm

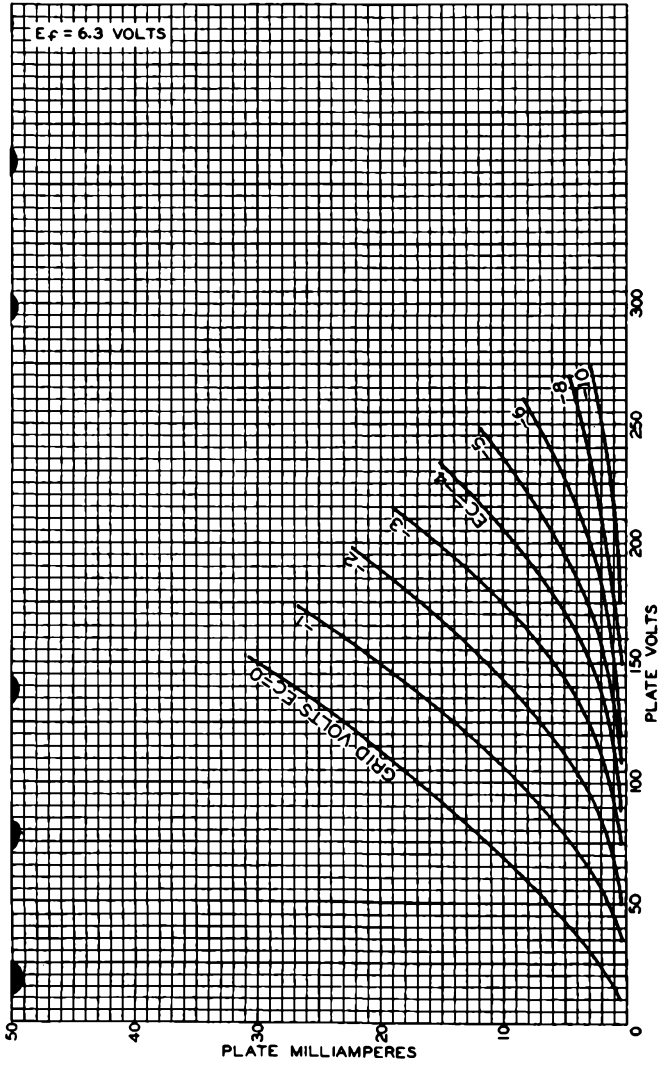
[▲] The dc component must not exceed 100 volts.



6BC8

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT

6BC8

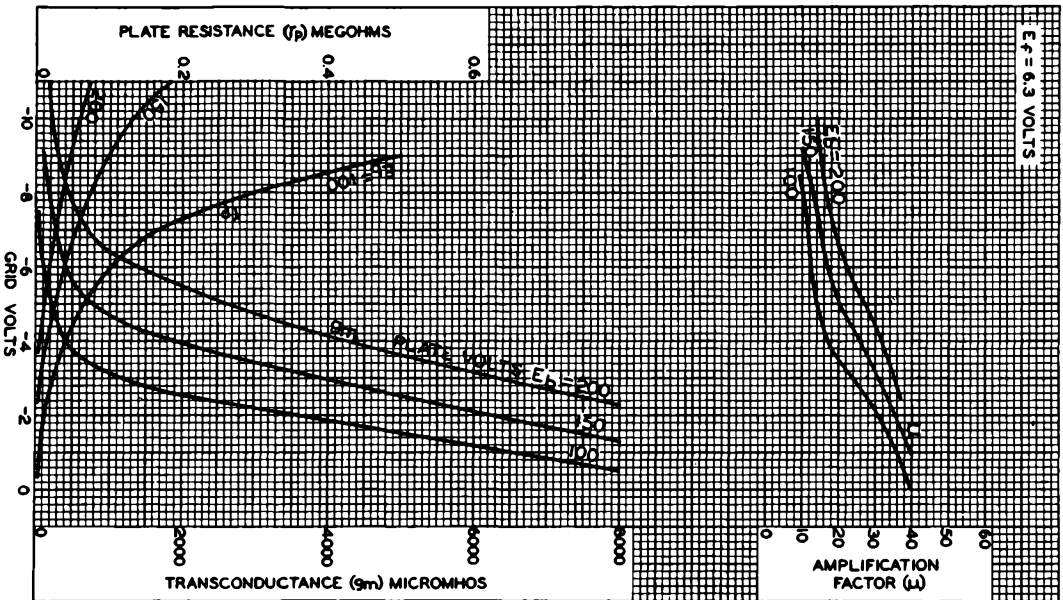


6BC8



6BC8

AVERAGE CHARACTERISTICS FOR EACH UNIT

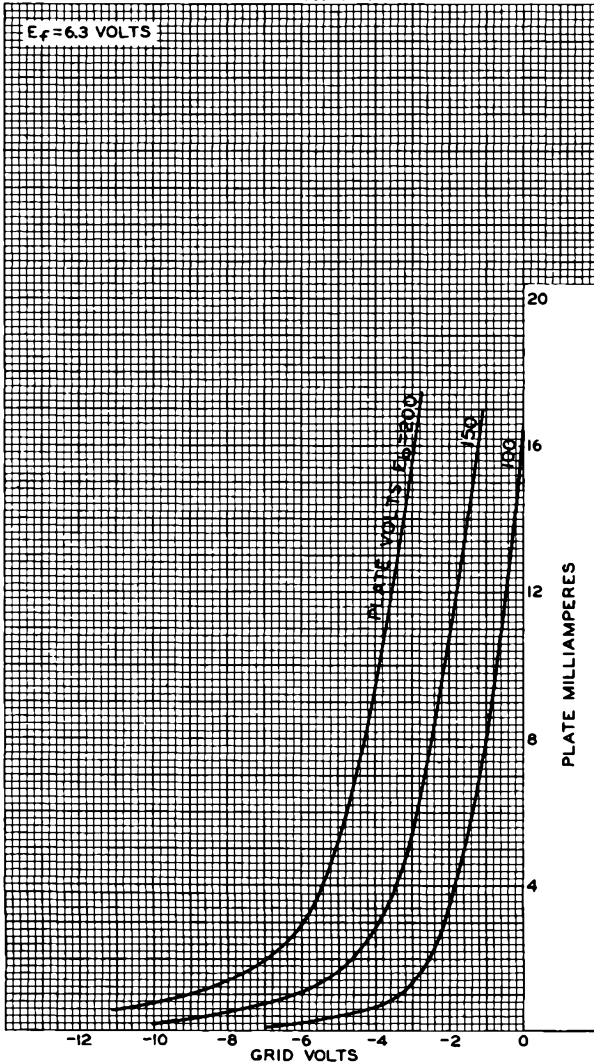




6BC8

6BC8

AVERAGE CHARACTERISTICS FOR EACH UNIT



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8788R1



6BD4-A

6BD4-A

SHARP-CUTOFF BEAM TRIODE

HIGH-VOLTAGE, LOW-CURRENT, REGULATOR TYPE

Supersedes Type 6BD₄

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.6	amp

Direct Interelectrode Capacitances:

Grid to Plate	1.0	$\mu\mu\text{f}$
Input	3.8	$\mu\mu\text{f}$
Output	0.04 max.	$\mu\mu\text{f}$

Amplification Factor 1650

Mechanical:

Mounting Position Any

Maximum Overall Length 5-1/8"

Seated Length 4-1/2" \pm 1/8"

Maximum Diameter 1-23/32"

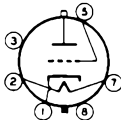
Weight (Approx.). 2.7 oz

Bulb T-12

Cap Small (JETEC No. C1-1)

Base Short Jumbo-Shell Octal 6-Pin (JETEC No. B6-73)

BOTTOM VIEW

Pin 1 - Cathode		Pin 7 - Heater
Pin 2 - Heater		Pin 8 - No Connection
Pin 3 - No Connection		Cap - Plate
Pin 5 - Grid		

VOLTAGE-CONTROL SERVICE

Maximum Ratings, Design-Center Values:

DC PLATE VOLTAGE	27000 max.	volts
UNREGULATED DC SUPPLY VOLTAGE	55000 max.	volts
GRID VOLTAGE:		
DC value	-125 max.	volts
Peak value	-550 max.	volts
DC PLATE CURRENT	1.5 max.	ma
PLATE DISSIPATION	25 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	180 max.	volts
Heater positive with respect to cathode	180 max.	volts

Typical Operation As Shunt Voltage-Regulator Tube In Accompanying Circuit:

Unregulated Supply:			
DC voltage	29800	36300	volts
Equivalent resistance	8	8	megohms

6BD4-A



6BD4-A

SHARP-CUTOFF BEAM TRIODE

Voltage Divider Values:*

R ₁ (5 watts)	120	220	megohms
R ₂ (2 watts)	1	1	megohm
R ₃ (1/2 watt)	2	3	megohms

Reference Voltage Supply:

DC value	500	500	volts
Equivalent resistance	1000	1000	ohms
Effective Grid-Plate Transconductance	138	116	μmhos

DC Plate Current:

For load current of 0 ma	1055	1035	μamp
For load current of 1 ma	100	100	μamp

Regulated DC Output Voltage:

For load current of 0 ma	20000	27000	volts
For load current of 1 ma	19700	26500	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

With unregulated supply having
an equivalent resistance of
at least 8 megohms 4 max. megohms

With unregulated supply having
an equivalent resistance less
than 8 megohms . . . See accompanying curve

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Heater Current	1	0.54	0.66	amp
Grid Voltage (1)	1,2	-7	-	volts
Grid Voltage (2)	1,3	-	-40	volts
Grid-Voltage Change	1,4	-	9	volts

Note 1: With heater voltage of 6.3 volts ac or dc.

Note 2: With dc plate voltage of 30000 volts and dc plate current of 1 ma.

Note 3: With dc plate voltage of 30000 volts and dc plate current of 0.1 ma.

Note 4: Difference between grid voltage (1) and grid voltage (2).

OPERATING NOTES

Operation of the 6BD4-A with a plate voltage above approximately 16000 volts (absolute value) results in the production of x-rays which can constitute a health hazard on prolonged exposure at close range unless the tube is adequately shielded. Relatively simple shielding should prove adequate, but the need for this precaution should be considered in equipment design.

JUNE 14, 1954

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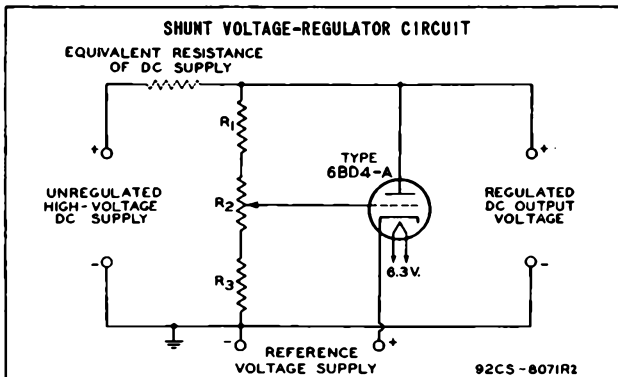
TENTATIVE DATA



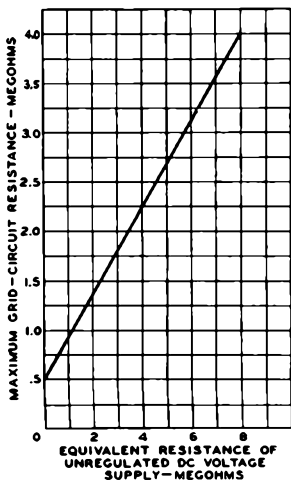
6BD4-A

6BD4-A

SHARP-CUTOFF BEAM TRIODE



Typical performance data for this basic circuit with certain characteristics of the unregulated dc supply and related voltage-divider values are given in the above tabulated data. Other combinations are feasible within the maximum ratings and the maximum circuit values for the 6BD4-A.



Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

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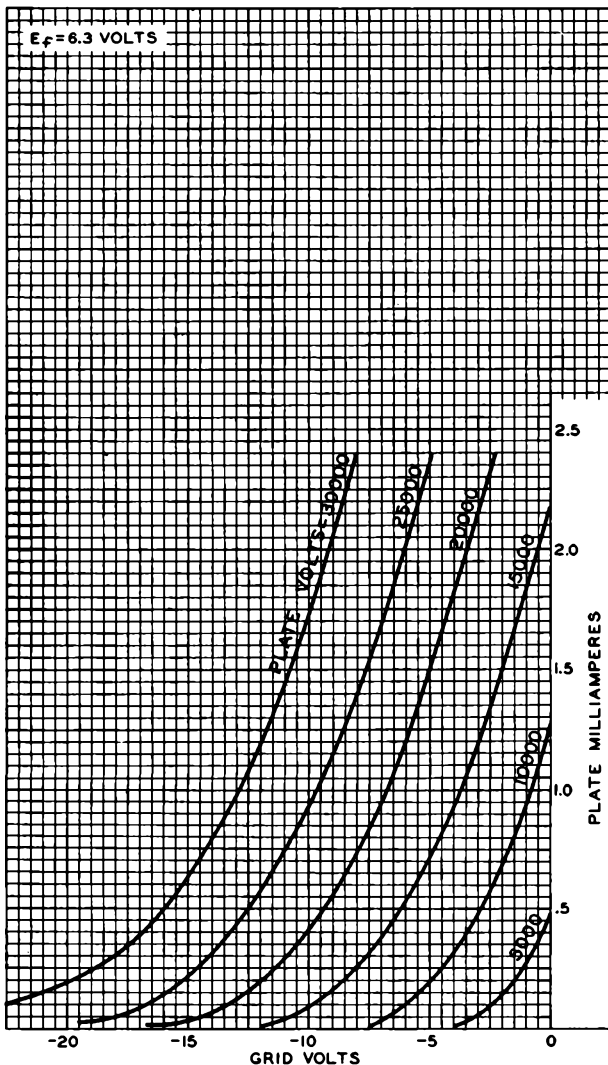
CE-8071R2
-8068T1

6BD4-A



6BD4-A

AVERAGE TRANSFER CHARACTERISTICS



MAR. 11, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8070R1



6BD6

6BD6

REMOTE-CUTOFF PENTODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

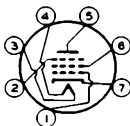
Direct Interelectrode Capacitances:

	Without Ex- ternal Shield	With External Shield No.316	
Grid No.1 to Plate	0.005 max.	0.004 max.	μf
Input	4.3	4.3	μf
Output	5.0	5.0	μf

Mechanical:

Mounting Position Any
 Maximum Overall Length 2-1/8"
 Maximum Seated Length 1-7/8"
 Length, Base Seat to Bulb Top (Excluding tip). 1-1/2" \pm 3/32"
 Maximum Diameter 3/4"
 Bulb T-5-1/2
 Base Small-Button Miniature 7-Pin
 Basing Designation for BOTTOM VIEW 7BK1

Pin 1-Grid No.1
 Pin 2-Grid No.3,
 Internal Shield
 Pin 3-Heater



Pin 4-Heater
 Pin 5-Plate
 Pin 6-Grid No.2
 Pin 7-Cathode

AMPLIFIER-Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	125 max.	volts
PLATE DISSIPATION	3 max.	watts
GRID-No.2 INPUT	0.65 max.	watt
TOTAL CATHODE CURRENT	14 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	100	125	250	volts
Grid No.3 (Suppressor)	Connected to cathode at socket			
Grid-No.2 Voltage	100	125	100	volts
Grid-No.1 (Control Grid) Voltage	-1	-3	-3	volts
Plate Resistance	0.15	0.18	0.8	megohm
Transconductance	2550	2350	2000	μmhos

FEB. 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BD6



6BD6

REMOTE-CUTOFF PENTODE

Grid-No.1 Bias (Approx.) for transconductance of 10 μ mhos . . .	-35	-45	-35	volts
Plate Current.	13	13	9	ma
Grid-No.2 Current.	5	5	3	ma

FEB 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



6BE6

PENTAGRID CONVERTER

MINIATURE TYPE

6BE6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	. . . . .	ac or dc volts
Current	0.3	. . . . .	amp

Direct Interelectrode

Capacitances:

	Without Shield	With Shield ^o	
Grid No.3 to All Other Electrodes (RF Input) .	7 max.	7 max.	μf
Plate to All Other Elec- trodes (Mixer Input) . .	8	13	μf
Grid No.1 to All Other Electrodes (Osc. Input)	5.5 max.	5.5 max.	μf
Grid No.3 to Plate . . .	0.30 max.	0.25 max.	μf
Grid No.3 to Grid No.1 .	0.15 max.	0.15 max.	μf
Grid No.1 to Plate . . .	0.1 max.	0.05 max.	μf
Grid No.1 to Cathode and Grid No.5	3	3	μf
Cathode and Grid No.5 to All Other Electrodes Except Grid No.1 . . .	15	20	μf

^o JETEC No.316 connected to pin No.2.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length from Base Seat to
Bulb Top (Excluding tip) 1-1/2" \pm 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CH

Pin 1 - Grid No.1
Pin 2 - Cathode,
Grid No.5
Pin 3 - Heater
Pin 4 - Heater



Pin 5 - Plate
Pin 6 - Grid No.2,
Grid No.4
Pin 7 - Grid No.3

CONVERTER

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.3 (CONTROL-GRID) VOLTAGE:		
Negative Bias Value	50 max.	volts
Positive Bias Value	0 max.	volts
GRIDS-No.2 & No.4 (SCREEN) VOLTAGE	100 max.	volts
GRIDS-No.2 & No.4 SUPPLY VOLTAGE	300 max.	volts

←Indicates a change

MAY 3, 1954

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BE6



6BE6

PENTAGRID CONVERTER

TOTAL CATHODE CURRENT	14 max.	ma
PLATE DISSIPATION	1 max.	watt
GRIDS-No.2 & No.4 INPUT	1 max.	watt
PEAK HEATER - CATHODE VOLTAGE:		
Heater negative with respect to cathode . .	90 max.	volts
Heater positive with respect to cathode . .	90 max.	volts

→ Characteristics - Separate Excitation:*

Plate Voltage	100	250	volts
Grids-No.2 & No.4 Voltage ;	100	100	volts
Grid-No.3 Voltage	-1.5	-1.5	volts
Grid-No.1 (Oscillator Grid)			
Voltage (rms)	10	10	volts
Grid-No.1 Resistor	20000	20000	ohms
Plate Resistance (Approx.)	0.4	1	megohm
Conversion Transconductance	455	475	μmhos
Grid-No.3 Voltage (Approx.) for conversion transconductance of:			
10 μmhos	-30	-30	volts
100 μmhos	-6	-6	volts
Plate Current	2.6	2.9	ma
Grids-No.2 & No.4 Current	7	6.8	ma
Grid-No.1 Current	0.5	0.5	ma
Total Cathode Current	10.1	10.2	ma

NOTE: With grids-No.2 & No.4 and plate at 100 volts, grids-No.1 & No.3 at zero volts, and signal applied to grid No.1, the oscillator transconductance (not oscillating) is 7250 micromhos; the cathode current is 25 milliamperes; and the amplification factor is 20. Grid-No.1 voltage (approx.) for plate current of 10 microamperes is -11 volts.

* The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

→ Indicates a change

MAY 3, 1954

TUBE DIVISION

DATA

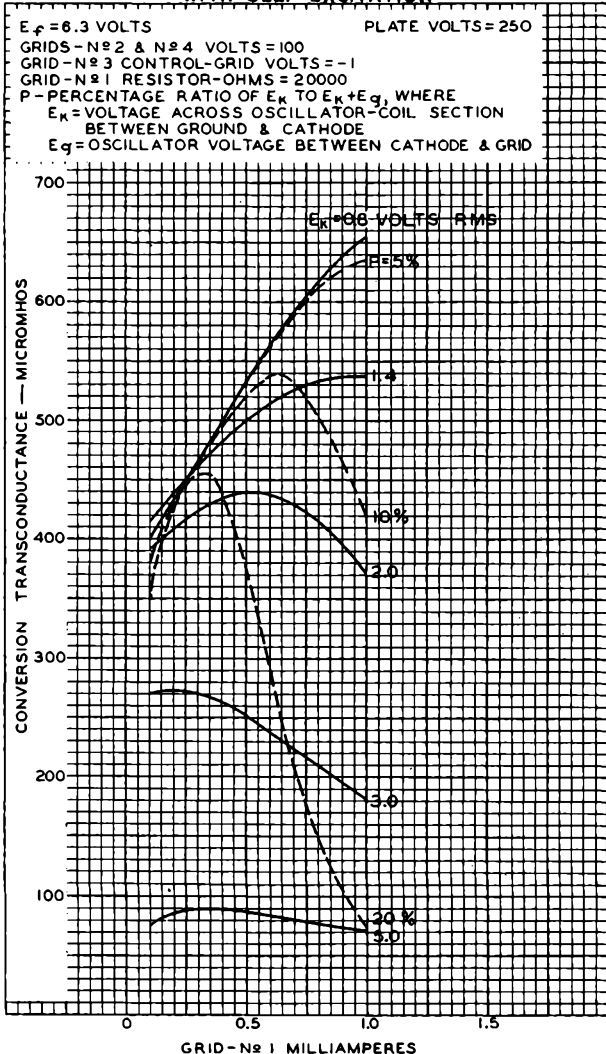
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6BE6

6BE6

OPERATION CHARACTERISTICS WITH SELF-EXCITATION



NOV. 12, 1945

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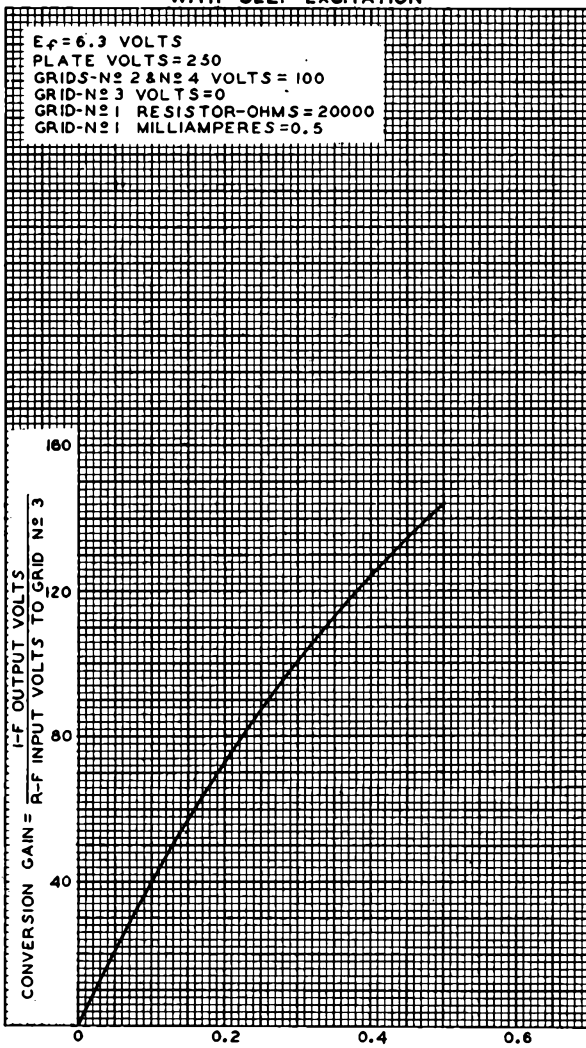
92CM-6625

6BE6



6BE6

OPERATION CHARACTERISTIC WITH SELF-EXCITATION



OCT.16,1945

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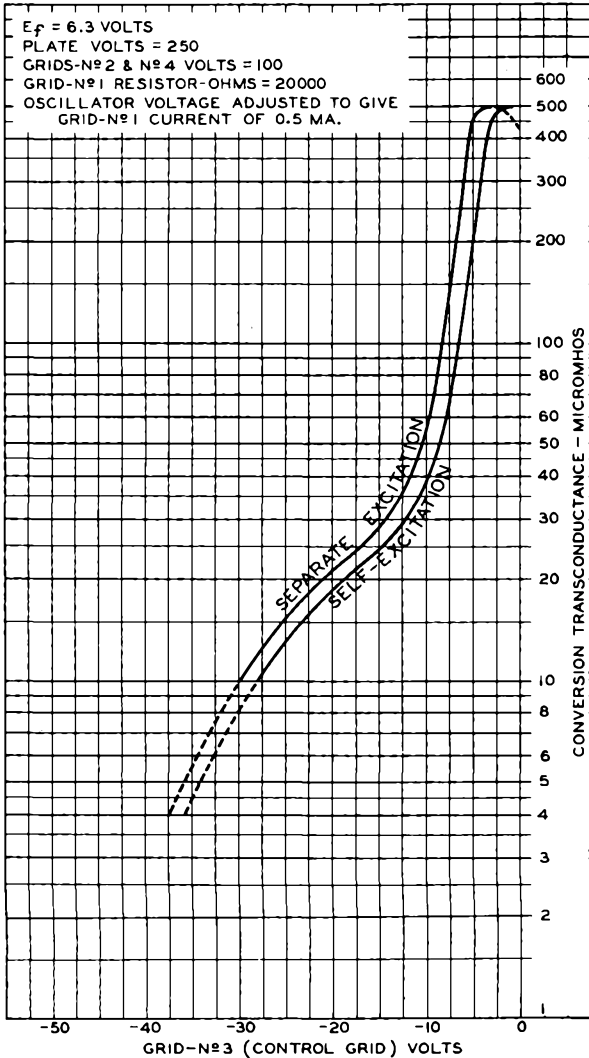
92CM - 6605



6BE6

6BE6

OPERATION CHARACTERISTICS



SEPT. 26, 1945

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92CM-6601

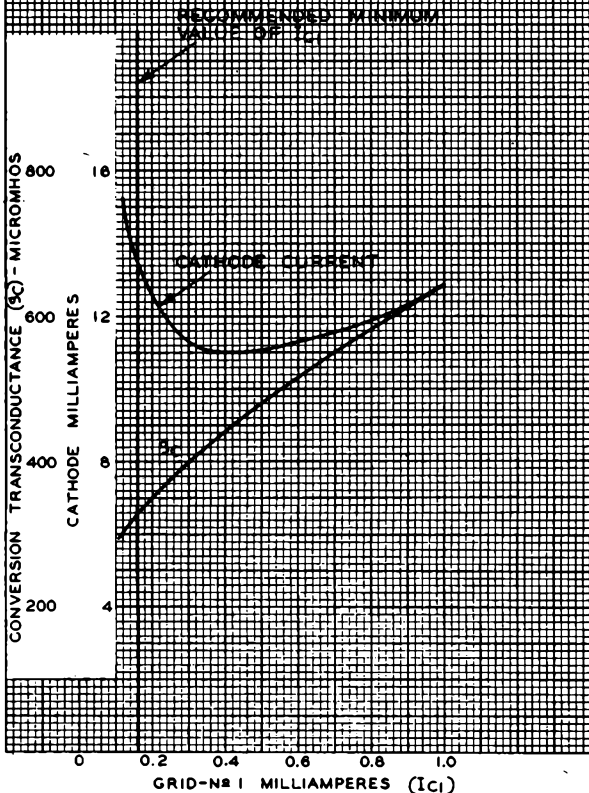
6BE6



6BE6

OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 250
 GRIDS-N^o 2 & N^o 4 VOLTS = 100
 GRID-N^o 3 (CONTROL GRID) VOLTS = -1.5
 GRID-N^o 1 RESISTOR-OHMS = 20000
 GRID-N^o 1 CURRENT VARIED BY ADJUSTMENT
 OF OSCILLATOR VOLTAGE



NOV. 12, 1945

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92CM-6624



6BF5

6BF5

BEAM POWER AMPLIFIER

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	1.2	amp

Direct Interelectrode Cap. (Approx.; no external shield):

As Beam Power Amplifier:

Grid No.1 to Plate	0.65	$\mu\mu\text{f}$
Input	14	$\mu\mu\text{f}$
Output	6	$\mu\mu\text{f}$

Characteristics as Beam Power Amplifier:

See AMPLIFIER--Class A₁

Characteristics as Triode-Connected Amplifier--Class A₁:

(Grid No.2 connected to plate)

Plate Voltage	225	volts
Grid Voltage	-30	volts
Amplification Factor	6.7	
Plate Resistance	2500	ohms
Transconductance	2700	μmhos
Plate Current	10	ma
Grid Voltage (Approx.) for plate current of 0.5 ma	-40	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" \pm 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	7BZ

Pin 1-Grid No.1
 Pin 2-Cathode,
 Grid No.3
 Pin 3-Heater



Pin 4-Heater
 Pin 5-Plate
 Pin 6-Grid No.2
 Pin 7-Grid No.1

AMPLIFIER--Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	117 max.	volts
PLATE DISSIPATION	5.5 max.	watts
GRID-No.2 INPUT	1.25 max.	watts

OCT. 1, 1953

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TUBE DEPARTMENT

TENTATIVE DATA

6BF5**6BF5****BEAM POWER AMPLIFIER****PEAK HEATER-CATHODE VOLTAGE:**

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 ^{max}	volts

Typical Operation and Characteristics:

Plate Voltage	110	volts
Grid-No.2 (Screen) Voltage	110	volts
Grid-No.1 (Control-Grid) Voltage	-7.5	volts
Peak AF Grid-No.1 Voltage	7.5	volts
Zero-Signal Plate Current	36	ma
Maximum-Signal Plate Current	39	ma
Zero-Signal Grid-No.2 Current	4	ma
Maximum-Signal Grid-No.2 Current	10.5	ma
Plate Resistance (Approx.)	12000	ohms
Transconductance	7500	μmhos
Plate Load Resistance	2500	ohms
Total Harmonic Distortion	10	per cent
Maximum-Signal Power Output	1.9	watts

VERTICAL DEFLECTION AMPLIFIER*Triode Connected--Grid No.2 Connected to Plate***Maximum Ratings, Design-Center Values Except as Noted:***For operation in a 525-line, 30 frame system**

DC PLATE VOLTAGE	250 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE†	900 ^{max}	volts
CATHODE CURRENT:		
DC	40 max.	ma
Peak	120 max.	ma
PLATE DISSIPATION††	5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 ^{max}	volts

Maximum Circuit Values:

Grid-No.1 Circuit Resistance:	
For cathode-bias operation	2.2 max. megohms

- * The dc component must not exceed 100 volts.
- As described in "Standards of Good Engineering Practice for Television Broadcast Stations", Federal Communications Commission.
- † The duration of the voltage pulse must not exceed 7 per cent of one vertical scanning cycle, in a 525-line, 30-frame system, 7 per cent of one vertical scanning cycle is 1.2 milliseconds.
- Under no circumstances should this absolute value be exceeded.
- †† An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

OCT. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



6BF6

6BF6

TWIN DIODE—MEDIUM-MU TRIODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3	ac or dc volts
Current.	0.3	amp

Direct Interelectrode Capacitances (Approx.):

	With External Shield [▲]	Without External Shield	
Triode Unit:			
Grid to Plate.	2.0	2.0	μf
Input.	1.8	1.8	μf
Output.	1.1	0.8	μf
Plate of Diode Unit			
No.1 to Cathode.	1.4	0.7	μf
Plate of Diode Unit			
No.2 to Cathode.	1.5	0.1	μf
Plate of Diode Unit			
No.1 to Triode Grid.	0.06 max.	0.07 max.	μf
Plate of Diode Unit			
No.2 to Triode Grid.	0.05 max.	0.06 max.	μf

Mechanical:

Mounting Position. Any

Maximum Overall Length. 2-1/8"

Maximum Seated Length. 1-7/8"

Length from Base Seat to
Bulb Top (excluding tip) 1-1/2" ± 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JEDEC No. E7-1)

Basing Designation for BOTTOM VIEW 7BT

- Pin 1—Triode Grid
- Pin 2—Cathode
- Pin 3—Heater
- Pin 4—Heater



- Pin 5—Diode Plate No.2
- Pin 6—Diode Plate No.1
- Pin 7—Triode Plate

TRIODE UNIT - Class A₁ Amplifier

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
PLATE DISSIPATION.	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

[▲] According to RTMA Standard ET-109A with External Shield No.315 tied to cathode.

← Indicates a change.

NOV. 1, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6BF6



6BF6

TWIN DIODE—MEDIUM-MU TRIODE

Typical Operation with Transformer Coupling:

Plate Voltage.	250	volts
Grid Voltage	-9	volts
Amplification Factor	16	
Plate Resistance (Approx.)	8500	ohms
Transconductance	1900	μ mhos
Plate Current.	9.5	ma
Load Resistance.	10000	ohms
Total Harmonic Distortion.	6.5	%
Power Output	300	mw

Typical Operation as Resistance-Coupled Amplifier:

See *RESISTANCE-COUPLED AMPLIFIER CHART*
at front of this Section

DIODE UNITS

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For each diode) 1.0 max. ma

Diode Considerations:

Consideration of these units, including typical circuits and diode curves, is given at the front of this section. Diode biasing of the triode unit of the 6BF6 is not suitable.

*Curves shown under Types 6R7 and 6SR7
also apply to the triode unit of the 6BF6*



6BG6-G

BEAM POWER TUBE

6BG6-G

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	5.3	ac or dc volts
Current	0.9	amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate	0.34	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater.	12	μf
Plate to cathode & grid No.3, grid No.2, and heater.	6.5	μf

Characteristics, Class A₁ Amplifier:

Plate Voltage	60	250	volts
Grid-No.2 (Screen) Voltage	250	250	volts
Grid-No.1 (Control-Grid) Voltage	0	-15	volts
Mu-Factor, Grid No.2 to Grid No.1	-	8	
Plate Resistance (Approx.)	-	25000	ohms
Transconductance	-	6000	μmhos
Plate Current	180*	75	ma
Grid-No.2 Current	18*	4	ma
Grid-No.1 Voltage (Approx.) for plate current of 1 ma.	-	-45	volts

Mechanical:

Mounting Position Vertical, base up or down, or
Horizontal with pins 2 and 7 in vertical plane

Maximum Overall Length 5-11/16"

Seated Length 4-31/32" ± 5/32"

Maximum Diameter 2-1/16"

Dimensional Outline See General Section

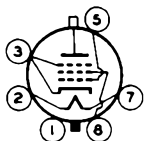
Bulb ST-16

Cap. Small (JETEC No.C1-1)

Base Medium-Shell Octal 6-Pin (JETEC No.B6-13)

Basing Designation for BOTTOM VIEW 5BT

- Pin 1 - No Connection
- Pin 2 - Heater
- Pin 3 - Cathode, Grid No.3



- Pin 5 - Grid No.1
- Pin 7 - Heater
- Pin 8 - Grid No.2
- Cap - Plate

^o without external shield.

* These values can be measured by a method involving a recurrent wave form such that the cathode current and grid-no.2 input will be kept within ratings in order to prevent damage to the tube.

← Indicates a change.

6BG6-G



6BG6-G

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

→ **Maximum Ratings, Design-Center Values Except as Noted:**For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	700	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [■]	6600 [■]	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	350	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-50	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	300	max.	volts
CATHODE CURRENT:			
Peak	400	max.	ma
Average	110	max.	ma
GRID-No.2 INPUT	3.2	max.	watts
PLATE DISSIPATION [†]	20	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 [▲]	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).			
	210	max.	°C

→ **Maximum Circuit Values:**

Grid-No.1-Circuit Resistance:

For grid-resistor-bias operation[†] 0.47 max. megohm

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[■] Under no circumstances should this absolute value be exceeded.

[●] The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[†] It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

[▲] The dc component must not exceed 100 volts.

→ Indicates a change.

SEPT. 1, 1955

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DATA

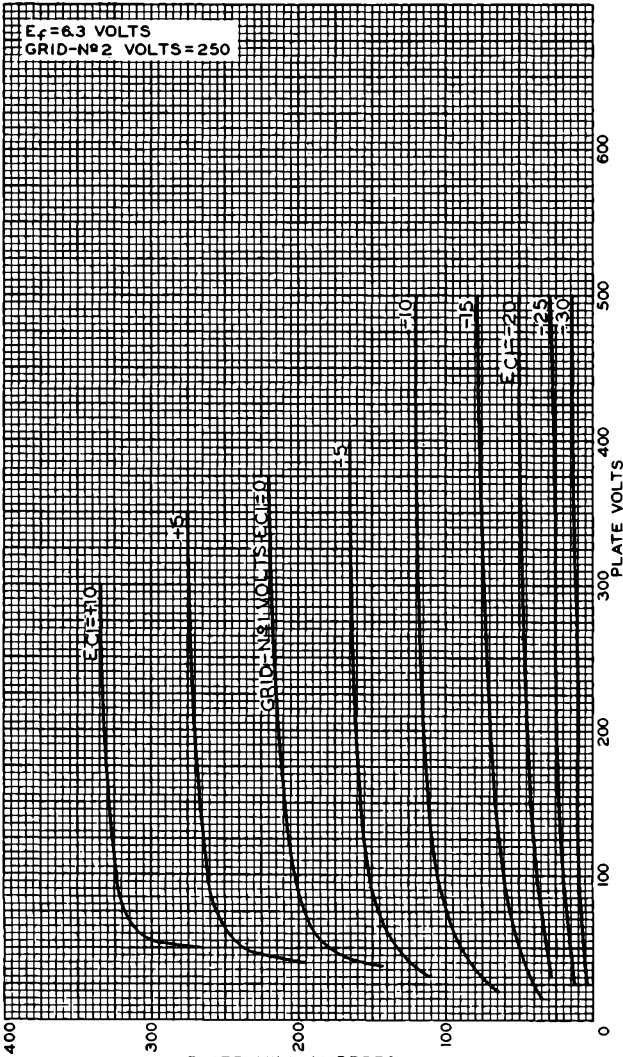
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6BG6-G

6BG6-G

AVERAGE PLATE CHARACTERISTICS



JUNE 18, 1947

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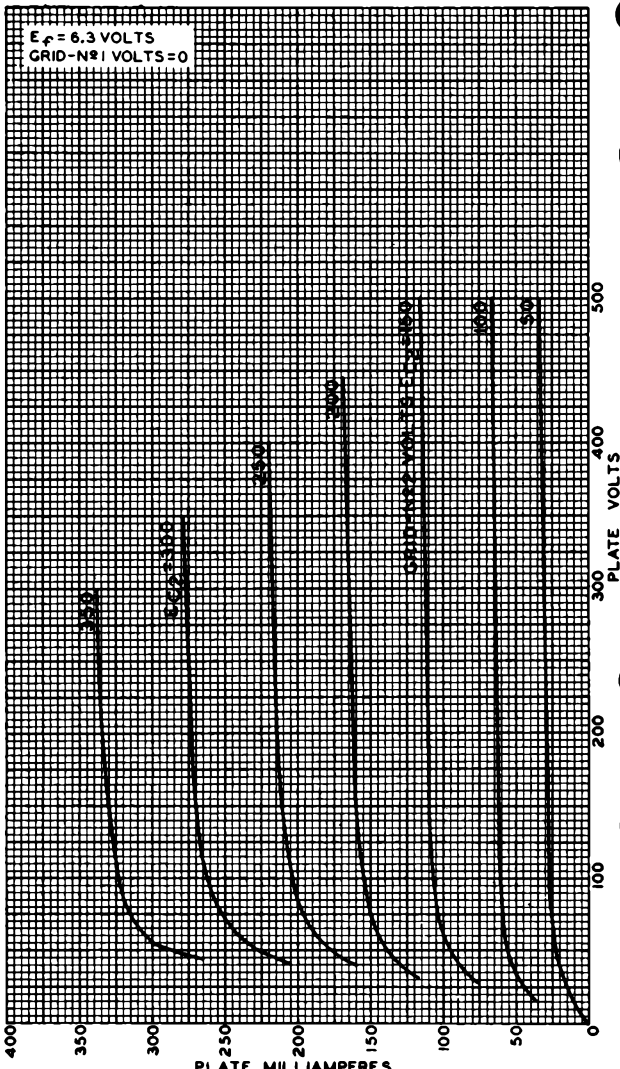
92CM-6774R1

6BG6-G



6BG6-G

AVERAGE PLATE CHARACTERISTICS



JUNE 25, 1947

PLATE MILLIAMPERES
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92CM-6775R1

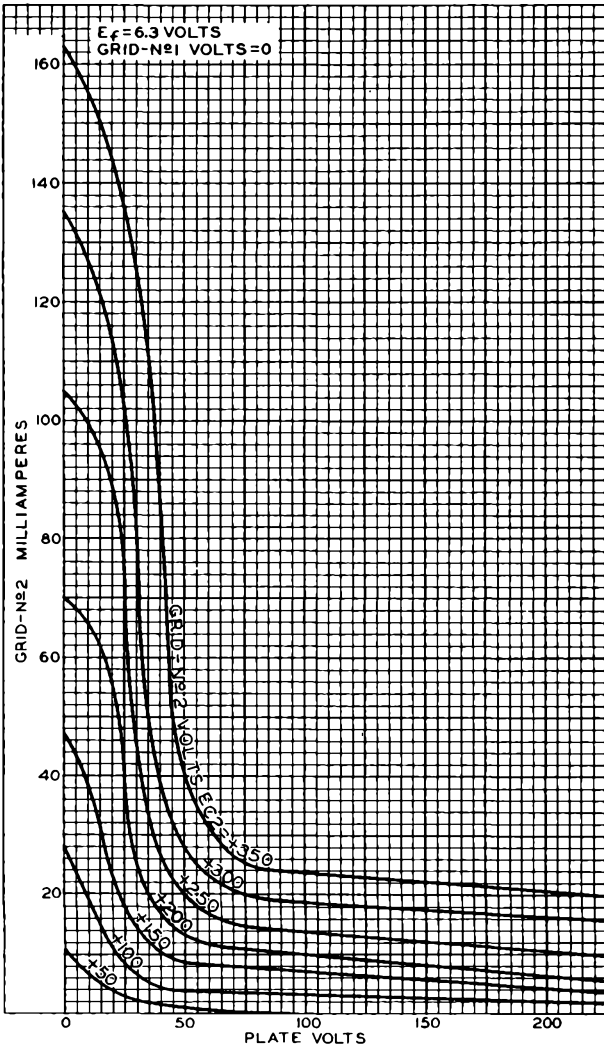
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6BG6-G

6BG6-G

AVERAGE CHARACTERISTICS



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92CM-6776R1



6BH6

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

6BH6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.15 amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Grid No.1 to plate	0.0035 max.	0.0035 max.	μ f
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater	5.4	5.4	μ f
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater	4.4	4.4	μ f

Characteristics, Class A₁ Amplifier:

Plate Voltage	100	250	volts
Grid No.3 (Suppressor)	Connected to cathode at socket		
Grid-No.2 Voltage	100	150	volts
Grid-No.1 Voltage	-1	-1	volt
Plate Resistance (Approx.)	0.7	1.4	megohm
Transconductance	3400	4600	μ mhos
Plate Current	3.6	7.4	ma
Grid-No.2 Current	1.4	2.9	ma
Grid-No.1 Voltage (Approx.) for plate current of 10 μ amp	-5	-7.7	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" \pm 3-3/32"
Maximum Diameter	3/4"
Dimensional Outline	See General Section
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	7CM

- Pin 1 - Grid No.1
- Pin 2 - Cathode
- Pin 3 - Heater
- Pin 4 - Heater
- Pin 5 - Plate



- Pin 6 - Grid No.2
- Pin 7 - Grid No.3,
Internal
Shield

^o with external shield JETEC No.316 connected to cathode.

← Indicates a change.

6BH6



6BH6

SHARP-CUTOFF PENTODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max. volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300 max. volts
→ GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
GRID-No.1 (CONTROL-GRID) VOLTAGE:	
Negative bias value.	50 max. volts
Positive bias value.	0 max. volts
PLATE DISSIPATION.	3 max. watts
→ GRID-No.2 INPUT:	
For grid-No.2 voltages up to 150 volts . .	0.5 max. watt
For grid-No.2 voltages between 150 and 300 volts.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode. .	90 max. volts
Heater positive with respect to cathode. .	90 max. volts

→ Indicates a change.

SEPT. 1, 1955

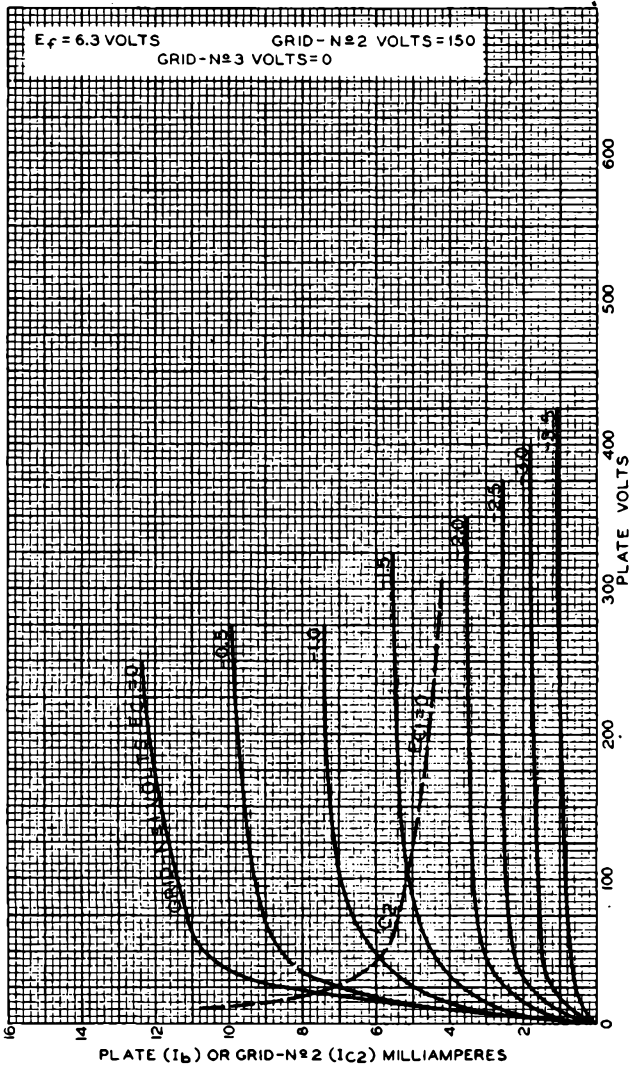
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DATA



6BH6

AVERAGE PLATE CHARACTERISTICS



AUG. 23, 1947

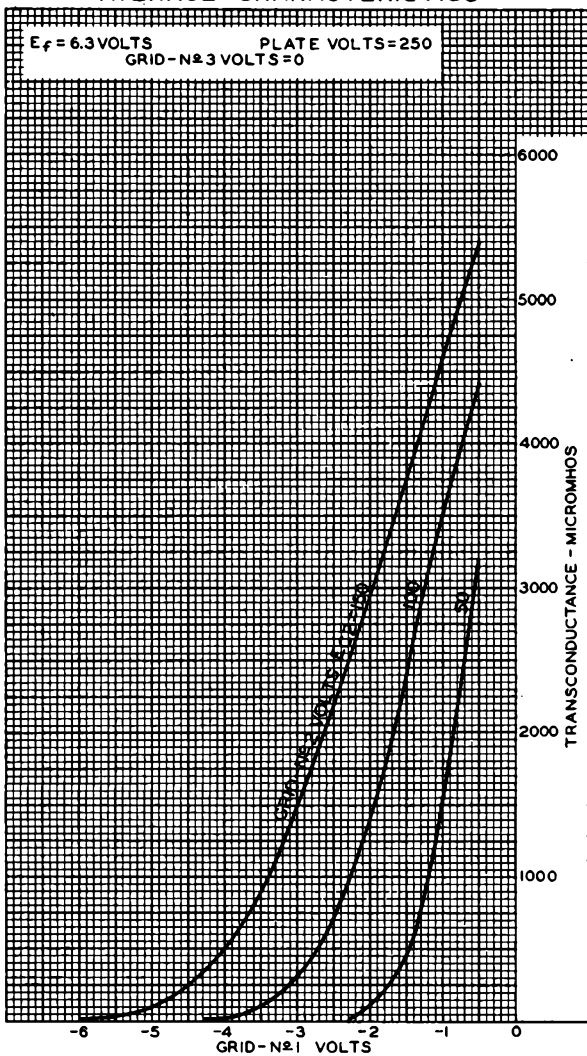
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92CM-6892

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AVERAGE CHARACTERISTICS



AUG. 21. 1947

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92CM - 6891



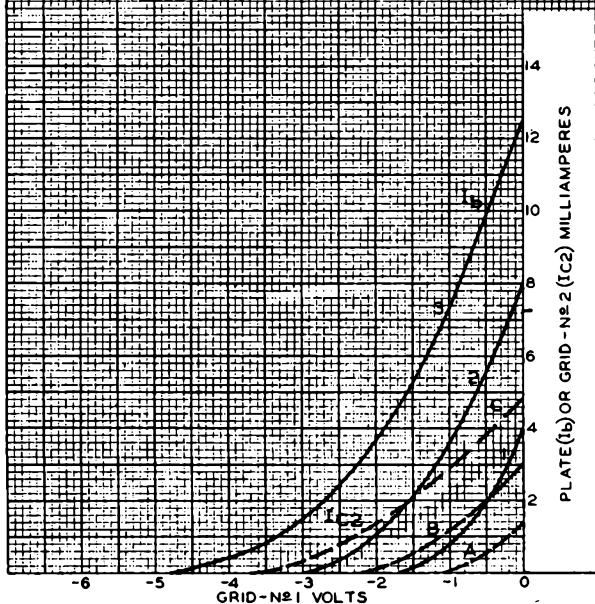
6BH6

6BH6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS PLATE VOLTS = 250 GRID - N° 3 VOLTS = 0

CURVES		GRID - N° 2 VOLTS
I_b —	I_{c2} - - -	
1	A	50
2	B	100
3	C	150



AUG. 22 1947

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

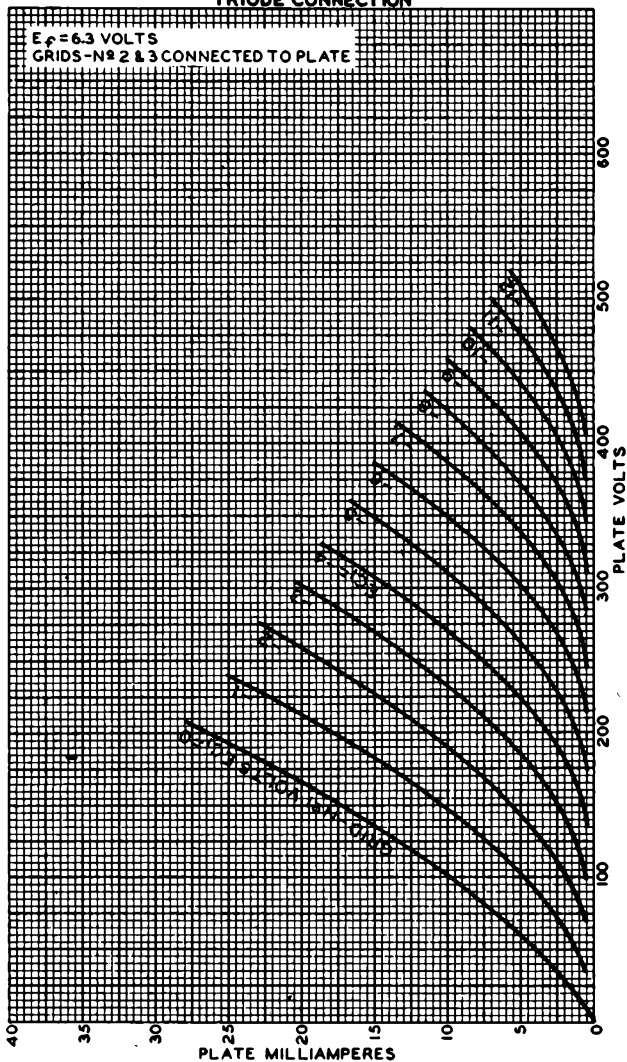
92CM-6893

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AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



DEC. 10, 1947

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92CM-6896



6BH8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

*Intended for use in equipment having
series heater-string arrangement*

6BH8

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.6	amp
Warm-up time (Average)	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances (Approx.):^o

Triode Unit:

Grid to plate	2.4	μμf
Grid to cathode and heater.	2.6	μμf
Plate to cathode and heater	0.38	μμf

Pentode Unit:

Grid No.1 to plate.	0.046	μμf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater.	7	μμf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater.	2.4	μμf
Triode grid to pentode plate.	0.016	μμf
Pentode grid No.1 to triode plate	0.004	μμf
Pentode plate to triode plate	0.095	μμf

Characteristics, Class A₁ Amplifier:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Plate Voltage	150	200	volts
Grid-No.2 Voltage	-	125	volts
Grid-No.1 Voltage	-5	-	volts
Cathode Resistor.	-	82	ohms
Amplification Factor.	17	-	
Plate Resistance (Approx.).	5150	150000	ohms
Transconductance.	3300	7000	μmhos
Plate Current	9.5	15	ma
Grid-No.2 Current	-	3.4	ma
Grid-No.1 Voltage (Approx.) for plate current of 100 μamp.	-14	-8	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length.	2-5/8"
Maximum Seated Length	2-3/8"

^o without external shield.

6BH8



6BH8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

Length, Base Seat to Bulb Top (Excluding tip) . . . 2" \pm 3/32"
 Maximum Diameter 7/8"
 Dimensional Outline. See General Section
 Bulb T-6-1/2
 Base Small-Button Noval 9-Pin (JETEC No. E9-1)
 Basing Designation for BOTTOM VIEW 9DX

Pin 1 - Triode
Cathode
Pin 2 - Triode
Grid
Pin 3 - Triode
Plate
Pin 4 - Heater
Pin 5 - Heater



Pin 6 - Pentode
Cathode,
Grid No. 3,
Internal
Shield
Pin 7 - Pentode
Grid No. 1
Pin 8 - Pentode
Grid No. 2
Pin 9 - Pentode
Plate

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

	Triode Unit	Pentode Unit	
PLATE VOLTAGE,	300 max.	300 max.	volts
GRID-No. 2 (SCREEN) SUPPLY VOLTAGE,	-	300 max.	volts
GRID-No. 2 VOLTAGE,	-	See Grid-No. 2 Input	

Rating Chart at front of Receiving Tube Section

GRID-No. 1 (CONTROL-GRID)

VOLTAGE:			
Positive bias value	0 max.	0 max.	volts
PLATE DISSIPATION,	2.5 max.	3 max.	watts

GRID-No. 2 INPUT:

For grid-No. 2 voltages up to 150 volts,	-	1 max.	watt
For grid-No. 2 voltages between 150 and 300 volts,	-	See Grid-No. 2 Input	

Rating Chart at front of Receiving Tube Section

PEAK HEATER-CATHODE

VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	200 [▲] max.	volts

[▲] The dc component must not exceed 100 volts



6BH8

6BH8

MEDIUM-MU TRIODE — SHARP-CUTOFF PENTODE

Maximum Circuit Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Grid-No.1-Circuit Resistance:			
For fixed-bias operation. .	0.5 max.	0.25 max.	megohm
For cathode-bias operation.	1.0 max.	1.0 max.	megohm

OPERATING CONSIDERATIONS

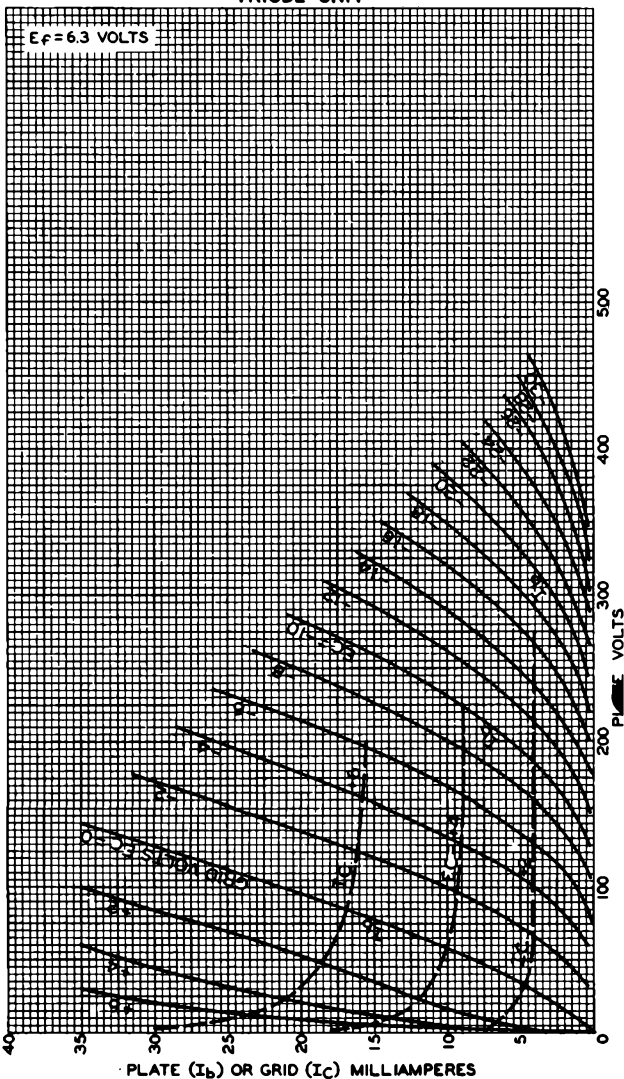
Because the *internal shield* is connected to the cathode and grid No.3, the impedance in the cathode circuit should be kept as low as possible to minimize cross-coupling effects.

6BH8



6BH8

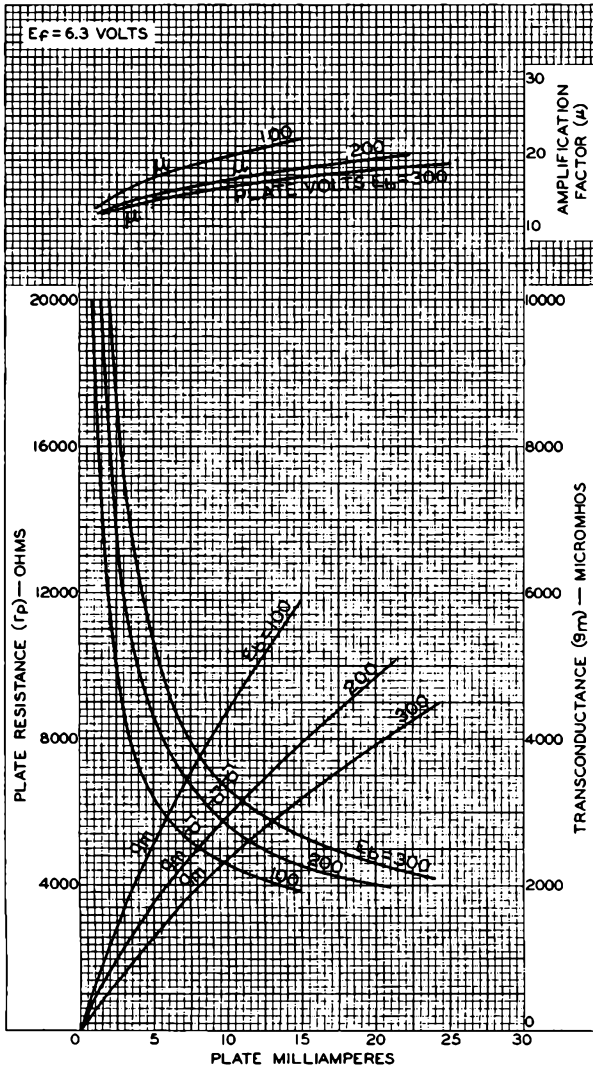
AVERAGE CHARACTERISTICS TRIODE UNIT





6BH8

AVERAGE CHARACTERISTICS TRIODE UNIT

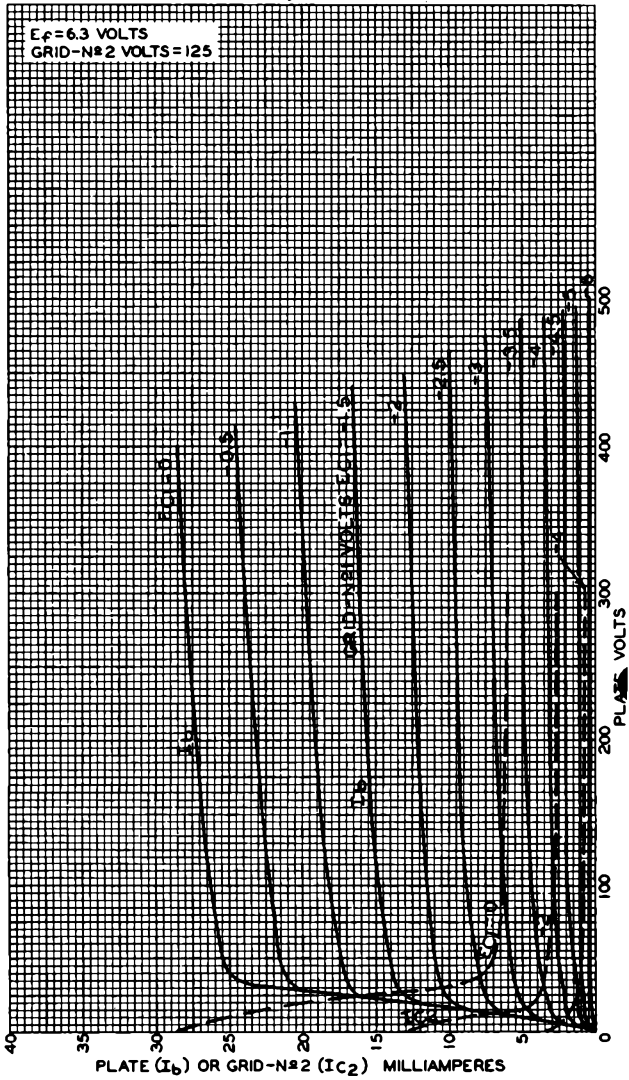


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AVERAGE CHARACTERISTICS PENTODE UNIT

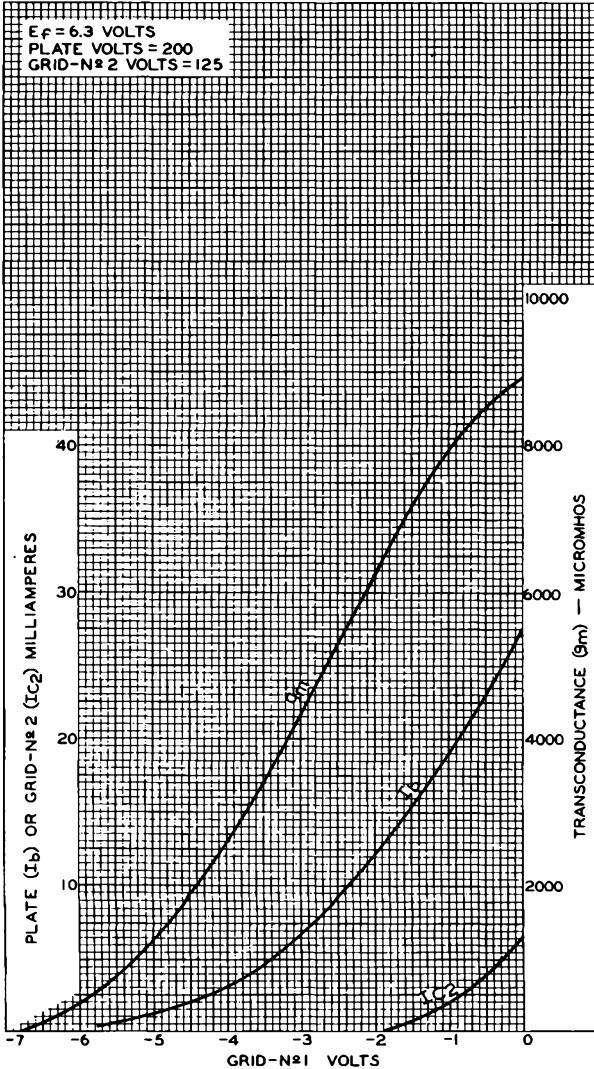




6BH8

6BH8

AVERAGE CHARACTERISTICS
PENTODE UNIT





6BJ6

REMOTE-CUTOFF PENTODE

7-PIN MINIATURE TYPE

6BJ6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.15 amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Grid No.1 to plate	0.0035 max.	0.0035 max.	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater	4.5	4.5	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater	5.5	5.5	μf

Characteristics, Class A₁ Amplifier:

Plate Voltage	100	250	volts
Grid No.3 (Suppressor)	Connected to cathode at socket		
Grid-No.2 Voltage	100	100	volts
Grid-No.1 Voltage	-1	-1	volt
Plate Resistance (Approx.)	0.25	1.3	megohm
Transconductance	3650	3600	μmhos
Plate Current	9	9.2	ma
Grid-No.2 Current	3.5	3.3	ma
Grid-No.1 Voltage (Approx.) for transconductance of 10 μmhos	-20	-20	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" \pm 3/32"
Maximum Diameter	3/4"
Dimensional Outline	See General Section
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	7CM

- Pin 1 - Grid No.1
- Pin 2 - Cathode
- Pin 3 - Heater
- Pin 4 - Heater
- Pin 5 - Plate



- Pin 6 - Grid No.2
- Pin 7 - Grid No.3,
Internal
Shield

^o with external shield JETEC No.316 connected to cathode.

← Indicates a change.

6BJ6



6BJ6

REMOTE-CUTOFF PENTODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max. volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300 max. volts
→ GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
GRID-No.1 (CONTROL-GRID) VOLTAGE:	
Negative bias value.	50 max. volts
Positive bias value.	0 max. volts
PLATE DISSIPATION.	3 max. watts
→ GRID-No.2 INPUT:	
For grid-No.2 voltages up to 150 volts	0.6 max. watt
For grid-No.2 voltages between 150 and 300 volts.	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode.	90 max. volts
Heater positive with respect to cathode.	90 max. volts

→ Indicates a change.

SEPT. 1, 1955

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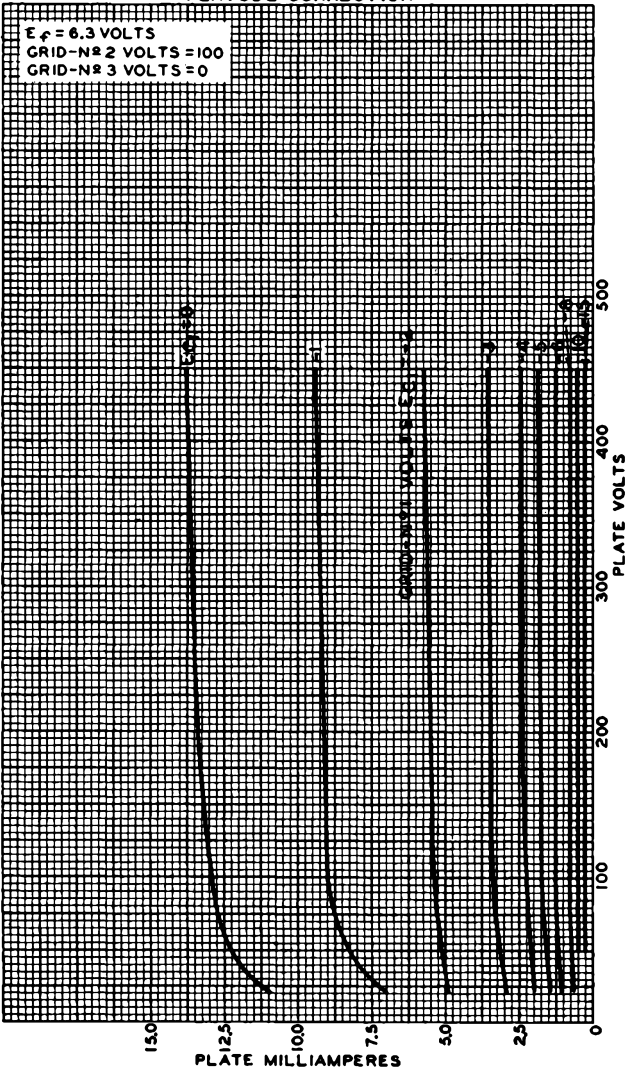
DATA



6BJ6

6BJ6

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



MAY 29, 1947

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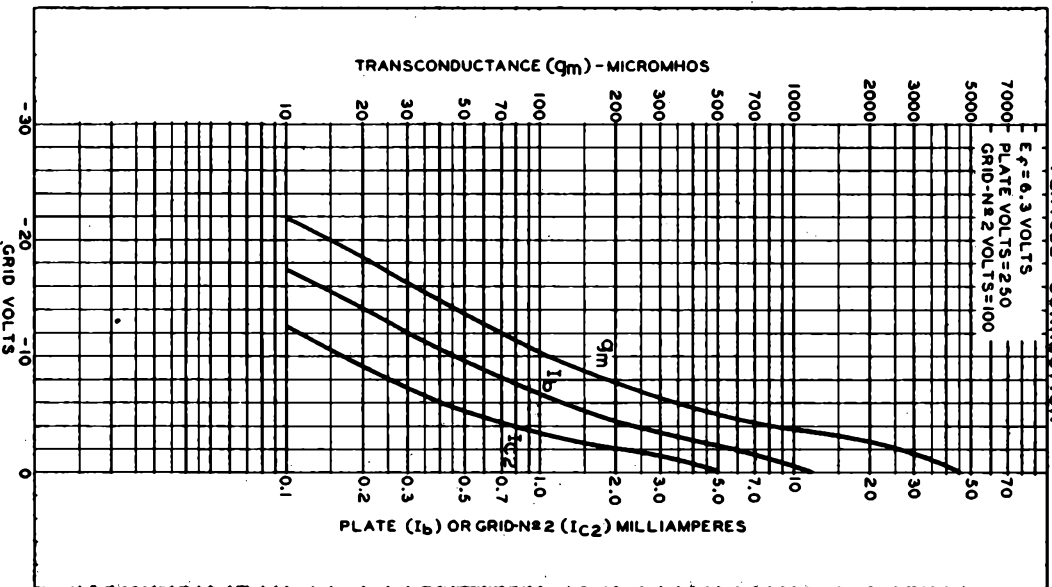
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6BJ6



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AVERAGE CHARACTERISTICS PENTODE CONNECTION



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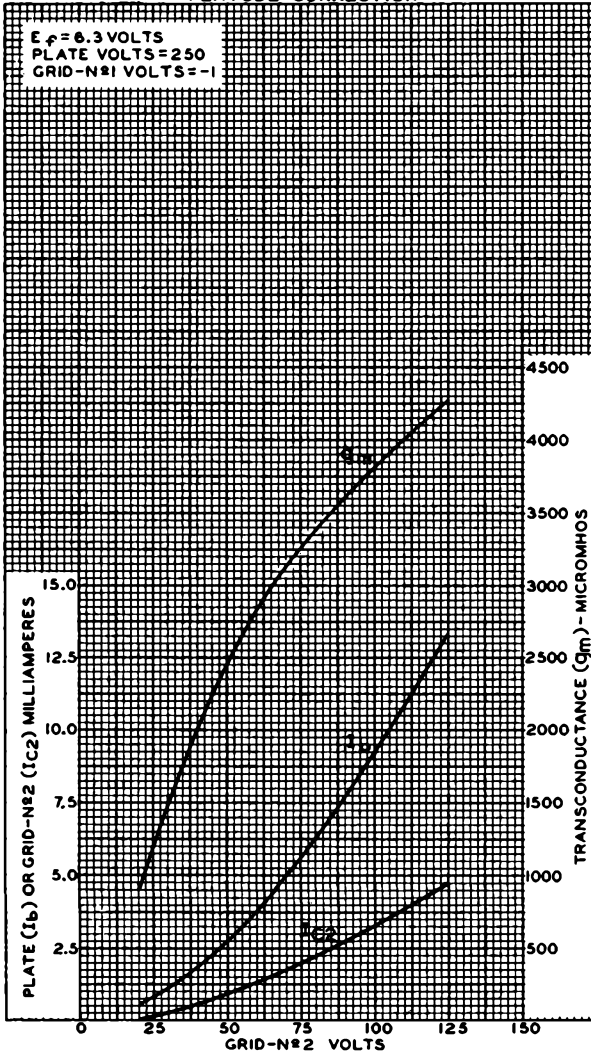
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6BJ6

6BJ6

AVERAGE CHARACTERISTICS PENTODE CONNECTION



JUNE 5, 1947

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6870



6BK4

6BK4

SHARP-CUTOFF BEAM TRIODE

HIGH-VOLTAGE, LOW-CURRENT, REGULATOR TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.2	amp

Direct Interelectrode Capacitances:

Grid to plate	0.03	μf
Grid to cathode and heater	2.6	μf
Plate to cathode and heater	1	μf

Amplification Factor (Approx.) 2000

Mechanical:

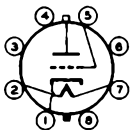
Mounting Position	Any
Maximum Overall Length	5-7/32"
Seated Length	4-1/2" \pm 3/16"
Maximum Diameter	1-23/32"
Bulb	T-12
Cap.	Small (JETEC No. C1-1)
Base	Short Jumbo-Shell Octal 8-Pin with External Barriers (JETEC No. BB-71)
Basing Designation for Bottom View	8GC

Pin 1 - Cathode

Pin 2 - Heater

Pin 3 - Internal Connection-Do Not Use

Pin 4 - Same As Pin 3



Pin 5 - Grid

Pin 6 - Same as Pin 3

Pin 7 - Heater

Pin 8 - Same as Pin 3

Cap - Plate

VOLTAGE-CONTROL SERVICE

Maximum Ratings, Design-Center Values:

DC PLATE VOLTAGE	25000 max.	volts
UNREGULATED DC SUPPLY VOLTAGE	55000 max.	volts
GRID VOLTAGE:		
DC value	-125 max.	volts
Peak value [■]	-400 max.	volts
DC PLATE CURRENT	1.5 max.	ma
PLATE DISSIPATION	25 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	225 max.	volts
Heater positive with respect to cathode.	Not Recommended	

Typical Operation As Shunt Voltage-Regulator Tube In Accompanying Circuit:

Unregulated Supply:		
DC voltage	36000	volts
Equivalent resistance	11	megohms

[■] For interval of 20 seconds maximum duration during equipment warm-up period.

6BK4



6BK4

SHARP-CUTOFF BEAM TRIODE

Voltage Divider Values:		
R ₁ (5 watts)	220	megohms
R ₂ (2 watts)	1	megohm
R ₃ (1/2 watt)	820000	ohms
Reference Voltage Supply:		
DC value	200	volts
Equivalent resistance	1000	ohms
Effective Grid-Plate Transconductance	200	μmhos
DC Plate Current:		
For load current of 0 ma	1000	μamp
For load current of 1 ma	45	μamp
Regulated DC Output Voltage:		
For load current of 0 ma	25000	volts
For load current of 1 ma	24500	volts

Maximum Circuit Values:

Grid-Circuit Resistance:		
For use with "Flyback Transformer" high-voltage supply	3 max.	megohms

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Grid Voltage (1)	1	-7	-	volts
Grid Voltage (2)	2	-	-40	volts
Grid-Voltage Change	3	-	9	volts

Note 1: With dc plate voltage of 30000 volts and dc plate current of 1 ma.

Note 2: With dc plate voltage of 30000 volts and dc plate current of 0.1 ma.

Note 3: Difference between grid voltage (1) and grid voltage (2).

OPERATING CONSIDERATIONS

Operation of the 6BK4 with a plate voltage above approximately 16000 volts (absolute value) results in the production of X-rays which can constitute a health hazard on prolonged exposure at close range unless the tube is adequately shielded. Relatively simple shielding should prove adequate, but the need for this precaution should be considered in equipment design.

MAR. 1, 1955

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TENTATIVE DATA

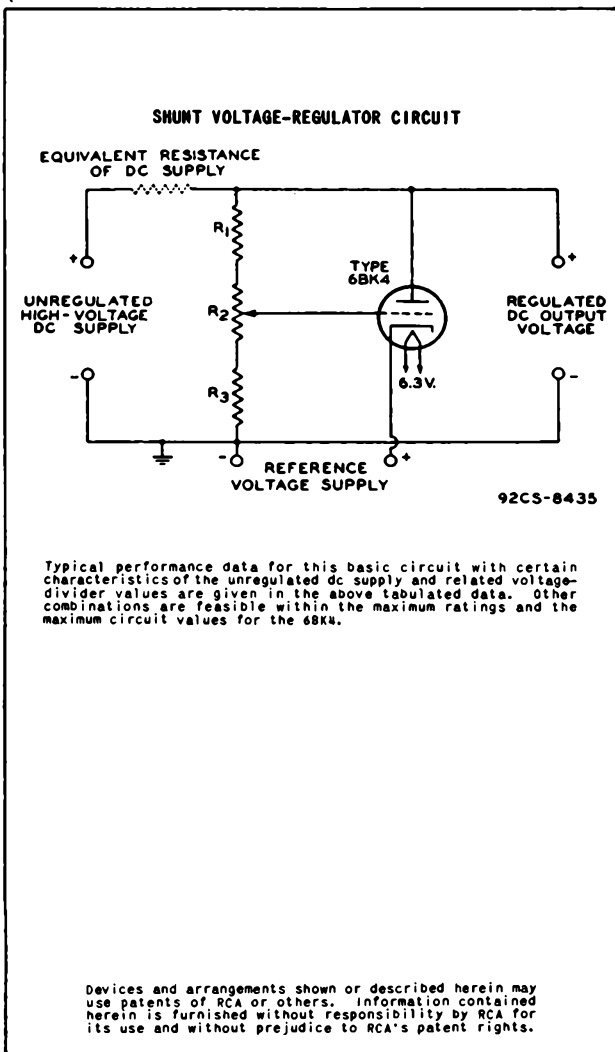
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6BK4

6BK4

SHARP-CUTOFF BEAM TRIODE



Typical performance data for this basic circuit with certain characteristics of the unregulated dc supply and related voltage-divider values are given in the above tabulated data. Other combinations are feasible within the maximum ratings and the maximum circuit values for the 6BK4.

Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

MAR. 1, 1955

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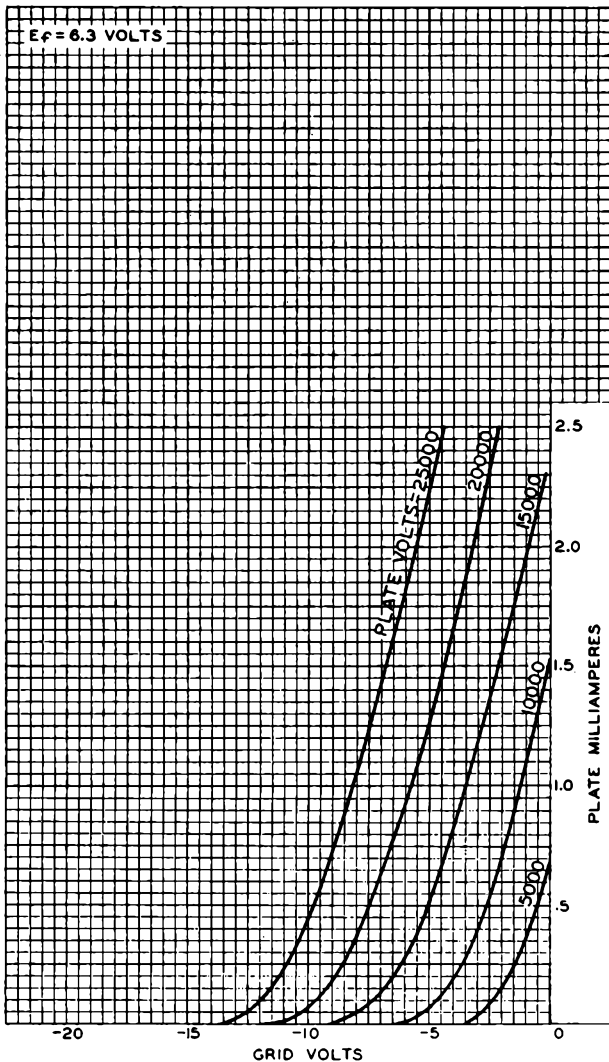
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6BK4



6BK4

AVERAGE TRANSFER CHARACTERISTICS



OCT. 18, 1954

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8432R1



6BK5

6BK5 BEAM POWER TUBE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3	ac or dc volts
Current.	1.2	amp

Direct Interelectrode Capacitances:^o

Grid No.1 to plate	0.6	μ f
Grid No.1 to cathode & grid No.3, grid No.2, and heater.	13	μ f
Plate to cathode & grid No.3, grid No.2, and heater.	5	μ f

Mechanical:

Mounting Position.	Any
Maximum Overall Length.	2-5/8"
Maximum Seated Length.	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip).	2" \pm 3/32"
Maximum Diameter.	7/8"
Bulb.	T-6-1/2
Base.	Small-Button Noval 9-Pin (JETEC No. E9-1)
Basing Designation for BOTTOM VIEW.	9BQ

Pin 1 - Plate
Pin 2 - No Connection
Pin 3 - Grid No.1
Pin 4 - Heater
Pin 5 - Heater



Pin 6 - Cathode,
Grid No.3
Pin 7 - Grid No.1
Pin 8 - Grid No.2
Pin 9 - No Connection

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	250 max.	volts
GRID-No.2 (SCREEN) VOLTAGE.	250 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value.	0 max.	volts
GRID-No.2 INPUT.	2.5 max.	watts
PLATE DISSIPATION.	9 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	100 max.	volts
Heater positive with respect to cathode.	100 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	250	volts
Grid-No.2 Voltage.	250	volts
Grid-No.1 Voltage.	-5	volts
Peak AF Grid-No.1 Voltage.	5	volts
Zero-Signal Plate Current.	35	ma
Max.-Signal Plate Current (Approx.).	37	ma
Zero-Signal Grid-No.2 Current.	3.5	ma

^o Without external shield.

MAY 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BK5



6BK5

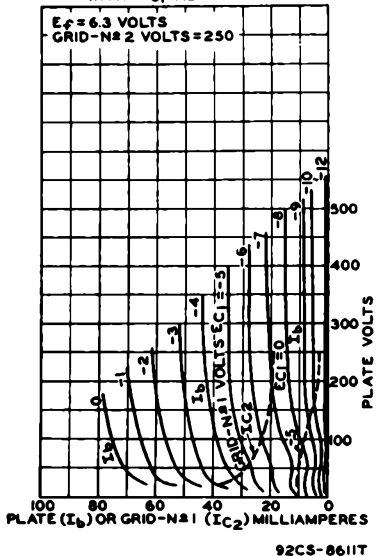
BEAM POWER TUBE

Max.-Signal Grid-No.2 Current (Approx.) . .	10	ma
Plate Resistance (Approx.)	0.1	megohm
Transconductance	8500	μ hos
Load Resistance	6500	ohms
Total Harmonic Distortion (Approx.) . . .	7	%
Power Output	3.5	watts

Maximum Circuit Values:**Grid-No.1-Circuit Resistance:**

For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	0.5 max. megohm

**AVERAGE PLATE CHARACTERISTICS
WITH E_{C1} AS VARIABLE**



MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BL4

6BL4 HALF-WAVE VACUUM RECTIFIER

For Television Damper Service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	3.0	amp

Direct Interelectrode Capacitances (Approx.):^o

Plate to heater and cathode.	11.5	μ mf
Cathode to heater and plate.	16	μ mf
Heater to cathode.	5	μ mf

Mechanical:

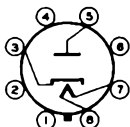
Mounting Position.	Any
Maximum Overall Length	4-5/8"
Maximum Seated Length.	4-1/16"
Maximum Diameter	1-23/32"
Bulb	T-12
Base	Short Jumbo-Shell Octal 8-Pin with External Barriers (JETEC No.88-71)

Basing Designation for BOTTOM VIEW 8GB

Pin 1 - Internal Connection-
Do Not Use

Pin 2 - Same As Pin 1

Pin 3 - Cathode



Pin 4 - Same as Pin 1

Pin 5 - Same as Pin 1

Pin 6 - Same as Pin 1

Pin 7 - Heater

Pin 8 - Heater

DAMPER SERVICE

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system^o

PEAK INVERSE PLATE VOLTAGE (Absolute value) [#]	4500 [●] max.	volts
PEAK PLATE CURRENT	1200 max.	ma
DC PLATE CURRENT	200 max.	ma
PLATE DISSIPATION.	8 max.	ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode (Absolute value).	4500 [▲] max.	volts
Heater positive with respect to cathode.	300 [■] max.	volts

^o Without external shield.

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

[#] This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30 frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[●] Under no circumstances should this absolute value be exceeded.

[▲] The dc component must not exceed 900 volts.

[■] The dc component must not exceed 100 volts.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

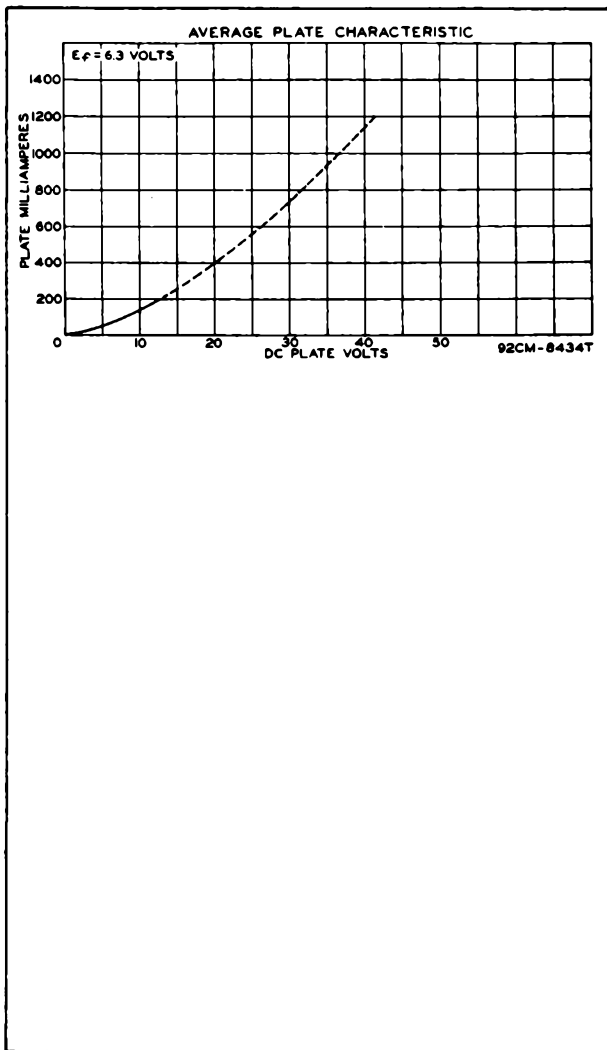
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BL4



6BL4

HALF-WAVE VACUUM RECTIFIER



MAR. 1, 1955

TUBE DIVISION

CE-8434T

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BK7-A

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

6BK7-A

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts
Current 0.4 amp

Direct Interelectrode Capacitances (Without external shield):

Table with columns for Unit No. 1, Unit No. 2, and capacitance values in microfarads (μf) for various electrode connections like Grid to plate, Grid to cathode, Plate to cathode, etc.

Characteristics, Class A1 Amplifier (Each Unit):

Table listing amplifier characteristics such as Plate Supply Voltage (150 volts), Cathode-Bias Resistor (56 ohms), Amplification Factor (43), Plate Resistance (4600 ohms), Transconductance (9300 μmhos), Plate Current (18 ma), and Grid Volts (-11 volts).

Mechanical:

Table listing mechanical specifications: Mounting Position (Any), Maximum Overall Length (2-3/16"), Maximum Seated Length (1-15/16"), Maximum Diameter (7/8"), and Bulb (T-6-1/2).

Base Small-Button Noval 9-Pin (JETEC No.E9-1)
Base Designation for BOTTOM VIEW 9AJ

- Pin 1 - Plate of Unit No.2
Pin 2 - Grid of Unit No.2
Pin 3 - Cathode of Unit No.2
Pin 4 - Heater
Pin 5 - Heater
Pin 6 - Plate of Unit No.1
Pin 7 - Grid of Unit No.1
Pin 8 - Cathode of Unit No.1
Pin 9 - Internal Shield



JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BK7-A



6BK7-A

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID VOLTAGE:		
Negative bias value.	50 max.	volts
PLATE DISSIPATION.	2.7 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. .	90 [•] max.	volts
Heater positive with respect to cathode .	90 max.	volts

• In cathode-drive circuits with direct-coupled drive, it is permissible for this voltage to be as high as 250 volts.



6BL7-GT

6BL7-GT

MEDIUM-MU TWIN TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	. . . . . ac or dc	volts
Current	1.5	. . . . .	amp

Direct Interelectrode

Capacitances:

	<i>Without External Shield</i>	<i>With External Shield No. 308 Tied to Cathode</i>	
--	--	---	--

Unit No. 1:

Grid to Plate	4.2	4.2	$\mu\mu\text{f}$
Input	4.4	5.0	$\mu\mu\text{f}$
Output	1.1	3.4	$\mu\mu\text{f}$

Unit No. 2:

Grid to Plate	4.0	4.0	$\mu\mu\text{f}$
Input	4.8	5.0	$\mu\mu\text{f}$
Output	1.2	3.2	$\mu\mu\text{f}$

Grid of Unit No. 1

to Grid of Unit No. 2	0.11	0.10	$\mu\mu\text{f}$
-----------------------	------	------	------------------

Plate of Unit No. 1

to Plate of Unit No. 2	1.5	1.2	$\mu\mu\text{f}$
------------------------	-----	-----	------------------

Characteristics, Amplifier Class A₁ (Each Unit):

Plate Voltage	250	volts
Grid Voltage	-9	volts
Plate Current	40	ma
Amplification Factor	15	
Plate Resistance	2150	* ohms
Transconductance	6200	μmhos
Grid-No. 1 Bias (Approx.) for plate current of 25 μamp	-25	volts
Grid-No. 1 Bias (Approx.) for plate voltage of 600 volts and plate current of 50 μamp	-60	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9

Base . Short Intermediate-Shell Octal 8-Pin (JETEC No. 88-46)
 Basing Designation for BOTTOM VIEW 8BD

Pin 1 - Grid of Unit No. 2
 Pin 2 - Plate of Unit No. 2
 Pin 3 - Cathode of Unit No. 2
 Pin 4 - Grid of Unit No. 1



Pin 5 - Plate of Unit No. 1
 Pin 6 - Cathode of Unit No. 1
 Pin 7 - Heater
 Pin 8 - Heater

← indicates a change

OCT. 1, 1953

DATA

6BL7-GT



6BL7-GT

MEDIUM-MU TWIN TRIODE

VERTICAL DEFLECTION AMPLIFIER

Values are for Each Unit

Maximum Ratings, Design-Center Values:

*For operation in a 525-Line, 30-frame system**

DC PLATE SUPPLY VOLTAGE	600 max.	volts
DC PLATE VOLTAGE	500 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^o	1800 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	500 max.	volts
DC CATHODE CURRENT	60 max.	ma
PLATE DISSIPATION	10 max.	watts
Total for Both Units	12 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 max.	volts

Typical Operation in a Vertical Deflection Circuit:

DC Plate Voltage	450	volts
Cathode-Bias Resistor	1200	ohms
Grid-Input Voltage, Approx. (See Fig.1):		
Peak-to-peak sawtooth component	36	volts
Negative peaking component	44	volts
DC Plate Current	11	ma
Plate-Output Voltage, Approx. (See Fig.2):		
Peak-to-peak sawtooth component	270	volts
Peak positive pulse component	600	volts

Maximum Circuit Values:

Grid-Circuit Resistance	4.7 max.	megohms
-----------------------------------	----------	---------

* As described in "Standards of Good Engineering Practice for Television Broadcast Stations", Federal Communications Commission.

^o The duration of the voltage pulse must not exceed 15 per cent of one scanning cycle. In a 525-line, 30-frame system, 15 per cent of one scanning cycle is 2.5 milliseconds.



Fig. 1 - Waveform at Grid of 6BL7-GT

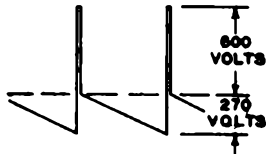


Fig. 2 - Waveform at Plate of 6BL7-GT

OCT. 1, 1953

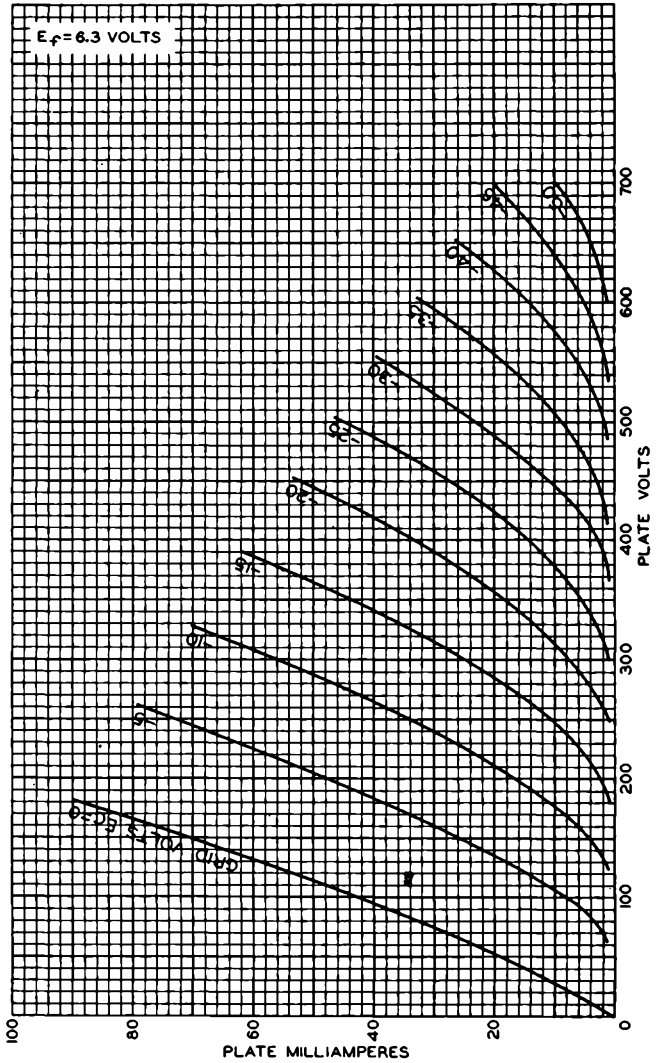
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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6BL7-GT

6BL7-GT AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



OCT. 26, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8133



6BN6

6BN6

BEAM TUBE

7-PIN MINIATURE TYPE

For limiter & discriminator service in FM & TV applications

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances:^o

Grid No.1 to cathode & internal shields, plate, grid No.3, grid No.2, and heater. 4.2 μ f

Grid No.3 to cathode & internal shields, plate, grid No.2, grid No.1, and heater. 3.3 μ f

Grid No.1 to grid No.3 0.004 max. μ f

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip) 2" \pm 3/32"

Maximum Diameter 3/4"

Dimensional Outline See General Section

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7DF

Pin 1 - Cathode,
Internal
Shields

Pin 2 - Grid No.1

Pin 3 - Heater



Pin 4 - Heater

Pin 5 - Grid No.2

Pin 6 - Grid No.3

Pin 7 - Plate

LIMITER & DISCRIMINATOR SERVICE

Maximum Ratings, Design-Center Values:

PLATE-SUPPLY VOLTAGE 300 max. volts

GRID-No.2 VOLTAGE. 100 max. volts

GRID-No.1 VOLTAGE:

Positive peak value. 55 max. volts

CATHODE CURRENT. 11.5 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

^o without external shield.



6BQ6-GT

BEAM POWER TUBE

6BQ6-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts
Current 1.2 amp

Direct Interelectrode Capacitances (Approx.; No external shield):

Grid No.1 to plate 0.6 μ f ←
Grid No.1 to cathode & grid No.3,
heater, and grid No.2 15 μ f
Plate to cathode & grid No.3,
heater, and grid No.2 7.5 μ f

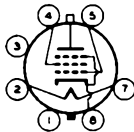
Characteristics, Class A₁ Amplifier:

Plate Voltage 60^{*} 150 250 volts
Grid-No.2 (Screen) Voltage . . 150^{*} 150 150 volts
Grid-No.1 (Control-Grid) Voltage 0 -22.5 -22.5 volts
 μ -Factor, Grid No.2 to Grid No.1 - 4.3 -
Plate Resistance - - 20000 ohms
Transconductance - - 5500 μ hos
Plate Current 225 - 55 ma
Grid-No.2 Current 25 - 2.1 ma
Grid-No.1 Voltage (Approx.)
for plate current of 1 ma . - - -46 volts

Mechanical:

Mounting Position Any
Maximum Overall Length 3-7/8"
Seated Length 3-5/32" \pm 5/32"
Maximum Diameter 1-9/32"
Bulb T-9
Cap Skirted Miniature (JETEC No.C1-3)
Base Intermediate-Shell Octal 7-Pin (JETEC No.B7-7),
Intermediate-Shell Octal 6-Pin (JETEC No.B6-81),
Short Intermediate-Shell Octal 7-Pin (JETEC No.B7-59),
or Short Intermediate-Shell Octal 6-Pin (JETEC No.B6-84)
Basing Designation for BOTTOM VIEW 5AM

- Pin 1 - No Connection
- Pin 2 - Heater
- Pin 3 - No Connection
- Pin 4 - Grid No.2



- Pin 5 - Grid No.1
- Pin 7 - Heater
- Pin 8 - Cathode,
Grid No.3
- Cap - Plate

* Applied for very short interval so as not to damage tube.
♦ On the 6-pin bases, pin no.1 as well as pin no.6 is omitted.

← Indicates a change

6BQ6-GT



6BQ6-GT

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

→ Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system*

DC PLATE SUPPLY VOLTAGE		
(Including Boost Voltage)	550 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE*	5500 [†] max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE*	1250 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	175 max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE*	300 max.	volts
CATHODE CURRENT:		
Peak	400 max.	ma
DC	110 max.	ma
GRID-No.2 INPUT	2.5 max.	watts
PLATE DISSIPATION#	11 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [‡] max.	volts
BULB TEMPERATURE (At hottest point on		
bulb surface)	220 max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance 0.47 max. megohm

* As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

† under no circumstances should this absolute value be exceeded.

* The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

‡ The dc component must not exceed 100 volts.

→ indicates a change



6BQ6-GT

6BQ6-GT

AVERAGE PLATE CHARACTERISTICS

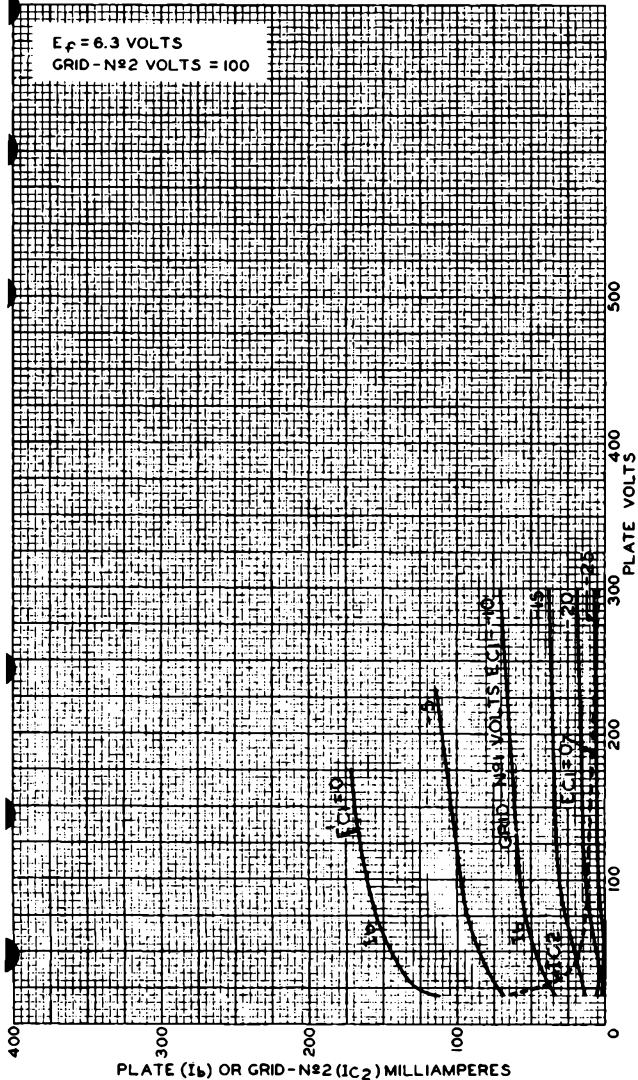


PLATE (I_b) OR GRID-N $\#$ 2 (I_{c2}) MILLIAMPERES

MAR. 6, 1950

TUBE DEPARTMENT

92CM-7459

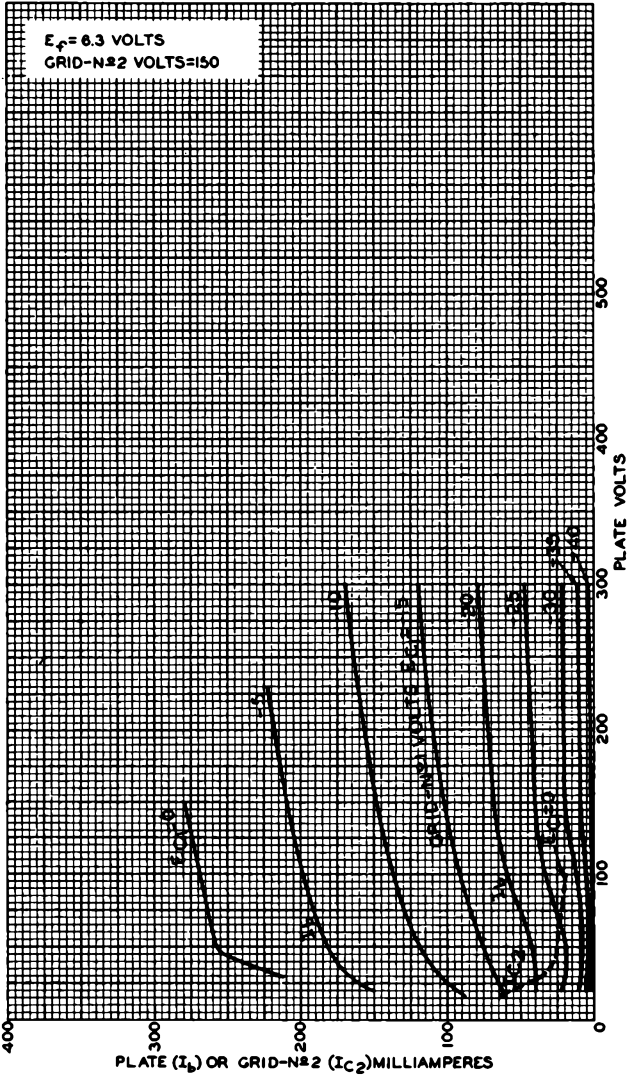
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BQ6-GT



6BQ6-GT

AVERAGE PLATE CHARACTERISTICS



MAR. 7, 1950

TUBE DEPARTMENT

92CM-7460

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BQ6-GTB

6BQ6-GTB/6CU6 BEAM POWER TUBE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts
Current 1.2 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate 0.6 μ f
Grid No.1 to cathode & grid No.3,
grid No.2, and heater 15 μ f
Plate to cathode & grid No.3,
grid No.2, and heater 7.5 μ f

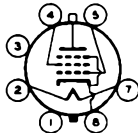
Characteristics, Class A₁ Amplifier:

Plate Voltage	60	150	250	volts
Grid No.2 (Screen) Voltage	150	150	150	volts
Grid No.1 (Control-Grid) Voltage	0	-22.5	-22.5	volts
Mu-Factor, Grid No.2 to Grid No.1	-	4.3	-	
Plate Resistance	-	-	18000	ohms
Transconductance	-	-	6000	μ mhos
Plate Current	270*	-	65	ma
Grid-No.2 Current	30*	-	2.1	ma
Grid-No.1 Voltage (Approx.) for plate current of 1 ma.	-	-	-46	volts

Mechanical:

Mounting Position Any
Maximum Overall Length 3-7/8"
Seated Length 3-5/32" \pm 5/32"
Maximum Diameter 1-9/32"
Bulb T-9
Cap Skirted Miniature (JETEC No.C1-3)
Base Intermediate-Shell Octal 7-Pin (JETEC No.B7-7),
Intermediate-Shell Octal 6-Pin (JETEC No.B6-81),
Short Intermediate-Shell Octal 7-Pin
with External Barriers (JETEC No.B7-59),
or Short Intermediate-Shell Octal 6-Pin
with External Barriers (JETEC No.B6-84)
Basing Designation for BOTTOM VIEW 6AM

Pin 1 - No Connection
Pin 2 - Heater
Pin 3 - No Connection
Pin 4 - Grid No.2



Pin 5 - Grid No.1
Pin 7 - Heater
Pin 8 - Cathode,
Grid No.3
Cap - Plate

^o without external shield.

* These values can be measured by a method involving a recurrent wave form such that the plate dissipation and grid-No.2 input will be kept within ratings in order to prevent damage to the tube.

◆ On the 6-pin bases, pin 1 as well as pin 6 is omitted.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BQ6-GTB



6BQ6-GTB

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	600	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [Ⓢ]	6000 [Ⓢ]	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1250	max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	200	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-50	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE	300	max.	volts
CATHODE CURRENT:			
Peak	400	max.	ma
Average	112.5	max.	ma
GRID-No.2 INPUT	2.5	max.	watts
PLATE DISSIPATION†	11	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 [▲]	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)			
	220	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For grid resistor-bias operation†. . . . 1.0 max. megohm

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

Ⓢ Under no circumstances should this absolute value be exceeded.

Ⓢ The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

† It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

▲ The dc component must not exceed 100 volts.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

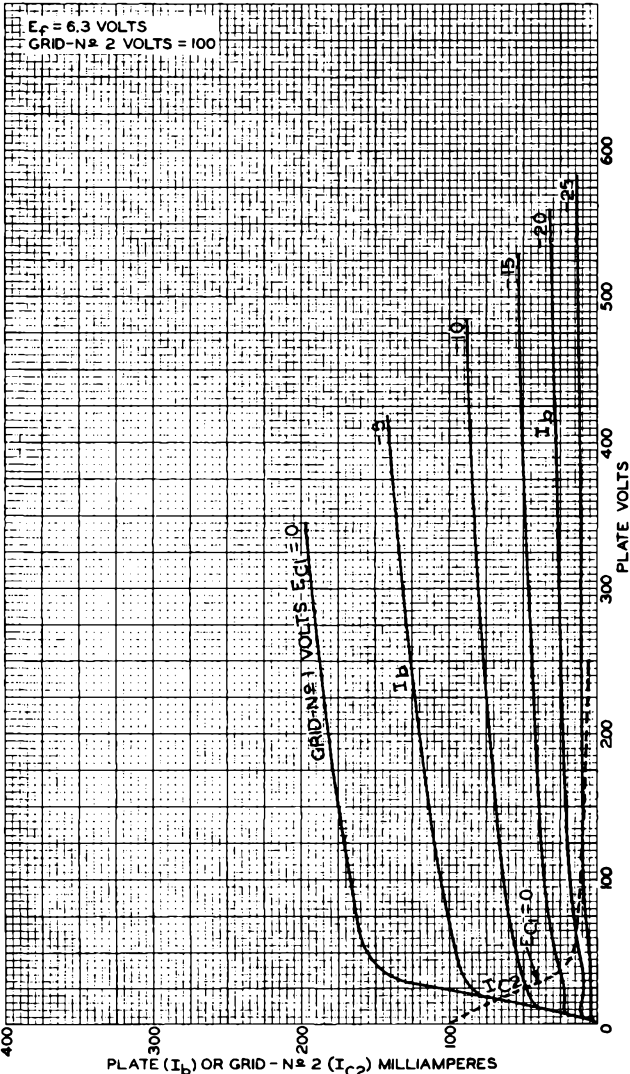
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6BQ6-GTB

6BQ6-GTB

AVERAGE PLATE CHARACTERISTICS



JAN. 11, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

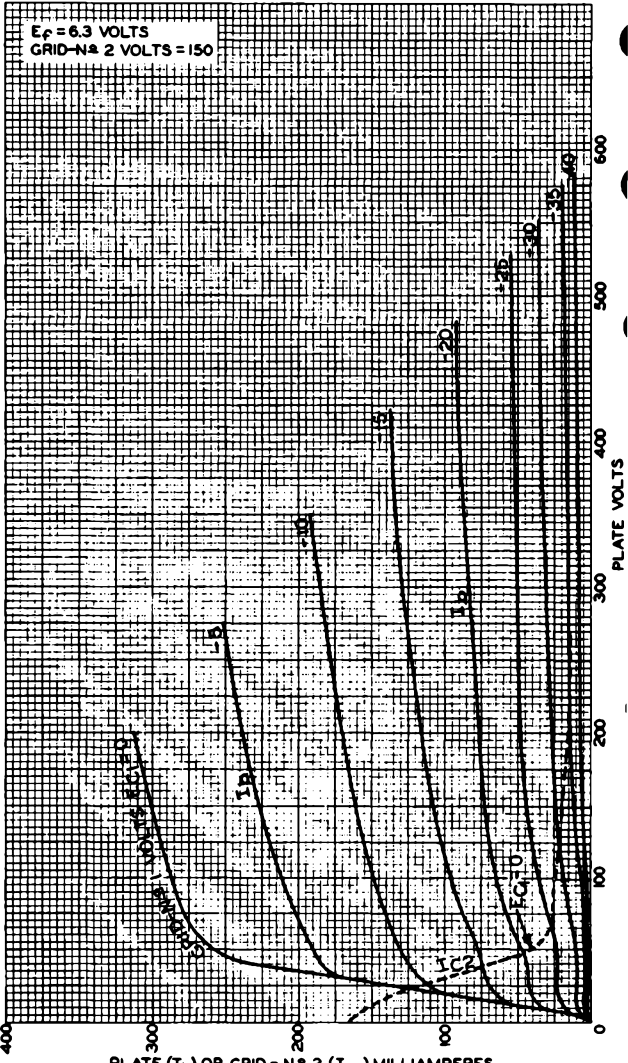
92CM-8500

6BQ6-GTB



6BQ6-GTB

AVERAGE PLATE CHARACTERISTICS



JAN. 11, 1955

PLATE (I_b) OR GRID-N# 2 (I_{c2}) MILLIAMPERES
TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM - 8501



6BQ7-A

MEDIUM-MU TWIN TRIODE

LOW-NOISE 9-PIN MINIATURE TYPE
For Driven RF-Grounded-Grid Circuits

6BQ7-A

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts
Current 0.4 amp

Direct Interelectrode Capacitances (According to RTMA Standard ET-109-A with external shield No. 315):

	Unit No. 1	Unit No. 2	
Grid to Plate	1.15	1.15	$\mu\mu\text{f}$
Input	2.85	-	$\mu\mu\text{f}$
Input (Grounded Grid)	-	4.95	$\mu\mu\text{f}$
Output	1.35	-	$\mu\mu\text{f}$
Output (Grounded Grid)	-	2.27	$\mu\mu\text{f}$
Plate to Cathode	0.15 max.	0.15 max.	$\mu\mu\text{f}$
Heater to Cathode	2.65	2.70	$\mu\mu\text{f}$
Plate of Unit No.1 to Plate of Unit No.2		0.010 max.	$\mu\mu\text{f}$
Plate of Unit No.2 to Plate & Grid of Unit No.1		0.024 max.	$\mu\mu\text{f}$

Characteristics, Amplifier Class A:

Plate Voltage	150	volts
Cathode-Bias Resistor	220	ohms
Amplification Factor	39	
Plate Resistance	6100	ohms
Transconductance	6400	μmhos
Plate Current	9	ma
Grid Volts (Approx.) for plate current of 10 μamp	-10	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW	9AJ

Pin 1 - Plate of Triode No. 2

Pin 2 - Grid of Triode No. 2

Pin 3 - Cathode of Triode No. 2

Pin 4 - Heater
Pin 5 - Heater



Pin 6 - Plate of Triode No. 1

Pin 7 - Grid of Triode No. 1

Pin 8 - Cathode of Triode No. 1

Pin 9 - Internal Shield

6BQ7-A



6BQ7-A

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	250 [▲] max.	volts
PLATE DISSIPATION.	2 max.	watts
CATHODE CURRENT.	20 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 [▲] max.	volts
Heater positive with respect to cathode.	200 max.	volts

Typical Operation in Push-Pull RF-Grounded-Grid Circuit:

Values are for Each Unit

Plate Voltage.	150	volts
Grid Voltage*.	-2	volts
Cathode Resistor (Common to both units). .	100	ohms
Plate Current.	10	ma

Typical Operation in RF-Grounded-Grid Circuit

with Direct-Coupled Drive:

Unit No. 1 (driver tube) is directly coupled to Unit No. 2 (driven rf-grounded-grid amplifier tube) as shown in accompanying circuit

Unit No. 1 Unit No. 2

Plate Supply Voltage	250	250	volts
Plate Voltage.	135	115	volts
Grid Voltage	-1	-	volt
Grid Resistor.	-	0.5	megohm
Plate Current.	10	10	ma
Grid Current	0	0	ma
Grid Voltage (Approx.) for plate current of 10 μ amp . .	-14	-	volt
Peak Heater-Cathode Voltage:			
Heater negative with respect to cathode	1	250	volts

Maximum Circuit Values (Each Unit):

Grid-Circuit Resistance.	0.5 max.	megohm
----------------------------------	----------	--------

* Obtained from cathode resistor.

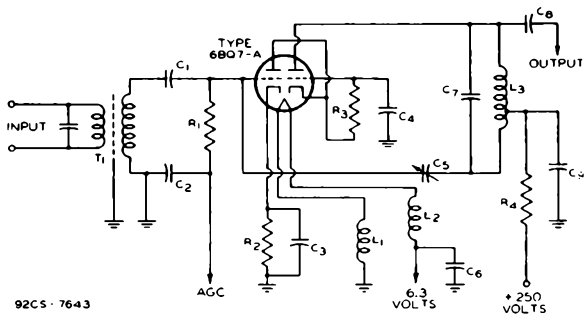
[▲] Under cutoff conditions in rf-grounded-grid circuit with direct-coupled drive, it is permissible for this voltage to be as high as 300 volts.

NOV. 1, 1952

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

**6BQ7-A****6BQ7-A****MEDIUM-MU TWIN TRIODE****RCA-6BQ7-A in Driven RF-Grounded-Grid Amplifier Circuit with Direct-Coupled Drive**

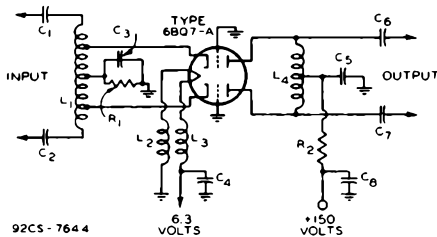
92CS-7643

- C1: 33 μ mf, 400 volts
 C2: 1000 μ mf, 400 volts
 C3: 1000 μ mf, 400 volts
 C4: 1000 μ mf, 400 volts
 C5: 0.5 to 1.5 μ mf, 400 volts
 C6: 1000 μ mf, 400 volts
 C7: 2 μ mf, 400 volts
 C8: 33 μ mf, 400 volts
 C9: 1000 μ mf, 400 volts
 R1: 1000 Ω ohms, 0.5 watt
 R2: 10 Ω ohms, 0.5 watt
 R3: 50000 Ω ohms, 0.5 watt
 R4: 100 Ω ohms, 0.5 watt

- L1, L2: Bifilar chokes, each 10 turns No. 18 enamel

L3: Tuned circuit element of tuner. Value depends on distributed circuit capacitances. To determine tap point, tap down to 80 to 90% of total number of turns

T1: Tuned circuit element of tuner. Value depends on distributed circuit capacitances.

RCA-6BQ7-A in Push-Pull RF-Grounded-Grid Circuit

92CS-7644

- C1 C2 C3 C4 C5:
 100 μ mf, 400 volts
 C6 C7: 100 μ mf, 400 volts
 C8: 1000 μ mf, 400 volts
 R1 R2: 100 Ω ohms, 0.5 watt

L1 L4: Tuned circuit elements of tuner. Values depend on distributed circuit capacitances.

L2 L3: Bifilar chokes, each 10 turns of No. 18 enamel wire, 1/4" coil form.

Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

NOV. 1, 1952

TUBE DEPARTMENT

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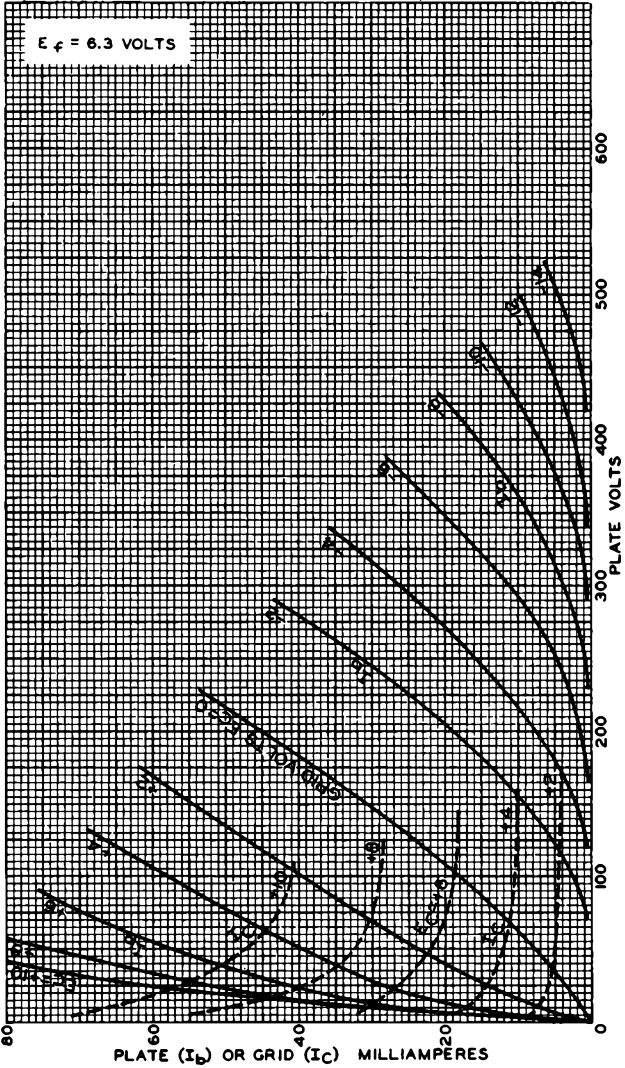
CE-7643-7644

6BQ7-A



6BQ7-A

AVERAGE PLATE CHARACTERISTICS
FOR EACH UNIT



AUG. 25, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

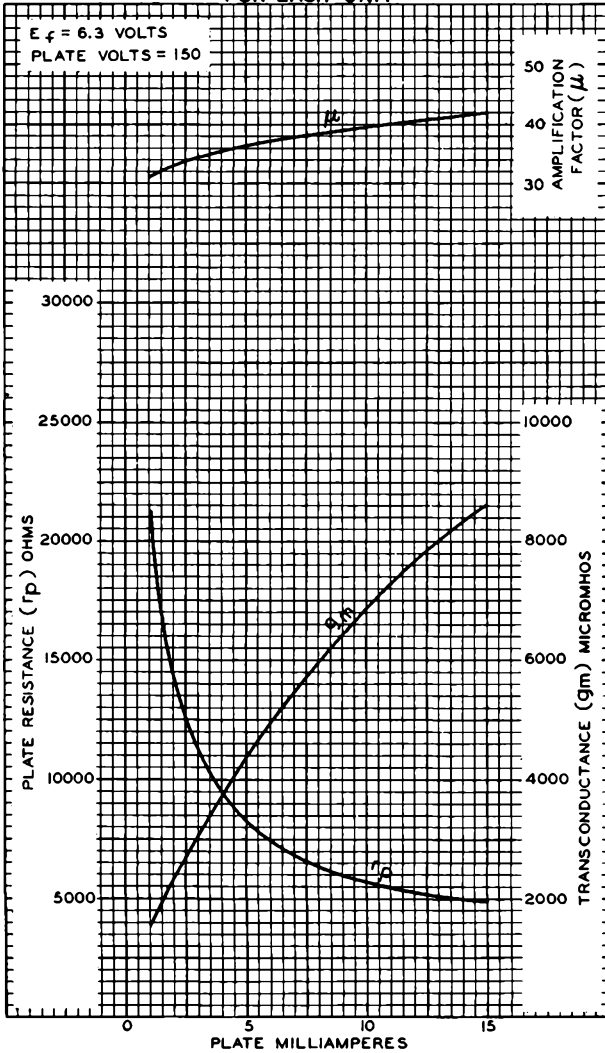
92CM-7536R1



6BQ7-A

6BQ7-A

AVERAGE CHARACTERISTICS
FOR EACH UNIT



AUG. 27, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7538RI

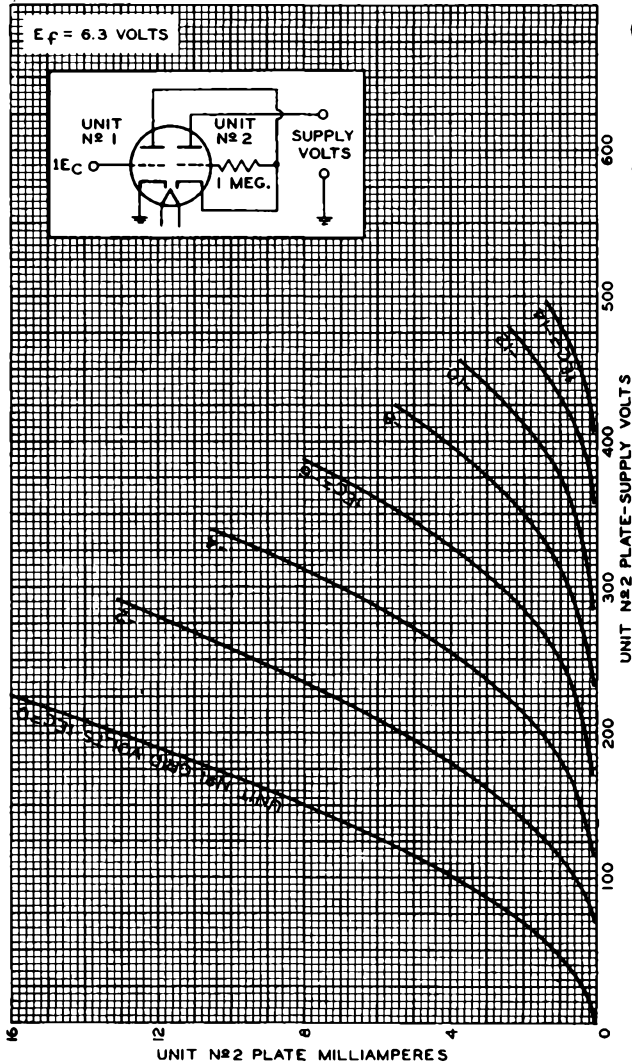
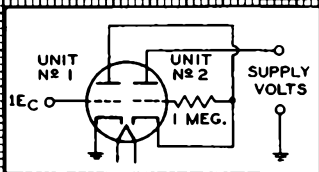
6BQ7-A



6BQ7-A

AVERAGE PLATE CHARACTERISTICS
AS DIRECT-COUPLED DRIVEN RF-GROUNDED-GRID AMPLIFIER

$E_f = 6.3$ VOLTS



OCT. 3, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7549R1

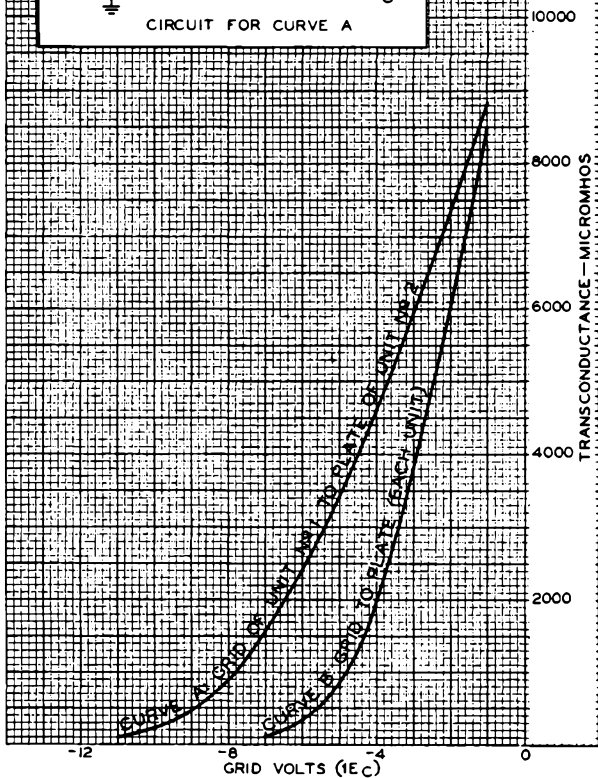
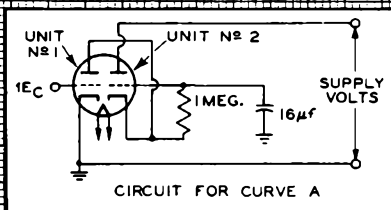


6BQ7-A

6BQ7-A

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
 CURVE A: SUPPLY VOLTS = 300
 CURVE B: PLATE VOLTS = 150



AUG. 25, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7550R1



6BR8-A

6BR8-A

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

With heater having controlled warm-up time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage.	6.3	ac or dc volts
Current.	0.45	amp
Warm-up time (Average).	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
<i>Triode Unit:</i>			
Grid to plate.	1.8	1.8	$\mu\mu\text{f}$
Grid to cathode and heater.	2.5	2.5	$\mu\mu\text{f}$
Plate to cathode and heater.	0.4	1	$\mu\mu\text{f}$
<i>Pentode Unit:</i>			
Grid No.1 to plate	0.015 max.	0.008 max.	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater	5	5	$\mu\mu\text{f}$
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater	2.6	3.5	$\mu\mu\text{f}$
Heater to cathode (Each unit).	3	3 [*]	$\mu\mu\text{f}$

Characteristics:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Plate-Supply Voltage	150	250	volts
Grid-No.2 (Screen-grid) Supply Voltage	—	110	volts
Cathode Resistor	56	68	ohms
Amplification Factor	40	—	
Plate Resistance (Approx.)	5000	40000	ohms
Transconductance	8500	5200	μmhos
Plate Current.	18	10	ma
Grid-No.2 Current.	—	3.5	ma
Grid-No.1 Voltage (Approx.) for plate $\mu\text{a} = 10$	-12	-10	volts

Mechanical:

Operating Position . . . . .	.Any
Maximum Overall Length	2-3/16"

^o, ^{*}: See next page.

6BR8-A

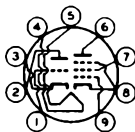


6BR8-A

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" \pm 3/32"
Diameter	0.750" to 0.875"
Dimensional Outline	See General Section
Bulb	T6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW	9FA

Pin 1—Triode Grid	Pin 8—Pentode Cathode,
Pin 2—Triode Plate	Pinode
Pin 3—Triode Cathode	Grid No. 3,
Pin 4—Heater	Internal
Pin 5—Heater	Shield
Pin 6—Pentode Plate	Pin 9—Pentode
Pin 7—Pentode Grid No. 2	Grid No. 1



CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

	Triode Unit as Osc.	Pentode Unit as Mixer	
PLATE VOLTAGE	300 max.	300 max.	volts
GRID-No. 2 (SCREEN-GRID) SUPPLY VOLTAGE	-	300 max.	volts
GRID-No. 2 VOLTAGE		See Grid-No. 2 Input	
<i>Rating Chart at front of Receiving Tube Section</i>			
GRID-No. 1 (CONTROL-GRID) VOLTAGE:			
Positive-bias value	0 max.	0 max.	volts
GRID-No. 2 INPUT:			
For grid-No. 2 voltages up to 150 volts	-	0.5 max.	watt
For grid-No. 2 voltages between 150 and 300 volts	-	See Grid-No. 2 Input	
<i>Rating Chart at front of Receiving Tube Section</i>			
PLATE DISSIPATION	2.7 max.	2.8 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	200 [▲] max.	volts

○ With external shield JEDEC No. 315 connected to cathode of unit under test except as noted.

● With external shield JEDEC No. 315 connected to ground.

▲ The dc component must not exceed 100 volts.

Curves shown under Type 6U8-A also apply to the 6BR8-A



6BY5-GA

6BY5-GA FULL-WAVE VACUUM RECTIFIER

For Television Damper Service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

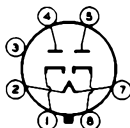
Voltage 6.3 ac or dc volts
Current 1.6 amp

Mechanical:

Mounting Position Any
Maximum Overall Length 3-7/8"
Maximum Seated Length 3-5/16"
Maximum Diameter 1-9/16"
Bulb T-12
Base Medium-Shell Octal 7-Pin (JETEC No. B7-12),
or Short-Medium-Shell Octal 7-Pin
with External Barriers (JETEC No. B7-119)

Basing Designation for BOTTOM VIEW 6CN

Pin 1 - Cathode of Unit No. 2
Pin 2 - Heater
Pin 3 - No Connection - Do Not Use*



Pin 4 - Plate of Unit No. 2
Pin 5 - Plate of Unit No. 1
Pin 7 - Heater
Pin 8 - Cathode of Unit No. 1

DAMPER SERVICE

Values are for Each Unit

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

PEAK INVERSE PLATE VOLTAGE (Absolute maximum)[#] 3000[■] max. volts
PEAK PLATE CURRENT 525 max. ma
DC PLATE CURRENT 175 max. ma
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode 450 max. volts
Heater positive with respect to cathode 100 max. volts

- Socket terminal No. 3 should not be used as tie point.
- As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.
- # This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.
- Under no circumstances should this absolute value be exceeded.

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

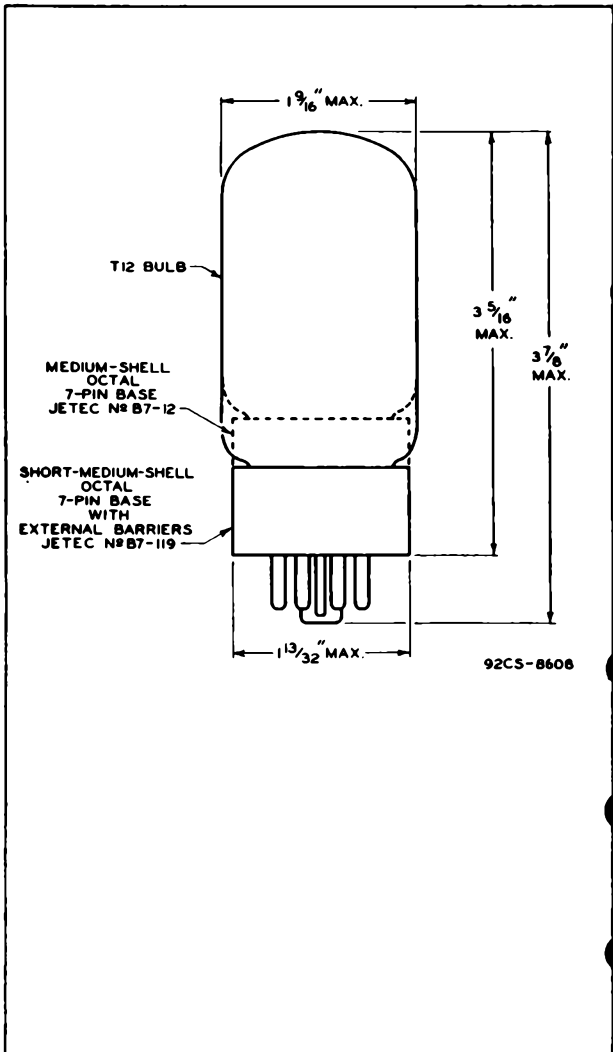
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BY5-GA



6BY5-GA

FULL-WAVE VACUUM RECTIFIER



MAY 1, 1955

TUBE DIVISION

CE-8608



6BY6

PENTAGRID AMPLIFIER

MINIATURE TYPE

6BY6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances:*

Grid No.1 to Plate	0.08 max.	μf
Grid No.3 to Plate	0.35 max.	μf
Grid No.1 to Grid No.3	0.15 max.	μf
Grid No.1 to All Other Electrodes and Heater	5.4	μf
Grid No.3 to All Other Electrodes and Heater	6.9	μf
Plate to All Other Electrodes and Heater	7.6	μf

Characteristics, Class A₁ Amplifier:

Plate Voltage	250	volts
Grids-No.2-and-No.4 Voltage	100	volts
Grid-No.3 Voltage	-2.5	volts
Grid-No.1 Voltage	-2.5	volts
Grid-No.3-to-Plate Transconductance	500	μmhos
Grid-No.1-to-Plate Transconductance	1900	μmhos
Plate Current	6.5	ma
Grids-No.2-and-No.4 Current	9	ma
Grid-No.3 Volts (Approx.) for plate current of 35 μamp and grid-No.1 volts = -4	-15	volts
Grid-No.1 Volts (Approx.) for plate current of 35 μamp and grid-No.3 volts = 0	-12	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length from Base Seat to Bulb Top (Excluding tip)	1-1/2" \pm 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)

BOTTOM VIEW

- Pin 1: Grid No.1
- Pin 2: Cathode,
Grid No.5
- Pin 3: Heater
- Pin 4: Heater



- Pin 5: Plate
- Pin 6: Grid No.2,
Grid No.4
- Pin 7: Grid No.3

*: With no external shield.

MARCH 1, 1954

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BY6



6BY6

PENTAGRID AMPLIFIER

GATED AMPLIFIER SERVICE

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max. volts
GRIDS-No.2-and-No.4 VOLTAGE	See Rating Curve at front of this Section
GRIDS-No.2-and-No.4 SUPPLY VOLTAGE	300 max. volts
GRID-No.3 SUPPLY VOLTAGE:	
Negative Bias Value	50 max. volts
Positive Bias Value	0 max. volts
Positive Peak Value	25 max. volts
GRID-No.1 SUPPLY VOLTAGE:	
Negative Bias Value	100 max. volts
PLATE DISSIPATION	2 max. watts
GRID-No.3 INPUT	0.1 max. watt
GRIDS-No.2-and-No.4 INPUT	1 max. watt
GRID-No.1 INPUT	0.1 max. watt
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode	200 max. volts
Heater positive with respect to cathode	200 [#] max. volts

Characteristics as Sync Separator and Sync Clipper:

Plate Voltage	10	volts
Grid-No.3 Voltage	0	volts
Grids-No.2-and-No.4 Voltage	25	volts
Grid-No.1 Voltage	0	volts
Plate Current	1.4	ma
Grids-No.2-and-No.4 Current	3.5	ma
Grid-No.3 Bias Volts (Approx.) for plate voltage of 25 volts, grids-No.2-and-No.4 voltage of 25 volts, grid-No.1 voltage of 0 volts, and plate current of 50 μ amp	-2.5	volts
Grid-No.1 Bias Volts (Approx.) for plate voltage of 25 volts, grids-No.2-and-No.4 voltage of 25 volts, grid-No.3 voltage of 0 volts, and plate current of 50 μ amp	-2.3	volts

Maximum Circuit Values:

Grid-No.1 or Grid-No.3-Circuit Resistance:	
For fixed-bias operation	0.5 max. megohm
For cathode-bias operation	1.0 max. megohm

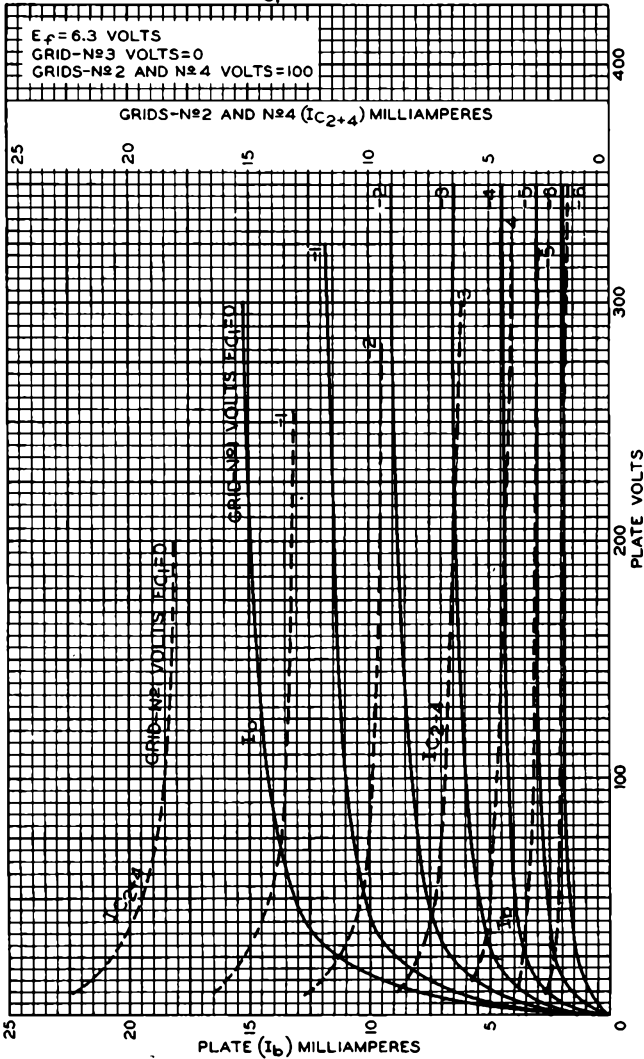
[#] The dc component must not exceed 100 volts.



6BY6

6BY6

AVERAGE OPERATION CHARACTERISTICS WITH E_{c1} AS VARIABLE



NOV. 5, 1953

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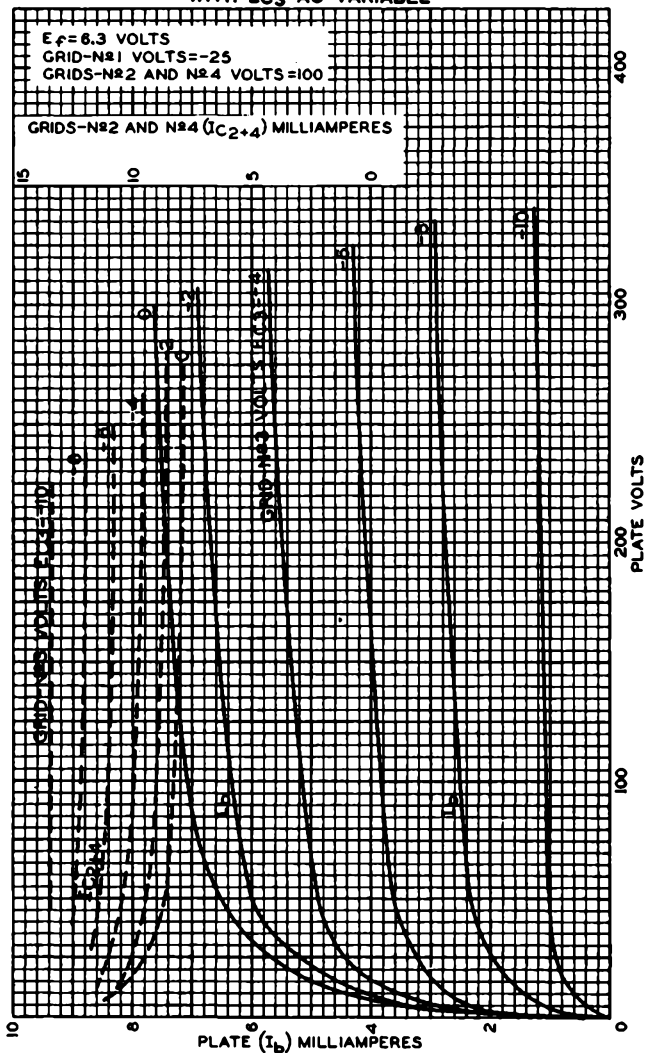
92CM-8140

6BY6



6BY6

AVERAGE OPERATION CHARACTERISTICS WITH EC_3 AS VARIABLE



NOV. 5, 1953

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 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

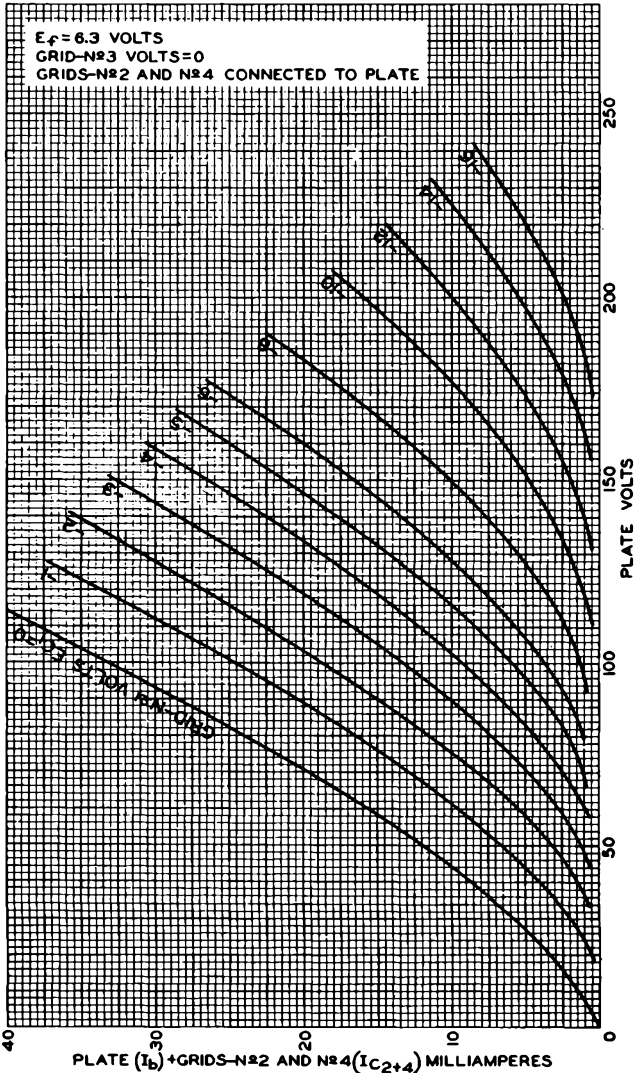
92CM-8139



6BY6

6BY6

AVERAGE PLATE CHARACTERISTICS



NOV. 5, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8138



6BZ6

SEMIREMOTE-CUTOFF PENTODE

7-PIN MINIATURE TYPE

6BZ6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts
Current. 0.3 amp

Direct Interelectrode Capacitances:

Table with 4 columns: Component, Without External Shield, With External Shield, and unit (pF). Rows include Grid No.1 to plate, Grid No.1 to cathode, Plate to cathode, etc.

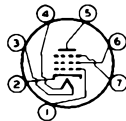
Characteristics, Class A1 Amplifier:

Table with 3 columns: Parameter, Value, and Unit. Parameters include Plate Voltage, Grid-No.3, Grid-No.2 Voltage, Cathode-Bias Resistor, Plate Resistance, Transconductance, Plate Current, Grid-No.2 Current, and Grid-No.1 Voltage.

Mechanical:

Table with 2 columns: Parameter and Value. Parameters include Mounting Position, Maximum Overall Length, Maximum Seated Length, Length, Base Seat to Bulb Top, Maximum Diameter, Bulb, and Base.

- Pin 1 - Grid No.1
Pin 2 - Cathode
Pin 3 - Heater
Pin 4 - Heater
Pin 5 - Plate



- Pin 6 - Grid No.2
Pin 7 - Grid No.3, Internal Shield

0 With external shield JEDEC No.316 connected to cathode.

MAY 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6BZ6



6BZ6

SEMIREMOTE-CUTOFF PENTODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE	0 max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE.	300 max.	volts
GRID-No.2 VOLTAGE.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value.	0 max.	volts
PLATE DISSIPATION.	2.5 max.	watts
GRID-No.2 INPUT:		
For grid-No.2 voltages up to 150 volts	0.5 max.	watt
For grid-No.2 voltages between 150 and 300 volts.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . .	200 max.	volts
Heater positive with respect to cathode . . .	200 [▲] max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.25 max.	megohm
For cathode-bias operation	1.0 max.	megohm

[▲] The dc component must not exceed 100 volts.

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

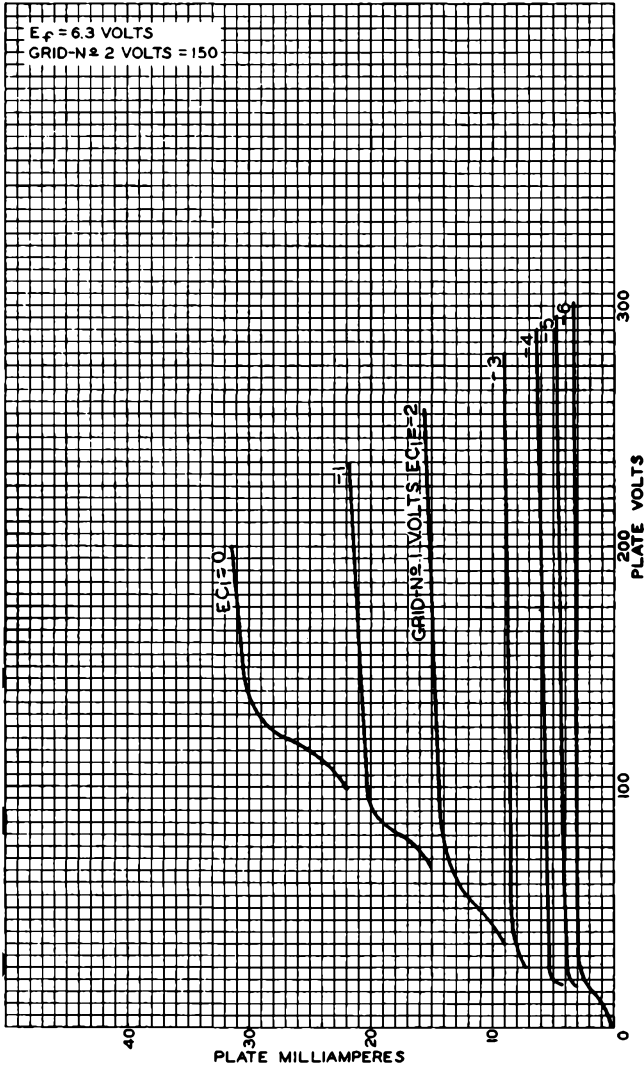
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6BZ6

6BZ6

AVERAGE PLATE CHARACTERISTICS



JAN. 25, 1955

TUBE DIVISION
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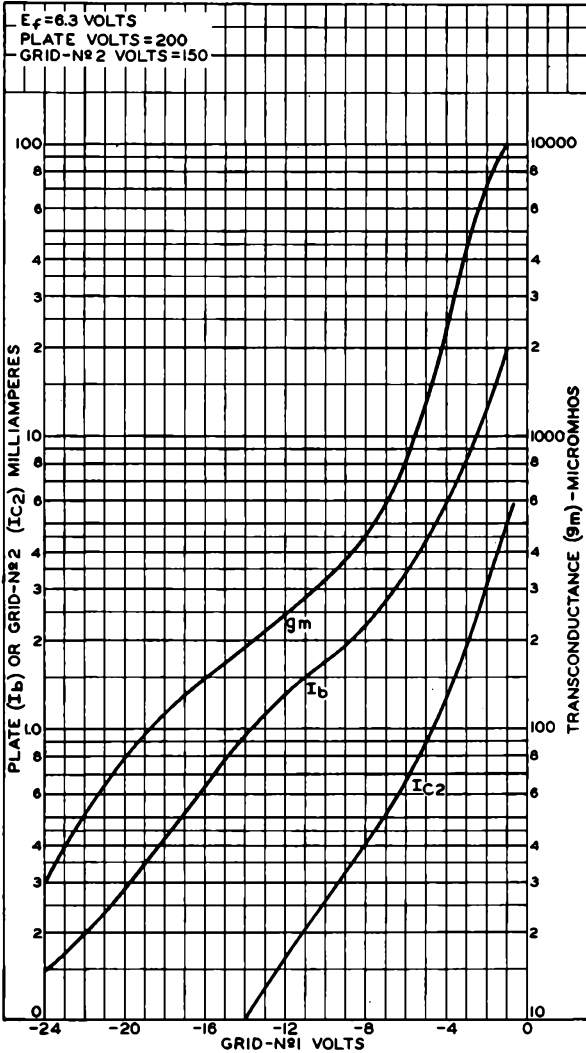
92CM - 8508

6BZ6



6BZ6

AVERAGE CHARACTERISTICS



JAN. 26, 1955

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8509



6BZ7

6BZ7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.4	amp

Direct Interelectrode Capacitances (With external shield JEDEC No.315 connected to cathode):

	Unit No.1	Unit No.2	
Grid to plate	1.15	1.15	$\mu\mu\text{f}$
Grid to cathode, heater, and internal shield.	2.5	-	$\mu\mu\text{f}$
Plate to cathode.	0.15 max.	0.15 max.	$\mu\mu\text{f}$
Plate to cathode, heater, and internal shield.	1.35	-	$\mu\mu\text{f}$
Plate to grid, heater, and internal shield.	-	2.27	$\mu\mu\text{f}$
Cathode to grid, heater, and internal shield.	-	4.95	$\mu\mu\text{f}$
Cathode to heater	2.6	2.7	$\mu\mu\text{f}$
Plate of unit No.1 to plate of unit No.2	0.010 max.		$\mu\mu\text{f}$
Plate of unit No.2 to plate & grid of unit No.1	0.024 max.		$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Supply Voltage	150	volts
Cathode-Bias Resistor	220	ohms
Amplification Factor	38	
Plate Resistance	5600	ohms
Transconductance	6800	μmhos
Plate Current	10	ma
Grid Volts (Approx.) for plate current of 10 μamp	-11	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No.E9-1)
Basing Designation for BOTTOM VIEW	9AJ

- Pin 1 - Plate of Unit No.2
- Pin 2 - Grid of Unit No.2
- Pin 3 - Cathode of Unit No.2
- Pin 4 - Heater
- Pin 5 - Heater



- Pin 6 - Plate of Unit No.1
- Pin 7 - Grid of Unit No.1
- Pin 8 - Cathode of Unit No.1
- Pin 9 - Internal Shield

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6BZ7



6BZ7

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 ^A max.	volts
PLATE DISSIPATION	2 max.	watts
CATHODE CURRENT	20 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 ^A max.	volts
Heater positive with respect to cathode .	200 max.	volts

^A In cathode-drive circuits with direct-coupled drive, it is permissible for this voltage to be as high as 250 volts.

JUNE 14, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



6C4

6C4

MEDIUM-MU TRIODE

For use in FM and other HF circuits

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.15	amp

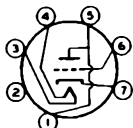
Direct Interelectrode Capacitances:^o

Grid to plate	1.6	μf
Grid to cathode and heater	1.8	μf
Plate to cathode and heater	1.3	μf

Mechanical:

Mounting Position	Any	
Maximum Overall Length	2-1/8"	←
Maximum Seated Length	1-7/8"	←
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" \pm 3/32"	←
Maximum Diameter	3/4"	
Bulb	T-5-1/2	
Base	Small-Button Miniature 7-Pin (JETEC No. E7-1)	←
Basing Designation for BOTTOM VIEW	6BG	

Pin 1 - Plate
 Pin 2 - Internal Con-
 nection
 Do Not Use
 Pin 3 - Heater



Pin 4 - Heater
 Pin 5 - Plate
 Pin 6 - Grid
 Pin 7 - Cathode

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
PLATE DISSIPATION	3.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [■] max.	volts

Characteristics:

Plate Voltage	100	250	volts
Grid Voltage	0	-8.5	volts
Amplification Factor	19.5	17	
Plate Resistance (Approx.)	6250	7700	ohms
Transconductance	3100	2200	μmhos
Plate Current	11.8	10.5	ma

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias operation	0.25 max.	megohm
For cathode-bias operation	1.0 max.	megohm

^o With no external shield.

[■]: See next page.

← indicates a change.

6CA



6C4

MEDIUM-MU TRIODE

← Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No. 10
at front of this Section.

RF POWER AMPLIFIER & OSCILLATOR—Class C Telegraphy

Maximum Ratings, Design-Center Values:

DC PLATE VOLTAGE	300 max.	volts
DC GRID VOLTAGE	-50 max.	volts
DC PLATE CURRENT	25 max.	ma
DC GRID CURRENT	8 max.	ma
PLATE DISSIPATION	5 max.	watts

← PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 ^{max.}	volts

Typical Operation at Frequencies up to 50 Mc:*

DC Plate Voltage	300	volts
DC Grid Voltage	-27	volts
DC Plate Current	25	ma
DC Grid Current (Approx.)	7	ma
Driving Power (Approx.)	0.35	watt
Useful Power Output (Approx.)	5.5	watts

* The dc component must not exceed 100 volts.

• Approximately 2.5 watts can be obtained when the 6C4 is used at 150 Mc as an oscillator with grid resistor of 10000 ohms and maximum rated input.

← indicates a change.

NOV. 5, 1954

TUBE DIVISION

DATA 1

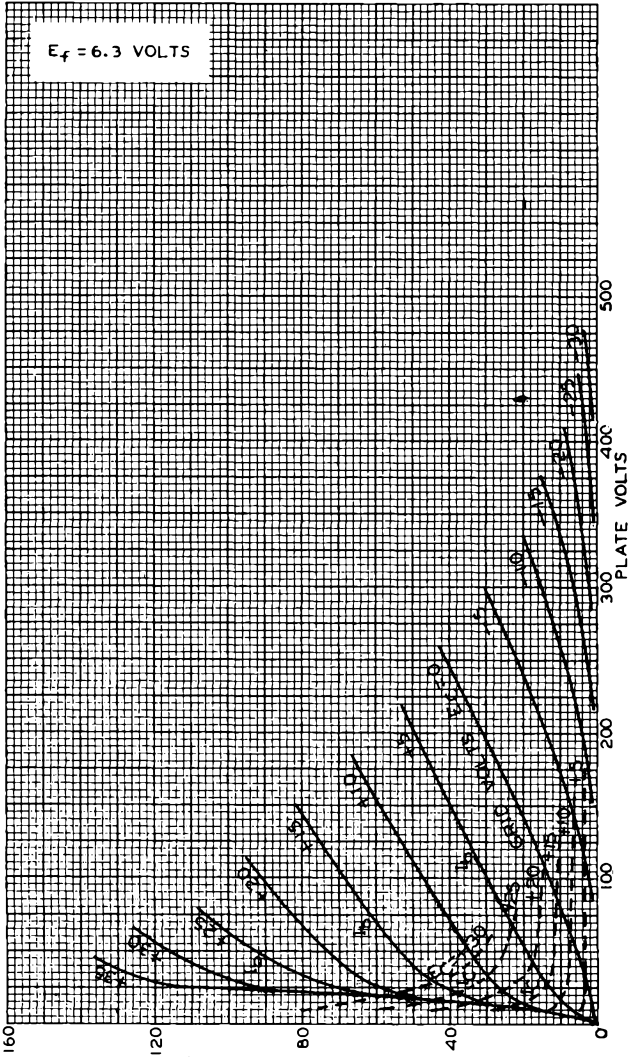
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6C4

6C4

AVERAGE PLATE CHARACTERISTICS

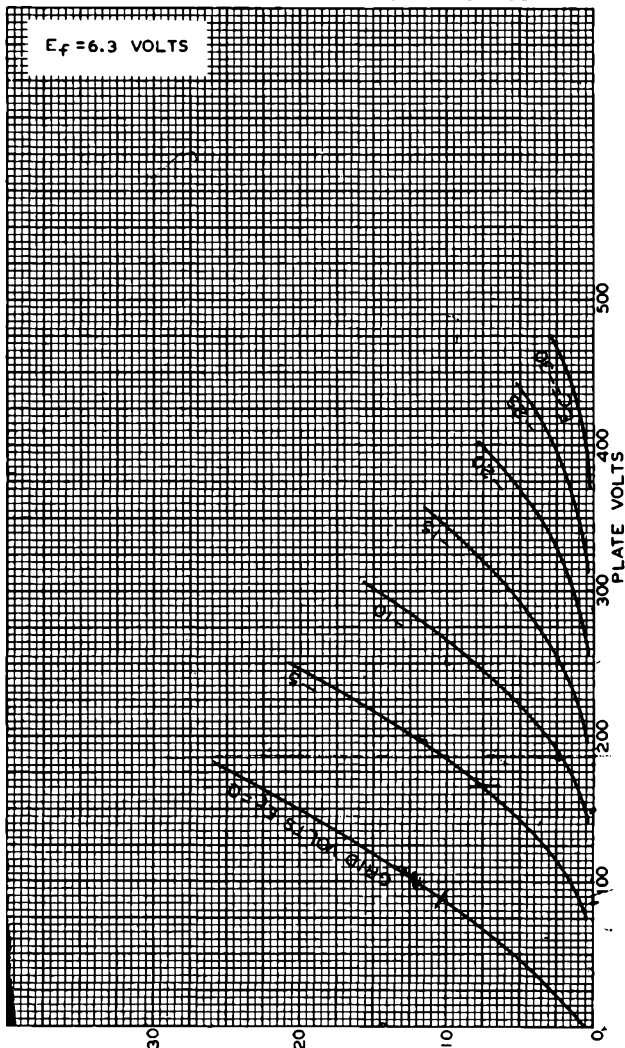


6CA



6C4

AVERAGE PLATE CHARACTERISTICS



ARCH 14, 1942

PLATE MILLIAMPERES
RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6377



6C5
6C5-GT/G

6C5, 6C5-GT/G

DETECTOR AMPLIFIER TRIODE

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
	<u>6C5</u>	<u>6C5-GT/G</u>
Direct Interelectrode Cap.	▲	▲▲
Grid to Plate	2.0	2.2
Grid to Cathode	3.0	4.4
Plate to Cathode	11	12
Maximum Overall Length	2-5/8"	3-5/16"
Maximum Seated Height	2-1/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT-8	T-9
Base	{ Small Wafer Octal 6-Pin	{ Small Wafer Octal 6-Pin, Sleeve
Basing Designation	6Q	GT-6Q
Pin 1 { 6C5, Shell		Pin 5 - Grid
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Mounting Position		Any

BOTTOM VIEW

Maximum And Minimum Ratings Are Design-Center Values

AMPLIFIER

Plate Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	2.5 max. watts
Characteristics - Class A₁ Amplifier:	
Plate Voltage	250 volts
Grid Voltage *	-8 volts
Amplification Factor	20
Plate Resistance	10000 ohms
Transconductance	2000 μmhos
Plate Current	8 ma.

Typical Operation with Resistance Coupling:
See RESISTANCE-COUPLED AMPLIFIER CHART.

DETECTOR

Typical Operation:	<u>Biased</u>	<u>Grid Leak</u>	
Plate Voltage	250	45 to 100	volts
Grid Voltage	-17 approx.	Return to cathode	volts
Plate Current	Adjusted to 0.2 ma. with no input signal	-	
Grid Leak	-	0.1 to 1.0	megohm
Grid Condenser	-	0.00005 to 0.0005	μf

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ with shell of 6C5 connected to cathode. Values are approximate.

▲▲ with external shield connected to cathode. Values are approximate.

* Under maximum rated conditions, the resistance in the grid circuit should not exceed 1.0 megohm.

Mar. 20, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

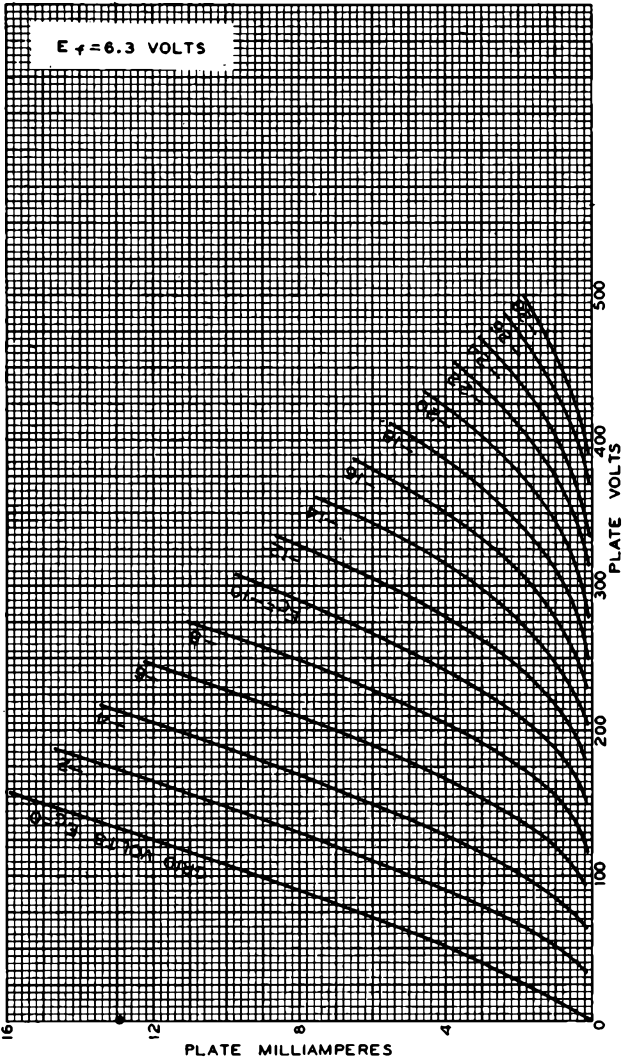
DATA

6C5



6C5

AVERAGE PLATE CHARACTERISTICS

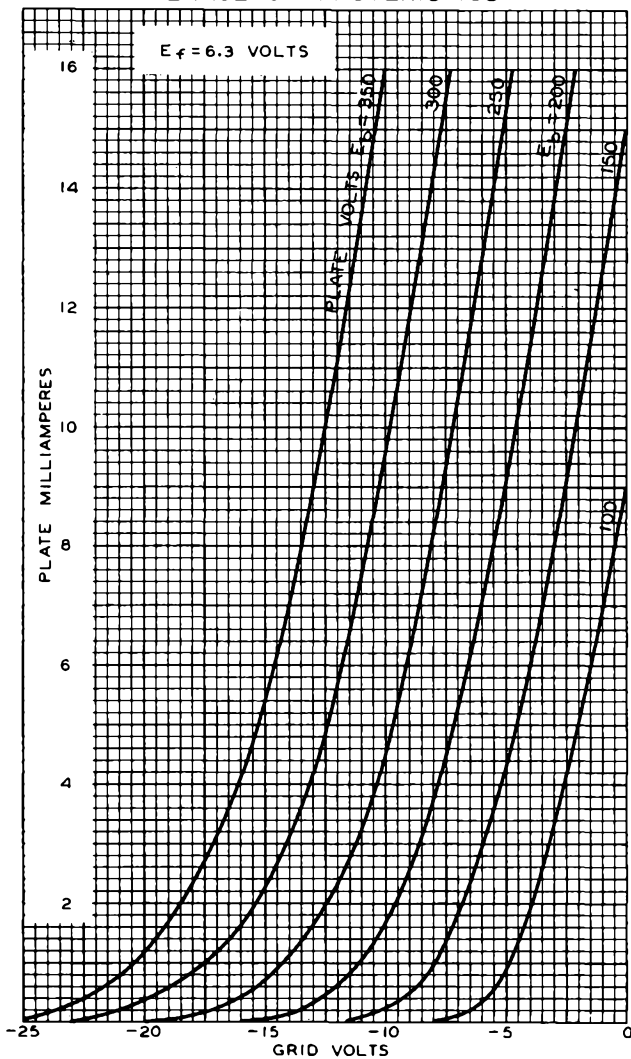


JULY 23, 1935

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

92C-4441

AVERAGE CHARACTERISTICS

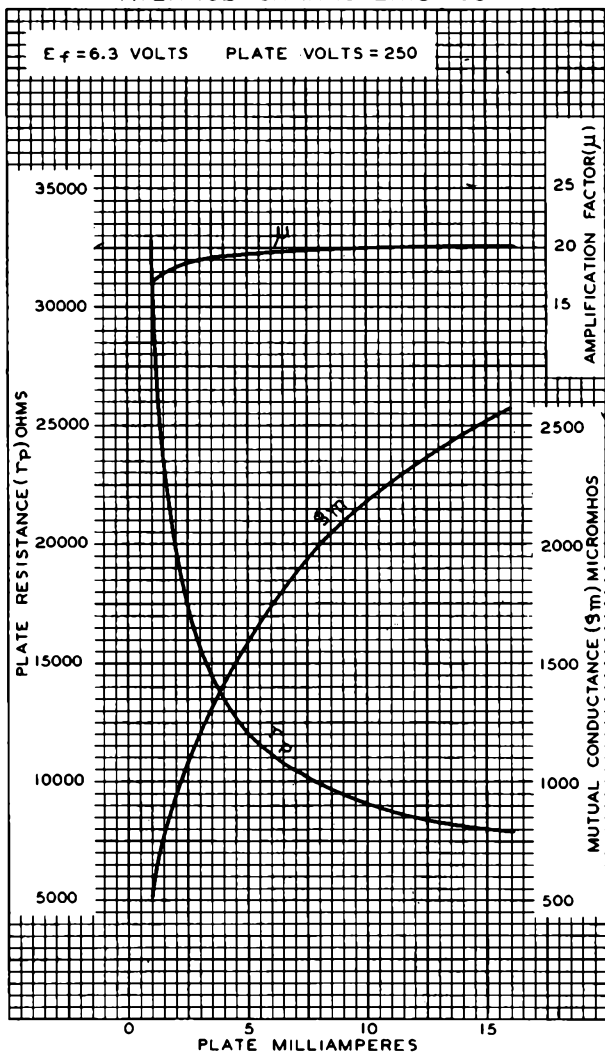


6C5


Cunningham
Radiotron

 RCA-6C5

AVERAGE CHARACTERISTICS



AUG. 23, 1935

RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4462



6C6

SHARP-CUTOFF PENTODE

6C6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances:

Pentode Connection:

Grid No.1 to Plate ^o	0.007 max.	$\mu\mu\text{f}$
Input ^{oo}	5	$\mu\mu\text{f}$
Output ^{oo}	6.5	$\mu\mu\text{f}$

Triode Connection^{oo}:

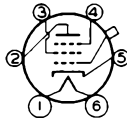
Grid No.1 to Plate .	2	$\mu\mu\text{f}$
Grid No.1 to Cathode	3	$\mu\mu\text{f}$
Plate to Cathode . .	10.5	$\mu\mu\text{f}$

- ^o With external shield connected to cathode.
- ^{oo} With no external shield.
- ^{*} With grid No.2 and grid No.3 connected to plate.

Mechanical:

Mounting Position	Any
Maximum Overall Length	4-15/16"
Seated Length	4-3/16" \pm 1/8"
Maximum Diameter	1-9/16"
Bulb	ST-12
Cap.	Small
Base	Small-Shell Small 6-Pin
Basing Designation for BOTTOM VIEW	6F

- Pin 1 - Heater
- Pin 2 - Plate
- Pin 3 - Grid No.2
- Pin 4 - Grid No.3



- Pin 5 - Cathode, Internal Shield
- Pin 6 - Heater Cap - Grid No.1

Maximum Ratings, Characteristics, and Typical Operating Conditions are the same as for Type 6J7.

Curves for Type 6C6 are the same as those for Type 6J7.

For additional data, see RESISTANCE-COUPLED AMPLIFIER CHARTS at the front of this Section.



6C7

6C7

DUPLEX-DIODE TRIODE

RENEWAL TYPE FOR MAJESTIC RECEIVERS

Heater ■	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Overall Length		4-9/32" to 4-17/32"
Seated Height		3-21/32" to 3-29/32"
Maximum Diameter (without shield)		1-9/16"
Bulb (with form-fitting shield)		ST-12
Cap		Small Metal
Base ▲		Small 7-Pin
Pin 1-Heater		Pin 5-Diode Plate #1
Pin 2-Plate		Pin 6-Cathode
Pin 3-External Shield		Pin 7-Heater
Pin 4-Diode Plate #2		



BOTTOM VIEW (7G)

TRIODE UNITCharacteristics:

Plate Voltage	250	volts
Grid Voltage	-9	volts
Amp. Factor	20	
Plate Res.™	16000	ohms
Transcond.	1250	μmhos
Plate Cur.	4.5	ma.

DIODE UNITS - Two

Consideration of these units is given under Type 85. Circuits will be similar to those shown for Type 55 with fixed bias.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- ▲ Requires a different socket than the medium 7-pin base.

July 1, 1941

RCA RADIIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



6C8-G

6C8-G
★

TWIN-TRIODE AMPLIFIER

Heater [■]	Coated Unipotential Cathodes		
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
Direct Interelectrode Capacitances (Approx.):			
	<u>Triode Unit T₁</u>	<u>Triode Unit T₂</u>	
Grid to Plate	2.6	1.8	μμf
Grid to Cathode	2.6	1.3	μμf
Plate to Cathode	2.0	2.2	μμf
Grid to Grid		0.1	μμf
Plate to Plate		2.0	μμf
Overall Length		4-7/32" to 4-15/32"	
Seated Height		3-21/32" to 3-29/32"	
Maximum Diameter		1-9/16"	
Bulb		ST-12	
Cap		Skirted Miniature, Style A	
Base		Small Shell Octal 8-Pin	
Pin 1 - No Connection		Pin 6 - Plate (Triode T ₁)	
Pin 2 - Heater		Pin 7 - Heater	
Pin 3 - Plate (Triode T ₂)		Pin 8 - Cathode (Triode T ₁)	
Pin 4 - Cathode (Triode T ₂)		Cap - Grid (Triode T ₂)	
Pin 5 - Grid (Triode T ₁)			
Mounting Position		Any	
	BOTTOM VIEW (G-8G)		
	EACH TRIODE UNIT		
Plate Voltage	250	max. volts	
Grid Voltage	0	min. volts	
Plate Dissipation	1.0	max. watt	
Characteristics - Class A ₁ Amplifier:			
Plate	250	volts	
Grid	-4.5	volts	
Amp. Fact.	36		
Plate Res.	22500	ohms	
Transcond.	1600	μmhos	
Plate Cur.	3.2	ma.	
Typical Operation - Resistance-Coupled Amplifier:			
See RESISTANCE-COUPLED AMPLIFIER CHART.			
[■] In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.			
← Indicates a change.			

Dec. 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

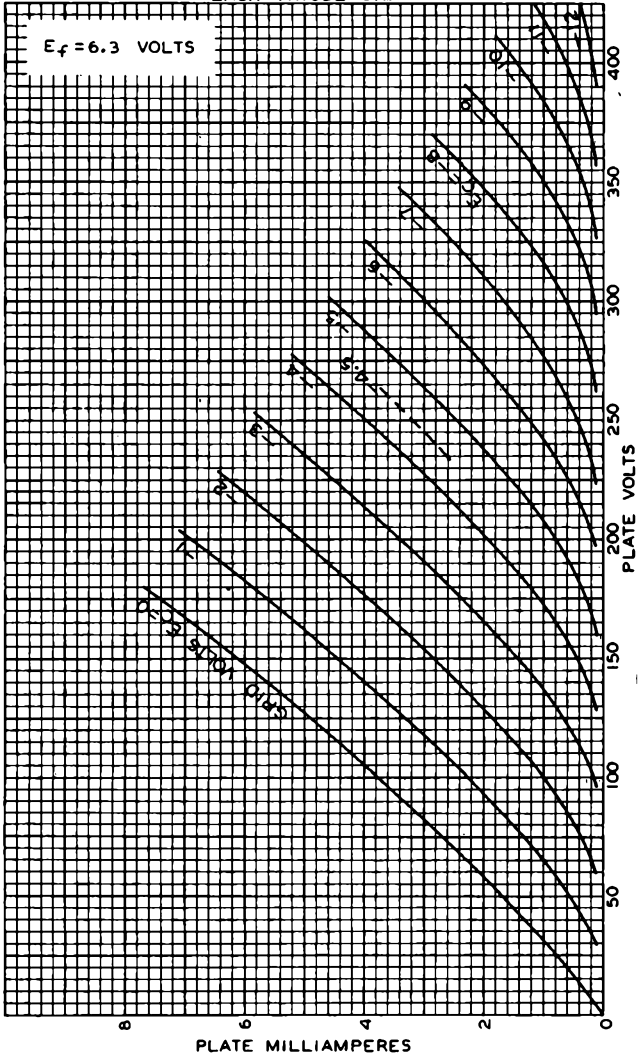
DATA

6C8-G



6C8-G

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



SEPT. 18, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4957RI



6CB5

6CB5

BEAM POWER TUBE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	2.5	amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate	0.8	μ f
Grid No.1 to cathode & grid No.3, grid No.2, and heater	24	μ f
Plate to cathode & grid No.3, grid No.2, and heater	10	μ f

Characteristics, Class A₁ Amplifier:

Plate Voltage	75	175	volts
Grid-No.2 (Screen) Voltage	150	175	volts
Grid-No.1 (Control-Grid) Voltage	0	-30	volts
Mu-Factor, Grid No.2 to Grid No.1	-	3.8	
Plate Resistance (Approx.)	-	5000	ohms
Transconductance	-	8800	μ mhos
Plate Current	460*	90	ma
Grid-No.2 Current	42*	6	ma
Grid-No.1 Voltage (Approx.) for plate current of 1 ma	-	-60	volts

Mechanical:

Mounting Position . . . . .	.Any
Maximum Overall Length	5-1/8"
Seated Length	4-7/16" \pm 5/32"
Maximum Diameter	2-1/16"
Bulb	ST-16
Cap.	Small (JETEC No.C1-1)
Base	Short Jumbo-Shell Octal 8-Pin with External Barriers (JETEC No.B8-71)

Basing Designation for BOTTOM VIEW 8GD

Pin 1 - Grid No.2
 Pin 2 - Heater
 Pin 3 - Cathode,
 Grid No.3
 Pin 4 - Grid No.1
 Pin 5 - Grid No.1



Pin 6 - Cathode,
 Grid No.3
 Pin 7 - Heater
 Pin 8 - Grid No.2
 Cap - Plate

^o Without external shield.

* These values can be measured by a method involving a recurrent wave form such that the plate dissipation and grid-No.2 input will be kept within ratings in order to prevent damage to the tube.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6CB5



6CB5

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	700 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute Value) [#]	6800 [●] max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	200 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-50 max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	200 max.	volts
DC PLATE CURRENT	200 max.	ma
GRID-No.2 INPUT	3.6 max.	watts
PLATE DISSIPATION [†]	23 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	210 max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance 0.47 max. megohm

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[#] The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[●] Under no circumstances should this absolute value be exceeded.

[▲] The dc component must not exceed 100 volts.

[†] It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value be employed.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

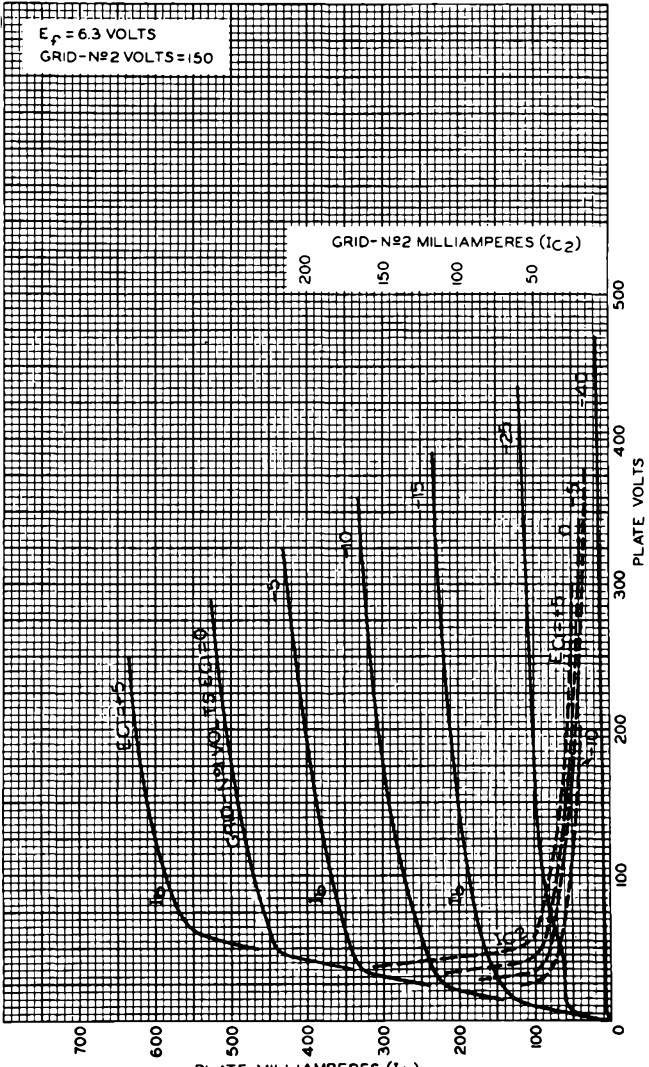
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6CB5

6CB5

AVERAGE PLATE CHARACTERISTICS



SEPT. 15, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

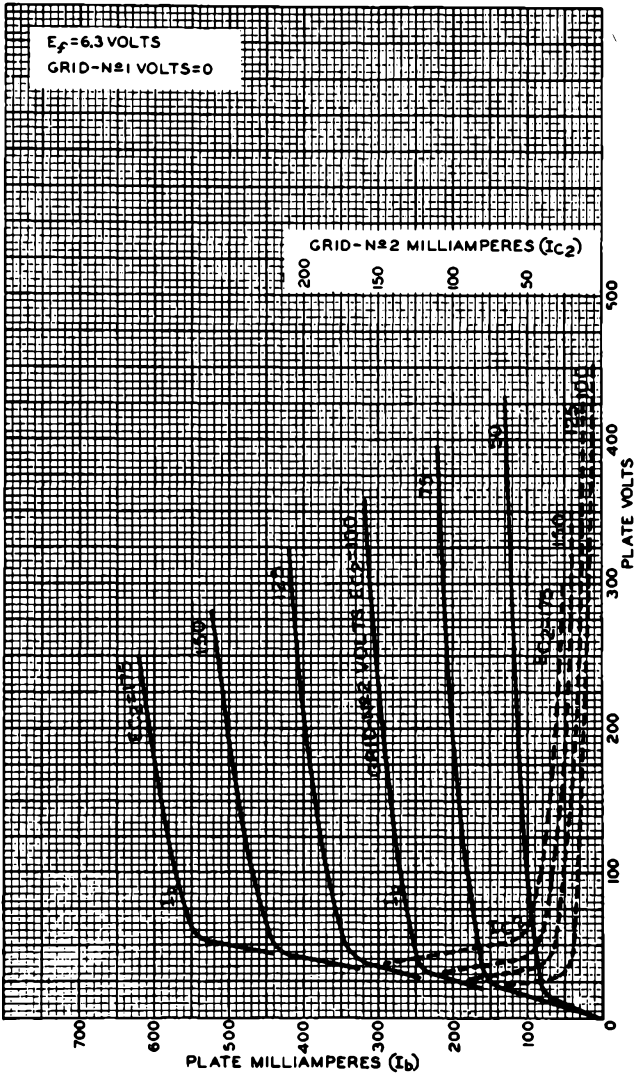
92CM-8436

6CB5



6CB5

AVERAGE PLATE CHARACTERISTICS



SEPT. 15, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8437



6CB6

6CB6

SHARP-CUTOFF PENTODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3	. . . . .	ac or dc volts
Current.	0.3	. . . . .	amp

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^o</i>	
Grid No.1 to plate	0.020 max.	0.010 max.	μ f
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater	6.5	6.5	μ f
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater	1.9	3.0	μ f

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip). 1-1/2" \pm 3/32"

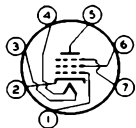
Maximum Diameter 3-4"

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CM

- Pin 1 - Grid No.1
- Pin 2 - Cathode
- Pin 3 - Heater
- Pin 4 - Heater



- Pin 5 - Plate
- Pin 6 - Grid No.2
- Pin 7 - Grid No.3,
Internal
Shield

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts

GRID-No.2 (SCREEN) SUPPLY VOLTAGE. 300 max. volts

GRID-No.2 VOLTAGE. See Grid-No.2 Input Rating Chart
at front of Receiving Tube Section

PLATE DISSIPATION. 2 max. watts

GRID-No.2 INPUT:

For grid-No.2 voltages up to 150 volts . . 0.5 max. watt

For grid-No.2 voltages between 150
and 300 volts. See Grid-No.2 Input Rating Chart
at front of Receiving Tube Section

^o With external shield JETEC No.316 connected to cathode.

← Indicates a change.

MAR. 1, 1955

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6CB6



6CB6

SHARP-CUTOFF PENTODE

- PEAK HEATER-CATHODE VOLTAGE:
 Heater negative with respect to cathode . 200 max. volts
 Heater positive with respect to cathode . 200[▲]max. volts

Typical Operation and Characteristics:

Plate Voltage	200	volts
Grid No.3 (Suppressor)	<i>Connected to cathode at socket</i>	
Grid-No.2 Voltage	150	volts
Cathode-Bias Resistor	180	ohms
Plate Resistance (Approx.)	0.6	megohm
Transconductance	6200	μ mhos
Grid-No.1 Voltage (Approx.) for plate current of 10 μ amp.	-8	volts
Plate Current	9.5	ma
Grid-No.2 Current	2.8	ma

▲ The dc component must not exceed 100 volts.

→ Indicates a change.

MAR. 1, 1955

TUBE DIVISION

DATA

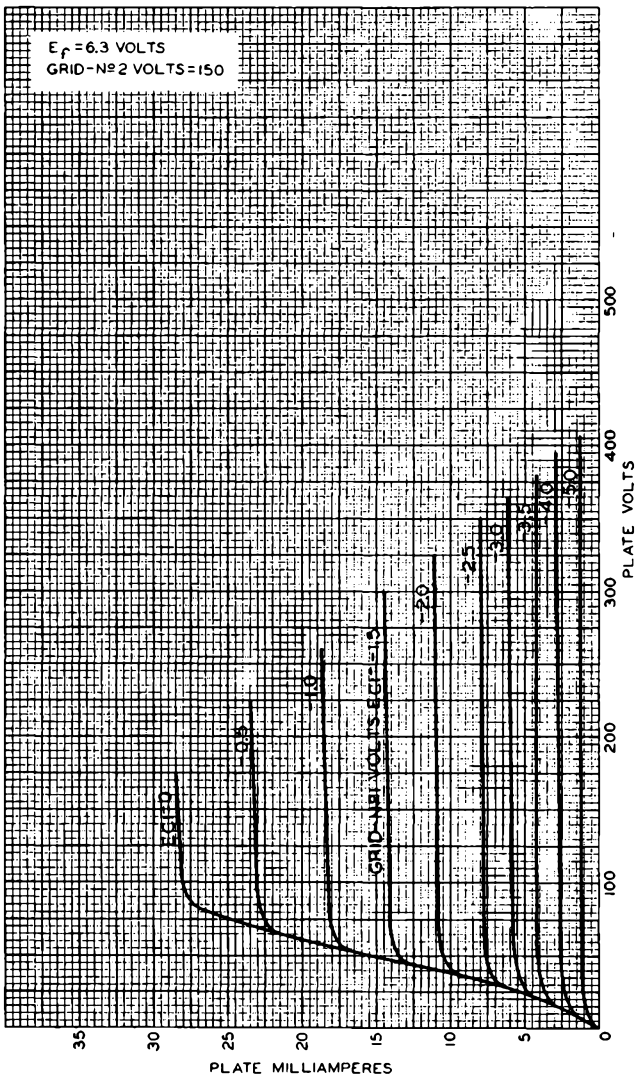
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6CB6

6CB6

AVERAGE PLATE CHARACTERISTICS



SEPT. 30, 1949

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

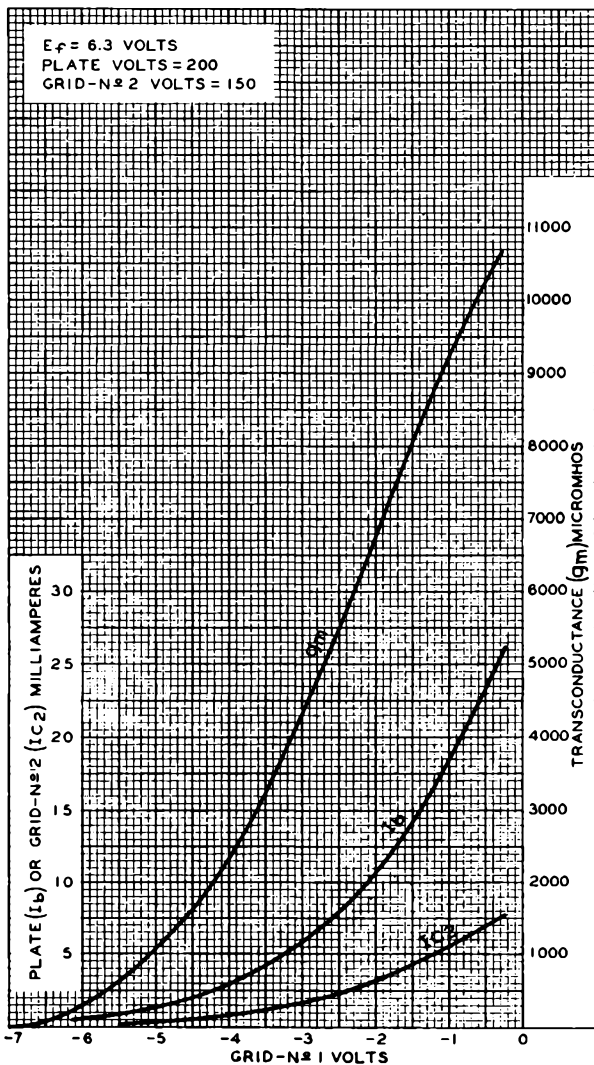
92CM-7378

6CB6



6CB6

AVERAGE CHARACTERISTICS



SEPT. 28, 1949

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7375



6CB6-A

6CB6-A

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

With heater having controlled warm-up time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3 ± 6%	amp
Warm-up time (Average)	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Grid No.1 to plate	0.025 max.	0.015 max.	μf
Grid No.1 to cathode & internal shield & grid No.3, grid No.2, and heater	6.5	6.5	μf
Plate to cathode & internal shield & grid No.3, grid No.2, and heater	2	3	μf

Characteristics, Class A₁ Amplifier:

Plate-Supply Voltage	125	125	volts
Grid No.3	♦	♦	
Grid-No.2 Supply Voltage	125	125	volts
Grid-No.1 Voltage	-3	-	volts
Cathode Resistor	-	56	ohms
Plate Resistance (Approx.)	-	0.28	megohm
Transconductance	-	8000	μmhos
Plate Current	2.8	13	ma
Grid-No.2 Current	-	3.7	ma
Grid-No.1 Voltage (Approx.) for plate μa = 20	-	-6.5	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" ± 3/32"
Diameter	0.650" to 0.750"
Dimensional Outline	See General Section
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No.E7-1)

^o, ♦: See next page.

6CB6-A

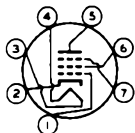


6CB6-A

SHARP-CUTOFF PENTODE

Basing Designation for Bottom View. 7CM

Pin 1 - Grid No.1
 Pin 2 - Cathode
 Pin 3 - Heater
 Pin 4 - Heater
 Pin 5 - Plate



Pin 6 - Grid No.2
 Pin 7 - Grid No.3,
 Internal
 Shield

AMPLIFIER - Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	330 max.	volts
GRID-No.3 (SUPPRESSOR-GRID) VOLTAGE	0 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE.	330 max.	volts
GRID-No.2 VOLTAGE	<i>See Grid-No.2 Input</i>	

Rating Chart at front of Receiving Tube Section

GRID-No.1 (CONTROL-GRID) VOLTAGE:
 Positive-bias value 0 max. volts

GRID-No.2 INPUT:

For grid-No.2 voltages up
 to 165 volts. 0.55 max. watt

For grid-No.2 voltages be-
 tween 165 and 330 volts *See Grid-No.2 Input*

Rating Chart at front of Receiving Tube Section

PLATE DISSIPATION 2.3 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with
 respect to cathode. 200 max. volts

Heater positive with
 respect to cathode. 200[▲] max. volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation. 0.25 max. megohm
 For cathode-bias operation. 1 max. megohm

○ With external shield JEDEC No.316 connected to cathode.

◆ Connected to cathode at socket.

▲ The dc component must not exceed 100 volts.

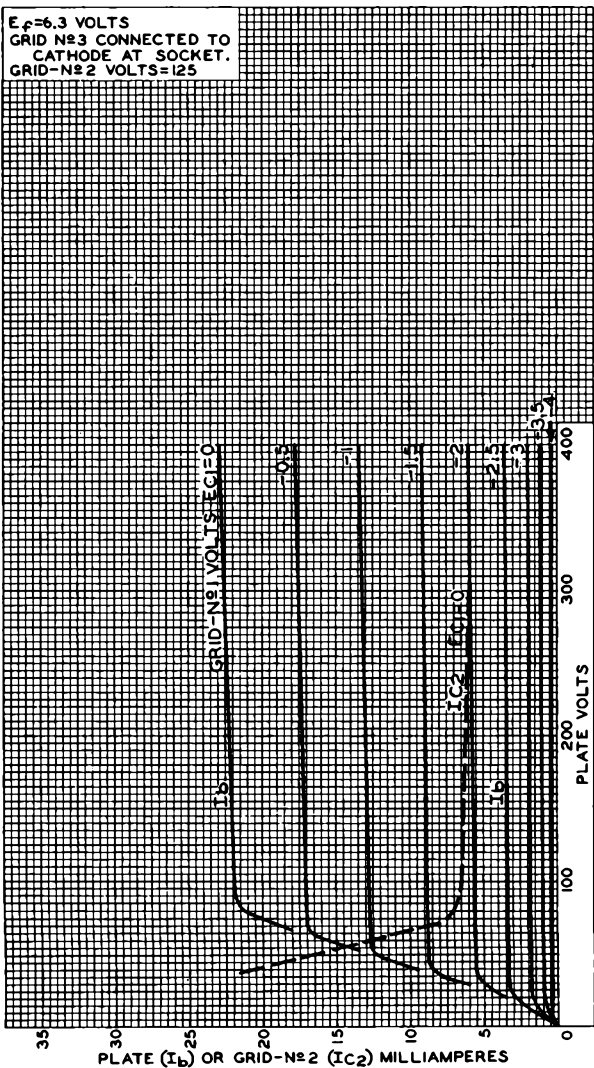


6CB6-A

6CB6-A

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID No 3 CONNECTED TO
CATHODE AT SOCKET.
GRID-No 2 VOLTS = 125



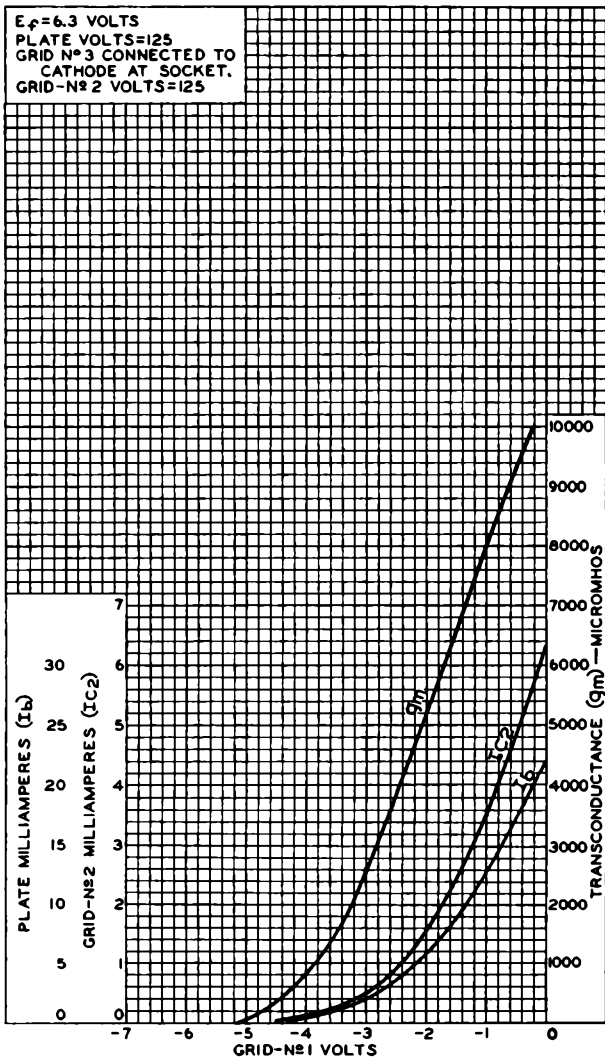
6CB6-A



6CB6-A

AVERAGE CHARACTERISTICS

$E_p = 6.3$ VOLTS
 PLATE VOLTS = 125
 GRID N°3 CONNECTED TO
 CATHODE AT SOCKET.
 GRID-N°2 VOLTS = 125





6CD6-G

BEAM POWER TUBE

6CD6-G

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3	ac or dc volts
Current.	2.5	amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate	0.8	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater.	24	μf
Plate to cathode & grid No.3, grid No.2, and heater.	9.5	μf

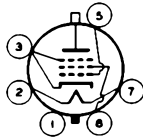
Characteristics, Class A₁ Amplifier:

Plate Voltage.	60	175	volts
Grid-No.2 (Screen) Voltage	100	175	volts
Grid-No.1 (Control-Grid) Voltage	0	-30	volts
Mu-Factor, Grid No.2 to Grid No.1	-	3.9	
Plate Resistance (Approx.)	-	7200	ohms
Transconductance	-	7700	μmhos
Plate Current.	230*	75	ma
Grid-No.2 Current.	21*	5.5	ma
Grid-No.1 Voltage (Approx.) for plate current of 1 ma.	-	-55	volts

Mechanical:

Mounting Position.	Vertical, base up or down, or Horizontal with pins 2 and 7 in vertical plane
Maximum Overall Length.	5-11/16"
Seated Length.	4-31/32" ± 5/32"
Maximum Diameter	2-1/16"
Dimensional Outline.	See General Section
Bulb	ST-16
Cap.	Small (JETEC No.C1-1)
Base	Medium-Shell Octal 6-Pin (JETEC No.B6-13)
Basing Designation for BOTTOM VIEW	5BT

- Pin 1 - No Connection
- Pin 2 - Heater
- Pin 3 - Cathode,
Grid No.3



- Pin 5 - Grid No.1
- Pin 7 - Heater
- Pin 8 - Grid No.2
- Cap - Plate

^o Without external shield.

* These values can be measured by a method involving a recurrent wave form such that the cathode current will be kept within ratings in order to prevent damage to the tube.

← Indicates a change.

6CD6-G



6CD6-G

BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

→ **Maximum Ratings, Design-Center Values Except as Noted:**For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	700	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [●]	6600 [■]	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	175	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-50	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	200	max.	volts
CATHODE CURRENT:			
Peak	700	max.	ma
Average	200	max.	ma
GRID-No.2 INPUT	3	max.	watts
PLATE DISSIPATION†	15	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 [▲]	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).			
	210	max.	°C

→ **Maximum Circuit Values:**

Grid-No.1-Circuit Resistance:

For grid-resistor-bias operation† 0.47 max. megohm

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

■ Under no circumstances should this absolute value be exceeded.

● The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

† It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

▲ The dc component must not exceed 100 volts.

→ Indicates a change.

SEPT. 1, 1955

TUBE DIVISION

DATA

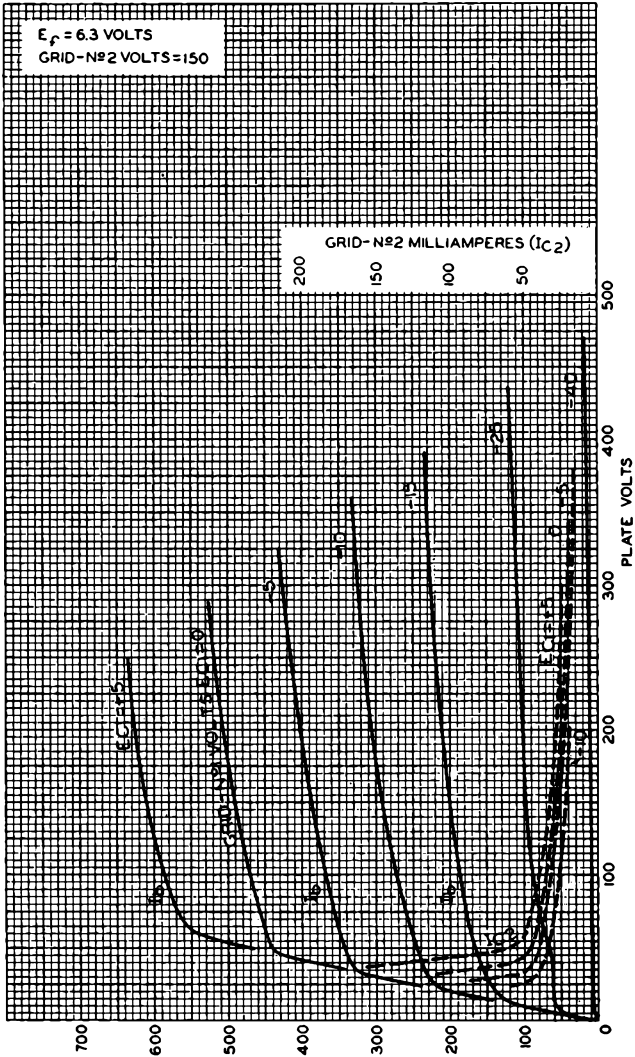
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6CD6-G

6CD6-G

AVERAGE PLATE CHARACTERISTICS



OCT. 26, 1949

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

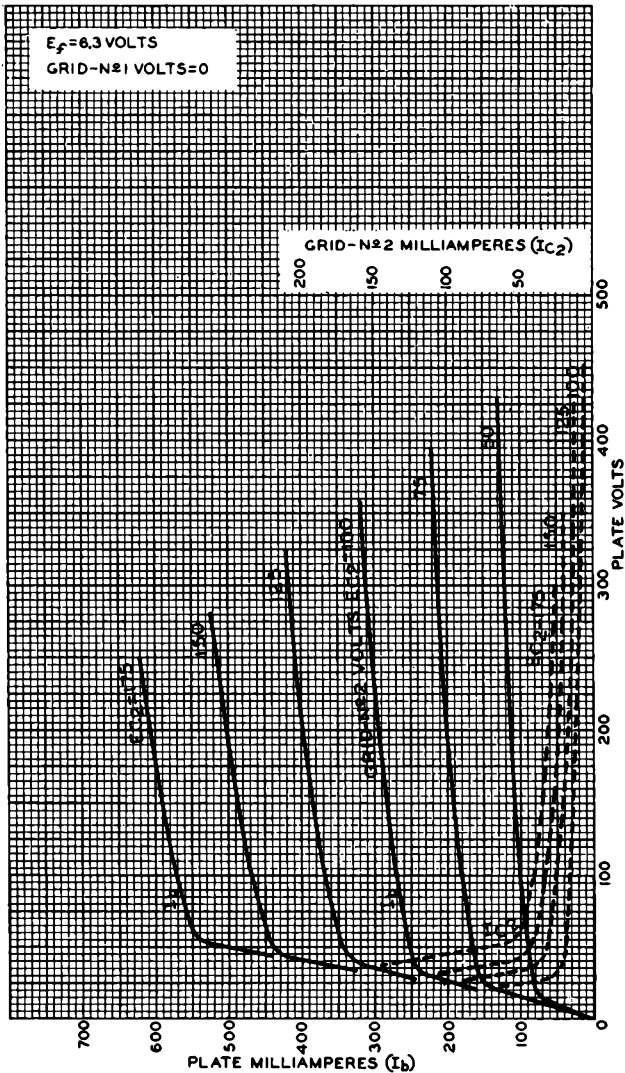
92CM-7393

6CD6-G



6CD6-G

AVERAGE PLATE CHARACTERISTICS



OCT. 25, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7392



6CD6-GA

6CD6-GA BEAM POWER TUBE

Supersedes Type 6CD6-G

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	. . . . .	ac or dc volts
Current	2.5	. . . . .	amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate.	1.1		μ f
Grid No.1 to cathode & grid No.3, grid No.2, and heater	22		μ f
Plate to cathode & grid No.3, grid No.2, and heater	8.5		μ f

Characteristics, Class A₁ Amplifier:

Plate Voltage	60	175	volts
Grid-No.2 (Screen-Grid) Voltage	100	175	volts
Grid-No.1 (Control-Grid) Voltage.	0	-30	volts
Mu-Factor, Grid No.2 to Grid No.1	-	3.9	
Plate Resistance (Approx.).	-	7200	ohms
Transconductance.	-	7700	μ hos
Plate Current	230*	75	ma
Grid-No.2 Current	21*	5.5	ma
Grid-No.1 Voltage (Approx.) for plate current of 1 ma	-	-55	volts

Mechanical:

Mounting Position Vertical, base up or down, or
Horizontal with pins 2 and 7 in vertical plane

Maximum Overall Length. 5"

Seated Length 4-1/4" \pm 3/16"

Maximum Diameter. 1-9/16"

Bulb. T-12

Cap Small (JETEC No.C1-1)

Base. Short Medium-Shell Octal 8-Pin
with External Barriers, Style A (JETEC No.B8-110),
or Short Medium-Shell Octal 8-Pin
with External Barriers, Style B (JETEC No.B8-118)

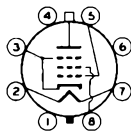
Basing Designation for BOTTOM VIEW. 5BT

Pin 1 - No Connection

Pin 2 - Heater

Pin 3 - Cathode,
Grid No.3

Pin 4 - No Connection



Pin 5 - Grid No.1

Pin 6 - No Connection

Pin 7 - Heater

Pin 8 - Grid No.2

Cap - Plate

^o Without external shield.

* These values can be measured by a method involving a recurrent wave form such that the cathode current will be kept within ratings in order to prevent damage to the tube.



BEAM POWER TUBE

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	700	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [⊗]	7000 [⊗]	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE	175	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-50	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	200	max.	volts
CATHODE CURRENT:			
Peak	700	max.	ma
Average	200	max.	ma
GRID-No.2 INPUT	3	max.	watts
PLATE DISSIPATION [†]	20	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 [▲]	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)			
	225	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For grid-resistor-bias operation[‡] 0.47 max. megohm

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

⊗ Under no circumstances should this absolute value be exceeded.

⊗ The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

† It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

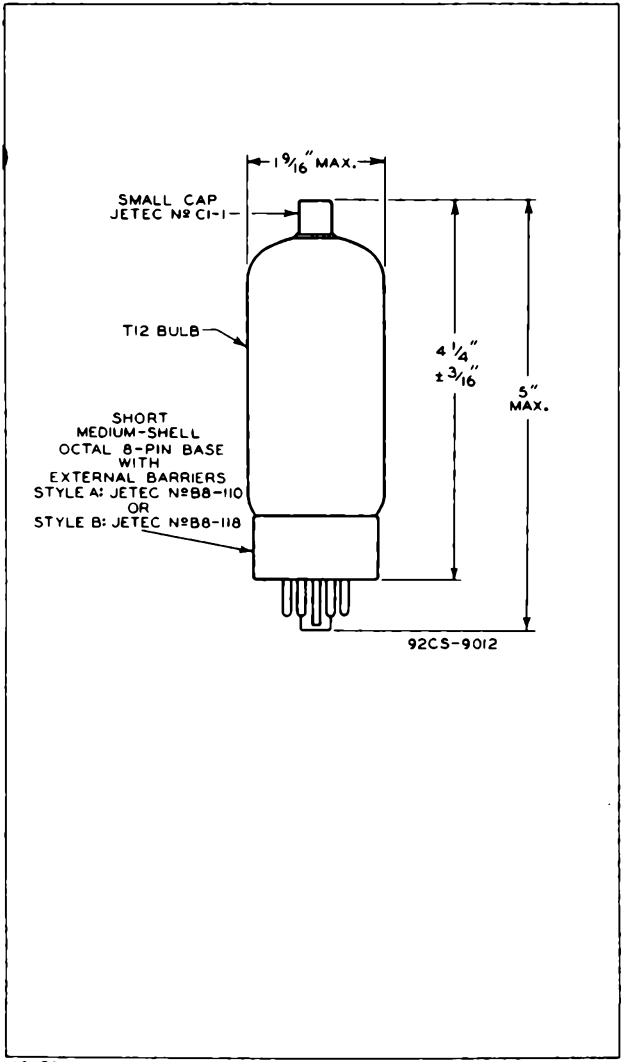
▲ The dc component must not exceed 100 volts.



6CD6-GA

BEAM POWER TUBE

6CD6-GA

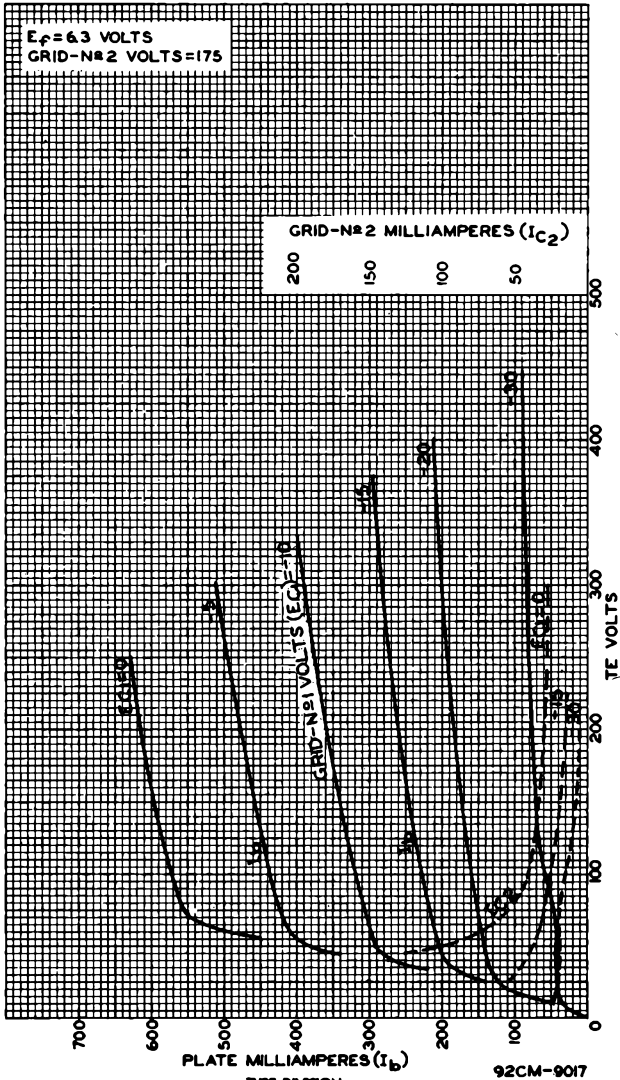


6CD6-GA



6CD6-GA

AVERAGE CHARACTERISTICS

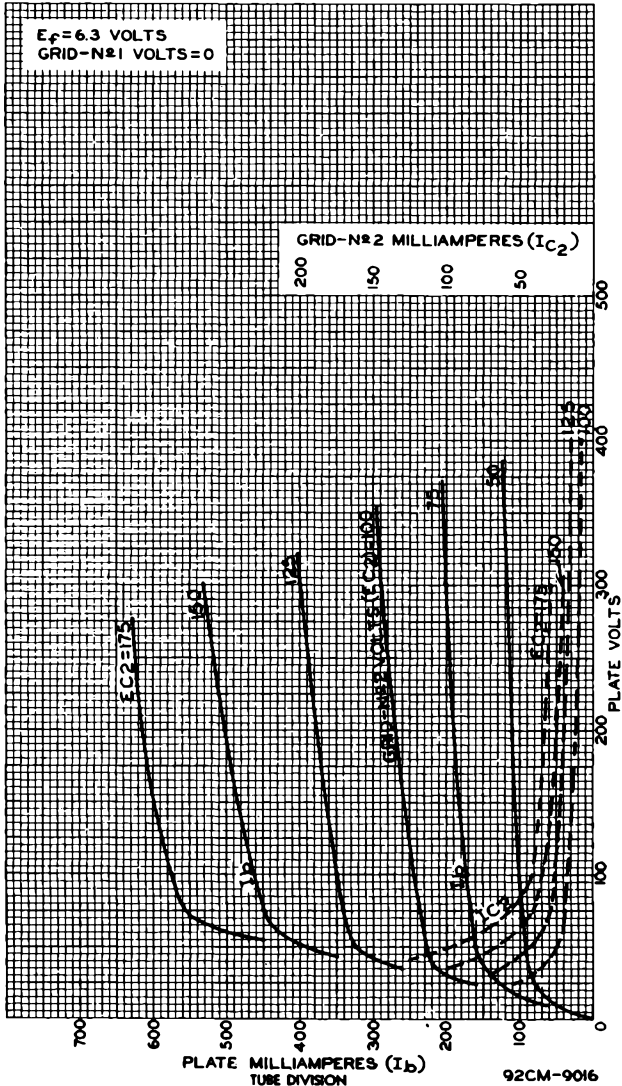




6CD6-GA

6CD6-GA

AVERAGE CHARACTERISTICS





6CF6

SHARP-CUTOFF PENTODE

MINIATURE TYPE

For use in gain-controlled video 1st stages operating at frequencies in the order of 40 megacycles

6CF6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances:^o

Grid No.1 to Plate	0.020 max.	μμf
Input	6.3	μμf
Output	1.9	μμf

^o With no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" ± 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	7CM

Pin 1 - Grid No.1
 Pin 2 - Cathode
 Pin 3 - Heater
 Pin 4 - Heater



Pin 5 - Plate
 Pin 6 - Grid No.2
 Pin 7 - Grid No.3,
 Internal
 Shield

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max. volts
GRID-No.2 (SCREEN) VOLTAGE	150 max. volts
PLATE DISSIPATION	2.0 max. watts
GRID-No.2 INPUT	0.5 max. watt
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode	90 max. volts
Heater positive with respect to cathode	90 max. volts

Typical Operation and Characteristics:

Plate Voltage	200 volts
Grid No.3 (Suppressor)	Connected to cathode at socket
Grid-No.2 Voltage	150 volts
Cathode-Bias Resistor	180 ohms
Plate Resistance (Approx.)	0.6 megohm
Transconductance	6200 μmhos
Grid-No.1 Bias (Approx.) for plate current of 35 μamp	-6.5 volts

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6CF6



6CF6

SHARP-CUTOFF PENTODE

Plate Current	9.5	ma
Grid-No.2 Current	2.8	ma

*Curves shown under Type 6CB6
also apply to the 6CF6*

AUG. 1, 1953

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TENTATIVE DATA



6CG7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

Intended for use in equipment with series heater-string arrangement

6CG7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current 0.6 amp

Warm-up time (Average) 11 sec

Heater warm-up time is defined as the time required in the accompanying test circuit for the voltage (E) across the heater terminals to increase from zero to 5 volts.

Direct Interelectrode Capacitances (Approx.):^o

	Unit No.1	Unit No.2	
Grid to plate	4	4	μf
Grid to cathode, heater, and internal shield	2.3	2.3	μf
Plate to cathode, heater, and internal shield	2.2	2.2	μf

Characteristics. Class A₁ Amplifier (Each Unit):

Plate Voltage 90 250 volts

Grid Voltage 0 -8 volts

Amplification Factor 20 20

Plate Resistance (Approx.) 6700 7700 ohms

Transconductance 3000 2600 μmhos

Plate Current 10 9 ma

Plate Current for grid voltage of -12.5 volts - 1.3 ma

Grid Voltage (Approx.) for plate current of 10 μamp -7 -18 volts

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip) 2" \pm 3/32"

Maximum Diameter 7/8"

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9AJ

Pin 1 - Plate of Unit No.2 Pin 6 - Plate of Unit No.1

Pin 2 - Grid of Unit No.2 Pin 7 - Grid of Unit No.1

Pin 3 - Cathode of Unit No.2 Pin 8 - Cathode of Unit No.1

Pin 4 - Heater Pin 9 - Internal Shield



^o without external shield.

6CG7



6CG7

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID VOLTAGE:		
Positive bias value	0 max.	volts
CATHODE CURRENT	20 max.	ma
PLATE DISSIPATION:		
Either plate	3.5 max.	watts
Both plates (Both units operating)	5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias operation	1 max.	megohm

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No. 29
at front of this Section

HORIZONTAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	300 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE [♠]	600 max.	volts
CATHODE CURRENT:		
Peak	300 inax.	ma
Average	20 max.	ma
PLATE DISSIPATION:		
Either plate	3.5 max.	watts
Both plates (Both units operating)	5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias, grid-resistor bias, or cathode-bias operation	2.2 max.	megohms

[♠] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[▲], [□]: See next page.

JAN. 3, 1955

TUBE DIVISION

TENTATIVE DATA 1

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6CG7

6CG7

MEDIUM-MU TWIN TRIODE

VERTICAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	300 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE [#]	400 max.	volts
CATHODE CURRENT:		
Peak	70 max.	ma
Average	20 max.	ma
PLATE DISSIPATION:		
Either plate	3.5 max.	watts
Both plates (Both units operating)	5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

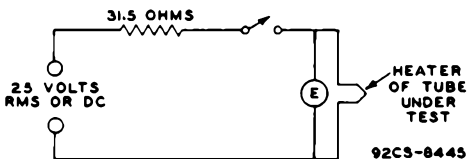
For fixed-bias, grid-resistor bias, or cathode-bias operation 2.2 max. megohms

[▲] The dc component must not exceed 100 volts.

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[#] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

TEST CIRCUIT FOR DETERMINING HEATER WARM-UP TIME

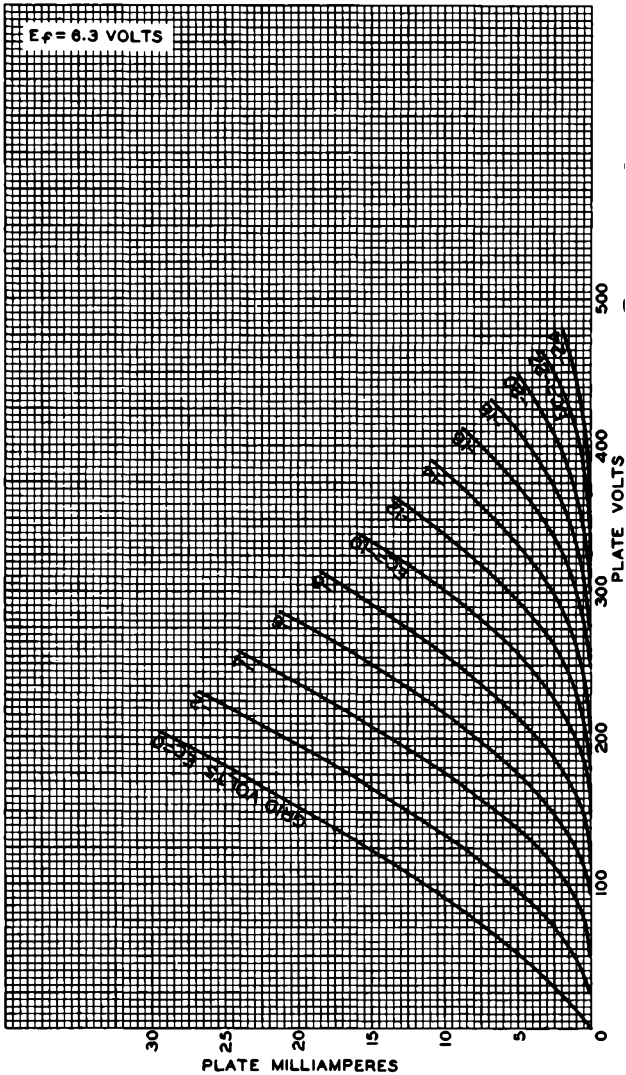


6CG7



6CG7

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



SEPT. 27, 1954

TUBE DIVISION

92CM-8442

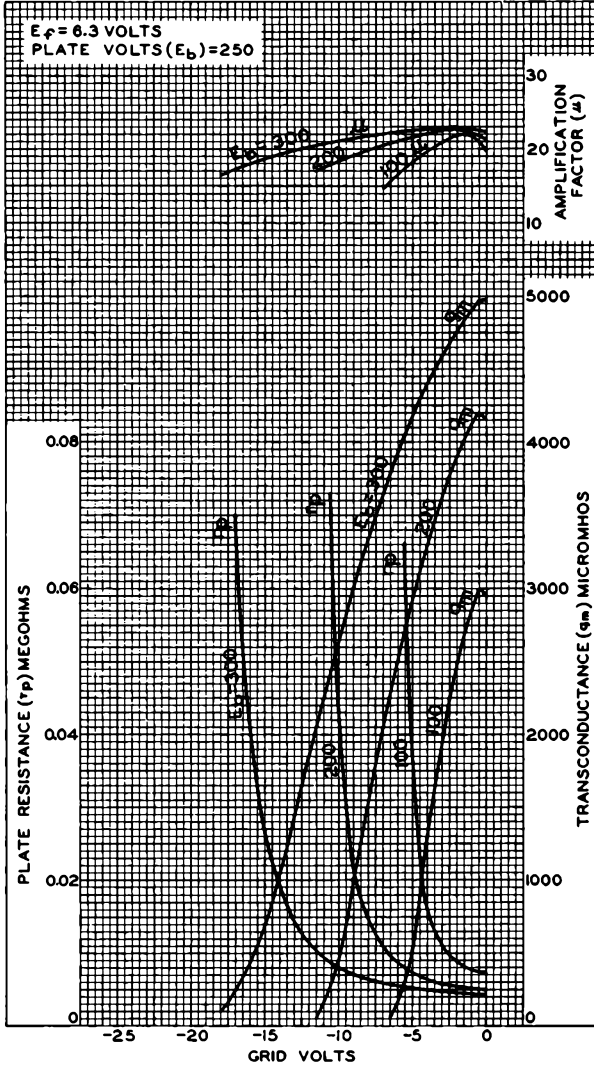
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6CG7

6CG7

AVERAGE CHARACTERISTICS FOR EACH UNIT



SEPT. 27, 1954

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8441



6CL6

6CL6

POWER PENTODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.65	amp

Direct Interelectrode Capacitances (without external shield):

Grid No.1 to Plate	0.120	μf
Input	11	μf
Output	5.5	μf

Characteristics, Amplifier Class A₁:

Plate Voltage	250	volts
Grid No.3	Connected to cathode	at socket
Grid-No.2 Voltage	150	volts
Grid-No.1 Voltage	-3	volts
Peak AF Grid-No.1 Signal Voltage	3	volts
Zero-Signal DC Plate Current	30	ma
Max.-Signal DC Plate Current	31	ma
Zero-Signal DC Grid-No.2 Current	7	ma
Max.-Signal DC Grid-No.2 Current	7.2	ma
Plate Resistance (Approx.)	0.15	megohm
Transconductance	11000	μhos
Grid-No.1 Voltage (Approx.) for plate current of 10 μamp	-14	volts
Load Resistance	7500	ohms
Total Harmonic Distortion	8	per cent
Max.-Signal Power Output	2.8	watts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (excluding tip)	2" \pm 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)

BOTTOM VIEW

Pin 1 - Cathode
Pin 2 - Grid No.1
Pin 3 - Grid No.2
Pin 4 - Heater
Pin 5 - Heater



Pin 6 - Plate
Pin 7 - Grid No.3,
Int. Shield
Pin 8 - Grid No.2
Pin 9 - Grid No.1

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
PLATE SUPPLY VOLTAGE	300 max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE	0 max.	volts

SEPT. 1, 1952

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

6CL6



6CL6

POWER PENTODE

GRID-No.2 (SCREEN) VOLTAGE	See Rating Curve at front of this Section
GRID-No.2 SUPPLY VOLTAGE	300 max. volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:	
Negative bias value	50 max. volts
Positive bias value	0 max. volts
PLATE DISSIPATION	7.5 max. watts
GRID-No.2 INPUT	1.7 max. watts
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode .	90 max. volts
Heater positive with respect to cathode .	90 max. volts
BULB TEMPERATURE (At hottest point on bulb surface)	200 max. °C

Typical Operation in 4-Mc Bandwidth Video Amplifier
Circuit of Fig. 1:

Plate Supply Voltage	300	volts
Grid No.3	Connected to cathode at socket	
Grid-No.2 Supply Voltage	300	volts
Grid-No.1 Bias Voltage	-2	volts
Grid-No.1 Signal Voltage (Peak to Peak) .	3	volts
Grid-No.2 Resistor	24000	ohms
Grid-No.1 Resistor	0.1	megohm
Load Resistor	3900	ohms
Zero-Signal Plate Current	30	ma
Zero-Signal Grid-No.2 Current	7.0	ma
Voltage Output (Peak to Peak)	132	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:	
For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	0.5 max. megohm

SEPT. 1, 1952

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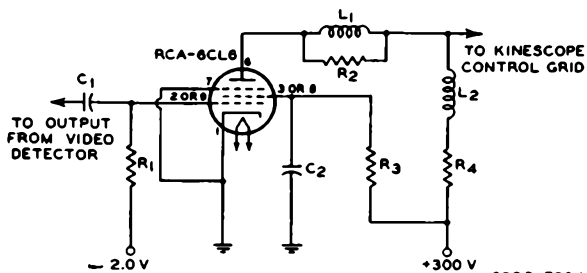
TENTATIVE DATA


6CL6

6CL6

POWER PENTODE

*Fig. 2 - Typical Video Voltage Amplifier Circuit
Having Bandwidth of 4 Mc.*



92CS-7804

C1: 0.1 μ f, 400 volts

C2: 4 μ f, 400 volts

L1: Peaking Coil, 180 μ h

L2: Peaking Coil, 120 μ h

R1: 100000 ohms, 0.5 watt

R2: 47000 ohms, 0.5 watt

R3: 24000 ohms, 2 watts

R4: 3900 ohms, 5 watts
non-inductive type

Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

SEPT. 1, 1952

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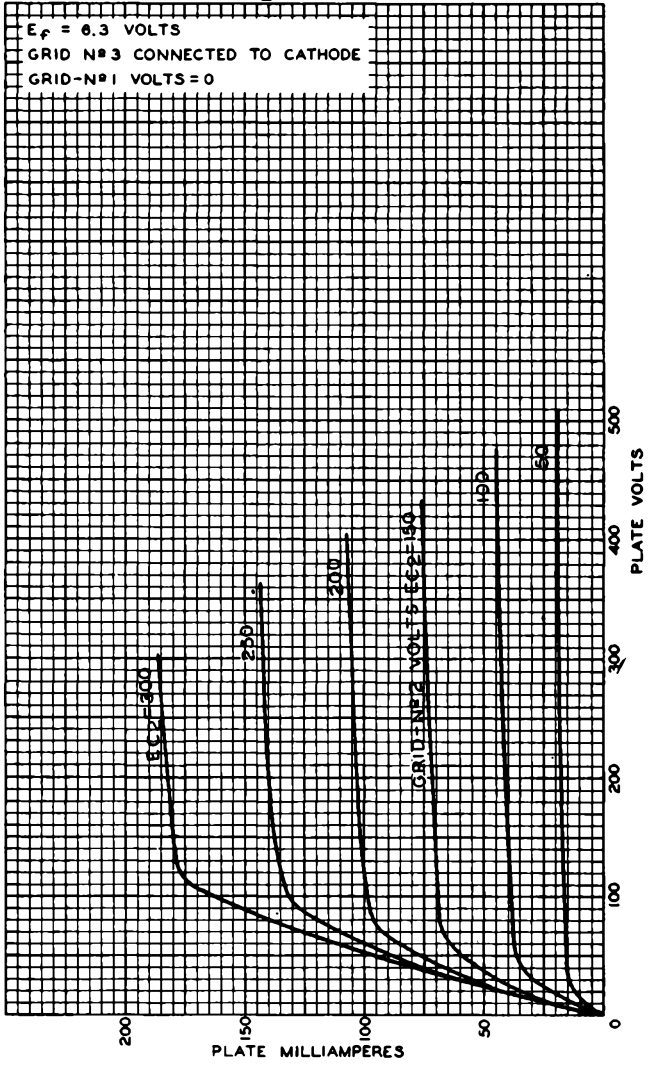
CE-7804

6CL6



6CL6

AVERAGE PLATE CHARACTERISTICS WITH EC_2 AS VARIABLE



MAY 22, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

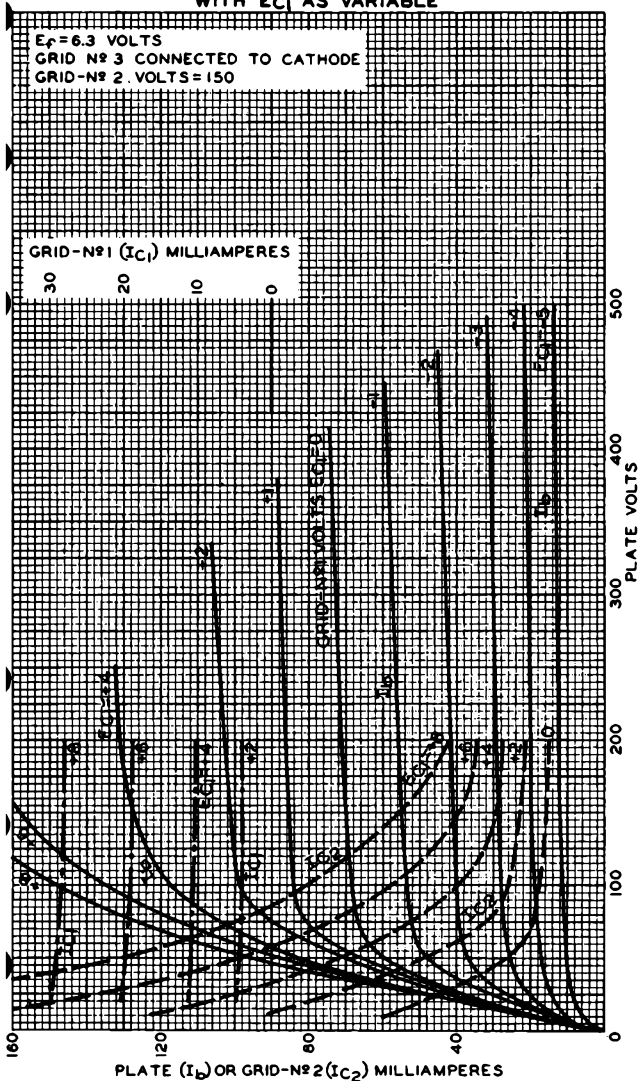
92CM-7803



6CL6

6CL6

AVERAGE PLATE CHARACTERISTICS WITH E_{c1} AS VARIABLE



MAY 22, 1952

TUBE DEPARTMENT

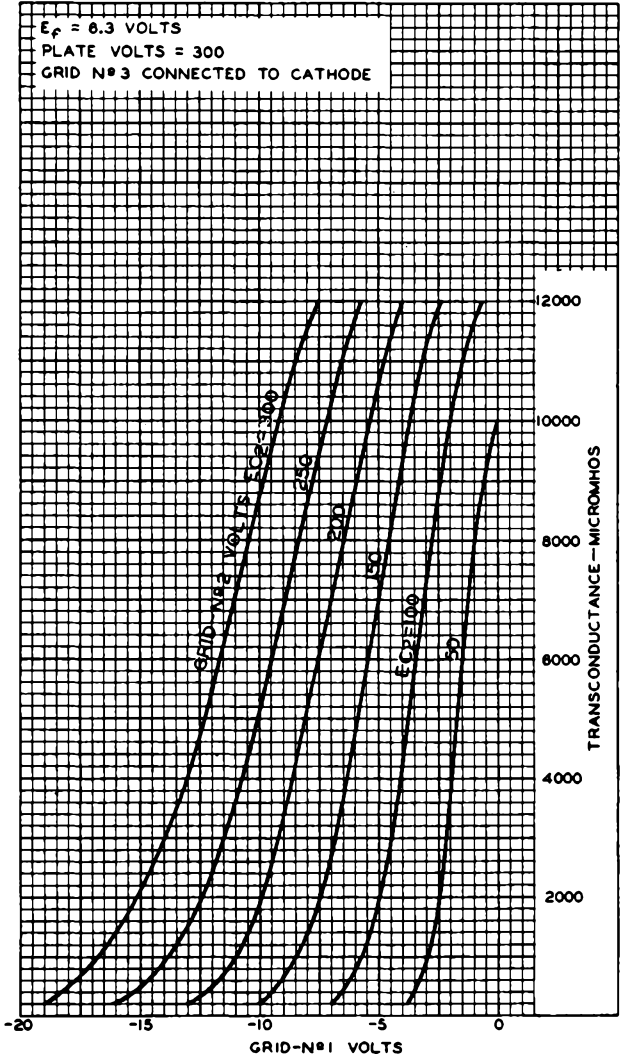
92CM - 7802

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6CL6



AVERAGE CHARACTERISTICS



MAY 21, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

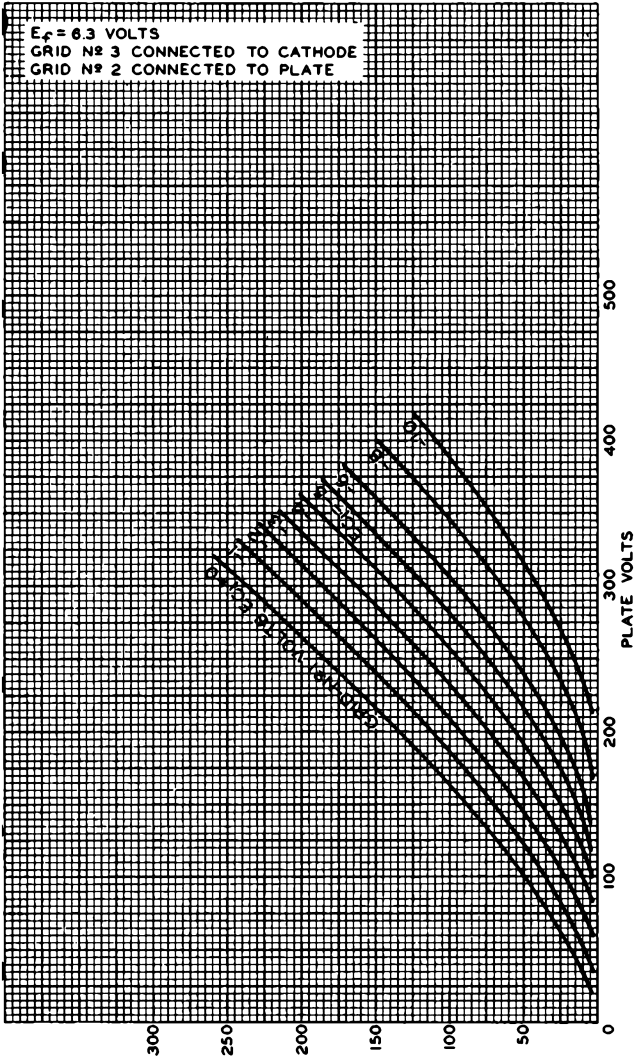
92CM-7801



6CL6

6CL6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



MAY 26, 1952

PLATE MILLIAMPERES
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7808



6CL8-A

6CL8-A

MEDIUM-MU TRIODE— SHARP-CUTOFF TETRODE

9-PIN MINIATURE TYPE

Intended for use as combined VHF oscillator and mixer tube in TV receivers. This type has a heater with controlled warm-up time.

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	. . . . .	ac or dc volts
Current	0.45	. . . . .	amp
Warm-up time (Average).	11	. . . . .	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
<i>Triode Unit:</i>			
Grid to plate	1.8	1.8	μf
Grid to cathode and heater	2.7	2.7	μf
Plate to cathode and heater	0.4	1.2	μf
<i>Tetrode Unit:</i>			
Grid No.1 to plate. . . .	0.02 max.	0.01 max.	μf
Grid No.1 to cathode, grid No.2, and heater .	5	5	μf
Plate to cathode, grid No.2, and heater .	2.4	3.4	μf
Heater to cathode (Each Unit)	2.5	2.5 [*]	μf

Characteristics, Class A₁ Amplifier:

	Triode Unit	Tetrode Unit		
Plate-Supply Voltage.	125	100	125	volts
Grid-No.2 (Screen-grid) Supply Voltage.	-	100	125	volts
Grid-No.1 (Control-grid) Voltage	-	0	-1	volt
Cathode Resistor.	56	-	-	ohms
Amplification Factor.	40	-	-	
Plate Resistance (Approx.). .	5000	-	10000	ohms
Transconductance.	8000	8200	6400	μmhos
Plate Current	15	-	12	ma
Grid-No.2 Current	-	-	4	ma
Grid-No.1 Voltage (Approx.) for plate $\mu\text{a} = 10$	-9	-	-10	volts

^{o, *}: See next page.

6CL8-A



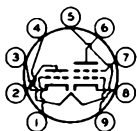
6CL8-A

MEDIUM-MU TRIODE— SHARP-CUTOFF TETRODE

Mechanical:

Operating Position Any
 Maximum Overall Length 2-3/16"
 Maximum Seated Length 1-15/16"
 Length, Base Seat to Bulb Top (Excluding tip) 1-9/16" \pm 3/32"
 Diameter 0.750" to 0.875"
 Dimensional Outline See General Section
 Bulb T6-1/2
 Base Small-Button Noval 9-Pin (JEDEC No. E9-1)
 Basing Designation for BOTTOM VIEW 9FX

Pin 1—Triode Grid
 Pin 2—Triode Plate
 Pin 3—Triode
 Cathode
 Pin 4—Heater
 Pin 5—Heater
 Pin 6—Tetrode Plate



Pin 7—Tetrode
 Grid No. 2
 Pin 8—Tetrode
 Cathode
 Pin 9—Tetrode
 Grid No. 1

CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

	Triode Unit as Osc.	Tetrode Unit as Mixer	
PLATE VOLTAGE	300 max.	300 max.	volts
GRID-No. 2 (SCREEN-GRID) SUPPLY VOLTAGE	-	300 max.	volts
GRID-No. 2 VOLTAGE	-	See Grid-No. 2 Input	
<i>Rating Chart at front of Receiving Tube Section</i>			
GRID-No. 1 (CONTROL-GRID) VOLTAGE:			
Positive-bias value	0 max.	0 max.	volts
GRID-No. 2 INPUT:			
For grid-No. 2 voltages up to 150 volts	-	0.5 max.	watt
For grid-No. 2 voltages between 150 and 300 volts	-	See Grid-No. 2 Input	
<i>Rating Chart at front of Receiving Tube Section</i>			
PLATE DISSIPATION	2.7 max.	2.8 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	200 [▲] max.	volts

°, ●, ▲: See next page.



6CL8-A

6CL8-A

MEDIUM-MU TRIODE—
SHARP-CUTOFF TETRODE

Maximum Circuit Values:

	<i>Triode Unit</i>	<i>Tetrode Unit</i>	
Grid-No.1-Circuit Resistance:			
For fixed-bias operation. .	0.5 max.	0.25 max.	megohm
For cathode-bias operation.	1 max.	1 max.	megohm

- With external shield JEDEC No.315 connected to cathode of unit under test except as noted.
- With external shield JEDEC No.315 connected to ground.
- ▲ The dc component must not exceed 100 volts.



6CM7

6CM7

MEDIUM-MU DUAL TRIODE

With Dissimilar Units

9-PIN MINIATURE TYPE

Intended for use in equipment having series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.6	amp
Warm-up time (Average)	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances (Approx.):^o

	Unit No. 1 Oscillator	Unit No. 2 Amplifier	
Grid to plate	3.8	3	$\mu\mu\text{f}$
Grid to cathode and heater	2	3.5	$\mu\mu\text{f}$
Plate to cathode and heater	0.5	0.4	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

	Unit No. 1 Oscillator	Unit No. 2 Amplifier	
Plate Voltage	200	250	volts
Grid Voltage	-7	-8	volts
Amplification Factor	20	18	
Plate Resistance (Approx.)	11000	4100	ohms
Transconductance	2000	4400	μmhos
Plate Current	5	20	ma
Plate Current for grid voltage of -10 volts	1	-	ma
Grid Voltage (Approx.) for plate current of 10 microamperes	-14	-	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" \pm 3/32"
Maximum Diameter	7/8"
Dimensional Outline	See General Section
Bulb	T-6-1/2

^o Without external shield.

6CM7



6CM7

MEDIUM-MU DUAL TRIODE

With Dissimilar Units

Base	Small-Button Noval 9-Pin (JETEC No. E9-1)
Basing Designation for BOTTOM VIEW	9ES
Pin 1 - Plate of Unit No. 2	Pin 6 - Plate of Unit No. 1
Pin 2 - No Connection	Pin 7 - Grid of Unit No. 1
Pin 3 - Cathode of Unit No. 1	Pin 8 - Grid of Unit No. 2
Pin 4 - Heater	Pin 9 - Cathode of Unit No. 2
Pin 5 - Heater	



VERTICAL DEFLECTION OSCILLATOR

Values are for Unit No. 1

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	500 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	200 max.	volts
CATHODE CURRENT:		
Peak	70 max.	ma
Average	15 max.	ma
PLATE DISSIPATION	1.25 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or cathode-bias operation	2.2 max.	megohms
--	----------	---------

VERTICAL DEFLECTION AMPLIFIER

Values are for Unit No. 2

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	500 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE# (Absolute maximum)	2200 [■] max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	200 max.	volts
CATHODE CURRENT:		
Peak	70 max.	ma
Average	20 max.	ma
PLATE DISSIPATION	5.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

[▲] The dc component must not exceed 100 volts.

[□], [#], [■]: See next page.

JULY 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6CM7

6CM7

MEDIUM-MU DUAL TRIODE With Dissimilar Units

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation 1.0 max. megohm
For cathode-bias operation 2.5 max. megohms

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

■ under no circumstances should this absolute value be exceeded.

6CM7



6CM7

AVERAGE PLATE CHARACTERISTICS UNIT N^o 1



MAY 17, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

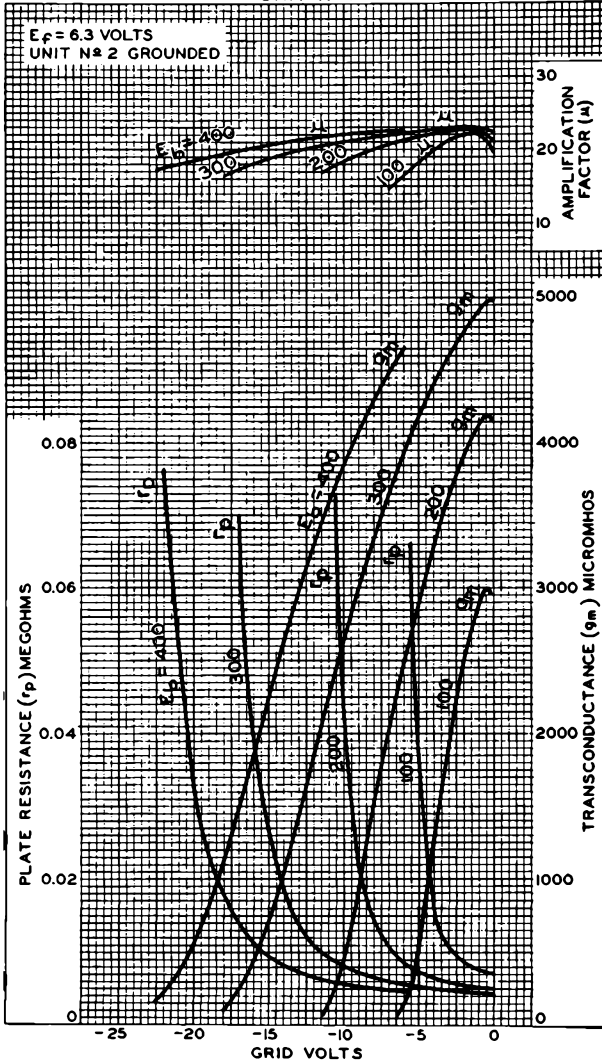
92CM-8617



6CM7

AVERAGE CHARACTERISTICS
UNIT N^o 1

6CM7



MAY 16, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

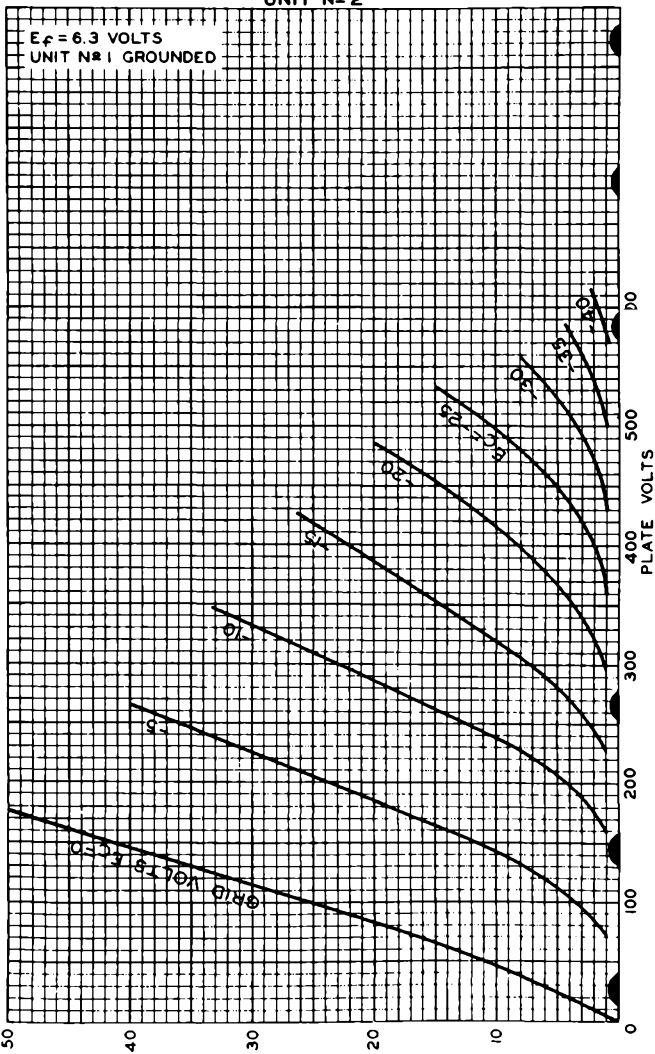
92CM-8616

6CM7



6CM7

AVERAGE PLATE CHARACTERISTICS
UNIT No 2



MAY 16, 1955

PLATE MILLIAMPERES
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

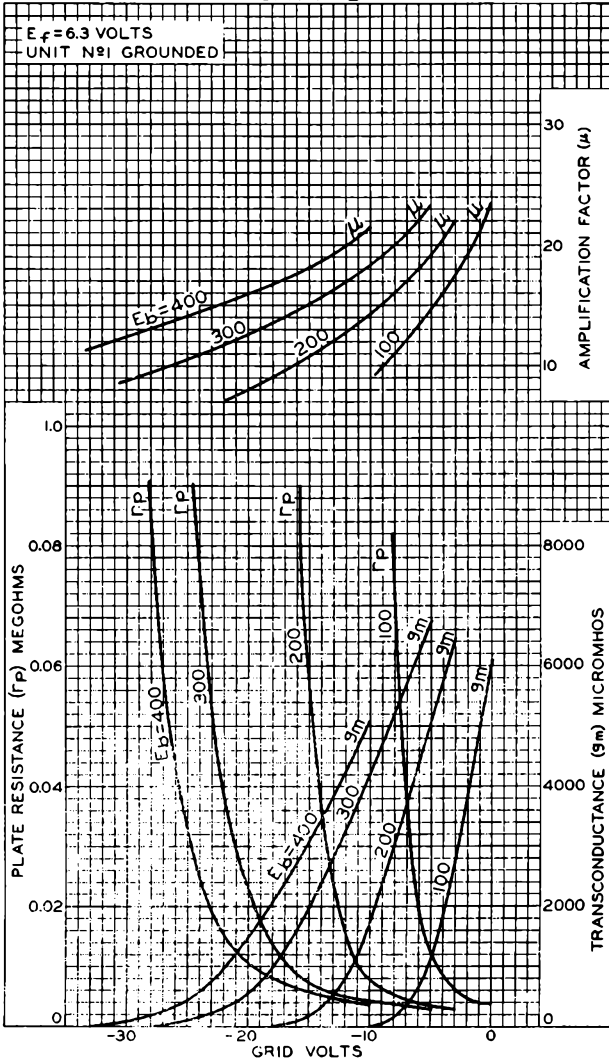
92CM-8615



6CM7

AVERAGE CHARACTERISTICS UNIT No 2

6CM7



MAY 16, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8613



6CS6

PENTAGRID AMPLIFIER

7-PIN MINIATURE TYPE

6CS6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances (Approx.):⁰

Grid No.1 to plate	0.05 max.	$\mu\mu\text{f}$
Grid No.3 to plate	0.36 max.	$\mu\mu\text{f}$
Grid No.1 to grid No.3	0.15 max.	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.5, grid No.4 & grid No.2, grid No.3, and heater	5.5	$\mu\mu\text{f}$
Grid No.3 to cathode & grid No.5, grid No.4 & grid No.2, grid No.1, and heater	7	$\mu\mu\text{f}$
Plate to cathode & grid No.5, grid No.4 & grid No.2, grid No.3, grid No.1, and heater	7.5	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

Plate Voltage	100	100	volts
Grid-No.2 & Grid-No.4 Voltage	30	30	volts
Grid-No.3 Voltage	-1	0	volt
Grid-No.1 Voltage	0	-1	volt
Plate Resistance (Approx.)	0.7	1	megohm
Grid-No.3-to-Plate Transconductance.	1250	-	μmhos
Grid-No.1-to-Plate Transconductance.	-	950	μmhos
Plate Current	0.8	0.75	ma
Grid-No.2 & Grid-No.4 Current	4	1.1	ma
Grid-No.3 Voltage (Approx.) for plate current of 50 μamp	-2.2	-	volts
Grid-No.1 Voltage (Approx.) for plate current of 50 μamp	-	-2.5	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" \pm 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	7CH

- Pin 1 - Grid No.1
- Pin 2 - Cathode,
Grid No.5
- Pin 3 - Heater
- Pin 4 - Heater



- Pin 5 - Plate
- Pin 6 - Grid No.2,
Grid No.4
- Pin 7 - Grid No.3

⁰ without external shield.

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6CS6



6CS6

PENTAGRID AMPLIFIER

GATED AMPLIFIER SERVICE

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.2 & GRID-No.4 SUPPLY VOLTAGE . . .	300 max.	volts
GRID-No.2 & GRID-No.4 VOLTAGE. . .	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	
PLATE DISSIPATION.	1 max.	watt
GRID-No.2 & GRID-No.4 INPUT:		
For grid-No.2 & grid-No.4 voltages		
up to 150 volts.	1 max.	watt
For grid-No.2 & grid-No.4 voltages		
between 150 and 300 volts. . .	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	
CATHODE CURRENT.	14 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to		
cathode	200 max.	volts
Heater positive with respect to		
cathode	200 [▲] max.	volts

Typical Operation as Sync Separator and Sync Clipper:

Plate Voltage.	10	volts
Grid-No.2 & Grid-No.4 Voltage.	30	volts
Grid-No.3 Voltage.	0	volts
Grid-No.1 Voltage.	0	volts
Plate Current.	1.2	ma
Grid-No.2 & Grid-No.4 Current.	4.1	ma

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	0.47 max.	megohm
Grid-No.3-Circuit Resistance	2.2 max.	megohms

[▲] The dc component must not exceed 100 volts.

MAY 1, 1955

TUBE DIVISION

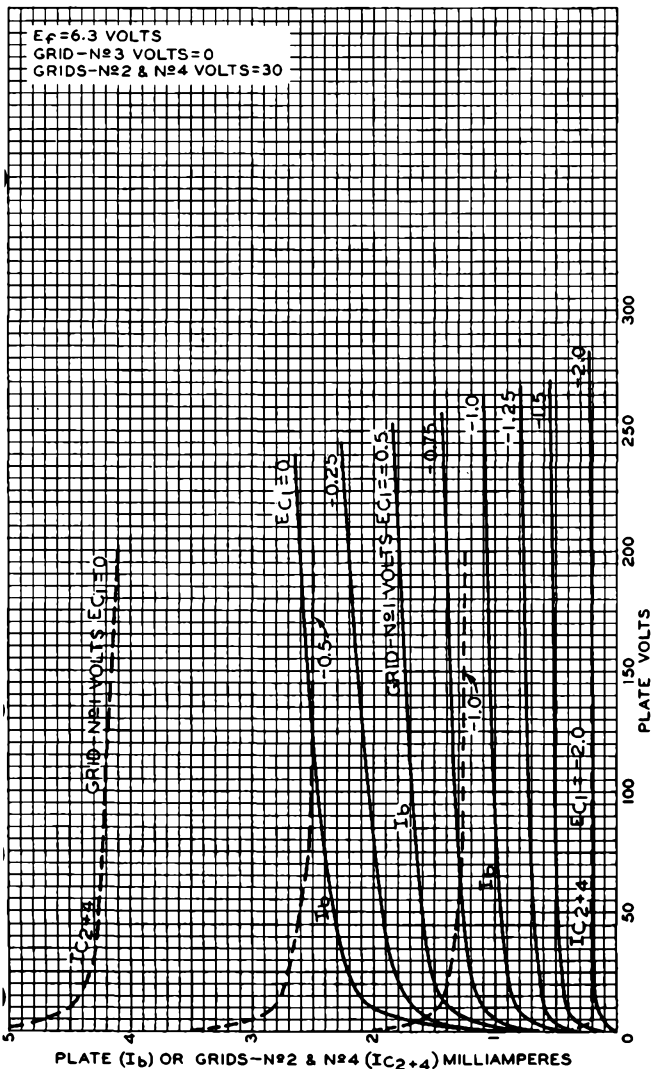
TENTATIVE DATA



6CS6

6CS6

AVERAGE CHARACTERISTICS



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

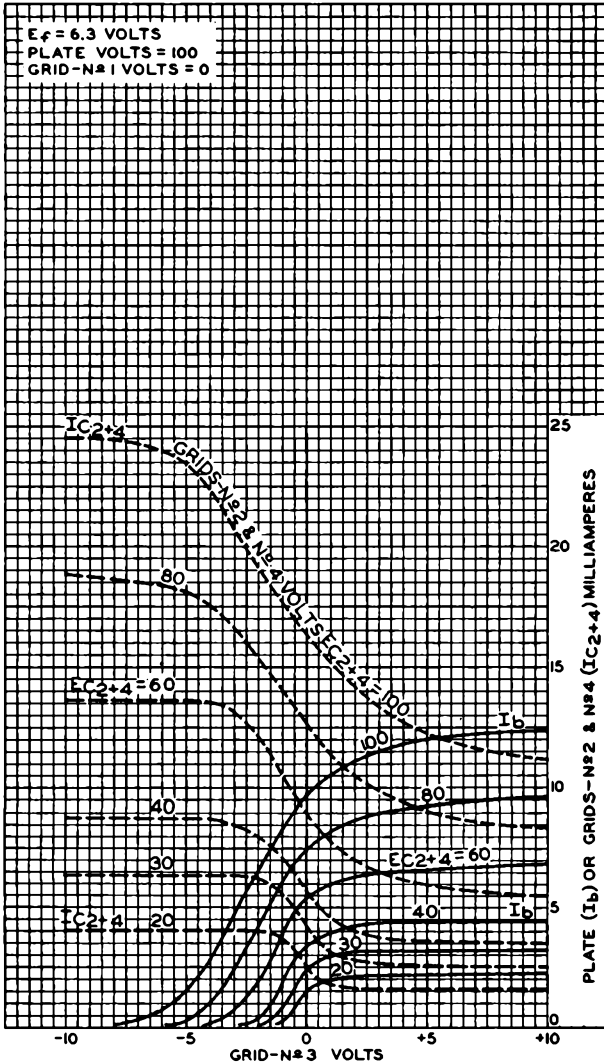
92CM-8922

6CS6



6CS6

AVERAGE CHARACTERISTICS



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8926



6CU5

BEAM POWER TUBE

7-PIN MINIATURE TYPE

6CU5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	1.2	amp

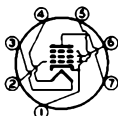
Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate.	0.7	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	13.2	μf
Plate to cathode & grid No.3, grid No.2, and heater	8.6	μf

Mechanical:

Mounting Position	Any
Maximum Overall Length.	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" ± 3/32"
Maximum Diameter.	3/4"
Dimensional Outline	See General Section
Bulb.	T-5-1/2
Base.	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW.	7CV

- Pin 1 - Cathode,
Grid No.3
- Pin 2 - Grid No.1
- Pin 3 - Heater



- Pin 4 - Heater
- Pin 5 - Grid No.1
- Pin 6 - Grid No.2
- Pin 7 - Plate

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	135 max.	volts
GRID-No.2 (SCREEN) VOLTAGE.	117 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value	0 max.	volts
PLATE DISSIPATION	6 max.	watts
GRID-No.2 INPUT	1.25 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200*max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).	220 max.	°C

Typical Operation and Characteristics:

Plate Voltage	120	volts
Grid-No.2 Voltage	110	volts
Grid-No.1 Voltage	-8	volts
Peak AF Grid-No.1 Voltage	8	volts

^o Without external shield.

* The dc component must not exceed 100 volts.

6CU5



6CU5

BEAM POWER TUBE

Zero-Signal Plate Current	49	ma
Max.-Signal Plate Current	50	ma
Zero-Signal Grid-No.2 Current	4	ma
Max.-Signal Grid-No.2 Current	8.5	ma
Plate Resistance (Approx.)	10000	ohms
Transconductance	7500	μ mhos
Load Resistance	2500	ohms
Total Harmonic Distortion	10	%
Max.-Signal Power Output	2.3	watts

Maximum Circuit Values:

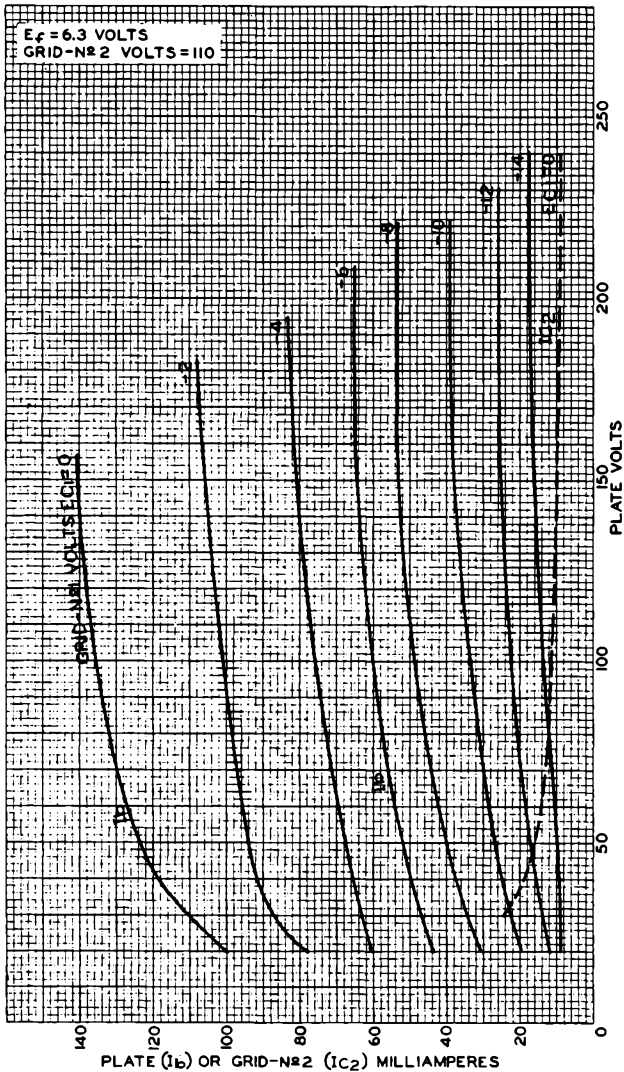
Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm



6CU5

AVERAGE CHARACTERISTICS

6CU5

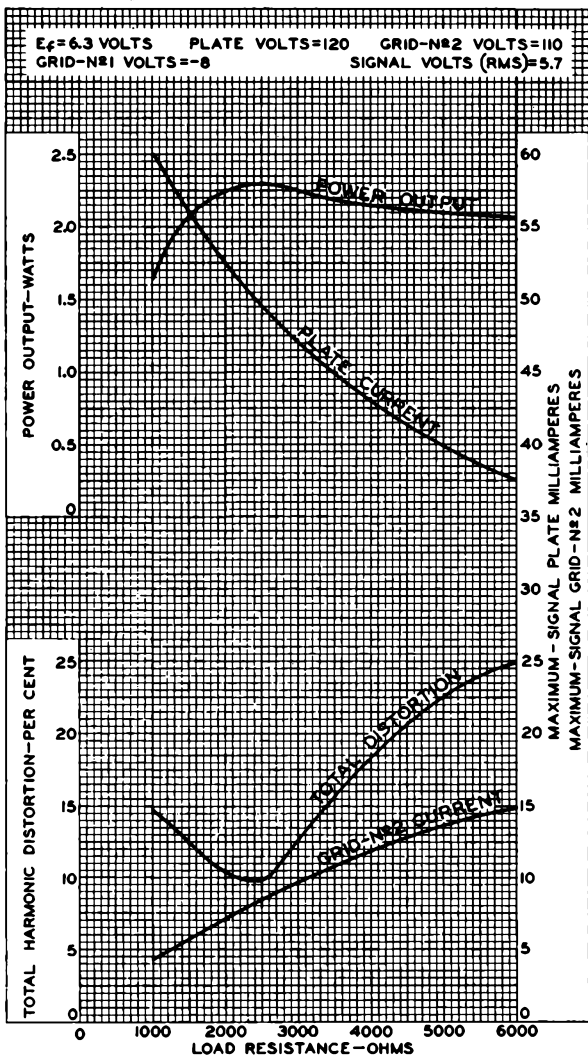


6CU5



6CU5

OPERATION CHARACTERISTICS



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8918



6D6

6D6

**TRIPLE-GRID SUPER-CONTROL AMPLIFIER**

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	0.007 max. ^o	μf
Input	4.7	μf
Output	6.5	μf
Overall Length		4-11/16" to 4-15/16"
Seated Height		4-1/16" to 4-5/16" →
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Small Metal
Base		Small 6-Pin
Pin 1-Heater		Pin 5-Cathode
Pin 2-Plate		Pin 6-Heater
Pin 3-Screen		Cap -Grid
Pin 4-Suppressor		
Mounting Position	BOTTOM VIEW (6F)	Any



- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- ° With close-fitting shield connected to cathode

Maximum Ratings, Typical Operating Conditions and Curves are the same as for type 6D7-0.

← Indicates a change.

Sept. 2, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

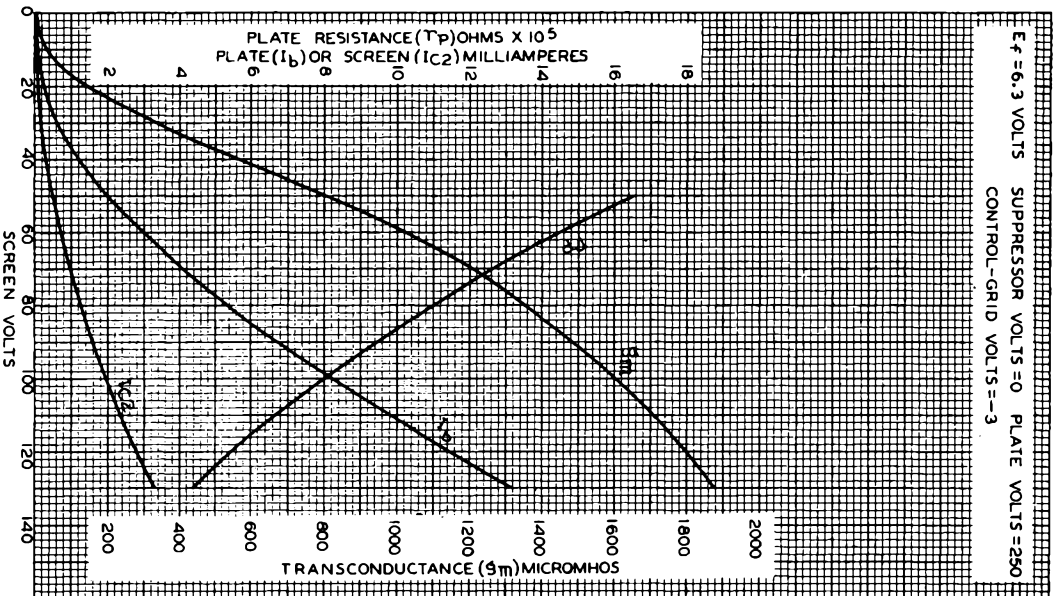
6D6



6D6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS SUPPRESSOR VOLTS = 0 PLATE VOLTS = 250
CONTROL-GRID VOLTS = -3



JULY 31, 1941

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4743R1



6D7

6D7

TRIPLE-GRID DETECTOR AMPLIFIER

RENEWAL TYPE FOR MAJESTIC RECEIVERS

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Overall Length		4-11/16" to 4-15/16"
Seated Height		4-1/16" to 4-5/16"
Maximum Diameter (without shield)		1-9/16"
Bulb (with form-fitting shield)		ST-12
Cap		Small Metal
Base [▲]		Small 7-Pin
Pin 1 - Heater		Pin 5 - External Shield
Pin 2 - Plate		Pin 6 - Cathode
Pin 3 - Screen		Pin 7 - Heater
Pin 4 - Suppressor		Cap - Grid

BOTTOM VIEW (7H)

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ Requires a different socket than the medium 7-pin base.

Typical Operating Conditions and Curves for the 6D7 are the same as for type 6J7.

July 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



6DC6

SEMIREMOTE-CUTOFF PENTODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts
 Current 0.3 amp

Direct Interelectrode Capacitances (No external shield):

Grid No.1 to plate . . . 0.02 max. $\mu\mu\text{f}$
 Input 6.5 $\mu\mu\text{f}$
 Output 2 $\mu\mu\text{f}$

Mechanical:

Maximum Overall Length 2-1/8"
 Maximum Seated Length 1-7/8"
 Length, Base Seat to Bulb Top
 (Excluding tip) 1-1/2" $\pm 3/32$ "
 Maximum Diameter 3/4"
 Bulb T-5-1/2
 Base Small-Button Miniature 7-Pin (JEDEC No.E7-1)
 Basing Designation for BOTTOM VIEW 7CM

Pin 1 - Grid No.1
 Pin 2 - Cathode
 Pin 3 - Heater
 Pin 4 - Heater



Pin 5 - Plate
 Pin 6 - Grid No.2
 Pin 7 - Grid No.3,
 Internal
 Shield

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts
 GRID-No.3 (SUPPRESSOR) VOLTAGE 0 max. volts
 GRID-No.2 SUPPLY VOLTAGE 300 max. volts
 GRID-No.2 (SCREEN) VOLTAGE See Rating Curve at
 front of this Section
 GRID-No.1 (CONTROL-GRID) VOLTAGE:
 Positive bias value 0 max. volts
 PLATE DISSIPATION 2 max. watts
 GRID-No.2 INPUT 0.5 max. watt
 PEAK HEATER-CATHODE VOLTAGE:
 Heater negative with respect to cathode . . . 200 max. volts
 Heater positive with respect to cathode . . . 200[▲] max. volts

Typical Operation and Characteristics:

Plate Supply Voltage 200 volts
 Grid No.3 Connected to cathode at socket
 Grid-No.2 Voltage 150 volts
 Cathode-Bias Resistor 180 ohms
 Plate Resistance (Approx.) 0.5 megohm

[▲] The dc component must not exceed 100 volts.

6DC6



6DC6

SEMIREMOTE-CUTOFF PENTODE

Transconductance	5500	μ hos
Grid-No.1 Voltage (Approx.) for transconductance of 50 μ hos	-12.5	volts
Plate Current	9	ma
Grid-No.2 Current	3	ma

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:	
For fixed-bias operation	0.25 max. megohm
For cathode-bias operation	1.0 max. megohm

JUNE 14, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

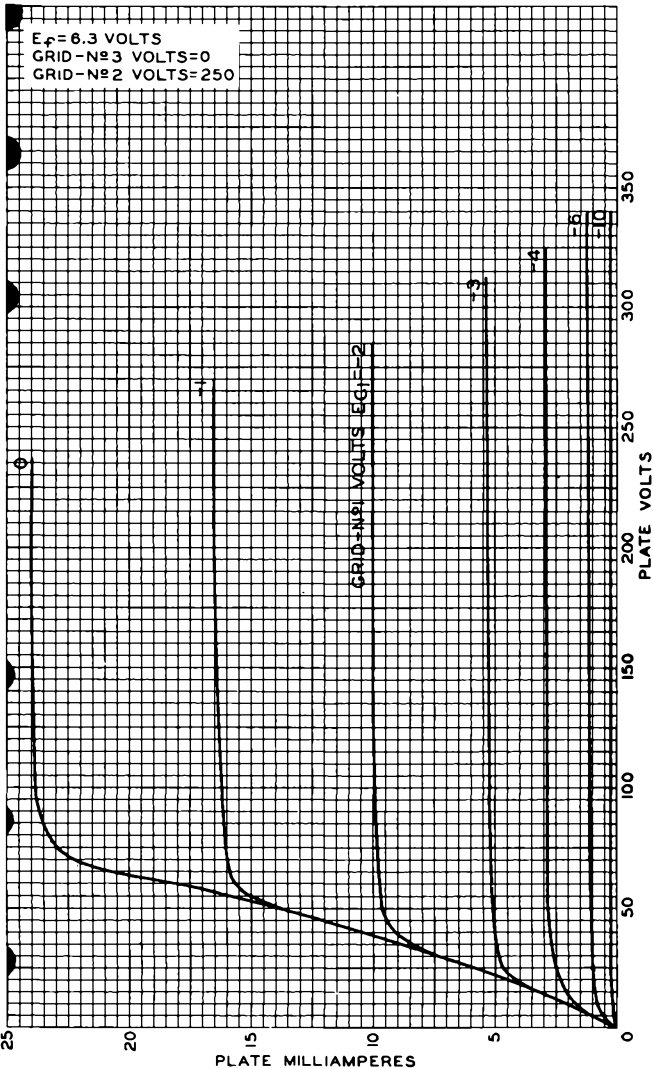
TENTATIVE DATA



6DC6

6DC6

AVERAGE PLATE CHARACTERISTICS



MAY. 26, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

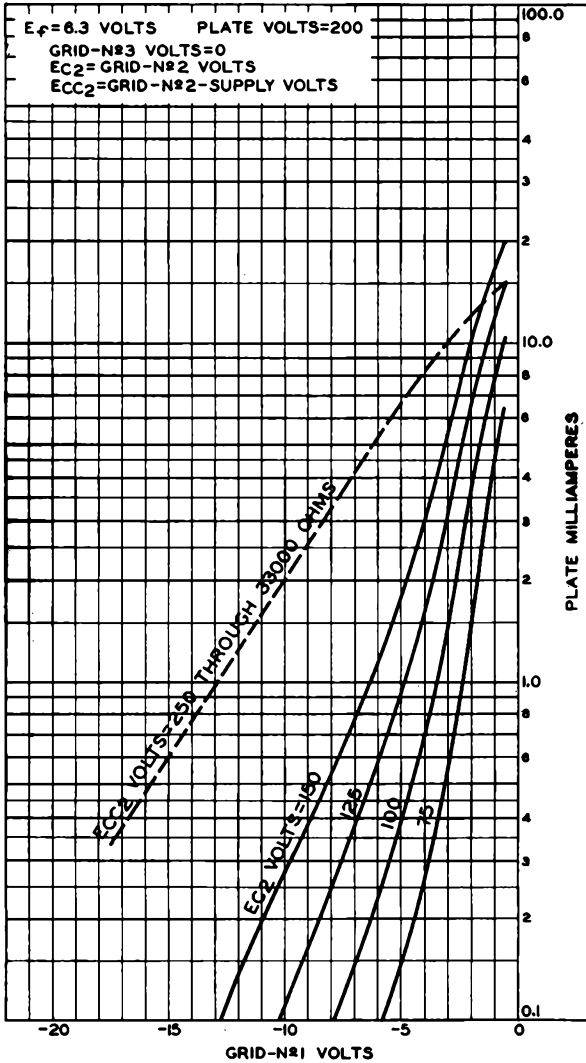
92CM-8330

6DC6



6DC6

AVERAGE CHARACTERISTICS



JUNE 15, 1954

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

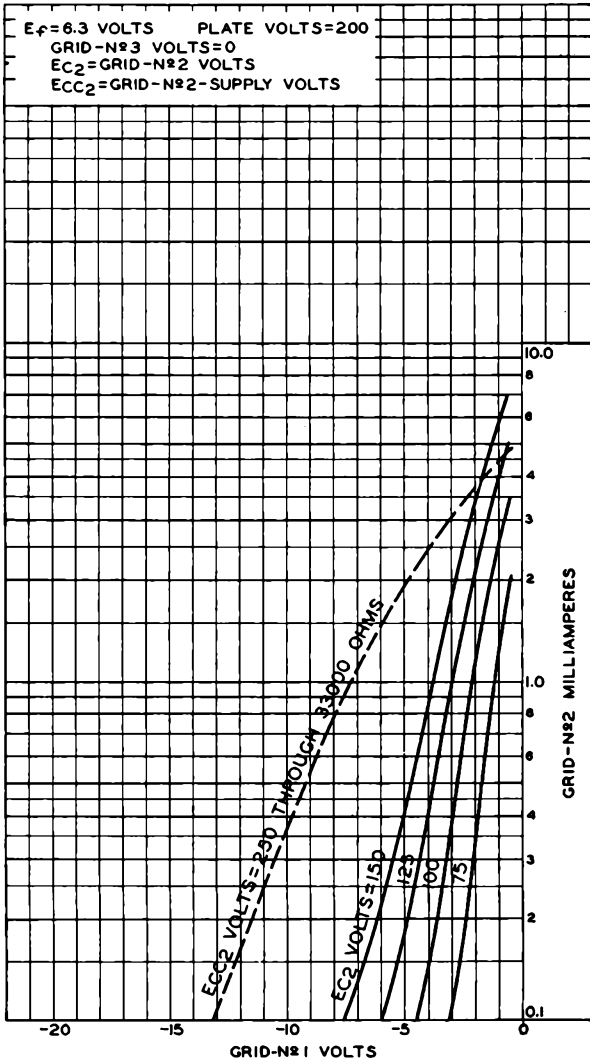
92CM-8337



6DC6

6DC6

AVERAGE CHARACTERISTICS



JUNE 15, 1954

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

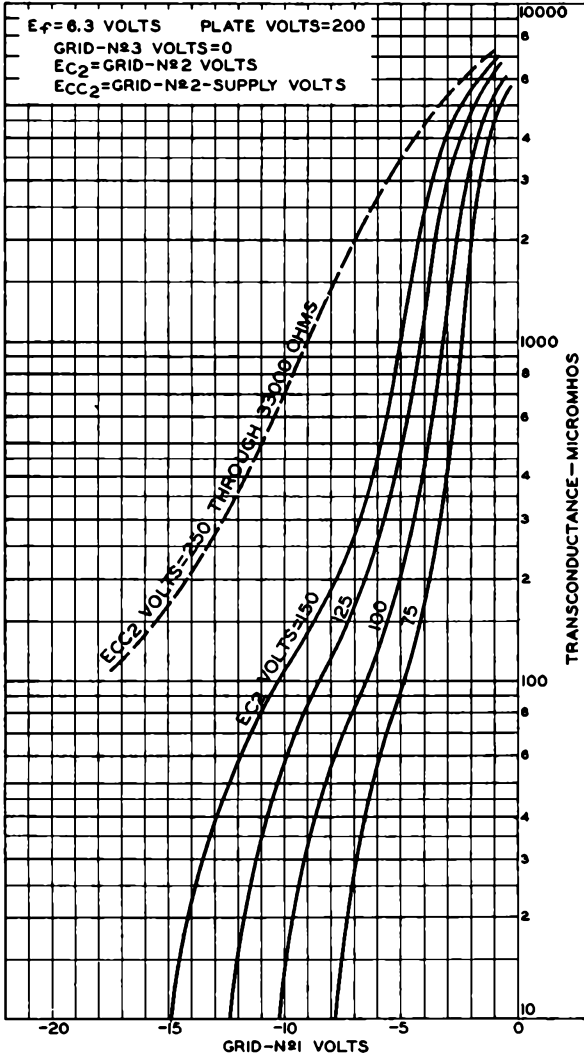
92CM-8338

6DC6



6DC6

AVERAGE CHARACTERISTICS



JUNE 15, 1954

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8336



6DE4

HALF-WAVE VACUUM RECTIFIER

For television damper service in 110° systems

6DE4

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ± 10% ac or dc volts
Current 1.6 amp

Direct Interelectrode Capacitances (Approx.):^o

Plate to cathode and heater 8.5 μmf
Cathode to plate and heater 11.5 μmf
Heater to cathode 4 μmf

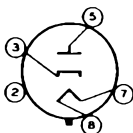
Mechanical:

Operating Position Any
Maximum Overall Length 3-13/16"
Maximum Seated Length 3-1/4"
Diameter 1.062" to 1.188"
Bulb T9

Base Short Intermediate-Shell Octal 5-Pin
(Arrangement 2), with External Barriers
(JEDEC Group 1, No. B5-85)

Basing Designation for BOTTOM VIEW 4CG

Pin 2 - Internal Con-
nection—
Do Not Use
Pin 3 - Cathode



Pin 5 - Plate
Pin 7 - Heater
Pin 8 - Heater

DAMPER SERVICE

Maximum Ratings, Design-Maximum Values:

For operation in a 525-Line, 30-frame system[#]

PEAK INVERSE PLATE VOLTAGE 5000[■] max. volts
PEAK PLATE CURRENT 1100 max. ma
DC PLATE CURRENT 175 max. ma
PLATE DISSIPATION 6.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with
respect to cathode 5000* max. volts
Heater positive with
respect to cathode 300[†] max. volts

^o Without external shield.

[#] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

[■] This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

* The dc component must not exceed 900 volts.

† The dc component must not exceed 100 volts.

6DE4

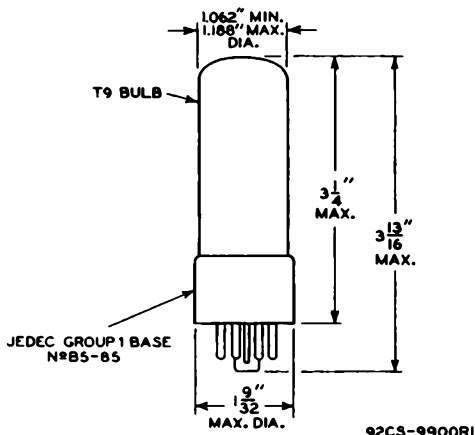


6DE4

HALF-WAVE VACUUM RECTIFIER

OPERATING CONSIDERATIONS

The base pins of the 6DE4 fit the standard Octal socket. Socket terminals for pins 1, 2, 4, and 6 should not be used for tie points. It is also recommended that socket clips for these pins be removed to reduce the possibility of arc-over and to minimize leakage.

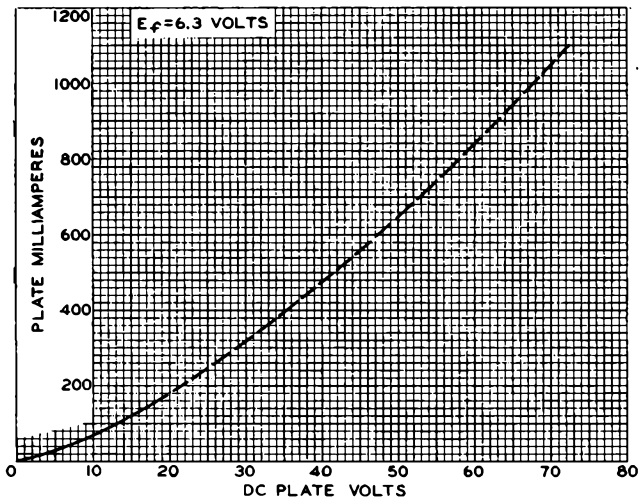




6DE4

6DE4

AVERAGE PLATE CHARACTERISTIC



92CS-9884



6DE6

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

6DE6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances:^o

Grid No.1 to plate 0.020 max. μ f

Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater 6.3 μ f

Plate to cathode, grid No.3 & internal shield, grid No.2, and heater 1.9 μ f

Mechanical:

Mounting Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip) 1-1/2" \pm 3/32"

Maximum Diameter 3/4"

Dimensional Outline See General Section

Bulb T-5-1/2

Base Small-Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CM

- Pin 1 - Grid No.1
- Pin 2 - Cathode
- Pin 3 - Heater
- Pin 4 - Heater



- Pin 5 - Plate
- Pin 6 - Grid No.2
- Pin 7 - Grid No.3, Internal Shield

AMPLIFIER-Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID-No.3 (SUPPRESSOR) VOLTAGE 0 max. volts

GRID-No.2 (SCREEN) SUPPLY VOLTAGE 300 max. volts

GRID-No.2 VOLTAGE See Grid-No.2 Input Rating Chart at front of Receiving Tube Section

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value 0 max. volts

PLATE DISSIPATION 2 max. watts

GRID-No.2 INPUT:

For grid-No.2 voltages up to 150 volts . . 0.5 max. watt

For grid-No.2 voltages between 150

and 300 volts See Grid-No.2 Input Rating Chart at front of Receiving Tube Section

^o without external shield.

6DE6



6DE6

SHARP-CUTOFF PENTODE

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	200	max.	volts
Heater positive with respect to cathode .	200 [▲]	max.	volts

Typical Operation and Characteristics:

Plate Supply Voltage	200	volts
Grid No.3	Connected to cathode at socket	
Grid-No.2 Supply Voltage	150	volts
Cathode-Bias Resistor	180	ohms
Plate Resistance (Approx.)	0.6	megohm
Transconductance	6200	μ mhos
Plate Current	9.5	ma
Grid-No.2 Current	2.8	ma
Grid-No.1 Voltage (Approx.) for plate current of 10 μ amp.	-10	volts
Grid-No.1 Voltage for trans- conductance of 600 μ mhos (minimum) under condition with plate volts=150, grid-No.2 volts=150, and no cathode resistor	-5.5	volts

▲ The dc component must not exceed 100 volts.

SEPT. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

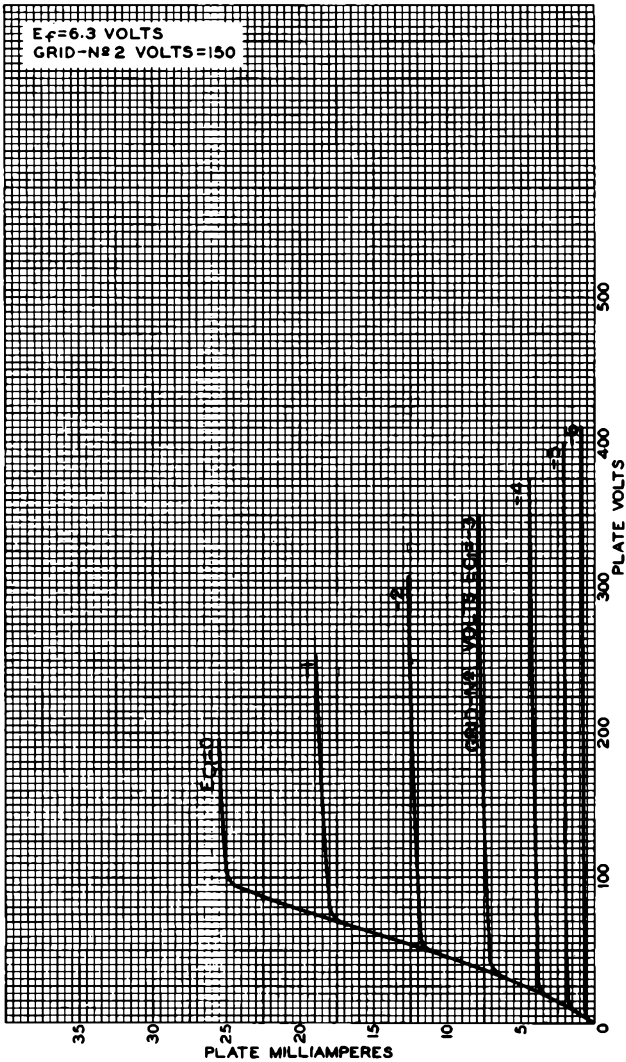
TENTATIVE DATA



6DE6

6DE6

AVERAGE PLATE CHARACTERISTICS



APRIL 2, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

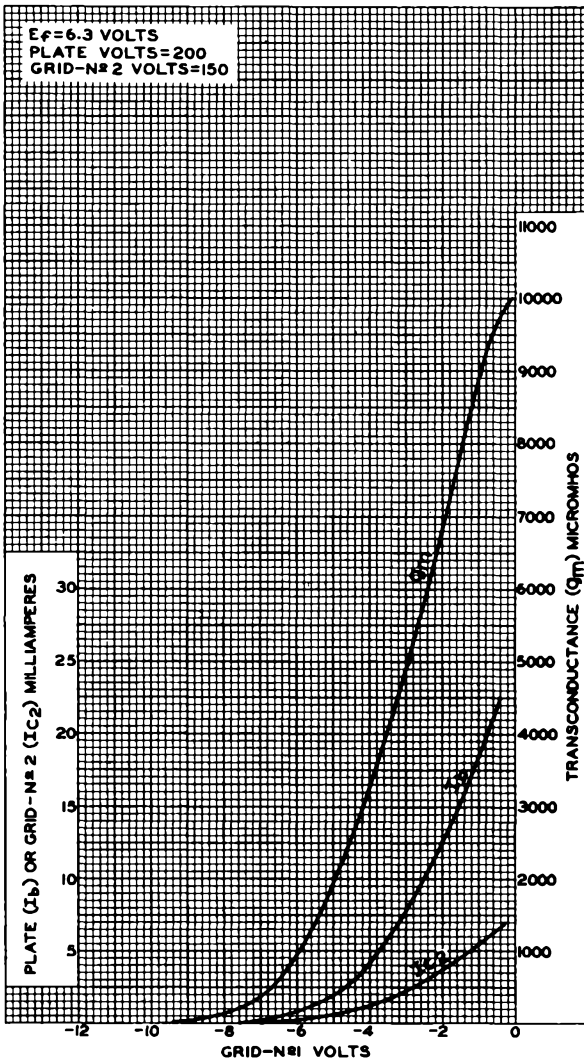
92CM-8578

6DE6



6DE6

AVERAGE CHARACTERISTICS



APRIL 2, 1955

TUBE DIVISION

92CM-8575

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6DK6

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

6DK6

DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances:⁰

Grid No.1 to plate	0.02 max.	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater	6.3	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater.	1.9	μf

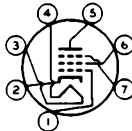
Characteristics, Class A₁ Amplifier:

Plate-Supply Voltage	125	volts
Grid-No.3.	<i>Connected to cathode at socket</i>	
Grid-No.2-Supply Voltage	125	volts
Cathode Resistor	56	ohms
Plate Resistance (Approx.)	0.35	megohm
Transconductance	9800	μmhos
Plate Current	12	ma
Grid-No.2 Current	3.8	ma
Grid-No.1 Voltage (Approx.) for plate $\mu = 20$	-6.5	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length.	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip).	1-1/2" \pm 3/32"
Diameter	0.650" to 0.750"
Dimensional Outline.	<i>See General Section</i>
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No.E7-1)
Basing Designation for BOTTOM VIEW . . . . .	.7CM

- Pin 1 - Grid No.1
- Pin 2 - Cathode
- Pin 3 - Heater
- Pin 4 - Heater
- Pin 5 - Plate



- Pin 6 - Grid No.2
- Pin 7 - Grid No.3, Internal Shield

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE.	330 max.	volts
GRID-No.3 (SUPPRESSOR-GRID) VOLTAGE.	0 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE	330 max.	volts

⁰: See next page.

6DK6



6DK6

SHARP-CUTOFF PENTODE

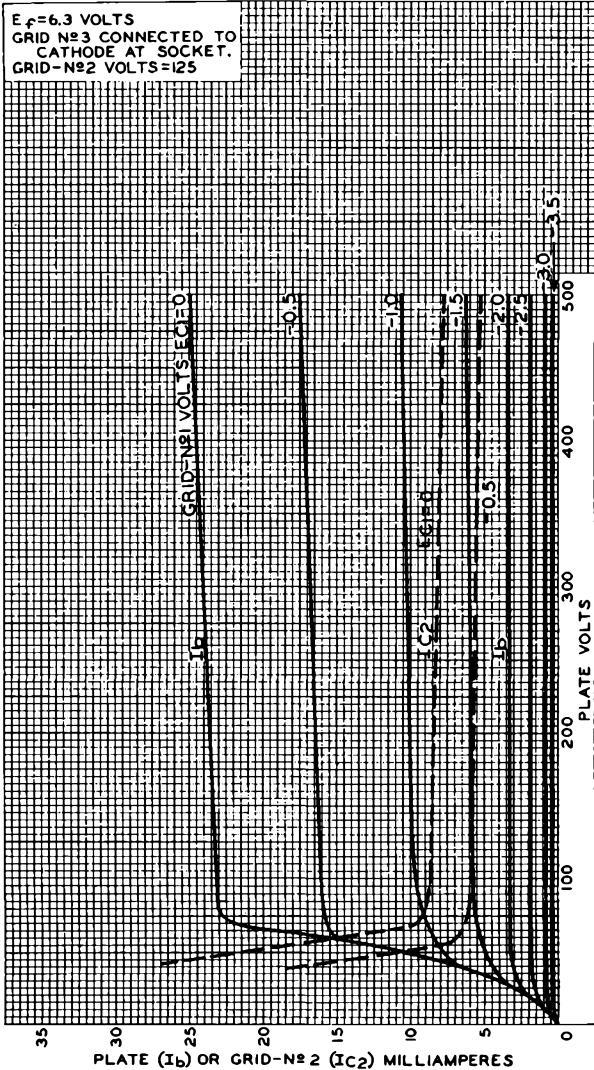
GRID-No.2 VOLTAGE.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive-bias value.	0 max.	volts
GRID-No.2 INPUT:		
For grid-No.2 voltages up to		
165 volts.	0.55 max.	watt
For grid-No.2 voltages between		
165 and 330 volts.	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	
PLATE DISSIPATION.	2.3 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with		
respect to cathode	200 max.	volts
Heater positive with		
respect to cathode	200 [▲] max.	volts
Maximum Circuit Values:		
Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.25 max.	megohm
For cathode-bias operation	1 max.	megohm
[○] Without external shield.		
[▲] The dc component must not exceed 100 volts.		



6DK6

6DK6

AVERAGE CHARACTERISTICS

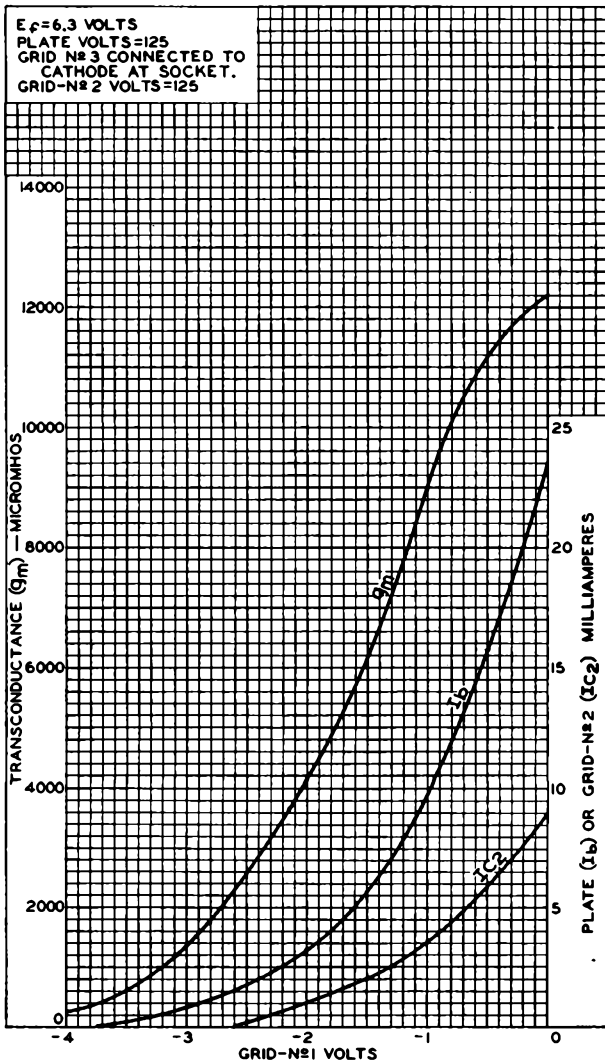


6DK6



6DK6

AVERAGE CHARACTERISTICS





6DT6

6DT6

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE
For FM detector service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts
Current 0.3 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate.	0.02	μf
Grid No.1 to cathode & internal shield, grid No.3, grid No.2, and heater.	5.8	μf
Grid No.3 to plate.	1.4	μf
Grid No.1 to grid No.3.	0.1	μf
Grid No.3 to cathode & internal shield, plate, grid No.2, grid No.1, and heater	6.1	μf

Characteristics, Class A₁ Amplifier:

Plate-Supply Voltage	150	volts
Grid-No.3 Supply Voltage.	0	volts
Grid-No.2 Supply Voltage.	100	volts
Cathode Resistor.	560	ohms
Plate Resistance (Approx.).	0.15	megohm
Transconductance, Grid No.1 to plate.	800	μmhos
Transconductance, Grid No.3 to plate.	515	μmhos
Plate Current	1.1	ma
Grid-No.2 Current	2.1	ma
Grid-No.1 Voltage (Approx.) for plate current of 10 μamp.	-4.5	volts
Grid-No.3 Voltage (Approx.) for plate current of 10 μamp.	-3.5	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length.	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip).	1-1/2" ± 3/32"
Maximum Diameter.	3/4"
Dimensional Outline	See General Section
Bulb.	T-5-1/2
Base.	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW.	7EN

Pin 1 - Grid No.1
Pin 2 - Cathode,
Internal
Shield
Pin 3 - Heater



Pin 4 - Heater
Pin 5 - Plate
Pin 6 - Grid No.2
Pin 7 - Grid No.3

^o with external shield JETEC No.316 connected to cathode.

6DT6



6DT6

SHARP-CUTOFF PENTODE

FM DETECTOR SERVICE

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max. volts
GRID-No.3 (SUPPRESSOR) VOLTAGE.	25 max. volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE	300 max. volts
GRID-No.2 VOLTAGE	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value	0 max. volts
PLATE DISSIPATION	1.5 max. watts

GRID-No.2 INPUT:

For grid-No.2 voltages up to 150 volts.	1 max. watt
For grid-No.2 voltages between 150 and 300 volts	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max. volts
Heater positive with respect to cathode	200 [▲] max. volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation.	0.25 max. megohm
For cathode-bias operation.	0.5 max. megohm

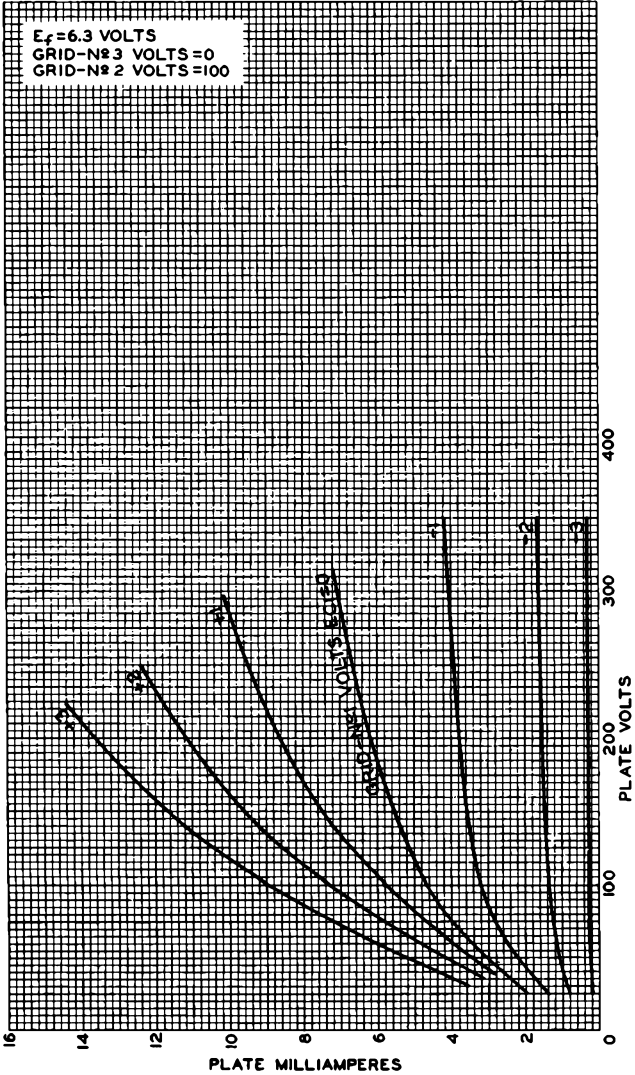
[▲] The dc component must not exceed 100 volts.



6DT6

6DT6

AVERAGE PLATE CHARACTERISTICS



TUBE DIVISION

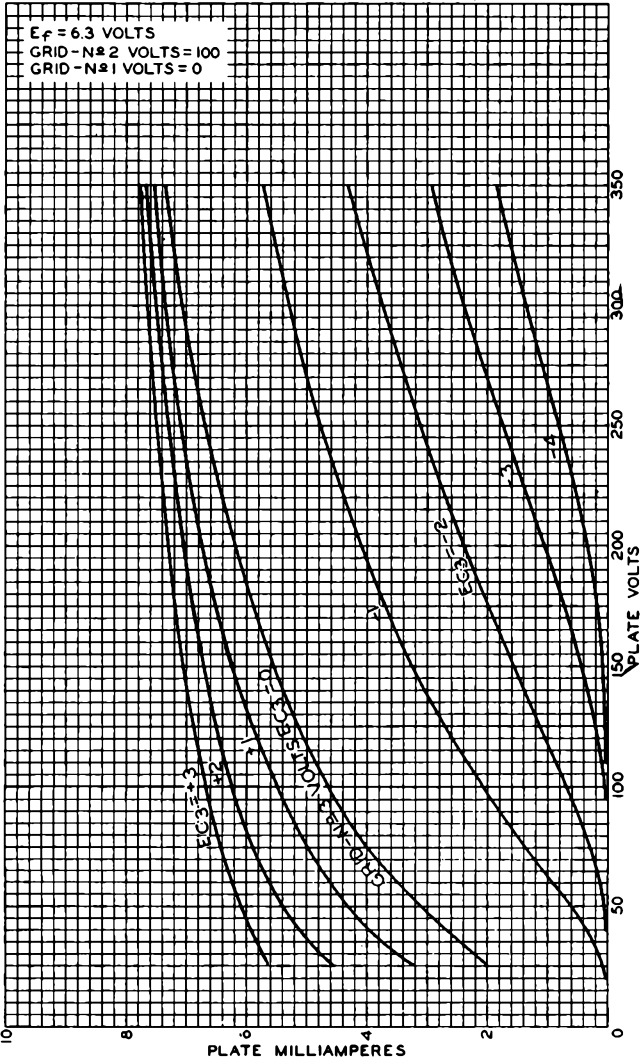
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8827

6DT6



AVERAGE PLATE CHARACTERISTICS

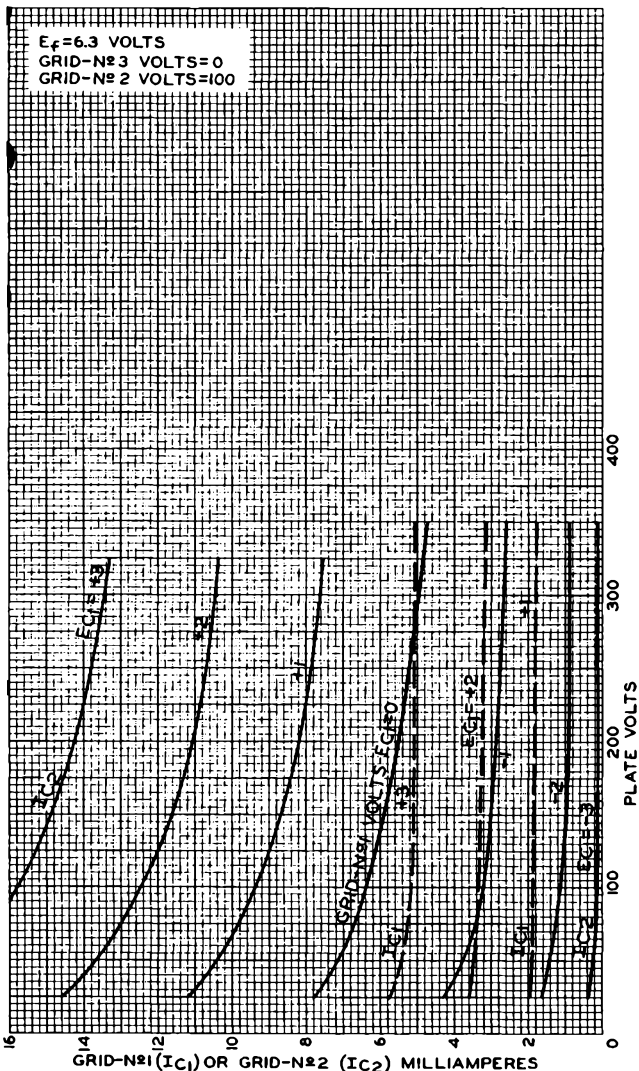




6DT6

6DT6

AVERAGE CHARACTERISTICS

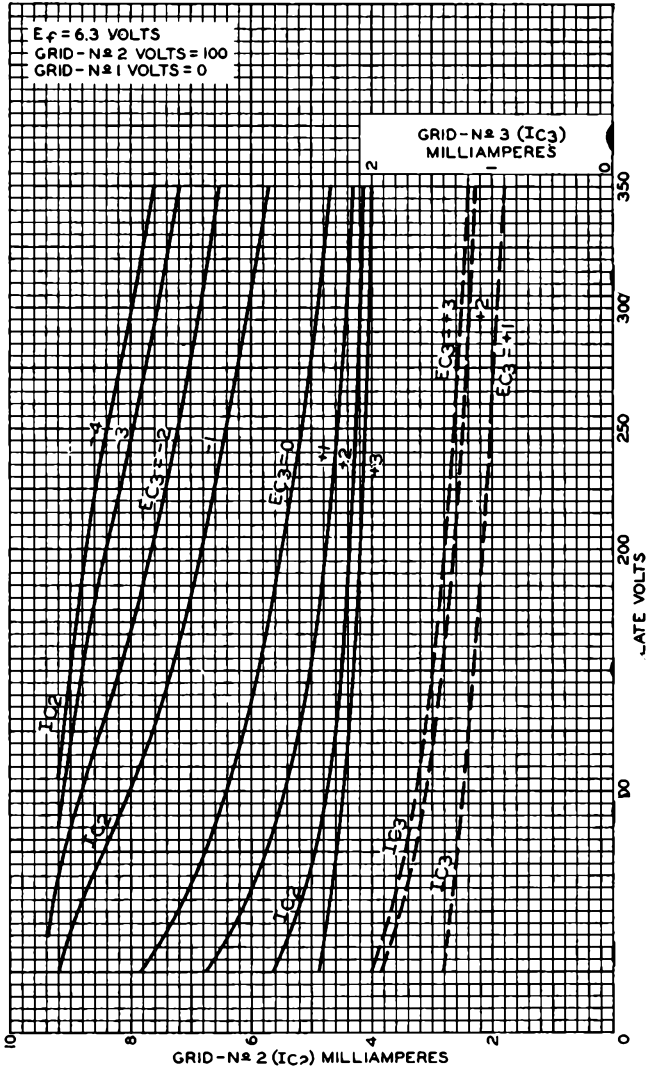


6DT6



6DT6

AVERAGE CHARACTERISTICS



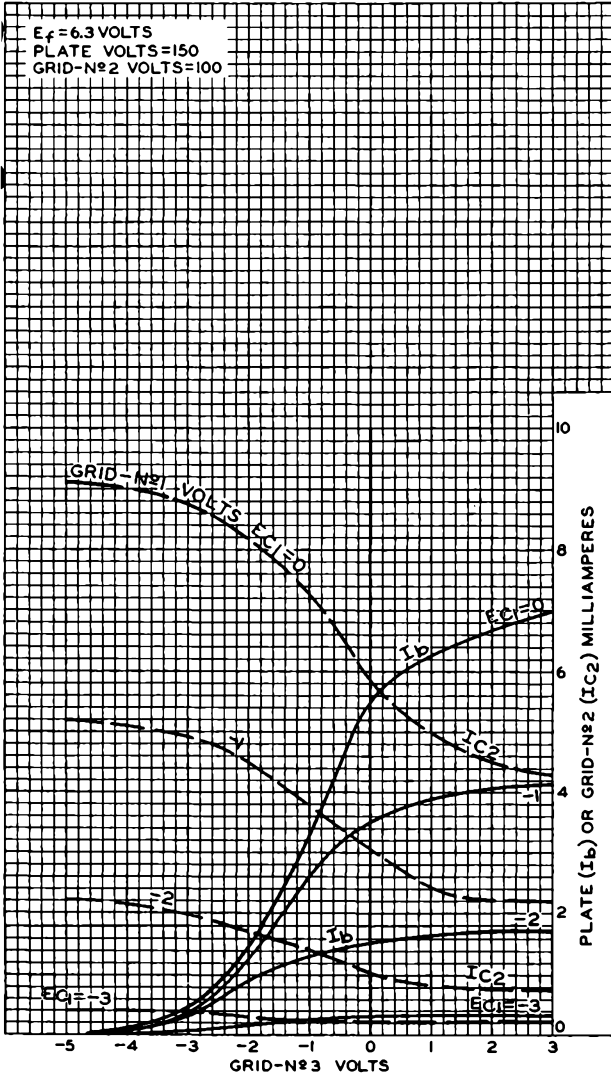
TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8829

6DT6

AVERAGE CHARACTERISTICS



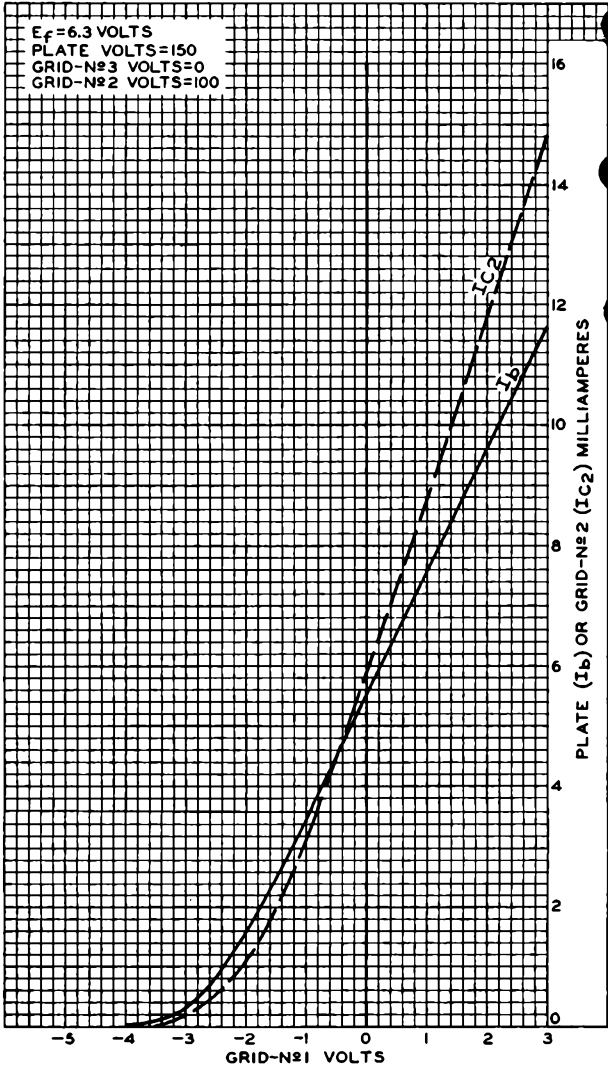
TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8826

6DT6

AVERAGE CHARACTERISTICS



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8825



6E5

6E5

ELECTRON-RAY TUBE

INDICATOR TYPE WITH TRIODE UNIT

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Overall Length		4" ± 3/16" ←
Seated Height		3-3/8" ± 3/16" ←
Maximum Diameter		1-3/16" ←
Bulb		T-9
Base		Small 6-Pin
Pin 1 - Heater		Pin 4 - Target
Pin 2 - Plate		Pin 5 - Cathode
Pin 3 - Grid		Pin 6 - Heater
Mounting Position	BOTTOM VIEW (6R)	Any* ←



Maximum and Minimum Ratings Are Design-Center Values

INDICATOR SERVICE

Plate-Supply Voltage			250 max. volts ←
Target Voltage			{ 250 max. volts ← { 125 min. volts ← { 90 max. volts ←
D-C Heater-Cathode Potential			90 max. volts ←
Typical Operation:			
Plate and Target Supply	125	250	volts ←
Series Triode-Plate Resistor**	1	1	megohm
Target Current*** †	0.8	2	ma.
Triode-Plate Current***	0.1	0.2	ma.
Triode-Grid Voltage (Approx.):			
For shadow angle of 0°	-4.0	-7.5	volts
For shadow angle of 90°	0	0	volts

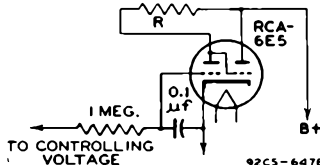
* The plane of the ray-control electrode passes through pins No. 2 and No. 5.

** Designated as R in circuit diagram. † Subject to wide variations.

*** For zero triode-grid voltage.

← Indicates a change.

The 6E5 is a high-vacuum type of tube designed to indicate visually the effect of change in the controlling voltage. For different controlling voltages, the shaded pattern produced on the fluorescent target varies through an angle from 90° to approximately 0°. The extent of the shaded area is controlled by the voltage on the ray-control electrode which is an extension of the triode plate between cathode and target. The voltage on the ray-control electrode is determined by the voltage applied to the grid of the triode connected as a d-c amplifier as shown in the circuit. A decrease in triode-grid bias decreases the voltage on the ray-control electrode; conversely, an increase produces an increased voltage on the ray-control electrode. In the practical use of the 6E5 as a tuning indicator, controlling voltage applied to the triode-grid is obtained from a suitable point in the a.v.c. circuit.



The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations. ← Indicates a change.

DEC. 15, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

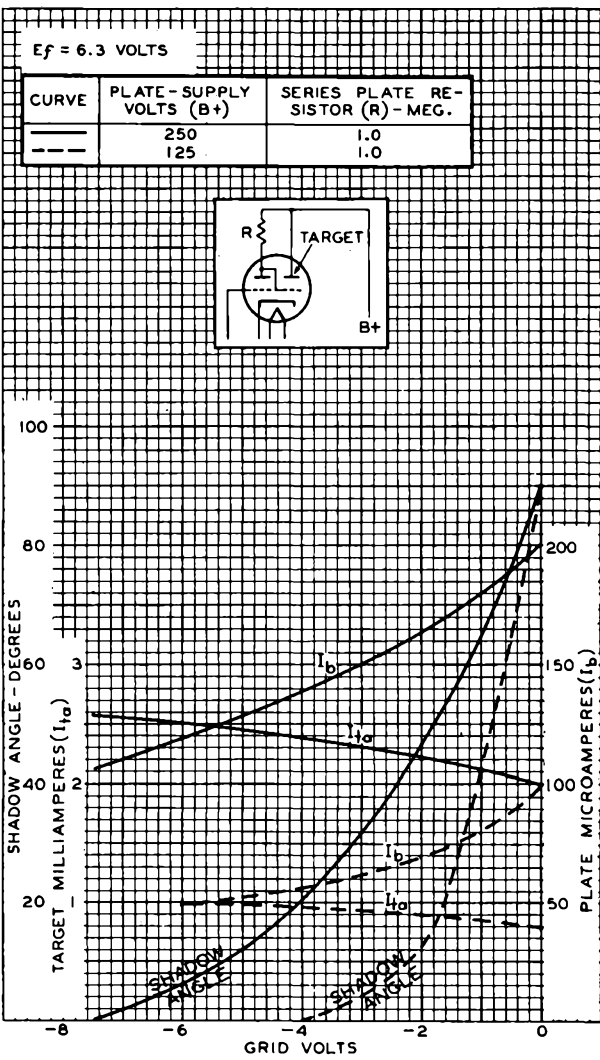
DATA

6E5



6E5

AVERAGE CONTROL CHARACTERISTICS



OCT. 12, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4422R4



6E6

6E6

TWIN-TRIODE POWER AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.6	amp.
Maximum Overall Length		4-11/16"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 7-Pin
Pin 1 - Heater		Pin 5 - Grid T ₁
Pin 2 - Plate T ₂		Pin 6 - Plate T ₁
Pin 3 - Grid T ₂		Pin 7 - Heater
Pin 4 - Cathode		
Mounting Position	BOTTOM VIEW (7B)	Any

For convenience, one triode is identified as T₁; the other as T₂.

PUSH-PULL AMPLIFIER - Each Unit

Plate Voltage		250 max. volts
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate	180	250 volts
Grid [▲]	-20	-27.5 volts
Amp. Fact.	6	6
Plate Res.	4300	3500 ohms
Transcond.	1400	1700 μmhos
Plate Cur.	11.5	18 ma.
Effec. Load Res. (plate-to-plate)	15000*	14000** ohms
Max.-Sig. Power Output #	0.75	1.6 watts

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ The type of input-coupling should not introduce too much resistance in the grid circuit. Transformer- or impedance-input coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

** For parallel operation: load resistance = 3750 ohms.

■ For parallel operation: load resistance = 3500 ohms.

For both triode units.

July 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

6E7



6E7

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

RENEWAL TYPE FOR MAJESTIC RECEIVERS

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Overall Length		4-11/16" to 4-15/16"
Seated Height		4-1/16" to 4-5/16"
Maximum Diameter (without shield)		1-9/16"
Bulb (with form-fitting shield)		ST-12
Cap		Small Metal
Base [▲]		Small 7-Pin
Pin 1 - Heater		Pin 5 - External Shield
Pin 2 - Plate		Pin 6 - Cathode
Pin 3 - Screen		Pin 7 - Heater
Pin 4 - Suppressor		Cap - Grid

BOTTOM VIEW (7H)

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ Requires a different socket than the medium 7-pin base.

Typical Operating Conditions and Curves for the 6E7 are the same as for Type 6D7-G.

July 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



6EA8

6EA8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

With heater having controlled warm-up time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.45 ± 6%	amp
Warm-up time (Average).	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Triode Unit:			
Grid to plate	1.7	1.7	μμf
Grid to cathode and heater.	3	3.2	μμf
Plate to cathode and heater.	0.3	1.1	μμf
Pentode Unit:			
Grid No.1 to plate.	0.02 max.	0.01 max.	μμf
Grid No.1 to cathode & grid No.3 & internal shield, grid-No.2, and heater.	5	5	μμf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater .	2.6	3.4	μμf
Heater to cathode	3	3*	μμf

Characteristics, Class A₁ Amplifier:

	Triode Unit	Pentode Unit	
Plate-Supply Voltage.	150	125	volts
Grid-No.2 Voltage	—	125	volts
Grid-No.1 Voltage	—	-1	volt
Cathode Resistor.	56	—	ohms
Amplification Factor.	40	—	
Plate Resistance (Approx.).	5000	80000	ohms
Transconductance.	8500	6400	μmhos
Plate Current	18	12	ma
Grid-No.2 Current	—	4	ma
Grid-No.1 Voltage (Approx.) for plate μa = 10	-12	-9	volts

Mechanical:

Operating Position. Any

^o, * : See next page.

6EA8



6EA8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

Maximum Overall Length 2-3/16"
 Maximum Seated Length 1-15/16"
 Length, Base Seat to Bulb Top (Excluding tip) . . 1-9/16" \pm 3/32"
 Diameter 0.750" to 0.875"
 Dimensional Outline See General Section
 Bulb T6-1/2
 Base Small-Button Noval 9-Pin (JEDEC No.E9-1)
 Basing Designation for BOTTOM VIEW 9AE

Pin 1—Triode Plate
 Pin 2—Pentode
 Grid No.1
 Pin 3—Pentode
 Grid No.2
 Pin 4—Heater
 Pin 5—Heater
 Pin 6—Pentode Plate



Pin 7—Pentode
 Cathode,
 Pentode
 Grid No.3,
 Internal
 Shield
 Pin 8—Triode Cathode
 Pin 9—Triode Grid

CONVERTER SERVICE

Maximum Ratings, Design-Maximum Values:

	Triode Unit as Osc.	Pentode Unit as Mixer	
PLATE VOLTAGE	330 max.	330 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE	—	330 max.	volts
GRID-No.2 VOLTAGE	—	See Grid-No.2 Input	
<i>Rating Chart at front of Receiving Tube Section</i>			
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive-bias value	0 max.	0 max.	volts
GRID-No.2 INPUT:			
For grid-No.2 voltages up to 165 volts	—	0.55 max.	watt
For grid-No.2 voltages between 165 and 330 volts	—	See Grid-No.2 Input	
<i>Rating Chart at front of Receiving Tube Section</i>			
PLATE DISSIPATION	3 max.	3.1 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	200 [▲] max.	volts

○ with external shield JEDEC No.315 connected to cathode of unit under test except as noted.

● with external shield JEDEC No.315 connected to ground.

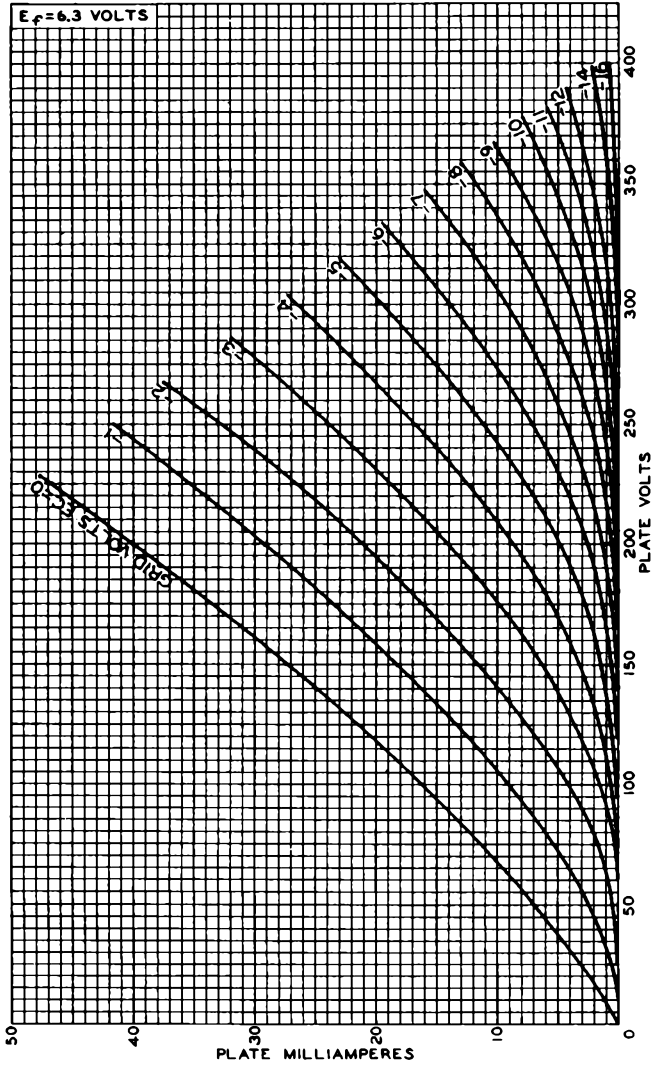
▲ The dc component must not exceed 100 volts.



6EA8

6EA8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

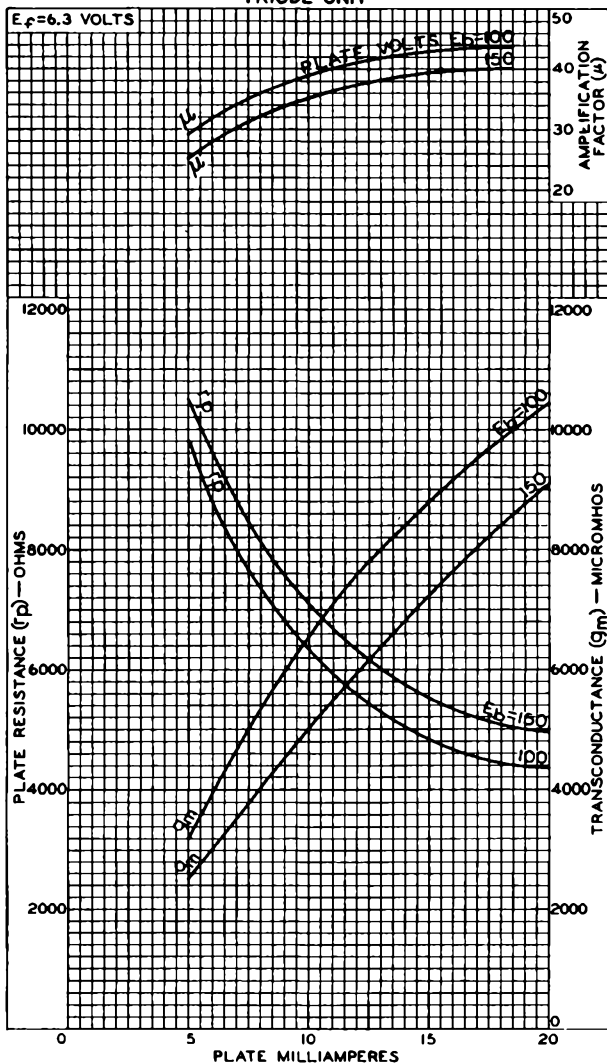


6EA8



6EA8

AVERAGE CHARACTERISTICS TRIODE UNIT

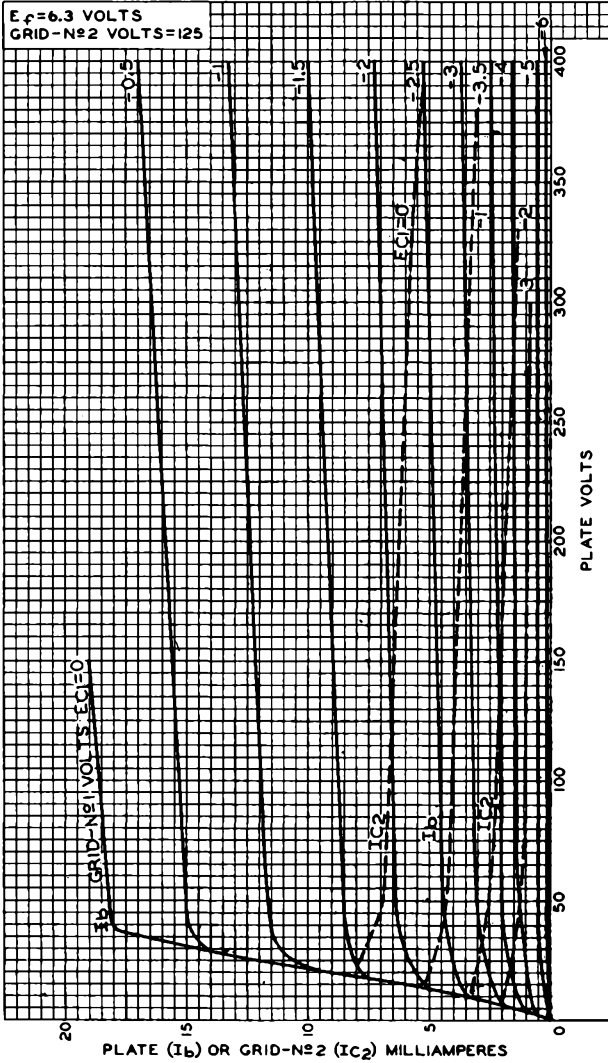




6EA8

6EA8

AVERAGE CHARACTERISTICS PENTODE UNIT

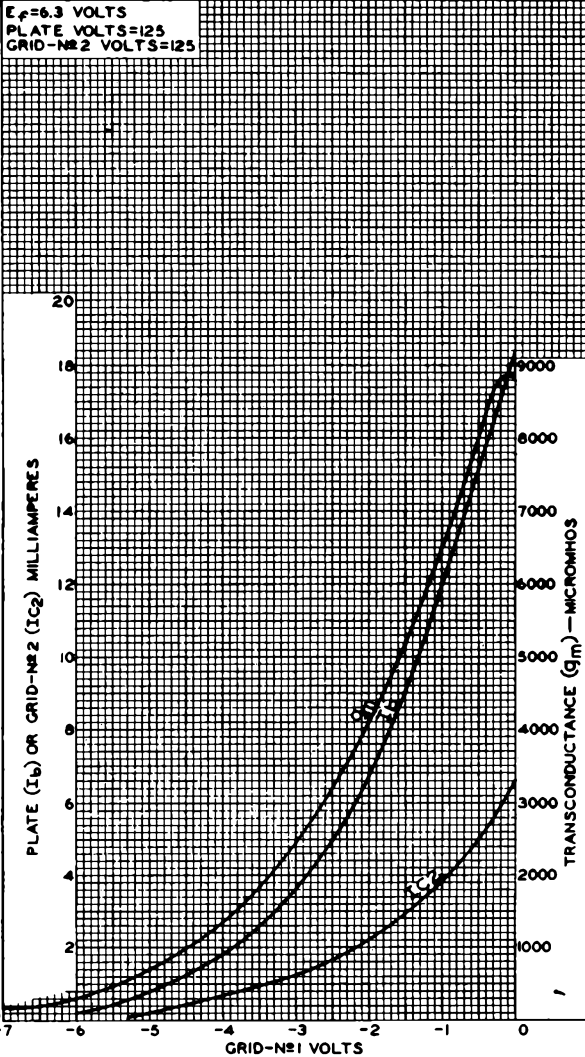


6EA8



6EA8

AVERAGE CHARACTERISTICS
PENTODE UNIT





6F5
6F5-GT

6F5, 6F5-GT HIGH-MU TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances (Approx.):

	6F5 ⁰	6F5-GT ⁰⁰
Grid to Plate	2.4	2.8 . . . μμf
Grid to Cathode	5.5	2.2 . . . μμf
Plate to Cathode	4.0	3.2 . . . μμf

⁰ With shell connected to cathode.

⁰⁰ With no external shield.

Mechanical:

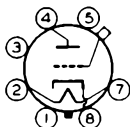
Mounting Position . . .	Any	Any
Maximum Overall Length	3-1/8"	3-5/16"
Seated Length	2-7/16" ± 1/8"	2-5/16"—2-3/4"
Maximum Diameter . . .	1-5/16"	1-5/16"
Bulb	Metal Shell, MTT8A	T-9
Cap	Miniature	Miniature
Base	Small-Wafer Octal 7-Pin	Intermed. Shell Octal 7-Pin
Basing Designation . .	5M ₁	G-5M ₁

BOTTOM VIEW

Pin 1 { 6F5, Shell
6F5-GT, No
Connection

Pin 2 - Heater

Pin 3 - No
Connection



Pin 4 - Plate

Pin 5 - No
Connection

Pin 7 - Heater

Pin 8 - Cathode

Cap - Grid

Maximum Ratings and Characteristics for the 6F5 and 6F5-GT are the same as shown for Type 6SF5. Typical Operating Conditions are shown in the RESISTANCE-COUPLED AMPLIFIER CHART at front of this Section.

Curve under Type 6SF5 also applies to the 6F5 and 6F5-GT.

← Indicates a change.

JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

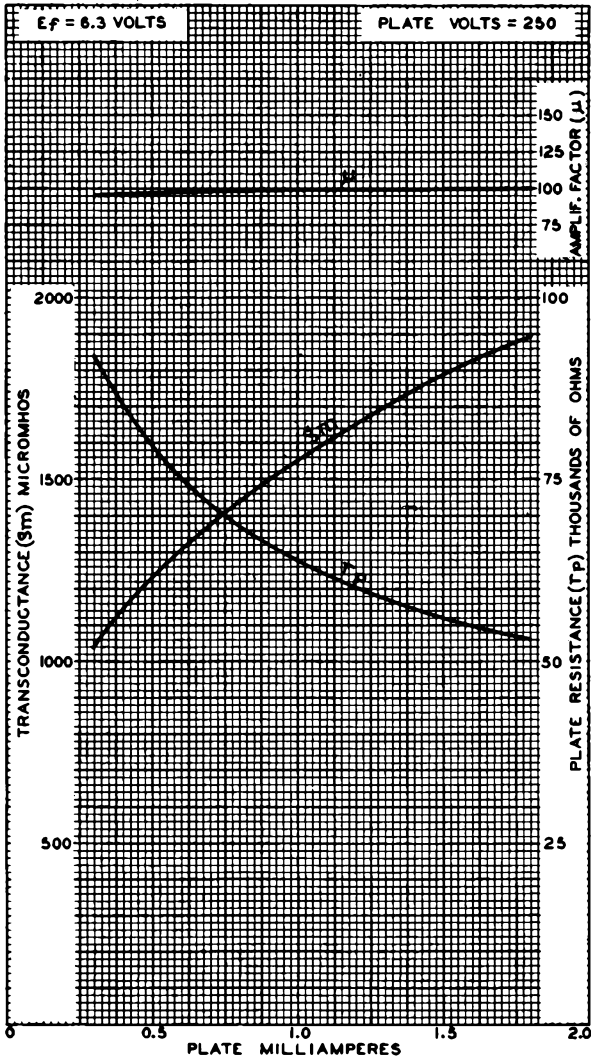
DATA

6F5



6F5

AVERAGE CHARACTERISTICS



SEPT. 4, 1935

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4470

6F6
6F6-G

6F6, 6F6-G

POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode		
Voltage	6.3		a-c or d-c volts
Current	0.7		amp.
Direct Interelectrode Capacitances (Approx.):			
	6F6	6F6-G ^{oo}	
Grid to Plate	0.2	0.5	μf
Input	6.5	8.0	μf
Output	13	6.5	μf
Maximum Overall Length	3-1/4"	4-5/8"	
Maximum Seated Height	2-11/16"	4-1/16"	
Maximum Diameter	1-5/16"	1-13/16"	
Bulb	Metal Shell, MT-8		ST-14
Base	{ Small Wafer { Octal 7-Pin	{ Medium Shell { Octal 7-Pin	
Basing Designation	7S		G-7S
Pin 1	{ 6F6, Shell { 6F6-G, No Con.		Pin 4 - Screen
Pin 2 - Heater			Pin 5 - Grid
Pin 3 - Plate			Pin 7 - Heater
Mounting Position			Pin 8 - Cathode

BOTTOM VIEW

Maximum Ratings Are Design-Center Values

SINGLE-TUBE AMPLIFIER (Pentode Connection)

Plate Voltage	375 max. volts
Screen Voltage	285 max. volts
Plate Dissipation	11 max. watts
Screen Dissipation	3.75 max. watts

Typical Operation and Characteristics - Class A₁ Amplifier:*

	Fixed Bias		Cathode Bias		
Plate	250	285	250	285	volts
Screen	250	285	250	285	volts
Grid ^o	-16.5	-20	-	-	volts
Cathode Resistor	-	-	410	440	ohms
Peak A-F Grid Volt.	16.5	20	16.5	20	volts
Zero-Sig. Plate Cur.	34	38	34	38	ma.
Max.-Sig. Plate Cur.	36	40	35	38	ma.
Zero-Sig. Screen Cur.	6.5	7	6.5	7	ma.
Max.-Sig. Screen Cur.	10.5	13	9.7	12	ma.
Plate Res. (approx.)	80000	78000	-	-	ohms
Transconductance	2500	2550	-	-	μmhos
Load Resistance	7000	7000	7000	7000	ohms
Tot. Harmonic Dist.	8	9	8.5	9	%
Max.-Sig. Power Output	3.2	4.8	3.1	4.5	watts

SINGLE-TUBE AMPLIFIER (Triode Connection)†

Plate Voltage	350 max. volts
Plate & Screen Dissipation (Total)	10 max. watts

* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

^o With shell connected to cathode.

^{oo} With no external shield.

*, †: See next page.

← Indicates a change.

May 1, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6F6
6F6-G



6F6, 6F6-G

POWER AMPLIFIER PENTODE

(continued from preceding page)

Typical Operation and Characteristics - Class A_2 Amplifier:‡

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate	250	250	volts
Grid*	-20	-	volts
Cathode Resistor	-	650	ohms
Peak A-F Grid Voltage	20	20	volts
Zero-Sig. Plate Cur.	31	31	ma.
Max.-Sig. Plate Cur.	34	32	ma.
Plate Resistance	2600	-	ohms
Amp. Factor	6.8	-	
Transconductance	2600	-	μmhos
Load Resistance	4000	4000	ohms
Total Harmonic Dist.	6.5	6.5	%
Max.-Sig. Power Output	0.85	0.8	watt

PUSH-PULL AMPLIFIER (Pentode Connection)

Plate Voltage	375 max.	volts
Screen Voltage	285 max.	volts
Plate Dissipation	11 max.	watts
Screen Dissipation	3.75 max.	watts

Typical Operation - Class A_2 Amplifier:‡

Unless otherwise specified, values are for 2 tubes

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate	315	315	volts
Screen	285	285	volts
Grid*	-24	-	volts
Cathode Resistor	-	320	ohms
Peak A-F Grid-to-Grid Voltage	48	58	volts
Zero-Sig. Plate Cur.	62	62	ma.
Max.-Sig. Plate Cur.	80	73	ma.
Zero-Sig. Screen Cur.	12	12	ma.
Max.-Sig. Screen Cur.	19.5	18	ma.
Effective Load Resistance (plate to plate)	10000	10000	ohms
Total Harmonic Dist.	4	3	%
Max.-Sig. Power Output	11	10.5	watts

PUSH-PULL AMPLIFIER (Pentode Connection)

Plate Voltage	375 max.	volts
Screen Voltage	285 max.	volts
Plate Dissipation	11 max.	watts
Screen Dissipation	3.75 max.	watts

Typical Operation - Class AB_2 Amplifier:‡

Unless otherwise specified, values are for 2 tubes

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate	375	375	volts

‡ Subscript 1 indicates that grid current does not flow during any part of input cycle.

‡ Subscript 2 indicates that grid current flows during some part of input cycle.

*, †: See next page.

May 1, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



6F6, 6F6-G

6F6
6F6-G

POWER AMPLIFIER PENTODE

(continued from preceding page)

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Screen	250	250	volts
Grid*	-26	-	volts
Cathode Resistor [†]	-	340	ohms
Peak A-F Grid-to- Grid Voltage	82	94	volts
Zero-Sig. Plate Cur.	34	54	ma.
Max.-Sig. Plate Cur.	82	77	ma.
Zero-Sig. Screen Cur.	5	8	ma.
Max.-Sig. Screen Cur.	19.5	18	ma.
Effective Load Resist- ance (plate to plate)	10000	10000	ohms
Total Harmonic Dist.	3.5	5	%
Max.-Sig. Power Output	18.5	19	watts

PUSH-PULL AMPLIFIER (Triode Connection)†

Plate Voltage	350 max.	volts
Plate & Screen Dissipation (Total)	10 max.	watts

Typical Operation - Class AB₂ Amplifier:*

Unless otherwise specified, values are for 2 tubes

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate	350	350	volts
Grid*	-38	-	volts
Cathode Resistor †	-	730	ohms
Peak A-F Grid-to- Grid Voltage	123	132	volts
Zero-Sig. Plate Cur.	48	50	ma.
Max.-Sig. Plate Cur.	92	60	ma.
Effective Load Resist- ance (plate to plate)	6000	10000	ohms
Total Harmonic Dist.	2	3	%
Max.-Sig. Power Output	13	9	watts

* Type of input coupling used should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance as high as, but not greater than 0.5 megohm.

† The value given for the cathode resistor is determined for a grid bias of -21 volts.

‡ Screen connected to plate.

§ Subscript 2 indicates that grid current flows during some part of input cycle.

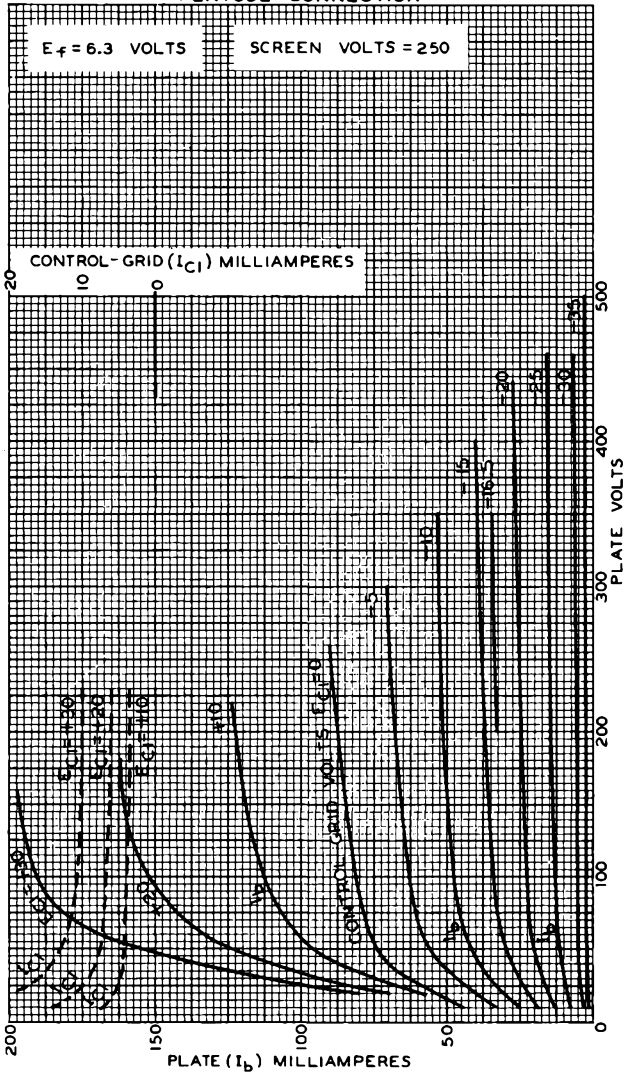
¶ The value given for the cathode resistor is determined for a grid bias of -36.5 volts.

6F6



6F6

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



JULY 22, 1935

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

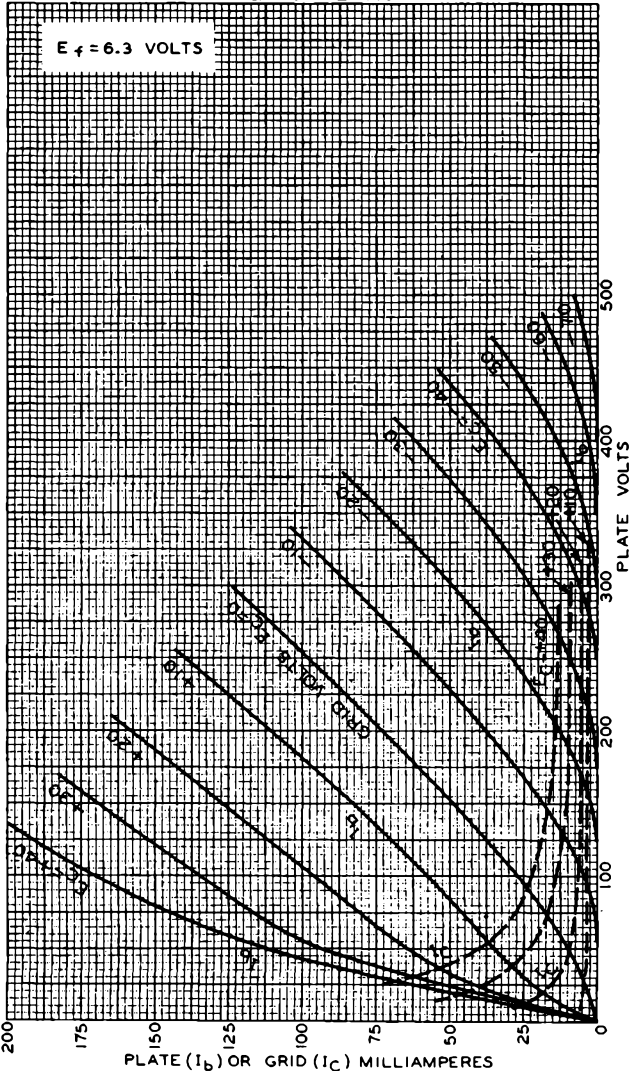
92C-4431



6F6

6F6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



JULY 23, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4440

6F6



6F6

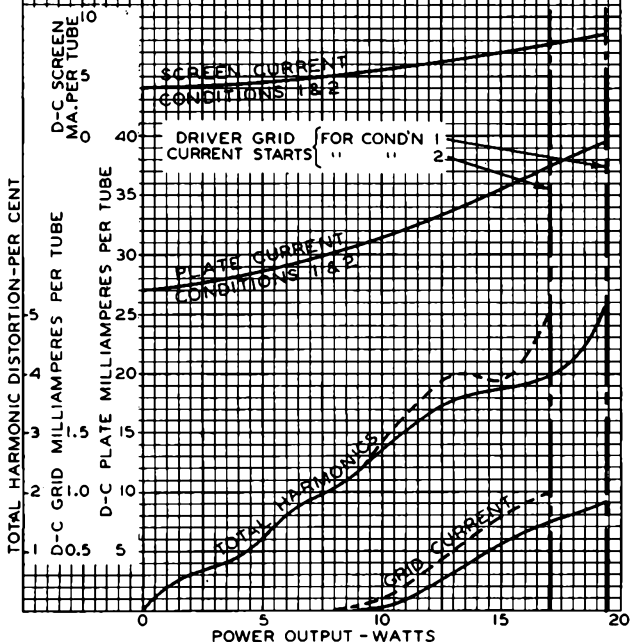
OPERATION CHARACTERISTICS PENTODE CONNECTION-CLASS AB OPERATION

 $E_f = 6.3 \text{ VOLTS}$

INPUT STAGE : CLASS A DRIVER-ONE TYPE 6F6 AS TRIODE
 PLATE VOLTS=250
 SELF-BIAS RESISTOR=650 OHMS
OUTPUT STAGE : CLASS AB-TWO TYPE 6F6'S AS PENTODES
 ZERO-SIGNAL PLATE VOLTS=375, FROM
 SOURCE HAVING RESISTANCE (R_b)
 SHOWN IN TABLE
 ZERO-SIGNAL SCREEN VOLTS=250, FROM THE
 ABOVE 375-VOLT PLATE SUPPLY THROUGH
 RESISTANCE (R_d) SHOWN IN TABLE
 ZERO-SIGNAL BIAS VOLTS=VALUE FROM
 GRID-BIAS RESISTOR (R_c) OF 340 OHMS
 OUTPUT LOAD, PLATE TO PLATE=10000 OHMS

CONDI- TION	CURVE	R_b Ohms	R_d Ohms	DRIVER STAGE		INTERSTAGE TRANSFORMER	
				Input-Sig. Volts (RMS)	Plate Load Ohms	Voltage Ratio Prim.:1/2Sec.	Peak Power Efficiency %
1	—	0	0	14.6	51100	2.50:1	47.7
2	- - -	1000	2000	10.3	33100	1.74:1	64.4

* For maximum output



NOV. 21, 1935

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4517

RCA-6F7 TRIODE-PENTODE

Heater *		Coated Uni-potential Cathode	
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
Direct Interelectrode Capacitances:			
Triode Unit:			
Grid to Plate	2.0	μuf	
Grid to Cathode	2.5	μuf	
Plate to Cathode	3.0	μuf	
Pentode Unit:			
Grid to Plate	0.008 max. [⊙]	μuf	
Input	3.2	μuf	
Output	12.5	μuf	
Overall Length		4-9/32" to 4-17/32"	
Maximum Diameter		1-9/16"	
Bulb		ST-12	
Cap		Small Metal	
Base		Small 7-Pin [△]	
Pin 1-Heater	②	Pin 5-Triode Grid	
Pin 2-Pentode Plate	①	Pin 6-Cathode	
Pin 3-Pentode Screen	⑦	Pin 7-Heater	
Pin 4-Triode Plate	③ ④ ⑤	Cap - Pentode Grid	

BOTTOM VIEW

AMPLIFIER SERVICE

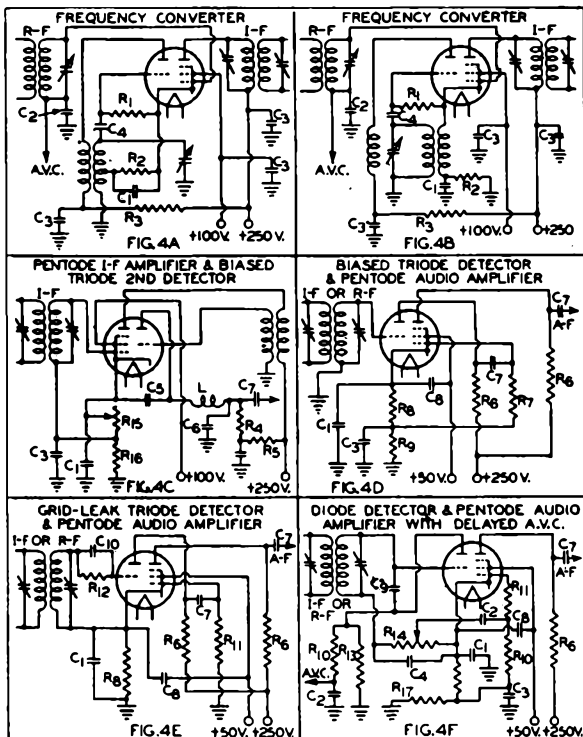
	<u>Triode Unit</u>	<u>Pentode Unit</u>	
Plate Voltage	100 max.	100	250 max. volts
Screen Voltage	-	100	100 max. volts
Grid Voltage	-3	-3	-3 min. volts
Amp. Fact.	8	300	90C
Plate Res.	16000	290000	850000 ohms
Mut. Cond.	500	1050	1100 μmhos
Mut. Cond. at -35 volts bias	-	9	10 μmhos
Plate Cur.	3.5	6.3	6.5 ma.
Screen Cur.	-	1.6	1.5 ma.

CONVERTER SERVICE

	<u>Triode Unit</u>	<u>Pentode Unit</u>	
Plate Voltage	100 max.	250	max. volts
Screen Voltage	-	100	max. volts
Grid Voltage	##	-3	min.* volts
Oscillator Plate Cur. (av.)	4 max.	-	ma.
Typical Operation:			
Plate	100 [⊙]	250	volts
Screen	-	100	volts
Grid Bias	##	-10 ^{⊙⊙}	volts
Plate Resistance	-	2	megohms
Conversion Conductance	-	300	μmhos
D-c Grid Current	2.4	2.8	ma.
D-c Plate Current	0.15	0	ma.
Screen Current	-	0.6	ma.
Oscillator Peak Voltage Input	-	7	volts

- ## Usually obtained by means of a grid leak.
 ** Grid bias should be at least 3 volts greater than the peak oscillator voltage applied to the pentode grid.
 ⊙ May be obtained from 250-volt source through 60000-ohm dropping resistor.
 ⊙⊙ Obtained by means of 1700-ohm self-biasing (cathode) resistor.
 * In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
 △ Requires different socket than medium 7-pin base.
 ⊙ With shield-can.

TYPICAL CIRCUITS



APPROXIMATE VALUES

$C_1 = 5 \mu\text{f}$
 $C_2 = 0.05 \mu\text{f}$
 $C_3 = 0.1 \mu\text{f}$
 $C_4 = 0.0002 \mu\text{f}$
 $C_5 = 0.0024 \mu\text{f}$
 $C_6 = 0.00016 \mu\text{f}$
 $C_7 = 0.01 \mu\text{f}$
 $C_8 = 0.5 \mu\text{f}$
 $C_9 = 0.0005 \text{ TO } 0.001 \mu\text{f}$
 $C_{10} = 0.00025 \mu\text{f}$
 $L = \text{I-F CHOKE COIL}$
 $R_1 = \text{OSCILLATOR GRID LEAK-} 0.1 \text{ MEGOHM}$

$R_2 = \text{PENTODE SELF-BIASING RESISTOR-1500 OHMS}$
 $R_3 = \text{VOLTAGE DROPPING RESISTOR-50000 OHMS}$
 $R_4 = \text{PLATE COUPLING RESISTOR-170000 OHMS}$
 $R_5 = \text{FILTER RESISTOR-30000 OHMS}$
 $R_6 = \text{PLATE COUPLING RESISTOR-300000 OHMS}$
 $R_7 = \text{PENTODE GRID LEAK-0.5 MEGOHM}$
 $R_8 = \text{PENTODE SELF-BIASING RESISTOR-5000 OHMS}$
 $R_9 = 10000 \text{ OHMS. } R_9 + R_8 = \text{TRIODE BIASING RESISTOR}$
 $R_{10} = \text{FILTER RESISTOR-1.0 MEGOHM}$
 $R_{11} = \text{GRID RESISTOR-500000 OHMS}$
 $R_{12} = \text{TRIODE GRID LEAK-1.0 MEGOHM}$
 $R_{13} = \text{A.V.C. DIODE LOAD-1.0 MEGOHM}$
 $R_{14} = \text{A-F DIODE-LOAD POTENTIOMETER-0.5 MEGOHM}$
 $R_{15} = \text{PENTODE SELF-BIASING RES. 4000 OHMS VAR.}$
 $R_{16} = 1500 \text{ OHMS. } R_{16} + R_{15} = \text{TRIODE BIASING RESISTOR}$

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.



Radiotron

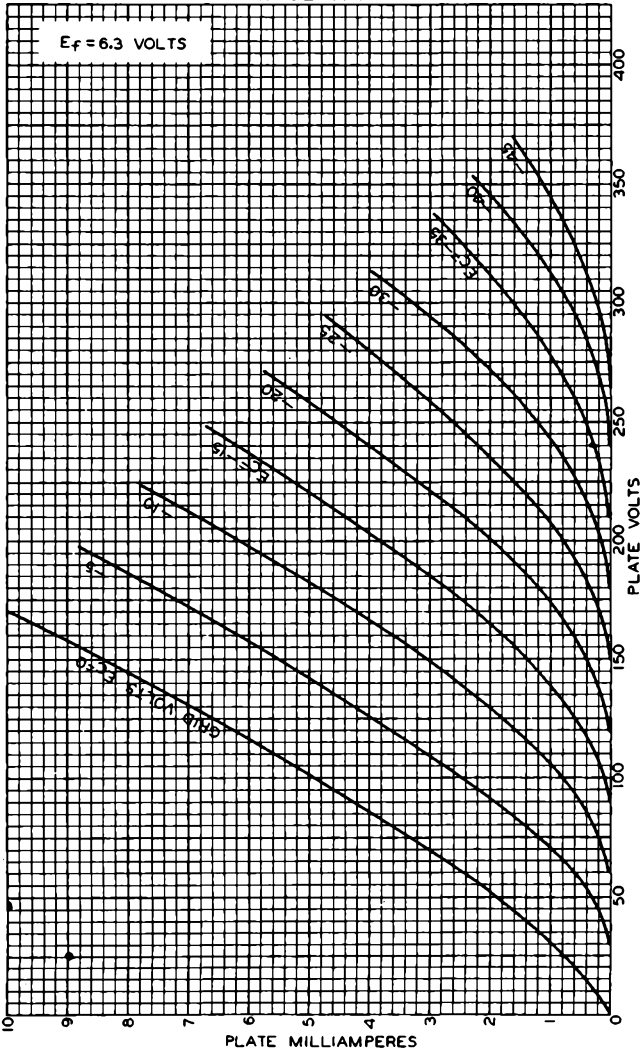
RCA-6F7

Cunningham
RADIO TUBES

C-6F7

6F7

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT

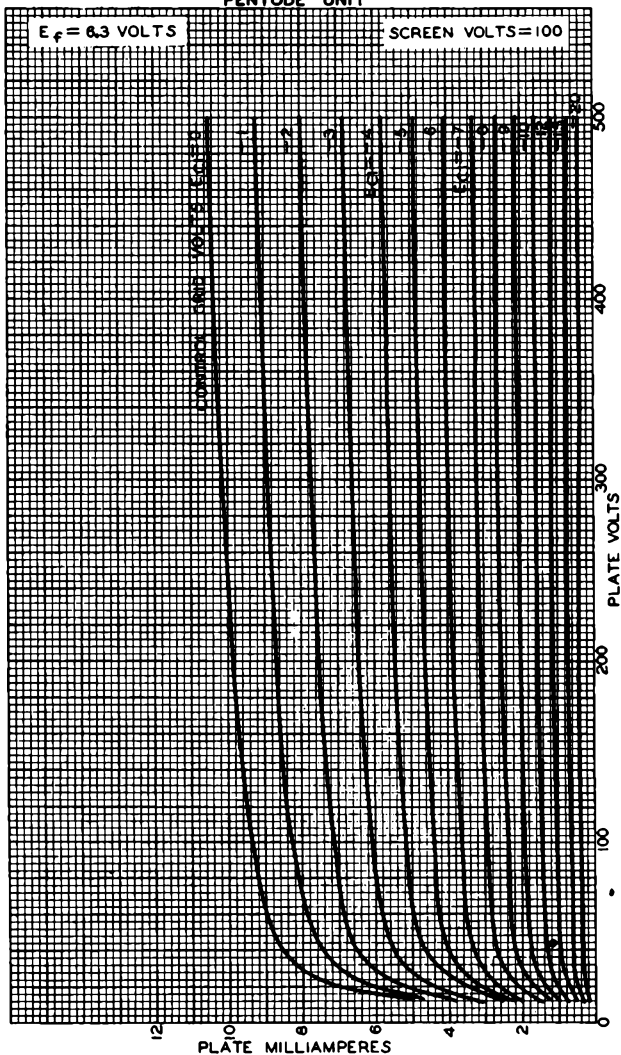


6F7

RCA Radiotron
RCA-6F7

Cunningham
RADIO TUBES
C-6F7

AVERAGE PLATE CHARACTERISTICS
PENTODE UNIT



AUG. 18, 1933

92S-5360



6F8-G

TWIN-TRIODE AMPLIFIER

Heater	Coated Unipotential Cathodes	
Voltage	6.3	a-c or d-c volts
Current	0.6	amp.
Direct Interelectrode Capacitances (Approx.): ^o		
	<u>Triode Unit T_1</u>	<u>Triode Unit T_2</u>
Grid to Plate	3:8	3.2 μf
Grid to Cathode	3.2	1.9 μf
Plate to Cathode	1.0	1.9 μf
Maximum Overall Length		4-15/32"
Maximum Seated Height		3-29/32"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Skirted Miniature
Base		Small Shell Octal 8-Pin
Pin 1 - No Connection		Pin 6 - Plate T_1
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate T_2		Pin 8 - Cathode T_1
Pin 4 - Cathode T_2		Cap - Grid T_2
Pin 5 - Grid T_1		
Mounting Position	BOTTOM VIEW (G-8G)	Any



For convenience, one triode unit is identified as T_1 ; the other as T_2

Maximum And Minimum Ratings Are Design-Center Values

AMPLIFIER - Each Unit

Plate Voltage		300 max. volts
Grid Voltage		0 min. volts
Plate Dissipation		2.5 max. watts
Characteristics - Class A_1 Amplifier:		
Plate	90	250 volts
Grid	0	-8 volts
Amp. Fact.	20	20
Plate Res.	6700	7700 ohms
Transcond.	3000	2600 μmhos
Plate Cur.	10	9 ma.

Typical Operation with Resistance Coupling:

See RESISTANCE-COUPLED AMPLIFIER CHART.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- With no external shield.

Curves under Type 6J5 apply to each unit of the 6F8-G.

← Indicates a change.

Jan. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY


DATA



6G6-G

6G6-G

POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances (Approx.):°		
Grid to Plate	0.5	μuf
Input	5.5	μuf
Output	7.0	μuf
Maximum Overall Length		4-1/8"
Maximum Seated Height		3-9/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small Shell Octal 7-Pin
Pin 1—No Connection		Pin 5—Grid
Pin 2—Heater		Pin 7—Heater
Pin 3—Plate		Pin 8—Cathode
Pin 4—Screen		
Mounting Position	BOTTOM VIEW(G-7S)	Any

*Maximum Ratings Are Design-Center Values*AMPLIFIER — Pentode Connection

Plate Voltage	300 max. volts	
Screen Voltage	300 max. volts	←
Plate Dissipation	2.75 max. watts	
Screen Dissipation	0.75 max. watt	
D-C Heater—Cathode Potential	90 max. volts	←

Typical Operation and Characteristics— Class A₁ Amplifier:

Plate Voltage	135	180	volts
Screen Voltage	135	180	volts
Grid Voltage*	-6	-9	volts
Peak A-F Grid Voltage	6	9	volts
Zero-Sig. Plate Cur.	11.5	15	ma.
Zero-Sig. Screen Cur.	2	2.5	ma.
Plate Resistance	0.170	0.175	megohm
Transconductance	2100	2300	μmhos
Load Resistance	12000	10000	ohms
Total Harmonic Dist.	7.5	10	%
Max.—Sig. Power Output	0.6	1.1	watts

AMPLIFIER — Triode Connection[▲]

Plate Voltage	300 max. volts	←
Plate Dissipation	3.5 max. watts	←
D-C Heater—Cathode Potential	90 max. volts	←

Typical Operation and Characteristics — Class A₁ Amplifier:

Plate Voltage	180	volts
Grid Voltage*	-12	volts
Peak A-F Grid Voltage	12	volts
Amplification Factor	9.5	
Plate Resistance	4750	ohms
Transconductance	2000	μmhos
Plate Current	11	ma.

← Indicates a change.

°, ▲, * : See next page.

APRIL 1, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6G6-G



6G6-G

POWER AMPLIFIER PENTODE

(continued from preceding page)

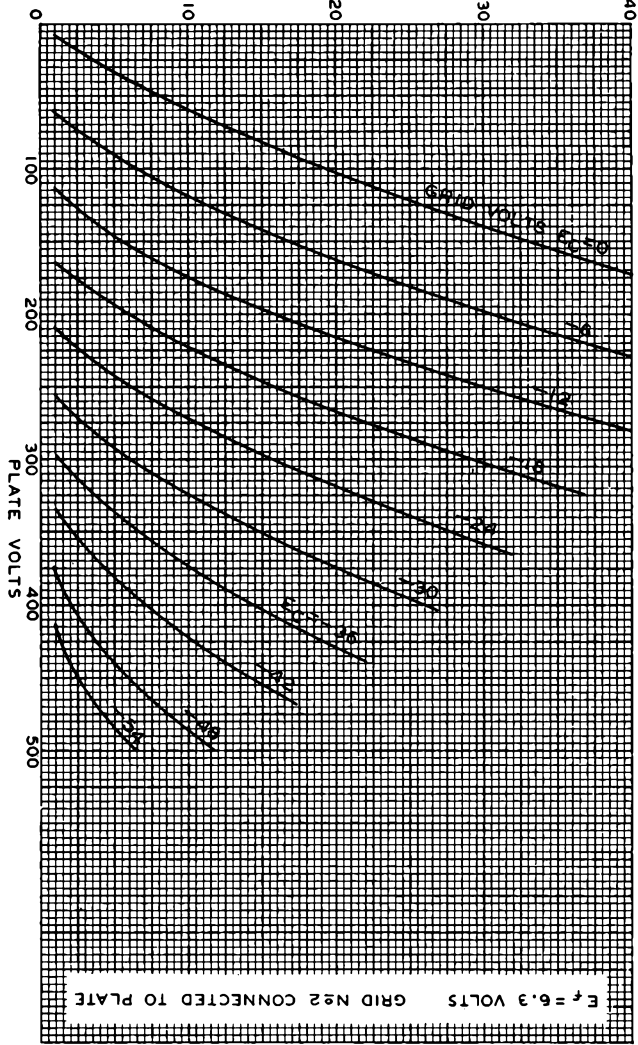
Load Resistance	•	12000	ohms
Total Harmonic Distortion		5	%
Max.-Sig. Power Output		0.25	watt

- ° With no external shield.
- Under maximum rated conditions, the d-c resistance in the grid circuit may be as high as 0.5 megohm with cathode bias or 0.1 megohm with fixed bias.
- ▲ with screen connected to plate.

APRIL 1, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



AVERAGE PLATE CHARACTERISTICS
 TRIODE CONNECTION

6G6-G

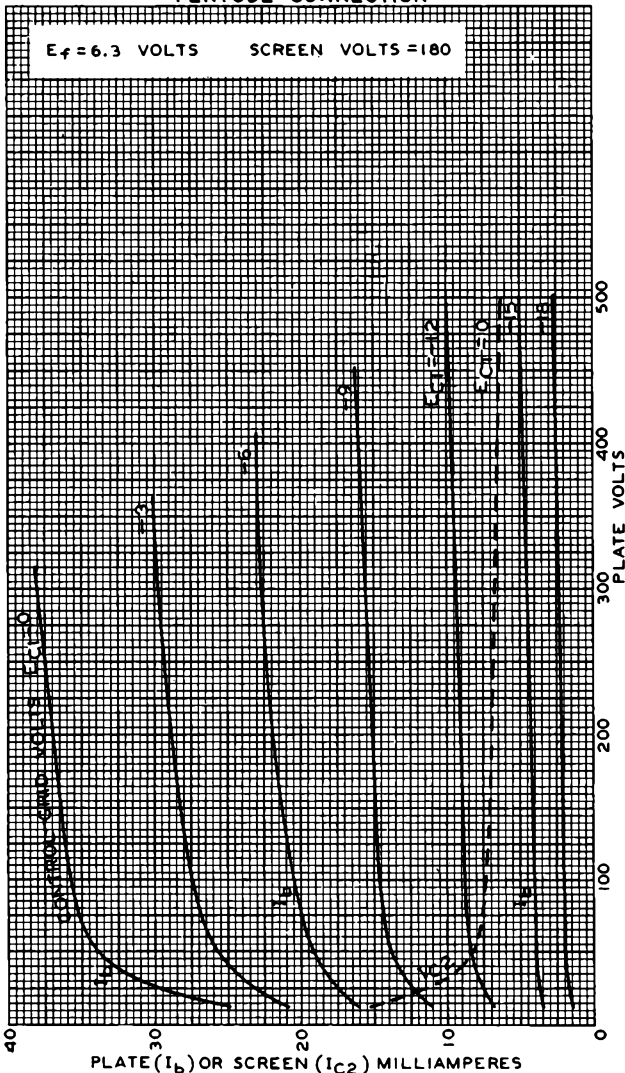


6G6-G

6G6-G



6G6-G AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



AUG. 19, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4956R1



6H6, 6H6-GT/G

6H6
6H6-GT/G

TWIN DIODE

Heater	Coated Unipotential Cathodes	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
	<i>6H6</i>	<i>6H6-GT/G</i>
Direct Interelectrode Cap. ^o		
Plate #1 to Cathode #1	3.0	3.0 μ f
Plate #2 to Cathode #2	3.4	4.0 μ f
Plate #1 to Plate #2	0.10 max.	0.10 max. μ f
Maximum Overall Length	1-3/4"	3-5/16"
Maximum Seated Height	1-3/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell MT-8	T-9
Base	{ Small Wafer Octal 7-Pin	{ Intermed. Shell Octal 7-Pin
Basing Designation	7Q	G-7Q
Pin 1	{ 6H6, Shell 6H6-GT/G, internal shield	Pin 4 - Cathode #2
Pin 2 - Heater		Pin 5 - Plate #1
Pin 3 - Plate #2		Pin 7 - Heater
RCA Socket		Pin 8 - Cathode #1
Mounting Position		Stock No. 9924 Any



BOTTOM VIEW

Maximum Ratings Are Design-Center Values

RECTIFIER OR DOUBLER

Peak Inverse Voltage		420 max. volts
Peak Plate Current per Plate		48 max. ma.
D-C Heater-Cathode Potential		330 max. volts
As Half-Wave Rectifier: [*]		
A-C Plate Voltage per Plate (RMS)	117	150 max. volts
Total Effect. Plate-Supply Impedance per Plate ^Δ	15 min.	40 min. ohms
D-C Output Current per Plate	8 max.	8 max. ma.

As Voltage Doubler:

	Half-Wave	Full-Wave
A-C Plate Voltage per Plate (RMS)	117	117 volts
Total Effect. Plate-Supply Impedance per Plate ^Δ	30 min.	15 min. ohms
D-C Output Current	8 max.	8 max. ma.

^o With shell or external and internal shields connected to cathodes.
^{*} In half-wave service, the two units may be used separately or in parallel.
^Δ When a filter-input condenser larger than 40 μ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

Circuits for the 6H6 and 6H6-GT/G are the same as those shown under Type 2525.

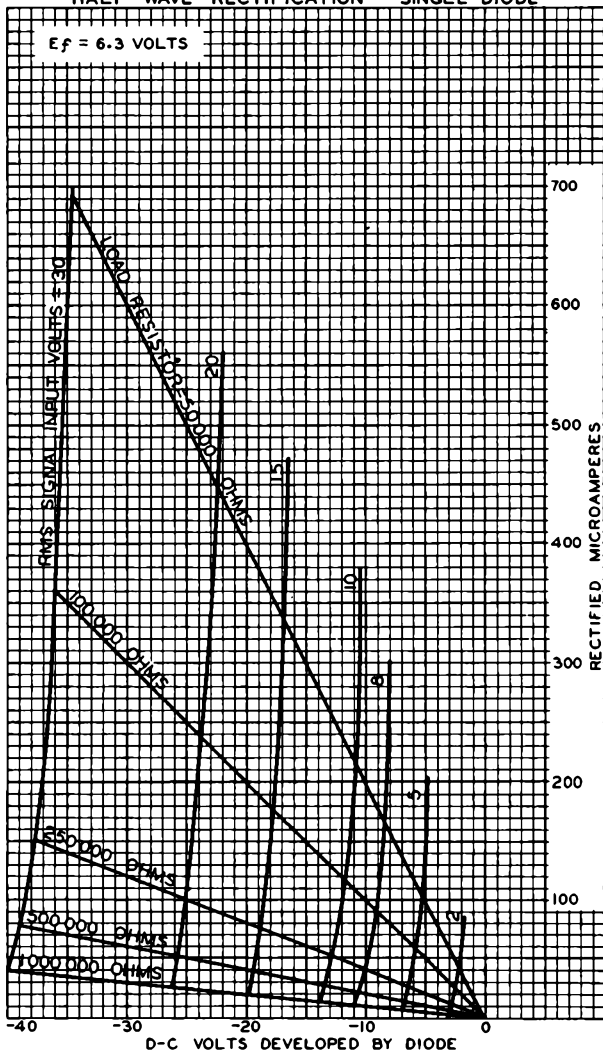
← Indicates a change.

6H6



6H6

AVERAGE CHARACTERISTICS HALF-WAVE RECTIFICATION - SINGLE DIODE



JULY 26, 1935

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4446



6J5
6J5-GT

6J5, 6J5-GT MEDIUM-MU TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3	ac or dc volts
Current.	0.3	amp

	6J5	6J5-GT	
Direct Interelectrode Cap. (Approx.):	-	▲▲	
Grid to Plate.	3.4	3.8	μf
Grid to Cathode.	3.4	4.2	μf
Plate to Cathode	3.6	5.0	μf

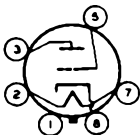
▲▲ With No. 308 shield connected to cathode.

Mechanical:

Mounting Position.	Any	Any
Maximum Overall Length	2-5/8"	3-5/16"
Maximum Seated Height.	2-1/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT8G	T-9
Base	{ Small-Wafer Octal 6-Pin	{ Sm.-Wafer Octal 6-Pin, Sleeve GT-6Q

Basing Designation for BOTTOM VIEW 6Q

- Pin 1 { 6J5, Shell
6J5-GT, Base
Sleeve
- Pin 2 - Heater



- Pin 3 - Plate
- Pin 5 - Grid
- Pin 7 - Heater
- Pin 8 - Cathode

AMPLIFIER- Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID VOLTAGE	0 max.	volts
CATHODE CURRENT.	20 max.	ma
PLATE DISSIPATION.	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	90	250	volts
Grid Voltage	0	-8	volts
Amplification Factor	20	20	-
Plate Resistance	6700	7700	ohms
Transconductance	3000	2600	μmhos
Plate Current.	10	9	ma

6J5
6J5-GT



6J5, 6J5-GT
MEDIUM-MU TRIODE

Maximum Circuit Values:

Grid-Circuit Resistance. 1.0 max. megohm

Typical Operation as Resistance-Coupled Amplifier:

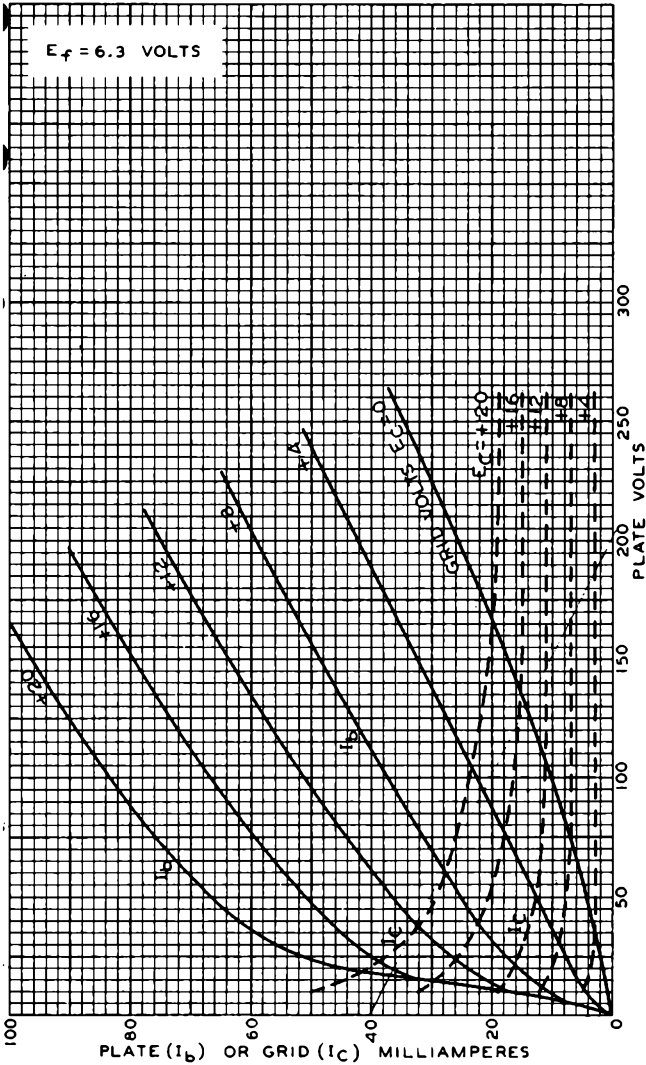
*See RESISTANCE-COUPLED AMPLIFIER CHART
at the front of this Section.*



6J5

6J5

AVERAGE PLATE CHARACTERISTICS



AUG. 10, 1943

TUBE DEPARTMENT

92CM-6448

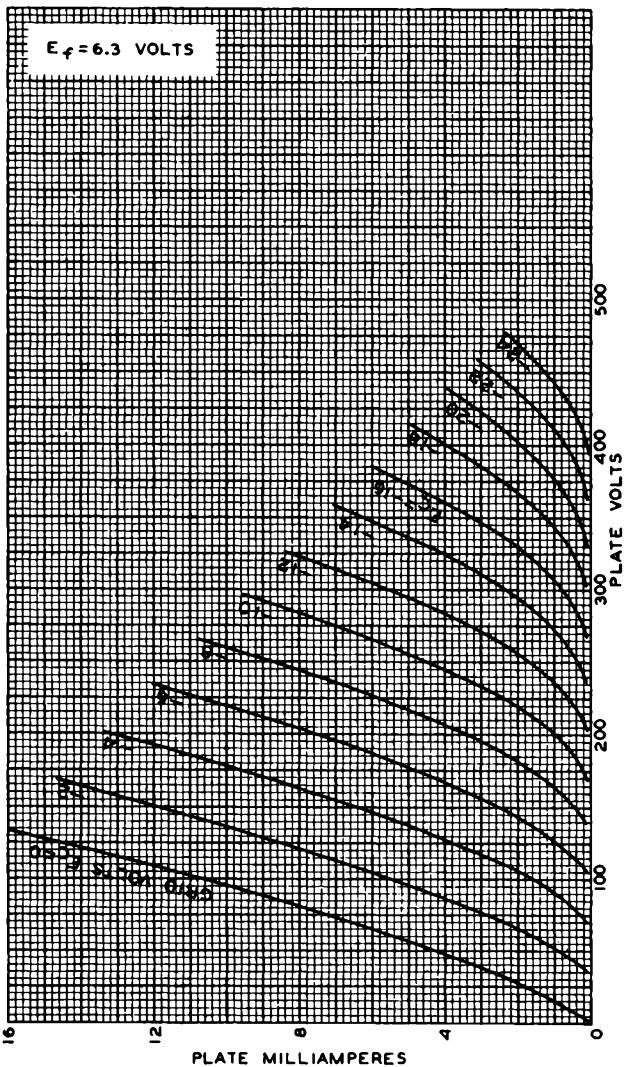
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6J5



6J5

AVERAGE PLATE CHARACTERISTICS



APRIL 27, 1943

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4771R1



6J6

6J6

MEDIUM-MU TWIN TRIODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.45	amp

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^o</i>	
<i>Unit No. 1</i>			
Grid to plate	1.6	1.5	$\mu\mu\text{f}$
Grid to cathode and heater	2.2	2.6	$\mu\mu\text{f}$
Plate to cathode and heater	0.4	1.6	$\mu\mu\text{f}$
<i>Unit No. 2</i>			
Grid to plate	1.6	1.5	$\mu\mu\text{f}$
Grid to cathode and heater	2.2	2.6	$\mu\mu\text{f}$
Plate to cathode and heater	0.4	1.0	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	100	volts
Cathode-Bias Resistor [■]	50 \blacklozenge	ohms
Amplification Factor	38	
Plate Resistance	7100	ohms
Transconductance	5300	μmhos
Plate Current	8.5	ma

Mechanical:

- Mounting Position Any
- Maximum Overall Length 2-1/8"
- Maximum Seated Length 1-7/8"
- Length, Base Seat to Bulb Top (Excluding tip) 1-1-2" \pm 3/32"
- Maximum Diameter 3/4"
- Bulb T-5-1/2
- Base Small-Button Miniature 7-Pin (JEDEC No. E7-1)

Basing Designation for BOTTOM VIEW 7BF

- | | | |
|--------------------------------|--|-------------------------------|
| Pin 1 - Plate of
Unit No. 2 | | Pin 5 - Grid of
Unit No. 1 |
| Pin 2 - Plate of
Unit No. 1 | | Pin 6 - Grid of
Unit No. 2 |
| Pin 3 - Heater | | Pin 7 - Cathode |
| Pin 4 - Heater | | |

^o with external shield JEDEC No. 316 connected to cathode.
[■] Fixed-bias operation is not recommended.
 \blacklozenge value is for both units operating at the specified conditions.

← Indicates a change.

MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6J6



6J6

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID VOLTAGE:		
Positive bias value.	0 max.	volts
PLATE DISSIPATION.	1.5 max.	watts
→ PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. .	100 max.	volts
Heater positive with respect to cathode. .	100 max.	volts

Maximum Circuit Values (For maximum rated conditions):

Grid-Circuit Resistance:		
For cathode-bias operation	0.5 max.	megohm

RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation

Values are for Each Unit

Maximum Ratings, Design-Center Values:

DC PLATE VOLTAGE	300 max.	volts
DC GRID VOLTAGE:		
Negative bias value.	-40 max.	volts
Positive bias value.	0 max.	volts
→ DC PLATE CURRENT	15 max.	ma
DC GRID CURRENT.	8 max.	ma
DC PLATE INPUT	4.5 max.	watts
PLATE DISSIPATION.	1.5 max.	watts
→ PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. .	100 max.	volts
Heater positive with respect to cathode. .	100 max.	volts

Typical Push-Pull Operation at Frequencies up to 50 Mc:*

Values are for Both Units

DC Plate Voltage	150	volts
DC Grid Voltage:		
From a fixed supply of	-10	volts
From a grid resistor of.	625	ohms
From a cathode resistor of	220	ohms
DC Plate Current	30	ma
DC Grid Current (Approx.)*	16	ma
Driving Power (Approx.)*	0.35	watt
Useful Power Output (Approx.).	3.5	watts

* Approximately 1.0 watt can be obtained when the 6J6 is used at 250 Mc as a push-pull oscillator with a plate voltage of 150 volts, with maximum rated plate dissipation, and with a grid resistor of 2000 ohms common to both units.

* For effect of load resistance on grid current and driving power, refer to TUBE RATINGS-Grid Current and Driving Power in the General Section.

→ Indicates a change.

MAR. 1, 1955

TUBE DIVISION

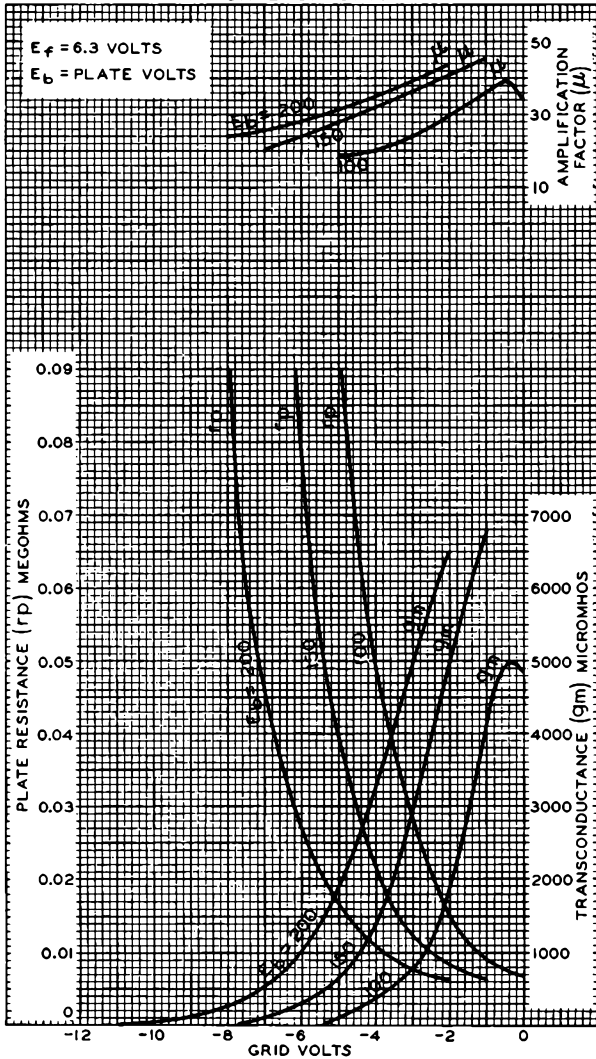
DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6J6

6J6 AVERAGE CHARACTERISTICS FOR EACH UNIT



JUNE 28, 1951

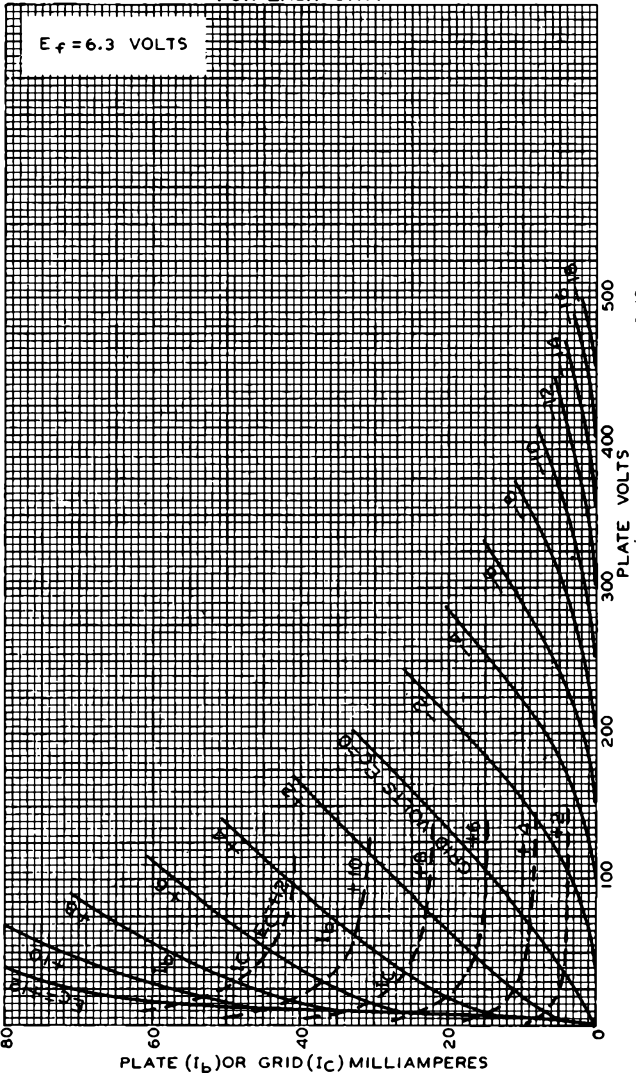
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7672



6J6

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



OCT. 21, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

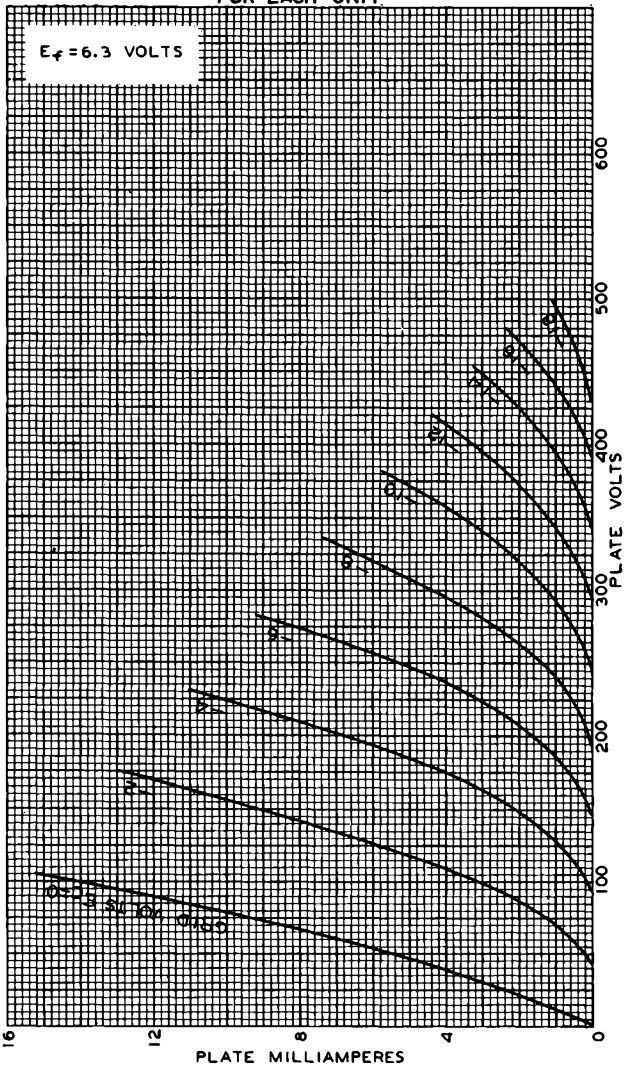
92CM-6403RI

6J6



6J6

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



SEPT. 20, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6402R1



6J7, 6J7-G, 6J7-GT
SHARP-CUTOFF PENTODE

6J7
6J7-G
6J7-GT

Cathode-Bias Resistor.	18000	10000	3000	10000	ohms
Zero-Sig. Cathode Cur.	0.063	0.183	0.65	0.43	ma
Plate Resistor	1.0	0.25	0.25	0.5	megohm
Blocking Capacitor . .	0.01	0.01	0.3	0.3	μ f
Grid Resistor [Ⓢ]	1.0	0.5	0.25	0.25	megohm

Maximum Circuit Values:

Grid-No.1-Circuit Resistance 1 max. megohm

Greater than 1 megohm.

◆ Voltage at plate will be "Plate-Supply" voltage minus voltage drop in plate resistor caused by plate current.

▲ With these signal values modulated 20%, the voltage output under each set of conditions is 17 peak volts at the grid of the following amplifier. This value is sufficient to insure full audio output from a 6F6 (class A pentode) at 250 volts on plate.

● For the following amplifier tube.

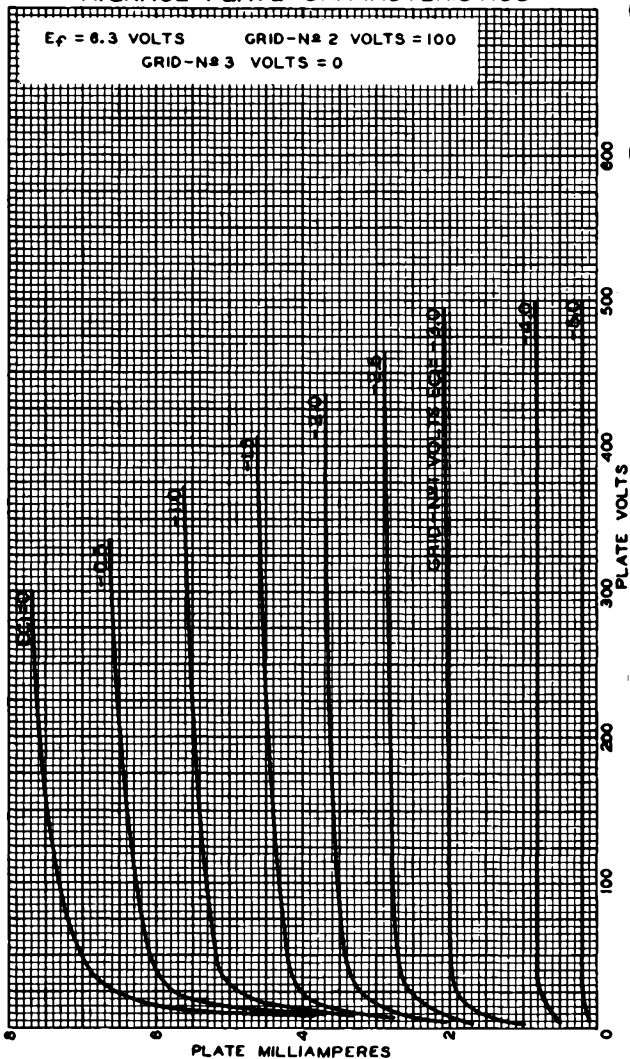
For additional data, see RESISTANCE-COUPLED AMPLIFIER CHARTS at the front of this Section.

6J7



6J7

AVERAGE PLATE CHARACTERISTICS



MAY 12, 1948

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

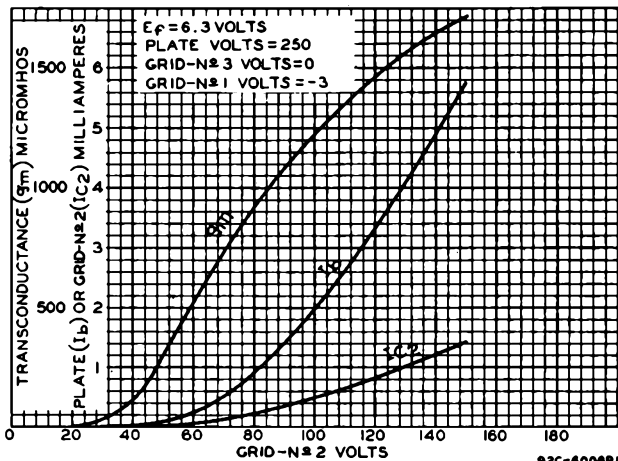
92CM-4741R2



6J7

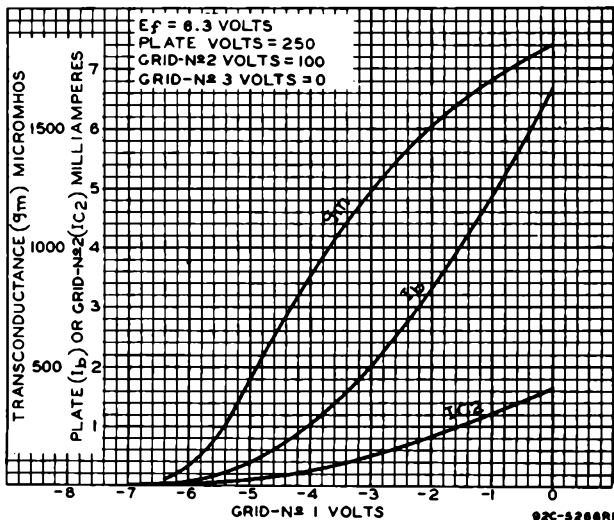
6J7

AVERAGE CHARACTERISTICS



92C-6008R1

AVERAGE CHARACTERISTICS



92C-5268R1

MAY 18, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

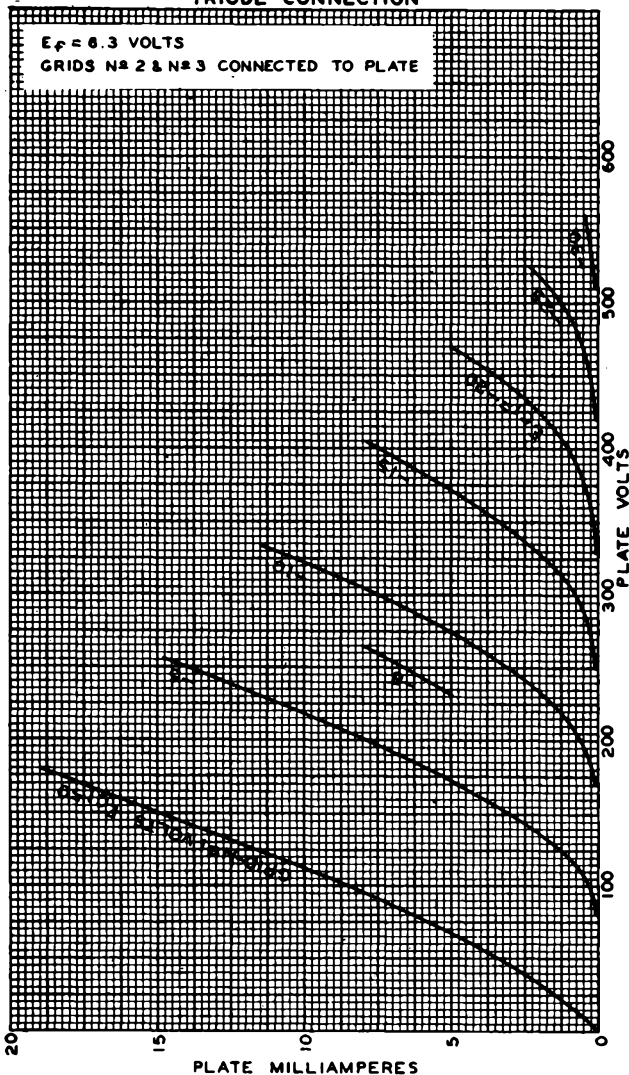
92CM-6007R1

6J7



6J7

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



MAY 11, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4842R1



6J8-G

6J8-G



TRIODE-HEPTODE CONVERTER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Heptode Grid #1 to Heptode Plate*	0.01	max. μf
Heptode Grid #1 to Triode Plate*	0.015	max. μf
Heptode Grid #1 to Triode Grid #4		
Heptode Grid #3 ^o	0.13	μf
Triode Grid to Triode Plate	2.2	μf
Heptode Grid #1 to All Other Electrodes (R-F Input)	4.4	μf
Triode Plate to All Other Electrodes (Osc. Output)	5.5	μf
Triode Grid & Heptode Grid #3 to All Other Electrodes (Osc. Input)	11.7	μf
Heptode Plate to All Other Electrodes (Mixer Output)	8.8	μf
Overall Length	4-7/32" to 4-15/32"	
Seated Height	3-21/32" to 3-29/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Skirted Miniature	
Base	Small Shell Octal 8-Pin	
Pin 1 - No Connection	Pin 5 - Triode Grid #4	
Pin 2 - Heater	Heptode Grid #3	
Pin 3 - Heptode Plate	Pin 6 - Triode Plate	
Pin 4 - Heptode Grids #2 & #4	Pin 7 - Heater	
	Pin 8 - Cathode	
Mounting Position	BOTTOM VIEW (G-8H)	Any
<u>CONVERTER SERVICE</u>		
Heptode Plate Voltage	250 max.	volts
Heptode Screen (Grids #2 & #4) Voltage	100 max.	volts
Triode Plate Supply Voltage*	250 max.	volts
<i>Typical Operation and Characteristics:</i>		
Heptode Plate Voltage	100	250 volts
Heptode Screen Voltage	100	100 volts
Heptode Control-Grid Voltage (Grid #1)	-3	-3 volts
Triode Plate Voltage	100	- volts
Triode Plate Supply Voltage*	-	250 volts
Triode Grid Resistor	50000	50000 ohms
Heptode Plate Resistance	0.9	4.0 approx. megohms
Conversion Transconductance	250	290 μmhos
Heptode Control-Grid Bias for Conversion Transcond. of 2 μmhos	-	-20 volts
Heptode Plate Current	1.4	1.3 ma.
Heptode Screen Current	3.0	2.9 ma.
Triode Plate Current	3.0	5.0 ma.
Triode Grid & Heptode Grid #3 Current	0.3	0.4 ma.
NOTE: The transconductance of the triode unit (not oscillating) is approximately 1600 μmhos under the following conditions: triode plate volts, 150; triode grid volts, -3.		
■ In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible.		
● With shield-can connected to cathode.		
* Applied through 20000-ohm dropping resistor.		



July 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

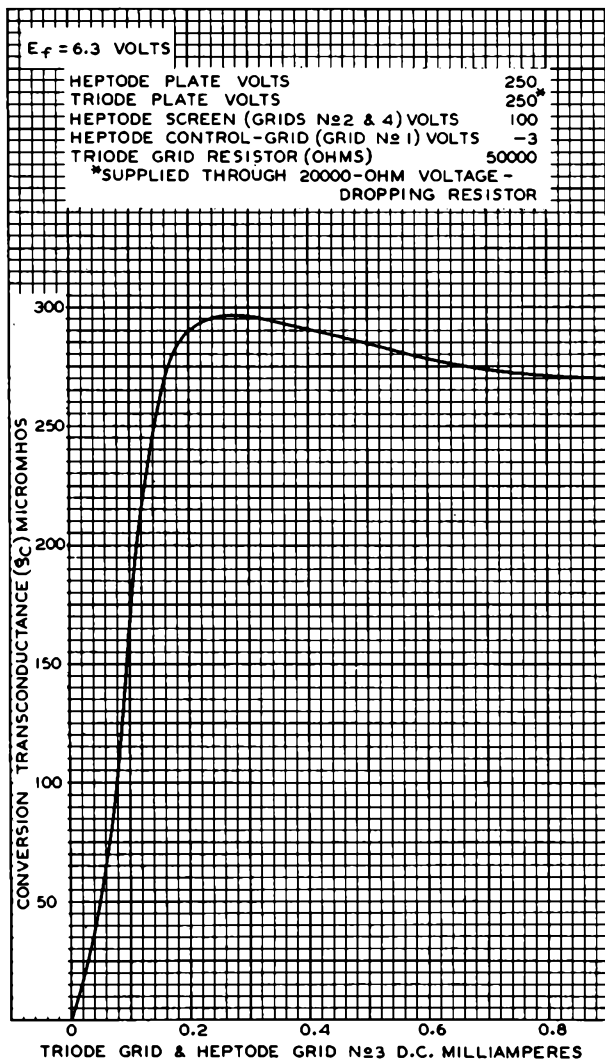
TENTATIVE DATA

6J8-G



6J8-G

OPERATION CHARACTERISTIC



MAY 13, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6285



6K6-GT

6K6-GT POWER PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.4	amp

Direct Interelectrode Capacitances (Approx.):⁰

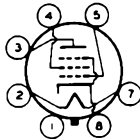
Grid No.1 to Plate	0.5	$\mu\mu\text{f}$
Input	5.5	$\mu\mu\text{f}$
Output	6.0	$\mu\mu\text{f}$

⁰ With no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	Intermediate-Shell Octal 7-Pin (JETEC No. B7-7)
Basing Designation for BOTTOM VIEW	G-7S

Pin 1-No
Connection
Pin 2-Heater
Pin 3-Plate
Pin 4-Grid No.2



Pin 5-Grid No.1
Pin 7-Heater
Pin 8-Cathode,
Grid No.3

SINGLE-TUBE AMPLIFIER

Pentode Connection

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	315 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	285 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value	0 max.	volts
PLATE DISSIPATION	8.5 max.	watts
GRID-No.2 INPUT	2.8 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics--Class A₁ Amplifier:

Plate Voltage	100	250	315	volts
Grid-No.2 Voltage	100	250	250	volts
Grid-No.1 Voltage	-7	-18	-21	volts
Peak AF Grid-No.1 Voltage	7	18	21	volts
Zero-Sig. Plate Current	9	32	25.5	ma
Max.-Sig. Plate Current	9.5	33	28	ma

*: See next page.

← Indicates a change

6K6-GT



6K6-GT POWER PENTODE

	Zero-Sig. Grid-No.2 Cur.	1.6	5.5	4	ma
	Max.-Sig. Grid-No.2 Cur.	3	10	9	ma
→	Plate Resistance (Approx.)	104000	90000	110000	ohms
	Transconductance	1500	2300	2100	μmhos
	Load Resistance	12000	7600	9000	ohms
	Total Harmonic Distortion.	11	11	15	%
	Max.-Sig. Power Output	0.35	3.4	4.5	watts
Maximum Circuit Values (for maximum rated conditions):					
Grid-No.1-Circuit Resistance:					
	For fixed bias		0.1 max.		megohm
	For cathode bias		0.5 max.		megohm
→	SINGLE-TUBE AMPLIFIER				
	<i>Triode Connection--Grid No.2 Connected to Plate</i>				
Maximum Ratings, Design-Center Values:					
	PLATE VOLTAGE		315 max.		volts
	TOTAL PLATE AND GRID-No.2 DISSIPATION		6 max.		watts
PEAK HEATER-CATHODE VOLTAGE:					
	Heater negative with respect to cathode		90 max.		volts
	Heater positive with respect to cathode		90 max.		volts
Typical Operation and Characteristics--Class A₁ Amplifier:					
	Plate Voltage		315		volts
	Grid-No.1 (Control-Grid) Voltage		-37.5		volts
	Peak AF Grid-No.1 Voltage		37.5		volts
	Zero-Signal Plate Current		18.5		ma
	Max.-Signal Plate Current		22		ma
	Amplification Factor		5.7		
	Plate Resistance (Approx.)		4700		ohms
	Transconductance		1200		μmhos
	Load Resistance		13000		ohms
	Total Harmonic Distortion.		10		%
	Max.-Signal Power Output		1.2		watts
Maximum Circuit Values (for maximum rated conditions):					
Grid-No.1-Circuit Resistance:					
	For fixed bias		0.1 max.		megohm
	For cathode bias		0.5 max.		megohm
	PUSH-PULL AMPLIFIER				
	<i>Pentode Connection</i>				
Maximum Ratings, Design-Center Values:					
	PLATE VOLTAGE		315 max.		volts
	GRID-No.2 (SCREEN) VOLTAGE		285 max.		volts
→	GRID-No.1 (CONTROL-GRID) VOLTAGE:				
	Positive bias value		0 max.		volts

→ Indicates a change

OCTOBER 1, 1951

DATA 1



6K6-GT

6K6-GT POWER PENTODE

PLATE DISSIPATION.	8.5 max.	watts	
GRID-No. 2 INPUT.	2.8 max.	watts	
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	90 max.	volts	←
Heater positive with respect to cathode.	90 max.	volts	

Typical Operation--Class A₁ Amplifier:

Values are for 2 tubes

	Fixed Bias	Cathode Bias	
Plate Voltage.	285	285	volts
Grid-No. 2 Voltage.	285	285	volts
Grid-No. 1 Voltage.	-25.5	-	volts
Cathode Resistor	-	400	ohms
Peak AF Grid-No. 1-to-			
Grid-No. 1 Voltage.	51	51	volts
Zero-Signal Plate Current. . .	55	55	ma
Max.-Signal Plate Current. . .	72	61	ma
Zero-Signal Grid-No. 2 Current. .	9	9	ma
Max.-Signal Grid-No. 2 Current. .	17	13	ma
Effective Load Resistance			
(Plate-to-plate).	12000	12000	ohms
Total Harmonic Distortion. . .	6	4	%
Max.-Signal Power Output . . .	10.5	9.8	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No. 1-Circuit Resistance:		
For fixed bias	0.1 max.	megohm
For cathode bias	0.5 max.	megohm

VERTICAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system*

DC PLATE VOLTAGE	350 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^o . . .	1500 max.	volts
DC GRID-No. 1 (CONTROL-GRID) VOLTAGE. . .	-50 max.	volts
PEAK NEGATIVE-PULSE GRID-No. 1 VOLTAGE	-200 max.	volts
DC CATHODE CURRENT	20 max.	ma
PLATE DISSIPATION.	7 max.	watts

Circuit Values:

Grid-No. 1-Circuit Resistance:		
For cathode bias	2.2 max.	megohms
Cathode-Bias Resistor.	330 min.	ohms

* As described in "Standards of Good Engineering Practice for Television Broadcast Stations", Federal Communications Commission.

^o The duration of the voltage pulse must not exceed 15 per cent of one scanning cycle. In a 525-line, 30-frame system, 15 per cent of one scanning cycle is 2.5 milliseconds.

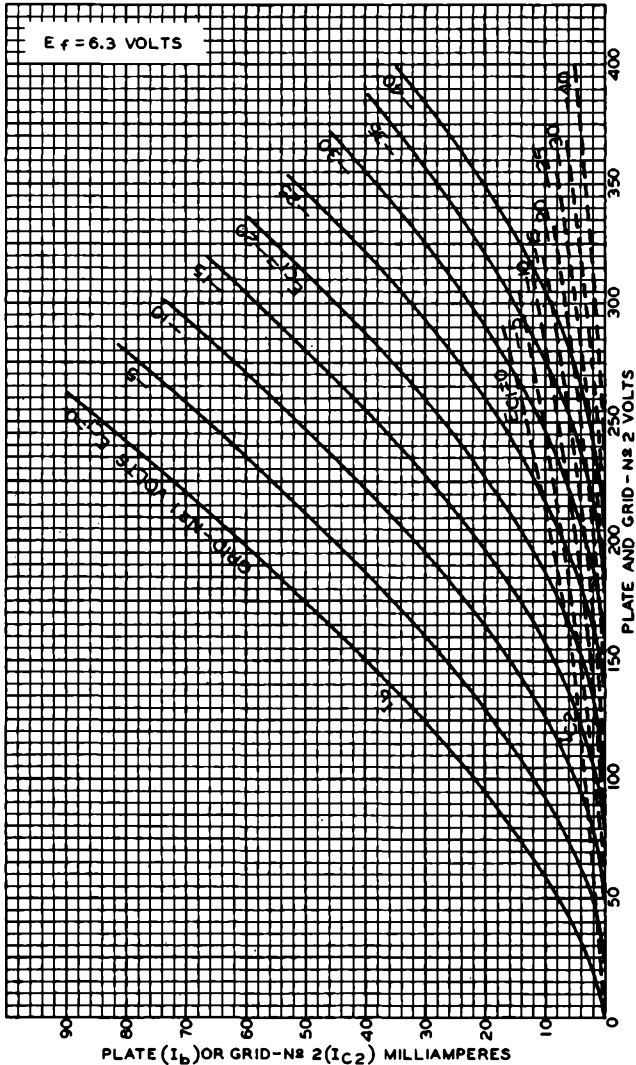
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6K6-GT



6K6-GT

AVERAGE CHARACTERISTICS



SEPT. 24, 1951

TUBE DEPARTMENT

92CM-5209R2

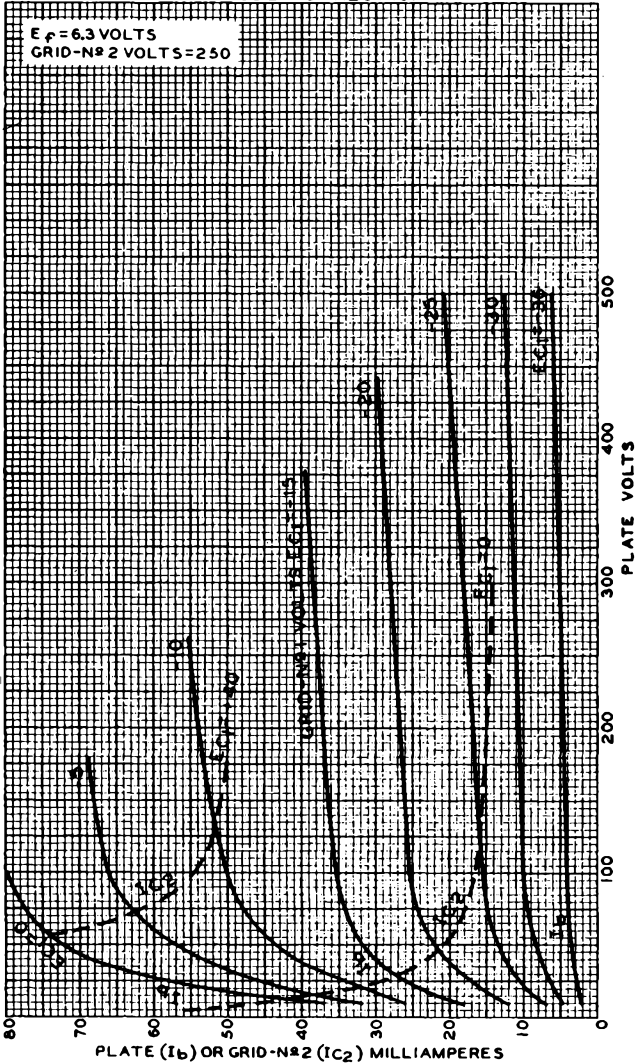
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6K6-GT

6K6-GT

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



FEB. 13, 1948

TUBE DEPARTMENT

92CM-4881R2

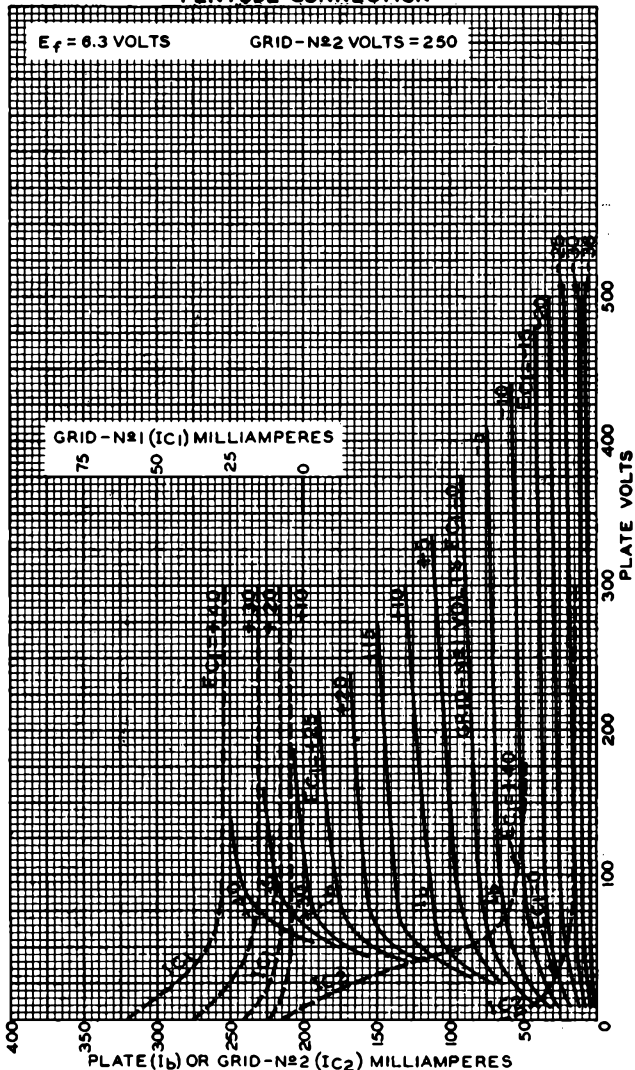
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6K6-GT



6K6-GT

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



FEB. 13, 1948

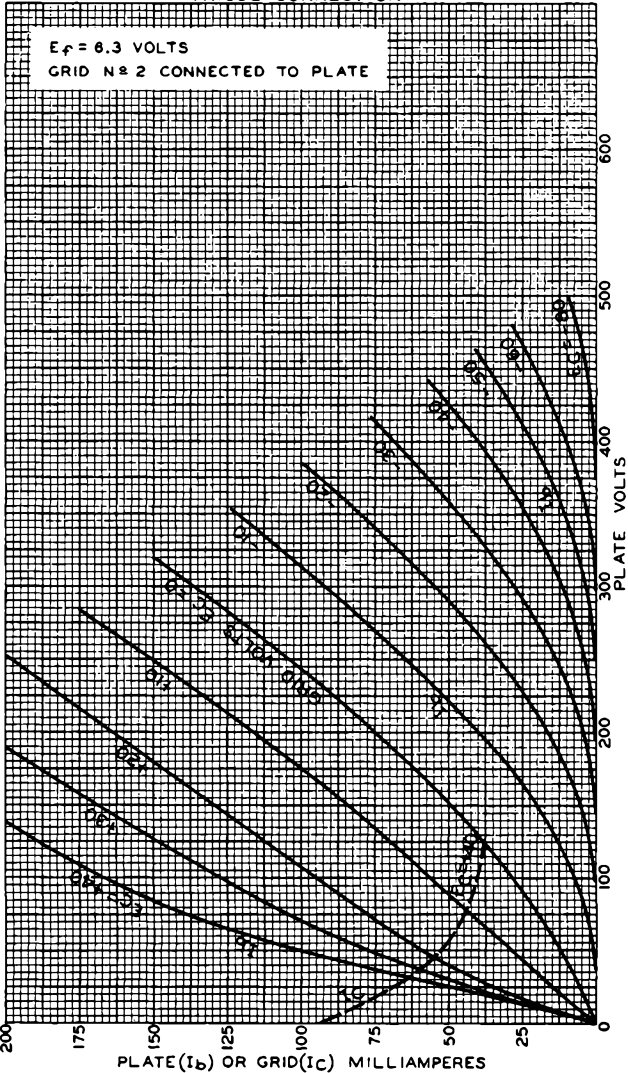
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92CM-6311R1



6K6-GT

6K6-GT AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



AUG. 18, 1941

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

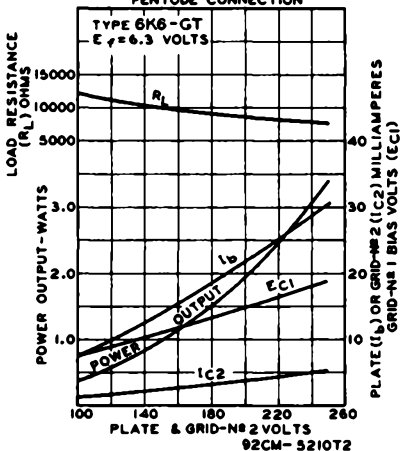
92CM-6313

6K6-GT

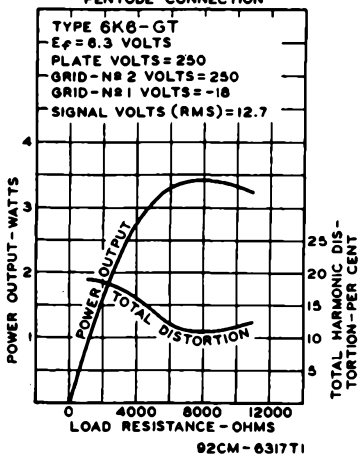


6K6-GT POWER PENTODE

OPERATION CHARACTERISTICS
PENTODE CONNECTION



OPERATION CHARACTERISTICS
PENTODE CONNECTION



OCTOBER 1, 1951

TUBE DEPARTMENT

CE-5210T2 - 6317T1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6K7, 6K7-G, 6K7-GT

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

Heater		Coated Unipotential Cathode		
Voltage	6.3	a-c or d-c volts		
Current	0.3	amp.		
	6K7	6K7-G	6K7-GT	
Direct Interelectrode Cap.	▲	▲▲	▲▲	
Grid to Plate	0.005	0.007	0.005 μuf	
Input	7	5	4.6 μuf	
Output	12	12	12 μuf	
Overall Length	{ 3-1/8" max.	{ 4-7/32" to 4-15/32"	3-5/16" max.	
Seated Height	{ 2-9/16" max.	{ 3-21/32" to 3-29/32"	2-3/4" max.	
Maximum Diameter	1-5/16"	1-9/16"	1-5/16"	
Bulb	Metal Shell, MT-8	ST-12	T-9	
Cap	Miniature	{ Skirted Min. Style C	{ Skirted Min. Style C	
Base	{ Small Wafer Octal 7-Pin	{ Small Shell Octal 7-Pin	{ Sm. Wafer Octal 7-Pin, Sleeve	
Basing Designation	7R	G-7R	GT-7R	
Pin 1	{ 6K7, Shell 6K7-G, No Con. 6K7-GT, Base Sleeve		Pin 4 - Screen	
Pin 2 - Heater			Pin 5 - Suppressor	
Pin 3 - Plate			Pin 7 - Heater	
Pin 4 - Screen			Pin 8 - Cathode	
Pin 5 - Suppressor			Cap - Grid	
Pin 7 - Heater			Any	
Pin 8 - Cathode				
Cap - Grid				
Mounting Position	BOTTOM VIEW			Any
<u>AMPLIFIER</u>				
Plate Voltage		300 max.	volts	
Screen Voltage		125 max.	volts	
Screen Supply Voltage		300 max.	volts	
Grid Voltage		0 min.	volts	
Plate Dissipation		2.75 max.	watts	
Screen Dissipation		0.35 max.	watt	
Typical Operation and Characteristics - Class A ₁ Amplifier:				
Plate	100	250	250	volts
Screen	100	100	125	volts
Grid	-1	-3	-3	volts
Suppressor	Connected to cathode at socket			
Plate Res.	0.15	0.8	0.6	approx. megohm
Transcond.	1650	1450	1650	μmhos
Grid Bias for transcond.				
of approx. 2 μmhos	-38.5	-42.5	-52.5	volts
Plate Cur.	9.5	7.0	10.5	ma.
Screen Cur.	2.7	1.7	2.6	ma.
■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible. ▲ with shell connected to cathode. ▲▲ with close-fitting shield connected to cathode. The internal shield in the dome is connected to cathode within 6K7-G and 6K7-GT.				
Curves under type 78 also apply to the 6K7, 6K7-G, and 6K7-GT.				

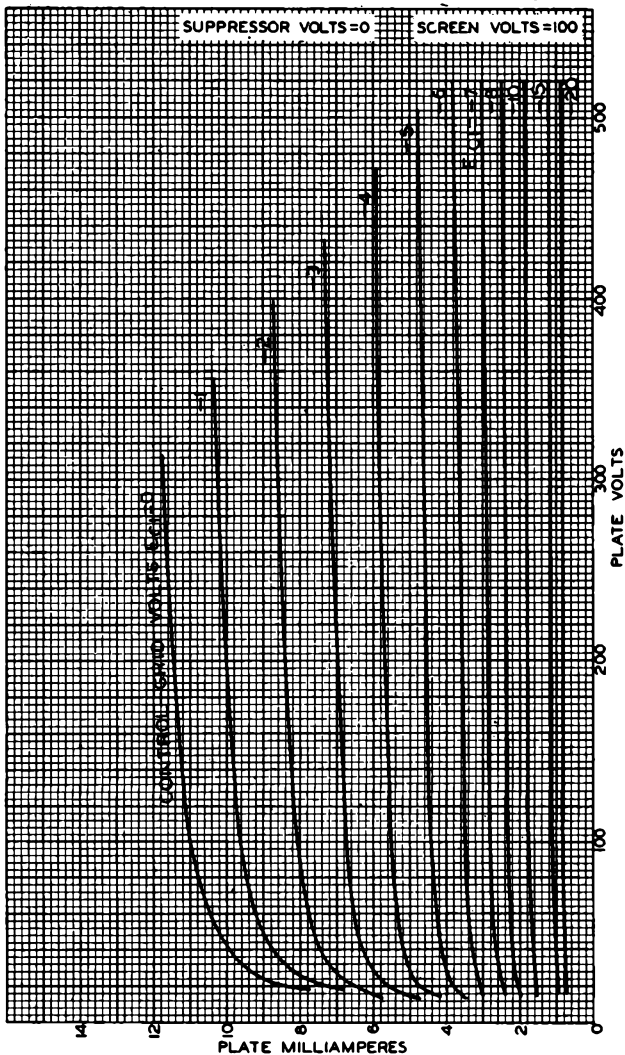
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6K7



6K7

AVERAGE PLATE CHARACTERISTICS



FEB. 24, 1937

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4742



6K8
6K8-G
6K8-GT

6K8, 6K8-G, 6K8-GT

TRIODE-HEXODE CONVERTER



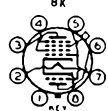
Heater [■] Coated Unipotential Cathode
 Voltage 6.3 a-c or d-c volts
 Current 0.3 amp.

Direct Interelectrode Capacitances:

	6K8 [○]	6K8-G [▲]	6K8-GT [▲]
Hexode Grid #3 to Hexode Plate	0.03	0.08	0.08 max. μ uf
Hexode Grid #3 to Triode Plate	0.02	0.05	0.05 max. μ uf
Hexode Grid #3 to Triode Grid & Hexode Grid #1	0.2	0.2	0.2 max. μ uf
Triode Grid & Hexode Grid #1 to Triode Plate	1.1	1.8	1.8 μ uf
Triode Grid & Hexode Grid #1 to Hexode Plate	0.1	0.15	0.15 max. μ uf
Hexode Grid #3 to All Other Electrodes (R-F Input)	6.6	4.6	4.6 μ uf
Triode Plate to All Other Electrodes Except Triode Grid & Hexode Grid #1 (Osc. Output)	3.2	3.4	3.4 μ uf
Triode Grid & Hexode Grid #1 to All Other Electrodes Except Triode Plate (Osc. Input)	6.0	6.5	6.5 μ uf
Hexode Plate to All Other Electrodes (Mixer Output)	3.5	4.8	4.8 μ uf

Overall Length { 3-1/8" max. } { 4-7/32" to 4-15/32" } { 3-9/16" max. }
 Seated Height { 2-9/16" max. } { 3-21/32" to 3-29/32" } { 3" max. }
 Maximum Diameter 1-5/16"
 Bulb Cap Metal Shell, MT-8 Miniature { Skirted } { Skirted }
 Base { Small Wafer } { Sm. Shell } { Sm. Wafer }
 { Octal 8-Pin } { Oct. 8-Pin } { Oct. 8-Pin, Sleeve }

Basing Designation 8K G-8K
 Pin 1 { 6K8, Shell } Pin 5 - Hexode Grid #1 & Triode Grid
 { 6K8-G, No Con. } Pin 6 - Triode Plate
 { 6K8-GT, Sleeve } Pin 7 - Heater
 Pin 2 - Heater Pin 8 - Cathode
 Pin 3 - Hexode Plate Cap - Hexode Grid #3
 Pin 4 - Hexode Grids #2 & #4 Any
 Mounting Position



BOTTOM VIEW

CONVERTER SERVICE

Hexode Plate Voltage		300 max. volts
Hexode Screen (Grids #2 & #4) Voltage		150 max. volts
Hexode Screen Supply Voltage		300 max. volts
Hexode Control-Grid (Grid #3) Voltage		0 min. volts
Triode Plate Voltage		125 max. volts
Hexode Plate Dissipation		0.75 max. watt
Hexode Screen Dissipation		0.7 max. watt
Triode Plate Dissipation		0.75 max. watt
Total Cathode Current		16. max. ma.
Typical Operation:		
Hexode Plate Voltage	100	250 volts
Hexode Screen Voltage	100	100 volts
Hexode Control-Grid Voltage	-3	-3 volts
Triode Plate Voltage	100	100 volts
Triode Grid Resistor	50000	50000 ohms
Hexode Plate Resistance (approx.)	0.4	0.6 megohm
Conversion Transconductance	325	350 μ mhos
Conversion Transcond. with Hexode Grid #3 Bias of -30 volts (approx.)	2	2 μ mhos
Hexode Plate Current	2.3	2.5 ma.
Hexode Screen Current	6.2	6.0 ma.
Triode Plate Current	3.8	3.8 ma.
Triode Grid & Hexode Grid #1 Current	0.15	0.15 ma.
Total Cathode Current	12.5	12.5 ma.

NOTE: The transconductance of the triode section, not oscillating, is approximately 3000 μ mhos when the triode plate volts = 100 and the triode grid volts = 0.

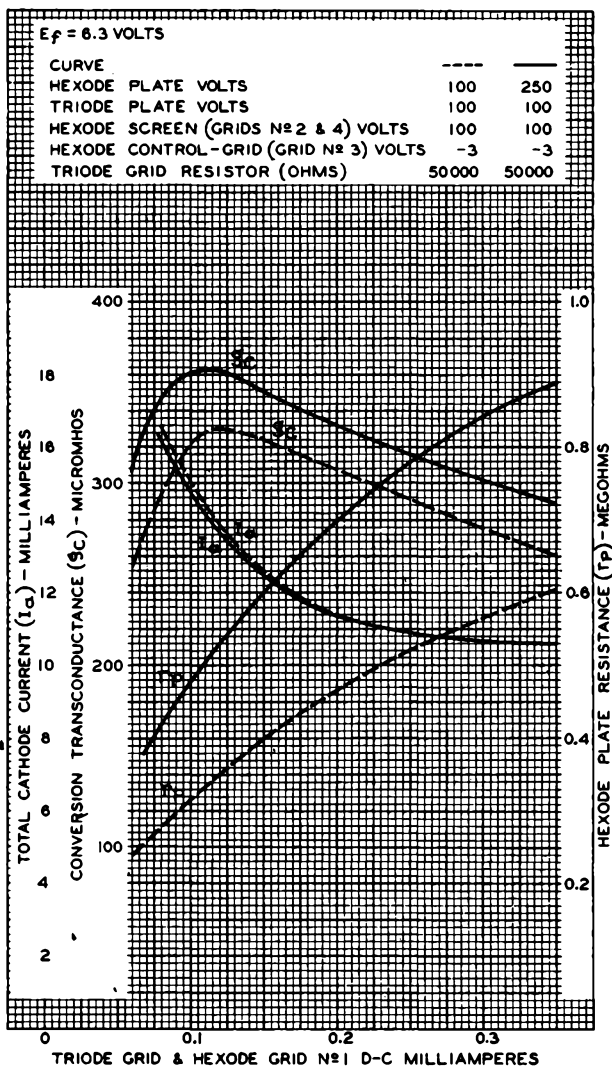
- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
 - ▲ With close-fitting shield connected to cathode.
 - With shell connected to cathode.
- ← Indicates a change.

6K8



6K8

OPERATION CHARACTERISTICS



APRIL 8, 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4886R1



6L6
6L6-G

6L6, 6L6-G BEAM POWER TUBE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.9	amp

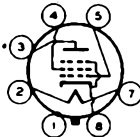
Direct Interelectrode Capacitances (Approx.):

	6L6 ^o	6L6-G ^{oo}	
Grid No.1 to plate . .	0.4	0.9	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	10	11.5	μf
Plate to cathode & grid No.3, grid No.2, and heater	12	9.5	μf

Mechanical:

	6L6	6L6-G
Mounting Position	Any	Any
Maximum Overall Length .	4-5/16"	5-5/16"
Maximum Seated Length . .	3-3/4"	4-3/4"
Maximum Diameter	1-5/8"	2-1/16"
Bulb	Metal Shell MT-10	ST-16
Base	Small-Wafer	Medium-Shell
	Octal 7-Pin (JETEC No. B7-22)	Octal 7-Pin (JETEC No. B7-12)
Basing Designation	7AC	G-7AC

Pin 1 { 6L6, Shell
6L6-G, No Conn.
Pin 2 - Heater
Pin 3 - Plate



Pin 4 - Grid No.2
Pin 5 - Grid No.1
Pin 7 - Heater
Pin 8 - Cathode,
Grid No.3

AF POWER AMPLIFIER - Class A₁ †

Triode Connection - Grid No.2 Connected to Plate

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	275 max.	volts
PLATE DISSIPATION	19 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	180 max.	volts
Heater positive with respect to cathode .	180 max.	volts

Typical Operation and Characteristics:

	Fixed Bias	Cathode Bias	
Plate Voltage	250	250	volts
Grid-No.1 (Control-Grid) Voltage	-20	-	volts
Cathode-Bias Resistor	-	490	ohms

o, oo †: See next page.

←Indicates a change.

6L6
6L6-G



6L6, 6L6-G BEAM POWER TUBE

	Fixed Bias	Cathode Bias	
Peak AF Grid-No.1 Voltage . . .	20	20	volts
Zero-Signal Plate Current . . .	40	40	ma
Max.-Signal Plate Current . . .	44	42	ma
Amplification Factor	8	-	
Plate Resistance (Approx.) . . .	1700	-	ohms
Transconductance	4700	-	μmhos
Load Resistance	5000	6000	ohms
Total Harmonic Distortion . . .	5	6	%
Max.-Signal Power Output . . .	1.4	1.3	watts

→ **Maximum Circuit Values (For maximum rated conditions):**

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

AF POWER AMPLIFIER - Class A₁†

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	360 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	270 max.	volts
PLATE DISSIPATION	19 max.	watts
GRID-No.2 INPUT	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	180 max.	volts
Heater positive with respect to cathode .	180 max.	volts

→ **Typical Operation and Characteristics:**

Fixed-Bias Operation

Plate Voltage	200	250	300	350	volts
Grid-No.2 Voltage	200	250	200	250	volts
Grid-No.1 Voltage	-11.5	-14	-12.5	-18	volts
Peak AF Grid-No.1 Voltage .	11.5	14	12.5	18	volts
Zero-Signal Plate Current .	52	72	48	54	ma
Max.-Signal Plate Current .	57	79	55	66	ma
Zero-Signal Grid-No.2 Current	3.5	5.0	2.5	2.5	ma
Max.-Signal Grid-No.2 Current	5.7	7.3	4.7	7.0	ma
Plate Resistance (Approx.)	35000	22500	35000	33000	ohms
Transconductance	5300	6000	5300	5200	μmhos
Load Resistance	3000	2500	4500	4200	ohms
Total Harmonic Distortion .	9	10	11	15	%
Max.-Signal Power Output .	4	6.5	6.5	10.8	watts

Cathode-Bias Operation

Plate Voltage	200	250	300	volts
Grid-No.2 Voltage	200	250	200	volts

° With shell connected to cathode.

°° With no external shield.

†: See next page.

→ indicates a change.



6L6, 6L6-G

BEAM POWER TUBE

6L6
6L6-G

Cathode-Bias Resistor	186	167	218	ohms
Peak AF Grid-No.1 Voltage	11.5	14	12.7	volts
Zero-Signal Plate Current	55	75	51	ma
Max.-Signal Plate Current	56	78	54.5	ma
Zero-Signal Grid-No.2 Current	4.2	5.4	3.0	ma
Max.-Signal Grid-No.2 Current	5.6	7.2	4.6	ma
Load Resistance	3000	2500	4500	ohms
Total Harmonic Distortion	9	10	11	%
Max.-Signal Power Output	4	6.5	6.5	watts

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

PUSH-PULL AF POWER AMPLIFIER - Class A₁ †

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	360 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	270 max.	volts
PLATE DISSIPATION	19 max.	watts
GRID-No.2 INPUT	2.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	180 max.	volts
Heater positive with respect to cathode .	180 max.	volts

Typical Operation and Characteristics:

Unless otherwise specified, values are for 2 tubes

	Fixed Bias		Cathode Bias		
Plate Voltage	250	270	250	270	volts
Grid-No.2 Voltage	250	270	250	270	volts
Grid-No.1 Voltage	-16	-17.5	-	-	volts
Cathode-Bias Resistor	-	-	124	124	ohms
Peak AF Grid-No.1-to-					
Grid-No.1 Voltage	32	35	35.6	28.2	volts
Zero-Signal Plate Current	120	134	120	134	ma
Max.-Signal Plate Current	140	155	130	145	ma
Zero-Signal Grid-No.2					
Current	10	11	10	11	ma
Max.-Signal Grid-No.2					
Current	16	17	15	17	ma
Plate Resistance (Per tube)					
(Approx.)	24500	23500	-	-	ohms
Transconductance (Per tube)	5500	5700	-	-	μmhos
Effective Load Resistance					
(Plate to plate)	5000	5000	5000	5000	ohms
Total Harmonic Distortion	2	2	2	2	%
Max.-Signal Power Output.	14.5	17.5	13.8	18.5	watts

†: See next page.

←Indicates a change

6L6
6L6-G



6L6, 6L6-G BEAM POWER TUBE

→ **Maximum Circuit Values (For maximum rated conditions):**

Grid-No.1-Circuit Resistance:

For fixed-bias operation 0.1 max. megohm
For cathode-bias operation 0.5 max. megohm

PUSH-PULL AF POWER AMPLIFIER - Class AB₁†

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 360 max. volts
GRID-No.2 (SCREEN) VOLTAGE 270 max. volts
PLATE DISSIPATION 19 max. watts
GRID-No.2 INPUT 2.5 max. watts

→ **PEAK HEATER-CATHODE VOLTAGE:**

Heater negative with respect to cathode . 180 max. volts
Heater positive with respect to cathode . 180 max. volts

→ **Typical Operation:**

Values are for 2 tubes

	Fixed Bias		Cathode Bias	
Plate Voltage	360	360	360	volts
Grid-No.2 Voltage	270	270	270	volts
Grid-No.1 Voltage	-22.5	-22.5	-	volts
Cathode-Bias Resistor	-	-	248	ohms
Peak AF Grid-No.1-to-				
Grid-No.1 Voltage	45	45	40.6	volts
Zero-Signal Plate Current	88	88	88	ma
Max.-Signal Plate Current	132	140	100	ma
Zero-Signal Grid-No.2				
Current	5	5	5	ma
Max.-Signal Grid-No.2				
Current	15	11	17	ma
Effective Load Resistance				
(Plate to plate)	6600	3800	9000	ohms
Total Harmonic Distortion	2	2	4	%
Max.-Signal Power Output	26.5	18	24.5	watts

→ **Maximum Circuit Values (For maximum rated conditions):**

Grid-No.1-Circuit Resistance:‡

For fixed-bias operation 0.1 max. megohm
For cathode-bias operation 0.5 max. megohm

PUSH-PULL AF POWER AMPLIFIER - Class AB₂‡

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 360 max. volts
GRID-No.2 (SCREEN) VOLTAGE 270 max. volts
PLATE DISSIPATION 19 max. watts
GRID-No.2 INPUT 2.5 max. watts

‡, †, ‡: See next page.

→ indicates a change.



6L6
6L6-G

6L6, 6L6-G BEAM POWER TUBE

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 180 max. volts
Heater positive with respect to cathode. . . 180 max. volts

Typical Operation:

Values are for 2 tubes

	<i>Fixed Bias</i>		
Plate Voltage.	360	360	volts
Grid-No.2 Voltage.	225	270	volts
Grid-No.1 Voltage.	-18	-22.5	volts
Peak AF Grid-No.1-to Grid-No.1 Voltage	52	72	volts
Zero-Signal Plate Current.	78	88	ma
Max.-Signal Plate Current.	142	205	ma
Zero-Signal Grid-No.2 Current.	3.5	5	ma
Max.-Signal Grid-No.2 Current.	11	16	ma
Effective Load Resistance (Plate to plate).	6000	3800	ohms
Peak Grid-Input Power.	140	270	mw
Total Harmonic Distortion.	2	2	%
Max.-Signal Power Output	31	47	watts

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance†:
For fixed-bias operation 0.1 max. megohms
For cathode-bias operation Not recommended

† Subscript 1 indicates that grid-No.1 current does not flow during any part of input cycle.

‡ Subscript 2 indicates that grid-No.1 current flows during some part of input cycle.

‡ Driver stage should be capable of supplying the specified driving power at low distortion to the No.1 grids of the AB₂ stage. To minimize distortion, the effective resistance per grid-No.1 circuit of the AB₂ stage should be held at a low value. For this purpose, the use of transformer coupling is recommended.

▲ The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.

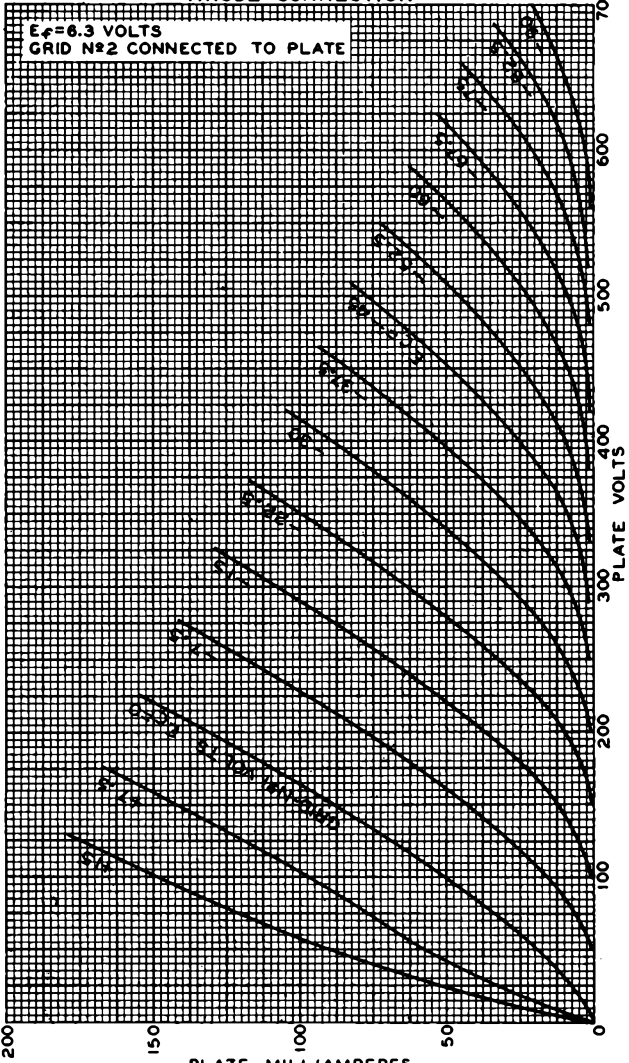
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6L6



6L6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



SEPT. 6 1938

PLATE MILLIAMPERES
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

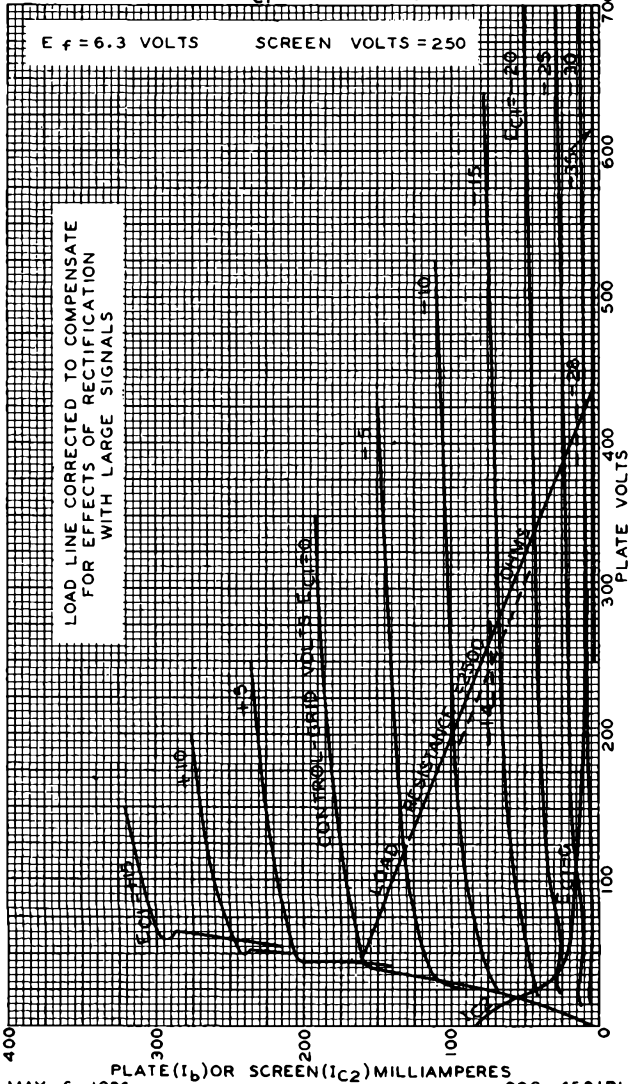
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6L6

AVERAGE PLATE CHARACTERISTICS WITH E_{C1} AS VARIABLE

6L6



MAY 6, 1936

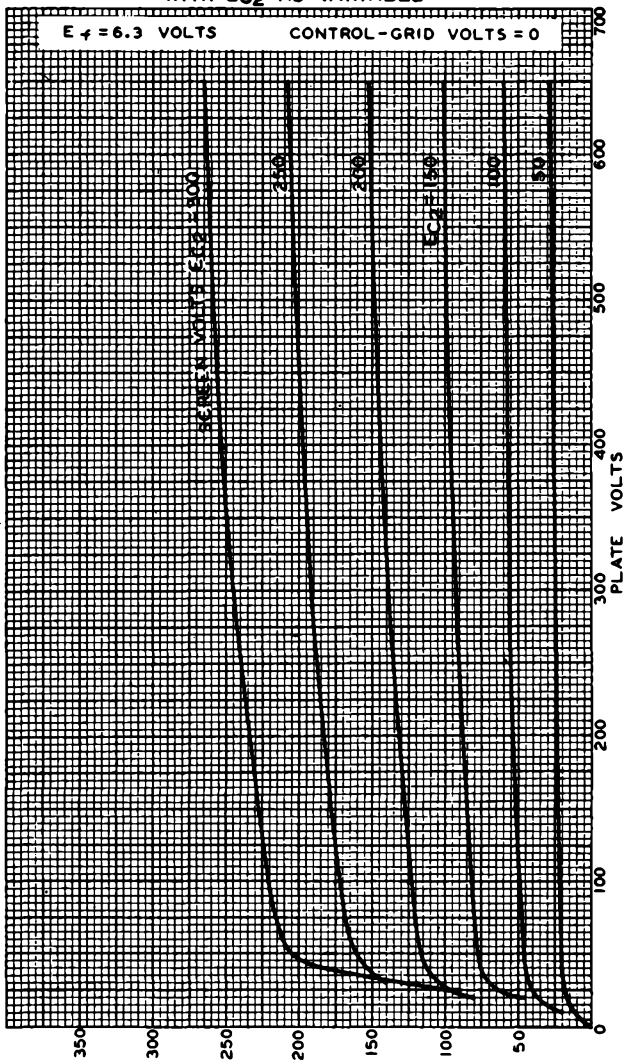
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92C-4581R1

6L6



6L6 AVERAGE PLATE CHARACTERISTICS WITH E_{C2} AS VARIABLE



MAY 8, 1936

PLATE MILLIAMPERES
RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

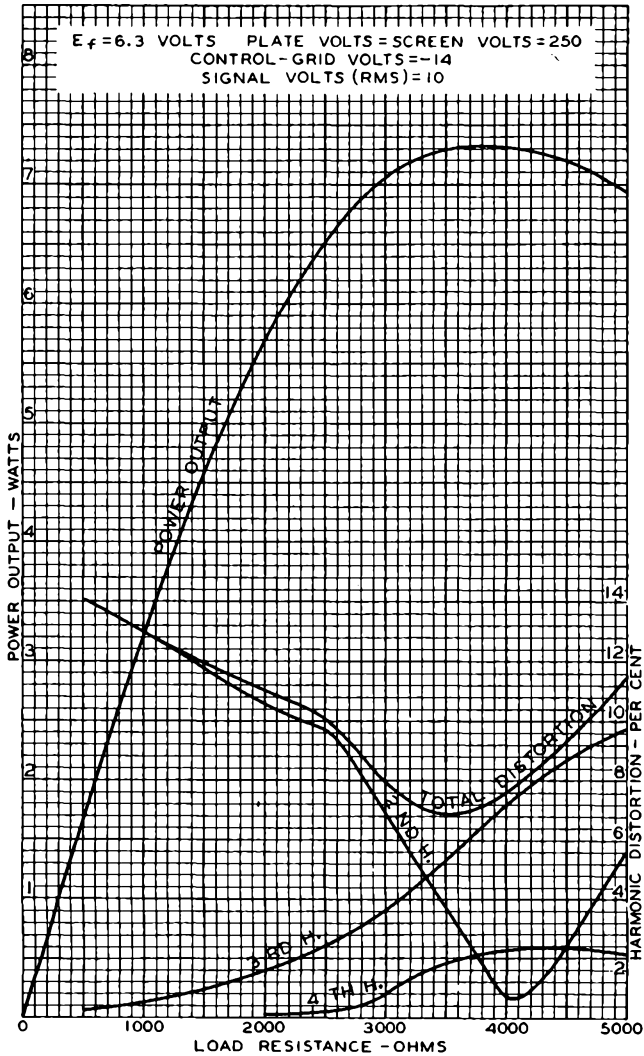
92C-4580 RI



6L6

6L6

OPERATION CHARACTERISTICS



MAY 7, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

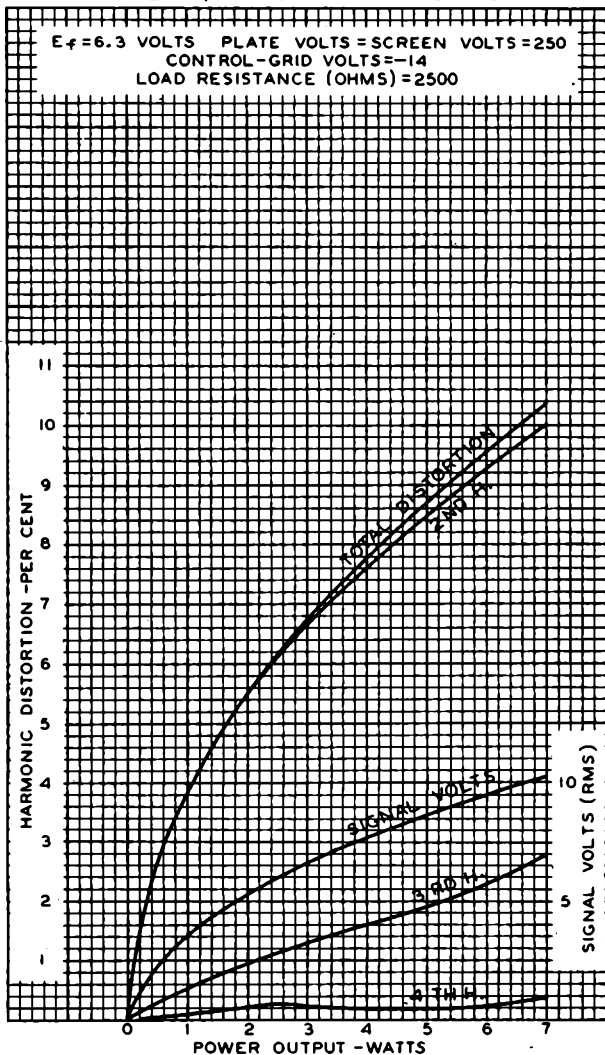
92C-4608

6L6



6L6

OPERATION CHARACTERISTICS



MAY 7, 1936

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4609



6L7, 6L7-G

6L7
6L7-G

PENTAGRID MIXER AMPLIFIER

Heater [■]		Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
	6L7	6L7-G	
Direct Interelectrode Cap.	▲	▲▲	
Grid #1 to Grid #3	0.2 max.	0.2 max.	μuf
Grid #1 to Plate	0.001 max.	0.005 max.	μuf
Grid #3 to Plate	0.1	0.24	μuf
Grid #1 to All Other Electrodes	7.5	6	μuf
Grid #3 to All Other Electrodes	10	12	μuf
Plate to All Other Electrodes	11	10	μuf
Overall Length	3-1/8" max.	{ 4-7/32" to 4-15/32"	
Maximum Diameter	1-5/16"	1-9/16"	
Bulb	Metal Shell, MT-8	ST-12	
Cap	Miniature	Skirted Min.	
Base	{ Small Wafer Octal 7-Pin	{ Small Shell Octal 7-Pin	
Basing Designation	7T	G-7T	
Pin 1 { 6L7, Shell 6L7-G, No Con.		Pin 5 - Grid #3	
Pin 2 - Heater		Pin 7 - Heater	
Pin 3 - Plate		Pin 8 - Cathode & Grid #5	
Pin 4 - Grids #2 & #4		Cap - Grid #1	
Mounting Position	BOTTOM VIEW	Any	
<u>AMPLIFIER - Class A₁</u>			
Plate Voltage		300 max.	volts
Screen Voltage (Grids #2 & #5)		100 max.	volts
Plate Dissipation		1.5 max.	watts
Screen Dissipation		1.0 max.	watt
Typical Operation:			
Plate		250	volts
Screen		100	volts
Control Grid (Grid #1)		-3	volts
Control Grid (Grid #3)		-3	volts
Plate Res. (approx.)		0.6	megohm
Transcond., Grid #1 to Plate		1100	μmhos
Transcond., Grid #1 to Plate*		5 approx.	μmhos
Plate Cur.		5.3	ma.
Screen Cur.		6.5	ma.
<u>MIXER</u>			
Plate Voltage		300 max.	volts
Screen Voltage (Grids #2 & #4)		150 max.	volts
Plate Dissipation		1.0 max.	watt
Screen Dissipation		1.5 max.	watts
[■] In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible. [▲] With shell connected to cathode. ^{▲▲} With close-fitting shield connected to cathode. [*] With grid #1 bias of -15 volts, and grid #3 bias of -15 volts.			

FEB. 2, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6L7
6L7-G



6L7,6L7-G

PENTAGRID MIXER AMPLIFIER

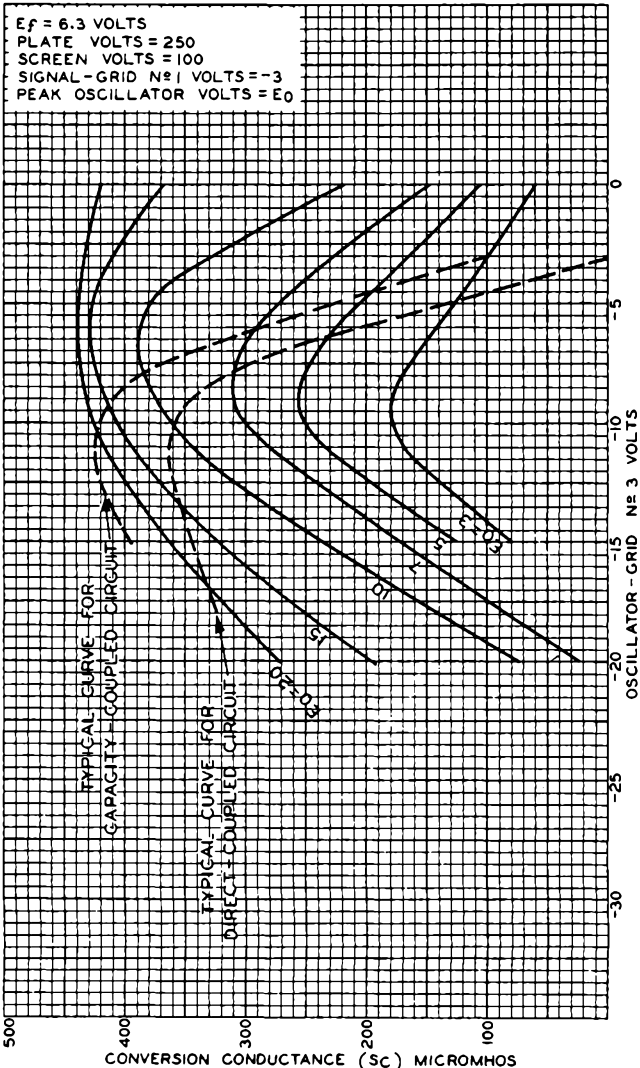
(continued from preceding page)

Typical Operation:

Plate	250	250#	volts
Screen	100	150#	volts
Signal-Grid (Grid #1)	-3 min.	-6# min.	volts
Oscillator Grid (Grid #3) **	-10	-15	volts
Peak Osc.-Grid Voltage			
Applied to Grid #3	12 min.	18 min.	volts
Plate Res.	Greater	than 1	megohm
Conversion Transcond.	375	350	μmhos
Conversion Transcond.	5 [●]	5 [▲]	μmhos
Plate Cur.	2.4	3.3	ma.
Screen Cur.	7.1	9.2	ma.

** The d-c resistance in grid #3 circuit should not exceed 50000 ohms.
 ● With grid #1 bias of -30 volts. ▲ With grid #1 bias of -45 volts.
 # These conditions are recommended for multi-range receiver applications.

OPERATION CHARACTERISTICS

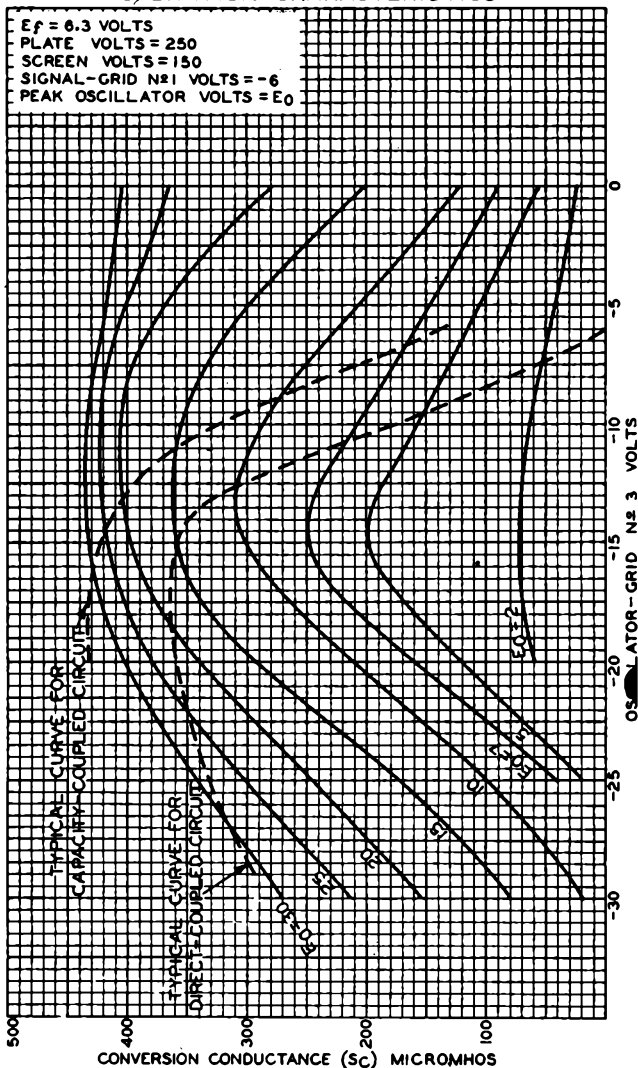


6L7


Cunningham
Radiotron


RCA-6L7

OPERATION CHARACTERISTICS



JULY 26, 1935

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

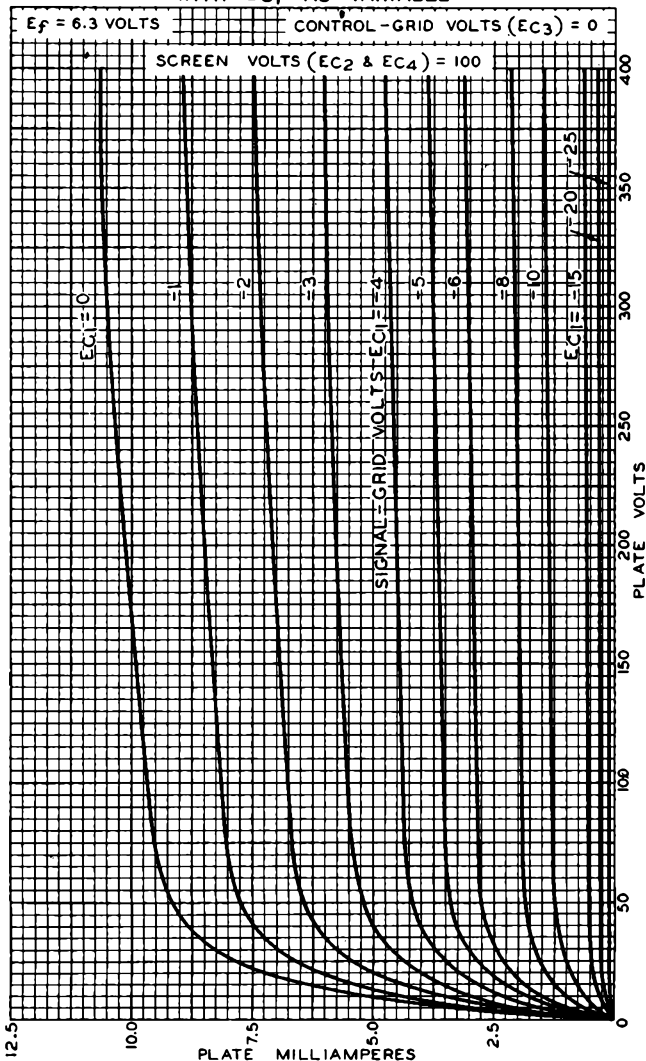
92C-4445



6L7

6L7

AVERAGE PLATE CHARACTERISTICS WITH E_{C1} AS VARIABLE



JAN. 3, 1936

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

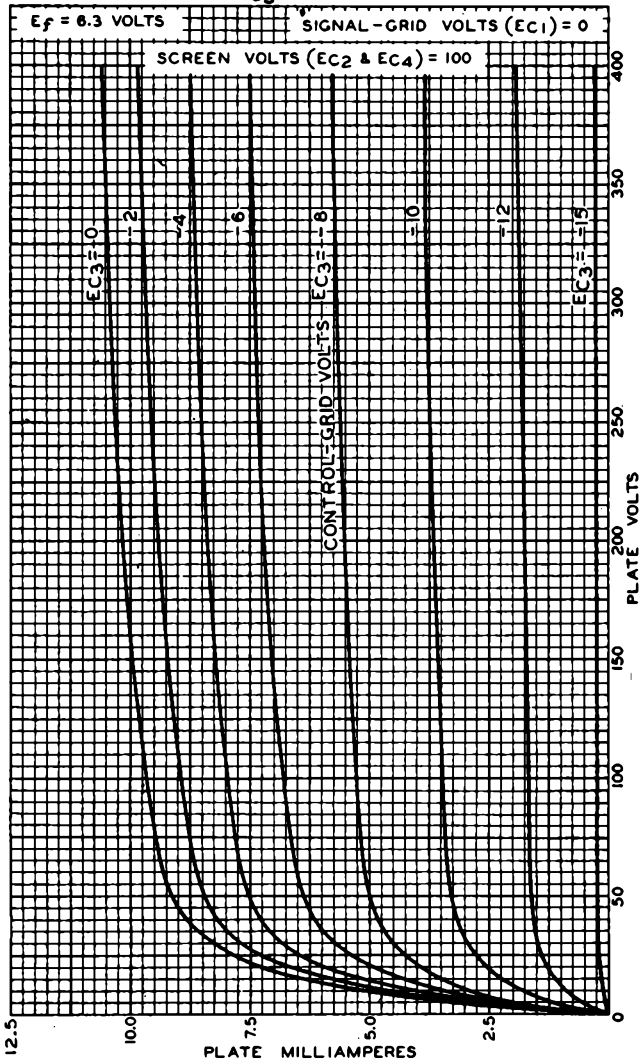
92C-4531

6L7



6L7

AVERAGE PLATE CHARACTERISTICS WITH EC_3 AS VARIABLE



JAN. 7, 1936

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

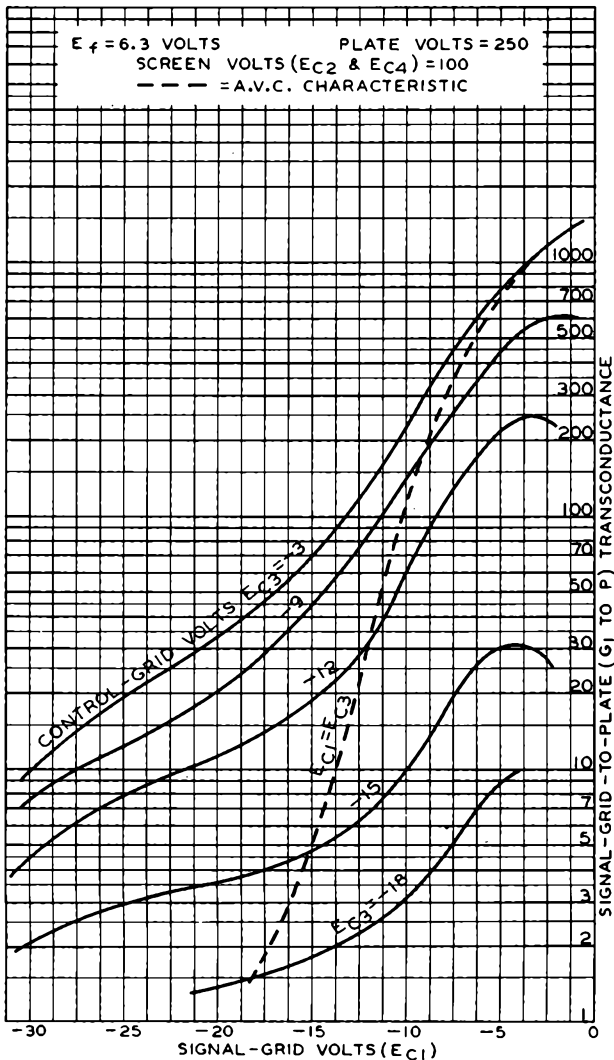
92C-4534



6L7

6L7

AVERAGE CHARACTERISTICS



JAN . 8 , 1936

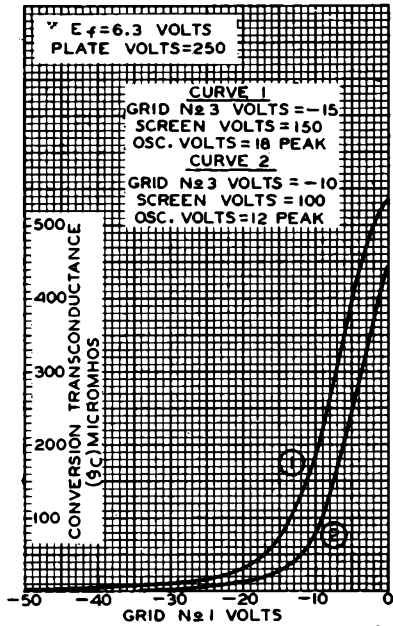
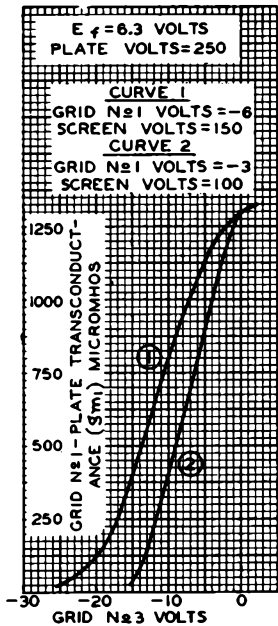
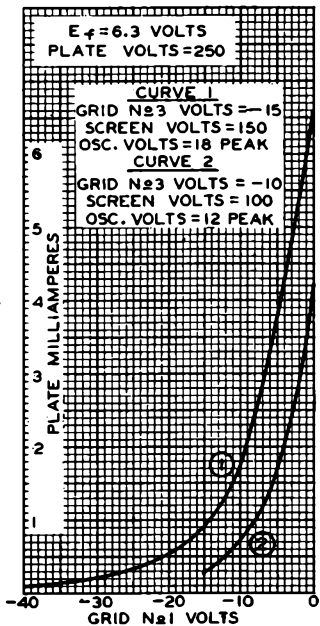
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4536

AUG. 5, 1935

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4442



AVERAGE CHARACTERISTICS



6L7

6L7



6N6-G



6N6-G

DIRECT-COUPLED POWER AMPLIFIER

Heater*	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.8	amp.
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium Shell Octal 7-Pin
Pin 1 - No Connection		Pin 5 - Input-Triode Grid
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Output-Triode Plate		Pin 8 - Cathode
Pin 4 - Input-Triode Plate		



Mounting Position BOTTOM VIEW (G-7AU) Any

AMPLIFIER - Class A₁**Operating Conditions and Characteristics:**

Heater*	6.3	volts
Output-Triode Plate	300 max.	volts
Input-Triode Plate	300 max.	volts
Input-Triode Grid [‡]	0	volts
Peak A-F Grid Voltage	21	volts
Amp. Fact.	58	
Plate Res.	24000	ohms
Transcond. #	2400	μmhos
Output-Triode Plate Cur.	42	ma.
Input-Triode Plate Cur.	9	ma.
Load Res. [□]	7000	ohms
Total Harmonic Distortion	5	%
Power Output	4	watts

* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

[‡] Input grid to output plate.

The input triode serves as a driver for the output triode and is directly coupled to it. No external bias supply is required, but the input-triode grid does not draw grid current because a bias voltage is set up automatically in the tube.

□ If two tubes are operated in push-pull, the plate-to-plate load resistance should be 10000 ohms.



6N7, 6N7-GT/G

6N7
6N7-GT/G

CLASS B TWIN AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.8	amp.
	6N7	6N7-GT/G
Maximum Overall Length	3-1/4"	3-5/16"
Maximum Seated Height	2-11/16"	2-2/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT-8	T-9
Base	{ Small Wafer Octal 8-Pin	{ Intermed. Sh. Octal 8-Pin
Basing Designation	8B	G-8B
Pin 1- { 6N7, Shell 6N7-GT/G, No Conn.		Pin 5-Grid (Triode T ₁)
Pin 2-Heater		Pin 6-Plate (Triode T ₁)
Pin 3-Plate (Triode T ₂)		Pin 7-Heater
Pin 4-Grid (Triode T ₂)		Pin 8-Cathode
Mounting Position	BOTTOM VIEW	Any

For convenience, one triode unit is identified as T₁; the other as T₂.

Maximum Ratings Are Design-Center Values

CLASS B POWER AMPLIFIER

Plate Voltage	300 max. volts	
Peak Plate Current (per plate)	125 max. ma.	
Average Plate Dissipation (per plate)	5.5 max. watts	
Typical Operation:	<i>Unless otherwise specified, values are for the two units</i>	
Plate-Supply Impedance	0	1000 [□] ohms
Effective Grid-Circuit Impedance (per unit)	0	516 ^{□□} ohms
Plate Voltage	300	300 volts
Grid Voltage	0	0 volts
Peak A-F Grid-to-Grid Voltage [▲]	58	82 [*] volts
Zero-Sig. D-C Plate Cur.	35	35 ma.
Max.-Sig. D-C Plate Cur.	70	70 ma.
Peak Grid Cur. (per unit)	20	22 ma.
Effective Load Res. (plate to plate)	8000	8000 ohms
Total Harmonic Distortion	4	8 %
Third Harmonic Distortion	3.5	7.5 %
Fifth Harmonic Distortion	1.5	2.5 %
Max.-Sig. Power Output	10	10 watts

□ Practical design value.
 □□ At 400 cycles for class B stage in which the effective resistance per grid circuit is 500 ohms, and the leakage reactance of the coupling transformer is 50 millihenries. The driver stage should be capable of supplying the grids of the class B stage with the specified values at low distortion.
 * Includes peak voltage drop through the grid circuit impedance.
 ▲ For power output shown.

Two 6N7's or 6N7-G's can be operated in a class B output stage with the two triode units of each tube connected in parallel to give a power output of 20 watts (approx.) under conditions of 300 volts on the plates and a 5000-ohm plate-to-plate load.

■ See next page. ← Indicates a change.

June 1, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6N7
6N7-GT/G



6N7, 6N7-GT/G

CLASS B TWIN AMPLIFIER

(continued from preceding page)

CLASS A₁ AMPLIFIER - As Driver

Both grids connected together at socket; likewise, both plates.

Plate Voltage 300 max. volts
Plate Dissipation (per plate) 1.0 max. watt

Typical Operation:

Plate	250	294	volts
Grid [▲]	-5	-6	volts
Amp. Fact.	35	35	
Plate Res.	11300	11000	ohms
Transcond.	3100	3200	μmhos
Plate Cur.	6	7	ma.

Plate Load—depends largely on the design factors of the class B amplifier. In general, the load will be between 20000 and 40000 ohms.

Power Output—under max. voltage conditions, upwards of 400 mw. can be obtained.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ The d-c resistance in the grid circuit of the 6N7 or 6N7-GT/G as a class A amplifier may be as high as 0.5 megohm with cathode bias. With fixed bias, the resistance should not exceed 0.1 megohm.

For additional curves, see Types 6A6 and 53; for data, see RESISTANCE-COUPLED AMPLIFIER CHART.

~ indicates a change.

June 1, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

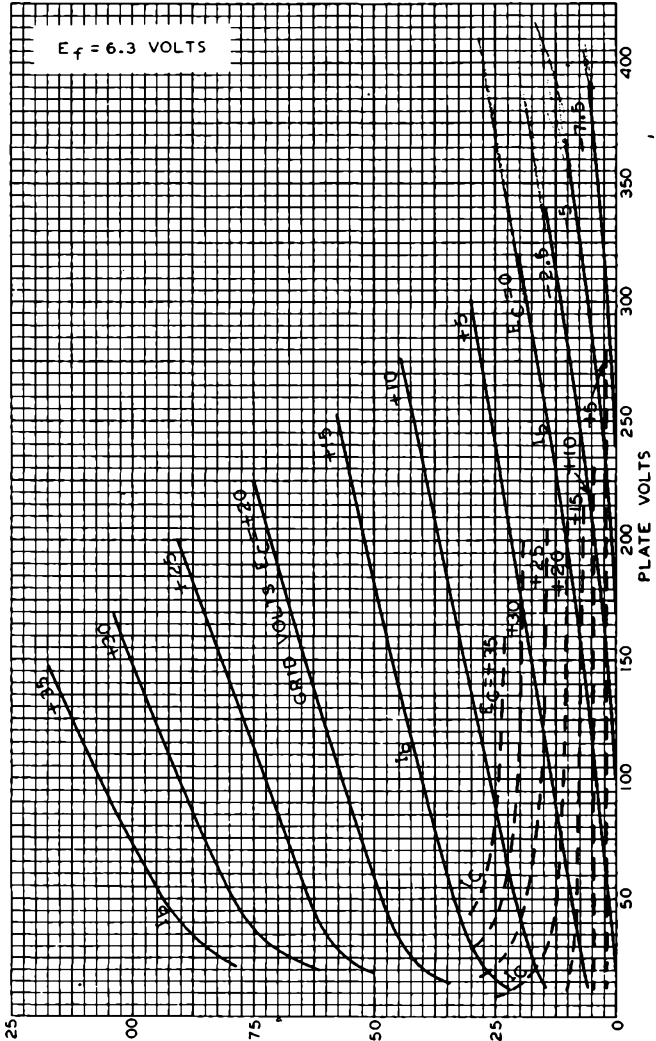
DATA



6N7

6N7

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



D-C PLATE (I_b) OR D-C GRID (I_c) MILLIAMPERES
DEC. 18, 1939' RCA RADIOTRON DIVISION 92C-4611
RCA MANUFACTURING COMPANY, INC.

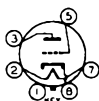
6P5-GT/G



6P5-GT/G

DETECTOR AMPLIFIER TRIODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp
Direct Interelectrode Capacitances: ^o		
Grid to Plate	2.6	μ f
Grid to Cathode	3.4	μ f
Plate to Cathode	5.5	μ f
Maximum Overall Length		3-5/16"
Maximum Seated Height		2-3/4"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 6-Pin	
Pin 1 - No Connection	Pin 5 - Grid	
Pin 2 - Heater	Pin 7 - Heater	
Pin 3 - Plate	Pin 8 - Cathode	
Mounting Position		Any



BOTTOM VIEW (G-6Q)

Maximum Ratings Are Design-Center Values

AMPLIFIER

Plate Voltage		250 max. volts
Plate Dissipation		1.25 max. watts
Typical Operation and Characteristics - Class A ₁ Amplifier:		
Plate	100	250 volts
Grid #	-5	-13.5 volts
Amp. Fact.	13.8	13.8
Plate Res.	12000	9500 ohms
Transcond.	1150	1450 μ mhos
Plate Cur.	2.5	5 ma.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- ° With shield connected to cathode. Values are approximate.
- ◆ Under maximum rated conditions, the d-c resistance in the grid circuit should not exceed 1.0 megohm.

Curves for the Type 6P5-GT/G are the same as for the 56 and the 76.

Dec. 1, 1942

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



6Q7, 6Q7-G, 6Q7-GT



DUPLEX-DIODE HIGH-MU TRIODE

Heater		Coated Unipotential Cathode		
Voltage	6.3	a-c or d-c volts		
Current	0.3	amp.		
	6Q7	6Q7-G	6Q7-GT	
Direct Interelectrode Cap.	▲	▲▲	▲▲	
Grid to Plate	1.4	1.5	1.6	μmf
Grid to Cathode	5.0	3.2	2.2	μmf
Plate to Cathode	3.8	5.0	5.0	μmf
Overall Length	{ 3-1/8" max.	{ 4-7/32" to 4-15/32"	3-5/16" max.	
Seated Height	{ 2-9/16" max.	{ 3-21/32" to 3-29/32"	2-3/4" max.	
Maximum Diameter	1-5/16"	1-9/16"	1-5/16"	
Bulb	Metal Shell, MT-8	ST-12	T-9	
Cap	Miniature	{ Skirted Miniature	{ Skirted Min. Style C	
Base	{ Small Wafer Octal 7-Pin	{ Small Shell Octal 7-Pin	{ Sm. Wafer Octal 7-Pin, Sleeve	
Basing Designation	7V	G-7V	GT-7V	
Pin 1 { 6Q7, Shell 6Q7-G, No Con. 6Q7-GT, Base Sleeve		Pin 4 - Diode Plate #2	Pin 5 - Diode Plate #1	
Pin 2 - Heater		Pin 7 - Heater	Pin 8 - Cathode	
Pin 3 - Triode Plate		Cap - Triode Grid		
Mounting Position	BOTTOM VIEW			Any
	TRIODE UNIT			
Plate Voltage				300 max. volts
<i>Characteristics - Class A₁ Amplifier:</i>				
Plate	100	250	volts	
Grid	-1	-3	volts	
Amp. Fact.	70	70		
Plate Res.	58000	58000	ohms	
Transcond.	1200	1200	μmhos	
Plate Cur.	0.8	1.0	ma.	
<i>Typical Operation - Resistance-Coupled Amplifier:</i>				
See RESISTANCE-COUPLED AMPLIFIER CHART				
<u>DIODE UNITS - Two</u>				
Consideration of these units is given under Type 85. Circuits will be similar to those shown for Type 55 with fixed bias. Diode biasing of the triode unit of the 6Q7, 6Q7-G or 6Q7-GT is not suitable. Diode curves under Type 6B7 apply to the 6Q7, 6Q7-G, and 6Q7-GT.				
■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.				
▲ With shell connected to cathode. Values are approximate.				
▲▲ With close-fitting shield connected to cathode. Values are approximate.				

← Indicates a change.

Dec. 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

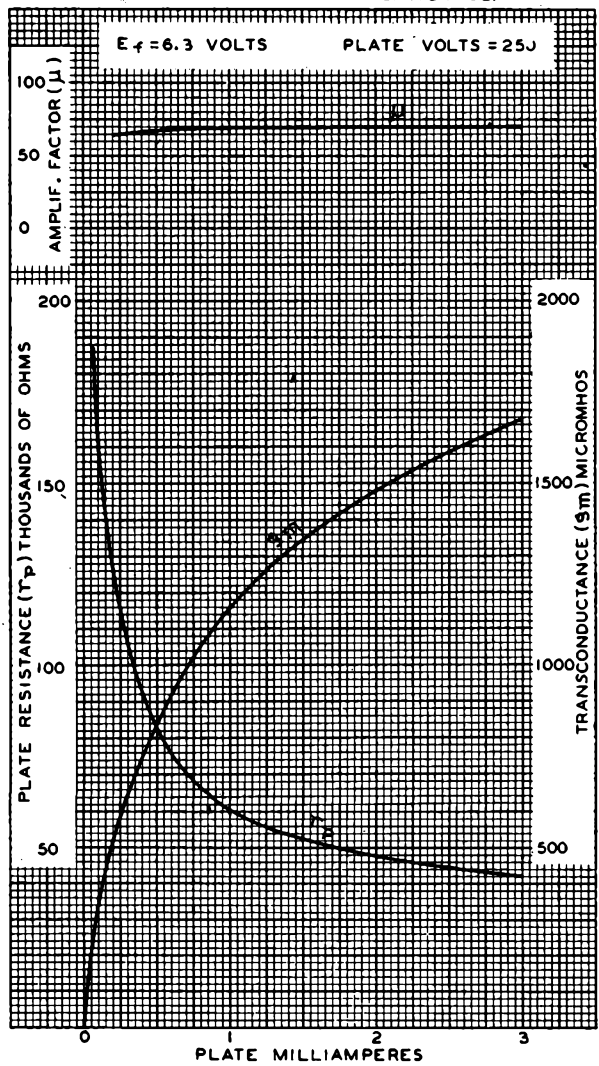
DATA

6Q7



6Q7

AVERAGE CHARACTERISTICS



JUNE 29, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

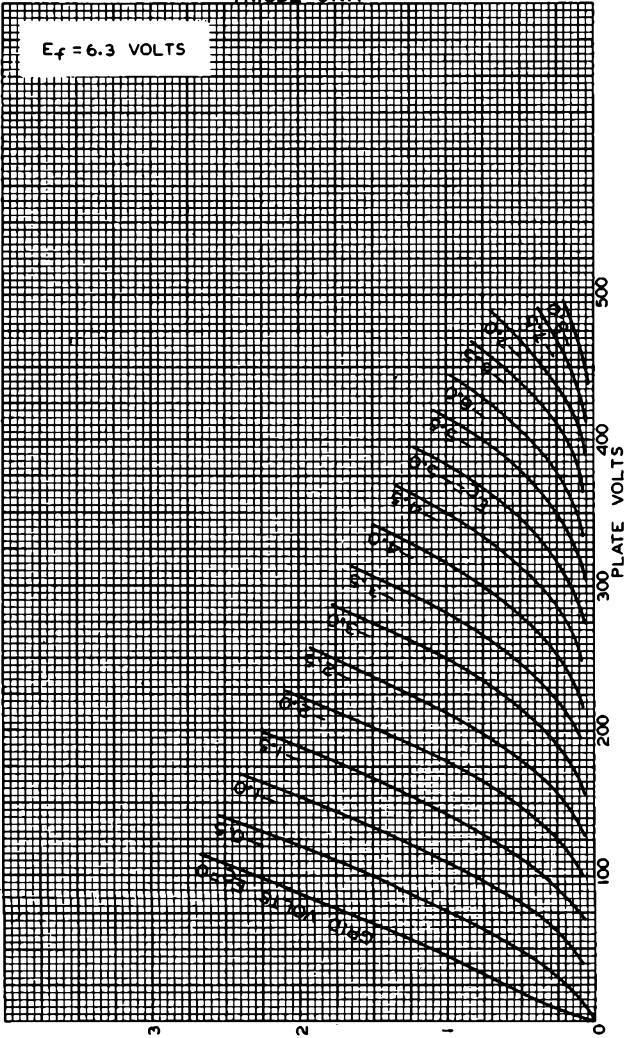
92C-4577



6Q7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

6Q7



SEPT. 10, 1941

PLATE MILLIAMPERES

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4522R2



6R7, 6R7-GT/G

DUPLEX-DIODE TRIODE

6R7
6R7-GT/G

Heater		Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
		<u>6R7</u>	<u>6R7-GT/G</u>
Direct Interelectrode Cap.		▲	
Grid to Plate	2.4	-	μuf
Grid to Cathode	4.8	-	μuf
Plate to Cathode	3.8	-	μuf
Maximum Overall Length	3-1/8"	3-5/16"	
Maximum Seated Height	2-9/16"	2-3/4"	
Maximum Diameter	1-5/16"	1-5/16"	
Bulb	Metal Shell, MT-8	T-9	
Cap	Miniature	{ Skirted Miniature	
Base	{ Small Wafer	{ Intermed. Shell	
Basing Designation	{ Octal 7-Pin	{ Octal 7-Pin	
Pin 1	7V	G-7V	
Pin 2-Heater		Pin 4-Diode Plate #2	
Pin 3-Triode Plate		Pin 5-Diode Plate #1	
Mounting Position		Pin 7-Heater	
		Pin 8-Cathode	
		Cap - Triode Grid	



BOTTOM VIEW

Maximum Ratings Are Design-Center Values

TRIODE UNIT

Plate Voltage	250 max. volts
Plate Dissipation	2.5 max. watts
D-C Heater-Cathode Potential	100 max. volts

Typical Operation and Characteristics-Class A₁ Amplifier:

Plate	250 volts
Grid	-9 volts
Amp. Fact.	16
Plate Res.	8500 ohms
Transcond.	1900 μmhos
Plate Cur.	9.5 ma.

Typical Operation— Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART. Under maximum rated conditions, the d-c resistance in the grid circuit of the 6R7 and 6R7-GT/G should not exceed 1.0 megohm.

DIODE UNITS - Two

For consideration of these units, see Type 85. Circuits will be similar to those shown for Type 55 with fixed bias. Diode biasing of the triode unit of the 6R7 and 6R7-GT/G is not suitable. Diode curves under Type 6B7 apply to the 6R7 and 6R7-GT/G.

▲ Triode unit with shell connected to cathode. Values are approximate.

An additional curve applying to Types 6R7 and 6R7-GT/G is

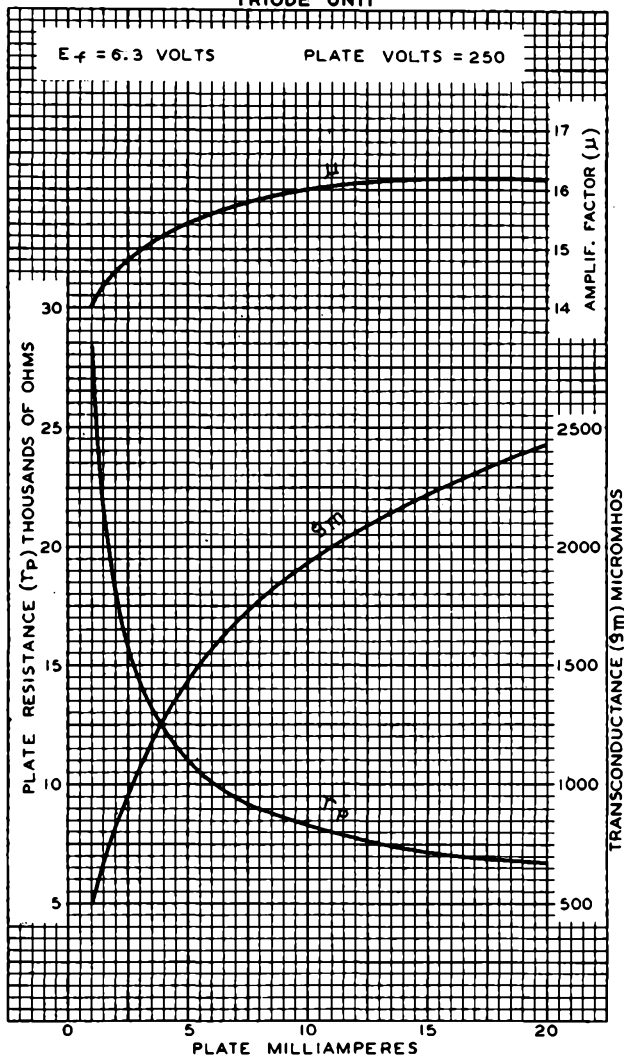
← Indicates a change. is shown under Type 6SR7.

6R7



6R7

AVERAGE CHARACTERISTICS TRIODE UNIT



DEC. 14, 1943

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4546R1



6S4

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

The 6S4 is the same as the 6S4-A except that the 6S4 does not have a controlled Heater Warm-up Time, and is not intended for use in equipment having series heater-string arrangement.

6S4

MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6SA-A

6SA-A

MEDIUM-MU TRIODE

9-PIN MINIATURE TYPE

Intended for use in equipment having series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3	. . . . . ac or dc volts
Current.	0.6	. . . . . amp
Warm-up time (Average)	11	. . . . . sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances (Approx.):^o

Grid to plate.	2.6	$\mu\mu\text{f}$
Grid to cathode and heater	4.2	$\mu\mu\text{f}$
Plate to cathode and heater.	0.9	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

Plate Voltage.	250	volts
Grid Voltage	-8	volts
Amplification Factor	16	
Plate Resistance (Approx.)	3600	ohms
Transconductance	4500	μmhos
Plate Current.	26	ma
Plate Current for grid voltage of -15 volts	4.5	ma
Grid Voltage (Approx.) for plate current of 50 μamp	-23	volts

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length.	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip).	2" \pm 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)
Basing Designation for BOTTOM VIEW . . . . .	.9AC

- Pin 1 - Internal Connection-Do Not Use
- Pin 2 - Cathode
- Pin 3 - Grid
- Pin 4 - Heater



- Pin 5 - Heater
- Pin 6 - Grid
- Pin 7 - Same as Pin 1
- Pin 8 - Same as Pin 1
- Pin 9 - Plate

^o without external shield.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6S4-A



6S4-A

MEDIUM-MU TRIODE

VERTICAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	500 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE#		
(Absolute maximum)	2200 [■] max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	250 max.	volts
CATHODE CURRENT:		
Peak	105 max.	ma
Average	30 max.	ma
PLATE DISSIPATION	7.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. .	200 max.	volts
Heater positive with respect to cathode. .	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation 2.2 max. megohms

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[#] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

[■] Under no circumstances should this absolute value be exceeded.

[▲] The dc component must not exceed 100 volts.

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

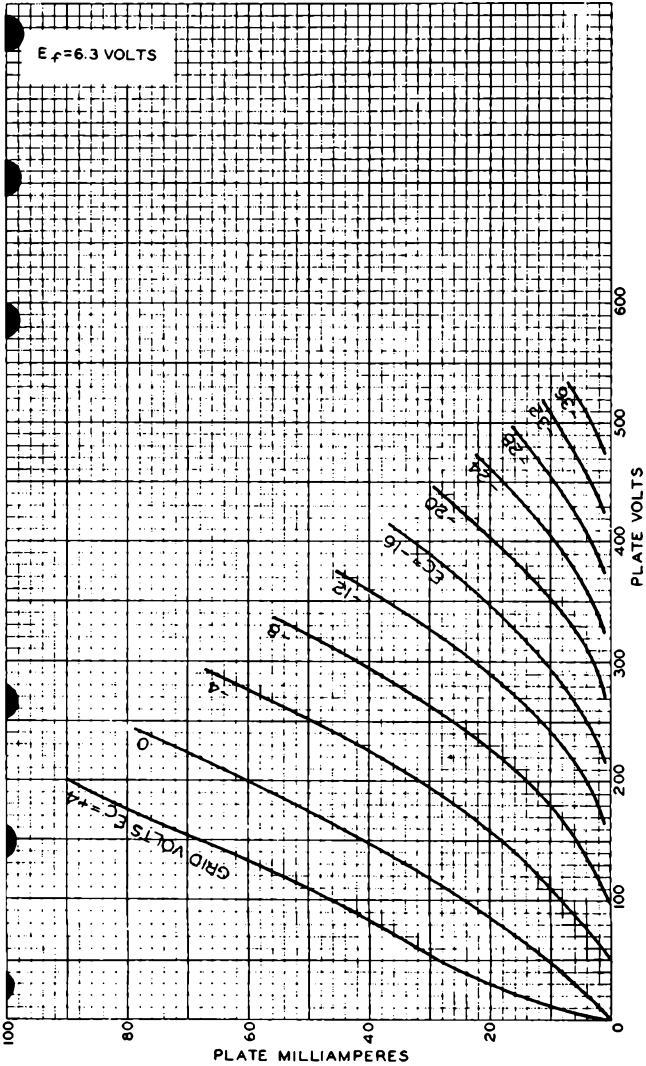
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6S4 - A

AVERAGE PLATE CHARACTERISTICS

6S4-A



SEPT. 22, 1949

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7373




6S7, 6S7-G



6S7-G

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

		Coated Unipotential Cathode	
Heater [■]			
Voltage	6.3	a-c or d-c volts	
Current	0.15	amp.	
		6S7	6S7-G
Direct Interelectrode Cap.	▲	▲	
Grid to Plate	0.005 max.	0.008 max.	μf
Input	6.5	4.4	μf
Output	10.5	8	μf
Overall Length	3-1/8" max.	{ 4-7/32" to 4-15/32"	
Maximum Diameter	1-5/16"	1-9/16"	
Bulb	Metal Shell, MT-8	ST-12	
Cap	Miniature	Skirted Min.	
Base	{ Small Wafer Octal 7-Pin	{ Small Shell Octal 7-Pin	
Basing Designation	7R	G-7R	
Pin 1 { 6S7, Shell 6S7-G, No Con.		Pin 5 - Suppressor	
Pin 2 - Heater		Pin 7 - Heater	
Pin 3 - Plate		Pin 8 - Cathode	
Pin 4 - Screen		Cap - Grid	
Mounting Position		Any	
 BOTTOM VIEW			
<u>AMPLIFIER - Class A₁</u>			
Plate Voltage		300 max.	volts
Screen Voltage		100 max.	volts
Screen Supply Voltage		300 max.	volts
Grid Voltage		0 min.	volts
Plate Dissipation		2.25 max.	watts
Screen Dissipation		0.25 max.	watt
Typical Operation:			
Plate	135	250	volts
Screen	67.5	100	volts
Grid	-3	-3	volts
Suppressor	Connected to cathode at socket		
Plate Res. (approx.)	1	1	megohm
Transcond.	1250	1750	μmhos
Transcond.	10 [●]	10 [▲]	μmhos
Plate Cur.	3.7	8.5	ma.
Screen Cur.	0.9	2	ma.
[■] In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible. [▲] With shell connected to cathode. ^{▲▲} With close-fitting shield connected to cathode. [●] With grid bias of -25 volts. [▲] With grid bias of -38.5 volts.			

FEB. 2, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

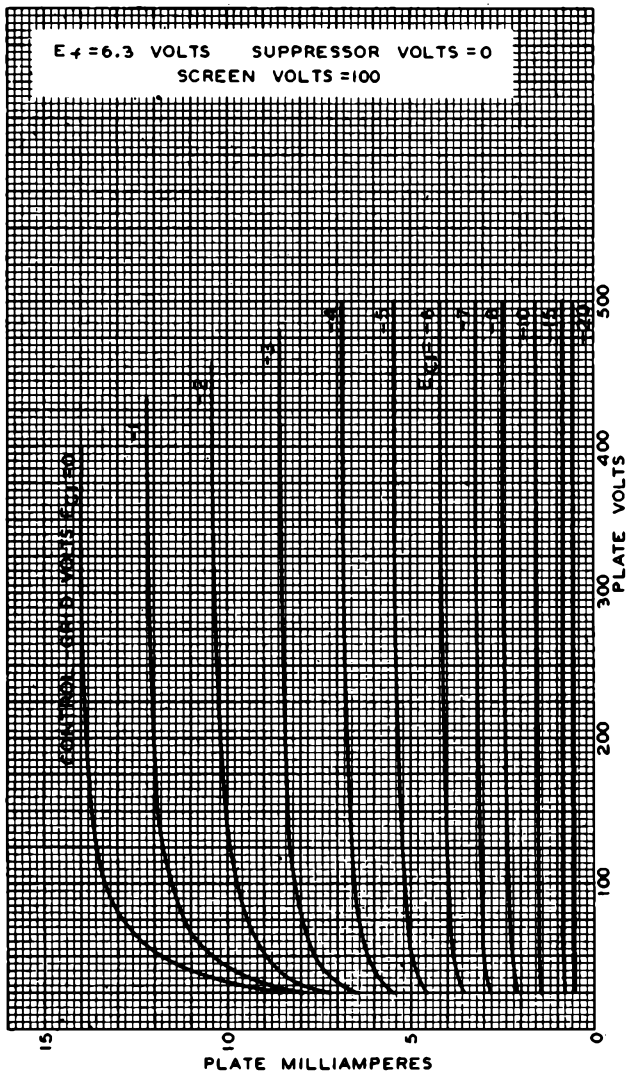
DATA

657



657

AVERAGE PLATE CHARACTERISTICS



JAN. 17, 1938

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4868



6S8-GT

6S8-GT

TRIPLE DIODE-HIGH-MU TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage. 6.3 ac or dc volts
Current. 0.3 amp

Direct Interelectrode Capacitances:*

Triode Unit:

Grid to Plate. 1.2 μf
Grid to Cathode. 2.0 μf
Plate to Cathode 3.8 μf

Each Diode Unit:

Plate to Cathode (Approx.). 1.0 μf

* With external shield.

Mechanical:

Mounting Position. Any
Maximum Overall Length 3-5/8"
Maximum Seated Length. 3-1/16"
Maximum Diameter 1-9/32"
Bulb T-9

Base Intermediate-Shell Octal 8-Pin
Basing Designation for BOTTOM VIEW 8CB

Pin 1 - Diode Plate No.3
Pin 2 - Cathode of Triode & Diodes Nos. 2 & 3
Pin 3 - Diode Plate No.1



Pin 4 - Diode Plate No.2
Pin 5 - Cathode of Diode No.1
Pin 6 - Triode Plate
Pin 7 - Heater
Pin 8 - Heater
Cap - Triode Grid

TRIODE UNIT AMPLIFIER - Class A1

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts
PLATE DISSIPATION. 0.5 max. watt
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode 90 max. volts
Heater positive with respect to cathode 90 max. volts

Characteristics:

Plate Voltage. 50 100 250 . . volts
Grid Voltage 0 -1 -2 . . volts
Grid Resistor. 10 0 0 . . megohms
Amplification Factor 85 100 100
Plate Resistance 285000 110000 91000 . . ohms
Transconductance 300 900 1100 . . μmhos
Plate Current. 0.07 0.4 0.9 . . ma

6S8-GT



6S8-GT

TRIPLE DIODE—HIGH-MU TRIODE

DIODE UNITS

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For Each Diode) 1.0 max. ma

Diode Considerations:

Diode units No.2 & No.3 and the triode unit have a common cathode, and diode unit No.1 has a separate cathode. Diodes No.1 (pins 3 & 5) and No.3 (pins 1 & 2) are recommended for use in FM detector applications, while diode No.2 (pins 4 & 2) is recommended for use as an AM detector.

Further consideration of these units, including diode curves, is given at the front of this section. Diode biasing of the triode unit of the 6S8-GT is not suitable.

AUGUST 29, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

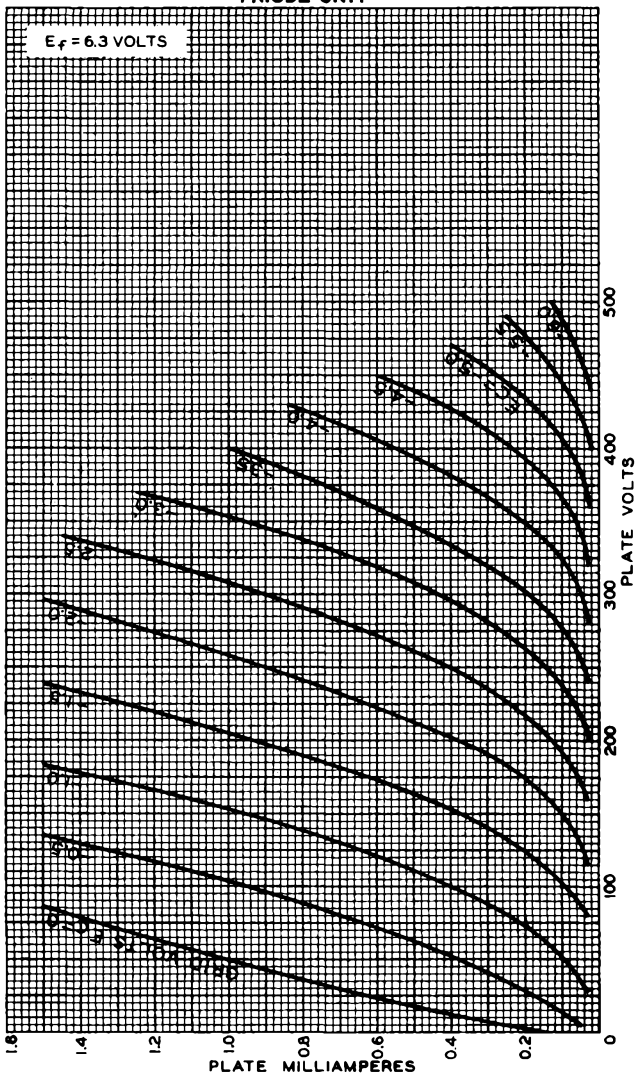
TENTATIVE DATA



6S8-GT

6S8-GT

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



JULY 25, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6876



6SA7
6SA7-GT/G

6SA7, 6SA7-GT/G

PENTAGRID CONVERTER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:	6SA7	6SA7-GT/G
Grid #3 to All Other Electrodes (R-F Input)	9.5 [▲]	11 ^{▲▲} μf
Plate to All Other Electrodes (Mixer Output)	12 [▲]	11 ^{▲▲} μf
Grid #1 to All Other Electrodes (Osc. Input)	7 [▲]	8 ^{▲▲} μf
Grid #3 to Plate	0.13 max. [▲]	0.5 max. ^{▲▲} μf
Grid #3 to Grid #1	0.15 max. [▲]	0.4 max. ^{▲▲} μf
Grid #1 to Plate	0.06 max. [▲]	0.2 max. ^{▲▲} μf
Grid #1 to Shell, Grid #5, and All Other Electrodes except Cathode	4.4	- μf
Grid #1 to All Other Electrodes except Cathode & Grid #5	-	5 μf
Grid #1 to Cathode	2.6	- μf
Grid #1 to Cathode & Grid #5	-	3 μf
Cathode to Shell, Grid #5, and All Other Electrodes except Grid #1	5	- μf
Cathode and Grid #5 to All Other Electrodes except Grid #1	-	14 μf
Maximum Overall Length	2-5/8"	3-5/16"
Maximum Seated Height	2-1/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell MT-8	T-9
Base	{ Small Wafer { Octal 8-Pin	{ Intermed. Sh. { Octal 8-Pin
Pin 1	{ 6SA7, Shell, Grid #5 { 6SA7-GT/G, No Conn.	
Pin 2	- Heater	
Pin 3	- Plate	
Pin 4	- Grids #2 & #4	
Pin 5	- Grid #1	
Pin 6	{ 6SA7, Cathode { 6SA7-GT/G, Cathode & Grid #5	
Pin 7	- Heater	
Pin 8	- Grid #3	
Mounting Position	Any	

<p>BOTTOM VIEW (BR)</p>	<p>BOTTOM VIEW (G-8AD)</p>
-------------------------	----------------------------

Maximum And Minimum Ratings Are Design-Center Values

<u>CONVERTER SERVICE</u>	
Plate Voltage	300 max. volts
Grids #2 & #4 Voltage	100 max. volts
Grids #2 & #4 Supply Voltage	300 max. volts
Grid #3 Voltage	0 min. volts
Plate Dissipation	1.0 max. watt
Screen Dissipation	1.0 max. watt
Total Cathode Current	14 max. ma.

[■] In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
[▲] With shell connected to cathode.
^{▲▲} With external shield connected to cathode.
[■] For self-excited oscillator.
 ← Indicates a change.

Jan. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6SA7
6SA7-GT/G



6SA7, 6SA7-GT/G PENTAGRID CONVERTER

(continued from preceding page)

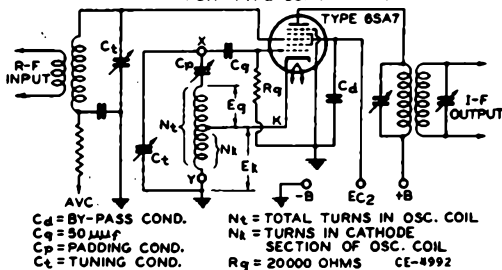
Characteristics:	Self-excitation*		Separate Excitation	
Plate Voltage	100	250	100	250 volts
Grids #2 & #4 Volt.	100	100	100	100 volts
Grid #3 (Control) Volt.	0	0	-2	-2 volts
Grid #1 Resistor	20000	20000	20000	20000 ohms
Plate Res. (Approx.)	0.5	1.0	0.5	1.0 megohm
Conversion Transcond.	425	450	425	450 μ hos
Conversion Transcond. (Approx.) †	2	2	2	2 μ hos
Plate Current	3.3	3.5	3.3	3.5 ma.
Grids #2 & #4 Current	8.5	8.5	8.5	8.5 ma.
Grid #1 Current	0.5	0.5	0.5	0.5 ma.
Total Cathode Current	12.3	12.5	12.3	12.5 ma.

NOTE: The transconductance between Grid #1 and Grids #2 & #4 connected to plate (not oscillating) is approximately 4500 μ hos under the following conditions: Grids #1, #3, and shell at 0 volts; Grids #2 & #4 and plate at 100 volts.

* Characteristics are approximate only and are shown for a Hartley circuit with a feedback of approximately 2 volts peak in the cathode circuit.

† With Grid #3 bias of -35 volts.

TYPICAL SELF-EXCITED CONVERTER CIRCUIT
FOR TYPE 6SA7



The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

Jan. 1, 1943

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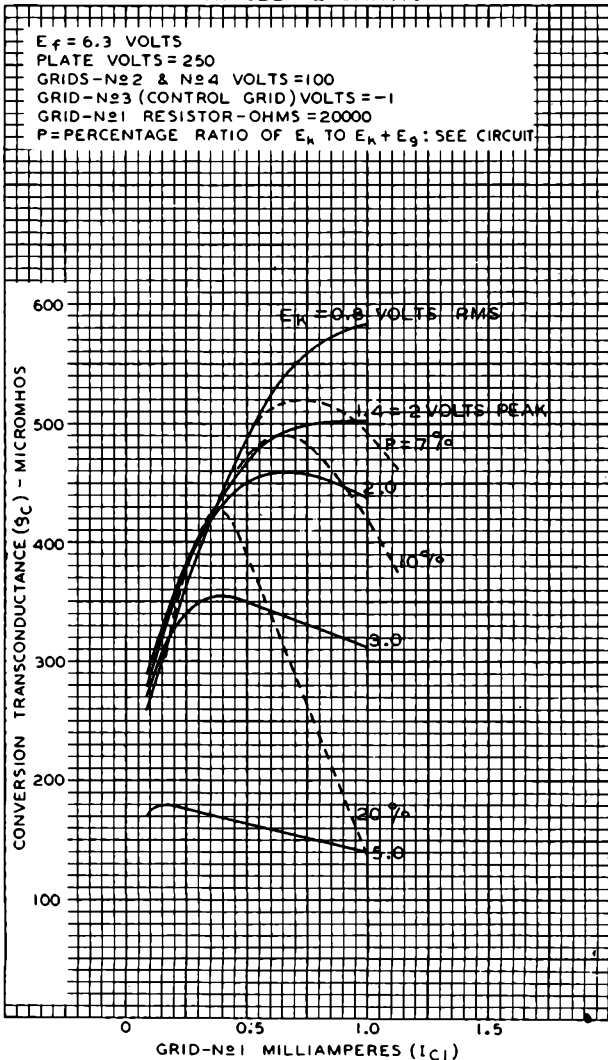
DATA



6SA7

OPERATION CHARACTERISTICS WITH SELF-EXCITATION

6SA7



NOV. 2, 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

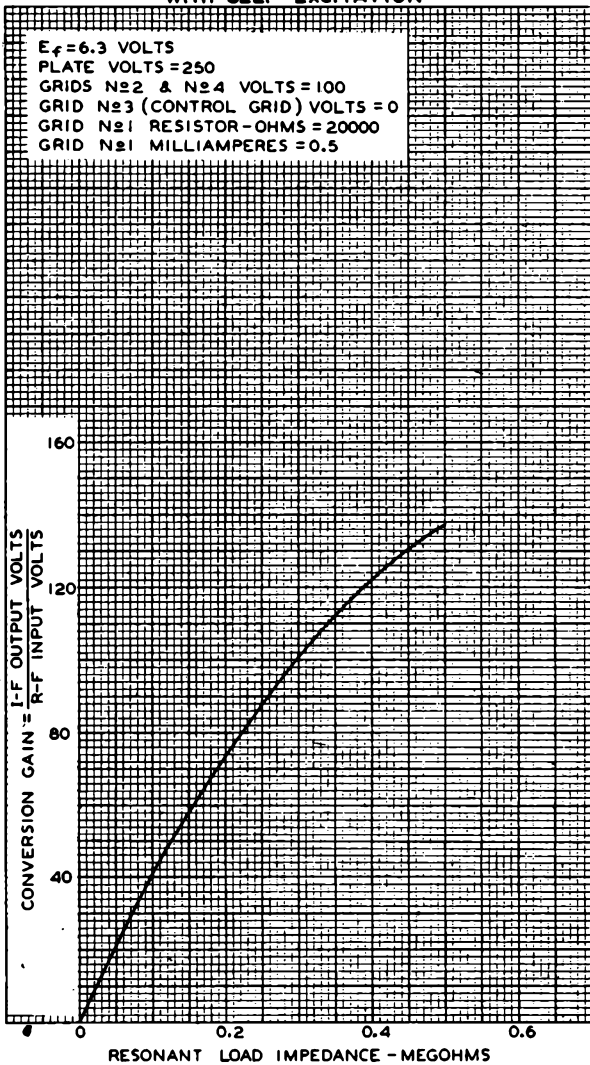
92C-4993

6SA7



6SA7

OPERATION CHARACTERISTIC WITH SELF-EXCITATION



APR. 25, 1941

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

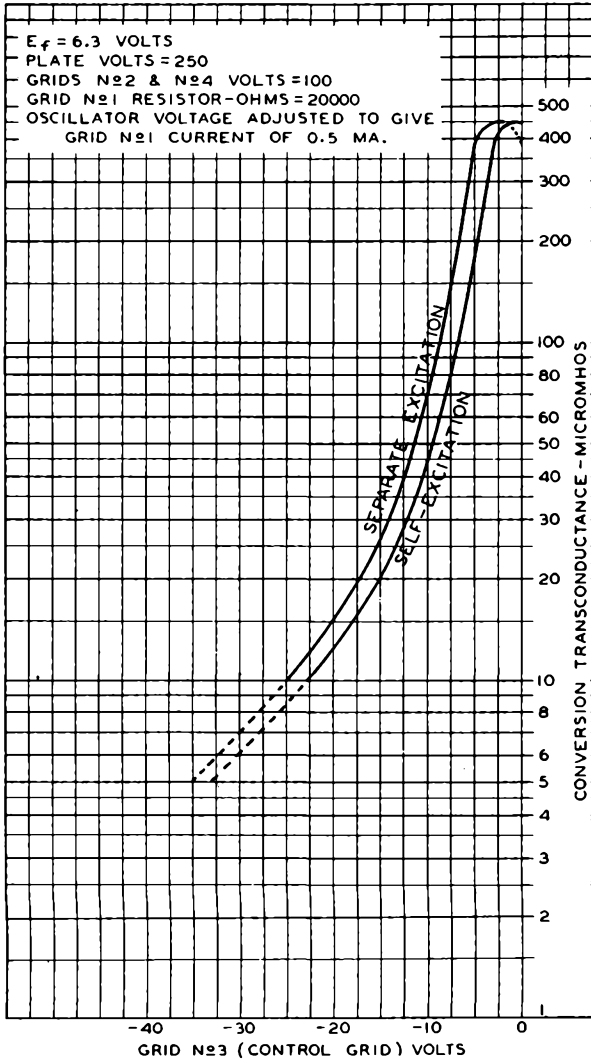
CE-4994



6SA7

6SA7

OPERATION CHARACTERISTICS



OCT. 25, 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

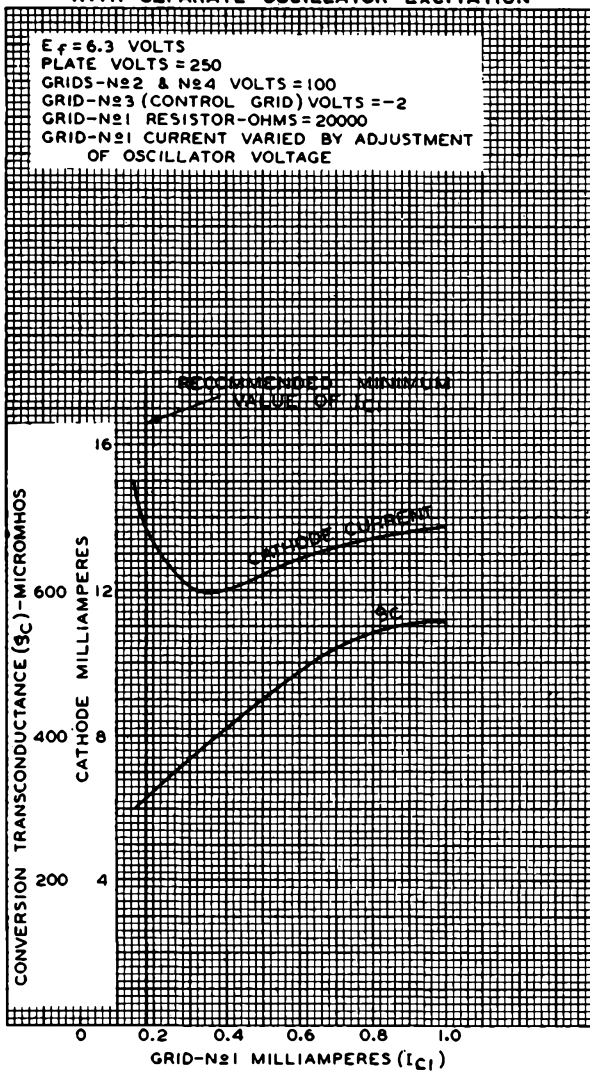
92C-4989

6SA7



6SA7

OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION



APR. 24, 1941

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4990RI



6SB7-Y

6SB7-Y

PENTAGRID CONVERTER

SINGLE-ENDED METAL TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3	ac or dc volts
Current.	0.3	amp.

Direct Interelectrode Capacitances:

Grid No.3 to All Other Electrodes (RF Input) [▲] .	9.6 . . .	μf
Plate to All Other Electrodes (Mixer Output) [▲] .	9.2 . . .	μf
Grid No.1 to All Other Electrodes (Osc. Input) [▲] .	7.3 . . .	μf
Grid No.3 to Plate [▲]	0.13 max.	μf
Grid No.3 to Grid No.1 [▲]	0.16 max.	μf
Grid No.1 to Plate [▲]	0.06 max.	μf
Grid No.1 to All Other Electrodes and Shell, Except Cathode	3.8 . . .	μf
Grid No.1 to Cathode	3.4 . . .	μf
Cathode to All Other Electrodes and Shell Except Grid No.1	4.5 . . .	μf

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length.	2-1/16"
Maximum Diameter	1-5/16"
Bulb	MT-8G
Base	Small Wafer Octal 8-Pin, Micanol
Basing Designation for BOTTOM VIEW	8R

Pin 1-Shell,
Grid No.5
Pin 2-Heater
Pin 3-Plate
Pin 4-Grids
No.2 & No.4



Pin 5-Grid No.1
Pin 6-Cathode
Pin 7-Heater
Pin 8-Grid No.3

CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRIDS-No.2 & No.4 VOLTAGE	100 max.	volts
GRIDS-No.2 & No.4 SUPPLY VOLTAGE.	300 max.	volts
PLATE DISSIPATION.	2.0 max.	watts
GRIDS-No.2 & No.4 DISSIPATION	1.5 max.	watts
TOTAL CATHODE CURRENT.	22 max.	ma.
GRID-No.3 VOLTAGE:		
Negative Bias Voltage.	100 max.	volts
Positive Bias Voltage.	0 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

[▲] with shell connected to cathode.

APRIL 1, 1946

RCA VICTOR DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6SB7-Y



6SB7-Y

PENTAGRID CONVERTER

Characteristics - - Separate Excitation:*

Plate Voltage.	100	250	. .	volts
Grids-No.2 & No.4 (Screen) Voltage	100	100	. .	volts
Grid-No.3 (Control Grid) Voltage	-1.0	-1.0	. .	volt
Grid-No.1 (Oscillator Grid) Resistor	20000	20000	. .	ohms
Plate Resistance (Approx.) . .	0.5	1.0	. .	Megohm
Conversion Transconductance. .	900	950	. .	umhos
Conversion Transconductance**	3.5	3.5	. .	umhos
Plate Current.	3.6	3.8	. .	ma.
Grids-No.2 & No.4 Current	10.2	10	. .	ma.
Grid-No.1 Current	0.35	0.35	. .	ma.
Total Cathode Current.	14.2	14.2	. .	ma.

Typical Operation in FM Band (88-108 Mc):

(See circuit on following page)

Plate Voltage.	250	. .	volts
Grids-No.2 & No.4 (Screen) Supply Voltage	250	. .	volts
Grids-No.2 & No.4 Resistor	12000	. .	ohms
Grid-No.1 Resistor	22000	. .	ohms
Signal Frequency	88	108	Mc
Oscillation Frequency.	98.7	118.7	Mc
Plate Current.	6.8	6.5	ma.
Grids-No.2 & No.4 Current.	12.6	12.5	ma.
Grid-No.1 Current	0.130	0.140	ma.

NOTE: The transconductance between grid No.1 and grids No.2 & No.4 connected to plate (not oscillating) is approximately 8000 micromhos under the following conditions: signal applied to grid No.1 at zero-bias; grids-No.2 and No.4 and plate at 100 volts; grid No.3 grounded. Under the same conditions, the plate current is 32 milliamperes and the amplification factor is 16.5.

* The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

** With grid-No.3 bias of -20 volts.



6SB7-Y

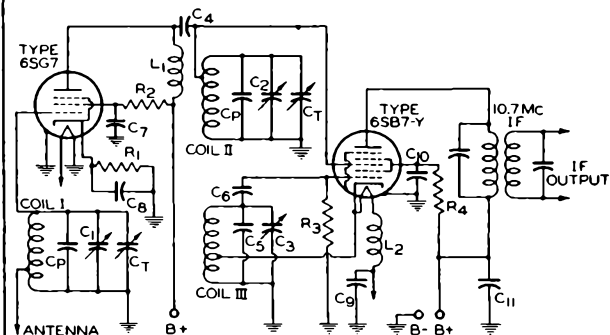
6SB7-Y

PENTAGRID CONVERTER

TYPICAL SELF-EXCITED CONVERTER CIRCUIT FOR TYPE 6SB7-Y WITH RF STAGE

88-108Mc

(SEE TYPICAL OPERATION)



C1 C2 C3 = GANGED TUNING CONDENSERS: 7 - 23 μf

C4 C5 C6 = 22 μf

C7 C8 C9 C10 C11 = BY-PASS CONDENSERS

Cp = PADDING CONDENSERS

Ct = TRIMMER CONDENSERS

L1 L2 = HF CHOKES

R1 = 68 OHMS

R2 = 33000 OHMS

R3 = 22000 OHMS

R4 = 12000 OHMS

COIL I = ANTENNA COIL*: 2 TURNS No. 14 WIRE + 1-1/4"

LEAD No. 20 WIRE. COIL TAPPED AT 1 TURN.

COIL II = INTERSTAGE COIL*: 2 TURNS No. 14 WIRE + 1-1/4"

LEAD No. 20 WIRE. COIL TAPPED AT 1-1/4 TURN.

COIL III = OSCILLATOR COIL*: 1-7/8 TURNS No. 14 WIRE, NO

ADDED LEAD. COIL TAPPED AT 5/8 TURN.

* All coils 5/8" long, approx.

NOTE 1: All tap positions are approximate and should be adjusted to give stable operation.

NOTE 2: Insertion of a small non-inductive resistor of about 3 ohms in the circuit at grid-No. 3 terminal of the 6SB7-Y is helpful in preventing oscillation at the signal frequency.

92CM-6650

APRIL 1, 1946

RCA VICTOR DIVISION

TENTATIVE DATA 2

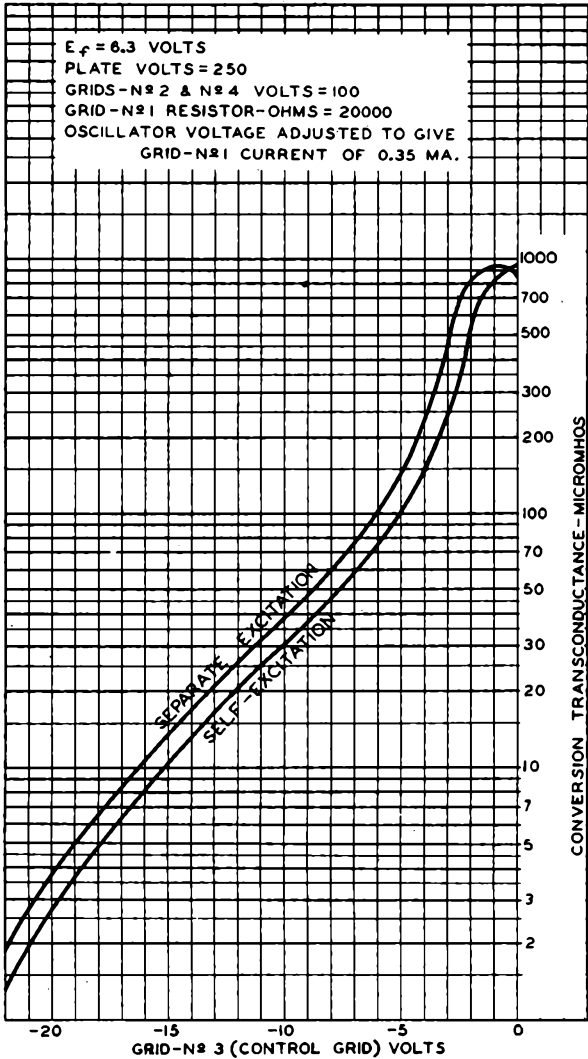
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6SB7-Y



6SB7-Y

OPERATION CHARACTERISTICS



NOV. 8, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6619



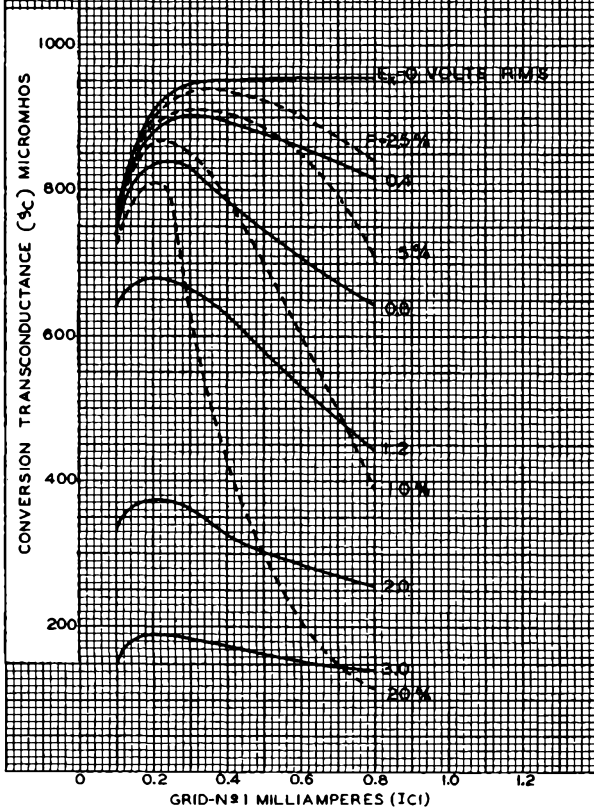
6SB7-Y

6SB7-Y

OPERATION CHARACTERISTICS WITH SELF-EXCITATION

$E_f = 6.3$ VOLTS
PLATE VOLTS = 250
GRIDS - N^o 2 & N^o 4 VOLTS = 100
GRID - N^o 3 (CONTROL GRID) VOLTS = -1
GRID - N^o 1 RESISTOR - OHMS = 20000
P - PERCENTAGE RATIO OF E_k TO $E_k + E_g$, WHERE

E_k = VOLTAGE ACROSS OSCILLATOR - COIL SECTION
BETWEEN GROUND AND CATHODE, AND
 E_g = OSCILLATOR VOLTAGE BETWEEN CATHODE
AND GRID



NOV. 20 1945

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

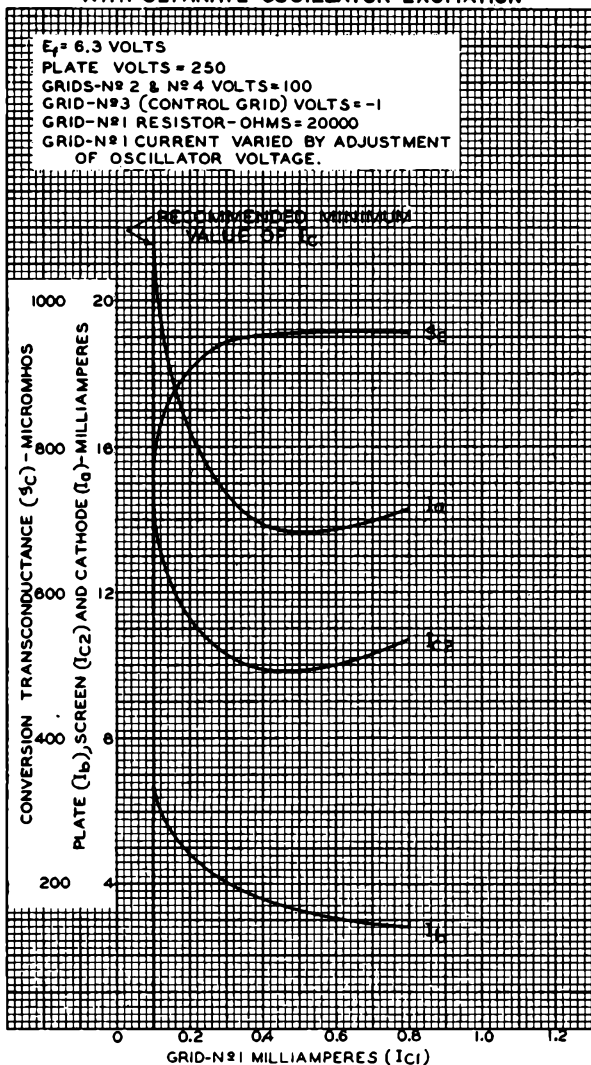
92CM-6635

6SB7-Y



6SB7-Y

OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION



NOV. 20, 1945

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6634



6SC7

6SC7

HIGH-MU TWIN TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances (Approx.):*

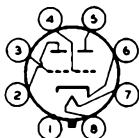
Grid to plate	2	μf
Grid to cathode, heater, and shell	2	μf ←
Plate to cathode, heater, and shell	3	μf

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-1/16"
Maximum Diameter	1-5/16"
Bulb	Metal Shell, MT-8
Base	Small-Wafer Octal 8-Pin (JETEC No. B8-21)

Basing Designation for BOTTOM VIEW 8S

Pin 1 - Shell	Pin 5 - Plate of Unit No.1
Pin 2 - Plate of Unit No.2	Pin 6 - Cathode
Pin 3 - Grid of Unit No.2	Pin 7 - Heater
Pin 4 - Grid of Unit No.1	Pin 8 - Heater



AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 max. volts
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode	90 max. volts ←
Heater positive with respect to cathode	90 max. volts

Characteristics:

Plate Voltage	250	volts
Grid Voltage	-2	volts
Amplification Factor	70	
Plate Resistance (Approx.)	53000	ohms
Transconductance (Approx.)	1325	μmhos
Plate Current	2	ma

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No. 17 at front of this Section

* values for each unit with pin 1 connected to pin 6.

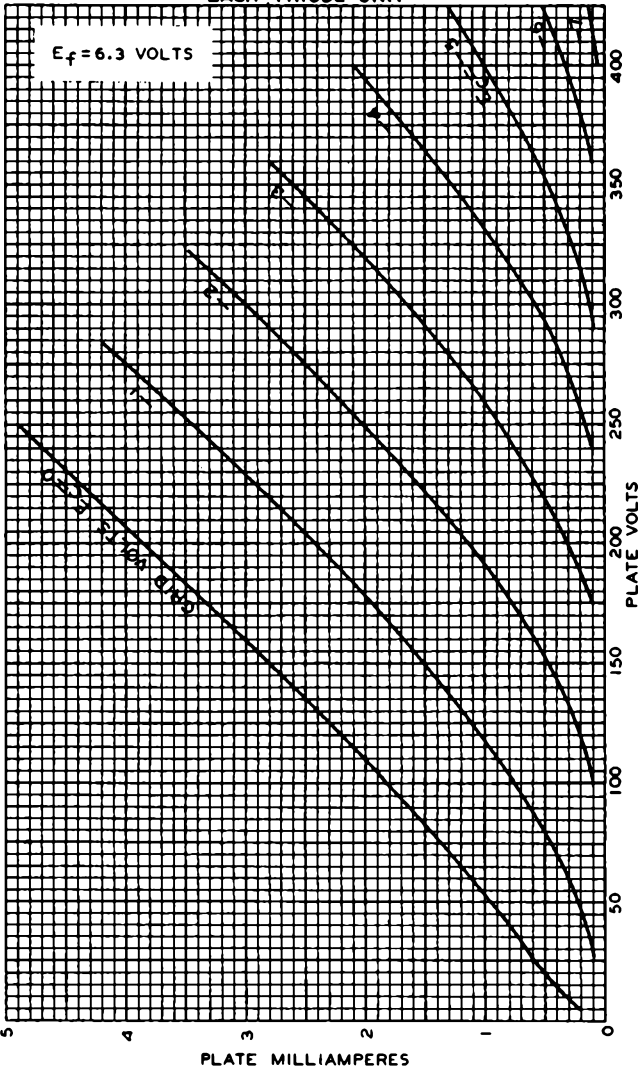
← indicates a change.

6SC7



6SC7

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT




OCT. 16, 1940

PLATE MILLIAMPERES
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6096R1

6SF5
6SF5-GT

6SF5, 6SF5-GT HIGH-MU TRIODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Cap.	6SF5 ▲	6SF5-GT
Grid to Plate	2.4	- μuf
Grid to Cathode	4.0	- μuf
Plate to Cathode	3.6	- μuf
Maximum Overall Length	2-5/8"	3-5/16"
Maximum Seated Height	2-1/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell MT-8	T-9
Base	{ Small Wafer Octal 6-Pin	{ Intermed. Shell Octal 6-Pin
Basing Designation	6AB	G-6AB
Pin 1	{ 6SF5, Shell 6SF5-GT, No Con.	Pin 5 - Plate
Pin 2 - Cathode		Pin 7 - Heater
Pin 3 - Grid		Pin 8 - Heater
Mounting Position		Any
	BOTTOM VIEW	
	AMPLIFIER	
Plate Voltage		300 max. volts
<i>Characteristics - Class A₂ Amplifier:</i>		
Plate	100	250 volts
Grid	-1	-2 volts
Amp. Fact.	100	100
Plate Res.	85000	66000 ohms
Transcond.	1150	1500 μmhos
Plate Cur.	0.4	0.9 ma.
<i>Typical Operation - Resistance Coupled Amplifier:</i>		
Same as 6F5 in RESISTANCE-COUPLED AMPLIFIER CHART.		
<p>■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.</p> <p>▲ With shell connected to cathode. Values are approximate.</p>		
The curve under type 6F5 also applies to the 6SF5 and 6SF5-GT.		
← Indicates a change.		

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

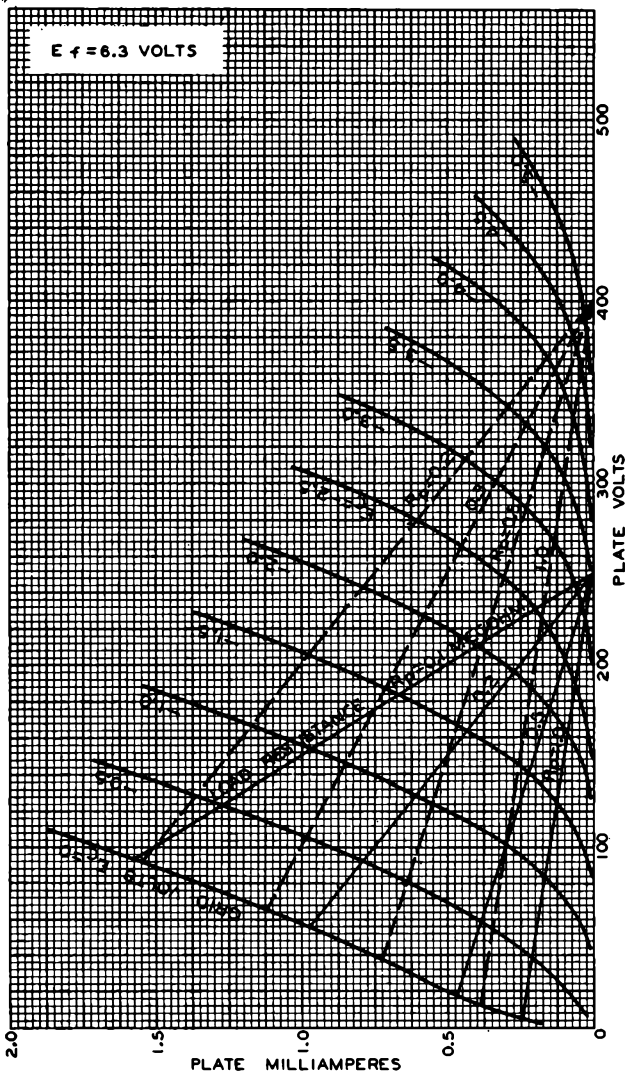
DATA

6SF5



6SF5

AVERAGE PLATE CHARACTERISTICS



SEPT. 23 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

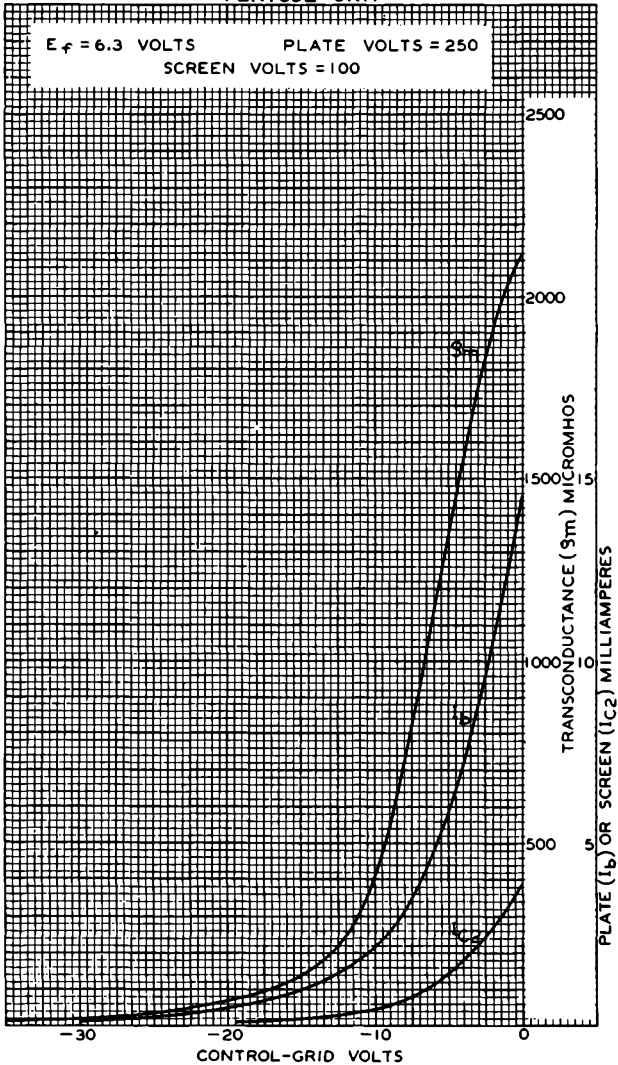
92C-4974



6SF7

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT

6SF7



FEB. 20, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6256



6SG7

6SG7

H-F AMPLIFIER PENTODE

SINGLE-ENDED METAL TYPE WITH SEMI-REMOTE CUT-OFF

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances: [○]		
Grid to Plate	0.003 max.	μuf
Input	8.5	μuf
Output	7.0	μuf
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal, 8-Pin
Pin 1 - Shell		Pin 5 - Cathode
Pin 2 - Heater		Pin 6 - Screen
Pin 3 - Cathode		Pin 7 - Heater
Pin 4 - Grid		Pin 8 - Plate
Mounting Position		Any



BOTTOM VIEW (8BK)

Maximum And Minimum Ratings Are Design-Center Values

AMPLIFIER

Plate Voltage	300 max. volts
Screen Voltage	200 max. volts
Screen Supply Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	3 max. watts
Screen Dissipation	0.6 max. watt

Typical Operation and Characteristics-Class A₁ Amplifier:

Plate Voltage	100	250	250	volts
Screen Voltage	100	125	150	volts
Grid Voltage	-1	-1	-2.5	volts
Suppressor	Connected to pin #3 internally			
Plate Resistance (Approx.)	0.25	0.9	#	megohm
Transconductance	4100	4700	4000	μmhos
Grid Bias [*]	-11.5	-14	-17.5	volts
Plate Current	8.2	11.8	9.2	ma.
Screen Current	3.2	4.4	3.4	ma.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

Greater than 1 megohm.

* Approximate, for transconductance of 40 micromhos.

○ With shell connected to cathode.

← Indicates a change.

May 1, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

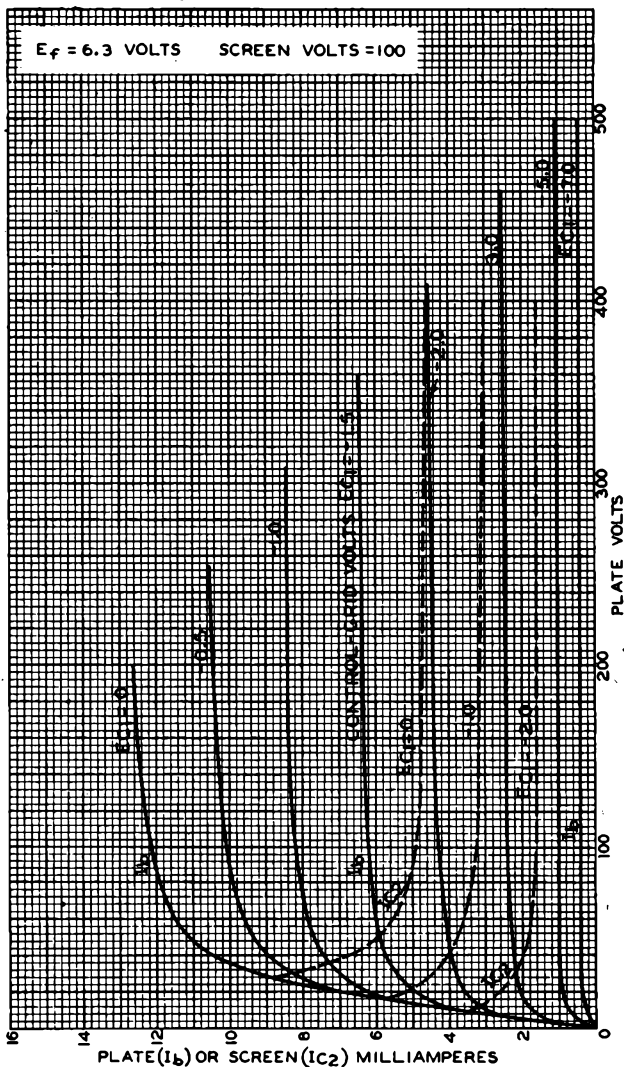
TENTATIVE DATA

6SG7



6SG7

AVERAGE PLATE CHARACTERISTICS



APRIL 16, 1942

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RCA MANUFACTURING COMPANY, INC.

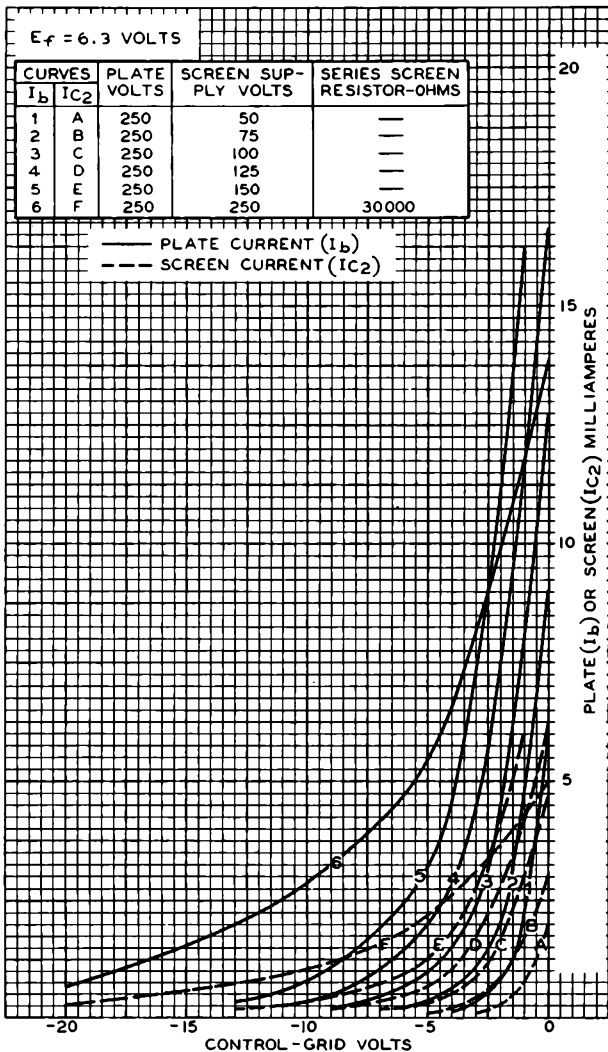
92C-6253R2



6SG7

6SG7

AVERAGE CHARACTERISTICS



APRIL 16, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6248R2

6SG7

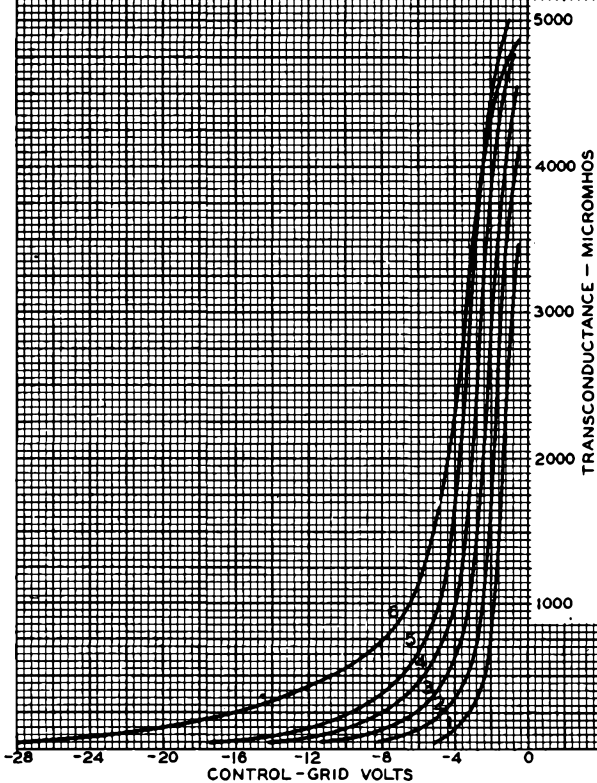


6SG7

AVERAGE CHARACTERISTICS

 $E_f = 6.3$ VOLTS

CURVE	PLATE VOLTS	SCREEN SUPPLY VOLTS	SERIES SCREEN RESISTOR-OHMS
1	250	50	—
2	250	75	—
3	250	100	—
4	250	125	—
5	250	150	—
6	250	250	30000



APRIL 16, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6245R2



6SH7

H-F AMPLIFIER PENTODE

SINGLE-ENDED METAL TYPE WITH SHARP CUT-OFF

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances: ^o		
Grid to Plate	0.003 max.	μ f
Input	8.5	μ f
Output	7.0	μ f
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal, 8-Pin
Pin 1 - Shell		Pin 5 - Cathode
Pin 2 - Heater		Pin 6 - Screen
Pin 3 - Cathode		Pin 7 - Heater
Pin 4 - Grid		Pin 8 - Plate
Mounting Position	BOTTOM VIEW (8BK)	Any



Maximum And Minimum Ratings Are Design-Center Values

AMPLIFIER

Plate Voltage		300 max.	volts
Screen Voltage		150 max.	volts
Screen Supply Voltage		300 max.	volts
Grid Voltage		0 min.	volts
Plate Dissipation		3 max.	watts
Screen Dissipation		0.7 max.	watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>			
Plate Voltage	100	250	volts
Screen Voltage	100	150	volts
Grid Voltage	-1	-1	volts
Plate Resistance	0.35	0.9 approx.	megohm
Transconductance	4000	4900	μ mos
Grid Bias for			
Plate Current = 10 μ amp.	-4	-5.5	volts
Plate Current	5.3	10.8	ma.
Screen Current	2.1	4.1	ma.

NOTE: This type is not recommended for high-gain audio amplifier applications because undesirable hum may be encountered.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

o with shell connected to cathode.

← Indicates a change.

June 1, 1942

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

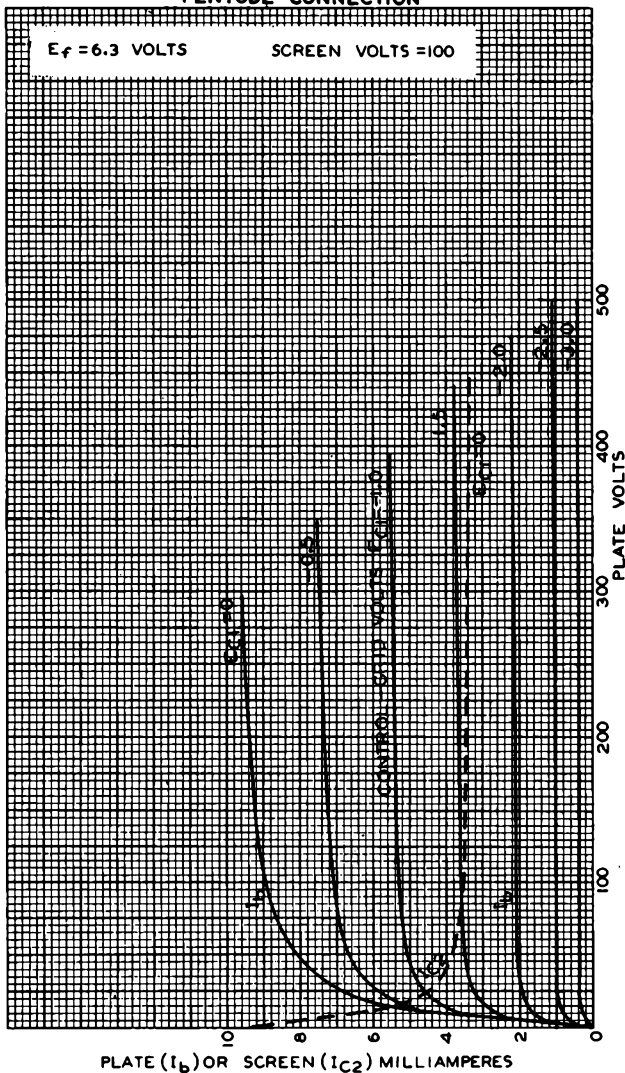
TENTATIVE DATA

6SH7



6SH7

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



JULY 24, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

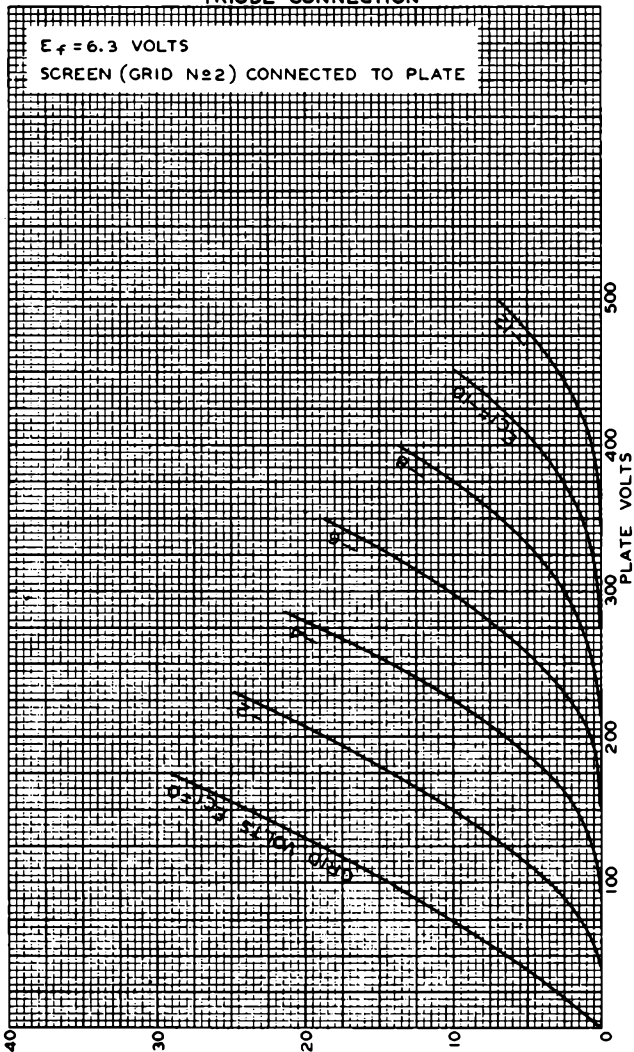
92C-6300



6SH7

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION

6SH7



MAY 11, 1942

PLATE MILLIAMPERES

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

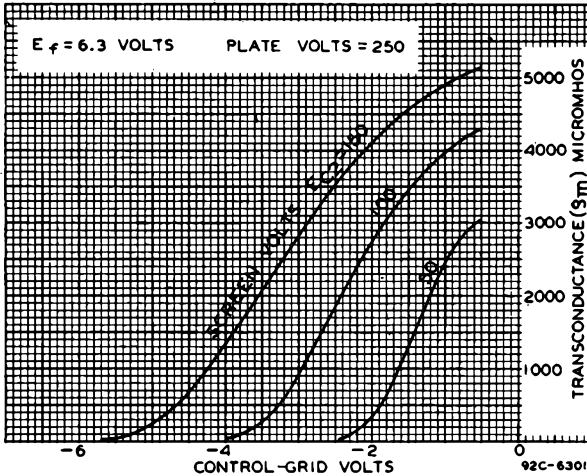
92C-6395

6SH7

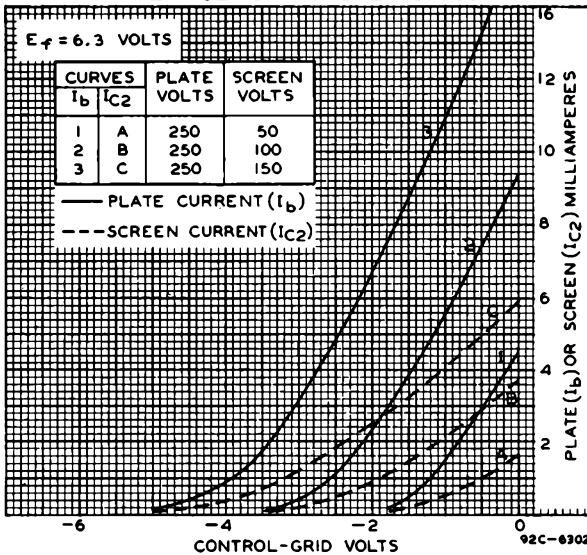


6SH7

AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



MAY 14, 1942

RCA RADIODIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6401



6 SJ7, 6SJ7-GT SHARP-CUTOFF PENTODE

6SJ7-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts
Current 0.3 amp

Direct Interelectrode Capacitances:

Pentode Connection:	6SJ7 ^o	6SJ7-GT ^{oo}	
Grid No.1 to Plate :	0.005 max.	0.005 max.	$\mu\mu f$ ←
Input	6	7	$\mu\mu f$ ←
Output	7	7	$\mu\mu f$ ←
Triode Connection:*			
Grid No.1 to Plate .	2.8	2.8	$\mu\mu f$
Grid No.1 to Cathode.	3.4	3.4	$\mu\mu f$
Plate to Cathode . .	11	11	$\mu\mu f$

^o With shell connected to cathode.

^{oo} With external shield connected to cathode.

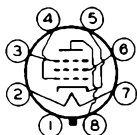
* With grid No.2 and grid No.3 connected to plate.

Mechanical:

Mounting Position	Any	Any
Maximum Overall Length	2-5/8"	3-5/16"
Maximum Seated Length	2-1/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT8G	T-9
Base	{ Small-Wafer Octal 8-Pin	Sm.-Wafer Octal 8-Pin, Sleeve
Basing Designation	8N	GT-8N

Pin 1 { 6SJ7, Shell
6SJ7-GT,
Base Sleeve
Pin 2-Heater
Pin 3-Grid No.3

BOTTOM VIEW



Pin 4 - Grid No.1
Pin 5 - Cathode
Pin 6 - Grid No.2
Pin 7 - Heater
Pin 8 - Plate

AMPLIFIER - Class A₁ Pentode Connection

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	125 max.	volts
GRID-No.2 SUPPLY VOLTAGE	300 max.	volts
PLATE DISSIPATION	2.5 max.	watts
GRID-No.2 DISSIPATION	0.7 max.	watt ←
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value	0 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	90 max.	volts ←
Heater positive with respect to cathode .	90 max.	volts

← Indicates a change.

JUNE 15, 1948

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6SJ7
6SJ7-GT



6SJ7, 6SJ7-GT
SHARP-CUTOFF PENTODE

Typical Operation and Characteristics:

Plate voltage.	100	250	..	volts
Grid No.3 (Suppressor) . Connected to cathode at socket				
Grid-No.2 Voltage.	100	100	..	volts
Grid-No.1 Voltage.	-3	-3	..	volts
Plate Resistance (Approx.)	0.7	#	..	megohm
Transconductance	1575	1650	..	μ mhos
Grid-No.1 Bias (Approx.) for plate current of 10 μ amp	-8	-8	..	volts
Plate Current.	2.9	3.0	..	ma
Grid-No.2 Current.	0.9	0.8	..	ma

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1 max.	megohm
--	--------	--------

AMPLIFIER - Class A₁

Triode Connection - Grids No.2 and No.3 Connected to Plate

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	250 max.	volts
PLATE DISSIPATION (Total).	2.5 max.	watts
GRID-No.1 VOLTAGE:		
Positive bias value.	0 max.	volts
→ PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	180	250	..	volts
Grid-No.1 Voltage.	-6	-8.5	..	volts
Amplification Factor	19	19		
Plate Resistance (Approx.)	8250	7600	..	ohms
Transconductance	2300	2500	..	μ mhos
Plate Current.	6.0	9.2	..	ma

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1 max.	megohm
--	--------	--------

Greater than 1 megohm.

For additional data, see RESISTANCE-COUPLED AMPLIFIER CHART at the front of this Section

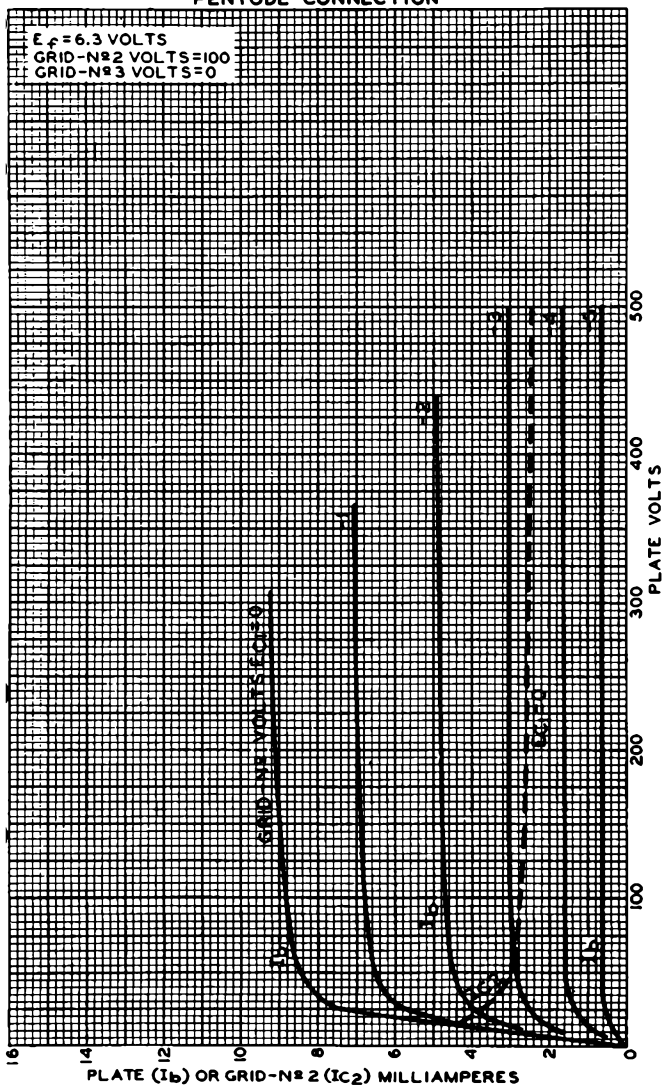
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6SJ7

6SJ7

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



OCT. 16, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4939R1

6SJ7

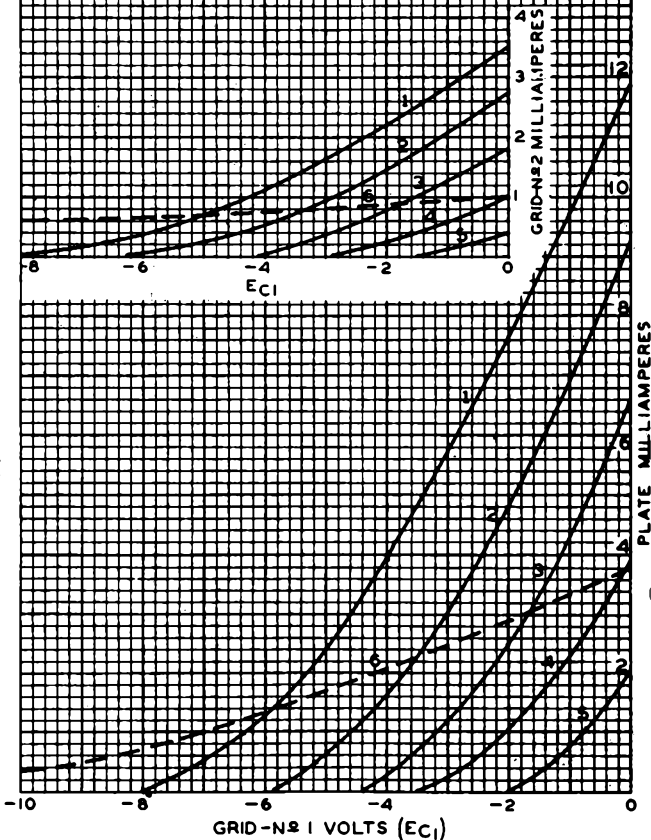


6SJ7

AVERAGE CHARACTERISTICS
PENTODE CONNECTION

$E_f = 6.3$ VOLTS PLATE VOLTS = 300 GRID-N#3 VOLTS = 0

CURVE	GRID-N#2 SUPPLY VOLTS	SERIES GRID-N#2 RESISTOR-OHMS
1	125	—
2	100	—
3	75	—
4	50	—
5	25	—
6	300	250000



MARCH 5, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6443R1



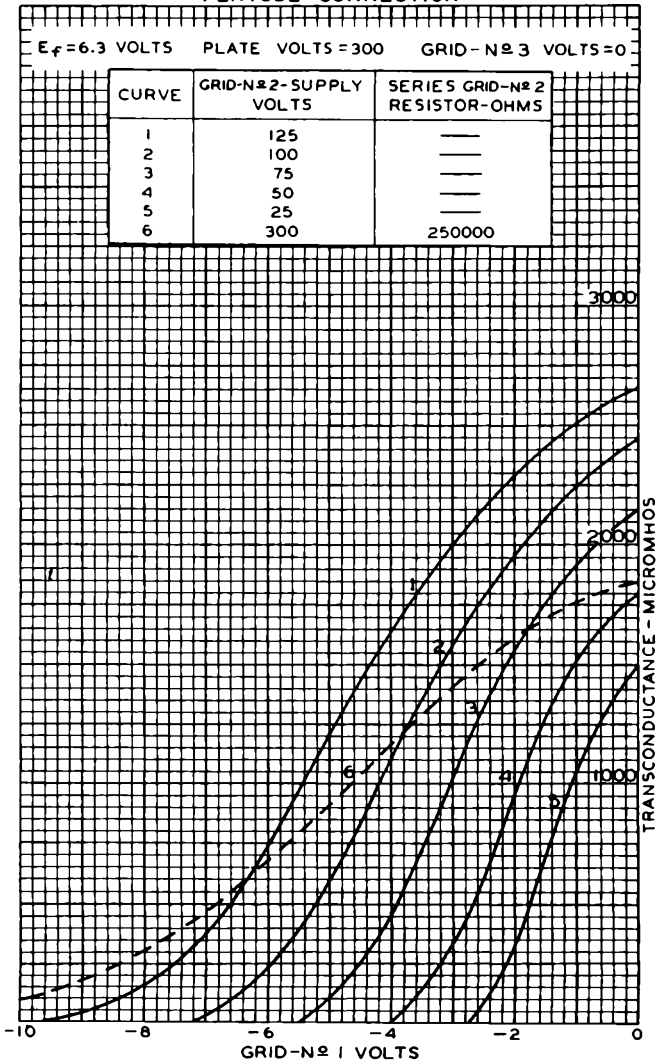
6SJ7

6SJ7

AVERAGE CHARACTERISTICS PENTODE CONNECTION

$E_f = 6.3$ VOLTS PLATE VOLTS = 300 GRID-Nº 3 VOLTS = 0

CURVE	GRID-Nº 2-SUPPLY VOLTS	SERIES GRID-Nº 2 RESISTOR-OHMS
1	125	—
2	100	—
3	75	—
4	50	—
5	25	—
6	300	250000



MARCH 5, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6444R1

65J7



6SJ7

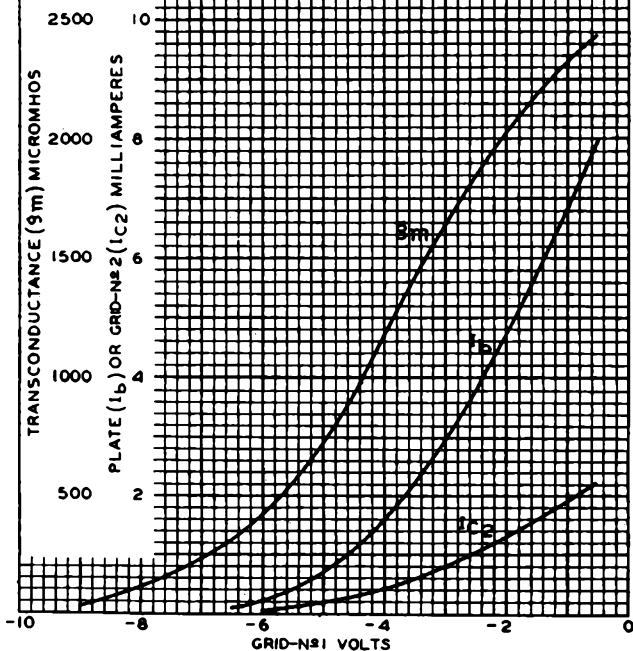
AVERAGE CHARACTERISTICS PENTODE CONNECTION

$E_f = 6.3$ VOLTS

GRID-N#3 VOLTS = 0

PLATE VOLTS = 250

GRID-N#2 VOLTS = 100



MARCH 5, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

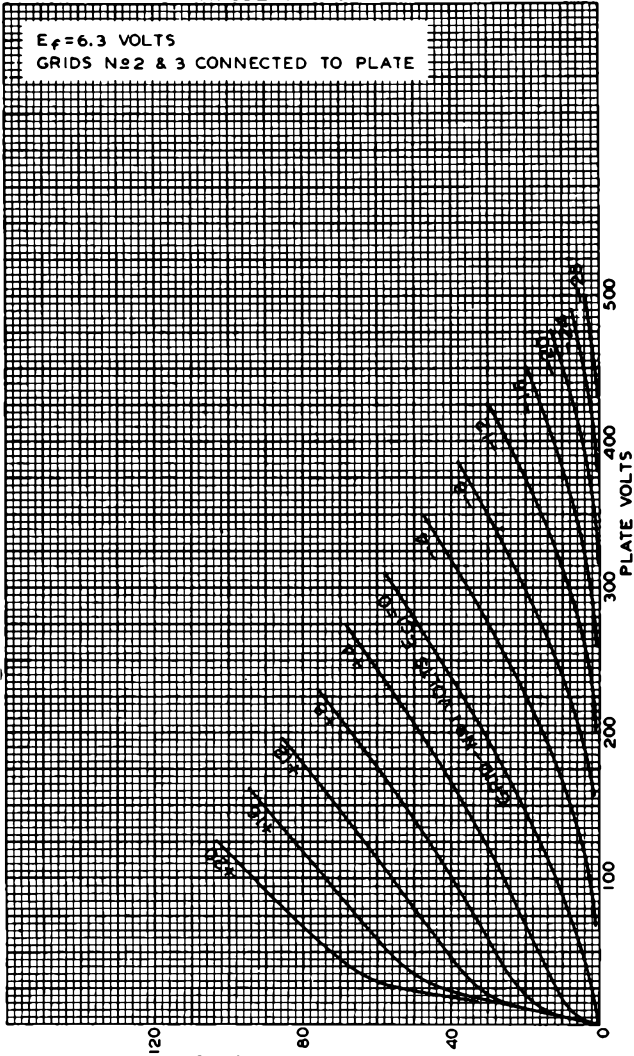
92CM-4937R1



6SJ7

6SJ7

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



MAY 12, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6409R1



6SK7
6SK7-GT/G

6SK7, 6SK7-GT/G

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
	<i>6SK7</i>	<i>6SK7-GT/G</i>
Direct Interelectrode Cap.	▲	
Grid to Plate	0.003 max.	0.005 max. μ f
Input	6.0	6.5 μ f
Output	7.0	7.5 μ f
Maximum Overall Length	2-5/8"	3-5/16"
Maximum Seated Height	2-1/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT-8	T-9
Base	{ Small Wafer Octal 8-Pin	{ Small Wafer Octal 8-Pin, Sleeve
Basing Designation	8N	GT-8N
Pin 1	{ 6SK7, Shell 6SK7-GT/G, Base Sleeve	Pin 4 - Grid
Pin 2 - Heater		Pin 5 - Cathode
Pin 3 - Suppressor		Pin 6 - Screen
Pin 4 - Grid		Pin 7 - Heater
Pin 5 - Cathode		Pin 8 - Plate
Mounting Position	BOTTOM VIEW	Any

Maximum And Minimum Ratings Are Design-Center Values

AMPLIFIER

Plate Voltage	300 max.	volts
Screen Voltage	125 max.	volts
Screen Supply Voltage	300 max.	volts
Grid Voltage	0 min.	volts
Plate Dissipation	4.0 max.	watts
Screen Dissipation	0.4 max.	watt
Typical Operation and Characteristics - Class A ₁ Amplifier:		
Plate	100	250 volts
Screen	100	100 volts
Grid	-1	-3 volts
Suppressor	Connected to cathode at socket	
Plate Res.	0.12	0.8 approx. megohm
Transconc.	2350	2000 μ hos
Grid Bias for		
transcond. of 10 μ hos	-35	-35 volts
Plate Cur.	13	9.2 ma.
Screen Cur.	4.0	2.6 ma.

■ In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ With shell connected to cathode.

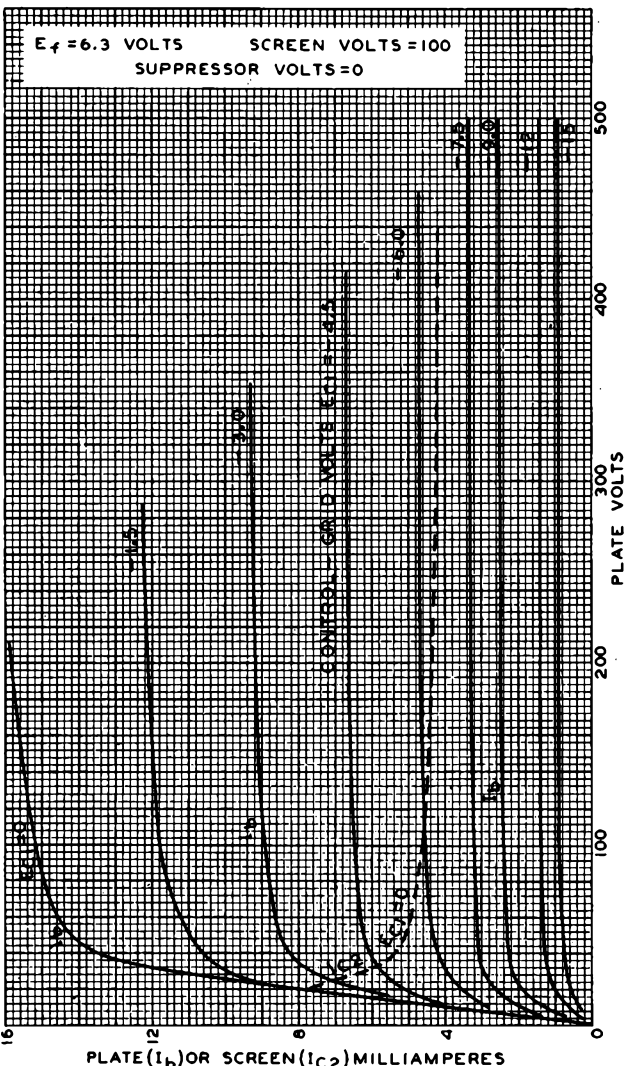
▲▲ With shield connected to cathode.

6SK7



6SK7

AVERAGE PLATE CHARACTERISTICS



JUNE 24, 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

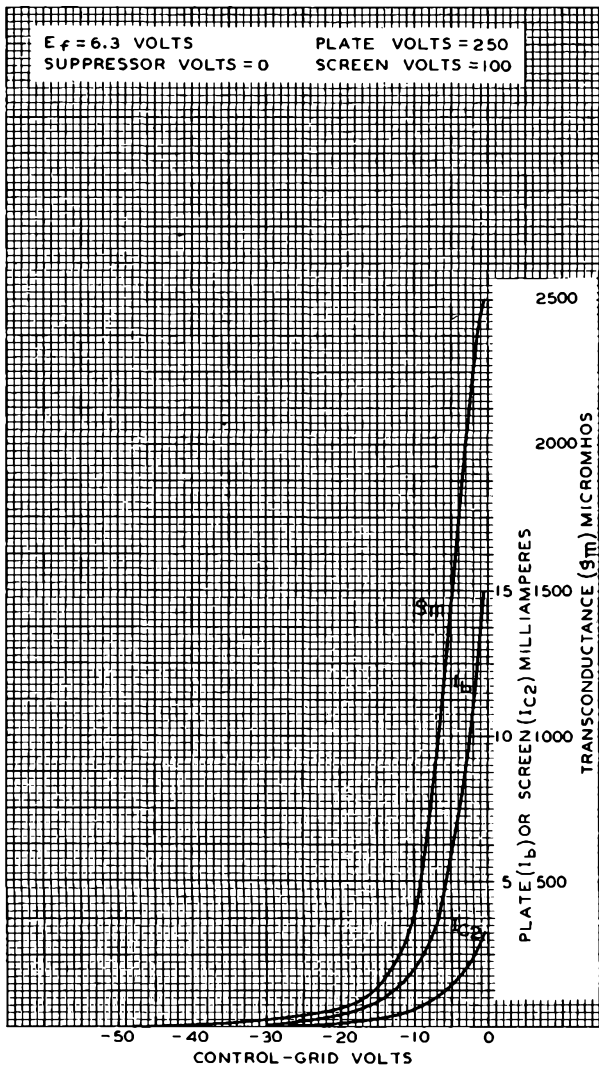
92C-4940



6SK7

6SK7

AVERAGE CHARACTERISTICS



JUNE 23, 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4938



6SL7-GT

6SL7-GT HIGH-MU TWIN TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances (Approx.):^o

	Unit No. 1	Unit No. 2	
Grid to plate	2.8	2.8	μf
Grid to cathode and heater	3.0	3.4	μf
Plate to cathode and heater	3.8	3.2	μf

Mechanical:

Mounting Position Any

Maximum Overall Length 3-5/16"

Maximum Seated Length 2-3/4"

Maximum Diameter 1-9/32" ←

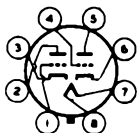
Bulb T-9 ←

Base Intermediate-Shell Octal 8-Pin (JEDEC No. B8-6) ←

or Short Intermediate-Shell Octal 8-Pin (JEDEC No. B8-46)

Basing Designation for BOTTOM VIEW 8B0

- Pin 1 - Grid of Unit No. 2
- Pin 2 - Plate of Unit No. 2
- Pin 3 - Cathode of Unit No. 2
- Pin 4 - Grid of Unit No. 1



- Pin 5 - Plate of Unit No. 1
- Pin 6 - Cathode of Unit No. 1
- Pin 7 - Heater
- Pin 8 - Heater

AMPLIFIER—Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts ←

GRID VOLTAGE:

Positive bias value 0 max. volts

PLATE DISSIPATION 1 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . . 90 max. volts

Heater positive with respect to cathode . . . 90 max. volts

Characteristics:

Plate Voltage 250 volts ←

^o with close-fitting shield (JEDEC No. 308) connected to cathode. ←

← Indicates a change.

6SL7-GT



6SL7-GT

HIGH-MU TWIN TRIODE

Grid Voltage	-2	volts
Amplification Factor	70	
Plate Resistance (Approx.)	44000	ohms
Transconductance	1600	μ mhos
Plate Current	2.3	ma

→ Typical Operation as Resistance-Coupled Amplifier:

*See RESISTANCE-COUPLED AMPLIFIER CHART No. 7
at front of this Section*

→ indicates a change.

NOV. 5, 1954

TUBE DIVISION

DATA

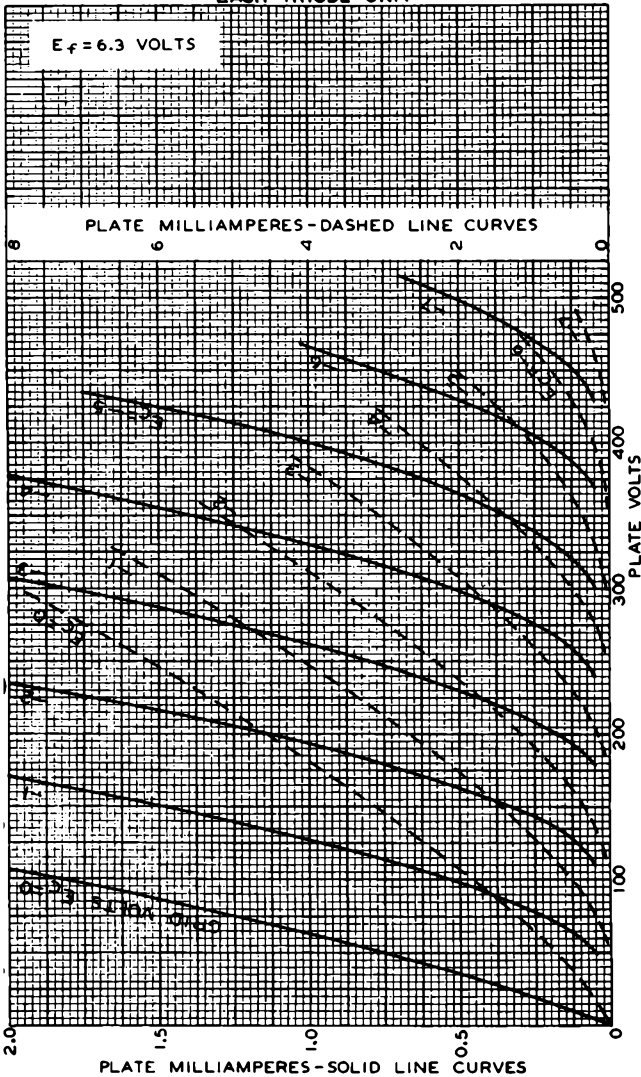
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6SL7-GT

6SL7-GT

AVERAGE PLATE CHARACTERISTICS
EACH TRIODE UNIT



JUNE 16, 1941

PLATE MILLIAMPERES - SOLID LINE CURVES

TUBE DIVISION

92CM-6298

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6SN7-GT

6SN7-GT

TWIN-TRIODE AMPLIFIER

Heater Coated Unipotential Cathodes
 Voltage 6.3 a-c or d-c volts
 Current 0.6 amp.

Direct Interelectrode Capacitances (Approx.):^o

	Triode Unit f_1	Triode Unit f_2	
Grid to Plate	3.8	4.0	μf
Grid to Cathode	2.8	3.0	μf
Plate to Cathode	0.8	1.2	μf

Maximum Overall Length 3-5/16"

Maximum Seated Height 2-3/4"

Maximum Diameter 1-5/16"

Bulb T-9

Base Intermediate Shell Octal 8-Pin

Pin 1 - Grid T_2 Pin 5 - Plate T_1

Pin 2 - Plate T_2 Pin 6 - Cathode T_1

Pin 3 - Cathode T_2 Pin 7 - Heater

Pin 4 - Grid T_1 Pin 8 - Heater

Mounting Position Any



BOTTOM VIEW (8BD)

For convenience, one triode unit is identified as f_1 ; the other as f_2 .

Maximum And Minimum Ratings Are Design-Center Values

AMPLIFIER—Each Unit

Plate Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	2.5 max. watts
D-C Heater-Cathode Potential	90 max. volts
Cathode Current	20 max. ma.

Characteristics — Class A_1 Amplifier:

Plate	90	250	volts
Grid #	0	-8	volts
Amp. Fact.	20	20	
Plate Res.	670 Ω	7700	ohms
Transcond.	300 μ	2600	μmhos
Plate Cur.	10	9	ma.

Typical Operation with Resistance Coupling:

Same as for Type 6F8-G in RESISTANCE-COUPLED AMPLIFIER CHAR

^o with no external shield.

* under maximum rated conditions, the d-c resistance in the grid circuit should not exceed 1.0 megohm per unit.

The curves under Type 6J5 also apply to each unit of the 6SN7-GT.

← Indicates a change.

APRIL 1, 1944

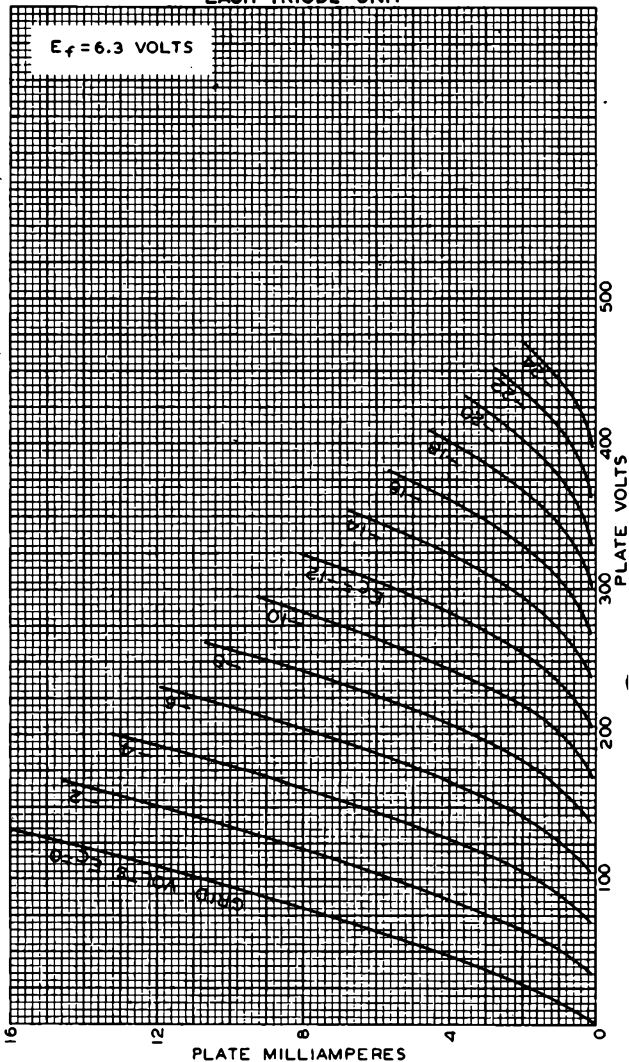
RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6SN7-GT



6SN7-GT AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



FEB. 21, 1941

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6257



6SN7-GTA

MEDIUM-MU TWIN TRIODE

6SN7-GTA

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.6	amp

Direct Interelectrode Capacitances (With no external shield):

	Unit No.1	Unit No.2	
Grid to plate	4	3.8	$\mu\mu\text{f}$
Grid to cathode and heater . .	2.2	2.6	$\mu\mu\text{f}$
Plate to cathode and heater . .	0.7	0.7	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	90	250	volts
Grid Voltage	0	-8	volts
Amplification Factor	20	20	volts
Plate Resistance (Approx.) . . .	6700	7700	ohms
Transconductance	3000	2600	μmhos
Plate Current	10	9	ma
Plate Current for grid voltage of -12.5 volts	-	1.3	ma
Grid Voltage (Approx.) for plate current of 10 μamp	-7	-18	volts

Mechanical:

Mounting Position Any

Maximum Overall Length 3-5/16"

Maximum Seated Length 2-3/4"

Maximum Diameter 1-9/32"

Bulb T-9

Base Short Intermediate-Shell Octal 8-Pin
with External Barriers (JETEC No. B8-58)

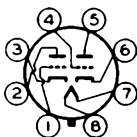
Basing Designation for BOTTOM VIEW 8B0

Pin 1 - Grid of
Unit No.2

Pin 2 - Plate of
Unit No.2

Pin 3 - Cathode of
Unit No.2

Pin 4 - Grid of
Unit No.1



Pin 5 - Plate of
Unit No.1

Pin 6 - Cathode of
Unit No.1

Pin 7 - Heater

Pin 8 - Heater

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	450 max.	volts
CATHODE CURRENT	20 max.	ma

6SN7-GTA



6SN7-GTA

MEDIUM-MU TWIN TRIODE

PLATE DISSIPATION:

Either plate	5 max.	watts
Both plates (Both units operating) . . .	7.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation	1 max.	megohm
------------------------------------	--------	--------

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No. 29
at front of this Section

HORIZONTAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	450 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE [♠]	600 max.	volts

CATHODE CURRENT:

Peak	300 max.	ma
Average	20 max.	ma

PLATE DISSIPATION:

Either plate	5 max.	watts
Both plates (Both units operating) . . .	7.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or cathode-bias operation	2.2 max.	megohms
--	----------	---------

VERTICAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	450 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE [♠]	400 max.	volts

CATHODE CURRENT:

Peak	70 max.	ma
Average	20 max.	ma

[▲], [□], [♠], [#]: See next page.



6SN7-GTA

6SN7-GTA

MEDIUM-MU TWIN TRIODE

PLATE DISSIPATION:

Either plate	5 max.	watts
Both plates (Both units operating) . . .	7.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or cathode-bias operation	2.2 max.	megohms
--	----------	---------

VERTICAL DEFLECTION AMPLIFIER

Values are for Each Unit

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	450 max.	volts
----------------------------	----------	-------

PEAK POSITIVE-PULSE PLATE VOLTAGE [#] (Absolute Maximum)	1500 [■] max.	volts
--	------------------------	-------

PEAK NEGATIVE-PULSE GRID VOLTAGE	250 max.	volts
--	----------	-------

CATHODE CURRENT:

Peak	70 max.	ma
Average	20 max.	ma

PLATE DISSIPATION:

Either plate	5 max.	watts
Both plates (Both units operating) . . .	7.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation	2.2 max.	megohms
--------------------------------------	----------	---------

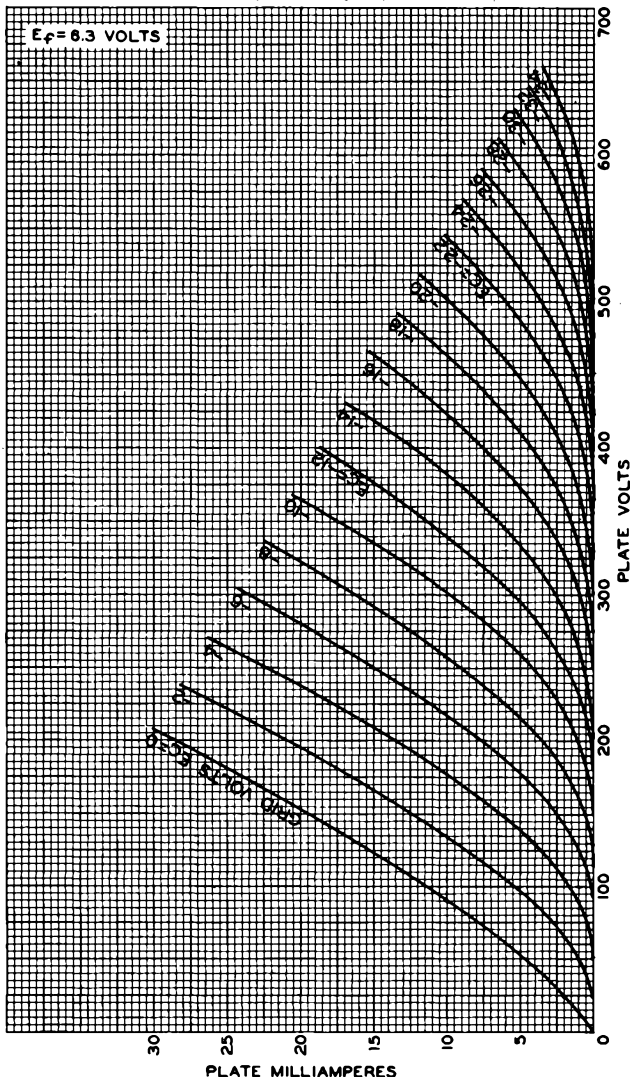
- [▲] The dc component must not exceed 100 volts.
- [□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.
- [♣] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.
- [#] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.
- [■] under no circumstances should this absolute value be exceeded.

6SN7-GTA



6SN7-GTA

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



APRIL 28, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

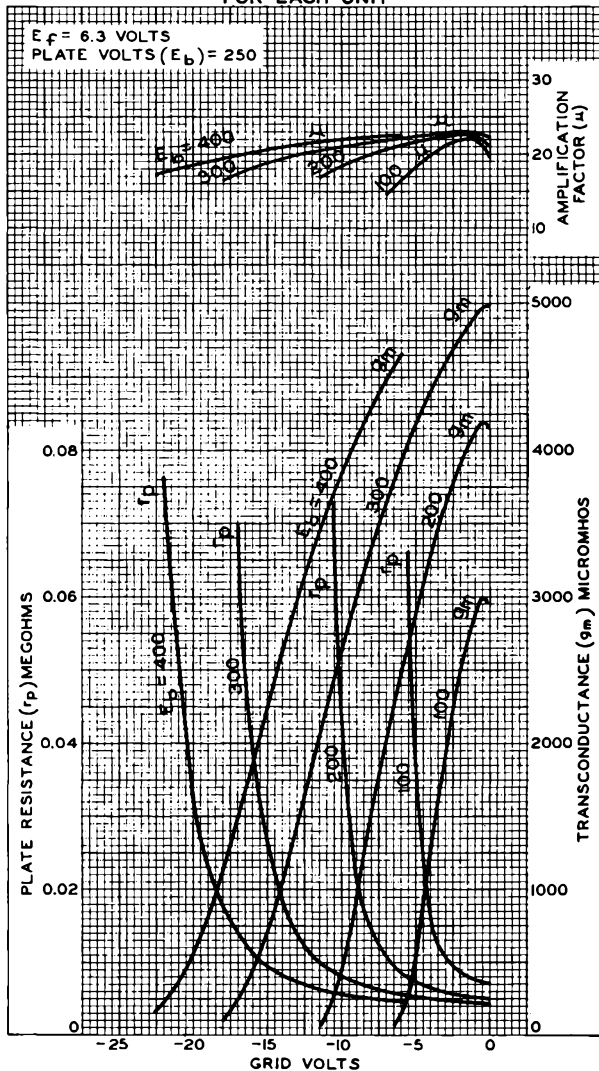
92CM-8322



6SN7-GTA

AVERAGE CHARACTERISTICS FOR EACH UNIT

6SN7-GTA



OCT. 14, 1953

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8122



6SN7-GTB

6SN7-GTB

MEDIUM-MU TWIN TRIODE

*Intended for use in equipment having
series heater-string arrangement*

The 6SN7-GTB is the same as the 6SN7-GTA except for the following item:

Heater, for Unipotential Cathodes:

Warm-up time (Average) . 11sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.



6SQ7
6SQ7-GT/G

6SQ7, 6SQ7-GT/G

DUPLEX-DIODE HIGH-MU TRIODE

Heater	Coated Unipotential Cathode										
Voltage	6.3	a-c or d-c volts									
Current	0.3	amp.									
Direct Interelectrode Cap.	6SQ7	6SQ7-GT/G									
Triode Unit:	<table border="1"> <tr> <td>Grid to Plate</td> <td>1.6</td> <td>1.8 μf</td> </tr> <tr> <td>Grid to Cathode</td> <td>3.2</td> <td>4.2 μf</td> </tr> <tr> <td>Plate to Cathode</td> <td>3.0</td> <td>3.4 μf</td> </tr> </table>		Grid to Plate	1.6	1.8 μf	Grid to Cathode	3.2	4.2 μf	Plate to Cathode	3.0	3.4 μf
Grid to Plate	1.6	1.8 μf									
Grid to Cathode	3.2	4.2 μf									
Plate to Cathode	3.0	3.4 μf									
Maximum Overall Length	2-5/8"	3-5/16"									
Maximum Seated Height	2-1/16"	2-3/4"									
Maximum Diameter	1-5/16"	1-5/16"									
Bulb	Metal Shell, MT-8	T-9									
Base	{ Small Wafer Octal 8-Pin	{ Small Wafer Octal 8-Pin, Sleeve GT-80									
Basing Designation	8Q										
Pin 1 { 6SQ7, Shell 6SQ7-GT/G, Base Sleeve		Pin 4 - Diode Plate #2									
Pin 2 - Triode Grid		Pin 5 - Diode Plate #1									
Pin 3 - Cathode		Pin 6 - Triode Plate									
Pin 4 - Diode Plate #2		Pin 7 - Heater									
Pin 5 - Diode Plate #1	Pin 8 - Heater										
Pin 6 - Triode Plate											
Pin 7 - Heater											
Pin 8 - Heater											
Mounting Position	BOTTOM VIEW	Any									

Maximum Ratings Are Design-Center Values

TRIODE UNIT

Plate Voltage	300 max. volts
D-C Heater-Cathode Potential	100 max. volts

Characteristics - Class A₁ Amplifier:

Heater	6.3	6.3	volts
Plate	100	250	volts
Grid	-1	-2	volts
Amp. Fact.	100	100	
Plate Res.	110000	91000	ohms
Transcond.	900	1100	μmhos
Plate Cur.	0.4	0.9	ma.

Typical Operation—Resistance-Coupled Amplifier:

Same as Type 75 in RESISTANCE-COUPLED AMPLIFIER CHART.

DIODE UNITS—Two

Consideration of these units is given under Type 85. Circuits will be similar to those shown for Type 55 with fixed bias. Diode biasing of the triode unit of the 6SQ7 or 6SQ7-GT/G is not suitable. Diode curves under Type 6B7 apply to the 6SQ7 and 6SQ7-GT/G.

- ▲ with shell connected to cathode. values are approximate.
- with no external shield. values are approximate.

The curve under Type 75 also applies to the 6SQ7 and the 6SQ7-GT/G.

← Indicates a change.

DEC. 1, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

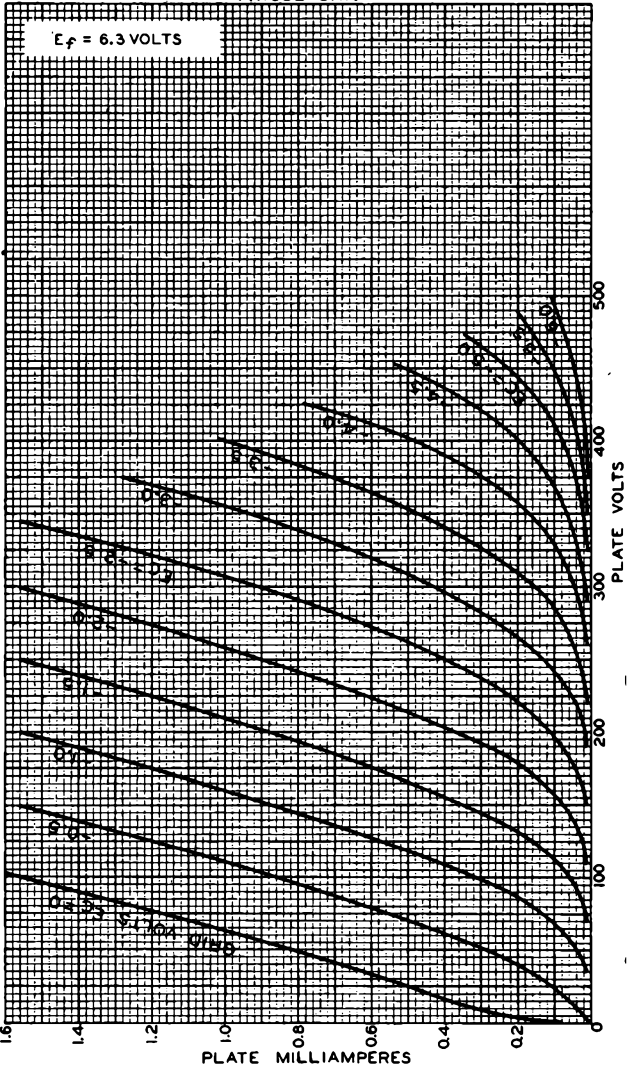
DATA

6SQ7



6SQ7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



DEC. 14, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

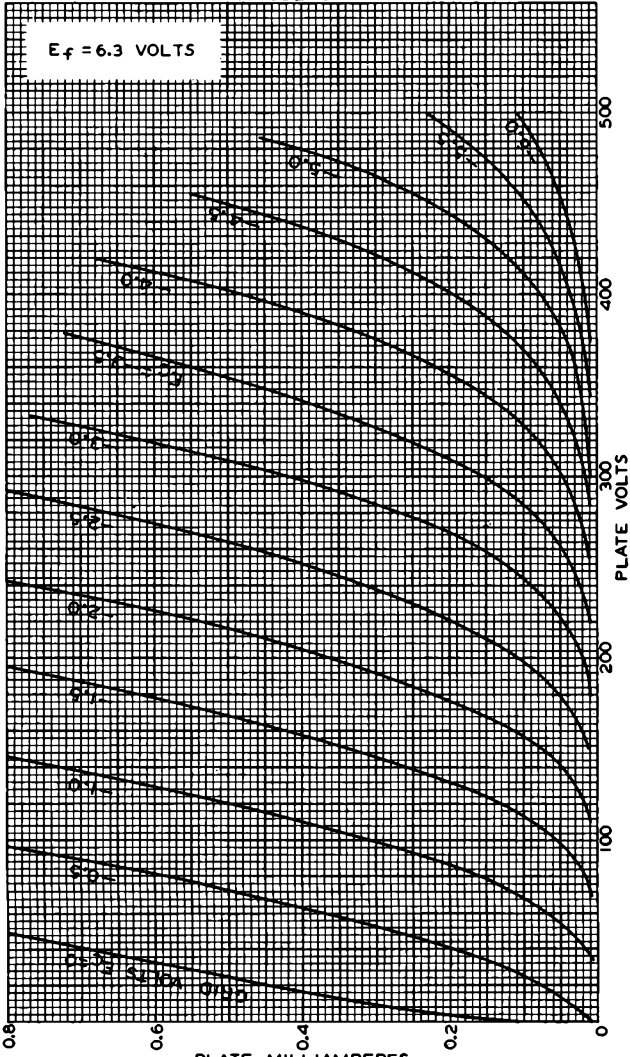
92CM-4975R2



6SQ7

6SQ7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



AUG. 13, 1941

PLATE MILLIAMPERES
RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6310



6SR7

6SR7

**DUPLEX-DIODE TRIODE**

SINGLE-ENDED METAL TYPE

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances—Triode Unit: [○]		
Grid to Plate	2.4	μf
Grid to Cathode	3.6	μf
Plate to Cathode	2.8	μf
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal 8-Pin
Pin 1—Shell		Pin 5—Diode Plate #1
Pin 2—Triode Grid		Pin 6—Triode Plate
Pin 3—Cathode		Pin 7—Heater
Pin 4—Diode Plate #2		Pin 8—Heater
Mounting Position		Any



BOTTOM VIEW (8Q)

TRIODE UNIT - Class A₁ Amplifier

Plate Voltage	250 max.	volts
Plate Dissipation	2.5 max.	watts
<i>Typical Operation with Transformer Coupling:</i>		
Plate	250	volts
Grid	-9	volts
Amp. Fact.	16	
Plate Res.	8500	ohms
Transconductance	1900	μmhos
Plate Cur.	9.5	ma.
Load Res.	10000	ohms
Power Output	300	mw

Typical Operation with Resistance Coupling:

See RESISTANCE-COUPLED AMPLIFIER CHART, Type 6R7.

DIODE UNITS - Two

For consideration of these units, see Type 85. Circuits will be similar to those shown for Type 55 with fixed bias. Diode biasing of the triode unit of the 6SR7 is not suitable. Diode curves under Type 6B7 apply to the 6SR7.

[■] In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible.

[○] With shell connected to cathode. values are approximate.

An additional curve applying to the 6SR7 is shown under Type 6R7.

April 15, 1940

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

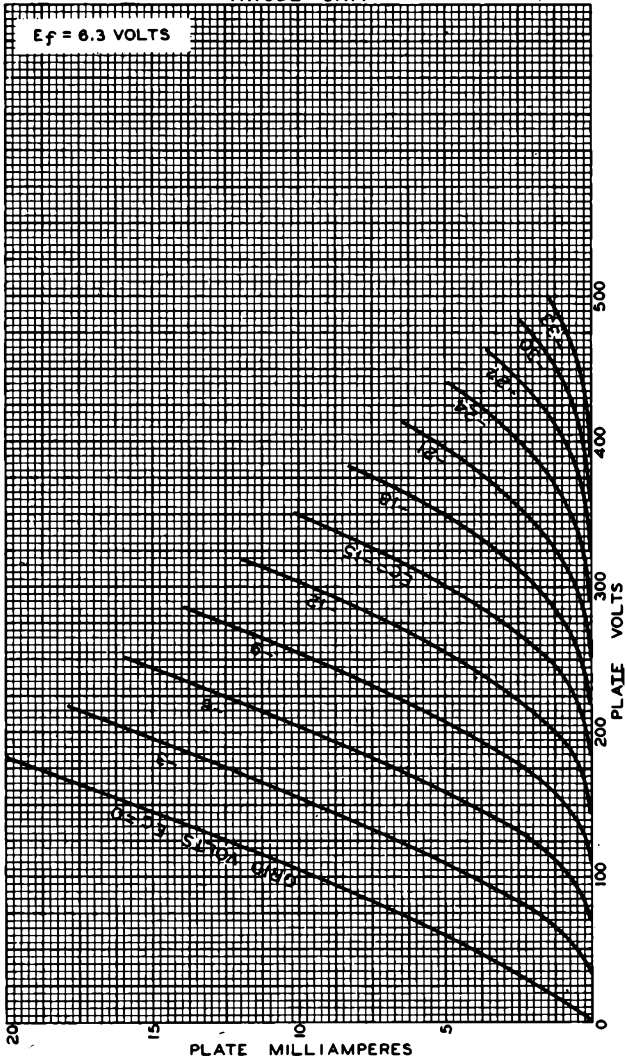
TENTATIVE DATA

6SR7



6SR7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



JAN. 14, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6141



6SS7



6SS7

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

SINGLE-ENDED METAL TYPE

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances: ^o		
Grid to Plate	0.004 max.	μuf
Input	5.5	μuf
Output	7.0	μuf
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal, 8-Pin
Pin 1 - Shell		Pin 5 - Cathode
Pin 2 - Heater		Pin 6 - Screen
Pin 3 - Suppressor		Pin 7 - Heater
Pin 4 - Grid		Pin 8 - Plate
Mounting Position		Any



BOTTOM VIEW (8N)

AMPLIFIER

Plate Voltage		300 max.	volts
Screen Voltage		100 max.	volts
Screen Supply Voltage		300 max.	volts
Grid Voltage		0 min.	volts
Plate Dissipation		2.25 max.	watts
Screen Dissipation		0.35 max.	watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>			
Plate Voltage	100	250	volts
Screen Voltage	100	100	volts
Grid Voltage	-1	-3	volts
Suppressor	Connected to cathode at socket		
Plate Res.	0.12	1.0 approx.	megohm
Transcond.	1930	1850	μmhos
Grid Bias for Transcond.			
of 10 μmhos (approx.)	-35	-35	volts
Plate Cur.	12.2	9	ma.
Screen Cur.	3.1	2	ma.

[■] In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

^o With shell connected to cathode.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

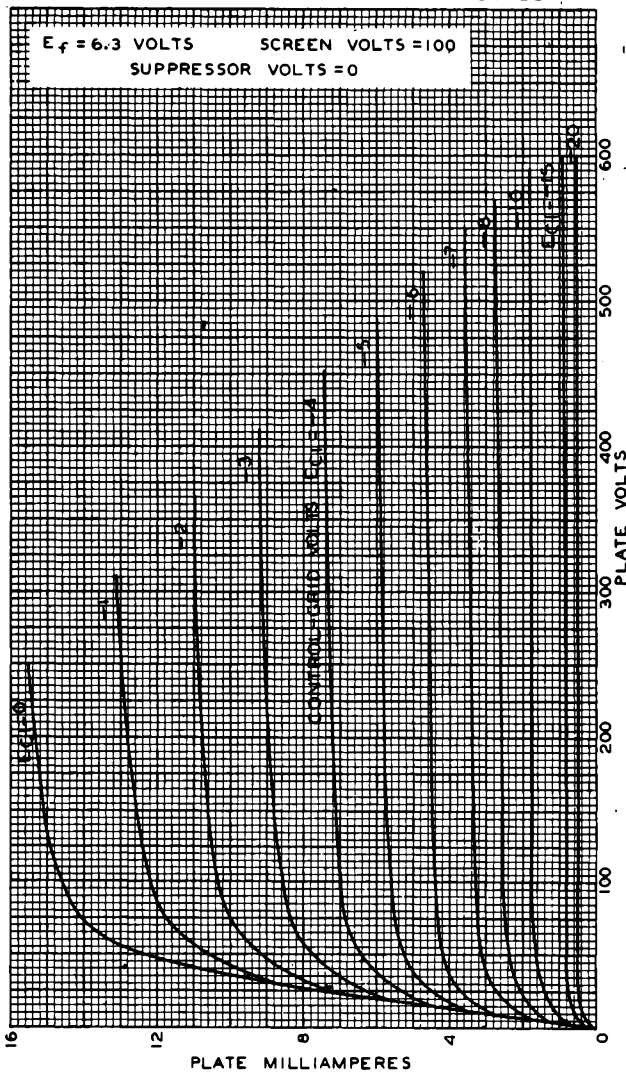
TENTATIVE DATA

6SS7



6SS7

AVERAGE PLATE CHARACTERISTICS



APR. 3, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6270



DUPLEX-DIODE TRIODE

SINGLE-ENDED METAL TYPE

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances (Approx.): ^o		
<i>Triode Unit:</i>		
Grid to Plate	1.5	μf
Grid to Cathode	2.8	μf
Plate to Cathode	3.0	μf
Maximum Overall Length		2-5/8"
Maximum Seated Height		2-1/16"
Maximum Diameter		1-5/16"
Bulb		Metal Shell, MT-8
Base		Small Wafer Octal 8-Pin
Pin 1 - Shell		Pin 5 - Diode Plate #1
Pin 2 - Triode Grid		Pin 6 - Triode Plate
Pin 3 - Cathode		Pin 7 - Heater
Pin 4 - Diode Plate #2		Pin 8 - Heater
Mounting Position	BOTTOM VIEW (8Q)	Any
<u>TRIODE UNIT</u>		
Plate Voltage		250 max. volts
Plate Dissipation		2.5 max. watts
<i>Characteristics - Class A₁ Amplifier:</i>		
Plate		250 volts
Grid		-9 volts
Amp. Fact.		16
Plate Res.		8500 ohms
Transcond.		1900 μmhos
Plate Cur.		9.5 ma.
<u>DIODE UNITS - Two</u>		
For consideration of these units, see Type 85. Circuits will be similar to those shown for Type 55 with fixed bias. Diode biasing of the triode unit of the 6ST7 is not suitable. Diode curves under Type 6B7 apply to the 6ST7.		
^o With shell connected to cathode. [■] In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.		

Dec. 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

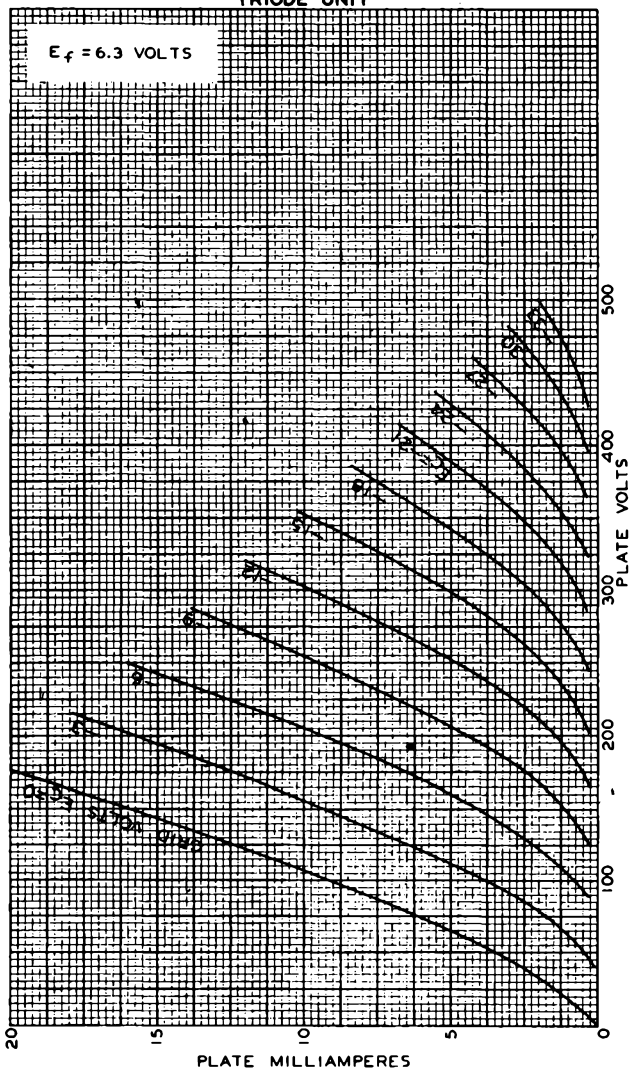
TENTATIVE DATA

6ST7



6ST7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



DEC. 4, 1941

PLATE MILLIAMPERES
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6342



6S27

6S27

DUPLEX-DIODE HIGH-MU TRIODE

SINGLE-ENDED METAL TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.15 amp.

Direct Interelectrode

Capacitances-Triode Unit (Approx.):^o

Grid to Plate 1.1 μmf

Grid to Cathode 2.6 μmf

Plate to Cathode 2.8 μmf

^o With shell connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-1/16"

Maximum Diameter 1-5/16"

Bulb MT-8G

Base Small Wafer Octal 8-Pin

Basing Designation for BOTTOM VIEW 8Q

Pin 1-Shell

Pin 2-Triode Grid

Pin 3-Cathode

Pin 4-Diode Plate

No. 2



Pin 5-Diode Plate

No. 1

Pin 6-Triode Plate

Pin 7-Heater

Pin 8-Heater

TRIODE UNIT

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Characteristics - Class A₁ Amplifier:

Plate Voltage 100 250 volts

Grid Voltage -1 -3 volts

Amplification Factor 70 70

Plate Resistance (Approx.) 61000 58700 ohms

Transconductance 1150 1200 μmhos

Plate Current 0.8 1 ma.

Typical Operation - Resistance-Coupled Amplifier:

Same as type 6Q7 in RESISTANCE-COUPLED AMPLIFIER CHART.

DIODE UNITS - Two

Consideration of these units, including typical circuits and diode curves is given at the front of this section. Diode biasing of the triode unit of the 6S27 is not suitable.

APRIL 1, 1946

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

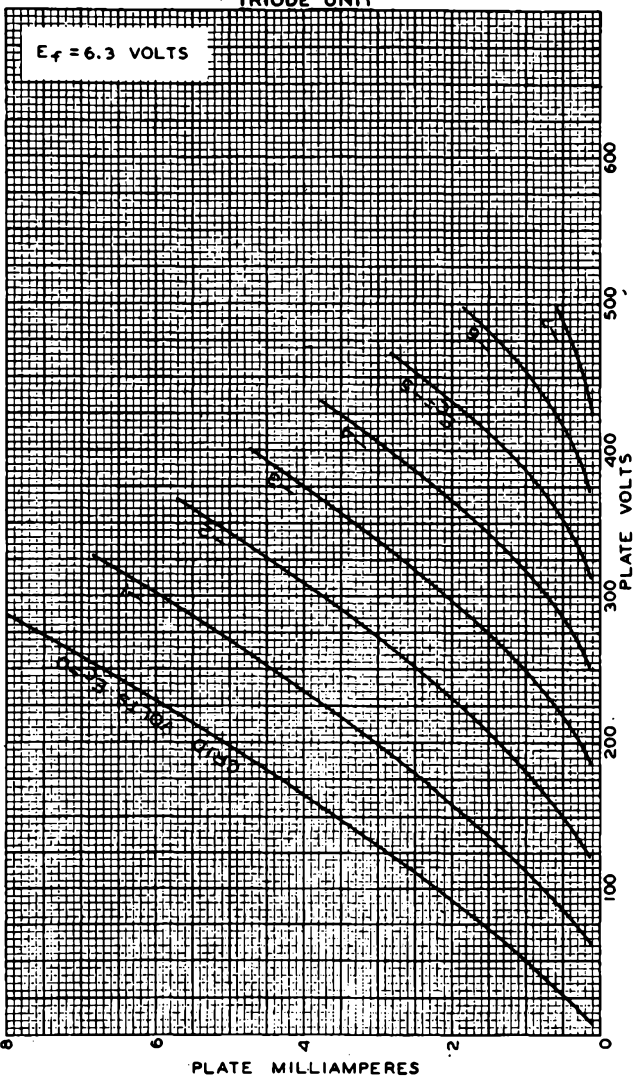
TENTATIVE DATA

6SZ7



6SZ7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



OCT. 3, 1945

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6602



6T4

MEDIUM-MU TRIODE

7-PIN MINIATURE TYPE

For UHF TV service

6T4

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.225	amp

Direct Interelectrode Capacitances (Approx.):

	Without External Shield ^o	With External Shield ^o	
Grid to plate	1.7	1.7	μmf
Grid to cathode and heater	2.6	3.2	μmf
Plate to cathode and heater	0.40	2.0	μmf
Heater to cathode	3.0	3.0 [*]	μmf
Grid to cathode	2.4	2.4 [*]	μmf
Plate to cathode	0.24	0.22	μmf

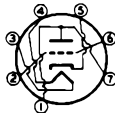
Characteristics, Class A₁ Amplifier:

Plate-Supply Voltage	80	volts
Cathode Resistor	150	ohms
Amplification Factor	13	
Transconductance	7000	μmhos
Plate Current	18	ma
Grid Voltage (Approx.) for plate current of 50 μamp	-15	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	1-3/4"
Maximum Seated Length	1-1/2"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/8" \pm 3/32"
Maximum Diameter	3/4"
Dimensional Outline	See General Section
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No. E7-1)
Basing Designation for BOTTOM VIEW	7DK

- Pin 1 - Plate
- Pin 2 - Grid
- Pin 3 - Heater
- Pin 4 - Heater



- Pin 5 - Cathode
- Pin 6 - Grid
- Pin 7 - Plate

OSCILLATOR IN UHF TELEVISION RECEIVERS

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	200 max.	volts
GRID CURRENT	8 max.	ma

- ^o with external shield JEDEC No. 316 connected to cathode, except as noted.
- ^{*} with external shield JEDEC No. 316 connected to ground.

6T4



6T4

MEDIUM-MU TRIODE

CATHODE CURRENT.	30	max.	ma
PLATE DISSIPATION.	3.5	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode .	50	max.	volts
Heater positive with respect to cathode .	50 [▲]	max.	volts

▲ The dc component must not exceed 25 volts.



6T8

TRIPLE DIODE—HIGH-MU TRIODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage.	6.3	. . . . .	ac or dc volts
Current.	0.45	. . . . .	amp

Direct Interelectrode Capacitances:^o

Triode unit:			
Grid to plate.	1.8		μμf
Grid to cathode & internal shield (pin 7), and heater.	1.6		μμf
Plate to cathode & internal shield (pin 7), and heater.	1.1		μμf
Diode-No.1 plate to cathode & internal shield (pin 7), and heater	3.8		μμf
Diode-No.2 plate to cathode & internal shield (pin 3), and heater	4.5		μμf
Diode-No.3 plate to cathode & internal shield (pin 7), and heater	3.8		μμf
Diode-No.2 cathode & internal shield (pin 3) to all other electrodes.	8.5		μμf
Triode grid to any diode plate	0.035 max.		μμf

Characteristics, Class A₁ Amplifier (Triode Unit):

Plate Voltage.	100	250	volts
Grid Voltage	-1	-3	volts
Amplification Factor	70	70	
Plate Resistance (Approx.)	54000	58000	ohms
Transconductance	1300	1200	μmhos
Plate Current.	0.8	1	ma

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length.	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip).	1-9/16" ± 3/32"
Maximum Diameter	7/8"
Dimensional Outline.	See General Section
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)

Basing Designation for BOTTOM VIEW 9E

Pin 1 - Diode-No.3 Plate		Pin 6 - Diode-No.1 Plate
Pin 2 - Diode-No.2 Plate		Pin 7 - Cathode of Triode & Diodes No.1 & No.3, Internal Shield
Pin 3 - Diode-No.2 Cathode, Internal Shield		Pin 8 - Triode Grid
Pin 4 - Heater		Pin 9 - Triode Plate
Pin 5 - Heater		

^o without external shield.

← Indicates a change.

6T8



6T8

TRIPLE DIODE—HIGH-MU TRIODE

TRIODE UNIT — AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

→ PLATE VOLTAGE.	300 max.	volts
→ GRID VOLTAGE:		
Positive bias value.	0 max.	volts
→ PLATE DISSIPATION.	1 max.	watt
→ PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation as Resistance-Coupled Amplifier:

See *RESISTANCE-COUPLED AMPLIFIER CHART No. 7*
at front of this Section

DIODE UNITS - Three

Maximum Ratings, Design-Center Values:

→ PLATE CURRENT (For each diode)	5 max.	ma
→ PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Diode Considerations:

Diode No.1, diode No.3, and the triode have a common cathode, and diode No.2 has a separate cathode. Diode No.2 (pins 2 & 3) and diode No.3 (pins 1 & 7) are recommended for use in FM detector applications, while diode No.1 (pins 6 & 7) is recommended for use as an AM detector.

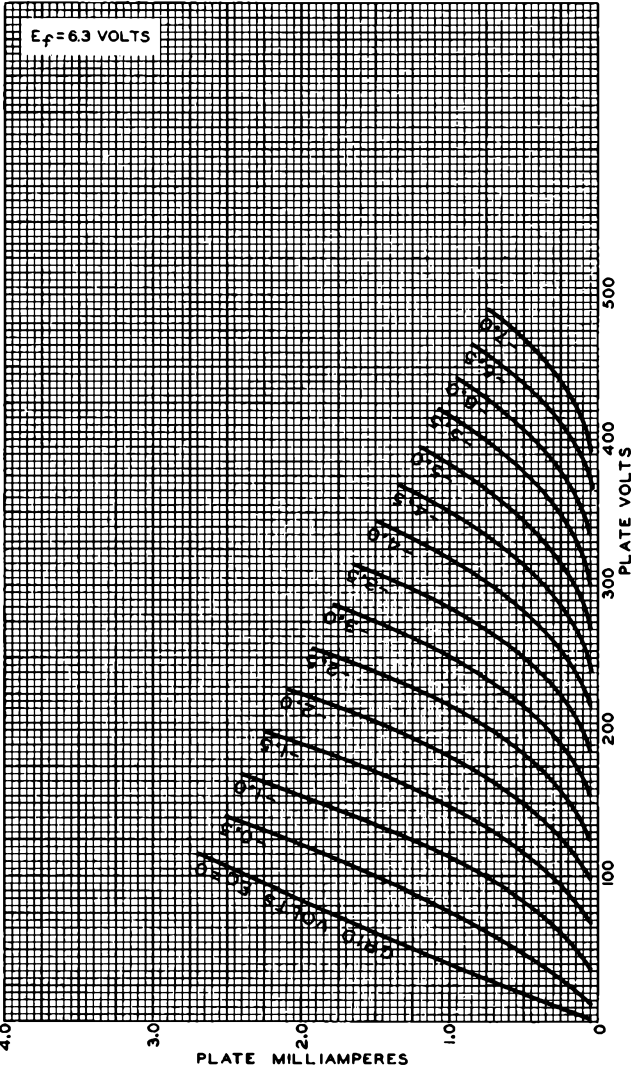
→ Indicates a change.



6T8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

6T8



AUG. 19, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7063



6T8-A

TRIPLE DIODE-HIGH-MU TRIODE

9-PIN MINIATURE TYPE

With heater having controlled warm-up time

6T8-A

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	. . . . .	ac or dc volts
Current	0.45 ± 6%	. . . . .	amp
Warm-up time (Average).	11	. . . . .	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield*	
Triode Unit:			
Grid to plate	1.7	1.7	μμf
Grid to cathode & internal shield (pin 7), and heater.	1.6	1.7	μμf
Plate to cathode & internal shield (pin 7), and heater.	1.2	2.4	μμf
Diode Units:			
Diode-No.1 plate to cathode & internal shield (pin 7), and heater.	3.8	3.8	μμf
Diode-No.2 plate to cathode & internal shield (pin 3), and heater.	3.8	3.8 [•]	μμf
Diode-No.3 plate to cathode & internal shield (pin 7), and heater.	3.4	3.6	μμf
Diode-No.2 cathode & internal shield (pin 3) to all other electrodes, and heater.	7.5	8.5 [■]	μμf
Triode grid to any diode plate	0.034 max.	0.034 max.	μμf

Characteristics, Class A₁ Amplifier (Triode Unit):

Plate Voltage	100	250	volts
Grid Voltage.	-1	-3	volts
Amplification Factor.	70	70	
Plate Resistance (Approx.).	54000	58000	ohms
Transconductance.	1300	1200	μmhos
Plate Current	0.8	1	ma

Mechanical:

Operating Position.	Any
Maximum Overall Length.	2-3/16"

* . • ■ : See next page.

6T8-A



6T8-A

TRIPLE DIODE—HIGH-MU TRIODE

Maximum Seated Length 1-15/16"
 Length, Base Seat to Bulb Top (Excluding tip) . . . 1-9/16" \pm 3/32"
 Diameter 0.750" to 0.875"
 Dimensional Outline See General Section
 Bulb T6-1/2
 Base Small-Button Noval 9-Pin (JEDEC No.E9-1)

Basing Designation for BOTTOM VIEW. 9E

Pin 1—Diode-No.3

Plate

Pin 2—Diode-No.2

Plate

Pin 3—Diode-No.2

Cathode,

Internal

Shield

Pin 4—Heater

Pin 5—Heater



Pin 6—Diode-No.1

Plate

Pin 7—Cathode of

Triode &

Diodes No.1

& No.3,

Internal

Shield

Pin 8—Triode Grid

Pin 9—Triode Plate

TRIODE UNIT — AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values.

PLATE VOLTAGE 330 max. volts

GRID VOLTAGE:

Positive-bias value 0 max. volts

PLATE DISSIPATION 1.1 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 100 max. volts

Heater positive with respect to cathode. 100 max. volts

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No.7
 at front of this Section

DIODE UNITS — Three

Maximum Ratings, Design-Maximum Values:

PLATE CURRENT (For each diode) 5.5 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 100 max. volts

Heater positive with respect to cathode. 100 max. volts

Characteristics (Each Unit):

Plate Voltage 5 volts

Plate Current 20 ma

Diode Considerations:

Diode No.1, diode No.3, and the triode have a common cathode, and diode No.2 has a separate cathode. Diode No.2 (pins 2 & 3) and diode No.3 (pins 1 & 7) are recommended for use in FM detector applications, while diode No.1 (pins 6 & 7) is recommended for use as an AM detector.



6T8-A

6T8-A

TRIPLE DIODE—HIGH-MU TRIODE

- With external shield JEDEC No.315 connected to pin 7 except as noted.
- With external shield JEDEC No.315 connected to pin 3.
- With external shield JEDEC No.315 connected to pins 4 and 5.

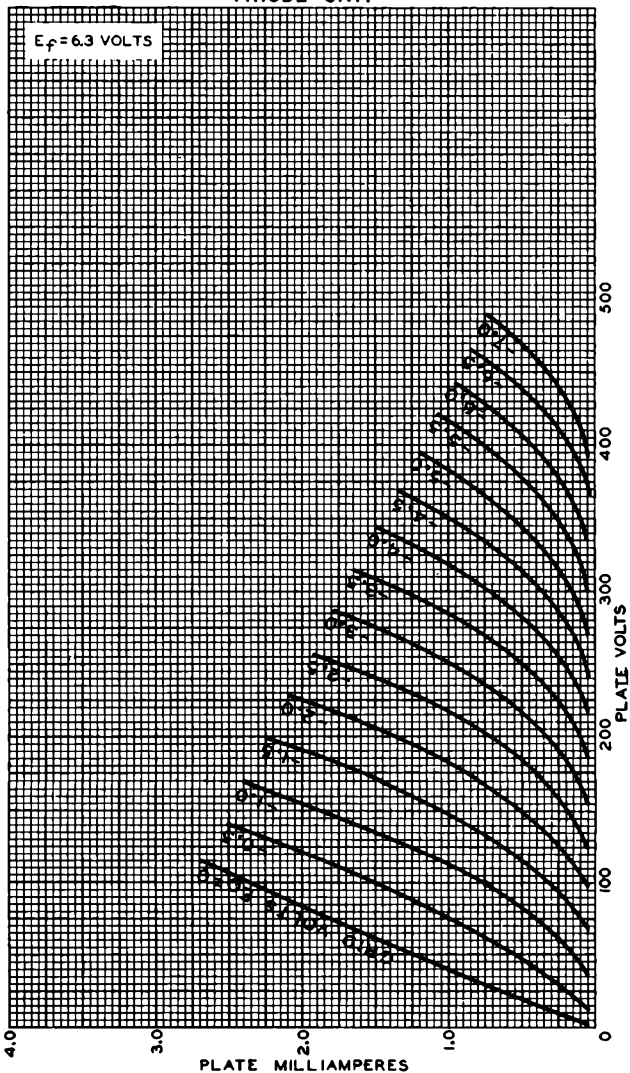
6T8-A



6T8-A

AVERAGE PLATE CHARACTERISTICS

TRIODE UNIT

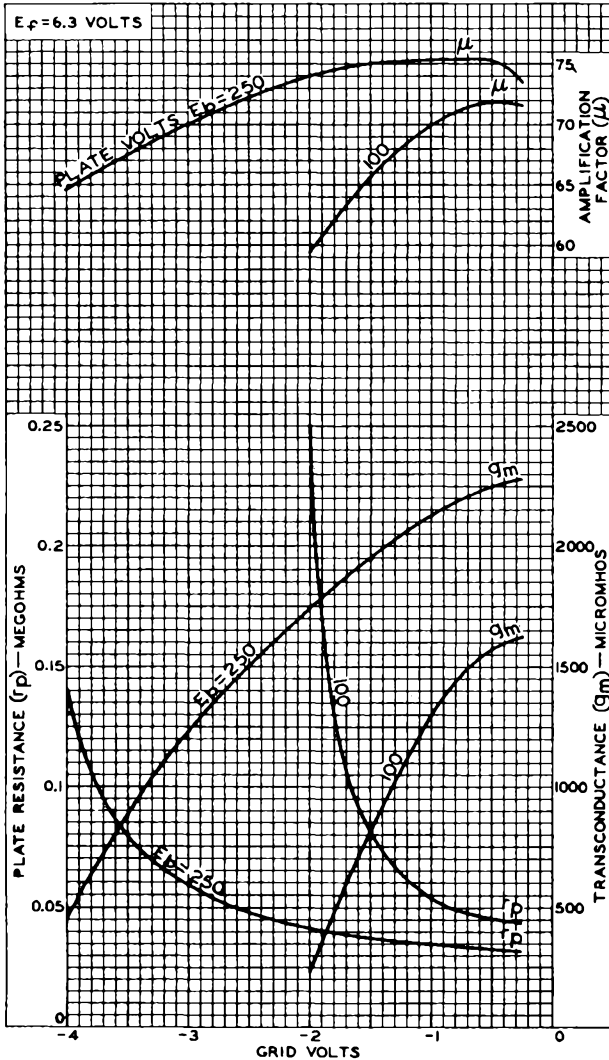




6T8-A

AVERAGE CHARACTERISTICS
TRIODE UNIT

6T8-A

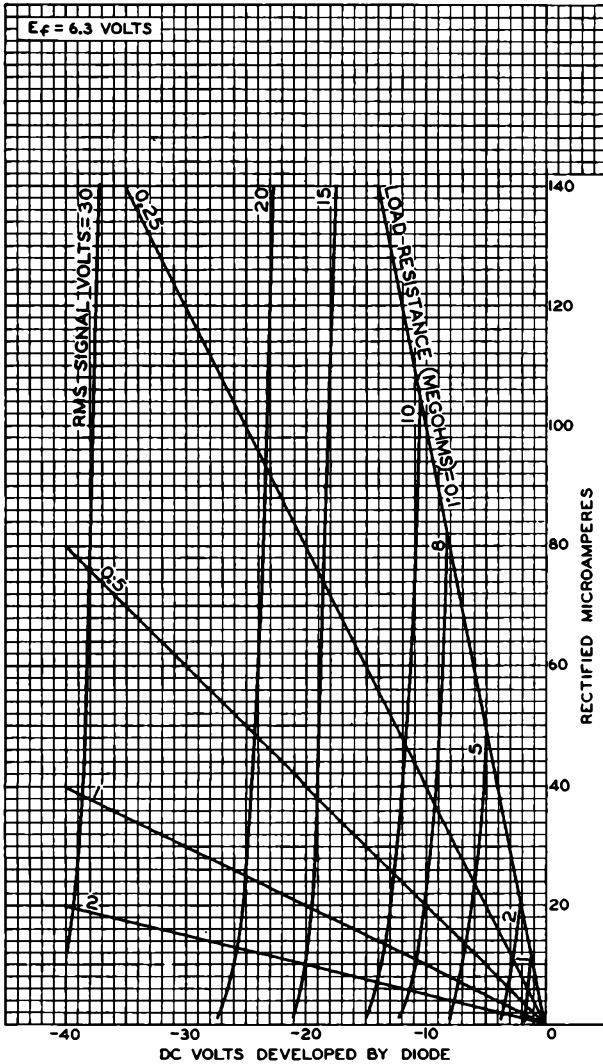


6T8-A



6T8-A

AVERAGE CHARACTERISTICS
HALF-WAVE CIRCUIT—EACH DIODE UNIT



ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9610



6U5

6U5

ELECTRON-RAY TUBE

INDICATOR TYPE WITH REMOTE-CUTOFF TRIODE UNIT

GENERAL DATA

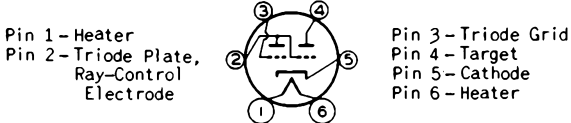
Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Mechanical:

Mounting Position	Any
Maximum Overall Length	4-3/16"
Seated Length	3-3/8 ± 3/16"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Small-Shell Small 6-Pin (JETEC No. A6-7)
Basing Designation for BOTTOM VIEW	6R



INDICATOR SERVICE

Maximum Ratings, Design-Center Values:

TRIODE-PLATE SUPPLY VOLTAGE	285 max.	volts
TARGET VOLTAGE	{ 285 max.	volts
	{ 125 min.	volts ←
TRIODE-PLATE DISSIPATION	1.0 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation:

Plate Supply and Target Voltage	200	250	volts
Series Triode-Plate Resistor	1	1	megohm
Target Current†			
for zero grid voltage	3	4	ma
Triode-Plate Current			
for zero grid voltage	0.19	0.24	ma
Triode-Grid Voltage (Approx.):			
For 0° shadow angle	-18.5	-22	volts
For 90° shadow angle	0	0	volts

† subject to wide variations.

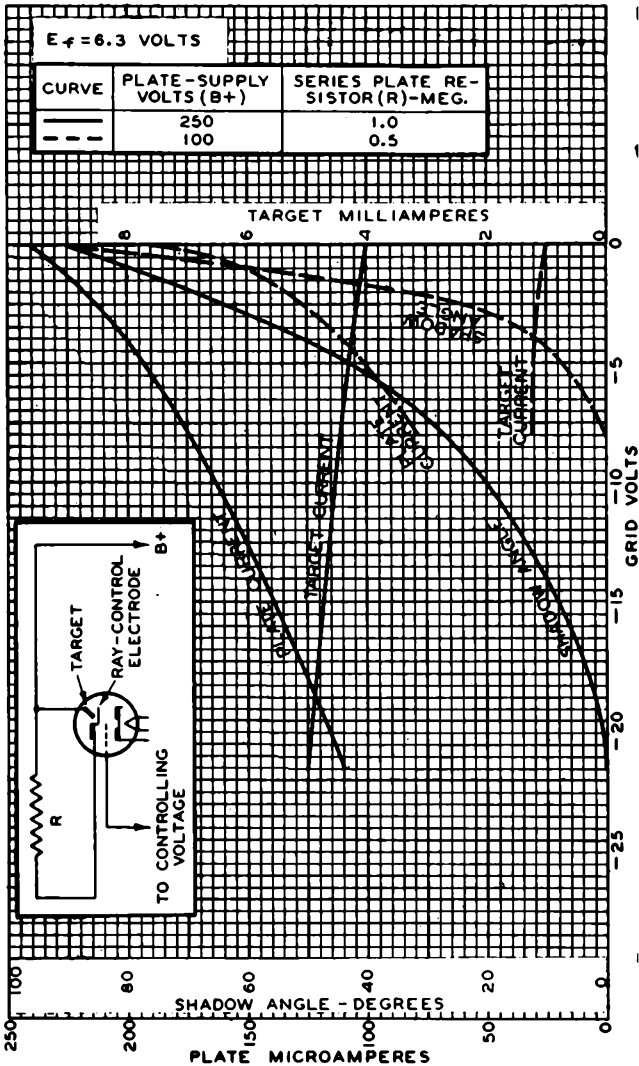
Refer to Type 6E5 for a discussion of the operation of the tube and also for the fundamental circuit.

← Indicates a change.

6U5



AVERAGE CONTROL CHARACTERISTICS



AUG. 9, 1954


TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4626R3

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

Heater [■]	Coated Unipotential Cathode [#]	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances: ^o		
Grid to Plate	0.007 max.	0.007 max. μf
Input	5	5 μf
Output	9	9 μf
Overall Length		4-5/8" to 4-7/8" ←
Seated Height		4-1/16" to 4-5/16" ←
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Skirted Miniature
Base		Small Shell Octal 7-Pin
Pin 1 - No Connection		Pin 5 - Suppressor
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Pin 4 - Screen		Cap - Grid
Mounting Position	BOTTOM VIEW (G-7R)	Any



AMPLIFIER

Plate Voltage	300 max.	volts
Screen Voltage	100 max.	volts
Screen Supply Voltage	300 max.	volts
Grid Voltage	0 min.	volts
Plate Dissipation	2.25 max.	watts
Screen Dissipation	0.25 max.	watt

Typical Operation and Characteristics - Class A₁ Amplifier:

Plate	100	250	volts
Screen	100	100	volts
Grid	-3	-3	volts
Suppressor	Connected to cathode at socket		
Plate Res.	0.25	0.8 approx.	ohms
Transcond.	1500	1600	μhos
Grid Bias for			
Transcond. of 2 μhos	-50	-50	volts
Plate Cur.	8	8.2	ma.
Screen Cur.	2.2	2	ma.

[■] In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
[#] The internal shield in the dome of the 6U7-G is connected to the cathode within the tube.
^o With close-fitting shield connected to cathode.

The Curve under Type 6D6 also applies to the 6U7-G.

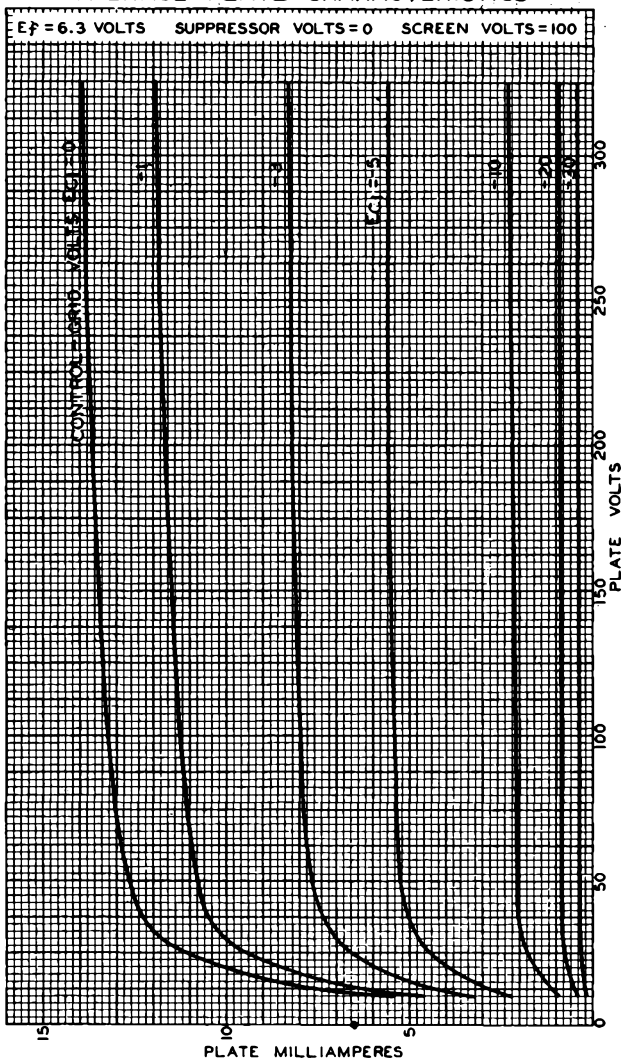
← Indicates a change.

6U7-G



6U7-G

AVERAGE PLATE CHARACTERISTICS



AUG. 20, 1941

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

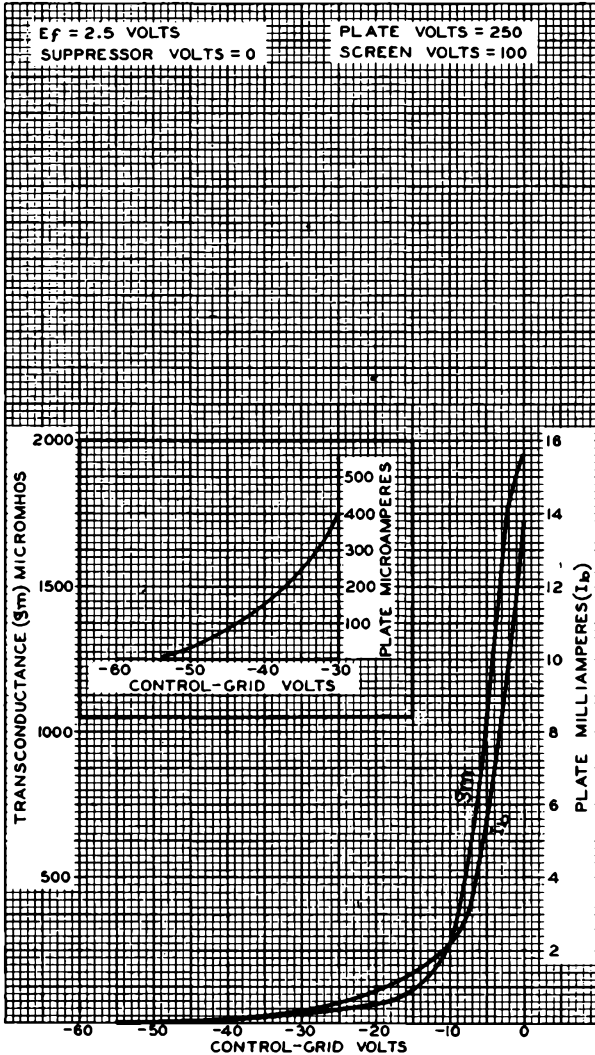
92C-6011R1



6U7-G

6U7-G

AVERAGE CHARACTERISTICS



JAN. 3, 1940

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

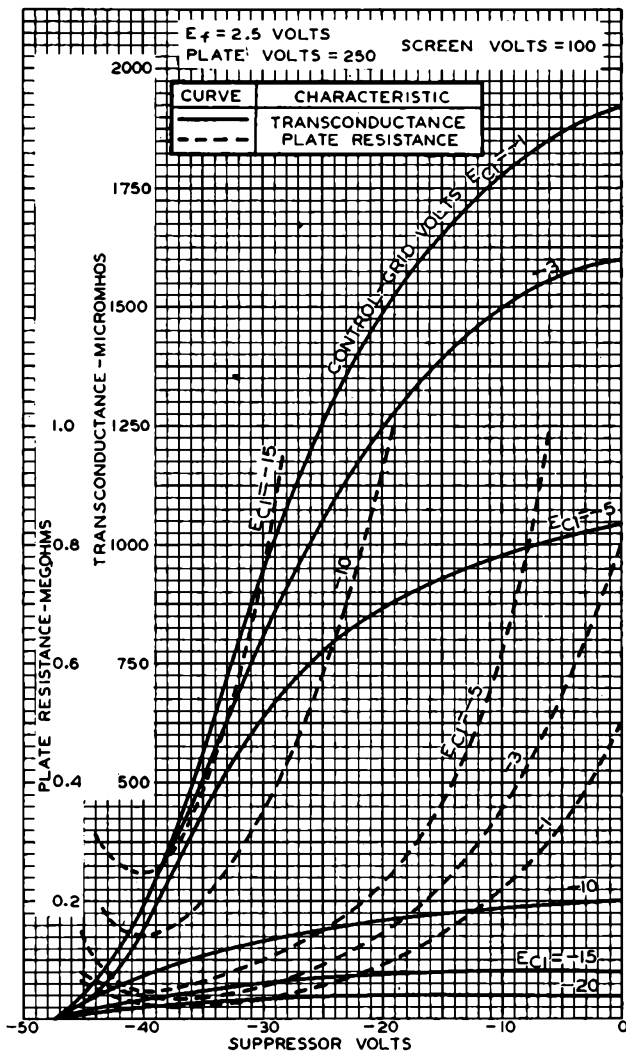
92C-6121

6U7-G



6U7-G

AVERAGE CHARACTERISTICS



JAN. 8, 1940

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-6126



6U8

6U8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3	ac or dc volts
Current	0.45	amp

Direct Interelectrode Cap.: *With Shield*^a *Without Shield*

Triode Unit:

Grid to Plate	1.8	1.8	$\mu\mu\text{f}$
Input	2.5	2.5	$\mu\mu\text{f}$
Output	1.0	0.4	$\mu\mu\text{f}$

Pentode Unit:

Grid No.1 to Plate	0.006 max.	0.010 max.	$\mu\mu\text{f}$
Input	5	5	$\mu\mu\text{f}$
Output	3.5	2.6	$\mu\mu\text{f}$

Heater to Cathode

(Approx., Each Unit)	3	3	$\mu\mu\text{f}$
--------------------------------	---	---	------------------

Characteristics:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Plate Supply Voltage.	150	250	volts
Grid-No.2 Voltage	—	110	volts
Cathode-Bias Resistor	56	68	ohms
Amplification Factor	40	—	
Plate Resistance (Approx.)	5000	400000	ohms
Transconductance	8500	5200	μmhos
Grid-No.1 Bias (Approx.) for Plate Cur. of 10 μamp	-12	-10	volts
Plate Current	18	10	ma
Grid-No.2 Current	—	3.5	ma

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" \pm 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No. E9-1)

Basing Designation for BOTTOM VIEW 9AE

Pin 1—Triode Plate

Pin 2—Pentode

Grid No.1

Pin 3—Pentode

Grid No.2

Pin 4—Heater

Pin 5—Heater

Pin 6—Pentode Plate

Pin 7—Pentode

Cathode,

Pentode

Grid No.3,

Internal

Shield

Pin 8—Triode Cathode

Pin 9—Triode Grid



^a According to RTMA Standard ET-109A with external shield No. 315 tied to cathode of unit under test.

APRIL 1, 1953

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6U8



6U8

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

	Triode Unit	Pentode Unit	
PLATE VOLTAGE	300 max.	300 max.	volts
GRID-No.2 SUPPLY VOLTAGE . .	-	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE .	-	} See Rating Curve at front of this Section	
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive bias value	0 max.	0 max.	volts
PLATE DISSIPATION	2.7 max.	2.8 max.	watts
GRID-No.2 INPUT	-	0.5 max.	watt
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode . .	90 max.	90 max.	volts
Heater positive with respect to cathode . .	90 max.	90 max.	volts

APRIL 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



6U8

6U8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT OR PENTODE UNIT CONNECTED AS TRIODE

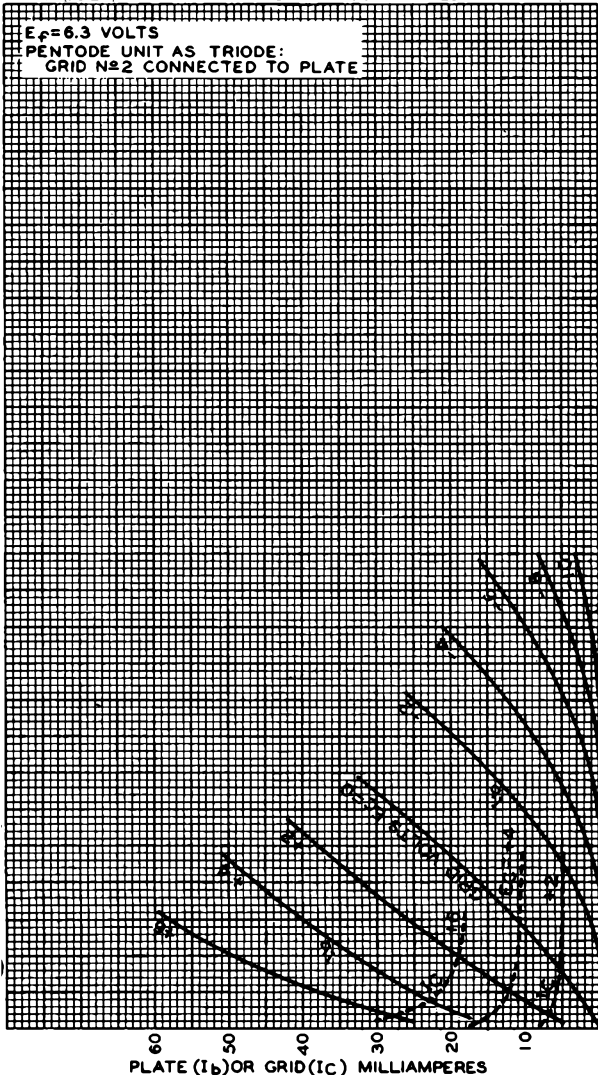


PLATE (I_b) OR GRID (I_c) MILLIAMPERES

NOV. 12, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

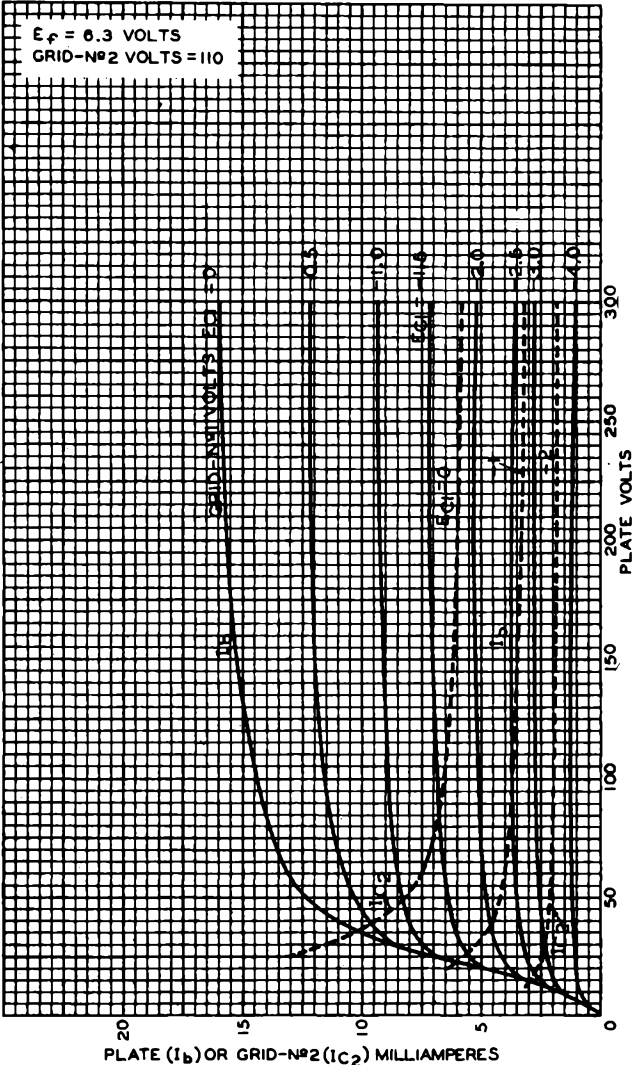
92CM-783

6U8



6U8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



NOV. 11, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

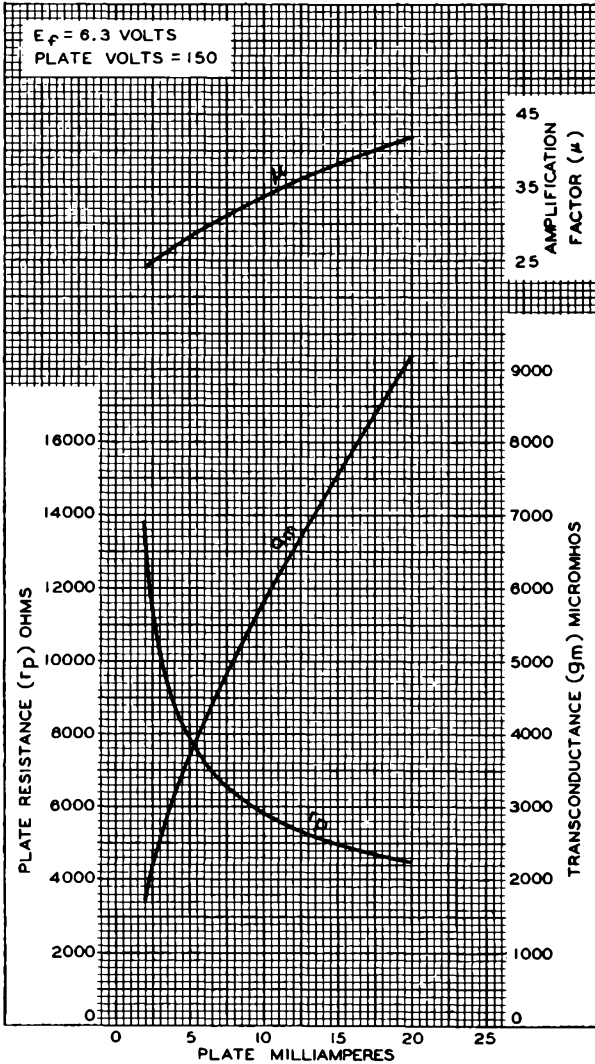
92CM-7869



6U8

6U8

AVERAGE CHARACTERISTICS TRIODE UNIT



NOV. 12, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7871



6V3-A

HALF-WAVE VACUUM RECTIFIER

9-PIN MINIATURE TYPE

For Television Damper Service

6V3-A

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 1.75 amp

Direct Interelectrode Capacitances (Approx.):^o

Heater to cathode 1.5 μ f

Plate to cathode and heater 8 μ f

Cathode to plate and heater 9 μ f

Mechanical:

Mounting Position Any

Maximum Overall Length 3-1/16"

Seated Length 2-21/32" \pm 1/8"

Maximum Diameter 7/8"

Bulb T-6-1/2

Cap Skirted Miniature (JETEC No. C1-2 or C1-33)

Base Small-Button Noval 9-Pin (JETEC No. E9-1)

Basing Designation for BOTTOM VIEW 9B0

Pin 1 - No Connection

Pin 2 - Plate

Pin 3 - Same as Pin 1

Pin 4 - Heater

Pin 5 - Heater



Pin 6 - Same as Pin 1

Pin 7 - Plate

Pin 8 - Same as Pin 1

Pin 9 - Plate

Cap - Cathode

DAMPER SERVICE

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system^o

PEAK INVERSE PLATE VOLTAGE

(Absolute maximum)[#] 6000[▲] max. volts

PEAK PLATE CURRENT 800 max. ma

DC PLATE CURRENT 135 max. ma

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode

(Absolute maximum)[#] 6750[▲] max. volts

Heater positive with respect to cathode . 300[●] max. volts

^o Without external shield.

^o As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[#] This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[▲] Under no circumstances should this absolute value be exceeded.

[▲] The dc component must not exceed 750 volts.

[●] The dc component must not exceed 100 volts.

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

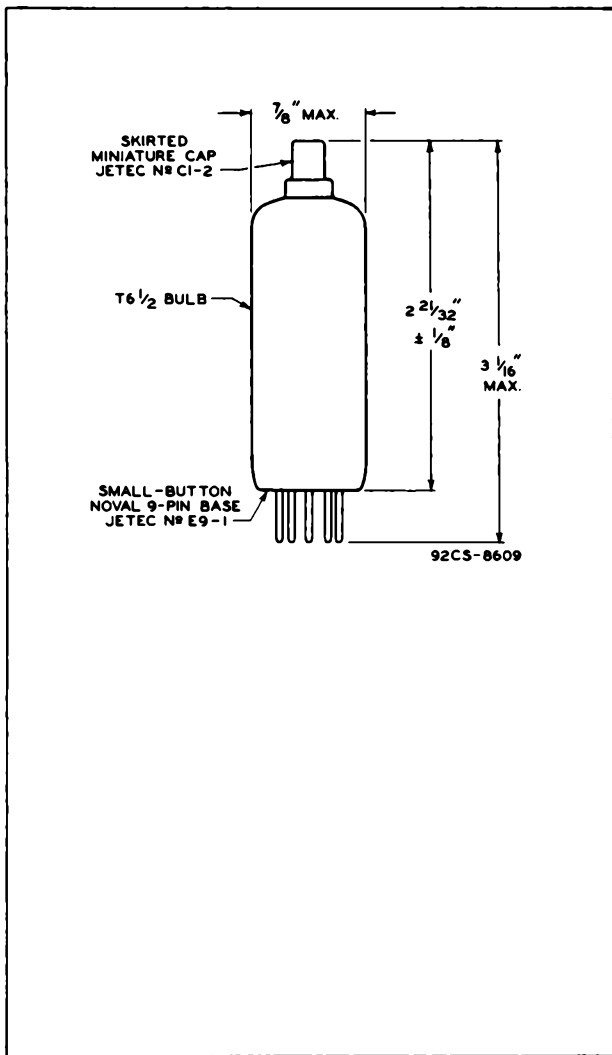
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6V3-A



6V3-A

HALF-WAVE VACUUM RECTIFIER



MAY 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8609



6V6
6V6-GT

6V6, 6V6-GT BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.45	amp

Direct Interelectrode Capacitances (Approx.):

	6V6 ^o	6V6-GT ^{oo}	
Grid No.1 to Plate . . .	0.3	0.7	μf
Input	10	9	μf
Output	11	7.5	μf

Mechanical:

	6V6	6V6-GT
Mounting Position . . .	Any	Any
Maximum Overall Length.	3-1/4"	3-5/16"
Maximum Seated Length .	2-11/16"	2-3/4"
Maximum Diameter . . .	1-5/16"	1-9/32"
Bulb	Metal Shell, MT-8	T-9
Base	Small-Wafer Octal 7-Pin (JETEC No. B7-22)	Intermed.-Shell Octal 7-Pin (JETEC No. B7-7)
Basing Designation	7AC	G-7AC

Pin 1 - { 6V6, Shell
6V6-GT, No
Connection

Pin 2 - Heater

Pin 3 - Plate



BOTTOM VIEW

Pin 4 - Grid No.2

Pin 5 - Grid No.1

Pin 7 - Heater

Pin 8 - Cathode,
Grid No.3

AF POWER AMPLIFIER—Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	315 max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE	315 max.	volts
GRID-No.2 VOLTAGE	285 max.	volts
PLATE DISSIPATION	12 max.	watts
GRID-No.2 INPUT	2 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	90 max.	volts
Heater positive with respect to cathode .	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	180	250	315	volts
Grid-No.2 Voltage	180	250	225	volts
Grid-No.1 Voltage	-8.5	-12.5	-13	volts
Peak AF Grid-No.1 Voltage . .	8.5	12.5	13	volts

^o with shell connected to cathode.

^{oo} with no external shield.

←Indicates a change

JAN. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6V6
6V6-GT



6V6, 6V6-GT

BEAM POWER AMPLIFIER

Zero-Signal Plate Current . . .	29	45	34	ma
Max.-Signal Plate Current . . .	30	47	35	ma
Zero-Signal Grid-No.2 Current (Approx.)	3	4.5	2.2	ma
Max.-Signal Grid-No.2 Current (Approx.)	4	7	6	ma
→ Plate Resistance (Approx.) . .	50000	50000	80000	ohms
Transconductance	3700	4100	3750	μmhos
Load Resistance	5500	5000	8500	ohms
Total Harmonic Distortion . . .	8	8	12	per cent
Max.-Signal Power Output	2	4.5	5.5	watts

AF POWER AMPLIFIER—Class AB₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	315 max.	volts
GRID-No.2 (SCREEN) SUPPLY VOLTAGE .	315 max.	volts
GRID-No.2 VOLTAGE	285 max.	volts
PLATE DISSIPATION	12 max.	watts
GRID-No.2 INPUT	2 max.	watts

→ PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation:

Values are for 2 tubes

Plate Voltage	250	285	volts
Grid-No.2 Voltage	250	285	volts
Grid-No.1 Voltage [▲]	-15	-19	volts
Peak AF Grid-No.1-to- Grid-No.1 Voltage	30	38	volts
Zero-Signal Plate Current	70	70	ma
Max.-Signal Plate Current	79	92	ma
Zero-Sig. Grid-No.2 Cur. (Approx.)	5	4	ma
Max.-Sig. Grid-No.2 Cur. (Approx.)	13	13.5	ma
→ Plate Resistance (Approx.)	60000	70000	ohms
Transconductance	3750	3600	μmhos
Effective Load Resistance	10000	8000	ohms
Total Harmonic Distortion	5	3.5	per cent
Max.-Signal Power Output	10	14	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:[▲]

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

[▲] The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.

→ indicates a change

JAN. 1, 1953

TUBE DEPARTMENT

DATA

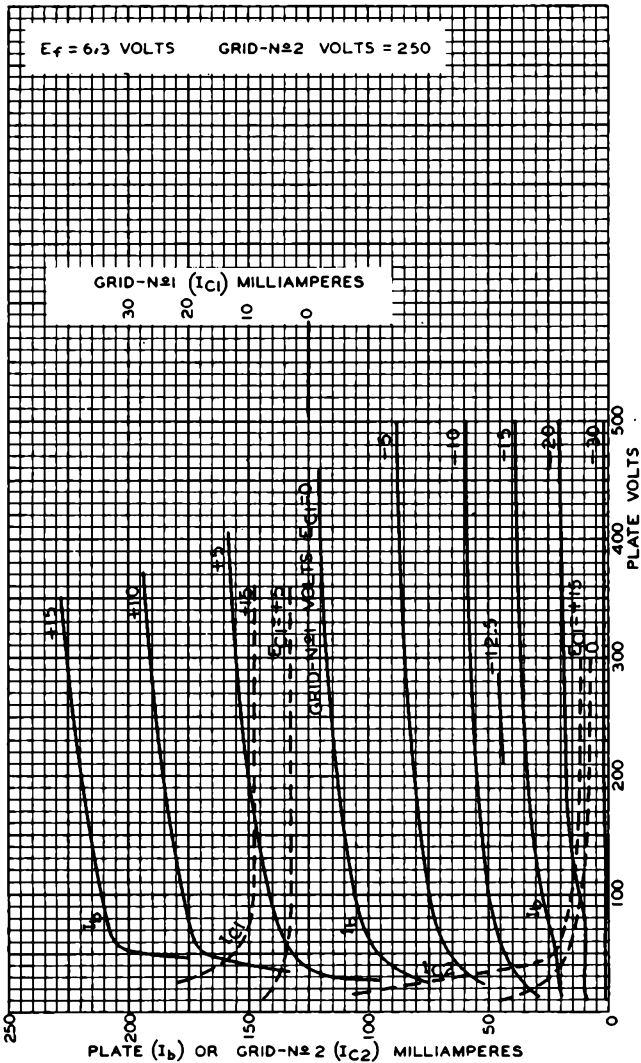
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6V6

6V6

AVERAGE PLATE CHARACTERISTICS



DEC. 18, 1952

TUBE DEPARTMENT

92CM-4E07R2

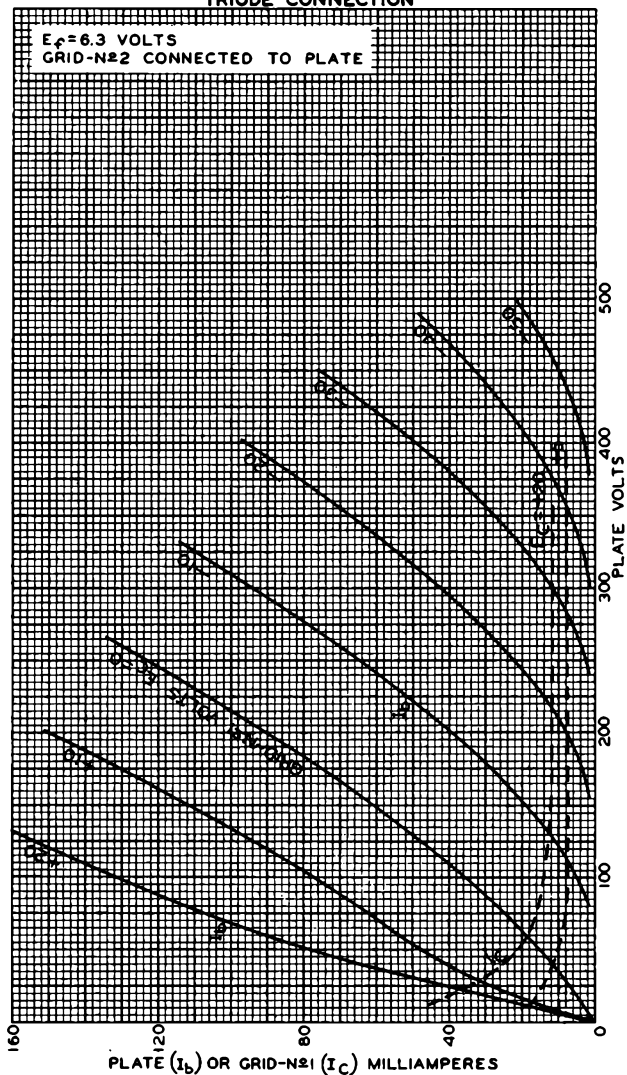
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6V6



6V6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



DEC. 18, 1952

TUBE DEPARTMENT

92CM-6333RI

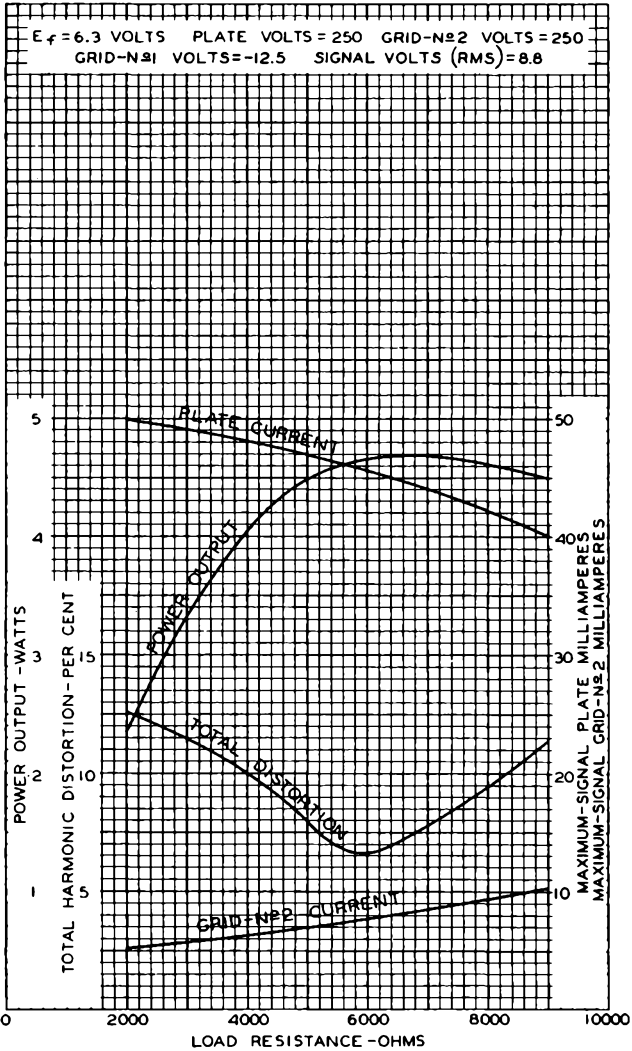
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6V6

6V6

OPERATION CHARACTERISTICS



DEC. 18, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6339RI



6W4-GT

6W4-GT

HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac volts
Current	1.2	amp

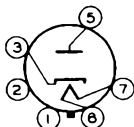
Direct Interelectrode Capacitances (Approx.):^o

Heater to Cathode	7.0	$\mu\mu\text{f}$
Plate to Heater and Cathode	5.3	$\mu\mu\text{f}$

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	Intermediate-Shell Octal 6-Pin
Basing Designation for BOTTOM VIEW	4CG

Pin 1 - No Connection
Pin 2 - No Connection



Pin 3 - Cathode
Pin 5 - Plate
Pin 7 - Heater
Pin 8 - Heater

DAMPER SERVICE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	3500*	max. volts
PEAK PLATE CURRENT	600	max. ma
DC PLATE CURRENT	125	max. ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	2100**	max. volts
Heater positive with respect to cathode.	100	max. volts

RECTIFIER SERVICE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	1250	max. volts
PEAK PLATE CURRENT	600	max. ma
HOT-SWITCHING TRANSIENT PLATE CURRENT		
For duration of 0.2 second maximum	3.5	max. amp
DC OUTPUT CURRENT	125	max. ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	450	max. volts
Heater positive with respect to cathode.	100	max. volts

^o With no external shield.

This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 percent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15% of one horizontal scanning cycle is 10 microseconds.

** The dc component must not exceed more than 450 volts.

<- Indicates a change.

6W4-GT

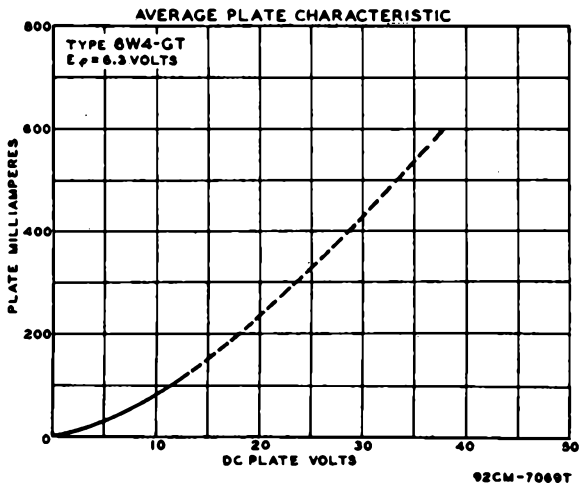


6W4-GT

HALF-WAVE VACUUM RECTIFIER

Typical Operation:

	<i>Half-Wave Rectifier (One Tube)</i>	<i>Full-Wave Rectifier (Two Tubes)</i>	
AC Plate-Supply Voltage (RMS)	350	-	volts
AC Plate-to-Plate Supply Voltage (RMS)	-	700	volts
Filter-Input Capacitor	20	20	μ f
Minimum Total Effective Plate- Supply Impedance Per Plate	145	145	ohms
DC Output Current	125	250	ma
DC Output Voltage at Input to Filter (Approx.):			
At half-load cur. of	{ 62.5 ma. 390 125 ma. -	-	volts
At full-load cur. of			
At half-load cur. of	{ 125 ma. 335 250 ma. -	-	volts
At full-load cur. of			
Voltage Regulation (Approx.):			
Half-load to full-load current	55	45	volts



MARCH 1, 1951

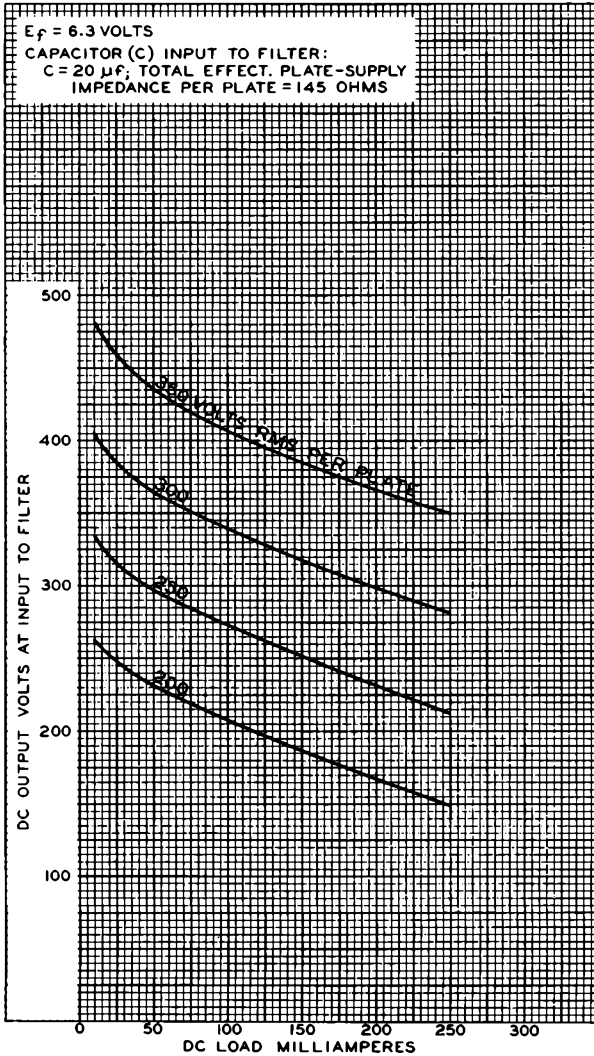
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



6W4-GT

6W4-GT OPERATION CHARACTERISTICS FULL-WAVE CIRCUIT—TWO TUBES



OCT. 13, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7091



6W6-GT

6W6-GT

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	1.2	amp

Direct Interelectrode Capacitances (Approx.):

Grid No.1 to Plate	0.5 max.	μ f
Input	15	μ f
Output	9	μ f

Characteristics as Beam Power Amplifier:

See AMPLIFIER—Class A₁ below:

Characteristics as Triode-Connected Amplifier:

(Grid No.2 connected to plate)

Plate Voltage	225	volts
Grid-No.1 Voltage	-30	volts
Amplification Factor	6.2	
Plate Resistance	1600	ohms
Transconductance	3800	μ hos
Plate Current	22	ma
Grid-No.1 Voltage (Approx.) for plate current of 0.5 ma	-42	volts ←

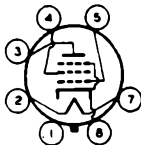
Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9 ←

Base. Intermediate-Shell Octal 6-Pin (JETEC No. B6-8) ←
 or Intermediate-Shell Octal 7-Pin (JETEC No. B7-7)
 or Short Intermediate-Shell Octal 6-Pin with Ex-
 ternal Barriers (JETEC No. B6-60)
 or Short Intermediate-Shell Octal 7-Pin with Ex-
 ternal Barriers (JETEC No. B7-59)

Basing Designation for BOTTOM VIEW G-7AC

- Pin 1—No Connection
- Pin 2—Heater
- Pin 3—Plate
- Pin 4—Grid No.2



- Pin 5—Grid No.1
- Pin 7—Heater
- Pin 8—Cathode,
Grid No.3

AMPLIFIER—Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	150 max.	volts
PLATE DISSIPATION	10 max.	watts
GRID-No.2 INPUT	1.25 max.	watts

← indicates a change.

OCT. 1, 1953

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TUBE DEPARTMENT

TENTATIVE DATA

6W6-GT



6W6-GT

BEAM POWER AMPLIFIER

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200*max.	volts

Typical Operation and Characteristics:

Plate Supply Voltage	110	200	volts
Grid-No.2 Voltage	110	125	volts
Grid-No.1 (Control-Grid) Voltage . .	-7.5	-	volts
Cathode-Bias Resistor	-	180	ohms
Peak AF Grid-No.1 Voltage	7.5	8.5	volts
Zero-Signal Plate Current	49	46	ma
Max.-Signal Plate Current	50	47	ma
Zero-Signal Grid-No.2 Current	4	2.2	ma
Max.-Signal Grid-No.2 Current	10	8.5	ma
Plate Resistance (Approx.)	13000	28000	ohms
Transconductance	8000	8000	μmhos
Load Resistance	2000	4000	ohms
Total Harmonic Distortion (Approx.) .	10	10	%
Max.-Signal Power Output	2.1	3.8	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

VERTICAL DEFLECTION AMPLIFIER

Triode Connected--Grid No.2 Connected to Plate

Maximum Ratings, Design-Center Values Except As Noted:

*For operation in a 525-line, 30-frame system**

DC PLATE VOLTAGE	300 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^o	1200*max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE	-250 max.	volts

CATHODE CURRENT:

Peak	140 max.	ma
DC	40 max.	ma

PLATE DISSIPATION	7.5 max.	watts
-----------------------------	----------	-------

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200*max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For cathode-bias operation	2.2 max.	megohms
--------------------------------------	----------	---------

[▲] The dc component must not exceed 100 volts.

[●] As described in "Standards of Good Engineering Practice for Television Broadcast Stations", Federal Communications Commission.

^o The duration of the voltage pulse must not exceed 15 per cent of one scanning cycle, in a 525-line, 30-frame system, 15 per cent of one scanning cycle is 2.5 milliseconds.

[•] under no circumstances should this absolute value be exceeded.

OCT. 1, 1953

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

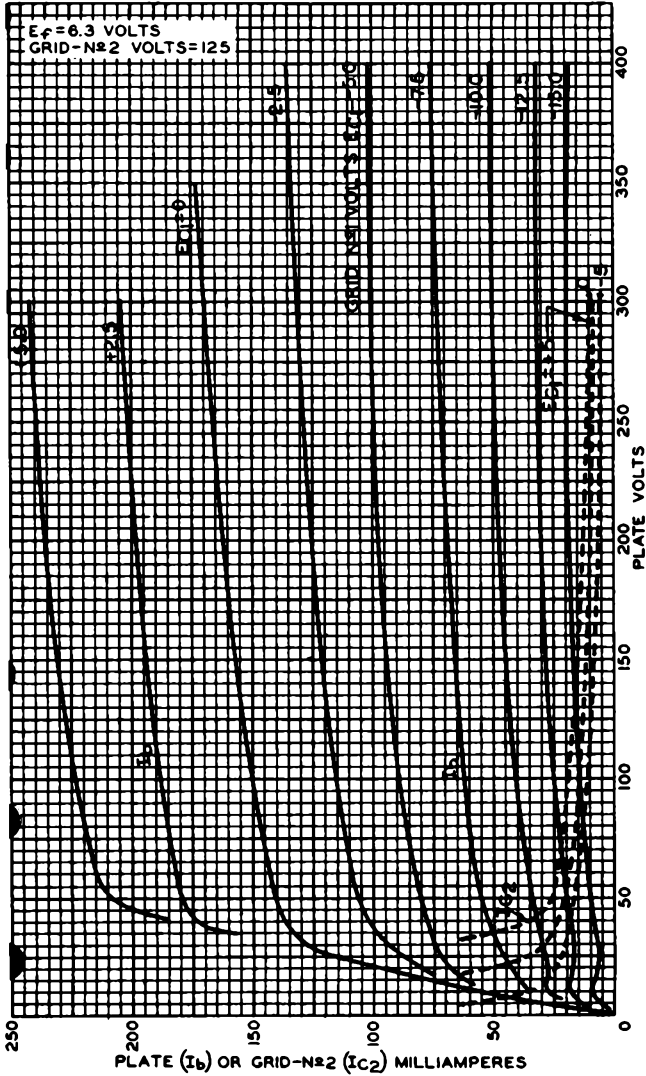
TENTATIVE DATA



6W6-GT

6W6-GT

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



MAR. 20. 1953

TUBE DEPARTMENT

92CM-7942

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

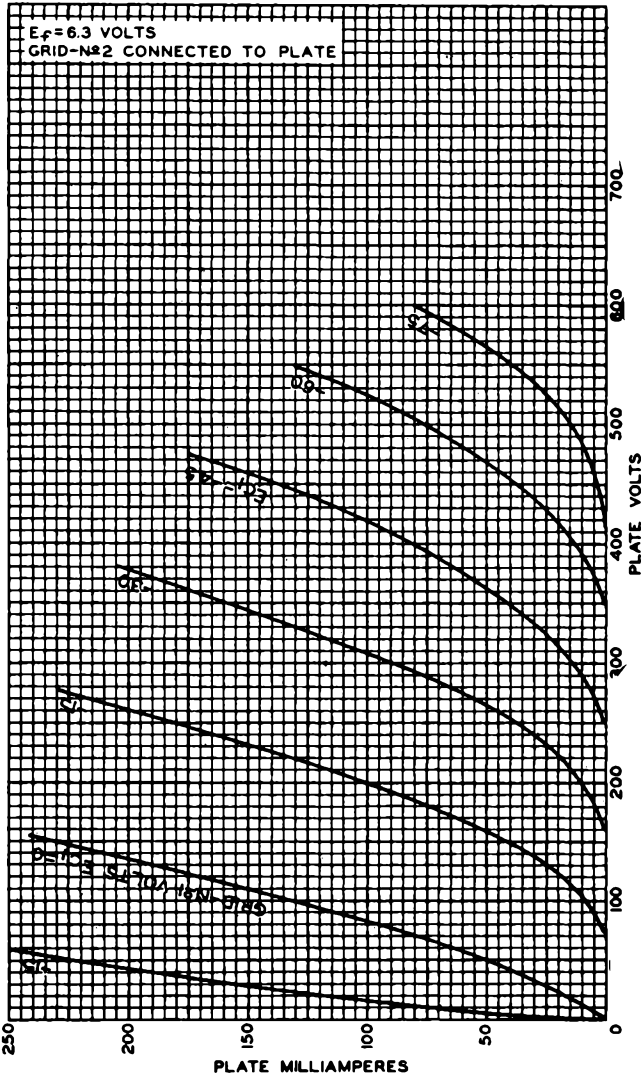
6W6-GT



6W6-GT

AVERAGE PLATE CHARACTERISTICS

TRIODE CONNECTION



MAR. 11, 1953


TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7943



6W7-G

6W7-G
★**TRIPLE-GRID DETECTOR AMPLIFIER**

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	0.007 max.	μf
Input	5	μf
Output	8.5	μf
Overall Length		4-7/32" to 4-15/32"
Seated Height		3-21/32" to 3-29/32"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Skirted Miniature
Base		Small Shell Octal 7-Pin
Pin 1 - No Connection		Pin 5 - Suppressor
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Pin 4 - Screen		Cap - Grid
Mounting Position		Any

BOTTOM VIEW (G-7R)

AMPLIFIER

Plate Voltage	300 max. volts
Screen Voltage	100 max. volts
Screen Supply Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	0.5 max. watt
Screen Dissipation	0.1 max. watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>	
Plate	250 volts
Screen	100 volts
Grid	-3 volts
Suppressor	Connected to cathode at socket
Plate Res. (approx.)	1.5 megohms
Transcond.	1225 μmhos
Grid Bias (approx.) for cathode-currentcut-off	-7 volts
Plate Cur.	2 ma.
Screen Cur.	0.5 ma.

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- With close-fitting shield connected to cathode.

Curves under types 6J7 and 5Y apply to the 6W7-G within the limitations of the maximum ratings.

← Indicates a change.

Dec. 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



6X4

FULL-WAVE VACUUM RECTIFIER

MINIATURE TYPE

GENERAL DATA

Electrical:

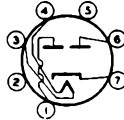
Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.6	amp

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length from Base Seat to Bulb Top (Excluding tip)	2" ± 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW	7CF

- Pin 1 - Plate No.2
- Pin 2 - No Connection
- Pin 3 - Heater
- Pin 4 - Heater



- Pin 5 - No Connection
- Pin 6 - Plate No.1
- Pin 7 - Cathode

RECTIFIER SERVICE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	1250 max. volts
PEAK PLATE CURRENT PER PLATE	210 max. ma
AC PLATE SUPPLY VOLTAGE (RMS) PER PLATE	See Rating Chart I
DC OUTPUT CURRENT PER PLATE	See Rating Chart I

HOT-SWITCHING CURRENT:

If hot-switching is regularly required in operation, the use of choke-input circuits is recommended. Such circuits limit the hot-switching current to a value no higher than that of the peak plate current. When capacitor-input circuits are used, a maximum peak current value per plate of 1 ampere during the initial cycles of the hot-switching transient should not be exceeded.

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	450 max. volts
Heater positive with respect to cathode	450 max. volts

Typical Operation as Full-Wave Rectifier with Capacitor-Input to Filter:

AC Plate-to-Plate Supply Voltage (RMS)	650	volts
Filter Input Capacitor	10	µf
Effective Plate-Supply Impedance per Plate	520	ohms

* Higher values of capacitance than indicated may be used but the effective plate-supply impedance should be increased to prevent exceeding the maximum rating for peak plate current.

← Indicates a change

6X4



6X4

FULL-WAVE VACUUM RECTIFIER

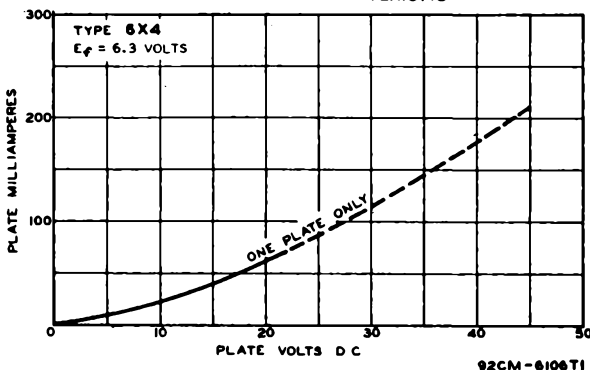
DC Output Voltage at Input to	Filter (Approx.):		
At half-load current of 35 ma.	360	volts	
At full-load current of 70 ma.	300	volts	
Voltage Regulation (Approx.):			
Half-load to full-load current	60	volts	

→ Typical Operation as Full-Wave Rectifier

with Choke-Input to Filter:

AC Plate-to-Plate Supply Voltage (RMS) . . .	900	volts
Minimum Filter Input Choke	10	henries
DC Output Voltage at Input to		
Filter (Approx.):		
At half-load current of 35 ma.	385	volts
At full-load current of 70 ma.	370	volts
Voltage Regulation (Approx.):		
Half-load to full-load current	15	volts

AVERAGE PLATE CHARACTERISTIC



RATING CHARTS AND OPERATION CHARACTERISTICS

Rating Chart I represents graphically the relationships between maximum ac voltage input and maximum dc output current derived from the fundamental ratings for conditions of capacitor-input and choke-input filters. This graphical presentation gives the equipment designer considerable latitude in choice of operating conditions.

Rating Chart II presents graphically the relationship between maximum rectification efficiency and maximum dc output current per plate for conditions of capacitor input to filter.

→ indicates a change

OCT. 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



6X4

6X4

FULL-WAVE VACUUM RECTIFIER

Rating Chart III represents graphically the relationships between minimum plate-supply resistance per plate and maximum ac plate-supply voltage per plate under no-load conditions for conditions of capacitor input to filter when occasional hot-switching is employed.

The *Operation Characteristics for Full-Wave Circuit with Capacitor-Input Filter* show not only the typical operating curves for such a circuit, but also show by means of boundary-lines "DEA" the limiting current and voltage relationships presented on *Rating Chart I*.

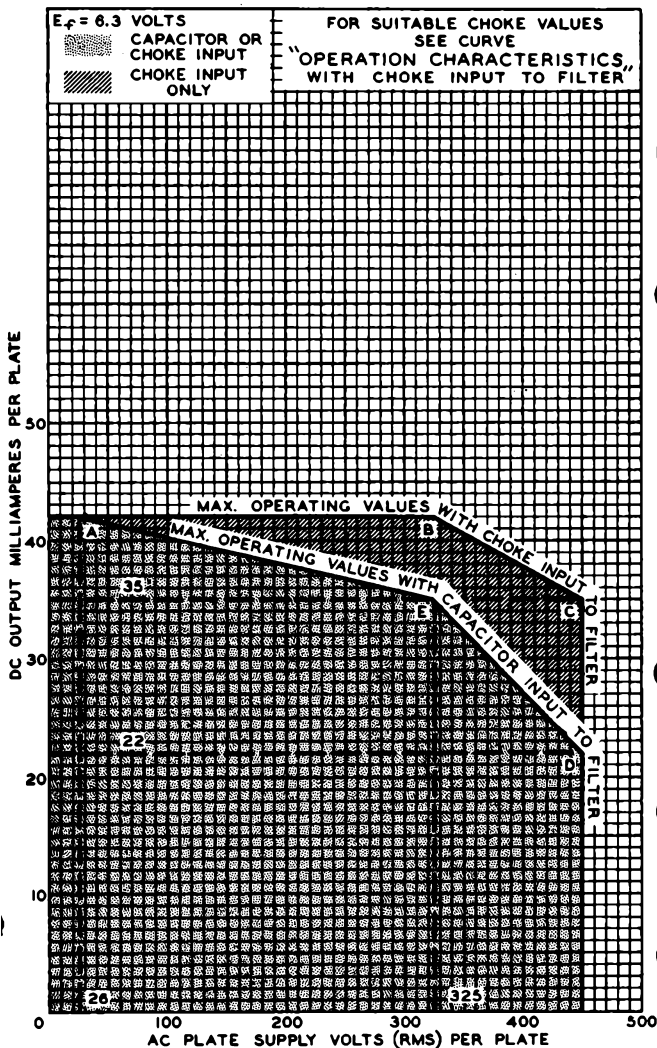
The *Operation Characteristics for Full-Wave Circuit with Choke-Input Filter* show the typical operating curves for such a circuit. They not only show by means of boundary line "ABC" the limiting current and voltage relationships presented on *Rating Chart I*, but also give information as to the effect on regulation of various sizes of chokes. The solid-line curves show the dc voltage outputs which would be obtained if the filter chokes had infinite inductance. The long-dash lines radiating from the zero position are boundary lines for various sizes of chokes as indicated. The intersection of one of these lines with a solid-line curve indicates the point on the curve at which the choke no longer behaves as though it had infinite inductance. To the left of the choke boundary line, the regulation curves depart from the solid-line curves as shown by the representative short-dash regulation curves.

6X4



6X4

RATING CHART I



JUNE 29, 1953

TUBE DEPARTMENT

92CM-8025

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6X4

RATING CHART II CAPACITOR INPUT TO FILTER

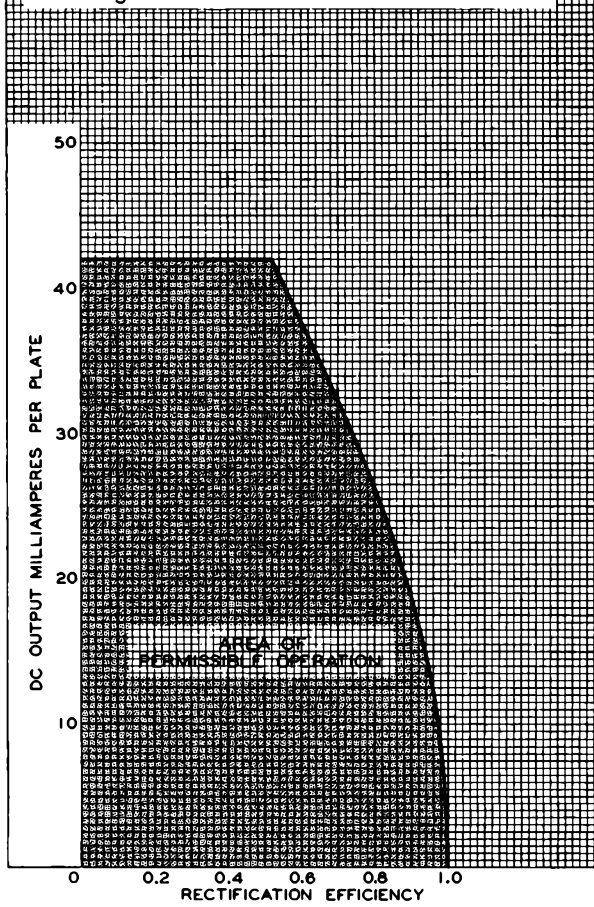
$E_f = 6.3$ VOLTS

MAX. PEAK PLATE CURRENT PER PLATE = 210 MA.

$$\text{RECTIFICATION EFFICIENCY} = \frac{E}{\sqrt{2} E_s}$$

WHERE \bar{E} = DC OUTPUT VOLTS AT INPUT TO FILTER

E_s = AC PLATE SUPPLY VOLTS (RMS) PER PLATE



JUNE 26, 1953

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8024

6X4

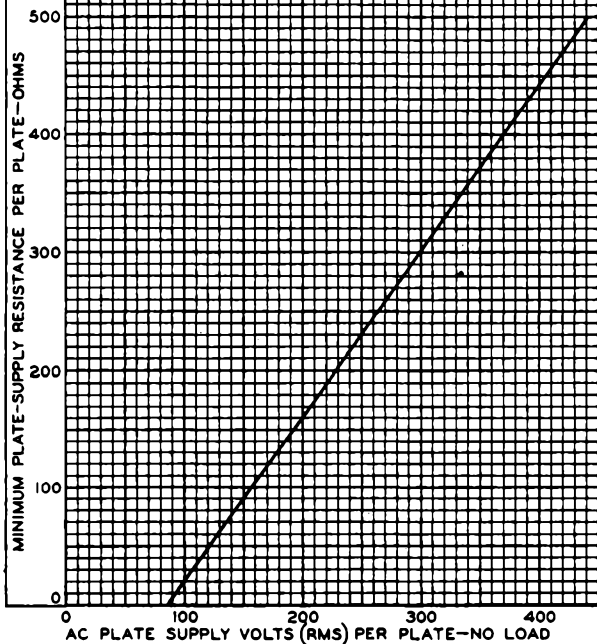
6X4



6X4

RATING CHART III CAPACITOR INPUT TO FILTER

$E_f = 6.3$ VOLTS MAX. HOT SWITCHING CUR. = 1 AMP.
 PLATE-SUPPLY RESISTANCE PER PLATE = $R_{SEC} + N^2 R_{PRI} + R_A$
 WHERE R_{SEC} = DC RESISTANCE OF TRANSFORMER
 SECONDARY PER SECTION
 R_{PRI} = DC RESISTANCE OF TRANSFORMER
 PRIMARY
 R_A = DC RESISTANCE OF ADDED SERIES
 RESISTANCE PER PLATE
 N = TRANSFORMER VOLTAGE STEP-UP
 RATIO PER SECTION



JUNE 29, 1953

TUBE DEPARTMENT

92CM-8026

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

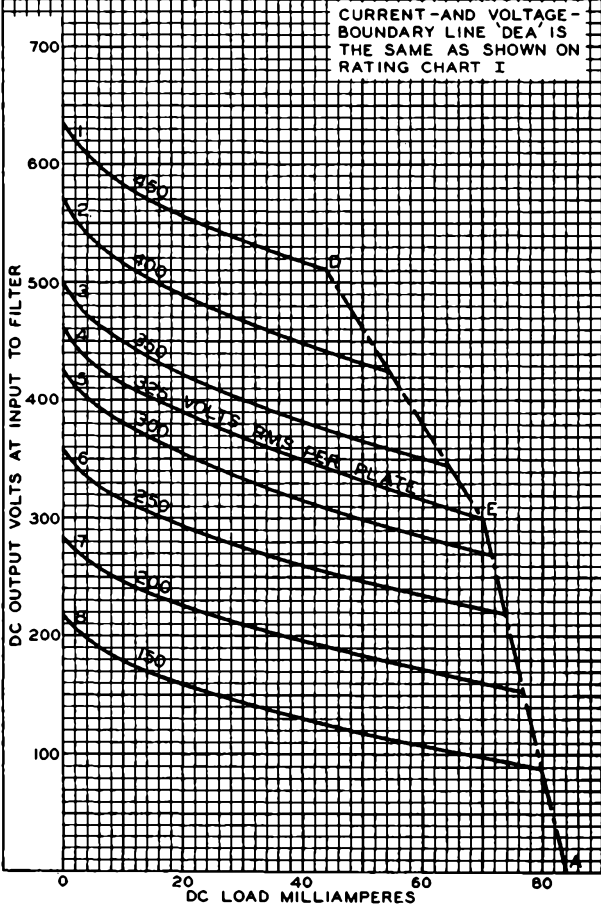


6X4

6X4

OPERATION CHARACTERISTICS FULL-WAVE CIRCUIT, CAPACITOR INPUT TO FILTER

$E_c = 6.3$ VOLTS
 CAPACITOR (C) INPUT TO FILTER: $C = 10\mu F$
 TOTAL EFFECTIVE PLATE-SUPPLY RESISTANCE
 PER PLATE $\left\{ \begin{array}{l} 520 \text{ OHMS FOR CURVES 1-5} \\ 400 \text{ OHMS FOR CURVES 6-8} \end{array} \right.$
 SUPPLY FREQUENCY = 60 CPS



JULY 3, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

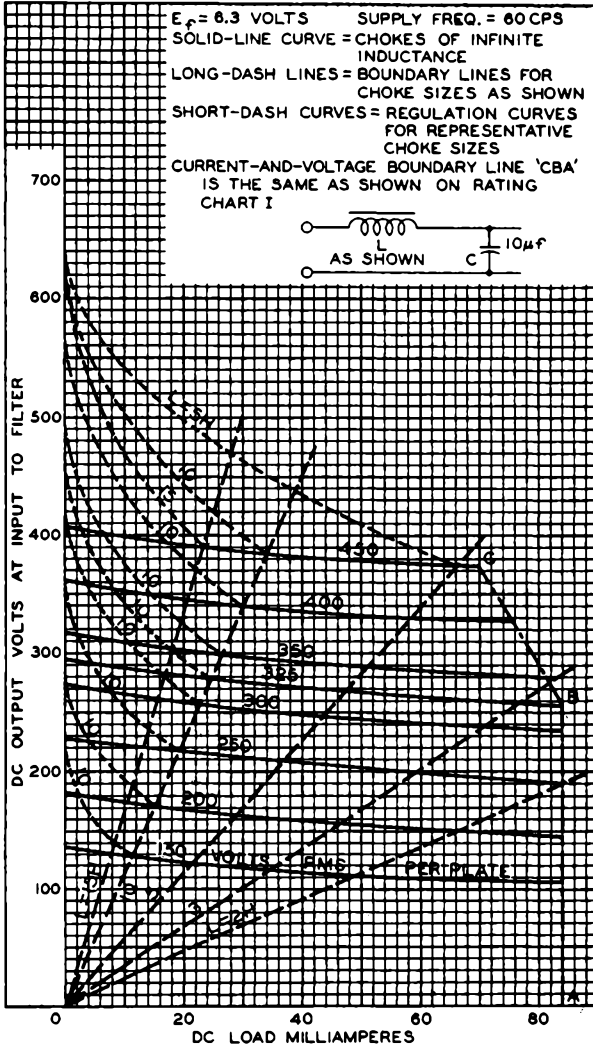
92CM-8031

6X4



6X4

**OPERATION CHARACTERISTICS
FULL-WAVE CIRCUIT, CHOKE INPUT TO FILTER**



JUNE 30, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8030



6X5
6X5-GT/G

6X5, 6X5-GT/G

FULL-WAVE HIGH-VACUUM RECTIFIER

Heater Voltage	6.3	Coated Unipotential Cathode	a-c or d-c volts
Current	0.6		amp.

	6X5	6X5-070
Maximum Overall Length	3-1/4"	3-5/16"
Maximum Seated Height	2-11/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT-8	T-9
Base	{ Small Wafer	{ Intermed. Sh.
	{ Octal 6-Pin	{ Octal 6-Pin
	6S	G-6S
Basing Designation		
Pin 1	{ 6X5, Shell	Pin 5 - Plate #1
	{ 6X5-GT/G, No Con.	Pin 7 - Heater
Pin 2 - Heater		Pin 8 - Cathode
Pin 3 - Plate #2		
Mounting Position		{ 6X5: Vertical ¹⁰
		{ 6X5-GT/G: Any

BOTTOM VIEW

Maximum Ratings Are Design-Center Values

FULL-WAVE RECTIFIER

Peak Inverse Plate Voltage	1250 max. volts
Peak Plate Current per Plate	210 max. ma.
D-C Output Current:	
With condenser input to filter	70 max. ma.
With choke input to filter	70 [⊙] max. ma.
D-C Heater-Cathode Potential	450 max. volts

Typical Operation:

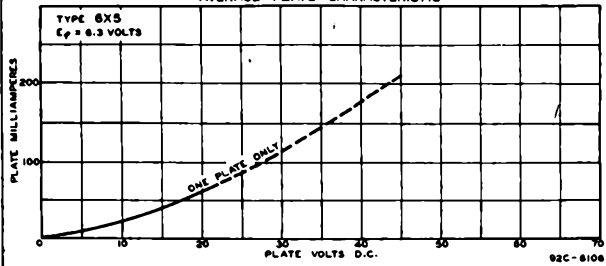
	Condenser- Input Filter	Choke- Input Filter
A-C Plate-to-Plate Supply Voltage (RMS)	650	900 volts
Filter Input Condenser	4	- μf
Min. Total Effect. Plate-Supply Imped. per Plate	150	- ohms
Filter Input Choke	-	8 henries
D-C Output Current	70	70 ma.
D-C Voltage (At input to filter):*		
At half-load current (35 ma.)	405	385 volts
At full-load current (70 ma.)	370	380 volts
Difference (Voltage Regulation)	35	5 volts
Percentage Regulation	8.5	1.3 %

⊙ Horizontal operation permitted if pins 3 & 5 are in a horizontal plane.

* For choke not less than 8 henries.

⊙ Approximate values.

AVERAGE PLATE CHARACTERISTIC



Mar. 20, 1943

RCA VICTOR DIVISION

DATA

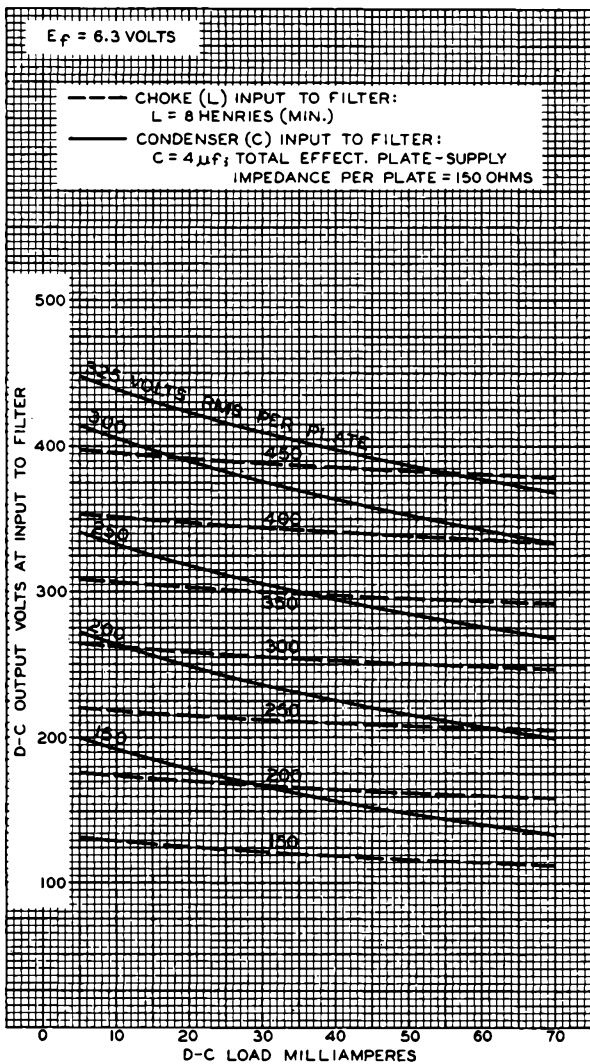
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6X5



6X5

OPERATION CHARACTERISTICS



NOV. 15, 1939

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-4576R1



6X8

6X8

TRIODE-PENTODE CONVERTER

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc	volts
Current	0.45		amp

Direct Interelectrode

Capacitances:

Triode Unit:

	Without External Shield	With External Shield No. 315 Tied to Cathode	
Grid to Plate	1.4	1.4	μ f
Input	2.0	2.6	μ f
Output	0.5	1.0	μ f

Pentode Unit:

Grid No.1 to Plate . .	0.09 max.	0.06 max.	μ f
Input	4.3	4.5	μ f
Output	0.7	1.4	μ f

Pentode Grid No.1

to Triode Plate	0.045 max.	0.035 max.	μ f
-------------------------	------------	------------	---------

Pentode Plate to

Triode Plate	0.040 max.	0.008 max.	μ f
------------------------	------------	------------	---------

Pentode Unit Con-
nected as Triode:[▲]

Grid No.1 to Plate . .	1.4	1.3	μ f
Input	3.0	3.2	μ f
Output	1.6	2.0	μ f
Heater to Cathode	6.0	6.0	μ f

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding Tip)	1-9/16" \pm 3-32"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW	9AK

Pin 1 - Pentode

Grid No.3

Pin 2 - Triode Grid

Pin 3 - Triode Plate

Pin 4 - Heater

Pin 5 - Heater

Pin 6 - Cathode

Pin 7 - Pentode

Grid No.1

Pin 8 - Pentode

Grid No.2

Pin 9 - Pentode Plate



Characteristics:

	Triode Unit	Pentode Unit	
Plate Voltage	100	250	volts
Grid No.3 (Suppressor) . .	-	Connected to cathode at socket	
Grid-No.2 Voltage	-	150	volts

▲: See next page.

← Indicates a change

OCT. 1, 1953

TUBE DEPARTMENT

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6X8



6X8

TRIODE-PENTODE CONVERTER

	Triode Unit	Pentode Unit	
Cathode-Bias Resistor . . .	100	200	ohms
Amplification Factor . . .	40	-	
Plate Resistance (Approx.) .	6900	75000	ohms
Transconductance	5800	4600	μ hos
Grid-No.1 Bias (Approx.) for Plate Cur. of 10 μ amp . .	-10	-10	volts
Plate Current	8.5	7.7	ma
Grid-No.2 Current	-	1.6	ma
<i>Pentode Unit Connected as Triode</i>			
Plate Voltage		150	volts
Grid No.3		Connected to cathode at socket	
Grid No.2		Tied to plate	
Cathode-Bias Resistor		250	ohms
Amplification Factor		42	
Plate Resistance (Approx.)		7900	ohms
Transconductance		4000	μ hos
Grid-No.1 Bias (Approx.) for Plate Current of 10 μ amp		-10	volts
Plate Current		7.8	ma

CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

	Triode Unit as Osc.	Pentode Unit as Mixer	
PLATE VOLTAGE	250 max.	250 max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE.	-	0 max.	volts
GRID-No.2 (SCREEN) VOLTAGE.	-	See Rating Curve at front of this Section	
GRID-No.2 SUPPLY VOLTAGE.	-	250 max.	volts
GRID-No.1 (CONTROL-GRID) VOLT.:			
Negative bias value	40 max.	40 max.	volts
Positive bias value	0 max.	0 max.	volts
PLATE DISSIPATION	1.5 max.	2.0 max.	watts
GRID-No.2 INPUT	-	0.4 max.	watt
GRID-No.1 INPUT	0.5 max.	-	watt
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	100 max.	100 max.	volts
Heater positive with respect to cathode	100 max.	100 max.	volts

Pentode Unit as Triode-Connected Mixer^A

PLATE VOLTAGE	250 max.	volts
-------------------------	----------	-------

^A: See next page.

OCT. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



6 X 8

6 X 8

TRIODE-PENTODE CONVERTER

GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Negative bias value	40 max.	volts
Positive bias value	0 max.	volts
PLATE DISSIPATION	2.4 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	100 max.	volts
Heater positive with respect to cathode .	100 max.	volts

Typical Operation:

	<i>Triode Unit as 250-Mc Osc.*</i>	<i>Pentode Unit as Mixer*</i>	
Plate Voltage	150	150	volts
Grid No.3 (Suppressor). . .	-	Connected to cathode at socket	
Grid-No.2 Voltage	-	150	volts
Mixer Grid-No.1			
Supply Voltage.	-	-3.5	volts
Oscillator Voltage (rms) at Mixer Grid No.1 . . .	-	2.6	volts
Mixer Grid-No.1-Circuit Resistance.	-	120000	ohms
Oscillator Grid Resistor .	2700	-	ohms
Conversion Transconductance	-	2100	μmhos
Plate Current	13	6.2	ma
Grid-No.2 Current	-	1.8	ma
Grid-No.1 Current	3.6	-	ma
Grid-No.1 Current	-	2.0	μamp
Oscillator Power			
Output (Approx.).	0.5	-	watt

Pentode Unit as Triode-Connected Mixer [▲]

Plate Voltage	150	volts
Grid-No.1 Supply Voltage	-3.5	volts
Oscillator Voltage (rms) at Grid No.1 . .	2.6	volts
Grid-No.1-Circuit Resistance.	120000	ohms
Conversion Transconductance	2800	μmhos
Plate Current	7.8	ma
Grid-No.1 Current	2.0	μamp

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation.	0.5 max.	megohm

- ▲ Grid No.3 connected to cathode; grid No.2 connected to plate.
- * With separate excitation and triode unit grounded.
- In TV or FM receivers, it is generally desirable to operate the oscillator with less power input than shown in the tabulated data in order to avoid over-excitation and excessive oscillator radiation.

OPERATING CONSIDERATIONS

When the 6X8 is used as the converter in AM broadcast receivers, it is important that the tuned plate-load impedance of the first IF coil not exceed 75000 ohms. Any higher value will cause excessive degeneration due to feedback in the pentode mixer unit.

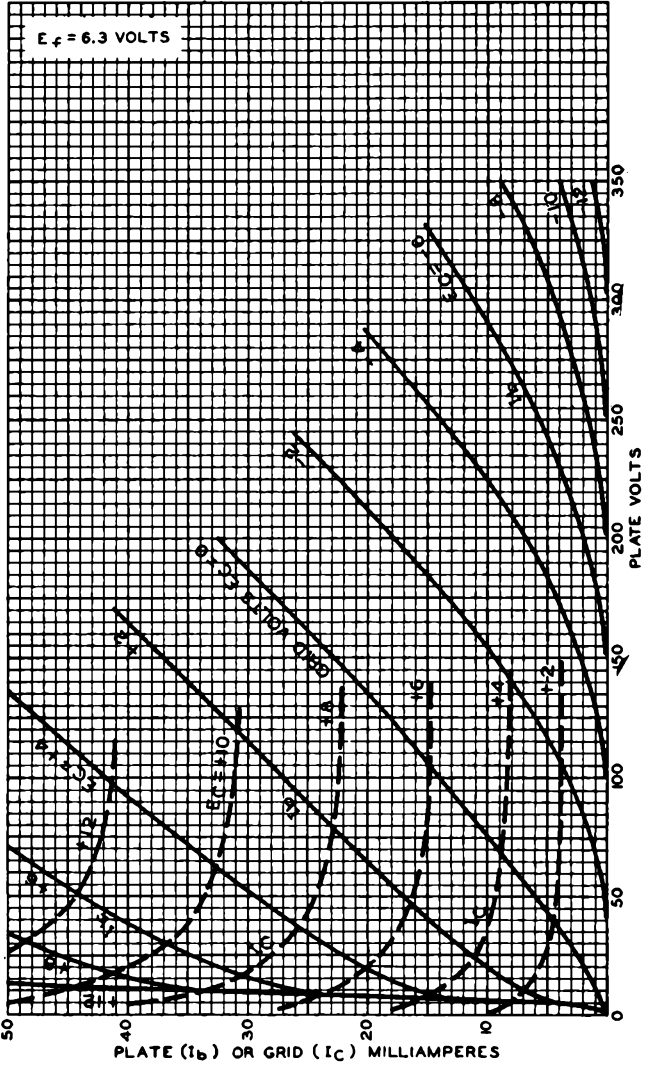
← indicates a change

6X8



6X8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



AUG. 26, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

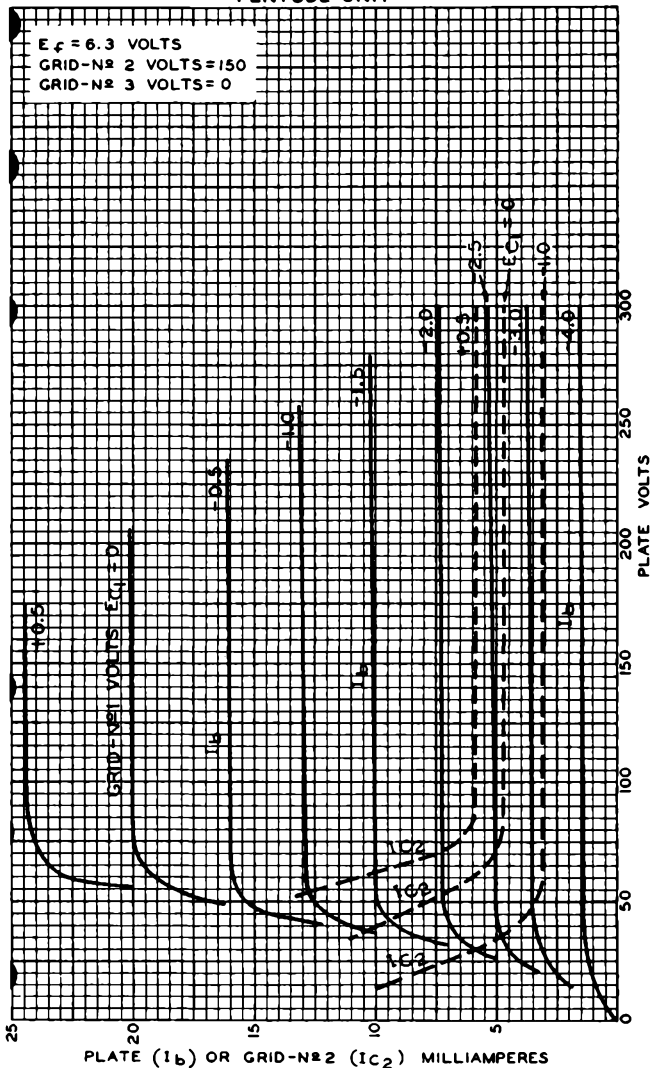
92CM-7531



6X8

6X8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



AUG. 29, 1950

TUBE DEPARTMENT

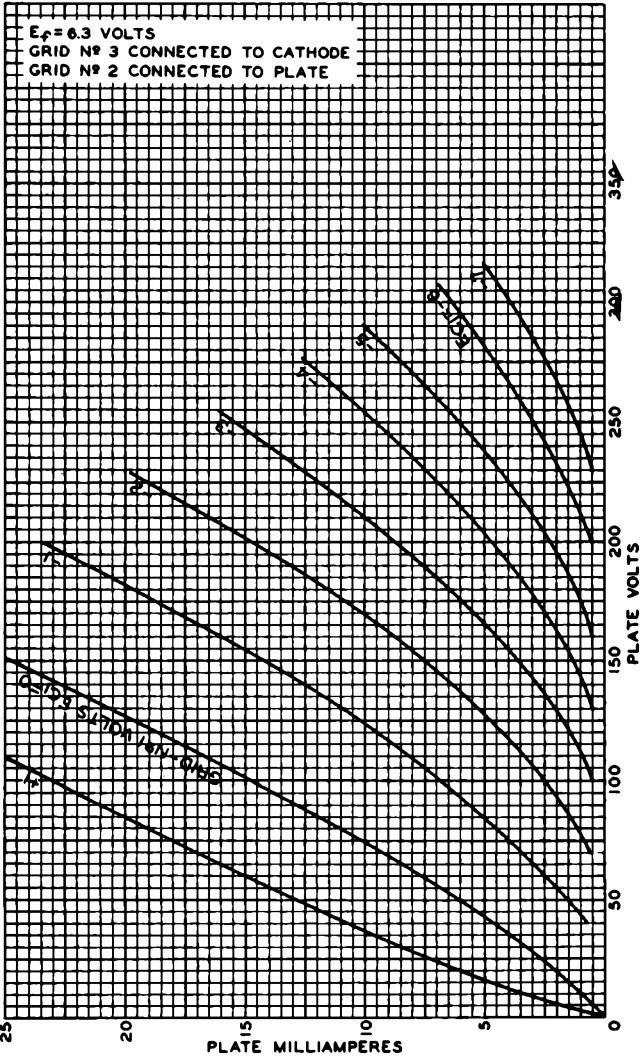
92CM-7532

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6X8



AVERAGE PLATE CHARACTERISTICS PENTODE UNIT CONNECTED AS TRIODE



APRIL 29, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

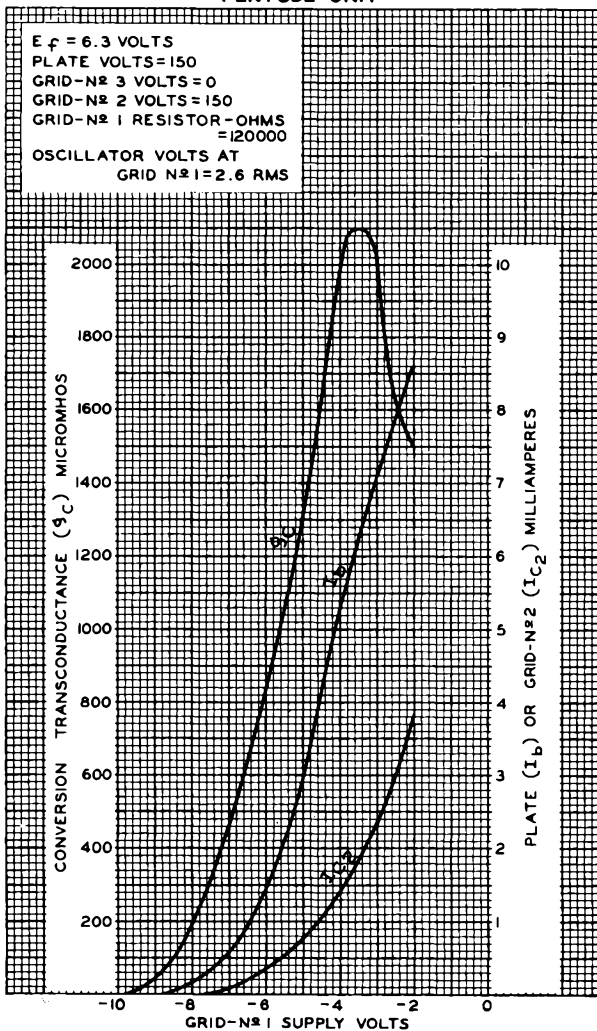
92CM-7500R1



6X8

6X8

OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION PENTODE UNIT



JUNE 19, 1951

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

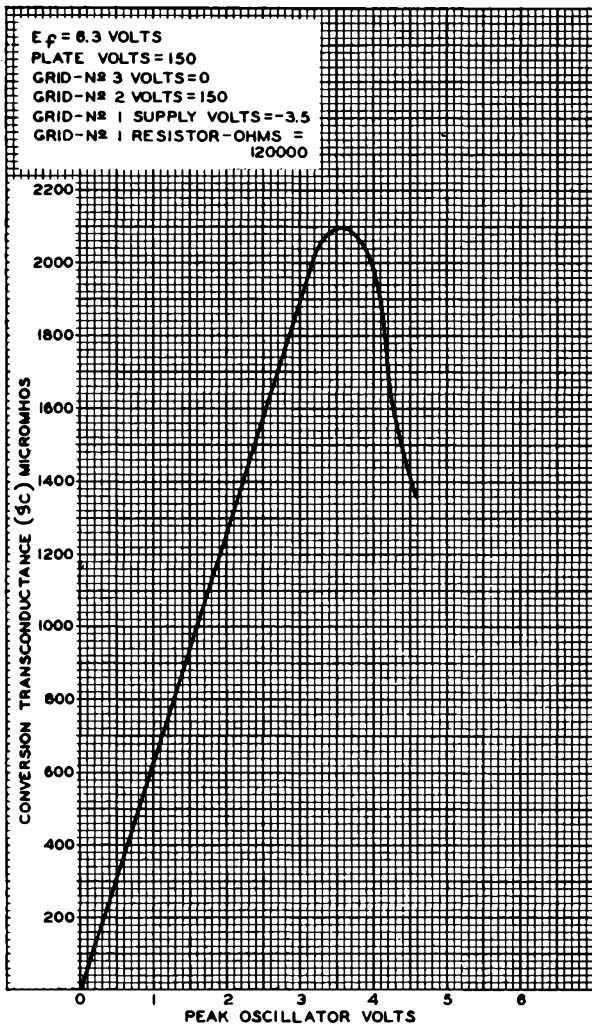
92CM-7547RI

6X8



6X8

OPERATION CHARACTERISTIC
WITH SEPARATE OSCILLATOR EXCITATION
PENTODE UNIT



JUNE 18, 1951

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

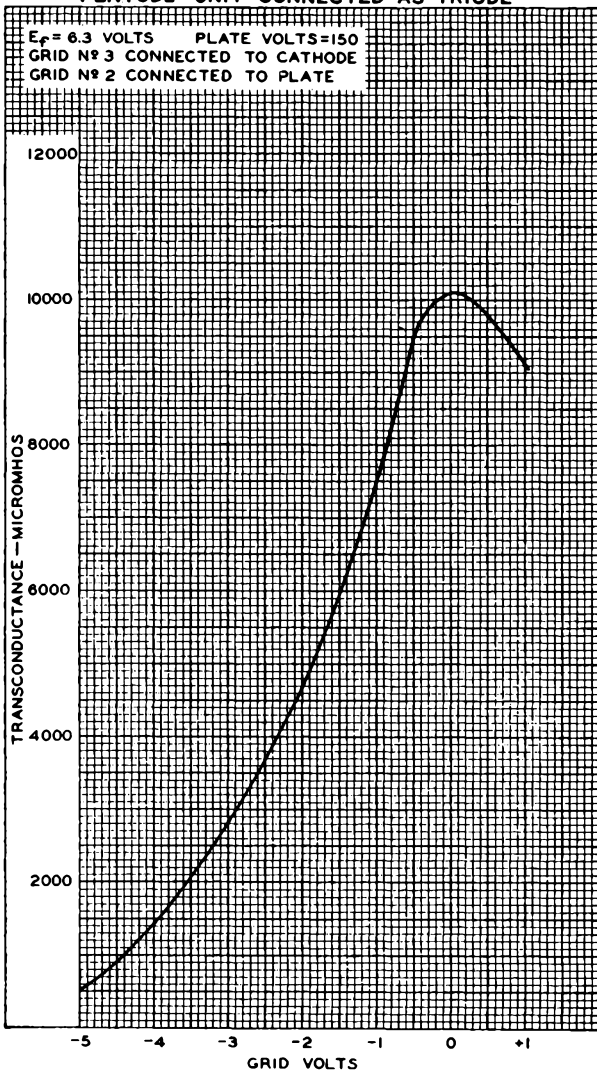
92CM-7548R1



6X8

6X8

AVERAGE CHARACTERISTIC PENTODE UNIT CONNECTED AS TRIODE



APRIL 29, 1952

TUBE DEPARTMENT

92CM-7844



6Y6-G

BEAM POWER AMPLIFIER

6Y6-G

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	1.25	amp

Direct Interelectrode Capacitances (Approx.):^o

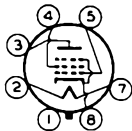
Grid No.1 to Plate	0.7	μf
Input	15	μf
Output	11	μf

^o with no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length	4-5/8"
Seated Length	3-7/8" + 3/16" - 5/16" ←
Maximum Diameter	1-13/16"
Bulb	ST-14
Base	Medium-Shell Octal 7-Pin
Basing Designation for BOTTOM VIEW	G-7AC

- Pin 1 - No Connection
- Pin 2 - Heater
- Pin 3 - Plate
- Pin 4 - Grid No.2



- Pin 5 - Grid No.1
- Pin 7 - Heater
- Pin 8 - Cathode, Grid No.3

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	200 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	135 max.	volts
PLATE DISSIPATION	12.5 max.	watts
GRID-No.2 DISSIPATION	1.75 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	180 max.	volts
Heater positive with respect to cathode	180 max.	volts

Typical Operation and Characteristics:

Plate Voltage	135	200	volts
Grid-No.2 Voltage	135	135	volts
Grid-No.1 (Control-Grid) Voltage	-13.5	-14	volts
Peak AF Grid-No.1 Voltage	13.5	14	volts
Zero-Signal Plate Current	58	61	ma
Max.-Signal Plate Current	60	66	ma
Zero-Signal Grid-No.2 Current	3.5	2.2	ma
Max.-Signal Grid-No.2 Current	11.5	9.0	ma
Plate Resistance (Approx.)	9300	18300	ohms
Transconductance	7000	7100	μmhos
Load Resistance	2000	2600	ohms

← Indicates a change.

6Y6-G



6Y6-G

BEAM POWER AMPLIFIER

Total Harmonic Distortion.	10	10	%
Max.-Signal Power Output	3.6	6.0	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias	0.1	..	megohm
For cathode bias	0.5	..	megohm

OSCILLATOR - Class C*For Television High-Voltage RF Supplies***Maximum Ratings, Design-Center Values:**

DC PLATE VOLTAGE	350 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	135 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE.	-90 max.	volts
DC PLATE CURRENT	80 max.	ma
DC GRID-No.1 CURRENT	1.5 max.	ma
PLATE INPUT.	23 max.	watts
GRID-No.2 INPUT.	0.6 max.	watt
PLATE DISSIPATION.	8 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	180 max.	volts
Heater positive with respect to cathode	180 max.	volts

Typical Operation:

DC Plate Voltage	350	..	volts
DC Grid-No.2 Voltage ^{□□}	{ 115	..	volts
	{ 5000	..	ohms
	{ -40	..	volts
DC Grid-No.1 Voltage†	{ 30000	..	ohms
	{ 600	..	ohms
Peak RF Grid-No.1 Voltage.	48	..	volts
DC Plate Current	60	..	ma
DC Grid-No.2 Current	5.1	..	ma
DC Grid-No.1 Current (Approx.)	1.4	..	ma
Driving Power (Approx.)	0.1	..	watt
Power Output (Approx.)	14	..	watts

^{□□} obtained from a separate source, from the plate-voltage supply with a potentiometer, or through a series resistor of value shown.

† obtained from a fixed supply, by grid resistor (30000), by cathode resistor (600) or by combination methods.

SEPT. 15, 1949

TUBE DEPARTMENT

DATA

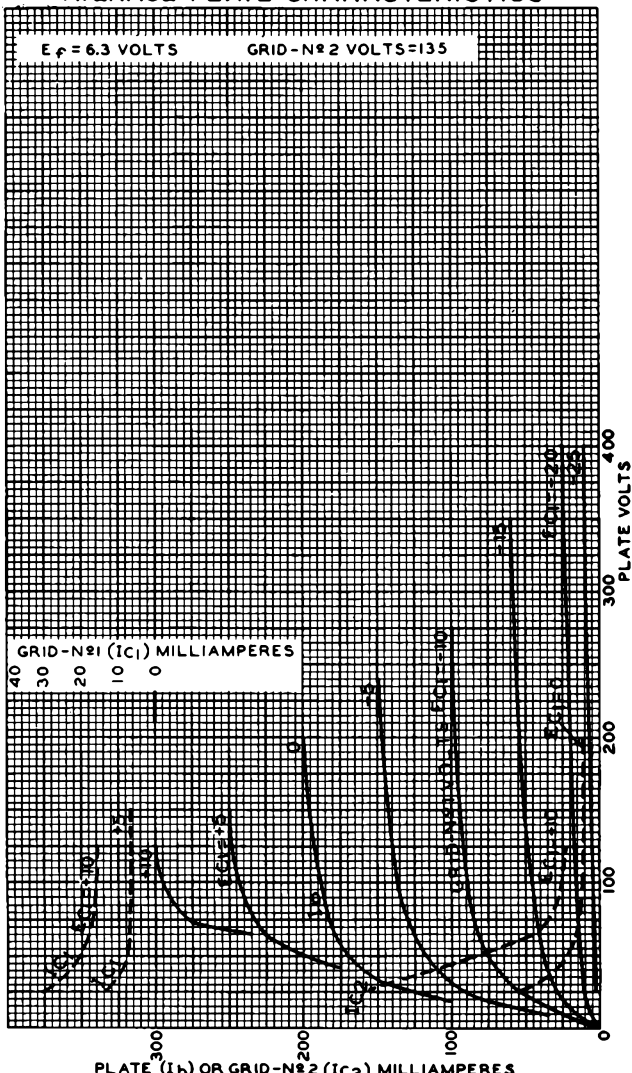
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6Y6-G

6Y6-G

AVERAGE PLATE CHARACTERISTICS



SEPT. 11, 1946

TUBE DEPARTMENT

92CM-6127R1

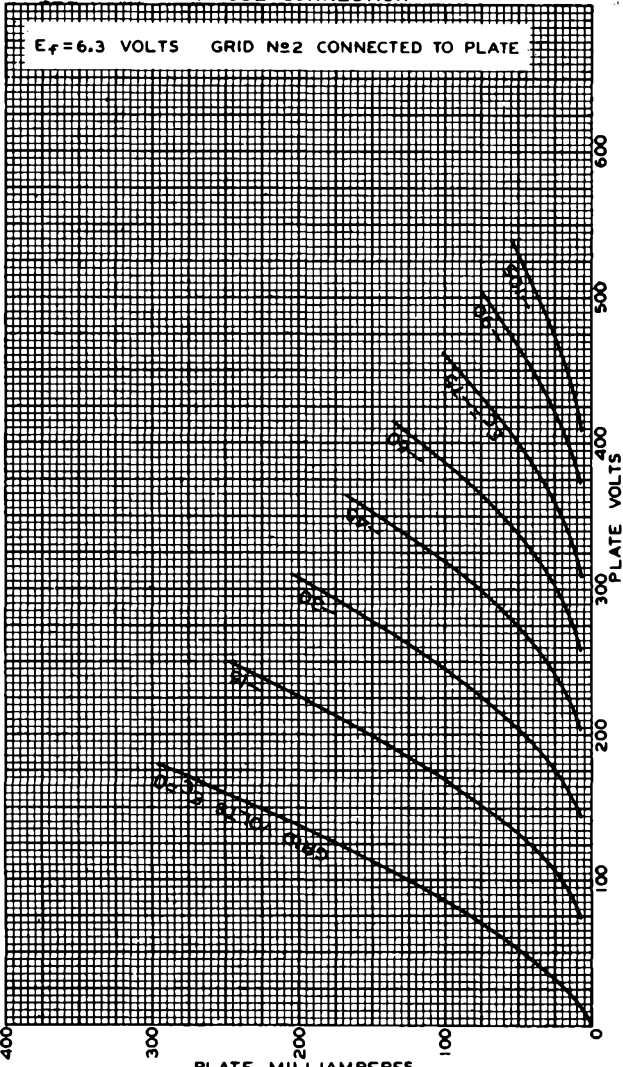
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6Y6-G



6Y6-G

AVERAGE PLATE CHARACTERISTICS
TRIODE CONNECTION



FEB. 8, 1944

PLATE MILLIAMPERES
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6538



7A4



7A4

DETECTOR AMPLIFIER TRIODE

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3 [□]	a-c or d-c volts
Current	0.3 ^{□□}	amp.
Direct Interelectrode Capacitances: [○]		
Grid to Plate	4.0	μf
Grid to Cathode	3.4	μf
Plate to Cathode	3.0	μf
Maximum Overall Length	2-25/32"	
Maximum Seated Height	2-1/4"	
Maximum Diameter	1-3/16"	
Bulb	T-9	
Base	Lock-in 8-Pin	
Pin 1 - Heater	Pin 6 - Grid	
Pin 2 - Plate	Pin 7 - Cathode	
Pin 3 - No Connection	Pin 8 - Heater	
Pin 4 - No Connection	Plug - Base Shell	
Pin 5 [{] Internal Con. Do Not Use		
Mounting Position	BOTTOM VIEW (5A ₂)	Any



Maximum Ratings, Typical Operating Conditions, and Curves for Type 7A4 are the same as for Type 6J5.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- Nominal voltage = 7.0 volts.
- Nominal current = 0.32 ampere.
- with close-fitting shield connected to cathode. Values are approximate.

May 1, 1941

RCA RADIODIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

7A5



7A5

BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3 [□]	a-c or d-c volts
Current	0.75 ^{□□}	amp.
Maximum Overall Length		3-5/32"
Maximum Seated Height		2-5/8"
Maximum Diameter		1-3/16"
Bulb		T-9
Base		Lock-in 8-Pin
Pin 1 - Heater		Pin 6 - Grid
Pin 2 - Plate		Pin 7 - Cathode
Pin 3 - Screen		Pin 8 - Heater
Pin 4 - No Connection		Plug - Base Shell
Pin 5 - No Connection		
Mounting Position		Any



BOTTOM VIEW (6AA)

AMPLIFIER

Plate Voltage	125 max. volts
Screen Voltage	125 max. volts
Plate Dissipation	5.5 max. watts
Screen Dissipation	1.2 max. watts

Typical Operation and Characteristics—Class A₁ Amplifier:

Heater	6.3 [□]	6.3 [□]	volts
Plate	110	125	volts
Screen	110	125	volts
Grid [▲]	-7.5	-9	volts
Peak A-F Grid Voltage	7.5	9	volts
Zero-Sig. Plate Cur.	40	44	ma.
Max.-Sig. Plate Cur.	41	45	ma.
Zero-Sig. Screen Cur. (Approx.)	3	3.3	ma.
Max.-Sig. Screen Cur. (Approx.)	7	9.5	ma.
Plate Res. (Approx.)	14000	17000	ohms
Transcond.	5800	6000	μmhos
Load Res.	2500	2700	ohms
Total Harmonic Dist.	10	10	%
Max.-Sig. Power Output	1.5	2.2	watts

■ In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible.

□ Nominal voltage = 7 volts.

□□ Nominal current = 0.80 ampere.

▲ The type of input coupling should not introduce too much resistance in the grid circuit. Transformer- or impedance-input coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



7A6

7A6 TWIN DIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3 [□]	ac or dc volts
Current	0.15 ^{□□}	amp

Direct Interelectrode Capacitances (Approx.):[○]

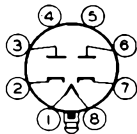
Plate to Cathode (Diode No.1)	2.0	μf
Plate to Cathode (Diode No.2)	2.6	μf
Plate of Diode No.1 to Plate of Diode No.2	0.1 max.	μf

[○] With external shield connected to cathodes.

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-25/32"
Maximum Seated Length	2-1/4"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin
Basing Designation for BOTTOM VIEW	7AJ

Pin 1 - Heater
Pin 2 - Cathode of
Diode No.2
Pin 3 - Plate of
Diode No.2
Pin 4 - No
Connection



Pin 5 - Internal
Shield
Pin 6 - Plate of
Diode No.1
Pin 7 - Cathode of
Diode No.1
Pin 8 - Heater
Plug - Base Shell

Maximum Ratings, Design-Center Values (Each Diode):

RMS PLATE VOLTAGE	150 max.	volts
PEAK PLATE CURRENT	45 max.	ma.
DC OUTPUT CURRENT	8 max.	ma.
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	330 max.	volts
Heater positive with respect to cathode.	330 max.	volts

[□] Nominal voltage = 7.0 volts.
^{□□} Nominal current = 0.160 ampere.

7A7



7A7

REMOTE-CUTOFF PENTODE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc voltsCurrent. 0.3^{□□} ampDirect Interelectrode Capacitances:[○]Grid No.1 to Plate 0.005 max. $\mu\mu\text{f}$ Input. 5.5 $\mu\mu\text{f}$ Output 7.0 $\mu\mu\text{f}$

○ With no external shield.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

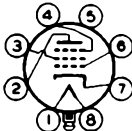
Basing Designation for BOTTOM VIEW 8V

Pin 1 - Heater

Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - Grid No.3

Pin 5 - Internal
Shield

Pin 6 - Grid No.1

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base
Shell

Maximum Ratings, Characteristics, and Typical Operating Conditions are the same as those for Type 6SK7

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.32 ampere.

JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7A8



7A8

OCTODE CONVERTER

Heater	Coated Unipotential Cathode		
Voltage	5.3	a-c or d-c volts	
Current	0.15	amp.	
Direct Interelectrode Capacitances: ^o			
Grid No. 4 to Plate	0.15 max.	uuf	←
Grid No. 4 to Grid No. 2	0.15	uuf	
Grid No. 4 to Grid No. 1	0.15	uuf	
Grid No. 1 to Grid No. 2	0.60	uuf	
Grid No. 4 to All Other Electrodes = R-F Input	7.5	uuf	
Grid No. 2 to All Other Electrodes Except Grid No. 1 (Osc. Output)	3.4	uuf	
Grid No. 1 to All Other Electrodes Except Grid No. 2 (Osc. Input)	3.8	uuf	
Plate to All Other Electrodes	9	uuf	
Maximum Overall Length	2-25/32"		
Maximum Seated Height	2-1/4"		
Maximum Diameter	1-3/16"		
Bulb	7-9		
Base	Lock-in 8-Pin		
Pin 1 - Heater	Pin 6 - Grid #4		
Pin 2 - Plate	Pin 7 - Cathode		
Pin 3 - Grid #2	Pin 8 - Heater		
Pin 4 - Grid #1	Plug - Base Shell		
Pin 5 - Grids #3 & #5			
Mounting Position	BOTTOM VIEW (8U)		Any



CONVERTER SERVICE

Plate Voltage	300 max.	volts	←
Screen (Grids #3 & #5) Voltage	100 max.	volts	
Screen Supply Voltage	300 max.	volts	
Anode-Grid (Grid #2) Voltage	200 max.	volts	
Anode-Grid Supply Voltage	300 max.	volts	
Control-Grid (Grid #4) Voltage	0 min.	volts	
Plate Dissipation	1.0 max.	watt	
Screen Dissipation	0.3 max.	watt	
Anode-Grid Dissipation	0.75 max.	watt	
Total Cathode Current	13 max.	ma.	
Typical Operation and Characteristics:			
Plate Voltage	100	250	volts
Screen Voltage	75	100	volts
Anode-Grid Voltage	100	-	volts
Anode-Grid Supply Voltage ^Δ	-	250	volts
Control-Grid Voltage	-	-3	volts
Oscillator-Grid (Grid #1) Res.	5000	5000	ohms
Plate Resistance	0.65	0.7	approx. megohm
Conversion Transconductance	375	550	μmhos
Conversion Transconductance for Grid Bias of -30 volts	-	2	approx. μmhos
Plate Current	1.8	3.0	ma.
Screen Current	2.7	3.2	ma.
Anode-Grid Current	2.0	4.2	ma.
Oscillator-Grid Current	0.2	0.4	ma.
Total Cathode Current	8.5	10.8	ma.

NOTE: The transconductance between Grid #1 and Grid #2 (not oscillating) is approximately 1600 μmhos under the following conditions: plate volts, 250; screen volts, 100; anode-grid volts, 180; oscillator-grid volts, 0; and control-grid connected to cathode.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

○ With close-fitting shield connected to cathode.

□ Nominal voltage = 7.0 volts.

◻ Nominal current = 0.16 ampere.

Δ Applied through a properly by-passed 20000-ohm voltage-dropping resistor.

← Indicates a change.

May 1, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



7AD7

7AD7

POWER PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3 ^o	ac or dc volts
Current	0.6 ^{oo}	amp

Direct Interelectrode Capacitances:^o

Grid No.1 to Plate.	0.030 max.	μf
Input	11.5	μf
Output.	7.5	μf

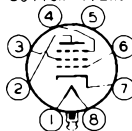
^o With external shield connected to cathode.

Mechanical:

Mounting Position	Any
Maximum Overall Length.	3-5/32"
Maximum Seated Length	2-5/8"
Maximum Diameter.	1-3/16"
Bulb.	T-9

Base. Lock-In 8-Pin
Basing Designation for BOTTOM VIEW. 8V

- Pin 1 - Heater
- Pin 2 - Plate
- Pin 3 - Grid No.2
- Pin 4 - Grid No.3
- Pin 5 - Internal Shield



- Pin 6 - Grid No.1
- Pin 7 - Cathode
- Pin 8 - Heater
- Plug - Base Shell

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE.	150 max.	volts
GRID-No.2 SUPPLY VOLTAGE.	300 max.	volts
PLATE DISSIPATION	10 max.	watts
GRID-No.2 DISSIPATION	1.2 max.	watts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value	0 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	300	volts
Grid No.3 (Suppressor).	Connected to cathode at socket	
Grid-No.2 Voltage	150	volts
Cathode-Bias Resistor	68	ohms
Plate Resistance (Approx.).	0.3	megohm
Transconductance.	9500	μmhos
Plate Current	28	ma
Grid-No.2 Current	7	ma

^o Nominal voltage = 7.0 volts.

^{oo} Nominal current = 0.16 ampere.

MAY 20, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



7AF7

MEDIUM-MU TWIN TRIODE

7AF7
7AG7

Heater, for Unipotential Cathode:
 Voltage 6.3[□] ac or dc volts
 Current 0.3^{□□} amp

The 7AF7 is the same as the 14AF7 except for heater rating.

□ Nominal voltage = 7.0 volts. □□ Nominal current = 0.32 ampere.

7AG7

SHARP-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:
 Voltage 6.3[□] ac or dc volts
 Current 0.15^{□□} amp

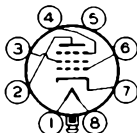
Direct Interelectrode Capacitances:[○]
 Grid No.1 to Plate 0.005 max. μf
 Input 7 μf
 Output 6 μf

○ with external shield connected to cathode.

Mechanical:

Mounting Position Any
 Maximum Overall Length 2-25/32"
 Maximum Seated Length 2-1/4"
 Maximum Diameter 1-3/16"
 Bulb T-9
 Base Lock-in 8-Pin
 Basing Designation for BOTTOM VIEW 8V

Pin 1 - Heater
 Pin 2 - Plate
 Pin 3 - Grid No.2
 Pin 4 - Grid No.3
 Pin 5 - Internal
 Shield



Pin 6 - Grid No.1
 Pin 7 - Cathode
 Pin 8 - Heater

Plug - Base
Shell

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts
 GRID-No.2 (SCREEN) VOLTAGE 300 max. volts
 PLATE DISSIPATION 2 max. watts
 GRID-No.2 DISSIPATION 0.75 max. watt
 GRID-No.1 (CONTROL-GRID) VOLTAGE:
 Negative bias value 1 min. volt

PEAK HEATER-CATHODE VOLTAGE:
 Heater negative with respect to cathode. 90 max. volts
 Heater positive with respect to cathode. 90 max. volts

□ Nominal voltage = 7.0 volts. □□ Nominal current = 0.16 ampere.

JUNE 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

7AG7



7AG7

SHARP-CUTOFF PENTODE

Typical Operation and Characteristics:

Plate Voltage.	250	..	volts
Grid No.3 (Suppressor)	Connected to cathode at socket		
Internal Shield.	Connected to cathode at socket		
Grid-No.2 Voltage.	250	..	volts
Cathode-Bias Resistor*	250	..	ohms
Plate Resistance (Approx.)	0.75	..	megohm
Transconductance	4200	..	μ hos
Grid-No.1 Bias (Approx.) for plate current of 10 μ a	-10	..	volts
Plate Current.	6	..	ma
Grid-No.2 Current.	2	..	ma

* Fixed-bias operation is not recommended.



7AH7

7AH7

REMOTE-CUTOFF PENTODE

GENERAL DATA

Electrical:

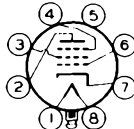
Heater, for Unipotential Cathode:
 Voltage 6.3[□] ac or dc volts
 Current 0.15^{□□} amp
 Direct Interelectrode Capacitances:[○]
 Grid No.1 to Plate . . . 0.005 max. μmf
 Input 7 μmf
 Output 6.5 μmf

[○]With external shield connected to cathode.

Mechanical:

Mounting Position Any
 Maximum Overall Length 2-25/32"
 Maximum Seated Length 2-1/4"
 Maximum Diameter 1-3/16"
 Bulb T-9
 Base Lock-in 8-Pin
 Basing Designation for BOTTOM VIEW 8V

Pin 1-Heater
 Pin 2-Plate
 Pin 3-Grid No.2
 Pin 4-Grid No.3
 Pin 5-Internal
 Shield



Pin 6-Grid No.1
 Pin 7-Cathode
 Pin 8-Heater
 Plug - Base
 Shell

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts
 GRID-No.2 (SCREEN) VOLTAGE 300 max. volts
 PLATE DISSIPATION 2 max. watts
 GRID-No.2 DISSIPATION 0.7 max. watt
 GRID-No.1 (CONTROL-GRID) VOLTAGE:
 Negative bias value -1 min. volt
 PEAK HEATER-CATHODE VOLTAGE:
 Heater negative with respect to cathode 90 max. volts
 Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 250 volts
 Grid No.3 (Suppressor) Connected to cathode at socket
 Internal Shield Connected to cathode at socket
 Grid-No.2 Voltage 250 volts
 Cathode-Bias Resistor # 250 ohms
 Plate Resistance (Approx.) 1 megohm
 Transconductance 3300 μmhos
 Grid-No.1 Bias (Approx.) for
 transconductance of 35 μmhos -20 volts

Fixed bias not recommended.

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.16 ampere.

FEB. 1, 1949

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

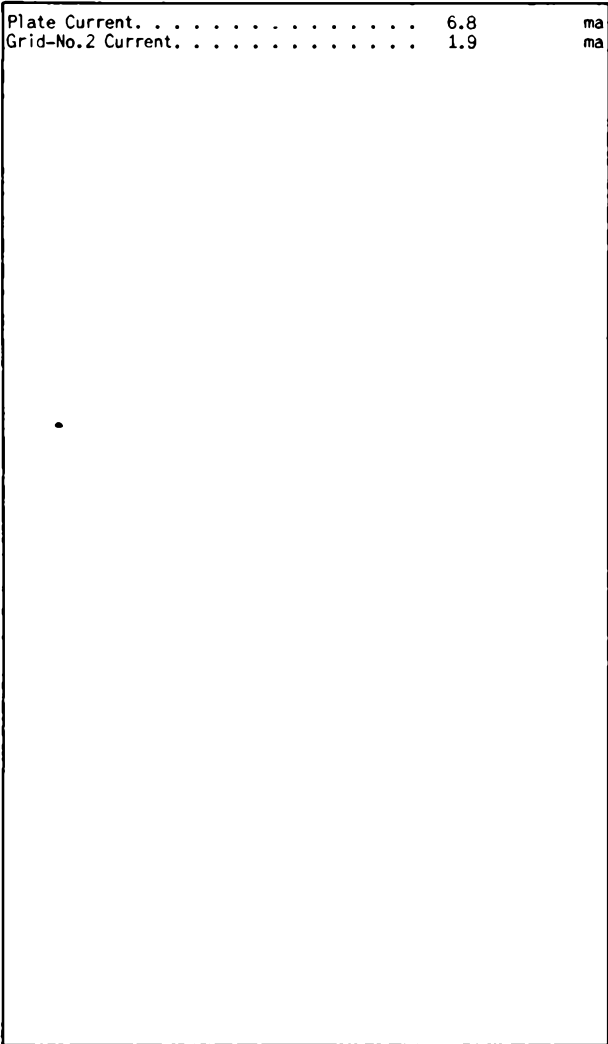
7AH7



7AH7

REMOTE-CUTOFF PENTODE

Plate Current.	6.8	ma
Grid-No.2 Current.	1.9	ma



FEB. 1, 1949

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7AU7

7AU7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

*Intended for use in equipment having
series heater-string arrangement*

The 7AU7 is the same as the 12AU7 except for the following items:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage	7.0	3.5	ac or dc volts
Current	0.3	0.6	. . . . .amp
Warm-up time (Average) .	-	11	. . . . .sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.



7B4

7B4

HIGH-MU TRIODE

GENERAL DATA

Electrical:

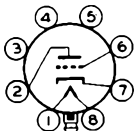
Heater, for Unipotential Cathode:

Voltage	6.3 [□]	ac or dc volts
Current	0.3 ^{□□}	amp

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-25/32"
Maximum Seated Length	2-1/4"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin
Basing Designation for BOTTOM VIEW	5AC

Pin 1 - Heater
 Pin 2 - Plate
 Pin 3 - No
 Connection
 Pin 4 - No
 Connection



Pin 5 - No
 Connection
 Pin 6 - Grid
 Pin 7 - Cathode
 Pin 8 - Heater
 Plug - Base Shell

Maximum Ratings, Characteristics, and Typical Operating Conditions are the same as those for type 6SF5

- Nominal voltage = 7.0 volts.
- Nominal current = 0.32 ampere.

7B5



7B5

POWER PENTODE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc volts
 Current. 0.4^{□□} amp

Mechanical:

Mounting Position. Any
 Maximum Overall Length 3-5/32"
 Maximum Seated Length. 2-5/8"
 Maximum Diameter 1-3/16"
 Bulb T-9
 Base Lock-in 8-Pin
 Basing Designation for BOTTOM VIEW 6AE

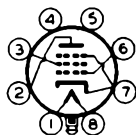
Pin 1 - Heater

Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - No .

Pin 5 - No

Connection
Connection

Pin 6 - Grid No.1

Pin 7 - Cathode,
Grid No.3

Pin 8 - Heater

Plug - Base
Shell

*Maximum Ratings, Characteristics, and Typical Operating
 Conditions are the same as those for Type 6K6-GT*

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.43 ampere.

JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7B6

TWIN DIODE—HIGH-MU TRIODE

7B6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3 [□]	ac or dc volts
Current	0.3 ^{□□}	amp

Direct Interelectrode Capacitances—Triode Unit:[○]

Grid to Plate	1.6	μf
Grid to Cathode	3.0	μf
Plate to Cathode	2.4	μf

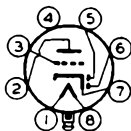
[○] With external shield connected to cathode.

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-25/32"
Maximum Seated Length	2-1/4"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8W

- Pin 1—Heater
- Pin 2—Triode Plate
- Pin 3—Triode Grid
- Pin 4—Internal Connection
- Pin 5—Diode Plate No.2



- Pin 6—Diode Plate No.1
- Pin 7—Cathode, Internal Shield
- Pin 8—Heater Plug -Base Shell

TRIODE UNIT AMPLIFIER—Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	100	250	volts
Grid Voltage	-1	-2	volts
Amplification Factor	100	100	
Plate Resistance	110000	91000	ohms
Transconductance	900	1100	μmhos
Plate Current	0.4	0.9	ma.

DIODE UNITS—Two

Consideration of these units, including typical circuits and diode curves, is given at the front of this Section.

[□] Nominal voltage = 7.0 volts.
^{□□} Nominal current = 0.32 ampere.

7B7



7B7

REMOTE-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc volts

Current 0.15^{□□} amp

Direct Interelectrode Capacitances:[○]

Grid No.1 to Plate 0.007 max. $\mu\mu\text{f}$

Input 5.0 $\mu\mu\text{f}$

Output 6.0 $\mu\mu\text{f}$

[○] With external shield connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-25/32"

Maximum Seated Length 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8V

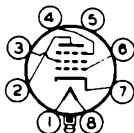
Pin 1 - Heater

Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - Grid No.3

Pin 5 - Internal
Shield



Pin 6 - Grid No.1

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base
Shell

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 100 max. volts

PLATE DISSIPATION 2.25 max. watts

GRID-No.2 DISSIPATION 0.25 max. watt

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 100 250 . . volts

Grid No.3 (Suppressor) Connected to cathode at socket

Grid-No.2 Voltage 100 100 . . volts

Grid-No.1 Voltage -3 -3 . . volts

Plate Resistance (Approx.) 0.3 0.75 . . megohm

Transconductance 1675 1750 . . μmhos

Grid-No.1 Bias (Approx.) for
transconductance of 10 μmhos -40 -40 . . volts

Plate Current 8.2 8.5 . . ma.

Grid-No.2 Current 1.8 1.7 . . ma.

[□] Nominal voltage = 7.0 volts.

^{□□} Nominal current = 0.160 ampere.

JUNE 20, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7B8

PENTAGRID CONVERTER

7B8

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc volts

Current. 0.3^{□□} amp

Direct Interelectrode Capacitances:[○]

Grid No.4 to All Other Electrodes (RF Input) 10.0 . . μf

Plate to All Other Electrodes (Mixer Output) 9.0 . . μf

Grid No.1 to All Other Electrodes except
Grid No.2 (Osc. Input) 5.0 . . μf

Grid No.2 to All Other Electrodes except
Grid No.1 (Osc. Output) 3.4 . . μf

Grid No.4 to Plate 0.2 max. μf

Grid No.4 to Grid No.2 0.2 max. μf

Grid No.4 to Grid No.1 0.2 max. μf

Grid No.1 to Grid No.2 0.9 . . μf

[○] With external shield connected to cathode.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8X

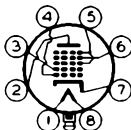
Pin 1 - Heater

Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - Grid No.1

Pin 5 - Grid No.3,
Grid No.5



Pin 6 - Grid No.4

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base
Shell

Maximum Ratings and Typical Operating Conditions for the 7B8 are the same as those for Type 6A8

[□] Nominal voltage = 7.0 volts.

^{□□} Nominal current = 0.320 ampere.

7C5



7C5

BEAM POWER AMPLIFIER

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc voltsCurrent 0.45^{□□} ampDirect Interelectrode Capacitances (Approx.):[○]Grid No.1 to Plate 0.4 μf Input 9.5 μf Output 9.0 μf [○] With no external shield.**Mechanical:**

Mounting Position Any

Maximum Overall Length 3-5/32"

Maximum Seated Length 2-5/8"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 6AA

Pin 1-Heater

Pin 2-Plate

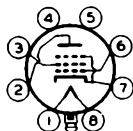
Pin 3-Grid No.2

Pin 4-No

Connection

Pin 5-No

Connection



Pin 6-Grid No.1

Pin 7-Cathode,
Grid No.3

Pin 8-Heater

Plug -Base
Shell

Maximum Ratings and Typical Operating Conditions for the 7C5 are the same as those for Type 6V6

[□] Nominal voltage = 7.0 volts.^{□□} Nominal current = 0.48 ampere.

JUNE 20, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



DUPLEX-DIODE HIGH-MU TRIODE

Heater*	Coated Unipotential Cathode	
Voltage	6.3 [□]	a-c or d-c volts
Current	0.15 ^{□□}	amp.
Direct Interelectrode Capacitances - Triode Unit:°		
Grid to Plate	1.4	μf
Grid to Cathode	2.4	μf
Plate to Cathode	3.0	μf
Maximum Overall Length		2-25/32" ←
Maximum Seated Height		2-1/4" ←
Maximum Diameter		1-3/16" ←
Bulb		T-9
Base		Lock-in 8-Pin
Pin 1 - Heater		Pin 6 - Diode Plate #1
Pin 2 - Triode Plate		Pin 7 - Cathode
Pin 3 - Triode Grid		Pin 8 - Heater
Pin 4 - Cathode		Plug - Base Shell
Pin 5 - Diode Plate #2		
Mounting Position	BOTTOM VIEW (8W)	Any

TRIODE UNIT

Plate Voltage	250 max.	volts
<i>Characteristics - Class A₁ Amplifier:</i>		
Heater	6.3	volts
Plate	250	volts
Grid	-1	volt
Amp. Fact.	100	
Plate Res.	0.1	megohm
Transcond.	1000	μmhos
Plate Cur.	1.3	ma.
<i>Typical Operation - Resistance-Coupled Amplifier:</i>		
Plate Supply	250	volts
Load Resistance	0.25	megohm
Grid Resistor	10	megohms

DIODE UNITS - Two

Consideration of these units is given under Type 85. Circuits will be similar to those shown for the 55 with fixed bias. Diode biasing of the triode unit of the 7C6 is not suitable. ←
 Diode curves under Type 6B7 apply to the 7C6.

- Nominal voltage = 7.0 volts.
- Nominal current = 0.16 ampere.
- * In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- ° Values are approximate.
- ← Indicates a change.

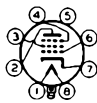
7C7



7C7

TRIPLE-GRID DETECTOR AMPLIFIER

Heater [■]	Coated Unipotential Cathode		
Voltage	6.3 [□]	a-c or d-c volts	
Current	0.15 ^{□□}	amp.	
Direct Interelectrode Capacitances: [○]			
Grid to Plate	0.007 max.	μf	
Input	5.5	μf	
Output	6.5	μf	
Maximum Overall Length			2-25/32"
Maximum Seated Height			2-1/4"
Maximum Diameter			1-3/16"
Bulb			T-9
Base			Lock-in 8-Pin
Pin 1 - Heater			Pin 6 - Grid
Pin 2 - Plate			Pin 7 - Cathode
Pin 3 - Screen			Pin 8 - Heater
Pin 4 - Suppressor			Plug - Base Shell
Pin 5 - Internal Shield			
Mounting Position	BOTTOM VIEW (BV)		Any
	<u>AMPLIFIER</u>		
Plate Voltage			300 max. volts
Screen Voltage			100 max. volts
Screen Supply Voltage			300 max. volts
Grid Voltage			0 min. volts
Plate Dissipation			1.0 max. watt
Screen Dissipation			0.1 max. watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>			
Plate	100	250	volts
Screen	100	100	volts
Grid	-3	-3	volts
Suppressor	Connected to cathode at socket		
Internal Shield	Connected to cathode at socket		
Plate Res. (approx.)	1.2	2	megohms
Transconductance	1225	1300	μmhos
Plate Cur.	1.8	2	ma.
Screen Cur.	0.4	0.5	ma.
[■] In circuits where the cathode is not directly connected to the heater the potential difference between heater and cathode should be kept as low as possible. [□] Nominal voltage = 7 volts. ^{□□} Nominal current = 0.16 ampere. [○] with close-fitting shell connected to cathode.			



May 15, 1940

 RCA RADIODRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



7E6

7E6

TWIN DIODE—MEDIUM-MU TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc volts

Current 0.3^{□□} amp

Direct Interelectrode Capacitances: *

Triode Unit:

Grid to Plate 1.5 μμf

Grid to Cathode 3.0 μμf

Plate to Cathode 2.4 μμf

Diode-No.1 Plate to Grid. 0.01 max. μμf

Diode-No.2 Plate to Grid. 0.04 max. μμf

* with external shield connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length. 2-25/32"

Maximum Seated Length 2-1/4"

Maximum Diameter. 1-3/16"

Bulb. T-9

Base. Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8W

Pin 1—Heater

Pin 2—Triode Plate

Pin 3—Triode Grid

Pin 4—Internal
Connection
—Do Not Use

Pin 5—Diode-No.2
Plate



Pin 6—Diode-No.1

Plate

Pin 7—Cathode

Pin 8—Heater

Plug—Base
Shell

TRIODE UNIT AMPLIFIER—Class A1

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

PLATE DISSIPATION 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 100 250 volts

Cathode-Bias Resistor 770 950 ohms

Amplification Factor. 16.5 16

Plate Resistance 11000 8500 ohms

(continued on next page)

□ Nominal Voltage = 7.0 volts.

□□ Nominal Current = 0.32 ampere.

←Indicates a change.

SEPT. 30, 1948

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7E6



7E6

TWIN DIODE—MEDIUM-MU TRIODE

Transconductance.	1500	1900	. .	μ mhos
Plate Current	3.9	9.5	. .	ma

Maximum Circuit Values (for maximum circuit conditions):

Grid-No.1-Circuit Resistance.	1 max.	megohm
---------------------------------------	--------	--------

DIODE UNITS—Two

Maximum Ratings, Design-Center Values:

PLATE CURRENT (Each Diode).	1 max.	ma
-------------------------------------	--------	----



7E7

7E7

TWIN DIODE—REMOTE-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3 [□]	ac or dc volts
Current	0.3 ^{□□}	amp

Direct Interelectrode Capacitances:[○]

Pentode Unit:

Grid No.1 to Plate	0.005 max.	μf
Input	4.6	μf
Output	5.5	μf
Diode-No.1 Plate to Grid No.1	0.013 max.	μf
Diode-No.2 Plate to Grid No.1	0.003 max.	μf

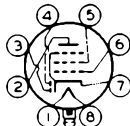
[○] with external shield connected to cathode.

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-25/32"
Maximum Seated Length	2-1/4"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-In 8 Pin

Basing Designation for BOTTOM VIEW BAE

Pin 1 - Heater	Pin 6 - Pentode
Pin 2 - Pentode Plate	Grid No.1
Pin 3 - Diode-No.2 Plate	Pin 7 - Cathode, Pentode
Pin 4 - Diode-No.1 Plate	Grid No.3
Pin 5 - Pentode Grid No.2	Pin 8 - Heater
	Plug - Base
	Shell



PENTODE * UNIT AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	100 max.	volts
GRID-No.2 SUPPLY VOLTAGE	300 max.	volts
PLATE DISSIPATION	2 max.	watts
GRID-No.2 DISSIPATION	0.3 max.	watt
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value	0 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

(continued on next page)

[□] Nominal voltage = 7.0 volts.

^{□□} Nominal current = 0.32 ampere.

←Indicates a change.

7E7



7E7

TWIN DIODE—REMOTE-CUTOFF PENTODE

Typical Operation and Characteristics:

Plate Voltage.	100	250	..	volts
Grid-No.2 Voltage.	100	100	..	volts
Cathode-Bias Resistor.	80	330	..	ohms
Plate Resistance (Approx.)	0.15	0.7	..	megohm
Transconductance	160K	1300	..	μ hos
Grid-No.1 Bias (Approx.) for transconductance of 2 μ hos	-36	-42.5	..	volts
Plate Current.	10	7.5	..	ma
Grid-No.2 Current.	2.7	1.6	..	ma

DIODE UNITS - Two

Maximum Ratings, Design-Center Values:

PLATE CURRENT (For Each Diode) 1 max. ma

SEPT. 30, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7F7

HIGH-MU TWIN TRIODE

7F7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3 [□]	ac or dc volts
Current	0.3 ^{□□}	amp

Direct Interelectrode Capacitances:*

Each Unit:

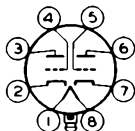
Grid to Plate	1.6	μuf
Grid to Cathode . . .	2.4	μuf
Plate to Cathode . . .	2.0	μuf
Grid to Grid	0.2 max.	μuf
Plate to Plate	1.0 max.	μuf

* with external shield connected to cathode.

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-25/32"
Maximum Seated Length	2-1/4"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin
Basing Designation for BOTTOM VIEW	BAC

- Pin 1 - Heater
- Pin 2 - Cathode of Unit No.2
- Pin 3 - Plate of Unit No.2
- Pin 4 - Grid of Unit No.2
- Pin 5 - Grid of Unit No.1



- Pin 6 - Plate of Unit No.1
- Pin 7 - Cathode of Unit No.1
- Pin 8 - Heater
- Plug - Base Shell

AMPLIFIER - Class A₁

Values are for each unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
PLATE DISSIPATION	1.0 max.	watt
GRID VOLTAGE:		
Positive bias value	0 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Characteristics:

Plate Voltage	100	250	volts
Grid Voltage	-1	-2	volts
Amplification Factor	70	70	
Plate Resistance (Approx.)	62000	44000	ohms
Transconductance	1125	1600	μmhos
Plate Current	0.65	2.3	ma

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.32 ampere.

← Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY.

DATA



7F8

MEDIUM-MU TWIN TRIODE

7F8

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	6.3 [□]	ac or dc volts
Current	0.3 ^{□□}	amp

Direct Interelectrode Capacitances:

Each Unit:

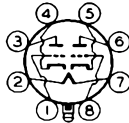
Grid to Plate	1.2*	μf
Grid to Cathode	2.8*	μf
Plate to Cathode	1.4*	μf
Heater to Cathode	2.8**	μf
Grid to Grid	0.1 max.	μf
Plate to Plate	0.5 max.	μf

- * With external shield connected to cathode.
- ** With external shield connected to ground.

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-9/32"
Maximum Seated Length	1-3/4"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin
Basing Designation for BOTTOM VIEW	8BW

- Pin 1 - Grid of Unit No.2
- Pin 2 - Heater
- Pin 3 - Plate of Unit No.2
- Pin 4 - Cathode of Unit No.2
- Pin 5 - Cathode of Unit No.1



- Pin 6 - Plate of Unit No.1
- Pin 7 - Heater
- Pin 8 - Grid of Unit No.1
- Plug - Base Shell

AMPLIFIER - Class A₁

Values are for each unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
PLATE DISSIPATION (Total for both units)	3.5 max.	watts
GRID VOLTAGE:		
Positive bias value	0 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Characteristics:

Plate Voltage	250	volts
Cathode-Bias Resistor	500	ohms
Amplification Factor	48	

□ Nominal voltage = 7.0 volts. □□ Nominal current = 0.32 ampere.

7F8



7F8

MEDIUM-MU TWIN TRIODE

Plate Resistance (Approx.)	14500	..	ohms
Transconductance	3300	..	μ hos
Plate Current.	6	..	ma
Grid Bias for plate current of 10 μ a (Approx.).	-11	..	volts

Maximum Circuit Values (for maximum rated conditions):

Grid-Circuit Resistance:
For cathode-bias operation 0.5 max. megohm



7G7

SHARP-CUTOFF PENTODE

7G7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc voltsCurrent 0.45^{□□} ampDirect Interelectrode Capacitances:[○]

Grid No.1 to Plate 0.007 max. μμf

Input 9 μμf

Output 7 μμf

○ with external shield connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-25/32"

Maximum Seated Length 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

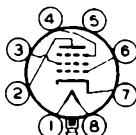
Basing Designation for BOTTOM VIEW 8V

Pin 1 - Heater

Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - Grid No.3

Pin 5 - Internal
Shield

Pin 6 - Grid No.1

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base
ShellAMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts ←

GRID-No.2 (SCREEN) VOLTAGE 100 max. volts ←

GRID-No.2 SUPPLY VOLTAGE 300 max. volts ←

PLATE DISSIPATION 1.5 max. watts ←

GRID-No.2 DISSIPATION 0.3 max. watt ←

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts ←

Heater positive with respect to cathode 90 max. volts ←

Typical Operation and Characteristics:

Plate Voltage 250 volts

Grid No.3 Connected to cathode at socket

Internal Shield Connected to cathode at socket

Grid-No.2 Voltage 100 volts

Grid-No.1 Voltage -2 volts

Cathode-Bias Resistor 250 ohms

Plate Resistance (Approx.) 0.8 megohm

Transconductance 4500 μmhos

(continued on next page)

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.48 amperes.

← Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7G7



7G7

SHARP-CUTOFF PENTODE

→ Grid-No.1 Bias (Approx.) for			
Cathode Current Cutoff	-7	..	volts
Plate Current.	6	..	ma
Grid-No.2 Current.	2	..	ma

→ indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7H7

REMOTE-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

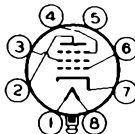
Voltage	6.3 ⁰	ac or dc volts
Current	0.3 ⁰⁰	amp
Direct Interelectrode Capacitances: ⁰		
Grid No.1 to Plate	0.007 max.	μf
Input	8	μf
Output	7	μf

⁰ With external shield connected to cathode.

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-25/32"
Maximum Seated Length	2-1/4"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin
Basing Designation for BOTTOM VIEW	8V

- Pin 1 - Heater
- Pin 2 - Plate
- Pin 3 - Grid No.2
- Pin 4 - Grid No.3
- Pin 5 - Internal Shield



- Pin 6 - Grid No.1
- Pin 7 - Cathode
- Pin 8 - Heater
- Plug - Base Shell

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	150 max.	volts
GRID-No.2 SUPPLY VOLTAGE	300 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value	0 max.	volts
PLATE DISSIPATION	2.5 max.	watts
GRID-No.2 DISSIPATION	0.5 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	100	250	volts
Grid No.3	Connected to cathode at socket		
Internal Shield	Connected to cathode at socket		
Grid-No.2 Voltage	100	150	volts
Grid-No.1 Voltage	-1	-	volt
Cathode-Bias Resistor	80	180	ohms

(continued on next page)

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.32 ampere.

← Indicates a change.

7H7



7H7

REMOTE-CUTOFF PENTODE

Plate Resistance (Approx.)	0.25	0.8	megohm
Transconductance	4800	4200	μ hos
Grid-No.1 Bias (Approx.) for transconductance of 35 μ hos	-12	-19	volts
Plate Current.	8.2	10	ma
Grid-No.2 Current.	3.3	3.2	ma

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



7J7

TRIODE-HEPTODE CONVERTER

7J7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc voltsCurrent 0.3^{□□} ampDirect Interelectrode Capacitances:[○]Heptode Grid No.1 to Heptode Plate 0.03 max. μf ←Heptode Grid No.1 to Triode Plate 0.1 max. μf

Heptode Grid No.1 to Triode Grid &

Heptode Grid No.3. 0.3 max. μf

Triode Grid & Heptode Grid No.3 to

Triode Plate 0.9 . . μf

Heptode Grid No.1 to All Other

Electrodes (RF Input). 4.6 . . μf

Heptode Plate to All Other

Electrodes (Mixer Output) 3.2 . . μf

Triode Grid & Heptode Grid No.3 to All

Other Electrodes Except Triode

Plate (Oscillator Input) 7.5 . . μf

Triode Plate to All Other Electrodes

Except Triode Grid & Heptode

Grid No.3 (Oscillator Output). 7.5 . . μf [○] With external shield connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-25/32"

Maximum Seated Length 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8BL

Pin 1 - Heater

Pin 2 - Heptode Plate

Pin 3 - Triode Plate

Pin 4 - Triode Grid,

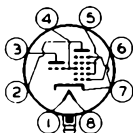
Heptode

Grid No.3

Pin 5 - Heptode

Grids No.2

& No.4



Pin 6 - Heptode

Grid No.1

Pin 7 - Cathode,

Heptode

Grid No.5,

Internal

Shield

Pin 8 - Heater

Plug - Base Shell

CONVERTER

Maximum Ratings, Design-Center Values:

HEPTODE PLATE VOLTAGE 300 max. volts

HEPTODE GRIDS-No.2 & No.4

(SCREEN) VOLTAGE 100 max. volts

[□] Nominal voltage = 7.0 volts.^{□□} Nominal current = 0.32 ampere.

← Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

7J7



7J7

TRIODE-HEPTODE CONVERTER

HEPTODE GRIDS—No. 2 & No. 4			
SUPPLY VOLTAGE	300 max.	volts	
HEPTODE GRID—No. 1 (CONTROL- GRID) VOLTAGE:			
Positive bias value.	0 max.	volts	
HEPTODE PLATE DISSIPATION.	0.5 max.	watt	
HEPTODE GRIDS—No. 2 & No. 4 DISSIPATION. . .	0.3 max.	watt	
TRIODE PLATE VOLTAGE	150 max.	volts	
TRIODE PLATE—SUPPLY VOLTAGE.	300 max.	volts	
TRIODE PLATE DISSIPATION	1.25 max.	watts	
TOTAL CATHODE CURRENT.	14 max.	ma	
→ PEAK HEATER—CATHODE VOLTAGE:			
Heater negative with respect to cathode. .	90 max.	volts	
Heater positive with respect to cathode. .	90 max.	volts	
→ Typical Operation:			
Heptode Plate Voltage.	100	250	volts
Heptode Grids—No. 2 & No. 4 Voltage. . .	100	100	volts
Heptode Grid—No. 1 Voltage.	-3	-3	volts
Triode (Oscillator) Plate—Supply Volt.	100	250†	volts
Triode Grid & Heptode			
Grid—No. 3 Resistor	50000	50000	ohms
Heptode Plate Resistance	0.5	1.5	megohms
Heptode Plate Current.	1.5	1.4	ma
Heptode Grids—No. 2 & No. 4 Current. . .	2.6	2.8	ma
Triode Plate Current	3.2	5	ma
Triode Grid & Heptode			
Grid—No. 3 Current.	0.3	0.4	ma
Conversion Conductance	280	290	μmhos
Conversion Conductance (Approx.) for heptode grid—No. 1 bias of -20 volts .			
	2	2	μmhos
Total Cathode Current.	7.7	9.6	ma
† Applied through a 20000-ohm dropping resistor, properly bypassed.			
NOTE: The transconductance of the triode section, not oscillating, is approximately 1400 μmhos under the following conditions: triode plate voltage = 150; triode-grid & heptode grid—No. 3 volts = -3. Under the same conditions, triode plate current is 6.6 ma.; triode plate resistance is 10700 ohms, and amplification factor is 15.			
→ Indicates a change.			

DEC. 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7K7

TWIN DIODE—HIGH-MU TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3⁰ ac or dc volts
 Current 0.3⁰⁰ amp

Mechanical:

Mounting Position Any
 Maximum Overall Length 2-25/32"
 Maximum Seated Length 2-1/4"
 Maximum Diameter 1-3/16"
 Bulb T-9
 Base Lock-in 8-Pin

Base Designation for BOTTOM VIEW 8BF

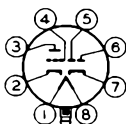
Pin 1-Heater

Pin 2-Triode
 Cathode

Pin 3-Triode Plate

Pin 4-Triode Grid

Pin 5-Diode-No.2
 Plate



Pin 6-Diode-No.1
 Plate

Pin 7-Cathode of
 Diode-No.1 &
 Diode-No.2

Pin 8-Heater
 Plug - Base Shell

TRIODE UNIT AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 250 max. volts

Typical Operation and Characteristics:

Plate Voltage 250 volts
 Grid Voltage -2 volts
 Amplification Factor 70
 Plate Resistance 44000 ohms
 Transconductance 1600 μ hos
 Plate Current 2.3 ma

DIODE UNITS - Two

The two diode units have a common cathode and are independent of the triode unit. Further consideration of the diode units including diode curves is given at the front of this Section.

[□]Nominal voltage = 7.0 volts

^{□□}Nominal current = 0.32 amperes.



PENTAGRID CONVERTER

Heater [■] Coated Unipotential Cathode		
Voltage	6.3 [□]	a-c or d-c volts
Current	0.3 ^{□□}	amp.
Direct Interelectrode Capacitances: [○]		
Grid #3 to All Other Electrodes & Base Shell (R-F Input)	9.0	μf
Plate to All Other Electrodes & Base Shell (Mixer Output)	9.0	μf
Grid #1 to All Other Electrodes & Base Shell	7.0	μf
Grid #3 to Plate	0.20 max.	μf
Grid #1 to Grid #3	0.20 max.	μf
Grid #1 to Plate	0.15 max.	μf
Grid #1 to All Other Electrodes & Base Shell Except Cathode	5.0	μf
Grid #1 to Cathode	2.2	μf
Cathode to All Other Electrodes & Base Shell Except Grid #1	6.0	μf
Maximum Overall Length	2-25/32"	
Maximum Seated Height	2-1/4"	
Maximum Diameter	1-3/16"	
Bulb	T-9	
Base	Lock-in 8-Pin	
Pin 1 - Heater	Pin 6 - Grid #3	
Pin 2 - Plate	Pin 7 - Cathode	
Pin 3 - Grids #2 & #4	Pin 8 - Heater	
Pin 4 - Grid #1	Plug - Base Shell	
Pin 5 - Grid #5		
Mounting Position	BOTTOM VIEW (8AL)	Any
	<u>CONVERTER SERVICE</u>	
Plate Voltage	300 max.	volts
Grids #2 & #4 Voltage	100 max.	volts
Grids #2 & #4 Supply Voltage	300 max.	volts
Grid #3 Voltage [●]	0 min.	volts
Plate & Grids #2 & #4 Dissipation (total)	2.0 max.	watts
Grids #2 & #4 Dissipation	1.0 max.	watt
Total Cathode Current	14 max.	ma.
Characteristics with Separate Excitation: [•]		
Plate Voltage	100	250 volts
Grids #2 & #4 Voltage	100	100 volts
Grid #3 (Control) Voltage	-2	-2 volts
Grid #5 Voltage	0	0 volts
Grid #1 Resistor	20000	20000 ohms
Plate Resistance	0.5	1 approx. megohm
Conversion Transcond.	.525	550 μmhos
Conversion Transcond. with Grid #3 Bias of -35 volts	2	2 approx. μmhos
Plate Current	3.3	3.5 ma.
Grids #2 & #4 Current	8.5	8.5 ma.
Grid #1 Current	0.5	0.5 ma.
Total Cathode Current	12.3	12.5 ma.
[■] , [□] , ^{□□} , [●] , [○] , [•] : See next page.		



May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

7Q7



7Q7

PENTAGRID CONVERTER

(continued from preceding page)

NOTE: The transconductance between Grid #1 and Grids #2 & #4 connected to plate (not oscillating) is approximately 4500 μ hos under the following conditions: Grids #1, #3, and #5 at 0 volts; Grids #2 & #4 and plate at 100 volts.

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- Nominal voltage = 7.0 volts.
- Nominal current = 0.32 ampere.
- With shield-can connected to cathode.
- With self-excited oscillator.
- These characteristics correspond very closely to those obtained with zero bias in a self-excited oscillator circuit.

A typical self-excited converter circuit is shown under type 6SA7.

May 1, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



7V7

SHARP-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3^o ac or dc volts

Current 0.45^o amp

Direct Interelectrode Capacitances:^o

Grid No.1 to Plate . . . 0.004 max. μ f

Input 9.5 μ f

Output 6.5 μ f

^o with external shield connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-25/32"

Maximum Seated Length 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8V

Pin 1 - Heater

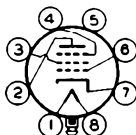
Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - Grid No.3

Pin 5 - Internal

Shield



Pin 6 - Grid No.1

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base

Shell

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 150 max. volts

GRID-No.2 SUPPLY VOLTAGE 300 max. volts

PLATE DISSIPATION 4 max. watts

GRID-No.2 DISSIPATION 0.8 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . . 90 max. volts

Heater positive with respect to cathode . . . 90 max. volts

Typical Operation and Characteristics:

	Condition I**	Condition II**
Plate Voltage	300	300 . . volts
Grid No.3 (Suppressor)	Connected to cathode at socket	
Internal Shield	Connected to cathode at socket	
Grid-No.2 Supply - Voltage#	150	300 . . volts
Grid-No.2 Resistor . .	-	40000 . . ohms
Min. Cathode-Bias Resistor	160	160 . . ohms

^o Nominal voltage = 7.0 volts.

^o Nominal current = 0.48 ampere.

*, **, #: See next page.

JUNE 15, 1948

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7V7
7W7



7V7

SHARP-CUTOFF PENTODE

Plate Current	10	10	ma
Grid-No.2 Current . . .	3.9	3.9	ma
Plate Resistance . . .	0.3	0.3	megohm
Transconductance . . .	5800	5800	μmhos
Grid-No.1 Bias (Approx.) for plate current of 10 μa.	-8	-16	volts

* Condition I with fixed grid-No.2 supply gives a sharp-cutoff characteristic.

** Condition II with series grid-No.2 resistor gives an extended-cutoff characteristic.

When grid-No.2 supply voltage in excess of 150 volts is used, a series grid-No.2 resistor must be used to limit grid-No.2 voltage to 150 volts when the plate current is at its normal value of 10 ma.

7W7

SHARP-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc volts
Current 0.45^{□□} amp

Direct Interelectrode Capacitances:[○]

Grid No.1 to Plate . . . 0.0025 max. μf
Input 9.5 μf
Output 7 μf

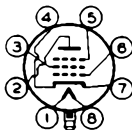
○ With external shield connected to cathode.

Mechanical:

Mounting Position Any
Maximum Overall Length 2-25/32"
Maximum Seated Length 2-1/4"
Maximum Diameter 1-3/16"
Bulb T-9
Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8BJ

Pin 1 - Heater
Pin 2 - Plate
Pin 3 - Grid No.2
Pin 4 - Cathode
Pin 5 - Grid No.3,
Internal
Shield



Pin 6 - Grid No.1
Pin 7 - Cathode
Pin 8 - Heater
Plug - Base
Shell

Maximum Ratings, Typical Operation, and Characteristics are the same as for Type 7V7

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.48 ampere.

JUNE 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7X7

7X7

DOUBLE DIODE-HIGH-MU TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3[□] ac or dc volts

Current 0.3^{□□} amp

Mechanical:

Mounting Position Any

Maximum Overall Length 2-25/32"

Maximum Seated Length 2-1/4"

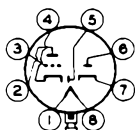
Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8BZ

- Pin 1 - Heater
- Pin 2 - Triode Plate
- Pin 3 - Triode Grid
- Pin 4 - Cathode
(Triode &
Diode No.1)
- Internal
Shield



- Pin 5 - Diode Plate
No.1
- Pin 6 - Diode Plate
No.2
- Pin 7 - Cathode
(Diode No.2)
- Pin 8 - Heater
Plug - Base Shell

TRIODE UNIT AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 100 250 . . volts

Grid Voltage 0 -1 . . volt

Amplification Factor 85 100

Plate Resistance 85000 67000 . . ohms

Transconductance 1000 1500 . . μ hos

Plate Current 1.2 1.9 . . ma

DIODE UNITS - Two

The 7X7 differs from the usual twin-diode-triode in that diode No.2 has its own cathode, separate from that used for the triode and diode No.1.

- Nominal voltage = 7.0 volts.
- Nominal current = 0.32 ampere.



7Y4

FULL-WAVE VACUUM RECTIFIER

7Y4

GENERAL DATA

Electrical:

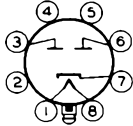
Heater, for Unipotential Cathode:

Voltage	6.3 [□]	ac or dc volts
Current	0.5 ^{□□}	amp

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-25/32"
Maximum Seated Length	2-1/4"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin
Basing Designation for BOTTOM VIEW	5AB

Pin 1 - Heater
 Pin 2 - No
 Connection
 Pin 3 - Plate No.2
 Pin 4 - No
 Connection



Pin 5 - No
 Connection
 Pin 6 - Plate No.1
 Pin 7 - Cathode
 Pin 8 - Heater
 Plug - Base Shell

FULL-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	1250 max.	volts
PEAK PLATE CURRENT PER PLATE	180 max.	ma
DC OUTPUT CURRENT	70 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	450 max.	volts
Heater positive with respect to cathode .	450 max.	volts

Typical Operation:

	Capacitor- Input to Filter	Choke- Input to Filter	
AC Plate-to-Plate Supply			
Voltage (RMS)	650	900	volts
Filter-Input Capacitor	4	-	μf
Min. Total Effective Plate- Supply Impedance per Plate*	150	-	ohms
Min. Filter-Input Choke	-	10	henries
DC Output Current	70	70	ma
DC Output Voltage at Input to Filter (Approx.):			
At half-load (35 ma.)	390	385	volts
At full-load (70 ma.)	355	375	volts
Voltage Regulation (Approx.):			
Half-load to full load current	35	10	volts

* Indicated value for conditions shown will limit peak plate current to maximum rated value. When a filter-input capacitor larger than 4μf is used, it may be necessary to use more plate-supply impedance than the value shown to limit the peak plate current to the rated value.

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.53 ampere.

← Indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

7Z4



7Z4

FULL-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc volts
 Current 0.9^{□□} amp

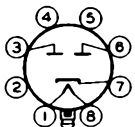
Mechanical:

Mounting Position Any
 Maximum Overall Length 3-5/32"
 Maximum Seated Length 2-5/8"
 Maximum Diameter 1-3/16"
 Bulb T-9
 Base Lock-in 8-Pin
 Basing Designation for BOTTOM VIEW 5AB

Pin 1 - Heater

Pin 2 - No
Connection

Pin 3 - Plate No. 2

Pin 4 - No
Connection

Pin 5 - No

Connection

Pin 6 - Plate No. 1

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base Shell

FULL-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 1250 max. volts
 PEAK PLATE CURRENT PER PLATE 300 max. ma
 DC OUTPUT CURRENT 100 max. ma
 PEAK HEATER-CATHODE VOLTAGE:
 Heater negative with respect to cathode. 450 max. volts
 Heater positive with respect to cathode. 450 max. volts

Typical Operation:

	Capacitor- Input to Filter	Choke- Input to Filter	
AC Plate-to-Plate Supply Voltage (RMS) . .	650	900	volts
Min. Total Effective Plate- Supply Impedance per Plate*	75	-	ohms
Min. Filter-Input Choke. . . .	-	6	henries
DC Output Current.	100	100	ma
DC Output Voltage at Input to Filter (Approx.):			
At half-load (50 ma.)	400	365	volts
At full-load (100 ma.)	365	350	volts
Voltage Regulation (Approx.):			
Half-load to full load current	35	15	volts

* When a filter-input capacitor larger than 40 μ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.96 ampere.

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12A8-GT

12A8-GT

PENTAGRID CONVERTER

The 12A8-GT is the same as the 6A8-GT except for the following items:

Heater, for Unipotential Cathode:

Voltage.	12.6	. . . . .	ac or dc volts
Current.	0.15	. . . . .	amp



12AB5

12AB5

BEAM POWER TUBE

9-PIN MINIATURE TYPE

For use in automobile radio receivers
operating from 12-volt storage batteries

GENERAL DATA

Electrical:

Heater^o, for Unipotential Cathode:

Voltage range. 10.0 to 15.9 dc volts

This voltage range is on an absolute basis. For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts.

Current (Approx.),
at 12.6 volts. 0.2 amp

Direct Interelectrode Capacitances:^o

Grid No.1 to plate 0.7 max. μ f

Grid No.1 to cathode & grid No.3,
grid No.2, and heater. 8 μ f

Plate to cathode & grid No.3,
grid No.2, and heater. 8.5 μ f

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip). . . 2" \pm 3/32"

Maximum Diameter 7/8"

Dimensional Outline. See General Section

Bulb T-6-1/2

Base Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9EU

Pin 1 - Grid No.2

Pin 2 - No Connection

Pin 3 - Grid No.1

Pin 4 - Heater

Pin 5 - Heater



Pin 6 - Grid No.1

Pin 7 - Cathode,
Grid No.3

Pin 8 - Grid No.2

Pin 9 - Plate

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

For application of these design-center ratings to storage-battery operation, see Operating Considerations

PLATE VOLTAGE. 315 max. volts

GRID-No.2 (SCREEN) VOLTAGE 285 max. volts

PLATE DISSIPATION. 12 max. watts

GRID-No.2 INPUT. 2 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

BULB TEMPERATURE (At hottest point

on bulb surface) 250 max. °C

^o: see next page.

SEPT. 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AB5



12AB5

BEAM POWER TUBE

Characteristics with 12.6 volts on heater:

Plate Voltage.	250	250	volts
Grid-No.2 Voltage.	200	250	volts
Grid-No.1 (Control-Grid) Voltage	-	-12.5	volts
Cathode-Bias Resistor.	270	-	ohms
Peak AF Grid-No.1 Voltage.	10.5	12.5	volts
Zero-Signal Plate Current.	33.5	45	ma
Max.-Signal Plate Current.	36	47	ma
Zero-Signal Grid-No.2 Current (Approx.)	1.6	4.5	ma
Max.-Signal Grid-No.2 Current (Approx.)	3.2	7	ma
Plate Resistance (Approx.)	75000	50000	ohms
Transconductance	4000	4100	μmhos
Load Resistance.	6000	5000	ohms
Total Harmonic Distortion.	8	8	%
Max.-Signal Power Output	3.3	4.5	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

PUSH-PULL AF POWER AMPLIFIER - Class AB₁

Maximum Ratings, Design-Center Values:

For application of these design-center ratings to storage-battery operation, see Operating Considerations

PLATE VOLTAGE.	315 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	285 max.	volts
PLATE DISSIPATION.	12 max.	watts
GRID-No.2 INPUT.	2 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)		
	250 max.	°C

Characteristics with 12.6 volts on heater:

Values are for 2 tubes

Plate Voltage.	250	volts
Grid-No.2 Voltage.	250	volts
Grid-No.1 (Control-Grid) Voltage	-15	volts
Peak Af Grid-No.1-to-		
Grid-No.1 Voltage	30	volts
Zero-Signal Plate Current.	70	ma
Max.-Signal Plate Current.	79	ma

- operation of heater in series with other heaters is not recommended.
- without external shield.

SEPT. 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12AB5

12AB5

BEAM POWER TUBE

Zero-Signal Grid-No.2 Current (Approx.) . .	5	ma
Max.-Signal Grid-No.2 Current (Approx.) . .	13	ma
Effective Load Resistance (Plate to plate)	10000	ohms
Total Harmonic Distortion.	5	%
Max.-Signal Power Output	10	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

OPERATING CONSIDERATIONS

The *maximum ratings* in the tabulated data for the 12AB5 are working design-center maximums established according to the standard design-center system of rating electron tubes. Tubes so rated will give satisfactory performance in storage-battery-operated equipment provided the following stipulations are observed:

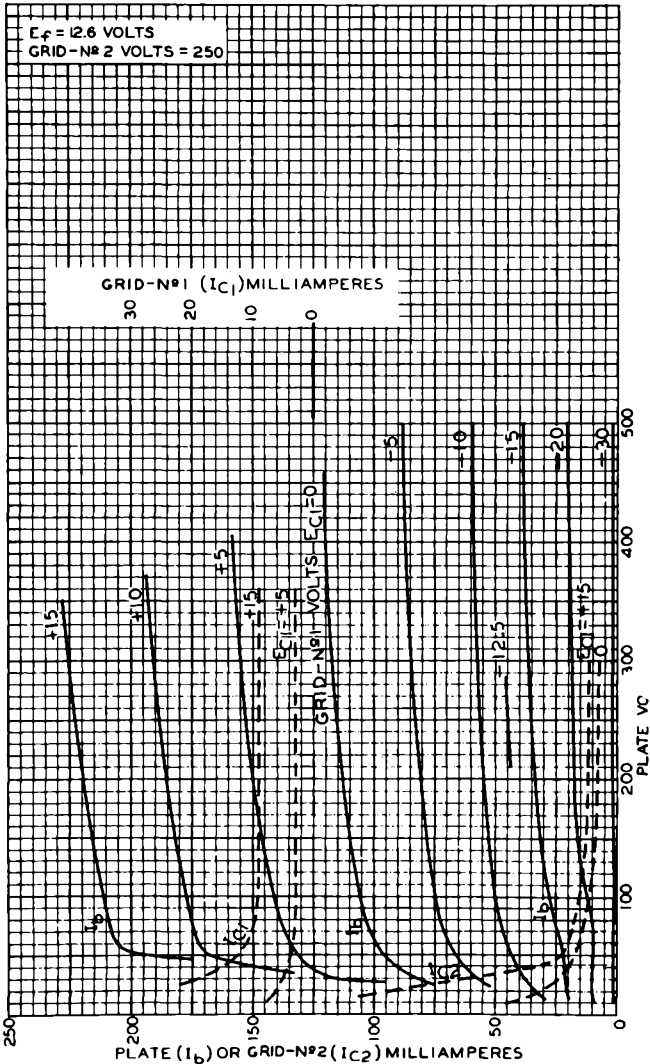
In the case of storage-battery-with-charger supply or similar supplies, the normal battery-voltage fluctuation may be as much as 35 per cent or more. This fluctuation imposes severe operating conditions on tubes. Under these conditions, the equipment should be designed so that 90 per cent of the design-center maximum values of plate voltage, grid-No.2 voltage, plate dissipation, and grid-No.2 input is never exceeded for a battery terminal potential of 13.2 volts. Although the operating voltages of the 12AB5 in this service will, at times, exceed the design-center maximum values, satisfactory performance with probable sacrifice in life will be obtained.

12AB5



12AB5

AVERAGE CHARACTERISTICS



AUGUST 18, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

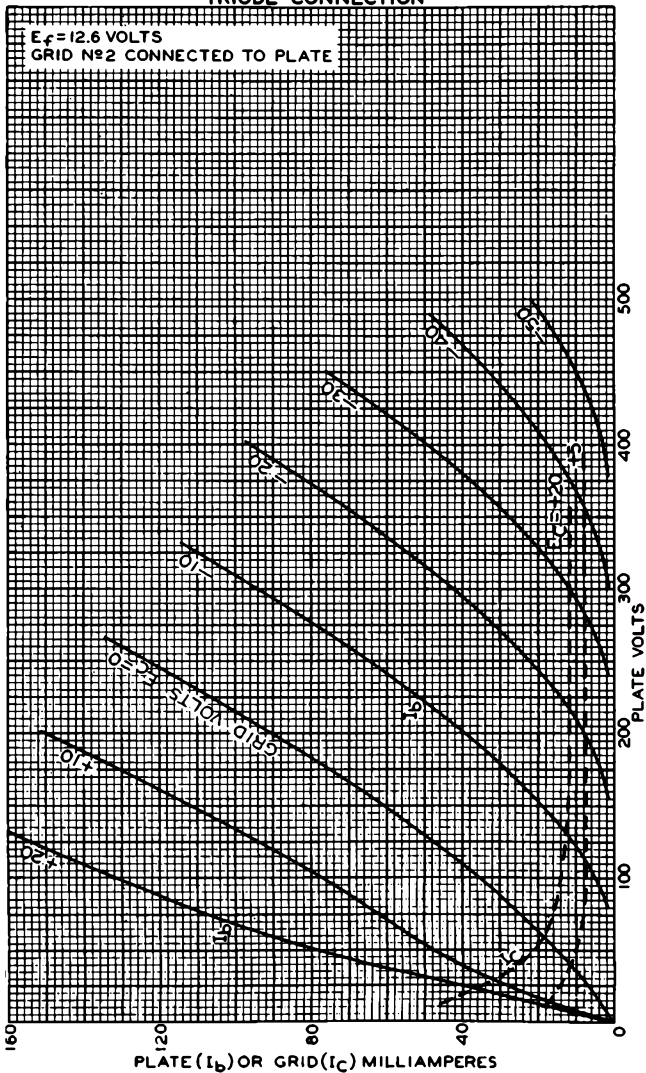
92CM-8754



12AB5

12AB5

AVERAGE CHARACTERISTICS
TRIODE CONNECTION



AUG. 19, 1955

PLATE (I_b) OR GRID (I_c) MILLIAMPERES
TUBE DIVISION

92CM-8756

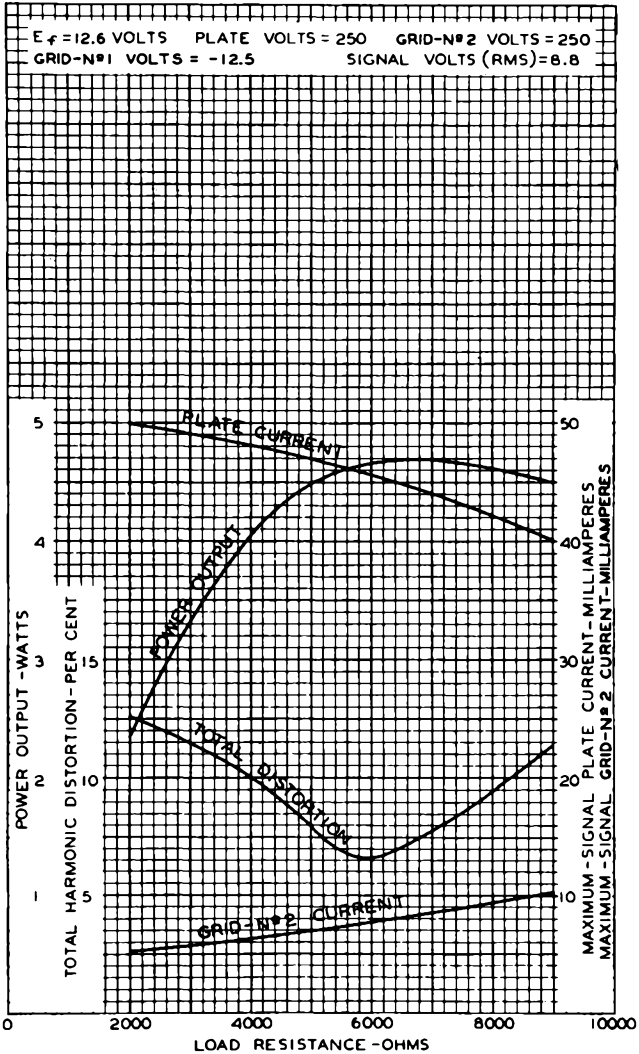
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AB5



12AB5

OPERATION CHARACTERISTICS



AUGUST 18, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8755



12AH7-GT

MEDIUM-MU TWIN TRIODE

12AH7-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 12.6 ac or dc volts

Current 0.15 amp

Direct Interelectrode Capacitances (Approx.):⁰

	Unit No. 1	Unit No. 2	
Grid to plate	3	2.2	μf
Grid to cathode and heater	2.8	3.2	μf
Plate to cathode and heater	2.6	3	μf
Plate of unit No.1 to plate of unit No.2	0.4		μf
Grid of unit No.1 to grid of unit No.2	0.06		μf

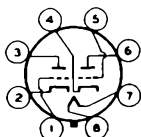
Characteristics, Class A₁ Amplifier (Each unit):

Plate Voltage	100	180	volts
Grid Voltage	-3.6	-6.5	volts
Amplification Factor	16	16	
Plate Resistance (Approx.)	10300	8400	ohms
Transconductance	1550	1900	μmhos
Plate Current	3.7	7.6	ma
Grid Voltage (Approx.) for plate current of 10 μamp	-8.5	-16	volts

Mechanical:

- Mounting Position Any
- Maximum Overall Length 3-1/16"
- Maximum Seated Length 2-1/2"
- Maximum Diameter 1-9/32" ←
- Dimensional Outline See General Section
- Bulb T-9 ←
- Base Intermediate-Shell Octal 8-Pin (JETEC No. 8B-6) ←
- Basing Designation for BOTTOM VIEW 8BE

- Pin 1 - Grid of Unit No.2
- Pin 2 - Cathode of Unit No.2
- Pin 3 - Plate of Unit No.2
- Pin 4 - Cathode of Unit No.1



- Pin 5 - Grid of Unit No.1
- Pin 6 - Plate of Unit No.1
- Pin 7 - Heater
- Pin 8 - Heater

⁰ with external shield JETEC No. 308 connected to cathode of unit under test.

← Indicates a change.

12AH7-GT



12AH7-GT

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁
Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE,	180 max.	volts
PLATE-SUPPLY VOLTAGE	300 max.	volts
PLATE DISSIPATION,	1.5 max.	watts
→ PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

▲ The dc component must not exceed 100 volts.

→ Indicates a change.

SEPT. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



12AL5

TWIN DIODE

MINIATURE TYPE

12AL5

Heater, for Unipotential Cathodes:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12AL5 is the same as the 6AL5 except for heater rating.



I2AL8

MEDIUM-MU TRIODE-POWER TETRODE

9-PIN MINIATURE TYPE

*For use in automobile radio receivers operating directly
from 12-volt storage batteries*

I2AL8

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 10 to 15.9 ac or dc volts

This voltage is on an absolute basis. For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts.

Current (Approx.) at

12.6 volts 0.55 amp

Direct Interelectrode Capacitances:^o

Triode Unit:

Grid to plate 5.7 $\mu\mu\text{f}$

Grid to cathode and heater 1.8 $\mu\mu\text{f}$

Plate to cathode and heater 0.4 $\mu\mu\text{f}$

Tetrode Unit:

Grid No.2 to plate 14 $\mu\mu\text{f}$

Grid No.2 to cathode, grid No.1,
and heater 13 $\mu\mu\text{f}$

Plate to cathode, grid No.1,
and heater 1.6 $\mu\mu\text{f}$

Tetrode grid No.2 to triode grid 0.01 max. $\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

	<i>Triode Unit</i>	<i>Tetrode Unit</i>	
Heater Voltage	12.6	12.6	volts
Plate Voltage	12.6	12.6	volts
Control-Grid Voltage (Developed across 2.2-megohm resistor):			
Grid	-0.9	-	volt
Grid-No.2	-	-0.5	volt
Grid-No.1 (Space-Charge-Grid) Voltage	-	12.6	volts
Amplification Factor:			
Grid to plate	13	-	
Grid No.2 to plate	-	7.2	
Plate Resistance (Approx.)	13000	480	ohms
Transconductance:			
Grid to plate	1000	-	μmhos
Grid No.2 to plate	-	15000	μmhos
Plate Current	0.5	40	ma
Grid-No.1 Current	-	75	ma

Mechanical:

Operating Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

^o: See next page.

12AL8

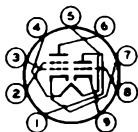


12AL8

MEDIUM-MU TRIODE-POWER TETRODE

Length, Base Seat to Bulb Top (Excluding tip) 2" \pm 3/32"
 Diameter 0.750" to 0.875"
 Dimensional Outline. See *General Section*
 Bulb T6-1/2
 Base Small-Button Noval 9-Pin (JEDEC No. E9-1)
 Basing Designation for BOTTOM VIEW 9GS

Pin 1-Triode Plate
 Pin 2-Tetrode
 Grid No.2
 Pin 3-Tetrode
 Grid No.1
 Pin 4-Heater
 Pin 5-Heater



Pin 6-Tetrode Plate
 Pin 7-Tetrode
 Cathode
 Pin 8-Triode Grid
 Pin 9-Triode
 Cathode

AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

	Triode Unit	Tetrode Unit	
PLATE VOLTAGE.	30 max.	30 max.	volts
GRID-No.2 (CONTROL-GRID) VOLTAGE.	-	-20 max.	volts
GRID-No.1 (SPACE-CHARGE-GRID) VOLTAGE (Absolute maximum) ^o	-	16 max.	volts
CATHODE CURRENT.	20 max.	-	ma
PEAK-HEATER-CATHODE VOLTAGE: Heater negative with respect to cathode	30 max.	30 max.	volts
Heater positive with respect to cathode	30 max.	30 max.	volts

Maximum Circuit Values:

	Triode Unit	Tetrode Unit	
Grid-No.2-Circuit Resistance	-	10 max.	megohms
Grid-Circuit Resistance.	10 max.	-	megohms

^o Without external shield.

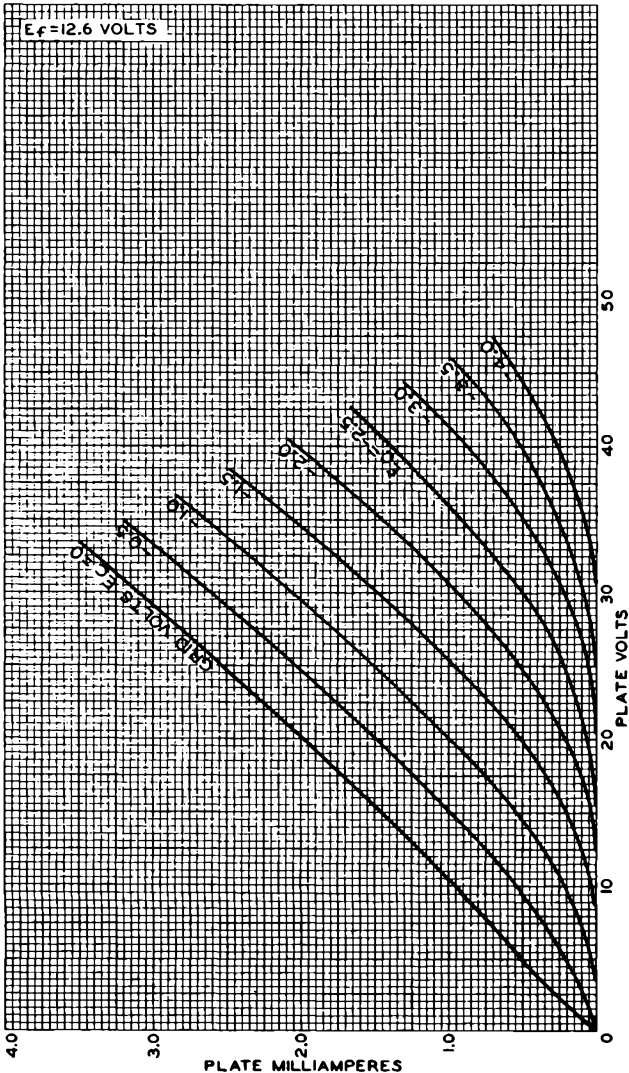
^h under no circumstances should this absolute value be exceeded.



12AL8

AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT

12AL8

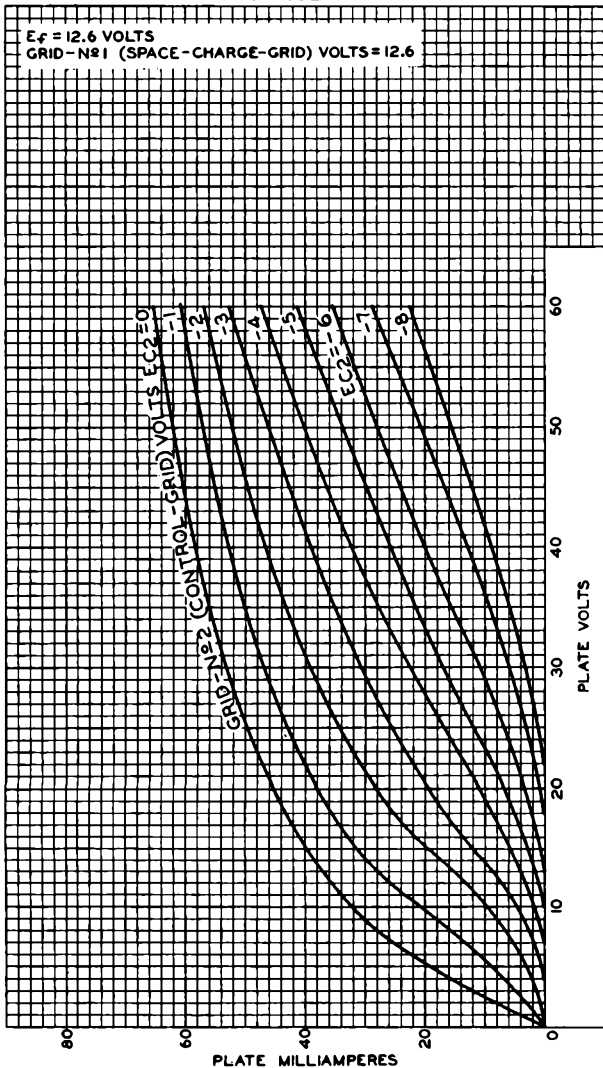


12AL8



12AL8

AVERAGE PLATE CHARACTERISTICS
TETRODE UNIT

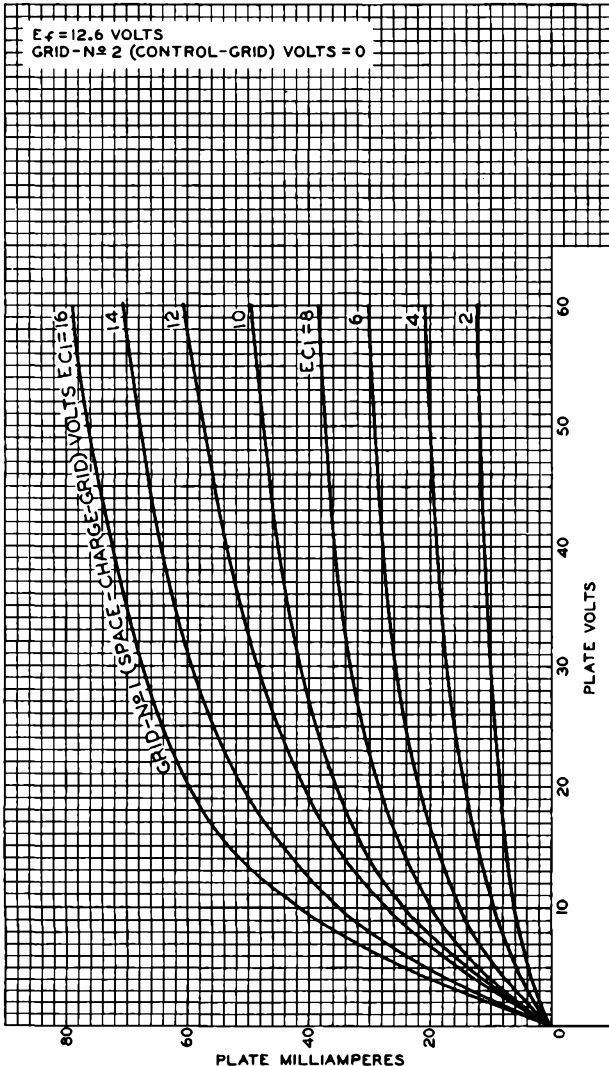




12AL8

AVERAGE PLATE CHARACTERISTICS
TETRODE UNIT

12AL8





12AQ5

12AQ5

BEAM POWER AMPLIFIER

Maximum Circuit Values Per Tube:▲

Grid-No.1-Circuit Resistance:‡

For fixed bias 0.1 max. megohm
For cathode bias 0.5 max. megohm

‡ The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.

▲ If the grid-No.1-circuit resistance is common to two tubes, the indicated maximum values per tube should be halved.

Curves shown under Type 6V6 also apply to 12AQ5

MAY 3, 1954

TUBE DIVISION

TENTATIVE DATA 2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AT6



12AT6
TWIN DIODE—HIGH-MU TRIODE

MINIATURE TYPE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts
Current 0.15 amp

The 12AT6 is the same as the 6AT6 except for heater rating.

MAY 3, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



12AQ5

12AQ5

BEAM POWER AMPLIFIER

Maximum Circuit Values Per Tube:[▲]

Grid-No.1-Circuit Resistance:[§]

- For fixed bias 0.1 max. megohm
- For cathode bias 0.5 max. megohm

[§] The type of input coupling used should not introduce too much resistance in the grid-no.1 circuit. Transformer- or impedance-coupling devices are recommended.

[▲] If the grid-no.1-circuit resistance is common to two tubes, the indicated maximum values per tube should be halved.

Curves shown under Type 6V6 also apply to 12AQ5



12AT7

12AT7

HIGH-MU TWIN TRIODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater Arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.15	0.3	amp

Direct Interelectrode Capacitances (Approx.)^o:

Unit No.1 Unit No.2

Grid-Drive Operation:

Grid to Plate	1.5	1.5	μf
Grid to Cathode	2.2	2.2	μf
Plate to Cathode	0.5	0.4	μf
Heater to Cathode	2.4	2.4	μf

Cathode-Drive Operation:

Plate to Cathode	0.2	0.2	μf
Grid & Heater to Cathode	4.6	4.6	μf
Grid & Heater to Plate	1.8	1.8	μf
Grid to Grid	0.005 max.		μf
Plate to Plate	0.4 max.		μf

^o With no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" ± 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2"
Base	Small-Button Noval. 9 Pin (JETEC No. E9-1)
Basing Designation for BOTTOM VIEW	9A

- Pin 1 - Plate of Unit No.2
- Pin 2 - Grid of Unit No.2
- Pin 3 - Cathode of Unit No.2
- Pin 4 - Heater
- Pin 5 - Heater



- Pin 6 - Plate of Unit No.1
- Pin 7 - Grid of Unit No.1
- Pin 8 - Cathode of Unit No.1
- Pin 9 - Heater Center-Tap

AMPLIFIER - Class A₁

Values are for each unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID VOLTAGE:		
Negative Bias Value	-50 max.	volts
PLATE DISSIPATION	2.5 max.	watts

← Indicates a change

MARCH 1, 1954

RCA TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

12AT7



12AT7

HIGH-MU TWIN TRIODE

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . 90 max. volts
Heater positive with respect to cathode . . 90 max. volts

→ Characteristics:

Plate Supply Voltage	100	250	volts
Cathode-Bias Resistor	270	200	ohms
Amplification Factor	60	60	
Plate Resistance (Approx.)	15000	10900	ohms
Transconductance	4000	5500	μ hos
Grid Voltage (Approx.) for plate current of 10 μ amp . .	-5	-12	volts
Plate Current	3.7	10	ma

→ indicates a change

MARCH 1, 1954

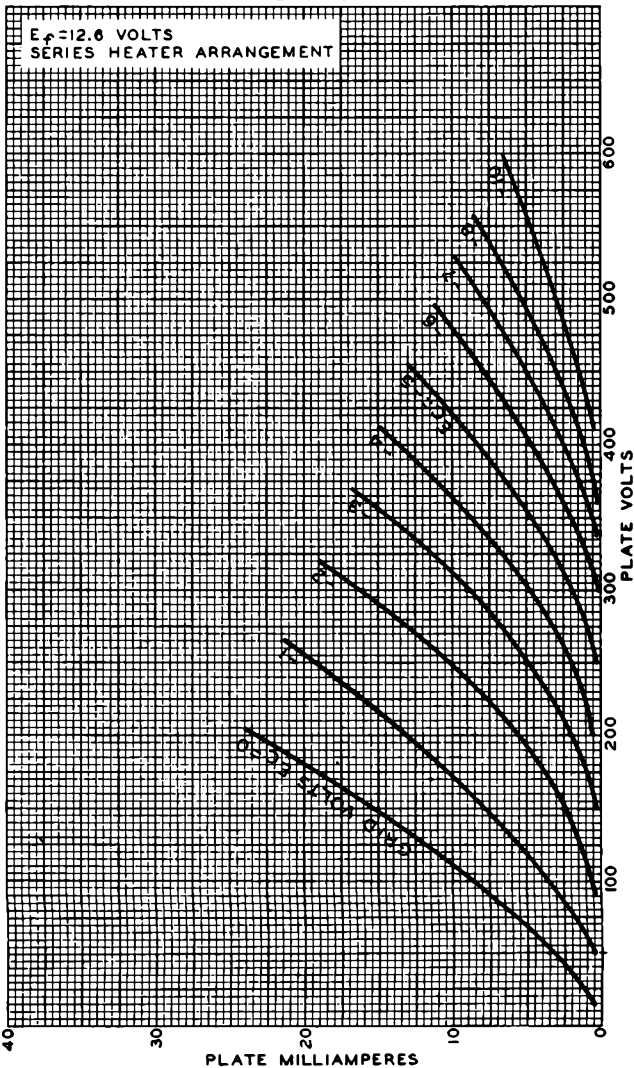
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



12AT7

12AT7 AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



AUG. 31, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7056

12AU6



12AU6

SHARP-CUTOFF PENTODE

MINIATURE TYPE

Heater, for Unipotential Cathode:		
Voltage.	12.6	. . . . . ac or dc volts
Current.	0.15	. . . . . amp

The 12AU6 is the same as the 6AU6 except for heater rating.



12AU7

12AU7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.15	0.3	amp

Direct Interelectrode Capacitances (Approx.):

Unit No.1 Unit No.2

Without external shield:

Grid to plate	1.5	1.5	$\mu\mu\text{f}$
Grid to cathode and heater.	1.6	1.6	$\mu\mu\text{f}$
Plate to cathode and heater	0.4	0.32	$\mu\mu\text{f}$

With external shield, JETEC No.315, connected to cathode:

Grid to plate	1.5	1.5	$\mu\mu\text{f}$
Grid to cathode and heater.	1.8	1.8	$\mu\mu\text{f}$
Plate to cathode and heater	2	?	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	100	250	volts
Grid Voltage	0	-8.5	volts
Amplification Factor.	20	17	
Plate Resistance (Approx.)	6500	7700	ohms
Transconductance.	3100	2200	μmhos
Plate Current	11.8	10.5	ma
Grid Voltage (Approx.) for plate current of 10 $\mu\text{amp.}$	-	-24	volts

Mechanical:

- Mounting Position Any
- Maximum Overall Length. 2-3/16"
- Maximum Seated Length 1-15/16"
- Length, Base Seat to Bulb Top (Excluding tip). 1-9/16" \pm 3/32"
- Maximum Diameter. 7/8"
- Bulb. T-6-1/2
- Base. Small-Button Noval 9-Pin (JETEC No.E9-1)
- Basing Designation for BOTTOM VIEW. 9A

Pin 1 - Plate of Unit No.2

Pin 2 - Grid of Unit No.2

Pin 3 - Cathode of Unit No.2

Pins 4 & 9 - Heater of Unit No.2

Pins 5 & 9 - Heater of Unit No.1



Pin 6 - Plate of Unit No.1

Pin 7 - Grid of Unit No.1

Pin 8 - Cathode of Unit No.1

Pin 9 - Heater Mid-Tap

← Indicates a change.

12AU7



12AU7

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
CATHODE CURRENT	20 max.	ma
PLATE DISSIPATION	2.75 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation.	0.25 max.	megohm
For cathode-bias operation.	1.0 max.	megohm

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No. 10
at front of this Section

HORIZONTAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-Line, 30-frame system[□]

DC PLATE VOLTAGE.	300 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE [▲]	600 max.	volts
CATHODE CURRENT:		
Peak.	300 max.	ma
Average	20 max.	ma
PLATE DISSIPATION	2.75 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or cathode-bias operation.	2.2 max.	megohms
---	----------	---------

VERTICAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-Line, 30-frame system[□]

DC PLATE VOLTAGE.	300 max.	volts
---------------------------	----------	-------

[▲] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

^{▲, □}: See next page.

→ Indicates a change.

MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1



12AU7

12AU7

MEDIUM-MU TWIN TRIODE

PEAK NEGATIVE-PULSE GRID VOLTAGE	400 max.	volts
CATHODE CURRENT:		
Peak	60 max.	ma
Average.	20 max.	ma
PLATE DISSIPATION.	2.75 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or
cathode-bias operation 2.2 max. megohms

VERTICAL DEFLECTION AMPLIFIER

Values are for Each Unit

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	300 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE [#]		
(Absolute maximum)	1200 [▲] max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	250 max.	volts
CATHODE CURRENT:		
Peak	60 max.	ma
Average.	20 max.	ma
PLATE DISSIPATION.	2.75 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation 2.2 max. megohms

- [▲] The dc component must not exceed 100 volts.
- [□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.
- [#] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.
- [■] Under no circumstances should this absolute value be exceeded.

The curves under Type 6C4 also apply to each unit of the 12AU7

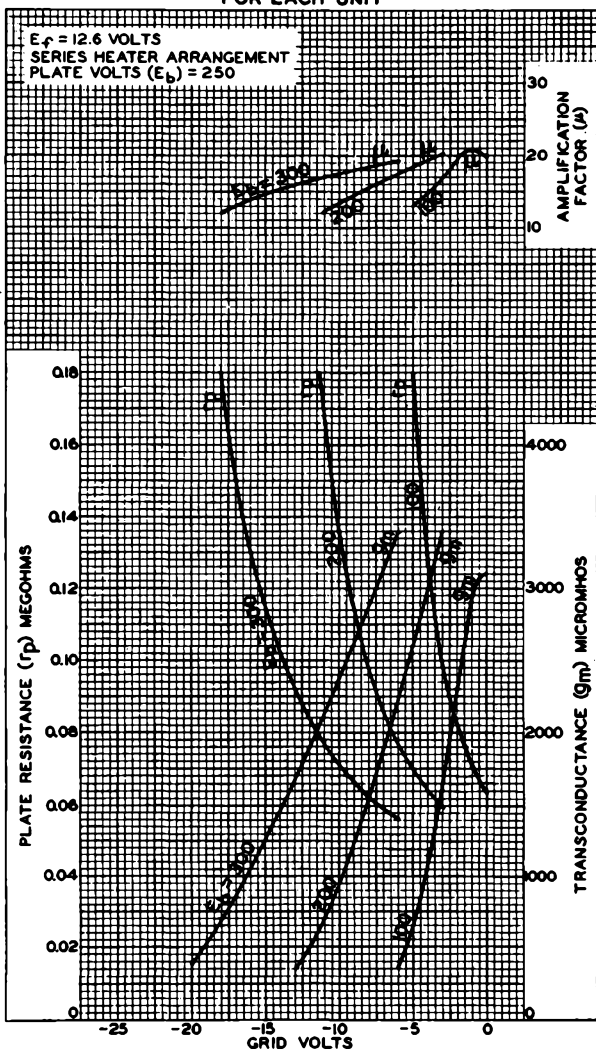
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12AU7



12AU7

AVERAGE CHARACTERISTICS FOR EACH UNIT



MAR. 18, 1955

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8564



12AV6

12AV6

TWIN DIODE—HIGH-MU TRIODE

MINIATURE TYPE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12AV6 is the same as the 6AV6 except for heater rating.



12AV7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

12AV7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater Arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.225	0.45	amp

Direct Interelectrode Capacitances:

	Unit No.1	Unit No.2	
<i>Without external shield:</i>			
Grid to plate	1.9	1.9	$\mu\mu\text{f}$
Grid to cathode and heater.	3.1	3.1	$\mu\mu\text{f}$
Plate to cathode.	0.24	0.24	$\mu\mu\text{f}$
Plate to cathode and heater	0.5	0.4	$\mu\mu\text{f}$
Plate to grid and heater. .	2	2	$\mu\mu\text{f}$
Cathode to grid and heater.	6.9	6.9	$\mu\mu\text{f}$
Cathode to heater	3.8	3.8	$\mu\mu\text{f}$

With external shield, JETEC No.315, connected to cathode, except as noted:

Grid to plate	1.9	1.9	$\mu\mu\text{f}$
Grid to cathode and heater.	3.2	3.2	$\mu\mu\text{f}$
Plate to cathode.	0.24	0.23	$\mu\mu\text{f}$
Plate to cathode and heater	1.3	1.6	$\mu\mu\text{f}$
Plate to grid, heater, and external shield	2.8	3.2	$\mu\mu\text{f}$
Cathode to grid, heater, and external shield . .	7	7	$\mu\mu\text{f}$
Heater to cathode	4	4	$\mu\mu\text{f}$

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9A

- | | |
|-------------------------------|-----------------------------|
| Pin 1- Plate of Unit No.2 | Pin 6- Plate of Unit No.1 |
| Pin 2- Grid of Unit No.2 | Pin 7- Grid of Unit No.1 |
| Pin 3- Cathode of Unit No.2 | Pin 8- Cathode of Unit No.1 |
| Pins 4,9- Heater of Unit No.2 | Pin 9- Heater Mid-Tap |
| Pins 5,9- Heater of Unit No.1 | |



12AV7



12AV7

MEDIUM-MU TWIN TRIODE

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID VOLTAGE:		
Negative bias value	-50 max.	volts
PLATE DISSIPATION	2.7 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	90 max.	volts
Heater positive with respect to cathode .	90 max.	volts

Typical Operation and Characteristics:

Plate Supply Voltage	100	150	volts
Cathode-Bias Resistor	120	56	ohms
Amplification Factor	37	41	
Plate Resistance	6100	4800	ohms
Transconductance	6100	8500	μ hos
Plate Current	9	18	ma
Grid Voltage (Approx.) for plate current of 10 μ amp	-9	-12	volts

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12AW6

SHARP-CUTOFF PENTODE

MINIATURE TYPE

12AW6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	12.6	ac or dc volts
Current	0.15	amp

Direct Interelectrode Capacitances (Approx.)^o:

Grid to Plate	0.025 max.	μ f
Input	6.5	μ f
Output	1.5	μ f

^o With no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length from Base Seat to Bulb Top (excluding tip)	1-1/2" \pm 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin
Basing Designation for BOTTOM VIEW	7CM

Pin 1 - Grid No. 1
 Pin 2 - Cathode
 Pin 3 - Heater
 Pin 4 - Heater
 Pin 5 - Plate



Pin 6 - Grid No. 2
 Pin 7 - Grid No. 3,
 Internal
 Shield

AMPLIFIER - Class A₁

Pentode Connection

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	150 max.	volts
GRID-No.2 SUPPLY VOLTAGE	300 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Negative bias value	50 max.	volts
Positive bias value	0 max.	volts
PLATE DISSIPATION	2 max.	watts
GRID-No.2 DISSIPATION	0.5 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	100	125	250	volts
Grid-No.3 (Suppressor) Voltage ^o	Connected to cathode at socket			
Grid-No.2 Voltage	100	125	150	volts
Cathode-Bias Resistor	100	100	200	ohms

^o See next page.

APRIL 15, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

12AW6



12AW6

SHARP-CUTOFF PENTODE

Plate Resistance (Approx.)	0.3	0.5	0.8	.. megohm
Transconductance	4750	5100	5000	.. μ hos
Grid-No.1 Voltage for plate current of 10 μ amp	-5	-6	-8	.. volts
Plate Current	5.5	7.2	7	.. ma.
Grid-No.2 Current	1.6	2.1	2	.. ma.

AMPLIFIER—Class A₁Triode Connection[▲]

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Negative bias value	50 max.	volts
Positive bias value	0 max.	volts
PLATE AND GRID-No.2 DISSIPATION (Total)	2.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	180	250	.. volts
Cathode-Bias Resistor	350	825	.. ohms
Plate Resistance	7900	11000	.. ohms
Amplification Factor	45	42	
Transconductance	5700	3800	.. μ hos
Plate Current.	7.0	5.5	.. ma.

□ Grid-No.3 is not suitable for use as a control or signal electrode.

▲ Grid-No.2 tied to plate and grid-No.3 tied to cathode.

APRIL 15, 1947

TUBE DEPARTMENT

TENTATIVE DATA

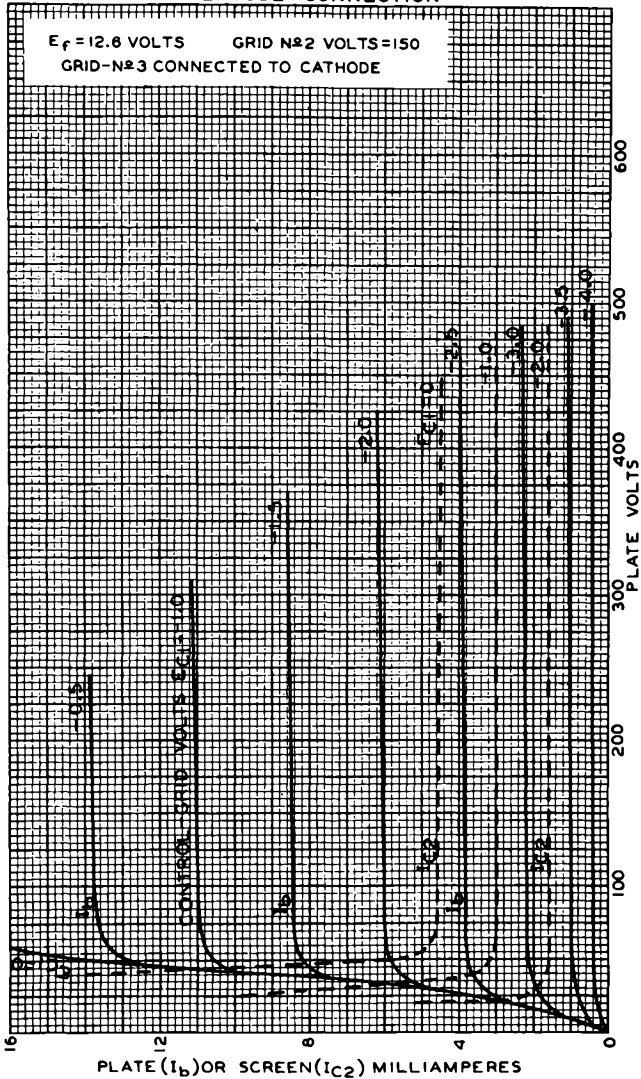
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12AW6

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION

$E_f = 12.6$ VOLTS GRID #2 VOLTS = 150
GRID - #3 CONNECTED TO CATHODE



MARCH 28, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

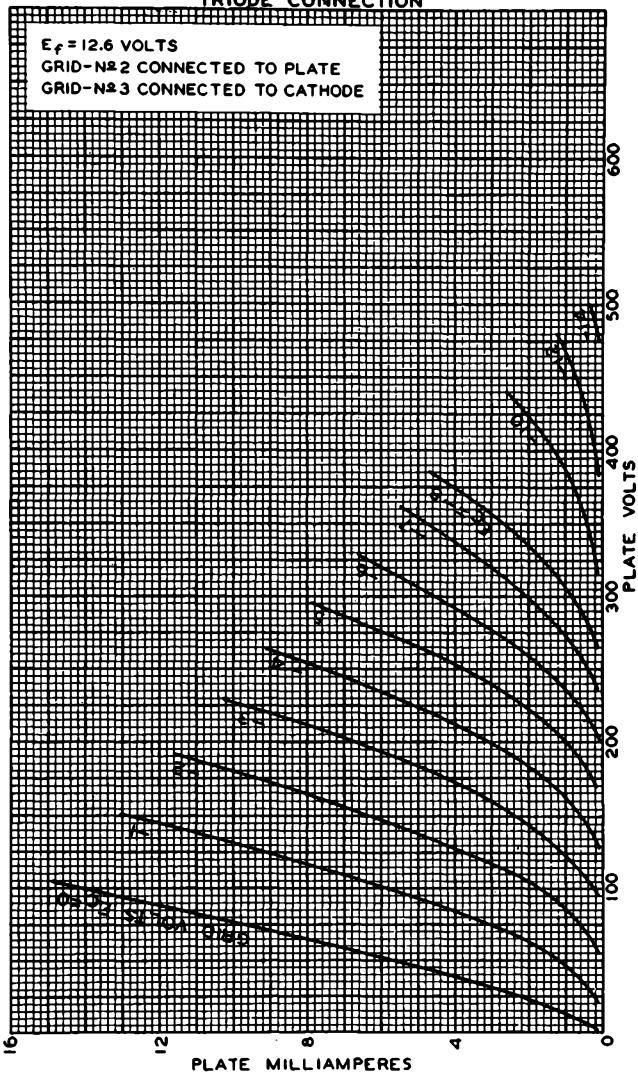
92CM-6855

12AW6



12AW6

AVERAGE PLATE CHARACTERISTICS
TRIODE CONNECTION



MARCH 28, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6856



12AX4-GT
12AX4-GTA

12AX4-GT HALF-WAVE VACUUM RECTIFIER

For Television Damper Service

Heater, for Unipotential Cathode:		
Voltage	12.6	. . . . . ac or dc volts
Current	0.6	. . . . . amp

The 12AX4-GT is the same as the 6AX4-GT except for heater rating.

12AX4-GTA HALF-WAVE VACUUM RECTIFIER

*Intended for TV damper service in equipment
having series heater-string arrangement*

The 12AX4-GTA is the same as the 6AX4-GT except for the following items:

Heater, for Unipotential Cathode:		
Voltage	12.6	. . . . . ac or dc volts
Current	0.6	. . . . . amp
Warm-up time (Average).	11	. . . . . sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.



12AX7

HIGH-MU TWIN TRIODE

9-PIN MINIATURE TYPE

12AX7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater Arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.15	0.3	amp

Direct Interelectrode Capacitances:^o

	Unit No. 1	Unit No. 2	
Grid to plate	1.7	1.7	μf
Grid to cathode and heater	1.6	1.6	μf →
Plate to cathode and heater	0.46	0.34	μf →

Mechanical:

- Mounting Position Any
- Maximum Overall Length 2-3/16"
- Maximum Seated Length 1-5/16"
- Length, Base Seat to Bulb Top (Excluding tip) 1-9/16" ± 3/32"
- Maximum Diameter 7/8"
- Bulb T-6-1/2 →
- Base Small-Button Noval 9-Pin (JETEC No. E9-1) →

Basing Designation for BOTTOM VIEW 9A

- | | | |
|---------------------------------|--|-----------------------------|
| Pin 1-Plate of Unit No. 2 | | Pin 6-Plate of Unit No. 1 |
| Pin 2-Grid of Unit No. 2 | | Pin 7-Grid of Unit No. 1 |
| Pin 3-Cathode of Unit No. 2 | | Pin 8-Cathode of Unit No. 1 |
| Pins 4 & 9-Heater of Unit No. 2 | | Pin 9-Heater Mid-Tap → |
| Pins 5 & 8-Heater of Unit No. 1 | | |

AMPLIFIER—Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID VOLTAGE:		
Negative bias value	50 max.	volts
Positive bias value	0 max.	volts
PLATE DISSIPATION	1 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	180 max.	volts
Heater positive with respect to cathode	180 max.	volts

Characteristics:

Plate Voltage	100	250	volts
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^o With no external shield.

→ Indicates a change.

12AX7



12AX7

HIGH-MU TWIN TRIODE

Grid Voltage	-1	-2	. . . . .	volts
Amplification Factor	100	100		
Plate Resistance	80000	62500	. . . . .	ohms
Transconductance	1250	1600	. . . . .	μ mhos
Plate Current	0.5	1.2	. . . . .	ma

← **Typical Operation as Resistance-Coupled Amplifier:**

See *RESISTANCE-COUPLED AMPLIFIER CHART No. 25*
at front of this Section

→ Indicates a change.

NOV. 5, 1954

TUBE DIVISION

DATA

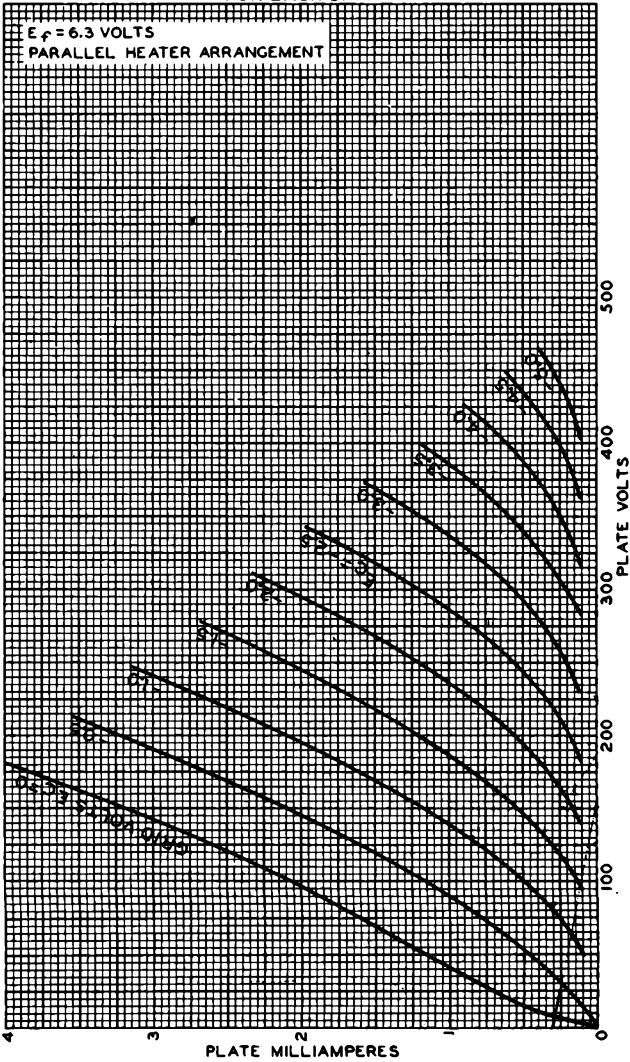
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12AX7

12AX7

AVERAGE PLATE CHARACTERISTICS
FOR EACH UNIT



JULY 30, 1947

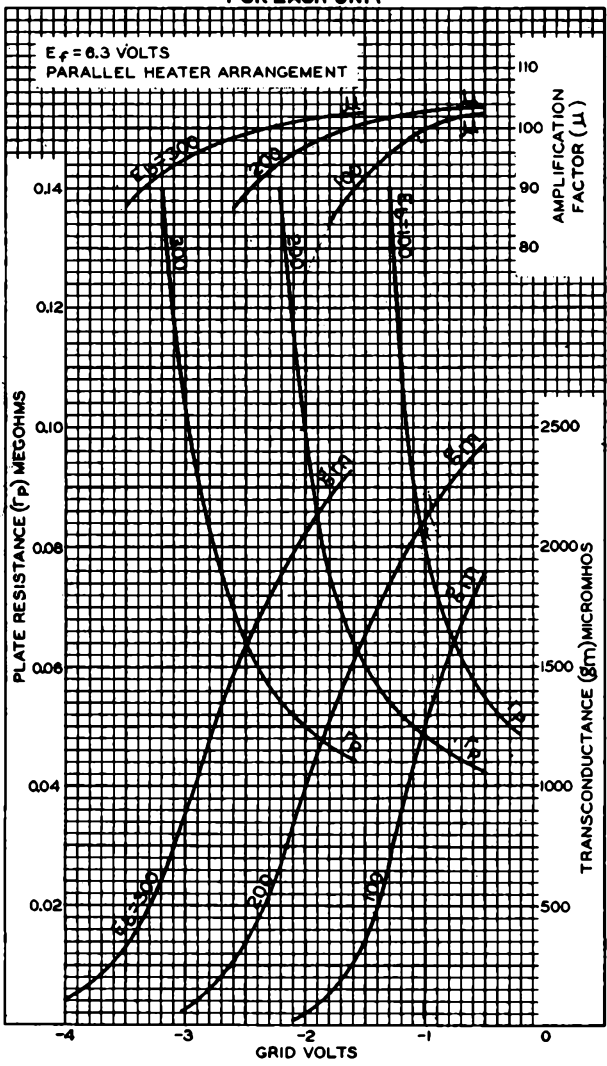
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92CM-6879

12AX7



12AX7 AVERAGE CHARACTERISTICS FOR EACH UNIT



JULY 30, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6880



12AZ7

12AZ7 HIGH-MU TWIN TRIODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage	12.6	6.3	.ac or dc volts
Current	0.225	0.450	. . . . . amp

Direct Interelectrode Capacitances (Approx.):

	Without External Shield	With External Shield ^o	
Grid-Drive Operation:			
Grid to plate (Each unit) . .	1.9	1.9	$\mu\mu\text{f}$
Grid to heater and cathode (Each unit)	3.1	3.2	$\mu\mu\text{f}$
Plate to heater and cathode (Unit No.1)	0.5	1.3	$\mu\mu\text{f}$
Plate to heater and cathode (Unit No.2)	0.4	1.6	$\mu\mu\text{f}$
Heater to cathode (Each unit)	3.8	4	$\mu\mu\text{f}$
Cathode-Drive Operation:			
Plate to cathode (Each unit).	0.24	0.23	$\mu\mu\text{f}$
Cathode to grid and heater (Each unit).	6.9	7	$\mu\mu\text{f}$
Plate to grid and heater (Unit No.1).	2	2.8	$\mu\mu\text{f}$
Plate to grid and heater (Unit No.2).	2	3.2	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate-Supply Voltage	100	250	volts
Cathode-Bias Resistor	270	200	ohms
Amplification Factor	60	60	
Plate Resistance (Approx.)	15000	10900	ohms
Transconductance	4000	5500	μmhos
Plate Current	3.7	10	ma
Grid Voltage (Approx.) for plate current of 10 μamp	-5	-12	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip) . .	1-9/16" \pm 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2

^o With external shield JETEC No.315 connected to cathode of unit under test.

12AZ7



12AZ7

HIGH-MU TWIN TRIODE

Base Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9A

Pin 1 - Plate of Unit No.2

Pin 2 - Grid of Unit No.2

Pin 3 - Cathode of Unit No.2

Pins 4 & 9 - Heater of Unit No.2

Pins 5 & 9 - Heater of Unit No.1



Pin 6 - Plate of Unit No.1

Pin 7 - Grid of Unit No.1

Pin 8 - Cathode of Unit No.1

Pin 9 - Heater Mid-Tap

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID VOLTAGE:

Negative bias value 50 max. volts

PLATE DISSIPATION 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12B4-A

12B4-A LOW-MU TRIODE

9-PIN MINIATURE TYPE

*Intended for use in equipment having
series heater-string arrangement*

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

	Series	Parallel	
Voltage.	12.6	6.3	ac or dc volts
Current.	0.300	0.600	amp
Warm-up time (Average)	-	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances (Approx.):⁰

Grid to plate.	4.8	$\mu\mu\text{f}$
Grid to cathode and heater	5	$\mu\mu\text{f}$
Plate to cathode and heater.	1.5	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

Plate Voltage.	150	volts
Grid Voltage	-17.5	volts
Amplification Factor	6.5	
Plate Resistance (Approx.)	1030	ohms
Transconductance	6300	μmhos
Plate Current.	34	ma
Grid Voltage (Approx.) for plate current of 200 μamp	-32	volts
Plate Current for grid voltage of -23 volts	9.6	ma

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length.	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip).	2" \pm 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)

Basing Designation for BOTTOM VIEW 9AG

- Pin 1 - Cathode
- Pin 2 - Grid
- Pin 3 - Heater
- Pin 4 - Heater
- Pin 5 - Heater



- Pin 6 - No Connection
- Pin 7 - Grid
- Pin 8 - No Connection
- Pin 9 - Plate

⁰ With external shield JEDEC No. 315 connected to cathode.

MAY 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

12B4-A



12B4-A

LOW-MU TRIODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	550 max.	volts
GRID VOLTAGE:		
Negative bias value	50 max.	volts
PLATE DISSIPATION	5.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation	0.47 max.	megohm
For cathode-bias operation	2.2 max.	megohms

VERTICAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	550 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [#]	1000 [■] max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	250 max.	volts
CATHODE CURRENT:		
Peak	105 max.	ma
Average	30 max.	ma
PLATE DISSIPATION	5.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater negative with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation	2.2 max.	megohms
--------------------------------------	----------	---------

[▲] The dc component must not exceed 100 volts.[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.[#] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.[■] Under no circumstances should this absolute value be exceeded.

MAY 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



12BA6
12C
12BF6

12BA6

REMOTE-CUTOFF PENTODE

MINIATURE TYPE

Heater, for Unipotential Cathode:		
Voltage.	12.6	. . . . . ac or dc volts
Current.	0.15	. . . . . amp

The 12BA6 is the same as the 6BA6 except for heater rating.

12BA7

PENTAGRID CONVERTER

9-PIN MINIATURE TYPE

Heater, for Unipotential Cathode:		
Voltage.	12.6	. . . . . ac or dc volts
Current.	0.15	. . . . . amp

The 12BA7 is the same as the 6BA7 except for heater rating.

12BD6

REMOTE-CUTOFF PENTODE

MINIATURE TYPE

Heater, for Unipotential Cathode:		
Voltage.	12.6	. . . . . ac or dc volts
Current.	0.15	. . . . . amp

The 12BD6 is the same as the 6BD6 except for heater rating.

12BE6

PENTAGRID CONVERTER

MINIATURE TYPE

Heater, for Unipotential Cathode:		
Voltage.	12.6	. . . . . ac or dc volts
Current.	0.15	. . . . . amp

The 12BE6 is the same as the 6BE6 except for heater rating.

12BF6

TWIN DIODE—MEDIUM-MU TRIODE

MINIATURE TYPE

Heater, for Unipotential Cathode:		
Voltage.	12.6	. . . . . ac or dc volts
Current.	0.15	. . . . . amp

The 12BF6 is the same as the 6BF6 except for heater rating.



12BH7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

12BH7

The 12BH7 is the same as the 12BH7-A except that the 12BH7 does not have a controlled Heater Warm-up Time, and is not intended for use in equipment having series heater-string arrangement.

MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

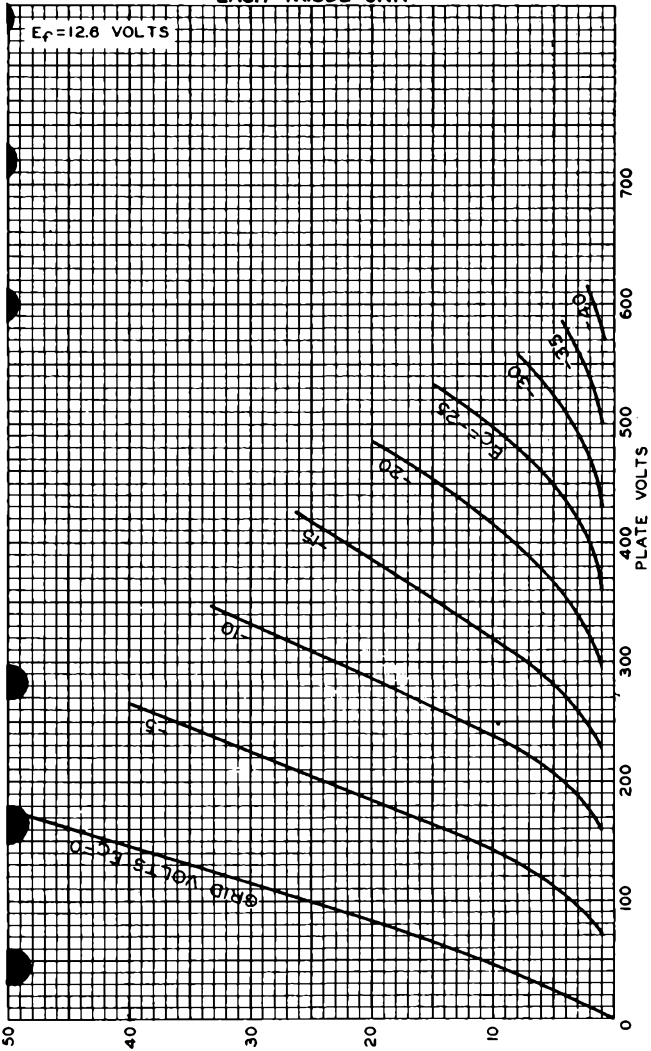
DATA



12BH7

12BH7

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



JAN. 25, 1952

PLATE MILLIAMPERES

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7742



12BH7-A

12BH7-A

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

Intended for use in equipment having series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.3	0.6	amp
Warm-up time (Average)	—	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances (Approx.):^o

	Unit No.1	Unit No.2	
Grid to plate	2.6	2.6	μf
Grid to cathode and heater	3.2	3.2	μf
Plate to cathode and heater	0.5	0.4	μf
Plate of unit No.1 to plate of unit No.2	0.8		μf

Mechanical:

- Mounting Position Any
- Maximum Overall Length 2-5/8"
- Maximum Seated Length 2-3/8"
- Length, Base Seat to Bulb Top (Excluding tip) 2" ±3/32"
- Maximum Diameter 7/8"
- Bulb T-6-1/2
- Base Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9A

- | | | |
|----------------------------------|--|------------------------------|
| Pin 1 - Plate of Unit No.2 | | Pin 6 - Plate of Unit No.1 |
| Pin 2 - Grid of Unit No.2 | | Pin 7 - Grid of Unit No.1 |
| Pin 3 - Cathode of Unit No.2 | | Pin 8 - Cathode of Unit No.1 |
| Pins 4 & 9 - Heater of Unit No.2 | | Pin 9 - Heater Mid-Tap |
| Pins 5 & 9 - Heater of Unit No.1 | | |

AMPLIFIER - Class A₁

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

^o without external shield.

12BH7-A



12BH7-A

MEDIUM-MU TWIN TRIODE

GRID VOLTAGE:		
Negative bias value	50 max.	volts
Positive bias value	0 max.	volts
CATHODE CURRENT	20 max.	ma
PLATE DISSIPATION	3.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200*max.	volts

Characteristics:

Plate Voltage	250	volts
Grid Voltage.	-10.5	volts
Amplification Factor.	16.5	
Plate Resistance (Approx.).	5300	ohms
Transconductance.	3100	μmhos
Plate Current	11.5	ma
Plate Current for grid voltage of -14 volts	4	ma
Grid Voltage (Approx.) for plate current of 50 μamp	-23	volts

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias operation.	0.25 max.	megohm
For cathode-bias operation.	1.0 max.	megohm

HORIZONTAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE.	450 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE [▲]	600 max.	volts
CATHODE CURRENT:		
Peak	300 max.	ma
Average	20 max.	ma
PLATE DISSIPATION	3.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	200 max.	volts
Heater positive with respect to cathode .	200*max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias, grid-resistor bias, or cathode-bias operation.	2.2 max.	megohms

[▲] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

^{▲, □}: See next page.



12BH7-A

MEDIUM-MU TWIN TRIODE

12BH7-A

VERTICAL DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	450 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	400 max.	volts
CATHODE CURRENT:		
Peak	70 max.	ma
Average	20 max.	ma
PLATE DISSIPATION	3.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias, grid-resistor bias, or cathode-bias operation 2.2 max. megohms

VERTICAL DEFLECTION AMPLIFIER

Values are for Each Unit

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	450 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE [#]		
(Absolute Maximum)	1500 [■] max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	250 max.	volts
CATHODE CURRENT:		
Peak	70 max.	ma
Average	20 max.	ma
PLATE DISSIPATION	3.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 [▲] max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation 2.2 max. megohms

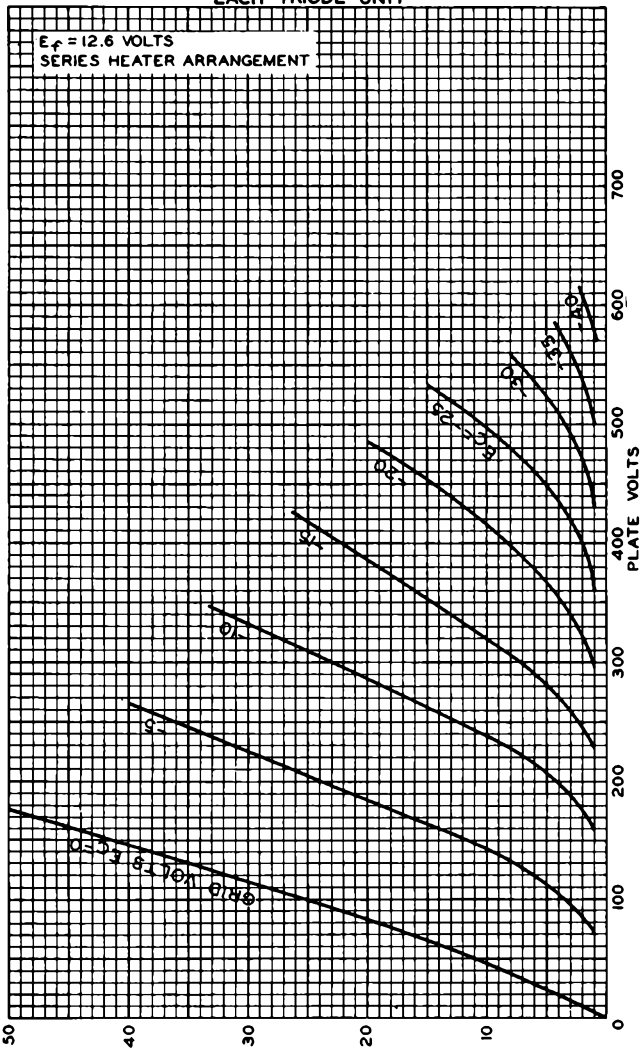
- [▲] The dc component must not exceed 100 volts.
- [□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.
- [#] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.
- [■] Under no circumstances should this absolute value be exceeded.

12BH7-A



12BH7-A

AVERAGE PLATE CHARACTERISTICS
EACH TRIODE UNIT



MAR. 1, 1955

PLATE MILLIAMPERES
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7742R1



12BQ6-GTB

12BQ6-GTB/12CU6

BEAM POWER TUBE

Intended for use in equipment having
series heater-string arrangement

The 12BQ6-GTB/12CU6 is the same as the 6BQ6-GTB/6CU6 except for the following items:

Heater, for Unipotential Cathode:

Voltage.	12.6	. . . . .	ac or dc volts
Current.	0.6	. . . . .	amp
Warm-up time (Average)	11	. . . . .	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.



12BY7

12BY7

SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Heater Arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.3	0.6	amp

Direct Interelectrode Capacitances (Without external shield):

Grid No.1 to plate	0.055	μ f
Grid No.1 to cathode, heater, grid No.2, and grid No.3 & internal shield	11.1	μ f
Plate to cathode, heater, grid No.2, and grid No.3 & internal shield	3	μ f

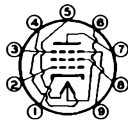
Characteristics, Class A₁ Amplifier:

Plate Supply Voltage	250	volts
Grid-No.2 Voltage	150	volts
Cathode-Bias Resistor	68	ohms
Amplification Factor	1200	
Plate Resistance	90000	ohms
Transconductance	12000	μ mhos
Plate Current	25	ma
Grid-No.2 Current	6	ma
Grid Voltage (Approx.) for plate current of 20 μ amp	-10	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" \pm 3/32"
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)
Basing Designation for BOTTOM VIEW	9BF

- Pin 1 - Cathode
- Pin 2 - Grid No.1,
- Pin 3 - Grid No.3,
- Int. Shield
- Pin 4 - Heater
- Pin 5 - Heater



- Pin 6 - Heater
- _ Mid-Tap
- Pin 7 - Plate
- Pin 8 - Grid No.2
- Pin 9 - Grid No.3,
- Int. Shield

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
GRID-No.3 (SUPPRESSOR) VOLTAGE	0 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	175 max.	volts

12BY7



12BY7

SHARP-CUTOFF PENTODE

GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Negative bias value	50 max.	volts
Positive bias value	0 max.	volts
PLATE DISSIPATION	6.25 max.	watts
GRID-No.2 INPUT	1 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	180 max.	volts
Heater positive with respect to cathode .	180 max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.25 max.	megohm
For cathode-bias operation	1 max.	megohm

JUNE 14, 1954

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



12BY7-A

12BY7-A

SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

Intended for use in equipment having series heater-string arrangement

The 12BY7-A is the same as the 12BY7 except for the following items:

Heater, for Unipotential Cathode:

Heater arrangement *Parallel*

Warm-up time (Average) 11 sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. . . 200 max. volts

Heater positive with respect to cathode. . . 200 max. volts

▲ The dc component must not exceed 100 volts.



12C8

12C8

TWIN DIODE-REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12C8 is the same as the 6B8 except for heater rating.



12CA5

12CA5

BEAM POWER TUBE

MINIATURE TYPE

Intended for use in equipment having series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	12.6	ac or dc volts
Current	0.6	amp
Warm-up time (Average)	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

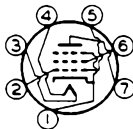
Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate	0.5	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater.	15	μf
Plate to cathode & grid No.3, grid No.2, and heater.	9	μf

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" ± 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW . . . . .	.7CV

- Pin 1 - Cathode,
Grid No.3
- Pin 2 - Grid No.1
- Pin 3 - Heater



- Pin 4 - Heater
- Pin 5 - Grid No.1
- Pin 6 - Grid No.2
- Pin 7 - Plate

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	130 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	130 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value	0 max.	volts
PLATE DISSIPATION	5 max.	watts
GRID-No.2 INPUT	1.4 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	180 max.	°C

^o without external shield.

[▲] The dc component must not exceed 100 volts.

MAR. 1, 1955

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

12CA5



12CA5

BEAM POWER TUBE

Typical Operation and Characteristics:

Plate Voltage.	110	125	volts
Grid-No.2 Voltage.	110	125	volts
Grid-No.1 Voltage.	-4	-4.5	volts
Peak AF Grid-No.1 Voltage.	4	4.5	volts
Zero-Signal Plate Current.	32	37	ma
Max.-Signal Plate Current.	31	36	ma
Zero-Signal Grid-No.2 Current.	3.5	4	ma
Max.-Signal Grid-No.2 Current.	7.5	11	ma
Plate Resistance (Approx.)	16000	15000	ohms
Transconductance	8100	9200	μ mhos
Load Resistance.	3500	4500	ohms
Total Harmonic Distortion.	5	6	%
Max.-Signal Power Output	1.1	1.5	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	0.5 max. megohm

MAR. 1, 1955

TUBE DIVISION

TENTATIVE DATA

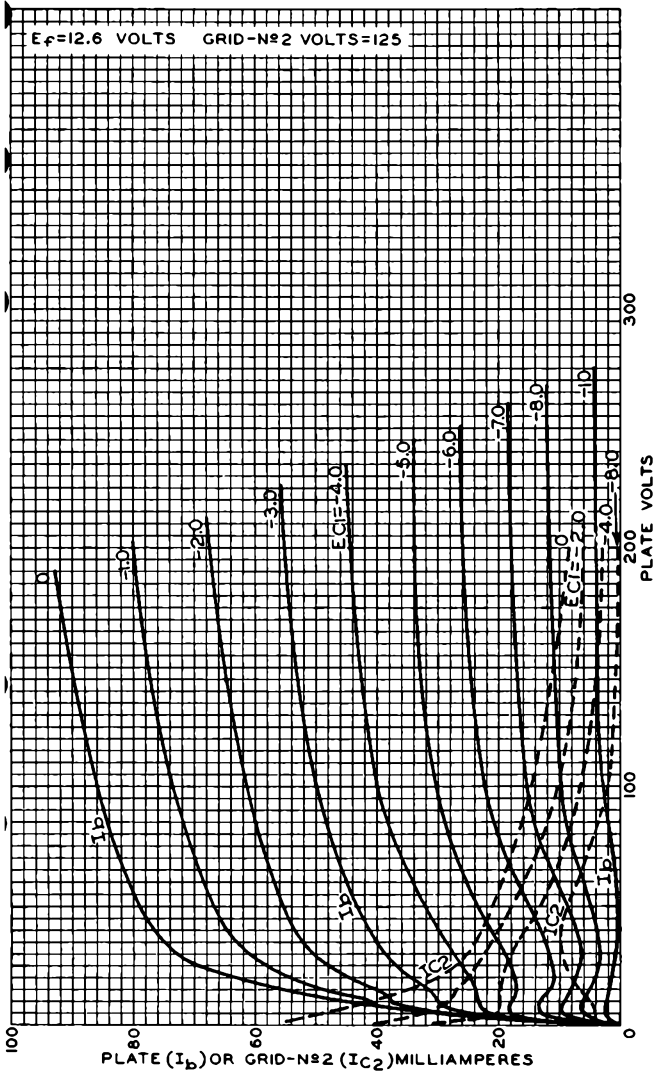
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12CA5

12CA5

AVERAGE PLATE CHARACTERISTICS



JAN. 24, 1955

TUBE DIVISION

92CM-8507

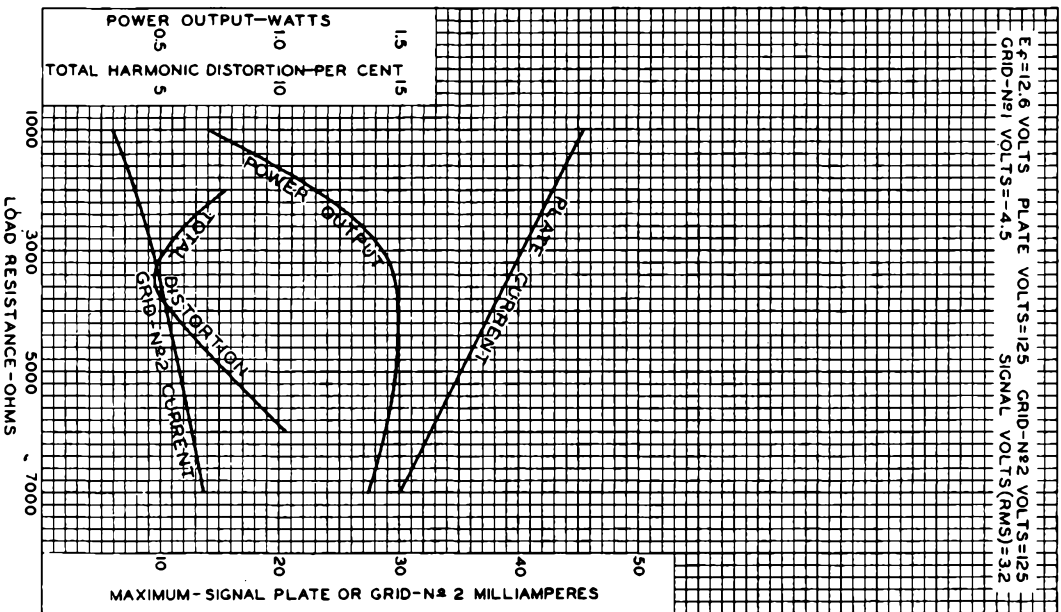
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12CA5



12CA5

OPERATION CHARACTERISTICS



JAN. 20, 1955

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8506R1



12CN5

12CN5 REMOTE-CUTOFF PENTODE

7-PIN MINIATURE TYPE

For use in automobile radio receivers operating directly from 12-volt storage batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage range. 10 to 15.9 dc volts

This voltage range is on an absolute basis. For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts.

Current (Approx.)

at 12.6 volts. 0.45 amp

Direct Interelectrode Capacitance:

	Without External Shield	With External Shield ^o	
Grid No.1 to plate	0.25 max.	0.2 max.	μf

Mechanical:

Operating Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip). 2" ± 3/32"

Diameter 0.650" to 0.750"

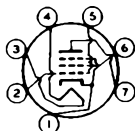
Dimensional Outline. See General Section

Bulb T5-1/2

Base Small-Button Miniature 7-Pin (JEDEC No. E7-1)

Basing Designation for BOTTOM VIEW 7CV

Pin 1 - Cathode,
Grid No. 3
Pin 2 - Grid No. 1
Pin 3 - Heater



Pin 4 - Heater
Pin 5 - Grid No. 1
Pin 6 - Grid No. 2
Pin 7 - Plate

AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 16 max. volts

GRID-No. 2 (SCREEN-GRID) VOLTAGE. 16 max. volts

GRID-No. 1 (CONTROL-GRID) VOLTAGE:

Positive-bias value. 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 16 max. volts

Heater positive with respect to cathode. 16 max. volts

Characteristics with 12.6 Volts on Heater:

Plate Voltage. 12.6 volts

Grid-No. 2 Voltage. 12.6 volts

^o With external shield JEDEC No. 316 connected to pin 1.

12CN5



12CN5

REMOTE-CUTOFF PENTODE

Grid-No.1 Supply Voltage.	0	volts
Grid-No.1 Resistor (Bypassed)	2.2	megohms
Plate Resistance (Approx.)	40000	ohms
Transconductance.	3800	μ mhos
Plate Current	4.5	ma
Grid-No.2 Current	3.5	ma

Maximum Circuit Values:

Grid-No.1-Circuit Resistance.	2.2 max.	megohms
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12CU5

12CU5

BEAM POWER TUBE

7-PIN MINIATURE TYPE

*Intended for use in equipment having
series heater-string arrangement*

The 12CU5 is the same as the 6CU5 except for the following items:

Heater, for Unipotential Cathode:

Voltage	12.6	ac or dc volts
Current	0.6	amp
Warm-up time (Average)	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT AT FRONT OF this Section.



I2CX6

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

For use in automobile radio receivers operating directly from 12-volt storage batteries

I2CX6

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage range. 10 to 15.9 dc volts

This voltage range is on an absolute basis. For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts.

Current (Approx.)

at 12.6 volts. 0.15 amp

Direct Interelectrode Capacitances:^o

Grid No.1 to plate 0.05 max. μ f

Grid No.1 to cathode, grid No.3, grid No.2, and heater. 7.6 μ f

Plate to cathode, grid No.3, grid No.2, and heater. 6.2 μ f

Mechanical:

Operating Position Any

Maximum Overall Length 2-1/8"

Maximum Seated Length. 1-7/8"

Length, Base Seat to Bulb Top (Excluding tip). . . 1-1/2" \pm 3/32"

Diameter 0.650" to 0.750"

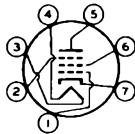
Dimensional Outline. See General Section

Bulb T5-1/2

Base Small-Button Miniature 7-Pin (JEDEC No.E7-1)

Basing Designation for BOTTOM VIEW 7BK

- Pin 1—Grid No.1
- Pin 2—Grid No.3
- Pin 3—Heater
- Pin 4—Heater



- Pin 5—Plate
- Pin 6—Grid No.2
- Pin 7—Cathode

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE. 33 max. volts

GRID-No.2 (SCREEN-GRID) VOLTAGE. 33 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:
Positive-bias value. 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode. 30 max. volts
Heater positive with respect to cathode. 30 max. volts

Characteristics:

Heater Voltage 12.6 volts
Plate Voltage. 12.6 volts

^o without external shield.

12CX6



12CX6

SHARP-CUTOFF PENTODE

Grid-No.3 (Suppressor-Grid) Voltage . . .	0	volts
Grid-No.2 Voltage	12.6	volts
Grid-No.1 Supply Voltage.	0	volts
Grid-No.1 Resistor (Bypassed)	2.2	megohms
Plate Resistance (Approx.).	40000	ohms
Transconductance.	3100	μ mhos
Plate Current	3	ma
Grid-No.2 Current	1.4	ma
Grid-No.1 Voltage (Approx.) for plate $\mu a = 10$	-4.5	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance.	10 max.	megohms
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12D4

12D4

HALF-WAVE VACUUM RECTIFIER

*Intended for TV damper service in equipment
having series heater-string arrangement*

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	12.6	. . . . . ac or dc volts
Current	0.6	. . . . . amp
Warm-up time (Average)	11	. . . . . sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances (Approx.):^o

Plate to cathode and heater	6	μ f
Cathode to plate and heater	8	μ f
Heater to cathode	3	μ f

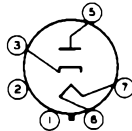
Mechanical:

Operating Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Dimensional Outline	See General Section
Bulb	T9

Base Intermediate-Shell Octal 5-Pin,
Arrangement 2 (JEDEC Group 1, No. B5-82),
Intermediate-Shell Octal 6-Pin,
Arrangement 1 (JEDEC Group 1, No. B6-8),
Short Intermediate-Shell Octal 5-Pin
with External Barriers, Arrangement 2
(JEDEC Group 1, No. B5-85), or
Short Intermediate-Shell Octal 6-Pin
with External Barriers, Arrangement 1
(JEDEC Group 1, No. B6-60)

Basing Designation for BOTTOM VIEW 4C8

- Pin 1 \blacklozenge - Same as Pin 2
- Pin 2 - Internal Connection-Do Not Use^o



- Pin 3 - Cathode
- Pin 5 - Plate
- Pin 7 - Heater
- Pin 8 - Heater

DAMPER SERVICE

Maximum Ratings, Design-Maximum Values:

For operation in a 525-line, 30-frame system^o

PEAK INVERSE PLATE VOLTAGE*	4400 max.	volts
PEAK PLATE CURRENT	900 max.	ma
DC PLATE CURRENT	155 max.	ma

^o, \blacklozenge , \blacksquare , \bullet , \blacktriangle : See next page.

I2D4



I2D4

HALF-WAVE VACUUM RECTIFIER

PLATE DISSIPATION. 5.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 4400[▲] max. volts

Heater positive with respect to cathode. 300[#] max. volts

○ Without external shield.

◆ On the 5-pin bases, pin 1 as well as pins 4 and 6 is omitted.

● Socket terminals 1, 2, 4 and 6 should not be used as tie points.

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

* This rating is applicable when the duty cycle of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

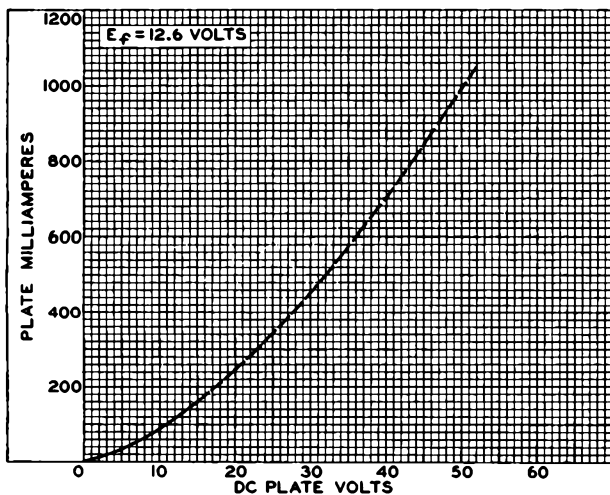
▲ The dc component must not exceed 900 volts.

The dc component must not exceed 100 volts.

4-59

TENTATIVE DATA

AVERAGE PLATE CHARACTERISTIC





12J8

12J8

TWIN DIODE—POWER TETRODE

9-PIN MINIATURE TYPE

For use in automobile radio receivers
operating directly from 12-volt storage batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage range. 10 to 15.9 dc volts

This voltage range is on an absolute basis. For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts

Current (Approx.) at

12.6 volts 0.325 amp

Direct Interelectrode Capacitances:^o

Tetrode Unit:

Grid No.1 to plate 0.7 $\mu\mu\text{f}$

Grid No.1 to cathode, grid No.2, and heater 10.5 $\mu\mu\text{f}$

Plate to cathode, grid No.2, and heater 4.4 $\mu\mu\text{f}$

Tetrode grid No.1 to plate of diode unit No.1. 0.04 max. $\mu\mu\text{f}$

Tetrode grid No.1 to plate of diode unit No.2. 0.015 max. $\mu\mu\text{f}$

Mechanical:

Operating Position Any

Maximum Overall Length 2-3/16"

Maximum Seated Length. 1-15/16"

Length, Base Seat to Bulb Top (Excluding tip) 1-9/16" \pm 3/32"

Diameter 0.750" to 0.875"

Dimensional Outline. See General Section

Bulb T6-1/2

Base Small-Button Noval 9-Pin (JEDEC No.E9-1)

Basing Designation for BOTTOM VIEW 9G C

Pin 1—Grid No.1 of
Tetrode Unit

Pin 2—Cathode of
Tetrode Unit

Pin 3—Grid No.2 of
Tetrode Unit

Pin 4—Heater

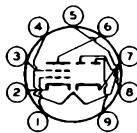
Pin 5—Heater

Pin 6—Plate of
Tetrode Unit

Pin 7—Cathode of
Diode Units
No.1 & No.2

Pin 8—Plate of Diode
Unit No.2

Pin 9—Plate of Diode
Unit No.1



TETRODE UNIT — AUDIO DRIVER

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 30 max. volts

GRID—No.2 (SCREEN—GRID) VOLTAGE. 30 max. volts

PEAK HEATER—CATHODE VOLTAGE:

Heater negative with respect to cathode. 30 max. volts

Heater positive with respect to cathode. 30 max. volts

^o Without external shield.

12J8



12J8

TWIN DIODE—POWER TETRODE

Typical Operation with 12.6 Volts on Heater:

Plate Voltage.	12.6	volts
Grid-No.2 Voltage.	12.6	volts
Grid-No.1 (Control-Grid) Voltage.	0	volts
AF Grid-No.1 Voltage (RMS).	1.6	volts
Grid-No.1 Resistor.	2.2	megohms
Grid-No.1-Resistor Bypass Capacitor.	1	μ f
Zero-Signal Plate Current.	12	ma
Zero-Signal Grid-No.2 Current.	1.5	ma
Transconductance.	5500	μ mhos
Plate Resistance (Approx.)	6000	ohms
Load Resistance.	2700	ohms
Total Harmonic Distortion.	5	%
Max.-Signal Power Output	20	mw

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	10 max.	megohms
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DIODE UNITS — Two

Maximum Ratings, Design-Center Values:

Values are for Each Unit

PLATE CURRENT.	5 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. .	30 max.	volts
Heater positive with respect to cathode. .	30 max.	volts

Characteristics with 12.6 Volts on Heater:

	<i>Diode Unit No.1</i>	<i>Diode Unit No.2</i>	
Plate Current for plate volts = 5. .	8.5	12	ma



12H6

TWIN DIODE

12H6
TO
12J7-GT

Heater, for Unipotential Cathodes:		
Voltage	12.6	ac or dc volts
Current	0.15	amp
<i>The 12H6 is the same as the 6H6 except for heater rating.</i>		

12J5-GT

MEDIUM-MU TRIODE

Heater, for Unipotential Cathode:		
Voltage	12.6	ac or dc volts
Current	0.15	amp
<i>The 12J5-GT is the same as the 6J5-GT except for heater rating and base. Base and connections for the 12J5-GT are the same as for the 6P5-GT.</i>		

12J7-GT

SHARP-CUTOFF PENTODE

Heater, for Unipotential Cathode:		
Voltage	12.6	ac or dc volts
Current	0.15	amp
<i>The 12J7-GT is the same as the 6J7-GT except for heater rating.</i>		

12K7-G
TO
12Q7-GT



12K7-GT

REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts
Current 0.15 amp

The 12K7-GT is the same as the 6K7-GT except for heater rating.

12K8

TRIODE-HEXODE CONVERTER

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts
Current 0.15 amp

The 12K8 is the same as the 6K8 except for heater rating.

12L6-GT

BEAM POWER TUBE

*Intended for use in equipment having
series heater-string arrangement*

The 12L6-GT is the same as the 25L6-GT except for the following items:

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts
Current 0.6 amp
Warm-up time (Average). 11 sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 300 max. volts
Heater positive with respect to cathode 200*max. volts

* The dc component must not exceed 100 volts.

12Q7-GT

TWIN DIODE-HIGH-MU TRIODE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts
Current 0.15 amp

The 12Q7-GT is the same as the 6Q7-GT except for heater rating.



12S8-GT

TRIPLE DIODE—HIGH-MU TRIODE

Heater, for Unipotential Cathodes:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12S8-GT is the same as the 6S8-GT except for heater rating.

12S8-GT
TO
12SF5-GT

12SA7, 12SA7-GT

PENTAGRID CONVERTER

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12SA7 and 12SA7-GT are the same as the 6SA7 and 6SA7-GT, respectively, except for heater rating.

12SC7

HIGH-MU TWIN TRIODE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12SC7 is the same as the 6SC7 except for heater rating.

12SF5, 12SF5-GT

HIGH-MU TRIODE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.15 amp

The 12SF5 and 12SF5-GT are the same as the 6SF5 and 6SF5-GT, respectively, except for heater rating.

12SF7
TO
12SJ7-GT



12SF7

DIODE—REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:		
Voltage	12.6	ac or dc volts
Current	0.15	amp
<i>The 12SF7 is the same as the 6SF7 except for heater rating.</i>		

12SG7

REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:		
Voltage	12.6	ac or dc volts
Current	0.15	amp
<i>The 12SG7 is the same as the 6SG7 except for heater rating.</i>		

12SH7

SHARP-CUTOFF PENTODE

Heater, for Unipotential Cathode:		
Voltage	12.6	ac or dc volts
Current	0.15	amp
<i>The 12SH7 is the same as the 6SH7 except for heater rating.</i>		

12SJ7, 12SJ7-GT

SHARP-CUTOFF PENTODE

Heater, for Unipotential Cathode:		
Voltage	12.6	ac or dc volts
Current	0.15	amp
<i>The 12SJ7 and 12SJ7-GT are the same as the 6SJ7 and 6SJ7-GT, respectively, except for heater rating.</i>		



12SK7
TO
12SR7

12SK7, 12SK7-GT REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:		
Voltage	12.6	ac or dc volts
Current	0.15	amp

The 12SK7 and 12SK7-GT are the same as the 6SK7 and 6SK7-GT, respectively, except for heater rating.

12SL7-GT HIGH-MU TWIN TRIODE

Heater, for Unipotential Cathode:		
Voltage	12.6	ac or dc volts
Current	0.15	amp

The 12SL7-GT is the same as the 6SL7-GT except for heater rating.

12SN7-GT MEDIUM-MU TWIN TRIODE

Heater, for Unipotential Cathodes:		
Voltage	12.6	ac or dc volts
Current	0.30	amp

The 12SN7-GT is the same as the 6SN7-GT except for heater rating.

12SQ7, 12SQ7-GT TWIN DIODE-HIGH-MU TRIODE

Heater, for Unipotential Cathode:		
Voltage	12.6	ac or dc volts
Current	0.15	amp

The 12SQ7 and 12SQ7-GT are the same as the 6SQ7 and 6SQ7-GT, respectively, except for heater rating.

12SR7 TWIN DIODE-MEDIUM-MU TRIODE

Heater, for Unipotential Cathode:		
Voltage	12.6	ac or dc volts
Current	0.15	amp

The 12SR7 is the same as the 6SR7 except for heater rating.

12V6-GT
TO
12X4



12V6-GT BEAM POWER TUBE

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts
Current 0.225 amp

The 12V6-GT is the same as the 6V6-GT except for heater rating.

12W6-GT BEAM POWER TUBE

*Intended for use in equipment having
series heater-string arrangement*

*The 12W6-GT is the same as the 6W6-GT except for the following
items:*

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts
Current 0.6 amp
Warm-up time (Average). 11 sec

*For definition of heater warm-up time and method of determining
it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of
this Section.*

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 300 max. volts

12X4 HALF-WAVE VACUUM RECTIFIER

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts
Current 0.3 amp

The 12X4 is the same as the 6X4 except for heater rating.



12R5

12R5

BEAM POWER TUBE

7-PIN MINIATURE TYPE

Intended for use in equipment having series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	12.6	ac or dc volts
Current	0.6	amp
Warm-up time (Average)	11	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate	0.55	μuf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	13	μuf
Plate to cathode & grid No.3, grid No.2, and heater	9	μuf

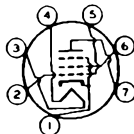
Characteristics, Class A₁ Amplifier:

Plate Voltage	45	110	volts
Grid-No.2 (Screen-Grid) Voltage	110	110	volts
Grid-No.1 (Control-Grid) Voltage	0	-8.5	volts
Plate Resistance (Approx.)	-	13000	ohms
Transconductance	-	7000	μmhos
Plate Current	120*	40	ma
Grid-No.2 Current	17*	3.3	ma
Grid-No.1 Voltage (Approx.) for plate ma. = 0.5	-	-22	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" ± 3/32"
Diameter	0.650" to 0.750"
Dimensional Outline	See General Section
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No.E7-1)
Basing Designation for BOTTOM VIEW . . . . .	.7CV

- Pin 1 - Cathode, Grid No.3
- Pin 2 - Grid No.1
- Pin 3 - Heater



- Pin 4 - Heater
- Pin 5 - Grid No.1
- Pin 6 - Grid No.2
- Pin 7 - Plate

^o *: See next page.

12R5



12R5

BEAM POWER TUBE

VERTICAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	150 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [#]	1500 [■] max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	150 max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL- GRID) VOLTAGE	150 max.	volts
CATHODE CURRENT:		
Peak	155 max.	ma
DC	45 max.	ma
GRID-No.2 INPUT	1 max.	watt
PLATE DISSIPATION	4.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	300 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:		
For cathode-bias operation	2.2 max.	megohms

□ Without external shield.

* This value can be measured by a method involving a recurrent wave form such that the maximum ratings of the tube will not be exceeded.

□ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

■ Under no circumstances should this absolute value be exceeded.

▲ The dc component must not exceed 100 volts.



14A4
14A5

14A4

MEDIUM-MU TRIODE

Heater, for Unipotential Cathode:
 Voltage. 12.6[□] ac or dc volts
 Current. 0.15^{□□} amp

The 14A4 is the same as the 7A4 except for heater rating.

[□] Nominal voltage = 14.0 volts. ^{□□} Nominal current = 0.16 ampere.

14A5

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:
 Voltage. 12.6[□] ac or dc volts
 Current. 0.15^{□□} amp

Direct Interelectrode Capacitances (Approx.):[○]
 Grid No.1 to Plate 0.4 μf
 Input. 6.8 μf
 Output 7.0 μf

[○] With external shield connected to cathode.

Mechanical:

Mounting Position. Any
 Maximum Overall Length 2-25/32"
 Maximum Seated Length. 2-1/4"
 Maximum Diameter 1-3/16"
 Bulb T-9
 Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 6AA

Pin 1 - Heater		Pin 6 - Grid No.1
Pin 2 - Plate		Pin 7 - Cathode,
Pin 3 - Grid No.2		Grid No.3
Pin 4 - No		Pin 8 - Heater
Pin 5 - No		Plug - Base
Connection	Connection	Shell

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max. volts
GRID-No.2 (SCREEN) VOLTAGE	300 max. volts
PLATE DISSIPATION.	7.5 max. watts
GRID-No.2 DISSIPATION.	1.5 max. watts
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode	90 max. volts
Heater positive with respect to cathode	90 max. volts

[□] Nominal voltage = 14.0 volts.
^{□□} Nominal current = 0.16 ampere.

14A5
14A7
14B6



14A5 BEAM POWER AMPLIFIER

(continued from preceding page)

Typical Operation and Characteristics:

Plate Voltage.	250	..	volts
Grid-No.2 Voltage.	250	..	volts
Grid-No.1 (Control-Grid) Voltage.	-12.5	..	volts
Cathode-Bias Resistor.	370	..	ohms
Peak AF Grid-No.1 Voltage.	12.5	..	volts
Zero-Signal Plate Current.	30	..	ma
Max.-Signal Plate Current.	32	..	ma
Zero-Signal Grid-No.2 Current.	3.5	..	ma
Max.-Signal Grid-No.2 Current.	5.5	..	ma
Plate Resistance (Approx.)	70000	..	ohms
Transconductance	3000	..	μ hos
Load Resistance.	7500	..	ohms
Total Harmonic Distortion.	7	..	%
Max.-Sig. Power Output	2.8	..	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:			
For fixed bias	0.1	..	megohm
For cathode bias	0.5	..	megohm

14A7 REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage.	12.6 [□]	..	ac or dc volts
Current.	0.15 ^{□□}	..	amp

The 14A7 is the same as the 7A7 except for heater rating.

[□] Nominal voltage = 14.0 volts. ^{□□} Nominal current = 0.16 ampere.

14B6 TWIN DIODE—HIGH-MU TRIODE

Heater, for Unipotential Cathode:

Voltage.	12.6 [□]	..	ac or dc volts
Current.	0.15 ^{□□}	..	amp

The 14B6 is the same as the 7B6 except for heater rating.

[□] Nominal voltage = 14.0 volts. ^{□□} Nominal current = 0.16 ampere.



14AF7

MEDIUM-MU TWIN TRIODE

14AF7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 12.6[□] ac or dc volts

Current 0.15^{□□} amp

Direct Interelectrode Capacitances:[○]

Each Unit:

Grid to Plate 2.3 μf

Grid to Cathode 2.2 μf

Plate to Cathode 1.6 μf

Grid of Unit No.1 to Grid of Unit No.2 0.20 max. μf

Plate of Unit No.1 to Plate of Unit No.2 0.60 max. μf

Grid of Unit No.1 to Plate of Unit No.2 0.06 max. μf

Grid of Unit No.2 to Plate of Unit No.1 0.10 max. μf

[○] Without external shield.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-25/32"

Maximum Seated Length 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

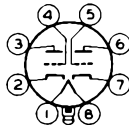
Basing Designation for BOTTOM VIEW 8AC

Pin 1 - Heater

Pin 2 - Cathode of Triode No.2

Pin 3 - Plate of Triode No.2

Pin 4 - Grid of Triode No.2



Pin 5 - Grid of Triode No.1

Pin 6 - Plate of Triode No.1

Pin 7 - Cathode of Triode No.1

Pin 8 - Heater Plug - Base Shell

AMPLIFIER - Class A₁

Values are for each unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

PLATE DISSIPATION 2.5 max. watts

GRID VOLTAGE:

Positive bias value 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 100 100 250 volts

Grid Voltage 0 - - volts

Cathode-Bias Resistor - 600 1100 ohms

[□] Nominal voltage = 14.0 volts.

^{□□} Nominal current = 0.16 ampere.

MAR. 15, 1948

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

14AF7
14B6



14AF7

MEDIUM-MU TWIN TRIODE

Amplification Factor	17	16	16	
Plate Resistance	6500	8400	7600	ohms
Transconductance	2600	1900	2100	μ hos
Plate Current	10.8	5	9	ma

14B6

TWIN DIODE—HIGH-MU TRIODE

Heater, for Unipotential Cathode:	
Voltage	12.6 [□] ac or dc volts
Current	0.15 ^{□□} amp
<i>The 14B6 is the same as the 7B6 except for heater rating.</i>	
[□] Nominal voltage = 14.0 volts.	^{□□} Nominal current = 0.16 ampere.



14C7

SHARP-CUTOFF PENTODE

14C7

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 12.6[□] ac or dc volts

Current 0.15^{□□} amp

Direct Interelectrode Capacitances:[○]

Grid No.1 to Plate 0.007 max. μ f

Input 6.0 μ f

Output 6.5 μ f

[○] With external shield connected to cathode.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-25/32"

Maximum Seated Length 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8V

Pin 1 - Heater

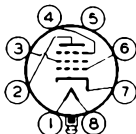
Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - Grid No.3

Pin 5 - Internal

Shield



Pin 6 - Grid No.1

Pin 7 - Cathode

Pin 8 - Heater

Plug - Base

Shell

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 300 max. volts

GRID-No.2 (SCREEN) VOLTAGE 100 max. volts

GRID-No.2 SUPPLY VOLTAGE 300 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:

Positive bias value 0 max. volts

PLATE DISSIPATION 1 max. watt

GRID-No.2 DISSIPATION 0.1 max. watt

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 100 250 volts

Grid No.3 Connected to cathode at socket

Internal Shield Connected to cathode at socket

Grid-No.2 Voltage 100 100 volts

Grid-No.1 Voltage -1 -3 volts

Cathode-Bias Resistor 130 100 ohms

Plate Resistance (Approx.) 0.1 # megohm

[□] Nominal voltage = 14.0 volts.

^{□□} Nominal current = 0.16 ampere.

Greater than 1 megohm.

14C7
TO
14H7



14C7 SHARP-CUTOFF PENTODE

(continued from preceding page)

Transconductance	2275	1575	μmhos
Grid-No.1 Bias (Approx.) for cathode-current cutoff.	-7	-7	volts
Plate Current.	5.7	2.2	ma
Grid-No.2 Current.	1.8	0.7	ma

14E6 TWIN DIODE—MEDIUM-MU TRIODE

Heater, for Unipotential Cathode:

Voltage.	12.6 [□]	ac or dc volts
Current.	0.15^{□□}	. . . . .	amp

The 14E6 is the same as the 7E6 except for heater rating.

[□] Nominal voltage = 14.0 volts. ^{□□} Nominal current = 0.16 ampere.

14E7 TWIN DIODE—REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathodes:

Voltage.	12.6 [□]	ac or dc volts
Current.	0.15^{□□}	. . . . .	amp

The 14E7 is the same as the 7E7 except for heater rating.

[□] Nominal voltage = 14.0 volts. ^{□□} Nominal current = 0.16 ampere.

14F7 HIGH-MU TWIN TRIODE

Heater, for Unipotential Cathodes:

Voltage.	12.6 [□]	ac or dc volts
Current.	0.15^{□□}	. . . . .	amp

The 14F7 is the same as the 7F7 except for heater rating.

[□] Nominal voltage = 14.0 volts. ^{□□} Nominal current = 0.16 ampere.

14F8 MEDIUM-MU TWIN TRIODE

Heater, for Unipotential Cathode:

Voltage.	12.6 [□]	ac or dc volts
Current.	0.15^{□□}	. . . . .	amp

The 14F8 is the same as the 7F8 except for heater rating.

[□] Nominal voltage = 14.0 volts. ^{□□} Nominal current = 0.16 ampere.

14H7 REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage.	12.6 [□]	ac or dc volts
Current.	0.15^{□□}	. . . . .	amp

The 14H7 is the same as the 7H7 except for heater rating.

[□] Nominal voltage = 14.0 volts. ^{□□} Nominal current = 0.16 ampere.



14J7
TO
14R7

14J7

TRIODE-HEPTODE CONVERTER

Heater, for Unipotential Cathode:
 Voltage. 12.6[□] ac or dc volts
 Current. 0.15^{□□} amp
The 14J7 is the same as the 7J7 except for heater rating.
 □ Nominal voltage = 14.0 volts. □□ Nominal current = 0.16 ampere.

14N7

MEDIUM-MU TWIN TRIODE

Heater, for Unipotential Cathodes:
 Voltage. 12.6[□] ac or dc volts
 Current. 0.3^{□□} amp
The 14N7 is the same as the 7N7 except for heater rating.
 □ Nominal voltage = 14.0 volts. □□ Nominal current = 0.32 ampere.

14Q7

PENTAGRID CONVERTER

Heater, for Unipotential Cathode:
 Voltage. 12.6[□] ac or dc volts
 Current. 0.15^{□□} amp
The 14Q7 is the same as the 7Q7 except for heater rating.
 □ Nominal voltage = 14.0 volts. □□ Nominal current = 0.16 ampere.

14R7

TWIN DIODE—REMOTE-CUTOFF PENTODE

Heater, for Unipotential Cathode:
 Voltage. 12.6[□] ac or dc volts
 Current. 0.15^{□□} amp
The 14R7 is the same as the 7R7 except for heater rating.
 □ Nominal voltage = 14.0 volts. □□ Nominal current = 0.16 ampere.



17AX4-GT
TO
17DE4

17AX4-GT HALF-WAVE VACUUM RECTIFIER

*Intended for TV damper service in equipment
having series heater-string arrangement*

The 17AX4-GT is the same as the 6AX4-GT except for the following items:

Heater, for Unipotential Cathode:			
Voltage.	16.8	. . . . .	ac or dc volts
Current.	0.45	. . . . .	amp
Warm-up time (Average)*.	11	. . . . .	sec

17BQ6-GTB BEAM POWER TUBE

*Intended for use in equipment having
series heater-string arrangement*

The 17BQ6-GTB is the same as the 6BQ6-GTB/6CU6 except for the following items:

Heater, for Unipotential Cathode:			
Voltage.	16.8	. . . . .	ac or dc volts
Current.	0.45	. . . . .	amp
Warm-up time (Average)*.	11	. . . . .	sec

17DE4 HALF-WAVE VACUUM RECTIFIER

*Intended for TV damper service in equipment
having series heater-string arrangement*

The 17DE4 is the same as the 6DE4 except for the following items:

Heater, for Unipotential Cathode:			
Voltage.	17	. . . . .	ac or dc volts
Current.	0.6 ± 6%	. . . . .	amp
Warm-up time (Average)*.	11	. . . . .	sec

* For definition of heater warm-up time and method of determining it, see sheet **HEATER WARM-UP TIME MEASUREMENT** at front of this Section.

17DQ6-A



17DQ6-A

BEAM POWER TUBE

*Intended for use in equipment having
series heater-string arrangement*

The 17DQ6-A is the same as the 6DQ6-A except for the following items:

Heater, for Unipotential Cathode:

Voltage.	16.8	. . . . .	ac or dc volts
Current.	0.45	. . . . .	amp
Warm-up time (Average)	11	. . . . .	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARN-UP TIME MEASUREMENT at front of this Section.



19BG6-G

19BG6-G BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	18.9	ac or dc volts
Current	0.3	amp

Transconductance (Approx.) with plate

volts = 250, grid-No.2 volts = 250,		
grid-No.1 volts = -15	6000	μmhos

Mu-Factor, Grid No.2 to Grid No.1 with

plate volts = 250, grid-No.2 volts = 250,		
grid-No.1 volts = -20	8	

Direct Interelectrode Capacitances:^o

Grid No.1 to Plate	0.65 max.	μμf
Input	11	μμf
Output	6.5	μμf

^o with no external shield.

Mechanical:

Mounting Position . . Vertical, Base Up or Down; Horizontal,
with Plane of Pins 2 & 7 Vertical

Maximum Overall Length 5-11/16"

Seated Length 4-31/32" ± 5/32"

Maximum Diameter 2-1/16"

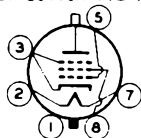
Bulb ST-16

Cap Small

Base Medium-Shell Octal 6-Pin

Basing Designation for BOTTOM VIEW. 5BT

Pin 1 - No Connection
Pin 2 - Heater
Pin 3 - Cathode,
Grid No.3



Pin 5 - Grid No.1
Pin 7 - Heater
Pin 8 - Grid No.2
Cap - Plate

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values:

For operation in a 525-line, 30-frame system^o

DC PLATE VOLTAGE	700 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE	6000 max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	-1500 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE*	350 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE.	-50 max.	volts

- ^o As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.
- * The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.
- Preferably obtained through a series-dropping resistor of sufficient magnitude to limit the grid-No.2 input to the rated maximum value.

SEPT. 1, 1950

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

19BG6-G



19BG6-G BEAM POWER AMPLIFIER

PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE. . .	-400 max.	volts
DC PLATE CURRENT	100 max.	ma
GRID-No.2 INPUT.	3.2 max.	watts
PLATE DISSIPATION.	20 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	250 max.	volts
Heater positive with respect to cathode.	250 max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1.0 max.	megohm
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SEPT. 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



19BG6-GA

19BG6-GA BEAM POWER TUBE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 18.9 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate 0.8 μf

Grid No.1 to cathode & grid No.3,
grid No.2, and heater. 11 μf

Plate to cathode & grid No.3,
grid No.2, and heater. 6 μf

Characteristics, Class A₁ Amplifier:

Plate Voltage 60 250 volts

Grid-No.2 Voltage 250 250 volts

Grid-No.1 Voltage 0 -15 volts

Mu-Factor, Grid No.2 to Grid No.1 8

Plate Resistance (Approx.) 25000 ohms

Transconductance. 6000 μmhos

Plate Current 180* 75 ma

Grid-No.2 Current 18* 4 ma

Grid-No.1 Voltage (Approx.) for
plate current of 1 ma -45 volts

Mechanical:

Mounting Position Vertical, base up or down, or
Horizontal with pins 2 and 7 in vertical plane

Maximum Overall Length 5"

Seated Length. 4-1/4" \pm 3/16"

Maximum Diameter 1-9/16"

Bulb T-12

Cap. Small (JEDEC No.C1-1)

Base Short Medium-Shell Octal 8-Pin

with External Barriers, Style A (JEDEC No.B8-110),
or Short Medium-Shell Octal 8-Pin
with External Barriers, Style B (JEDEC No.B8-118)

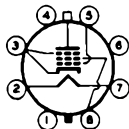
Basing Designation for BOTTOM VIEW5BT

Pin 1 - No Connec-
tion

Pin 2 - Heater

Pin 3 - Cathode,
Grid No.3

Pin 4 - Same as Pin 1



Pin 5 - Grid No.1

Pin 6 - Same as Pin 1

Pin 7 - Heater

Pin 8 - Grid No.2

Cap - Plate

^o Without external shield.

* These values can be measured by a method involving a recurrent wave form such that the cathode current and grid-No.2 input will be kept within ratings in order to prevent damage to the tube.

19BG6-GA



**19BG6-GA
BEAM POWER TUBE**

HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

For operation in a 525-line, 30-frame system[□]

DC PLATE VOLTAGE	700 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [●]	6600 [■] max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE	350 max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	300 max.	volts
CATHODE CURRENT:		
Peak	400 max.	ma
Average	110 max.	ma
GRID-No.2 INPUT	3.2 max.	watts
PLATE DISSIPATION [†]	20 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)		
	210 max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance: For grid-resistor-bias operation [†]	0.47 max.	megohm
--	-----------	--------

[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.

[■] under no circumstances should this absolute value be exceeded.

[●] The duration of the voltage pulse must not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

[†] It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.

[▲] The dc component must not exceed 100 volts.

CURVES

for Type 19BG6-GA are the same as those shown for
Type 6BG6-G



19J6

19J6 MEDIUM-MU TWIN TRIODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 18.9 ac or dc volts
Current. 0.15 amp

Direct Interelectrode Capacitances (Each unit, approx.):^o

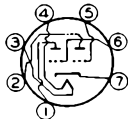
Grid to Plate. 1.5 μmf
Grid to Cathode. 2.0 μmf
Plate to Cathode 0.4 μmf

^o With no external shield.

Mechanical:

Mounting Position. Any
Maximum Overall Length 2-1/8"
Maximum Seated Length. 1-7/8"
Length, Base Seat to Bulb Top (excluding tip) 1-1/2" \pm 3/32"
Maximum Diameter 3/4"
Bulb T-5-1/2
Base Small-Button Miniature 7-Pin
Basing Designation for BOTTOM VIEW 7BF

Pin 1 - Plate of Triode No.2
Pin 2 - Plate of Triode No.1
Pin 3 - Heater
Pin 4 - Heater



Pin 5 - Grid of Triode No.1
Pin 6 - Grid of Triode No.2
Pin 7 - Cathode

AMPLIFIER - Class A₁

Values are for each unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 300 max. volts
PLATE DISSIPATION. 1.5 max. watts
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode 90 max. volts
Heater positive with respect to cathode. 90 max. volts

Characteristics:

Plate Voltage. 100 volts
Cathode-Bias Resistor[▲] 50 \diamond ohms
Amplification Factor 38
Plate Resistance 7100 ohms
Transconductance 5300 μmhos
Plate Current. 8.5 ma

Maximum Circuit Values (for maximum rated conditions):

Grid-Circuit Resistance:
For cathode-bias operation 0.5 max. megohm

[▲], [◆]: See next page.

NOV. 15, 1948

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TUBE DEPARTMENT

TENTATIVE DATA

19J6



19J6

MEDIUM-MU TWIN TRIODE

MIXER SERVICE

Values are for each unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	300 max.	volts
PLATE DISSIPATION.	1.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. .	90 max.	volts
Heater negative with respect to cathode. .	90 max.	volts

Characteristics:

Plate Voltage.	150	volts
Cathode-Bias Resistor [▲]	810 [†]	ohms
Oscillator Peak Voltage.	3	volts
Plate Resistance	10200	ohms
Conversion Transconductance.	1900	μmhos
Short-Circuit Input Conductance		
at 100 Mc	196	μmhos
Plate Current.	4.8	ma

Maximum Circuit Values (for maximum rated conditions):

Grid-Circuit Resistance:

For cathode-bias operation 0.5 max. megohm

[▲] Operation with fixed bias is not recommended.[♦] Value is for both units operating at the specified conditions.[†] For one unit, with other unit not operating. When both units are operating, the value of cathode-bias resistor is determined by the total cathode current of both units.

NOV. 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA

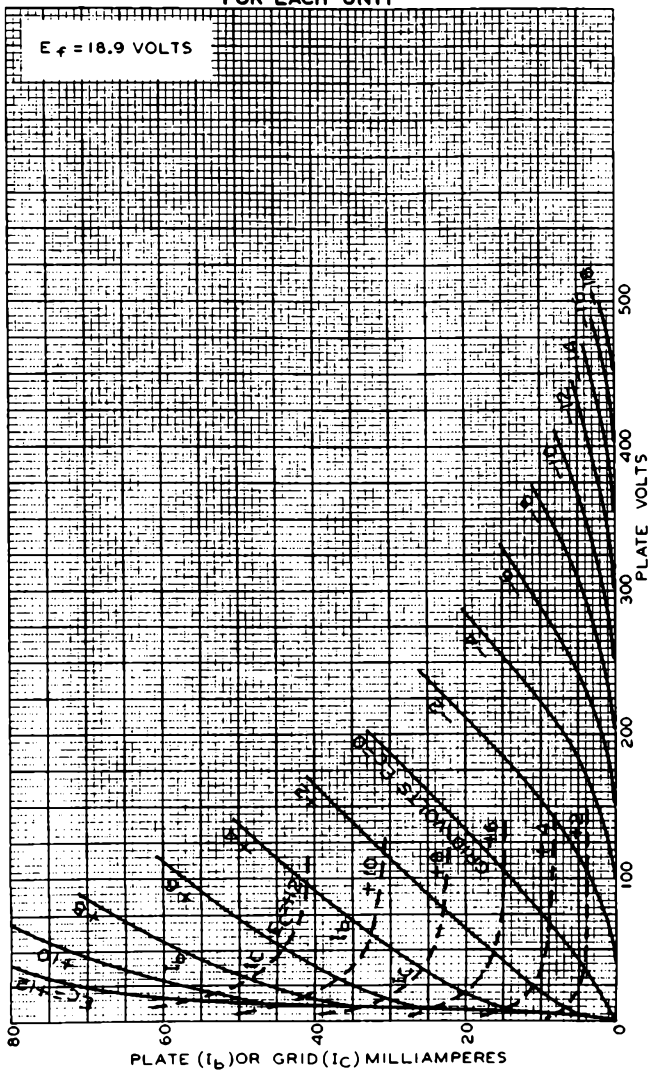
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19J6

19J6

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



AUG. 18, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

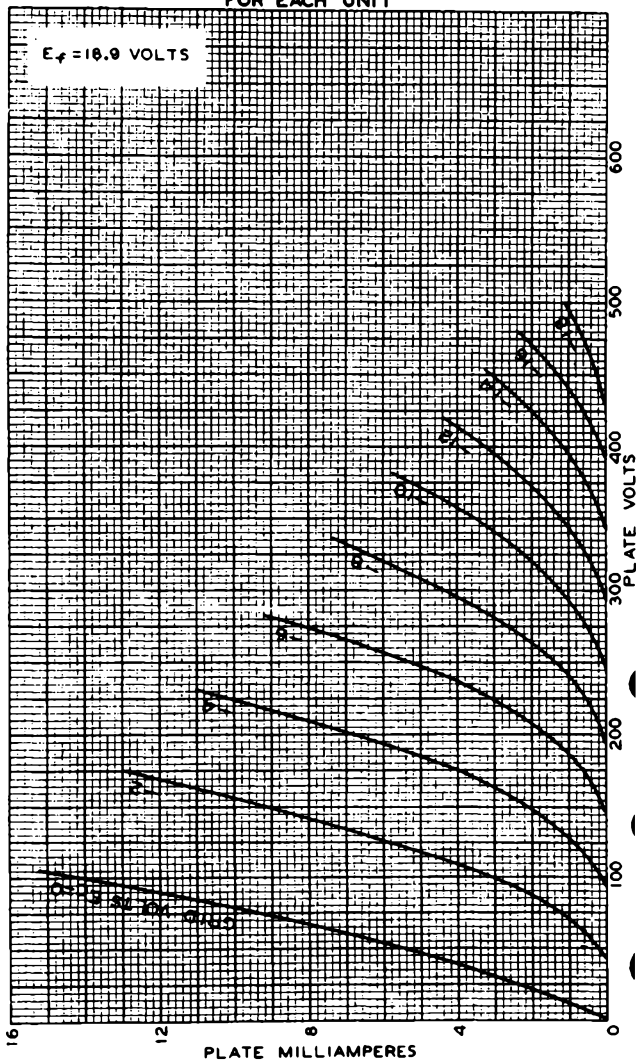
92CM-7061

19J6



19J6

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



AUG. 18, 1948

TUBE DEPARTMENT

92CM-7060

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



19T8

19T8
19X8

TRIPLE DIODE—HIGH-MU TRIODE

9-PIN MINIATURE TYPE

Heater, for Unipotential Cathode:		
Voltage	18.9	ac or dc volts
Current	0.15	amp

The 19T8 is the same as the 6T8 except for heater rating.

19X8

TRIODE-PENTODE CONVERTER

9-PIN MINIATURE TYPE

Heater, for Unipotential Cathode:		
Voltage	18.9	ac or dc volts
Current	0.15	amp

The 19X8 is the same as the 6X8 except for heater rating, but is intended primarily for use in "transformerless" AM/FM receivers whereas the 6X8 is intended for use in AM/FM receivers and in television receivers utilizing an intermediate frequency in the order of 40 Mc. Therefore, reference in the note () under the 6X8 to TV receivers does not apply to the 19X8.*



24-A

24-A

SCREEN GRID R-F AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	2.5	a-c or d-c volts
Current	1.75	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	0.007 max.	μmf
Input	5.3	μmf
Output	10.5	μmf
Overall Length	4-25/32" to 5-1/32"	
Maximum Diameter	1-13/16"	
Bulb	ST-14	
Cap	Small Metal	
Base	Medium 5-Pin	
Pin 1 - Heater	Pin 4 - Cathode	
Pin 2 - Plate	Pin 5 - Heater	
Pin 3 - Screen	Cap - Grid	
Mounting Position	BOTTOM VIEW	Any

AMPLIFIER - Class A₁

Operating Conditions and Characteristics:

Heater	2.5	2.5	volts
Plate	180	250 \square	volts
Screen	90	90	max. volts
Grid	-3	-3	volts
Amp. Fact.	400	630	
Plate Res.	400000	600000	ohms
Transcond.	1000	1050	μmhos
Plate Cur.	4	4	ma.
Screen Cur.	1.7	1.7	max. ma.

DETECTOR

Typical Operation:

	Biased	Grid-Leak	
Heater *	2.5	2.5	volts
Plate	250 \square	180 max.	volts
Screen	20 to 45	20 to 45	volts
Grid	-5 approx.	Return to Cathode ∇	volts
Plate Load	0.25 Δ	0.25 Δ	megohms
Plate Cur.	Adjusted to 0.1 ma. with no input signal \blacksquare		

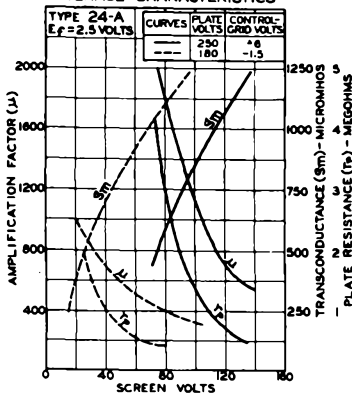
- \square Max. plate volts = 275.
- ∇ conventional grid leak and condenser.
- Δ Or 500 h. choke shunted by 0.25 megohm. For resistance load, plate-supply voltage will be voltage at plate plus voltage drop in load caused by specified plate current.
- \blacksquare With shield-can.

Average plate current with normal maximum signal should be limited to 4.0 ma., as measured with a d-c meter.

- * In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

\leftarrow Indicates a change.

AVERAGE CHARACTERISTICS



925-574R4

APRIL 3, 1939

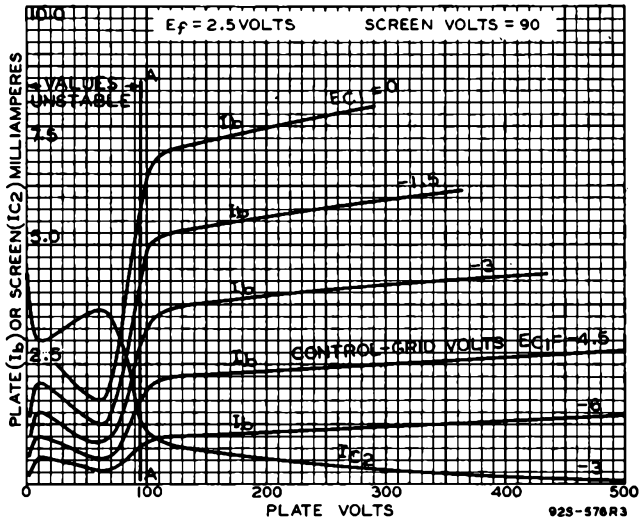
RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

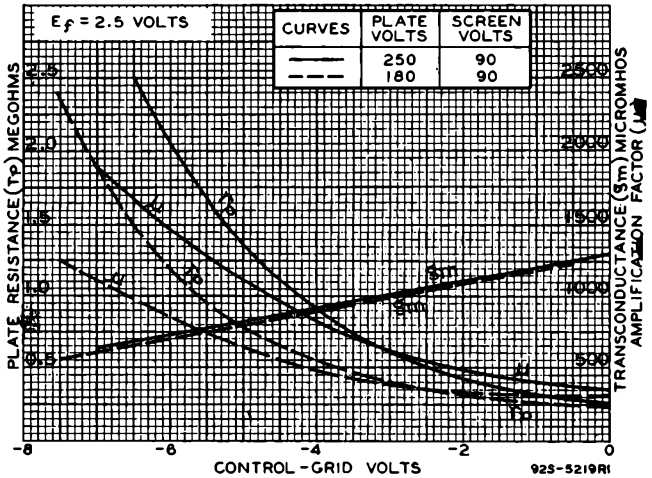
24-A



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



FEB. 14, 1939

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6027



25A6
25A6-GT/G

25A6, 25A6-GT/G

POWER AMPLIFIER PENTODE

Heater [■]		Coated Unipotential Cathode	
Voltage	25	a-c or d-c volts	
Current	0.3	amp.	
	<u>25A6</u>	<u>25A6-GT/G</u>	
Direct Interelectrode Cap.	▲		
Grid to Plate	0.2	-	μf
Input	8.5	-	μf
Output	12.5	-	μf
Maximum Overall Length	3-1/4"	3-5/16"	
Maximum Seated Height	2-11/16"	2-3/4"	
Maximum Diameter	1-5/16"	1-5/16"	
Bulb	Metal Shell, MT-8	T-9	
Base	{ Small Wafer	{ Intermed. Sh.	
	{ Octal 7-Pin	{ Octal 7-Pin	
Basing Designation	7S	G-7S	
Pin 1	{ 25A6, Shell	Pin 5 - Grid	
	{ 25A6-GT/G, No Con.	Pin 7 - Heater	
Pin 2 - Heater		Pin 8 - Cathode,	
Pin 3 - Plate		Grid #3	
Pin 4 - Screen			
Mounting Position			Any



BOTTOM VIEW

Maximum Ratings Are Design-Center Values

AMPLIFIER

Plate Voltage	160 max. volts
Screen Voltage	135 max. volts
Plate Dissipation	5.3 max. watts
Screen Dissipation	1.9 max. watts

Typical Operation and Characteristics- Class A₁ Amplifier:

Plate Voltage	95	135	160	volts
Screen Voltage	95	135	120	volts
Grid Voltage *	-15	-20	-18	volts
Peak A-F Grid Voltage	15	20	18	volts
Zero-Sig. Plate Current	20	37	33	ma.
Max.-Sig. Plate Current	22	39	36	ma.
Zero-Sig. Screen Current	4	8	6.5	ma.
Max.-Sig. Screen Current	8	14	12	ma.
Plate Resistance	45000	35000	42000	ohms
Transconductance	2000	2450	2375	μmhos
Load Resistance	4500	4000	5000	ohms
Total Harmonic Distortion	11	9	10	%
Max.-Sig. Power Output	0.9	2	2.2	watts

■ Heater-cathode bias should not exceed 90 volts d.c. as measured between negative heater terminal and cathode.

▲ With shell connected to cathode. Values are approximate.

* The d-c resistance in the grid circuit should not exceed 0.5 megohm with cathode bias. With fixed bias, the d-c resistance may be as high as 0.5 megohm for the 95-volt condition, but should be limited to 0.1 megohm for the 135-volt and 160-volt conditions.

Curves under Type 43 also apply to the 25A6 and 25A6-GT/G.

→ Indicates a change.

Mar. 20, 1943

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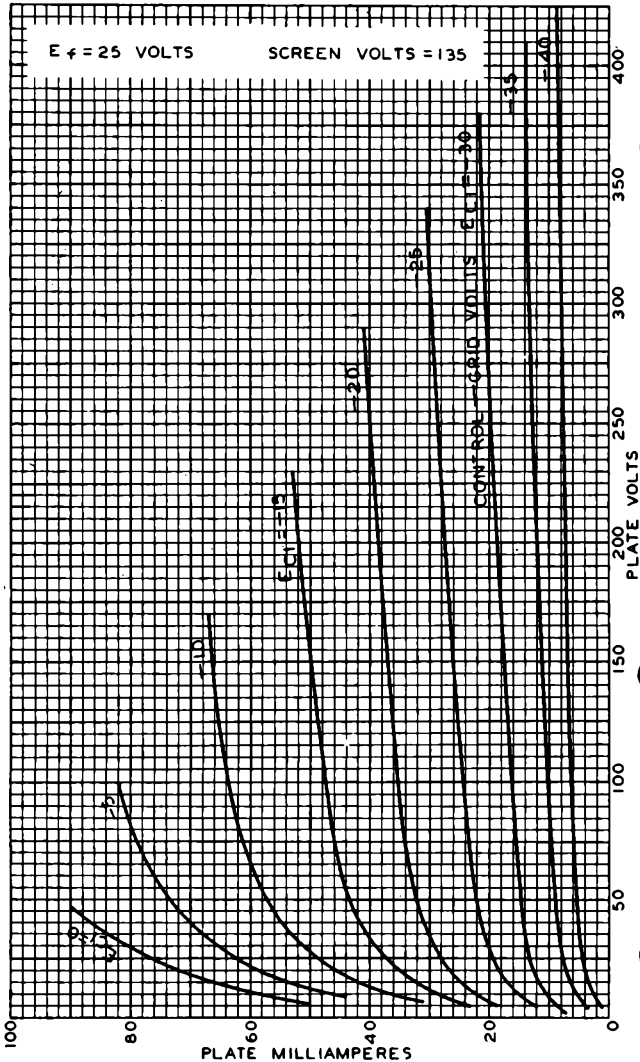
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25A6



25A6

AVERAGE PLATE CHARACTERISTICS



JAN. 8, 1940

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-4559R1



25AC5-GT/G

25AC5-GT/G

HIGH-MU POWER AMPLIFIER TRIODE

Heater	Coated Unipotential Cathode	
Voltage	25	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		3-5/16"
Maximum Seated Height		2-3/4"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 6-Pin	
Pin 1 - No Connection		Pin 5 - Grid
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Mounting Position		Any



BOTTOM VIEW (G-6Q)

Maximum Ratings Are Design-Center Values

CHARACTERISTICS

Plate Voltage	110	volts
Grid Voltage	+15	volts
Amplification Factor	58	
Plate Resistance	15200	ohms
Transconductance	3800	μ hos
Plate Current	45	ma.
Grid Current	7	ma.

AMPLIFIER

Plate Voltage	180 max.	volts
Plate Dissipation	10 max.	watts

Typical Operation - Class B Power Amplifier:

Unless otherwise specified, values are for 2 tubes

Plate Voltage	180	volts
Grid Voltage	0	volts
Peak A-F Grid-to-Grid Voltage	60	volts
Zero-Signal D-C Plate Current	4	ma.
Effective Load Res. (plate-to-plate)	4800	ohms
Peak Power Input	810	mw.
Power Output	6	watts

Dynamic-Coupled Class A₁ Amplifier - With Driver as Indicated:

	6AR5-DF/O	6P5-DF/O	3P
	As Driver	As Driver	As Driver

Plate-Supply Voltage	110	180	180	volts
Grid Voltage	A	A	A	volts
Average Plate Current	45	27	37	ma.
Average Plate Current of Driver	7	4	5.3	ma.
Input Signal to Driver (RMS)	22	12	17	volts
Driver Grid Resistor	1.0	1.0	1.0	max. megohm
Load Resistance	2000	8000	5000	ohms
Harmonic Distortion	10	10	10	%
Power Output	2.0	2.0	2.7	watts

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

▲ Bias voltage for both 25AC5-GT/G and the driver is developed by the Dynamic-Coupled connection. The Dynamic-Coupled connection is illustrated under Type 6AC5-GT/G; the 25AC5-GT/G does not require the use of the 25000-ohm resistor.

■ Current does not flow in the driver grid circuit during any part of the input cycle. Under maximum rated conditions, the total d-c resistance in the grid circuit of the driver should not exceed 1.0 megohm.

Mar. 20, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY


DATA

25B5



25B5

DIRECT-COUPLED POWER AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	25	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		4-19/32"
Maximum Seated Height		3-31/32"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small 6-Pin
Pin 1 - Heater		Pin 4 - Input-Triode
Pin 2 - Output-Triode Plate		Grid
Pin 3 - Input-Triode Plate		Pin 5 - Output-Triode Cathode
Mounting Position	BOTTOM VIEW (6D)	Pin 6 - Heater

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

Maximum Ratings and Typical Operating Conditions for the 25B5 are the same as those for Type 25N6-G.

Mar. 20, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



25BQ6-GT

25BQ6-GT

BEAM POWER AMPLIFIER

Heater, for Unipotential Cathode:

Voltage. 25 ac or dc volts
Current. 0.3 amp

The 25BQ6-GT is the same as the 6BQ6-GT except for heater rating.



25BQ6-
GTB


25BQ6-GTB/25CU6 BEAM POWER TUBE

The 25BQ6-GTB/25CU6 is the same as the 6BQ6-GTB/6CU6 except for the following items:

Heater, for Unipotential Cathode:

Voltage.	25	. . . . .	ac or dc volts
Current.	0.3	. . . . .	amp

BEAM POWER AMPLIFIER

Heater [■]	Coated Uniopotential Cathode	
Voltage	25	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		4-5/8"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium Shell Octal 7-Pin
Pin 1 - No Connection		Pin 5 - Grid
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Pin 4 - Screen		
Mounting Position		Any

BOTTOM VIEW (G-7AC)

AMPLIFIER

Plate Voltage	200 max. volts
Screen Voltage	135 max. volts
Plate Dissipation	12.5 max. watts
Screen Dissipation	1.75 max. watts

Typical Operation and Characteristics—Class A₁ Amplifier:

Heater [■]	25	25	volts
Plate	135	200	volts
Screen	135	135	volts
Grid [▲]	-13.5	14	volts
Peak A-F Grid Voltage	13.5	14	volts
Zero-Sig. Plate Cur.	58	61	ma.
Max.-Sig. Plate Cur.	60	66	ma.
Zero-Sig. Screen Cur.	3.5	2.2	ma.
Max.-Sig. Screen Cur.	11.5	9.0	ma.
Plate Res. (Approx.)	9300	18300	ohms
Transcond.	7000	7100	μmhos
Load Res.	2000	2600	ohms
Total Harmonic Dist.	10	10	%
Max.-Sig. Power Output	3.6	6.0	watts

[■] In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible.

[▲] The type of input coupling should not introduce too much resistance in the grid circuit. Transformer- or impedance-input coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

The curve under Type 6T6-G also applies to the 25C6-G.



25CD6-GA

25CD6-GA BEAM POWER TUBE

*Intended for use in equipment having
series heater-string arrangement*

The 25CD6-GA is the same as the 6CD6-G except for the following items:

Heater, for Unipotential Cathode:

Voltage	25	. . . . .	ac or dc volts
Current	0.6	. . . . .	amp
Warm-up time (Average)	11	. . . . .	sec

For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.

PEAK HEATER-CATHODE VOLTAGE:

- Heater negative with respect to cathode. 200 max. volts
- Heater positive with respect to cathode. 200[▲]max. volts

[▲] The dc component must not exceed 100 volts.



25L6-GT

25L6-GT BEAM POWER TUBE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 25 ac or dc volts
Current 0.3 amp

Direct Interelectrode Capacitances:^o

Grid No.1 to plate 0.6 μ f
Grid No.1 to cathode & grid No.3,
grid No.2, and heater 15 μ f
Plate to cathode & grid No.3,
grid No.2, and heater 10 μ f

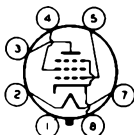
Mechanical:

Mounting Position Any
Maximum Overall Length 3-5/16"
Maximum Seated Length 2-3/4"
Maximum Diameter 1-9/32"
Bulb T-9

Base Intermediate-Shell Octal 7-Pin (JETEC No. B7-7),
or Short Intermediate-Shell Octal 7-Pin
with External Barriers (JETEC No. B7-59)

Basing Designation for BOTTOM VIEW 7AC

- Pin 1 - No Connection
- Pin 2 - Heater
- Pin 3 - Plate
- Pin 4 - Grid No.2



- Pin 5 - Grid No.1
- Pin 7 - Heater
- Pin 8 - Cathode,
Grid No.3

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 200 max. volts
GRID-No.2 (SCREEN) VOLTAGE 125 max. volts
PLATE DISSIPATION 10 max. watts
GRID-No.2 INPUT 1.25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . 150 max. volts
Heater positive with respect to cathode . . 150 max. volts

Typical Operation and Characteristics:

Plate Voltage 110 200 volts
Grid-No.2 Voltage 110 125 volts
Grid-No.1 (Control-Grid) Voltage . . -7.5 0 volts
Peak AF Grid-No.1 Voltage 7.5 8.5 volts
Cathode Resistor 0 180 ohms
Zero-Signal Plate Current 49 46 ma
Max.-Signal Plate Current 50 47 ma
Zero-Signal Grid-No.2 Current 4 2.2 ma

^o Without external shield.

← Indicates a change.

25L6-GT



25L6-GT BEAM POWER TUBE

Max.-Signal Grid-No.2 Current.	10	8.5	ma
Plate Resistance (Approx.)	13000	28000	ohms
Transconductance	8000	8000	μ hos
Load Resistance.	2000	4000	ohms
Total Harmonic Distortion.	10	10	%
Max.-Signal Power Output	2.1	3.8	watts

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	0.5 max. megohm

Curves shown under Type 50L6-GT also apply to the 25L6-GT



25L6-GT

25L6-GT

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	25	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to Plate	0.8	μ mf
Input	15	μ mf
Output	10	μ mf

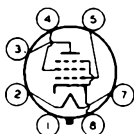
^o With no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	Intermediate-Shell Octal 7-Pin

Base Designation for BOTTOM VIEW G-7AC

- Pin 1 - No Connection
- Pin 2 - Heater
- Pin 3 - Plate
- Pin 4 - Grid No.2



- Pin 5 - Grid No.1
- Pin 7 - Heater
- Pin 8 - Cathode, Grid No.3

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	200 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	125 max.	volts
PLATE DISSIPATION	10 max.	watts
GRID-No.2 INPUT	1.25 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	110	200	volts
Grid-No.2 Voltage	110	125	volts
Grid-No.1 (Control-Grid) Voltage	-7.5	-	volts
Cathode-Bias Resistor	-	180	ohms
Peak AF Grid-No.1 Voltage	7.5	8.5	volts
Zero-Signal Plate Current	49	46	ma
Max.-Signal Plate Current	50	47	ma
Zero-Signal Grid-No.2 Current	4	2.2	ma
Max.-Signal Grid-No.2 Current	10	8.5	ma
Plate Resistance (Approx.)	13000	28000	ohms
Transconductance	8000	8000	μ mhos
Load Resistance	2000	4000	ohms

← Indicates a change.

25L6-GT



25L6-GT

BEAM POWER AMPLIFIER

Total Harmonic Distortion	10	10	%
Max.-Signal Power Output.	2.1	3.8	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias.	0.1	megohm
For cathode bias.	0.5	megohm

Curves shown under Type 50L6-GT also apply to the 25L6-GT.



25W4-GT

25W4-GT

HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

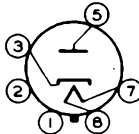
Voltage.	25	ac volts
Current.	0.3	amp

Mechanical:

Mounting Position.	Any
Maximum Overall Length.	3-5/16"
Maximum Seated Length.	2-3/4"
Maximum Diameter.	1-9/32"
Bulb.	T-9
Base.	Intermediate-Shell Octal 6-Pin
Basing Designation for BOTTOM VIEW.	4CG

Pin 1-No
Connection

Pin 2-No
Connection



Pin 3-Cathode

Pin 5-Plate

Pin 7-Heater

Pin 8-Heater

DAMPER SERVICE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	2000*	max.	volts
PEAK PLATE CURRENT	600	max.	ma
DC PLATE CURRENT	125	max.	ma
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	450	max.	volts
Heater positive with respect to cathode.	100	max.	volts

RECTIFIER SERVICE

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	1250	max.	volts
PEAK PLATE CURRENT	600	max.	ma
HOT-SWITCHING TRANSIENT PLATE CURRENT			
For duration of 0.2 second maximum	3.5	max.	amp
DC OUTPUT CURRENT.	125	max.	ma
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	450	max.	volts
Heater positive with respect to cathode.	100	max.	volts

* This rating is applicable where the duty cycle of the voltage pulse does not exceed 15 percent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15% of one horizontal scanning cycle is 10 microseconds.

25W4-GT



25W4-GT

HALF-WAVE VACUUM RECTIFIER

Typical Operation:	Half-Wave	Full-Wave	
	Rectifier (One Tube)	Rectifier (Two Tubes)	
AC Plate-Supply Voltage (RMS) . .	350	-	volts
AC Plate-to-Plate Supply Voltage (RMS)	-	700	volts
Filter-Input Capacitor	20	20	μf
Minimum Total Effective Plate- Supply Impedance Per Plate.	145	145	ohms
DC Output Current	125	250	ma
DC Output Voltage at Input to Filter (Approx.):			
At half-load cur.of	62.5 ma. 390 125 ma. -	-	volts
		395	volts
At full-load cur.of	125 ma. 335 250 ma. -	-	volts
		350	volts
Voltage Regulation (Approx.):			
Half-load to full-load current	55	45	volts

Curves shown under Type 6W4-GT also apply to the 25W4-GT



25Z5



HIGH-VACUUM RECTIFIER-DOUBLER

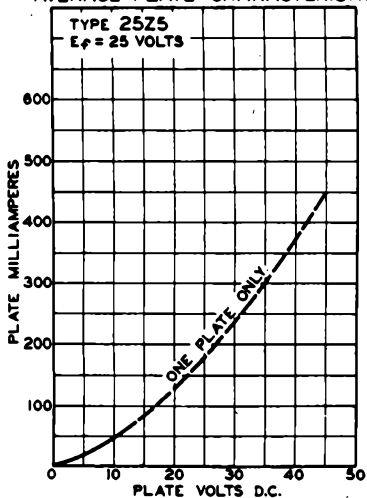
Heater	Coated Unipotential Cathodes	
Voltage	25	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		4-3/16" ←
Maximum Seated Height		3-9/16" ←
Maximum Diameter		1-9/16" ←
Bulb		ST-12
Base		Small 6-Pin
Pin 1-Heater		Pin 4-Cathode #1
Pin 2-Plate #2		Pin 5-Plate #1
Pin 3-Cathode #2		Pin 6-Heater
Mounting Position	BOTTOM VIEW (6E)	Any



Maximum Ratings, Typical Operating Conditions, and Curves are the same as those for Type 25B8.

In the design of "transformerless" receivers, a filter of condenser-input type is recommended for use with the 25Z5 in order to obtain a d-c output voltage as high as possible. A larger input capacitance, i.e., 16 μ f, is desirable for half-wave rectifier service, while a higher value is advantageous for voltage-doubler circuits. Since the peak voltage applied to the input condenser(s) is relatively low, it is possible to use condensers having moderate voltage rating (sufficient only for the line voltage). For rectifier and voltage-doubler circuits, see next page.

AVERAGE PLATE CHARACTERISTIC



← Indicates a change.

92C-4458RI

Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

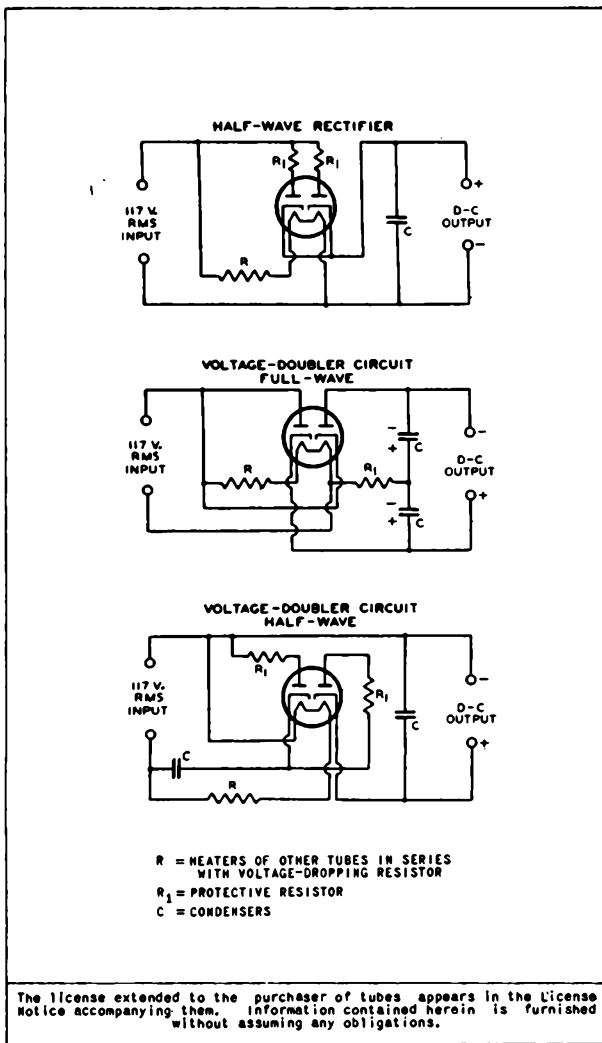
DATA

2525



2525

TYPICAL RECTIFIER-DOUBLER CIRCUITS



Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

CIRCUITS



25Z6, 25Z6-GT/G

25Z6
25Z6-GT/G

HIGH-VACUUM RECTIFIER-DOUBLER

Heater Voltage	25	a-c or d-c volts
Heater Current	0.3	amp.
	25Z6	25Z6-GT/G
Maximum Overall Length	3-1/4"	3-5/16"
Maximum Seated Height	2-11/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT-8	T-9
Base	{ Small Wafer Octal 7-Pin	{ Intermed. Sh. Octal 7-Pin
Basing Designation	70	G-70
Pin 1	{ 25Z6, Shell 25Z6-GT/G, No Con.	Pin 4 - Cathode #2
Pin 2	- Heater	Pin 5 - Plate #1
Pin 3	- Plate #2	Pin 7 - Heater
Mounting Position		Pin 8 - Cathode #1 Any



BOTTOM VIEW

Maximum Ratings Are Design-Center Values
RECTIFIER OR DOUBLER

Peak Inverse Plate Voltage	700 max. volts
Peak Plate Current per Plate	450 max. ma.
D-C Output Current per Plate	75 max. ma.
D-C Heater-Cathode Potential	350 max. volts

Typical Operation as Half-Wave Rectifier
with Condenser-Input Filter:*

Unless otherwise indicated, values are for both plates in parallel.

A-C Plate Supply Voltage per Plate (RMS)	117	150	235	volts
Filter Input Condenser	16	16	16	μf
Min. Total Effect. Plate-Supply Imped. per Plate	15	40	100	ohms
D-C Output Current per Plate	75	75	75	ma.
D-C Voltage (At input to filter):*				
At half-load current (75 ma.)	115	-	255	volts
At full-load current (150 ma.)	80	-	200	volts
Difference (Voltage Regulation)	35	-	55	volts
Percentage Regulation	30	-	22	%

Typical Operation as Voltage Doubler:

	Half-Wave	Pull-Wave	
A-C Plate Supply Voltage per Plate (RMS)	117	117	volts
Filter Input Condenser (Each)	16	16	μf
Min. Total Effect. Plate-Supply Imped. per Plate	30	15	ohms
D-C Output Current	75	75	ma.
D-C Voltage (At input to filter):*			
At half-load current (37.5 ma.)	-	250	volts
At full-load current (75 ma.)	-	205	volts
Difference (Voltage Regulation)	-	45	volts
Percentage Regulation	-	18	%

* In half-wave rectifier service, the two units may be used separately or in parallel.

* Approximate values.

Circuits and Plate Characteristic Curve for the 25Z6 and 25Z6-GT/G are the same as for Type 25Z5.

Mar. 20, 1943

RCA VICTOR DIVISION

DATA

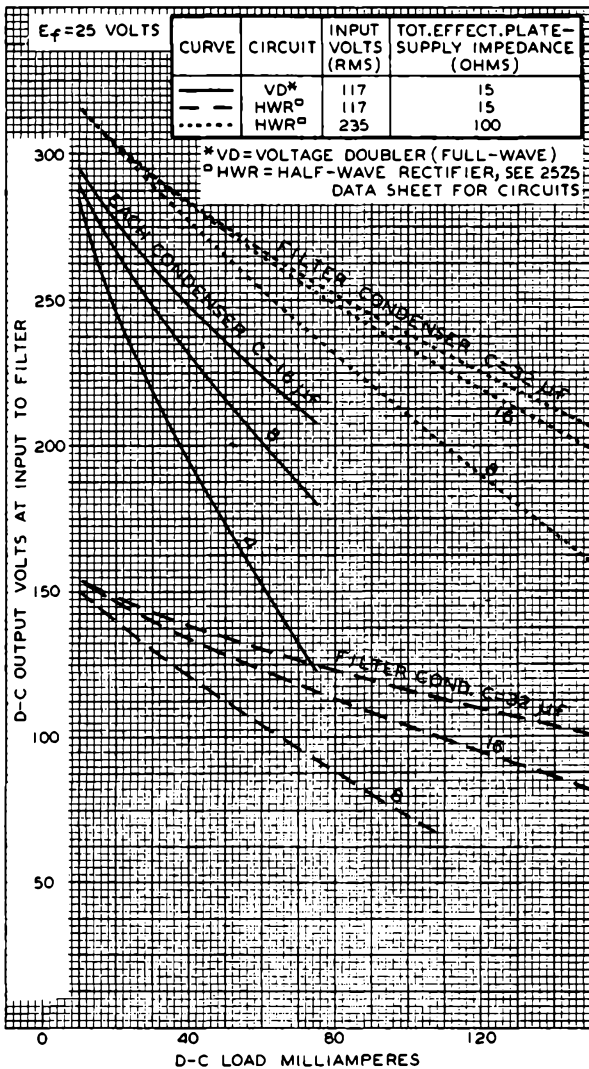
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

25Z6



25Z6

OPERATION CHARACTERISTICS



NOV. 27, 1939

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92C-4603 R2

RCA-26
AMPLIFIER
A-C FILAMENT

Filament	Coated		
Voltage	1.5		a-c or d-c volts
Current	1.05		amp.
Direct Interelectrode Capacitances:			
Grid to Plate	8.1		μf
Grid to Filament	2.8		μf
Plate to Filament	2.5		μf
Maximum Overall Length			4-11/16"
Maximum Diameter			1-13/16"
Bulb	(2)	(3)	ST-14
Base			Medium 4-Pin
Pin 1-Filament	(1)		Pin 3-Grid
Pin 2-Plate		(4)	Pin 4-Filament

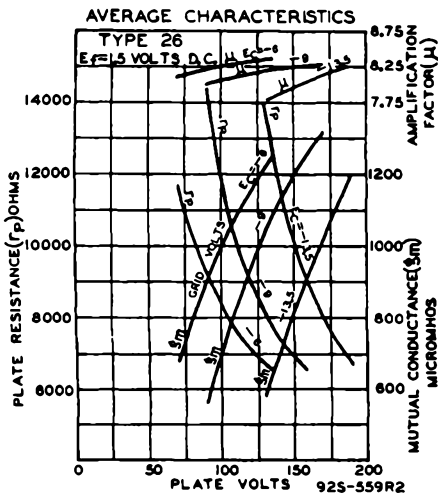
BOTTOM VIEW

AMPLIFIER (Class A)

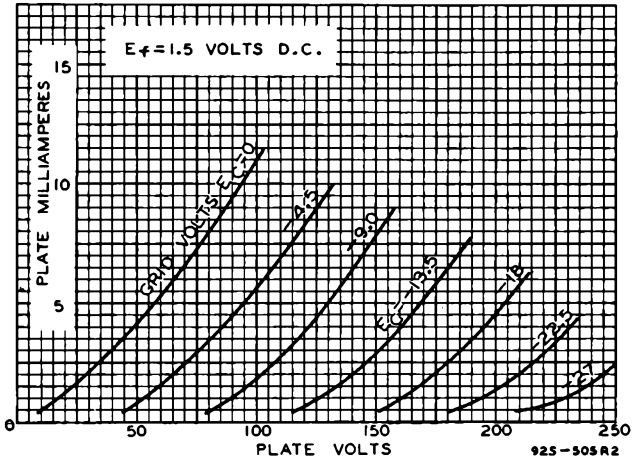
Operating Conditions and Characteristics:

Filament	1.5	1.5	1.5	a-c volts
Plate	90	135	180 max.	volts
Grid*	-7	-10	-14.5	volts
Ampl. Fact.	8.3	8.3	8.3	
Plate Res.	8900	7600	7300	ohms
Mut. Cond.	935	1100	1150	μmhos
Plate Cur.	2.9	5.5	6.2	ma.

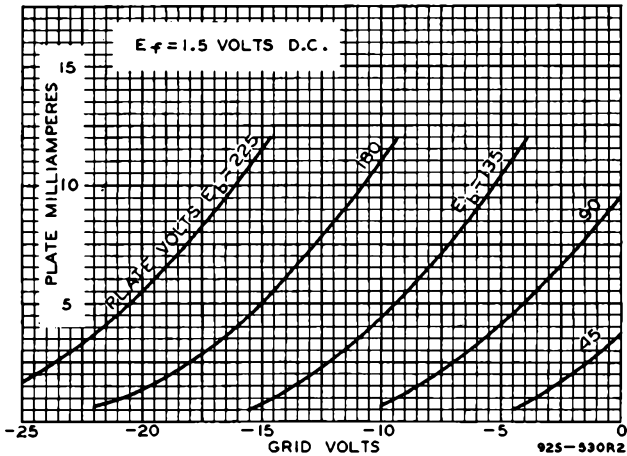
* Grid volts measured from mid-point of a-c operated filament.



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



RCA-27 DETECTOR, AMPLIFIER

Heater	Coated Uni-potential Cathode	a-c or d-c volts
Voltage	2.5	
Current	1.75	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	3.3	μ f
Grid to Cathode	3.1	μ f
Plate to Cathode	2.3	μ f
Maximum Overall Length	(3)	4-1/4"
Maximum Diameter		1-9/16"
Bulb		ST-17
Base	(2) (4)	Medium 5-Pin
Pin 1-Heater		Pin 4-Cathode
Pin 2-Plate	(1) (5)	Pin 5-Heater
Pin 3-Grid		

BOTTOM VIEW AMPLIFIER (Class A)

Operating Conditions and Characteristics:					
Heater	2.5	2.5	2.5	2.5	volts
Plate	90	135	180	250	275 max. volts
Grid	-6	-9	-13.5	-21	volts
Amp. Fact.	9	9	9	9	
Plate Res.	11000	9000	9000	9250	ohms
Mut. Cond.	820	1000	1000	975	μ mhos
Plate Cur.	2.7	4.5	5.0	5.2	ma.

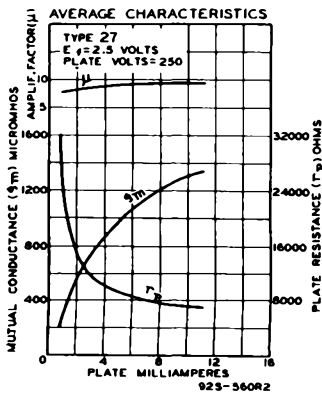
Grid-coupling resistor, if used, should not exceed 1.0 megohm.

DETECTOR

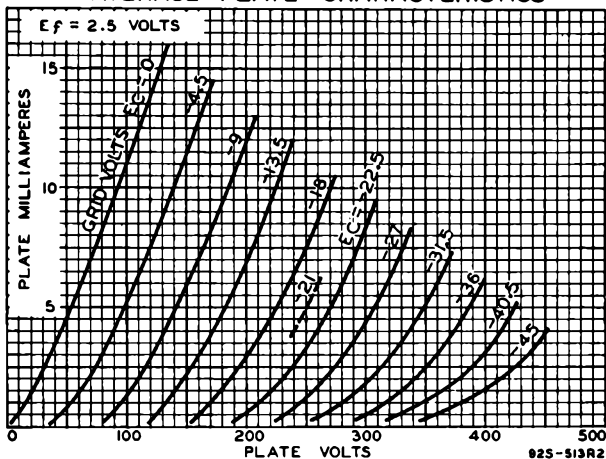
Typical Operation:	<u>Biased</u>	<u>Grid-Leak</u>	
Heater *	2.5	2.5	2.5 volts
Plate	250	275 max.	45 volts
Grid	-30*	-33*	Return to Cathode volts
Plate Cur. ^o	Adjusted to 0.2 ma. with no input signal		-
Grid Leak	-	-	1 to 5 megohms
Grid Condenser	-	-	0.00025 μ f

^o Max-Signal d-c plate current should be limited to 5.0 ma.

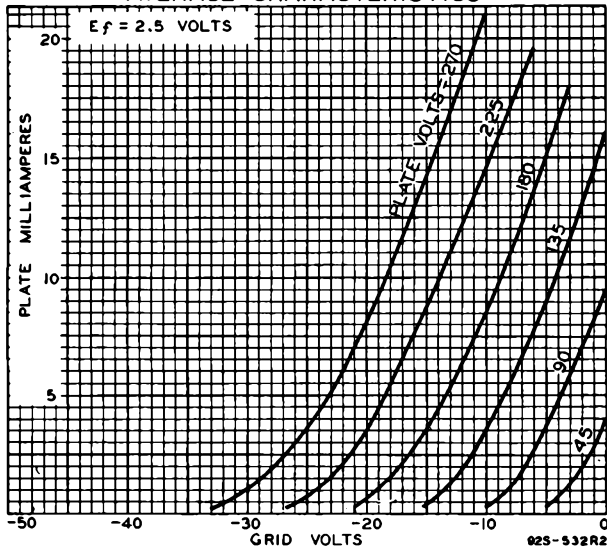
* Recommended practice is to connect the cathode directly to a mid-tap on the heater winding. If this practice is not followed, the potential difference between heater and cathode should be kept as low as possible. # Approximate.



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



RCA-31 POWER AMPLIFIER

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.130	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	5.7	μ f
Grid to Filament	3.5	μ i
Plate to Filament	2.7	μ i
Maximum Overall Length		4-1/4"
Maximum Diameter	(2) (3)	1-9/16"
Bulb		ST-12
Base		Small 4-Pin
Pin 1-Filament+	(1) (4)	Pin 3-Grid
Pin 2-Plate		Pin 4-Filament-

BOTTOM VIEW

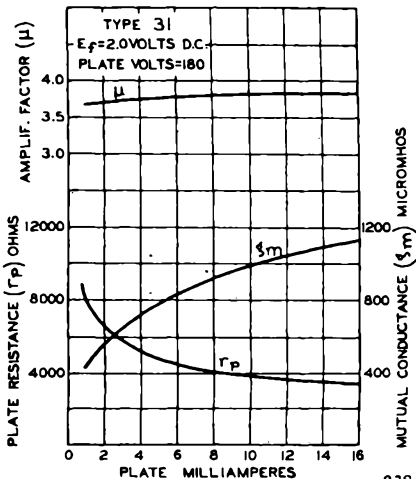
AMPLIFIER (Class A)

Operating Conditions and Characteristics:

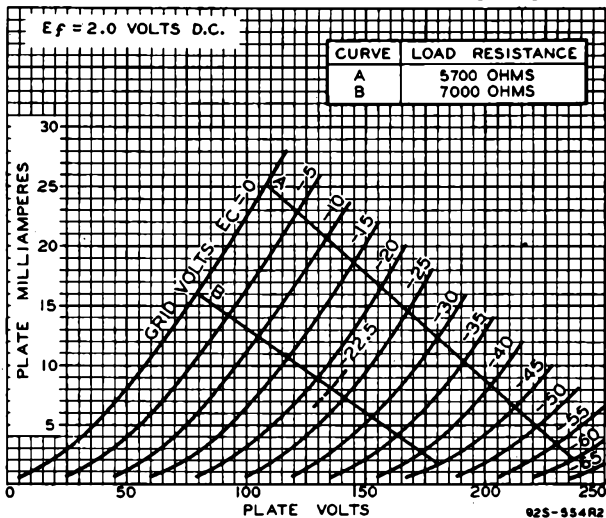
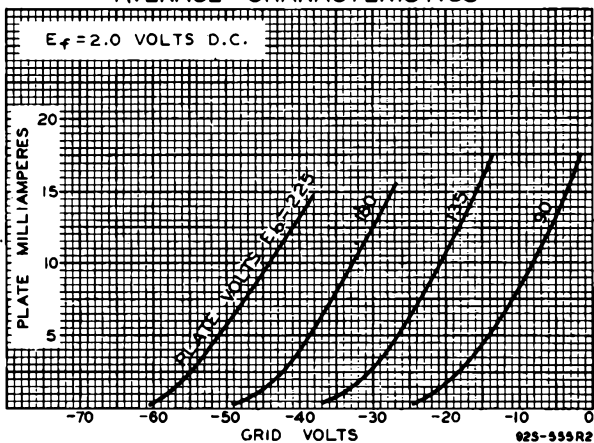
Filament	2.0	2.0	d-c volts
Plate	135	180	volt:
Grid	-22.5	-30	volt:
Amp. Factor	3.8	3.8	
Plate Res.	4100	3600	ohms
Mut. Cond.	925	1050	μ mhos
Plate Cur.	8.0	12.3	ma.
Load Res.	7000	5700	ohms
Self-Bias Res.	2815	2440	ohms
U.P.O.	185	375	mw.

Full or partial self-biasing is to be preferred; required if grid resistor (maximum value 1.0 megohm) is used.

AVERAGE CHARACTERISTICS



923-562R2

AVERAGE PLATE CHARACTERISTICS

AVERAGE CHARACTERISTICS


RCA-32 SCREEN GRID R-F AMPLIFIER

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.060	amp.
Direct Interelectrode Capacitances:		
Grid to Plate (with shield-can)	0.015 max.	μf
Input	5.3	μf
Output	10.5	μf
Overall Length	(2) (3)	4-25/32" to 5-1/32"
Maximum Diameter		1-13/16"
Bulb		ST-14
Cap		Small Metal
Base		Medium 4-Pin
Pin 1-Filament +	(1) (4)	Pin 4-Filament-Cap
Pin 2-Plate		-Grid
Pin 3-Screen		

AMPLIFIER (Class A)

Operating Conditions and Characteristics:			
Filament	2.0	2.0	volts
Plate	135	180 max.	volts
Screen	67.5	67.5	max. volts
Grid	-3	-3	volts
Amp. Fact.	610	780	
Plate Res.	0.95	1.2	megohms
Mut. Cond.	640	650	μmhos
Plate Cur.	1.7	1.7	ma.
Screen Cur.	0.4	0.4	max. ma.

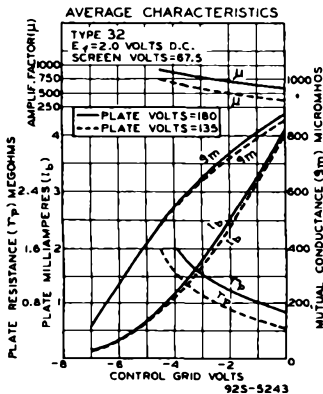
Grid-coupling resistor, if used, should not exceed 2.0 megohms.

DETECTOR

Typical Operation:	<u>Biased</u>	<u>Grid-Leak</u>	
Filament	2.0	2.0	volts
Plate-Supply	135	180	volts
Screen	45	67.5 max.	volts
Grid	-4.5*	-6*	Return to (+) Fil. volts
Plate Load	0.1*	0.1*	0.1* megohm
Plate Cur.	Adjusted to 0.2 ma. with no input signal.		-
Grid Leak	-	-	1-5 megohms
Grid Condenser	-	-	0.00025 μf

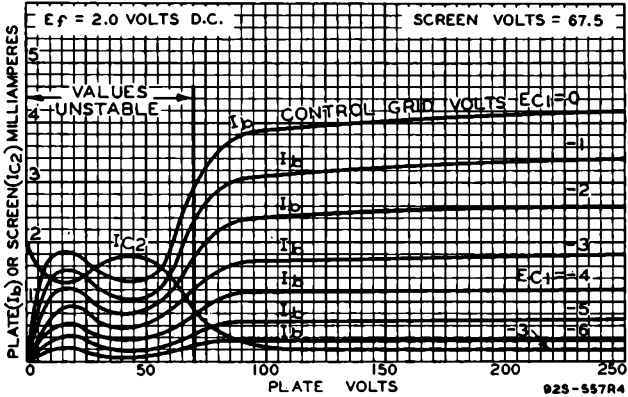
* Or equivalent impedance. In designing circuits to use the 32 as a detector, it is desirable to work from the detector stage directly into the power output stage.

◆ Approximate.

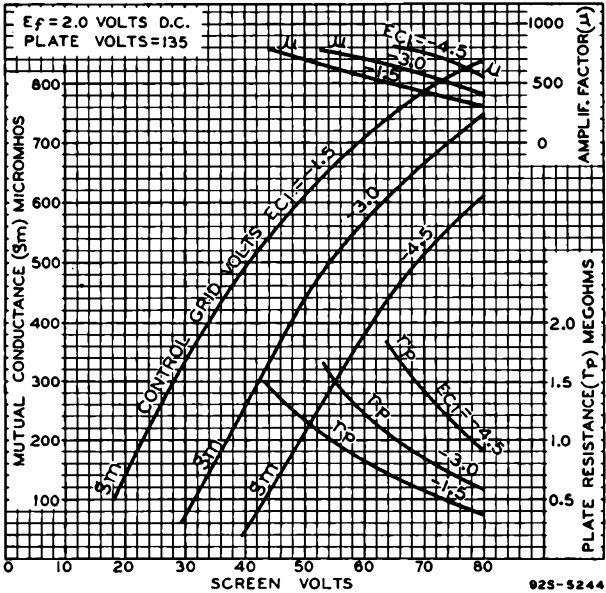


32

AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



POWER AMPLIFIER PENTODE

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.260	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	1.0	μmf
Input	8.0	μmf
Output	12.0	μmf
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb	③	ST-14
Base		Medium 5-Pin
Pin 1-Filament +	② ④	Pin 4-Screen
Pin 2-Plate		Pin 5-Filament -
Pin 3-Grid	① ⑤	

BOTTOM VIEW

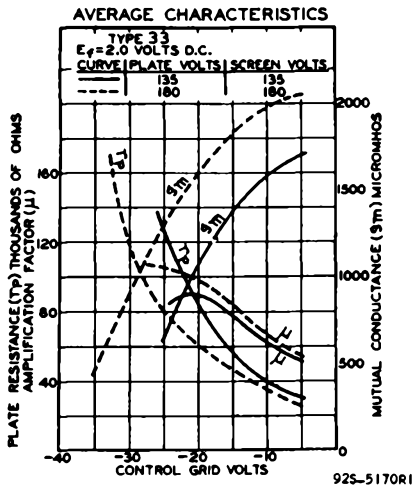
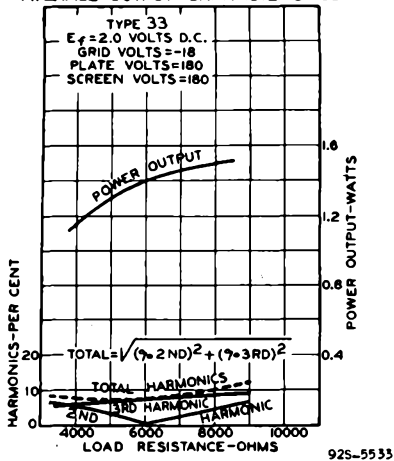
AMPLIFIER (Class A)

Operating Conditions and Characteristics:			
Filament	2.0	2.0	d-c volts
Plate	135	<u>180 max.</u>	volts
Screen	135	<u>180 max.</u>	volts
Grid	-13.5	-18	volts
Amp. Fact.	70	90	approx.
Plate Res.	50000	55000	approx. ohms
Mut. Cond.	1450	1700	μmhos
Plate Cur.	14.5	22	ma.
Screen Cur.	3	5	ma.
Load Res.	7000	6000	ohms
P.O. ^o	0.7	1.4	watts

^o 7% total harmonic distortion.

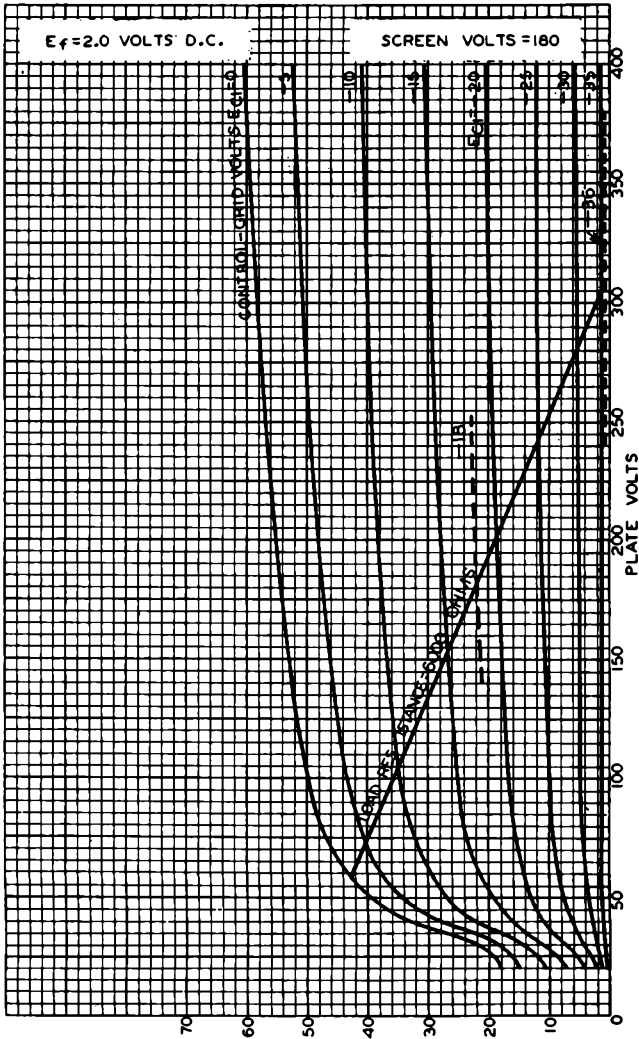
If a single 33 is self-biased, the self-biasing resistor (770 ohms for 135 volts, or 670 ohms for 180 volts) should be shunted by a suitable filter network to avoid degenerative effects at low audio frequencies. With two 33's in push-pull, the filter network may be omitted across the resistor (one-half of the values for a single tube).

Transformer or impedance input-coupling devices are recommended. If, however, resistance coupling is employed the grid resistor with self-bias should not exceed one megohm; without self-bias, it should be limited to 0.5 megohm.

AVERAGE CHARACTERISTICS

AVERAGE OUTPUT CHARACTERISTICS


33

AVERAGE PLATE CHARACTERISTICS



JAN. 1, 1934

PLATE MILLIAMPERES
 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

925-5440

RCA-34

SUPER-CONTROL R-F AMPLIFIER PENTODE

Filament Voltage	Coated 2.0	d-c volts
Current	0.060	amp.
Direct Interelectrode Capacitances:		
Grid to Plate (with shield-can)	0.015 max.	µuf
Input	6.0	µuf
Output	11.5	µuf
Overall Length	4-25/32" to 5-1/32"	
Maximum Diameter	1-13/16"	
Bulb	ST-14	
Cap Base	Small Metal	
Pin 1-Filament+	Medium 4-Pin	
Pin 2-Plate	Pin 4-Filament-	
Pin 3-Screen	Cap -Grid	

BOTTOM VIEW

AMPLIFIER (Class A)

Operating Conditions and Characteristics:

Filament	2.0	2.0	2.0	d-c volts
Plate	67.5	135	180 max.	volts
Screen	67.5	67.5	67.5	max. volts
Grid	-3	-3	-3	min. volts
Amp. Fact.	224	360	620	
Plate Res.	400000	600000	1000000	ohms
Mut. Cond.	560	600	620	µmhos
Mut. Cond. :	15	15	15	µmhos
Plate Cur.	2.7	2.8	2.8	ma.
Screen Cur.	1.1	1.0	1.0	ma.

* At -22.5 volts bias.

MIXER

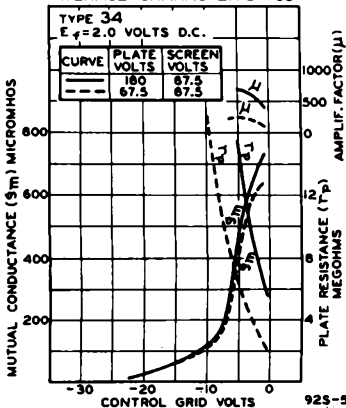
In Superheterodyne Circuits

Operating Conditions with Variable Bias:

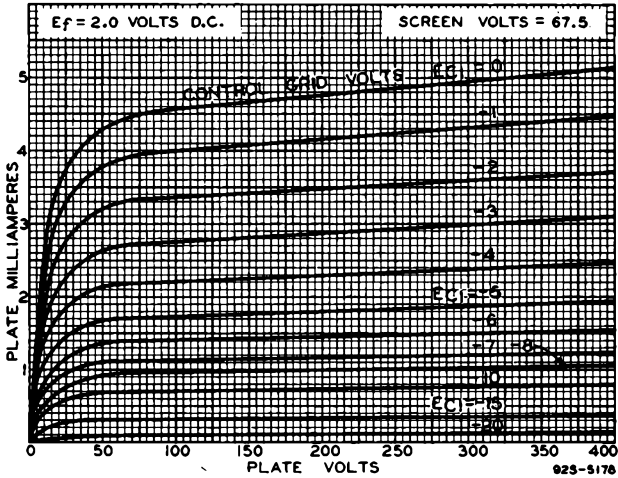
Filament	2.0	2.0	2.0	d-c volts
Plate	67.5	135	180 max.	volts
Screen	67.5	67.5	67.5	max. volts
Grid	-5	-5	-5	approx. volts

The grid bias shown is minimum for an oscillator peak voltage of 4.0 volts. These values are optimum.

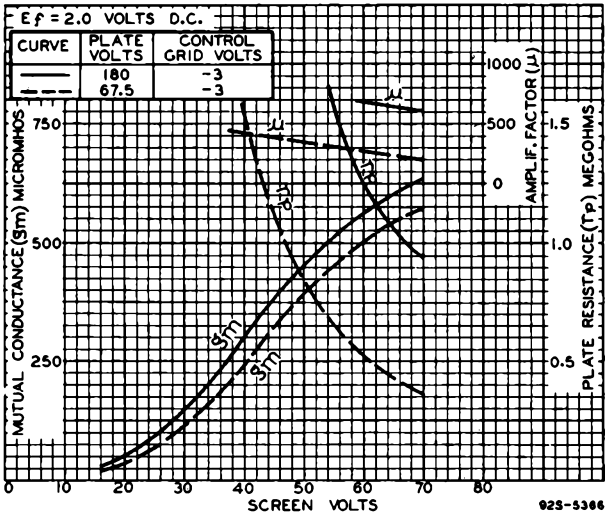
AVERAGE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS





35A5

35A5

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	35.0	ac or dc volts
Current.	0.15	amp

Mechanical:

Mounting Position.	Any
Maximum Overall Length	3-5/32"
Maximum Seated Length.	2-5/8"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin
Basing Designation for BOTTOM VIEW	6AA

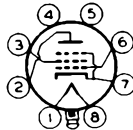
Pin 1 - Heater

Pin 2 - Plate

Pin 3 - Grid No.2

Pin 4 - No Connection

Pin 5 - No Connection



Pin 6 - Grid No.1

Pin 7 - Cathode,

Grid No.3

Pin 8 - Heater

Plug - Base Shell

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	200 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	125 max.	volts
PLATE DISSIPATION.	8.5 max.	watts
GRID-No.2 DISSIPATION.	1.0 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage.	110	200	volts
Grid-No.2 Voltage	110	110	volts
Grid-No.1 (Control-Grid) Voltage	-7.5	-8	volts
Zero-Signal Plate Current.	40	41	ma.
Max.-Signal Plate Current.	41	44	ma.
Zero-Signal Grid-No.2 Current.	3.0	2.0	ma.
Max.-Signal Grid-No.2 Current.	7.0	7.0	ma.
Plate Resistance (Approx.)	16000	40000	ohms
Transconductance	5800	5900	μmhos
Load Resistance.	2500	4500	ohms
Total Harmonic Distortion.	10	10	%
Max.-Sig. Power Output	1.5	3.3	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias	0.1	megohm
For cathode bias	0.5	megohm



35B5

BEAM POWER AMPLIFIER

MINIATURE TYPE

35B5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 35 ac or dc volts

Current 0.15 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to Plate 0.4 μf

Input 11 μf

Output 6.5 μf

^o with no external shield.

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length from Base Seat to Bulb Top (excluding tip) . . . 2" \pm 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Miniature Button 7-Pin

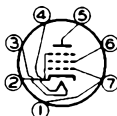
Basing Designation for BOTTOM VIEW 7BZ

Pin 1 - Grid No.1

Pin 2 - Cathode,

Grid No.3

Pin 3 - Heater



Pin 4 - Heater

Pin 5 - Plate

Pin 6 - Grid No.2

Pin 7 - Grid No.1

AF POWER AMPLIFIER - Class A₁

Maximum Ratings; Design-Center Values:

PLATE VOLTAGE 117 max. volts

GRID-No.2 (SCREEN) VOLTAGE 117 max. volts

PLATE DISSIPATION 4.5 max. watts

GRID-No.2 DISSIPATION 1.0 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 150 max. volts

Heater positive with respect to cathode 150 max. volts

Typical Operation and Characteristics:

Plate Voltage 110 volts

Grid-No.2 Voltage 110 volts

Grid-No.1 (Control-Grid) Voltage -7.5 volts

Peak AF Grid-No.1 Voltage 7.5 volts

Zero-Signal Plate Current 40 ma.

Max.-Signal Plate Current 41 ma.

Zero-Signal Grid-No.2 Current 3 ma.

Max.-Signal Grid-No.2 Current 7 ma.

35B5



35B5

BEAM POWER AMPLIFIER

Transconductance	5800	. .	μ hos
Load Resistance.	2500	. .	ohms
Total Harmonic Distortion.	10	. .	%
Max.-Signal Power Output	1.5	. .	watts

Maximum Circuit Values (for maximum rated conditions):

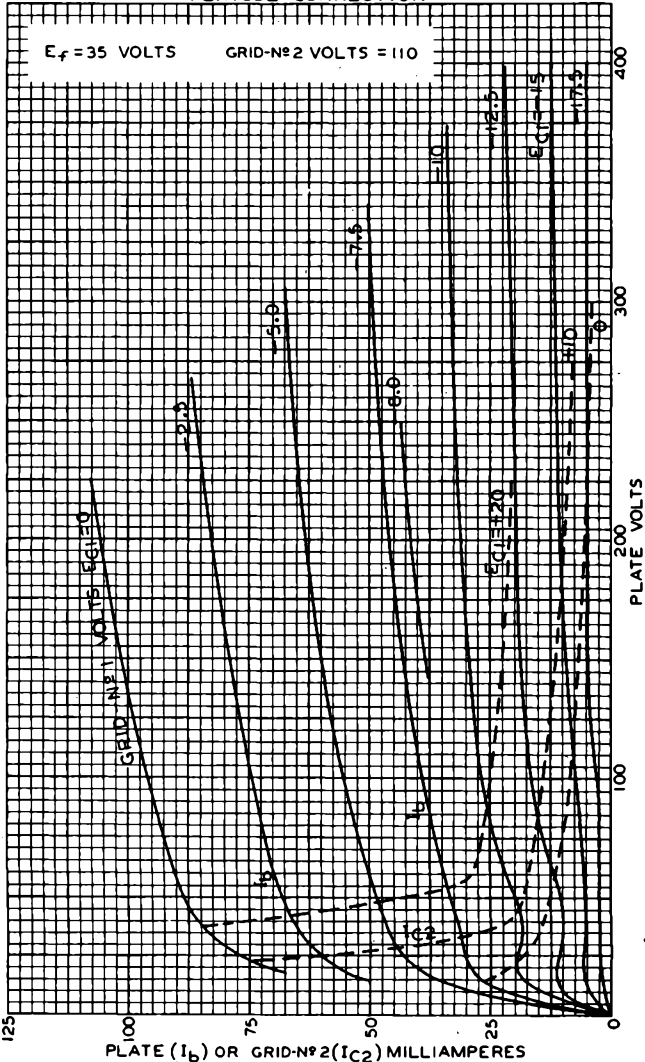
Grid-No.1-Circuit Res. {	fixed bias . .	0.1	. .	megohm
	cathode bias . .	0.5	. .	megohm



35B5

35B5

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



AUG. 15, 1941

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

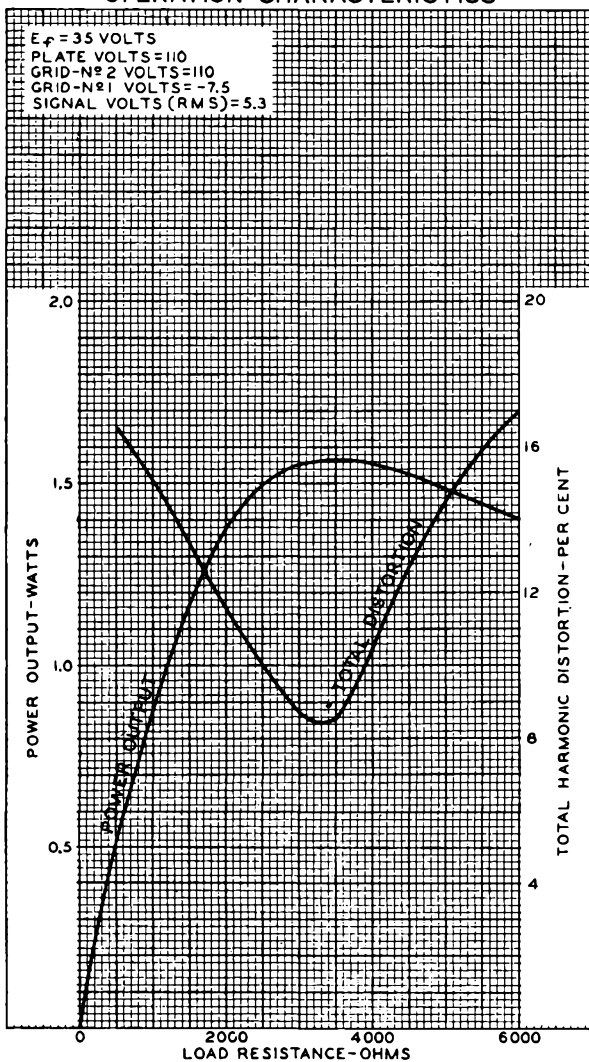
92CM-6312RI

35B5



35B5

OPERATION CHARACTERISTICS



SEPT. 20, 1946

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6794



35C5

35C5

BEAM POWER TUBE

MINIATURE TYPE

Except for a different basing arrangement, which simplifies the problem of meeting Underwriters' Laboratories' requirements in the design of ac/dc receivers, the 35C5 is similar to the miniature type 35B5.

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 35 ac or dc volts
Current 0.15 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate 0.60 μf
Grid No.1 to cathode & grid No.3,
grid No.2, and heater. 12 μf
Plate to cathode & grid No.3,
grid No.2, and heater. 9 μf

Mechanical:

Mounting Position. Any
Maximum Overall Length 2-5/8"
Maximum Seated Length. 2-3/8"
Length, Base Seat to Bulb Top (Excluding tip). 2" \pm 3/32"
Maximum Diameter 3/4"
Bulb T-5-1/2
Base Small-Button Miniature 7-Pin (JEDEC No. E7-1)

Basing Designation for BOTTOM VIEW 7CV

Pin 1 - Cathode,
Grid No.3
Pin 2 - Grid No.1
Pin 3 - Heater



Pin 4 - Heater
Pin 5 - Grid No.1
Pin 6 - Grid No.2
Pin 7 - Plate

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 135 max. volts
GRID-No.2 (SCREEN) VOLTAGE 117 max. volts
PLATE DISSIPATION. 4.5 max. watts
GRID-No.2 INPUT. 1 max. watt
PEAK HEATER-CATHODE VOLTAGE:
Heater neogative with respect to cathode. . . 180 max. volts
Heater positive with respect to cathode. . . 180 max. volts
BULB TEMPERATURE (At hottest point) \blacklozenge 250 max. $^{\circ}\text{C}$

^o Without external shield.

\blacklozenge High ambient temperature and shielding may necessitate a reduction in operating dissipation. When tube shields are used it is advisable to paint both inside and outside surfaces of tube shield a dull black and to provide ventilation slots to reduce operating temperature.

→ Indicates a change.

35C5



35C5

BEAM POWER TUBE

Typical Operation and Characteristics:

Plate Voltage.	110	volts
Grid-No.2 Voltage.	110	volts
Grid-No.1 (Control-Grid) Voltage.	-7.5	volts
Peak AF Grid-No.1 Voltage.	7.5	volts
Zero-Signal Plate Current.	40	ma
Max.-Signal Plate Current (Approx.).	41	ma
Zero-Signal Grid-No.2 Current.	3	ma
Max.-Signal Grid-No.2 Current.	7	ma
Plate Resistance (Approx.)	13000	ohms
Transconductance	5800	μ mhos
Load Resistance	2500	ohms
Total Harmonic Distortion.	10	%
Max.-Signal Power Output	1.5	watts

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	0.5 max. megohm

Curves shown under type 35B5 also apply to the 35C5

JAN. 3, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



35L6-GT

35L6-GT BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	35	ac or dc volts
Current	0.15	amp

Direct Interelectrode Capacitances (Approx.):^o

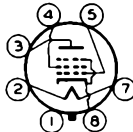
Grid No.1 to Plate	0.8	μf
Input	13	μf
Output	9.5	μf

^o With no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-5/16"
Bulb	T-9
Base	Intermediate-Shell Octal 7-Pin
Basing Designation for BOTTOM VIEW	G-7AC

- Pin 1 - No Connection
- Pin 2 - Heater
- Pin 3 - Plate
- Pin 4 - Grid No.2



- Pin 5 - Grid No.1
- Pin 7 - Heater
- Pin 8 - Cathode, Grid No.3

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	200 max.	volts
GRID-No.2 (SCREEN) VOLTAGE	117 max.	volts
PLATE DISSIPATION	8.5 max.	watts
GRID-No.2 DISSIPATION	1.0 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	90 max.	volts
Heater positive with respect to cathode	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	110	200	..	volts
Grid-No.2 Voltage	110	110	..	volts
Grid-No.1 (Control-Grid) Voltage	-7.5	-8	..	volts
Peak AF Grid-No.1 Voltage	7.5	8	..	volts
Zero-Signal Plate Current	40	41	..	ma.
Max.-Signal Plate Current	41	44	..	ma.
Zero-Signal Grid-No.2 Current	3	2	..	ma.
Max.-Signal Grid-No.2 Current	7	7	..	ma.
Plate Resistance (Approx.)	14000	40000	..	ohms
Transconductance	5800	5900	..	μmhos
Load Resistance	2500	4500	..	ohms
Total Harmonic Distortion	10	10	..	%
Max.-Sig. Power Output	1.5	3.3	..	watts

35L6-GT



35L6-GT BEAM POWER AMPLIFIER

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed bias	0.1 . . megohm
For cathode bias	0.5 . . megohm

Curves shown under Type 35B5 are also applicable
to the 35L6-GT.

JUNE 20, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

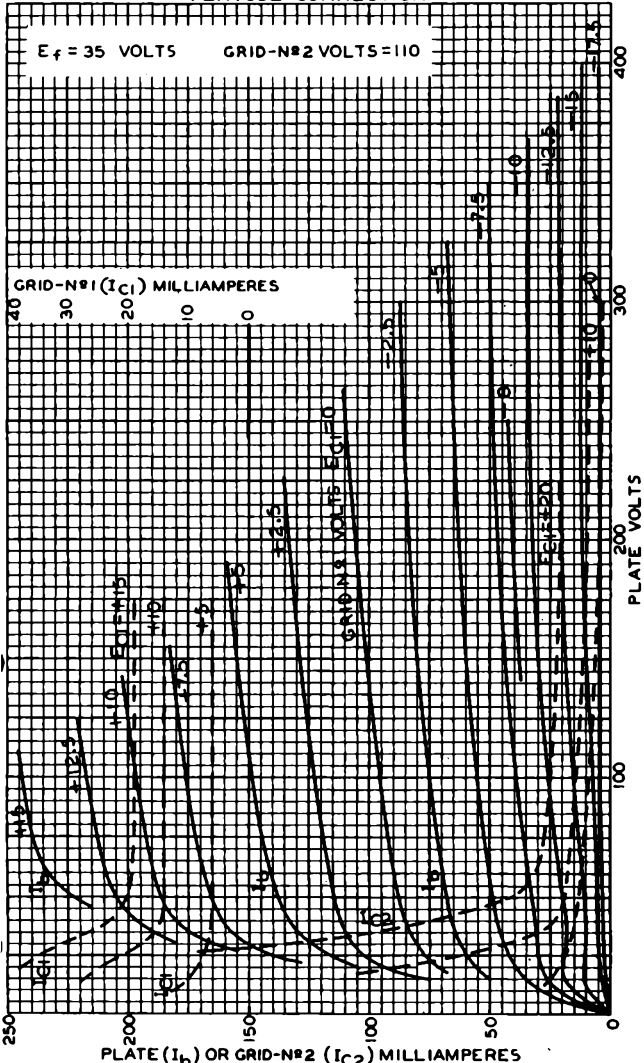
DATA



35L6-GT

35L6-GT

AVERAGE PLATE CHARACTERISTICS
PENTODE CONNECTION



AUG. 11, 1941

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARTISON, NEW JERSEY

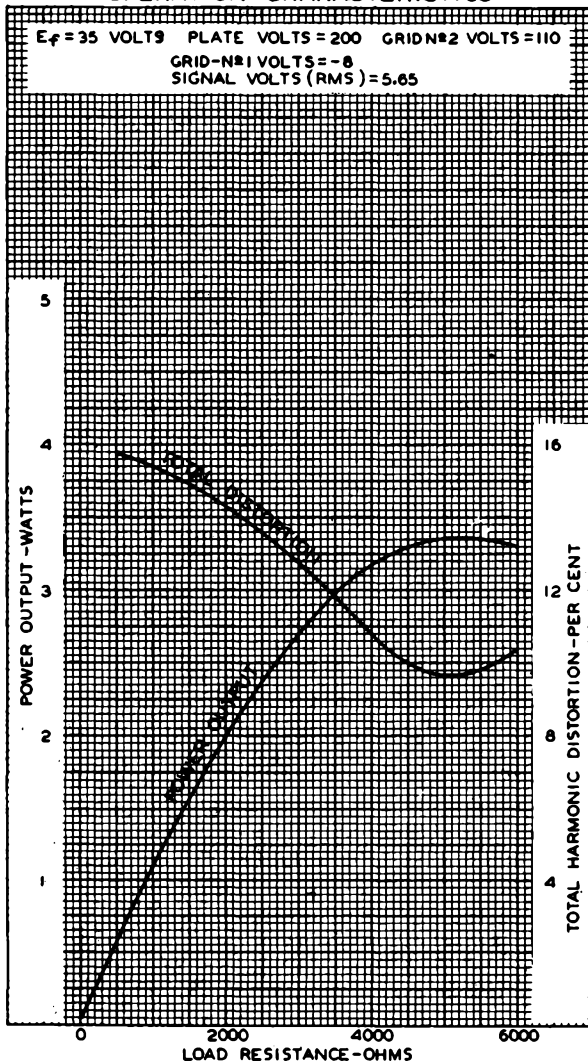
92CM-6309

35L6-GT



35L6-GT

OPERATION CHARACTERISTICS



AUG. 21, 1941

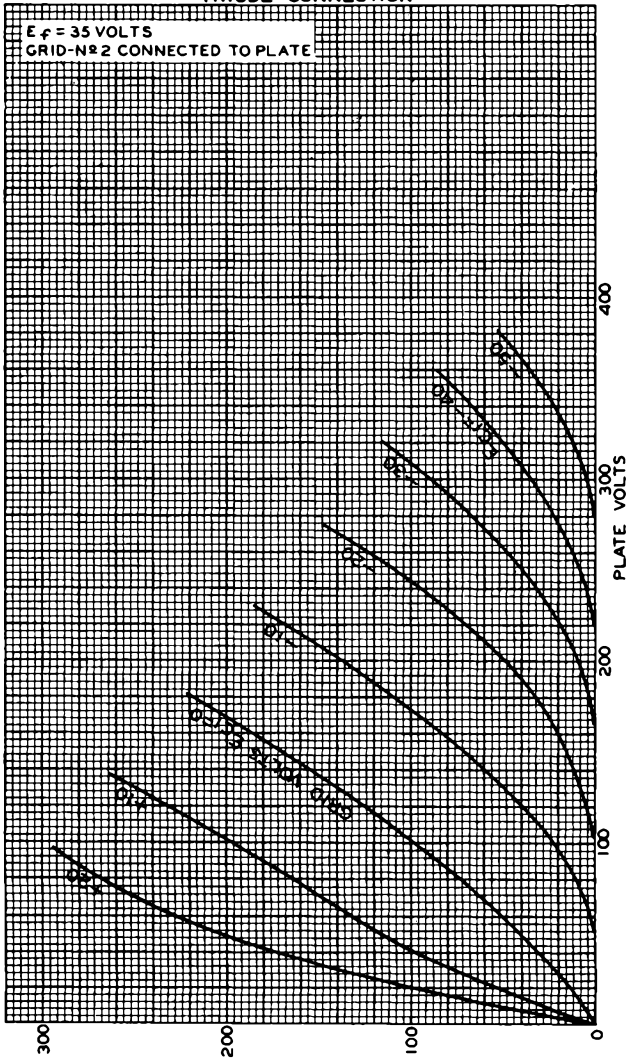
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6315



35L6-GT

35L6-GT AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



AUG. 6, 1941

PLATE MILLIAMPERES
TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM - 6307RI



35W4

35W4 HALF-WAVE VACUUM RECTIFIER

MINIATURE TYPE

GENERAL DATA

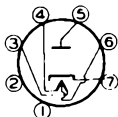
Electrical:	<i>Without</i>	<i>With No. 40</i>	
	<i>Panel</i>	<i>or No. 47</i>	
Heater, for Unipotential Cathode:	<u>Lamp</u>	<u>Panel Lamp</u>	
Voltage (AC or DC):			
Entire Heater (pins 3 & 4) . . .	35	32 . . .	volts
Panel-Lamp Section (pins 4 & 6) . . .	7.5	5.5 . . .	volts
Current { between pins 3 & 4 . . .	0.15	- . . .	amp
{ between pins 3 & 6 . . .	-	0.15 . . .	amp

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length from Base Seat to Bulb Top (Excluding tip)	2" ± 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin 5BQ

Basing Designation for BOTTOM VIEW

- | | |
|-----------------------|-------------------------------|
| Pin 1 - No Connection | Pin 6 - Heater Tap |
| Pin 2 - No Connection | Pin 7 - Cathode |
| Pin 3 - Heater | Panel-Lamp Heater |
| Pin 4 - Heater | Section is between pins 4 & 6 |
| Pin 5 - Plate | |



HALF-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	330 max.	volts
PEAK PLATE CURRENT	600 max.	ma
DC OUTPUT CURRENT:		
With Panel Lamp & { No Shunting Resistor.	60 max.	ma
{ Shunting Resistor	90 max.	ma
Without Panel Lamp	100 max.	ma
PANEL-LAMP-SECTION VOLTAGE (RMS):		
When panel lamp fails	15 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	330 max.	volts
Heater positive with respect to cathode.	330 max.	volts

Typical Operation with No.40 or No.47 Panel Lamp in Accompanying Half-Wave Circuit with Capacitor-Input Filter:

AC Plate-Supply Volt. (RMS).	117	117	117	117	. . .	volts
Filter-Input Capacitor	40	40	40	40	. . .	µf
Min. Total Effective Plate-Supply Impedance	15	15	15	15	. . .	ohms
Panel-Lamp Shunting Res.	-	300	150	100	. . .	ohms
DC Output Current	60	70	80	90	. . .	ma

← Indicates a change.

35W4



35W4

HALF-WAVE VACUUM RECTIFIER

Typical Operation Without Panel Lamp in Conventional Half-Wave Circuit with Capacitor-Input Filter:

AC Plate-Supply Voltage (RMS)	117	volts
Filter-Input Capacitor	40	μ f
Min. Total Effective Plate-Supply Imped.	15	ohms
DC Output Current	100	ma
DC Output Voltage at Input to Filter (Approx.):		
→ At half-load current (50 ma.)	135	volts
At full-load current (100 ma.)	120	volts
Voltage Regulation (Approx.):		
→ Half-load to full-load current	15	volts

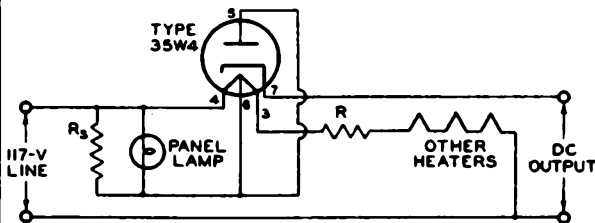
Maximum Circuit Values:

Panel-Lamp Shunting Resistor:*

For dc output current of	{	70 ma.	800 max. ohms
		80 ma.	400 max. ohms
		90 ma.	250 max. ohms

*Required when dc output current is greater than 60 ma.

HALF-WAVE CIRCUIT with No.43 or No.47 Panel Lamp



DROP ACROSS R AND ALL HEATERS (WITH PANEL LAMP) SHOULD EQUAL 117 VOLTS AT 0.15 AMPERE. R_s = SHUNTING RESISTOR REQUIRED WHEN DC OUTPUT CURRENT EXCEEDS 60 MILLIAMPERES

92C5-6626

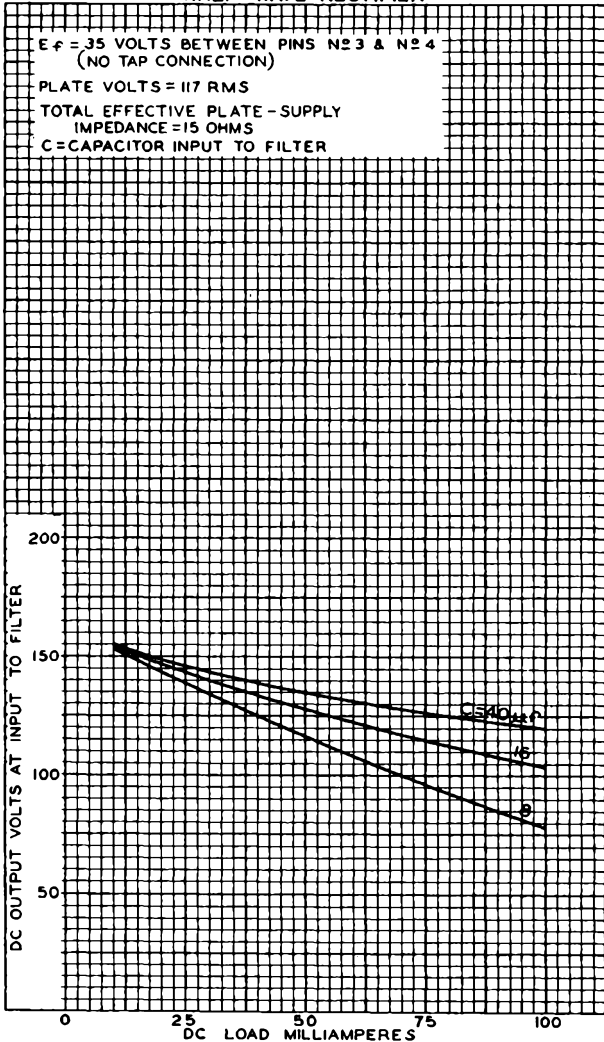
Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

→ Indicates a change.



35W4

35W4 OPERATION CHARACTERISTICS HALF-WAVE RECTIFIER



MAY 19, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

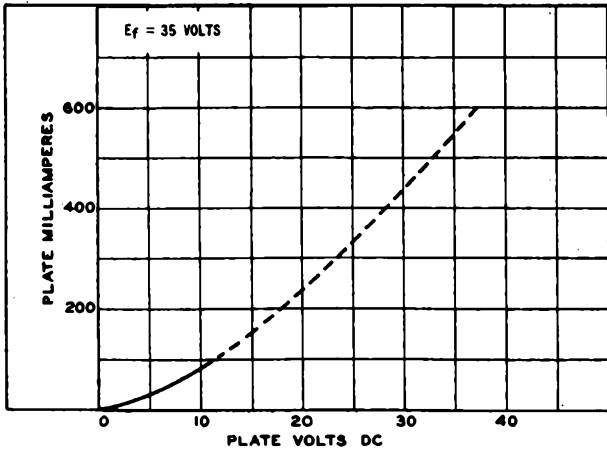
92CM-6615R1

35W4



35W4

AVERAGE PLATE CHARACTERISTIC



92CM-6305TV

SEPT. 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6305TV



35Y4

35Y4

HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:		<i>Without Panel Lamp</i>	<i>With Panel Lamp</i>	<i>No. 40 or No. 47 Lamp</i>	
Heater, for Unipotential Cathode:					
Voltage (AC or DC):					
Entire Heater (pins 1 & 8) . . .	35	32	..	volts	
Panel-Lamp Section (pins 1 & 4) . . .	7.5	5.5	..	volts	
Current { between pins 1 & 8 . . .	0.15	-	..	amp	
between pins 4 & 8 . . .	-	0.15	..	amp	

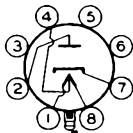
▲ Under typical operating conditions shown below.

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/32"
Maximum Seated Length	2-5/8"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 5AL

- Pin 1 - Heater
- Pin 2 - Plate
- Pin 3 - No Connection
- Pin 4 - Heater Tap
- Pin 5 - No Connection
- Pin 6 - No Connection



- Pin 7 - Cathode
- Pin 8 - Heater
- Plug - Base Shell
- Panel-Lamp Heater Section is between pins 1 & 4

HALF-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	700 max.	volts
PEAK PLATE CURRENT	600 max.	ma
DC OUTPUT CURRENT:		
With Panel Lamp & { No Shunting Resistor	60 max.	ma
{ Shunting Resistor	90 max.	ma
Without Panel Lamp	100 max.	ma
PANEL-LAMP-SECTION VOLTAGE (RMS):		
When panel lamp fails	15 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	300 max.	volts
Heater positive with respect to cathode	300 max.	volts

Typical Operation With No.40 or No.47 Panel Lamp in Circuit Below with Capacitor-Input Filter:

AC Plate-Supply Volt. (RMS)	117	117	117	117	235	volts
Filter-Input Capacitor	40	40	40	40	40	μf
Min. Total Effective Plate-Supply Impedance	15	15	15	15	100	ohms
Panel-Lamp Shunting Res.	-	300	150	100	-	ohms
DC Output Current	60	70	80	90	60	ma

35Y4



35Y4

HALF-WAVE VACUUM RECTIFIER

Typical Operation Without Panel Lamp in Conventional Half-Wave Circuit with Capacitor-Input Filter:

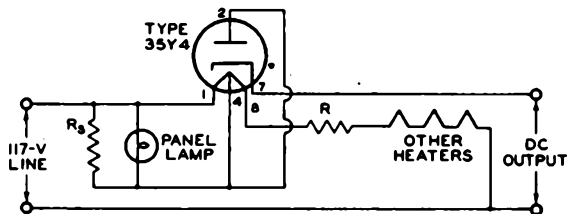
AC Plate-Supply Voltage (RMS)	117	235	volts
Filter-Input Capacitor	40	40	μ f
Min. Total Effective Plate-Supply Imped.	15	100	ohms
DC Output Current	100	100	ma
DC Output Voltage at Input to Filter (Approx.):			
At half-load current (50 ma.)	140	280	volts
At full-load current (100 ma.)	120	235	volts
Voltage Regulation (Approx.):			
Half-load to full-load current	20	45	volts

Maximum Circuit Values:

Panel-Lamp Shunting Resistor:*

For dc output current of	{	70 ma.	800 max.	ohms
		80 ma.	400 max.	ohms
		90 ma.	250 max.	ohms

* Required when dc output current is greater than 60 ma.



DROP ACROSS R AND ALL HEATERS (WITH PANEL LAMP) SHOULD EQUAL 117 VOLTS AT 0.15 AMPERE. R_s = SHUNTING RESISTOR REQUIRED WHEN DC OUTPUT CURRENT EXCEEDS 60 MILLIAMPERES

92CS-6626

Many of the devices and arrangements shown or described herein use inventions of patents owned by RCA or others. Information contained herein is furnished without assuming any responsibility for its use.

DEC. 30, 1947

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



35Z3

35Z3 HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

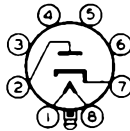
Heater, for Unipotential Cathode:

Voltage	35	. . . . .	ac or dc volts
Current	0.15	. . . . .	amp

Mechanical:

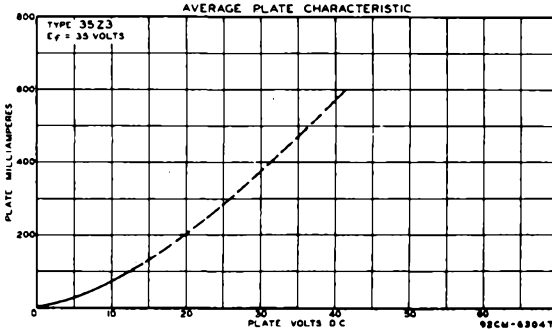
Mounting Position	Any
Maximum Overall Length	3-5/32"
Maximum Seated Length	2-5/8"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin
Basing Designation for BOTTOM VIEW	4Z

Pin 1 - Heater
 Pin 2 - Plate
 Pin 3 - No
 Connection
 Pin 4 - No
 Connection
 Pin 5 - No
 Connection



Pin 6 - No
 Connection
 Pin 7 - Cathode
 Pin 8 - Heater
 Plug - Base
 Shell

Maximum Ratings and Typical Operating Conditions for the 35Z3 are the same as for Type 35Z4-GT.



35Z4-GT



**35Z4-GT
HALF-WAVE VACUUM RECTIFIER**

GENERAL DATA

Electrical:

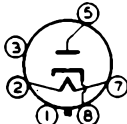
Heater, for Unipotential Cathode:

Voltage 35 ac or dc volts
Current 0.15 amp

Mechanical:

Mounting Position Any
Maximum Overall Length 3-5/16"
Maximum Seated Length 2-3/4"
Maximum Diameter 1-5/16"
Bulb T-9
Base Intermediate-Shell Octal 6-Pin
Basing Designation for BOTTOM VIEW G-5AA

Pin 1 - No
Connection
Pin 2 - Heater
Pin 3 - No
Connection



Pin 5 - Plate
Pin 7 - Heater
Pin 8 - Cathode

HALF-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 700 max. volts
PEAK PLATE CURRENT 600 max. ma.
DC OUTPUT CURRENT 100 max. ma.
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode 350 max. volts
Heater positive with respect to cathode 350 max. volts

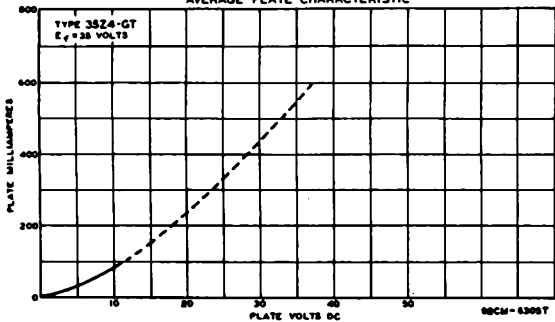
Typical Operation with Capacitor-Input Filter:

AC Plate-Supply Voltage (RMS) 117 235 volts
Min. Total Effective Plate-Supply Imped. [▲] 15 100 ohms
DC Output Current 100 100 ma.

[▲] When a filter-input capacitor larger than 40 μ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

Curves under Type 35Z5-GT also apply to the 35Z4-GT

AVERAGE PLATE CHARACTERISTIC

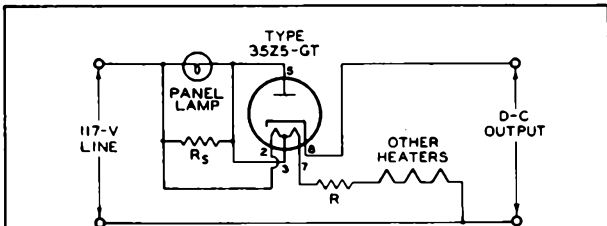


35Z5-GT



35Z5-GT

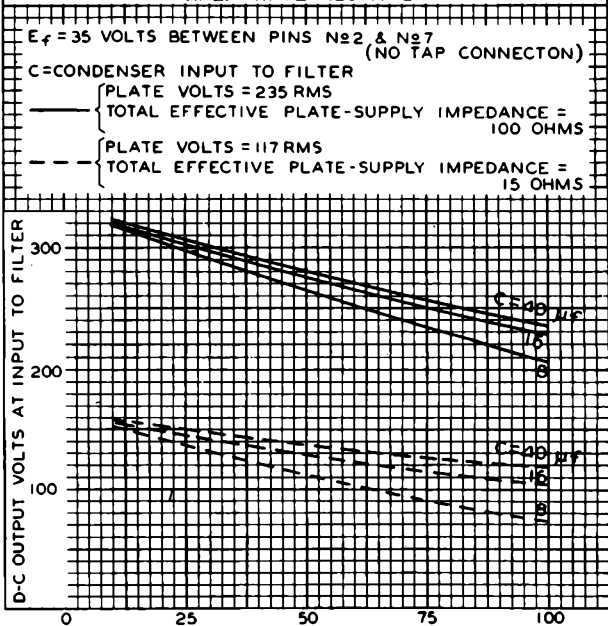
HALF-WAVE HIGH-VACUUM RECTIFIER



DROP ACROSS R AND ALL HEATERS (WITH PANEL LAMP) SHOULD EQUAL 117 VOLTS AT 0.15 AMPERE. R_s = SHUNTING RESISTOR REQUIRED WHEN D-C OUTPUT CURRENT EXCEEDS 60 MILLIAMPERES

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

**OPERATION CHARACTERISTICS
HALF-WAVE RECTIFIER**



June 1, 1943

D-C LOAD MILLIAMPERES
RCA VICTOR DIVISION

CE-6361

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

RCA-36 SCREEN GRID R-F AMPLIFIER

Heater		Coated Uni-potential Cathode	
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
Direct Interelectrode Capacitances:			
Grid to Plate (with shield-can)		0.007 max. μf	
Input		3.7 μf	
Output		9.2 μf	
Overall Length	③	4-9/32" to 4-17/32"	
Maximum Diameter		1-9/16"	
Bulb		ST-12	
Cap	② ④	Small Metal	
Base		Small 5-Pin	
Pin 1-Heater	① ⑤	Pin 4-Cathode	
Pin 2-Plate		Pin 5-Heater	
Pin 3-Screen		Cap -Grid	

BOTTOM VIEW

AMPLIFIER (Class A)

Operating Conditions and Characteristics:					
Heater*	6.3	6.3	6.3	6.3	volts
Plate	100	135	180	250 max.	volts
Screen	55	67.5	90 max.	90 max.	volts
Grid	-1.5	-1.5	-3	-3	volts
Amp. Fact.	470	475	525	595	
Plate Res.	0.55	0.475	0.50	0.55	megohm
Mut. Cond.	850	1000	1050	1050	μmhos
Plate Cur.	1.8	2.8	3.1	3.2	ma.
Screen Cur.	-	-	-	1.7	max. ma.

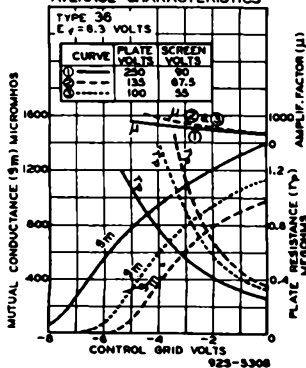
DETECTOR

Typical Operation:		<u>Biased</u>			<u>Grid-Leak</u>	
Heater*	6.3	6.3	6.3	6.3	volts	
Plate-Supply	100	180	250 max.	135	volts	
Screen	55	67.5	90 max.	Up to 45	volts	
Grid	-5%	-6%	-8%	Return to Cathode	volts	
Plate Load	0.25 Ω	0.25 Ω	0.25 Ω	0.25 Ω	megohm	
Plate Cur.	Adjusted to 0.1 ma. with no input signal			-		
Grid Leak	-	-	-	2 to 5	megohms	
Grid Condenser	-	-	-	0.00025	μf	

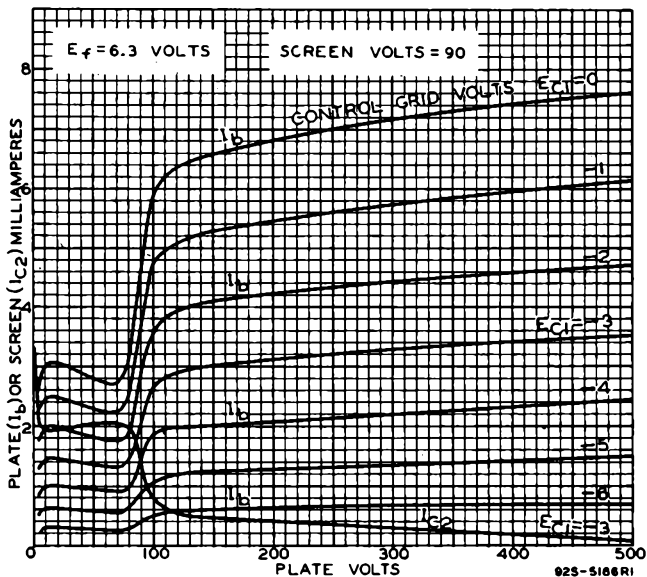
Or equivalent impedance. In designing circuits to use the 36 as a detector, it is desirable to work from the detector stage directly into the power output stage. * Approximate.

In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

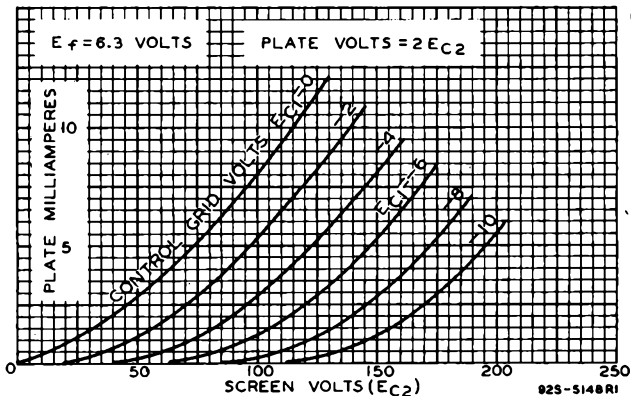
AVERAGE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS




AVERAGE CHARACTERISTICS





41

POWER PENTODE

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.4	amp.
Direct Interelectrode Capacitances (Approx.): [○]		
Grid to Plate	0.6	μf ←
Input	6.0	μf
Output	7.5	μf
Maximum Overall Length		4-3/16"
Maximum Seated Height		3-9/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small-Shell Small 6-Pin
Pin 1 - Heater		Pin 4 - Grid
Pin 2 - Plate		Pin 5 - Cathode
Pin 3 - Screen		Pin 6 - Heater
Mounting Position		Any

BOTTOM VIEW (6B)

Maximum Ratings Are Design-Center Values

SINGLE-TUBE AMPLIFIER

Plate Voltage	315 max.	volts
Screen Voltage	285 max.	volts
Plate Dissipation	8.5 max.	watts
Screen Dissipation	2.8 max.	watts

Typical Operation and Characteristics - Class A₁ Amplifier:

Plate	100	250	315	volts
Screen	100	250	250	volts
Grid [■]	-7	-18	-21	volts
Peak A-F Grid Voltage	7	18	21	volts
Zero-Sig. Plate Cur.	9	32	25.5	ma.
Max.-Sig. Plate Cur.	9.5	33	28	ma.
Zero-Sig. Screen Cur.	1.6	5.5	4.0	ma.
Max.-Sig. Screen Cur.	3	10	9	ma.
Plate Resistance	104000	68000	75000	approx. ohms
Transconductance	1500	2300	2100	μmhos
Load Resistance	12000	7600	9000	ohms
Total Harmonic Dist.	11	11	15	%
Max.-Sig. Power Output	0.35	3.4	4.5	watts

PUSH-PULL AMPLIFIER

Plate Voltage	315 max.	volts
Screen Voltage	285 max.	volts
Plate Dissipation	8.5 max.	watts
Screen Dissipation	2.8 max.	watts

Typical Operation - Class A₁ Amplifier:

Unless otherwise specified, values are for 2 tubes

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate Voltage	285	285	volts
Screen Voltage	285	285	volts

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

○ With no external shield.

■ See next page.

← Indicates a change.

OCTOBER 1, 1951

TUBE DEPARTMENT

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

41



41

POWER PENTODE

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Grid*	-25.5	-	volts
Cathode Resistor	-	400	ohms
Peak A-F Grid to Grid Volt.	51	51	volts
Zero-Sig. Plate Cur.	55	55	ma.
Max.-Sig. Plate Cur.	72	61	ma.
Zero-Sig. Screen Cur.	9	9	ma.
Max.-Sig. Screen Cur.	17	13	ma.
Effective Load Resistance (plate to plate)	12000	12000	ohms
Total Harmonic Dist.	6	4	%
Max.-Sig. Power Output	10.5	9.8	watts

* The type of input coupling should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

Curves for Type 41 are the same as those shown for Type 6X6-GT.

OCTOBER 1, 1951

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



42

42

POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.7	amp.
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 6-Pin
Pin 1-Heater		Pin 4-Grid
Pin 2-Plate		Pin 5-Cathode
Pin 3-Screen		Pin 6-Heater



BOTTOM VIEW

For additional data, refer to Type 6F6; and to Types 6F6 and 2A5 for additional curves. ←

← Indicates a change.



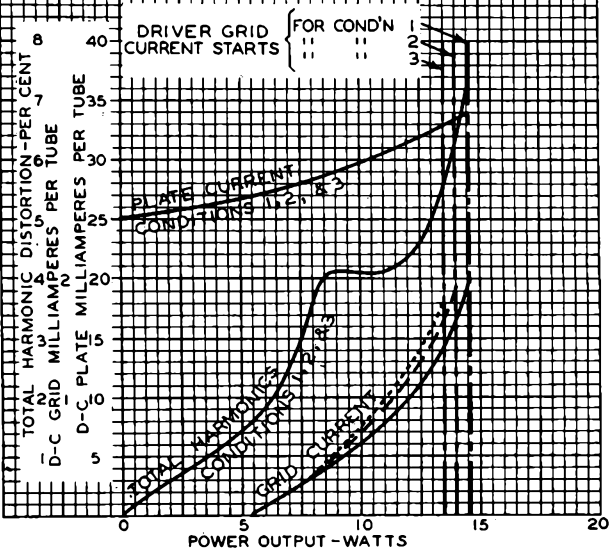
OPERATION CHARACTERISTICS
TRIODE CONNECTION-CLASS AB OPERATION

$E_f = 6.3$ VOLTS

INPUT STAGE : CLASS A DRIVER-ONE TYPE 42 AS TRIODE
 PLATE VOLTS = 250
 SELF-BIAS RESISTOR = 650 OHMS
 OUTPUT STAGE : CLASS AB-TWO TYPE 42'S AS TRIODES
 ZERO-SIGNAL PLATE VOLTS = 350, FROM
 SUPPLY HAVING RESISTANCE (R_b)
 SHOWN IN TABLE
 ZERO-SIGNAL BIAS VOLTS = VALUE FROM
 GRID-BIAS RESISTOR (R_c) OF
 730 OHMS
 OUTPUT LOAD, PLATE TO PLATE = 10000 OHMS

CONDI- TION	CURVE	R_b Ohms	DRIVER STAGE		INTERSTAGE TRANSFORMER	
			Input-Signal Volts* (RMS)	Plate Load Ohms	Voltage Ratio Prim.:1/2 Sec.	Peak Power Efficiency - %
1	—	0	14	15600	1.29	76.7
2	---	500	14	17400	1.29	76.0
3	1000	14	17000	1.29	76.7

* For maximum output

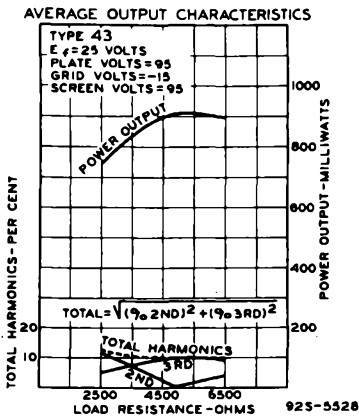


RCA-43

POWER AMPLIFIER PENTODE

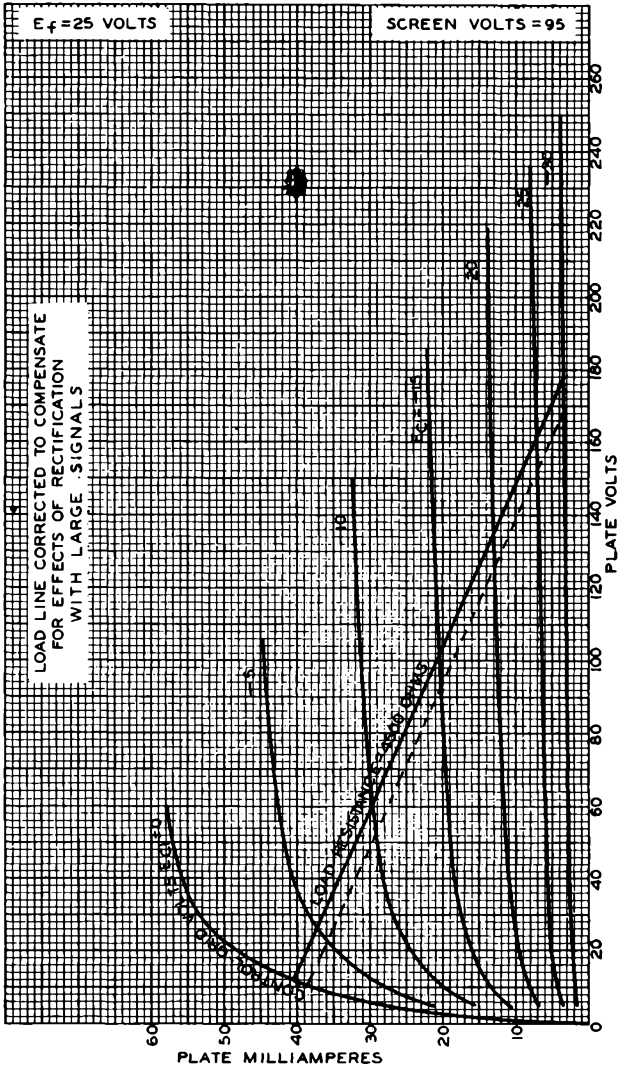
Heater	Coated Unipotential Cathode	
Voltage	25.0	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 6-Pin
Pin 1-Heater		Pin 4-Grid
Pin 2-Plate		Pin 5-Cathode
Pin 3-Screen		Pin 6-Heater

For data and additional curves, refer to Type 25A6. The 43 and 25A6 are identical electrically.



RCA-43

AVERAGE PLATE CHARACTERISTICS



JULY 27, 1936

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

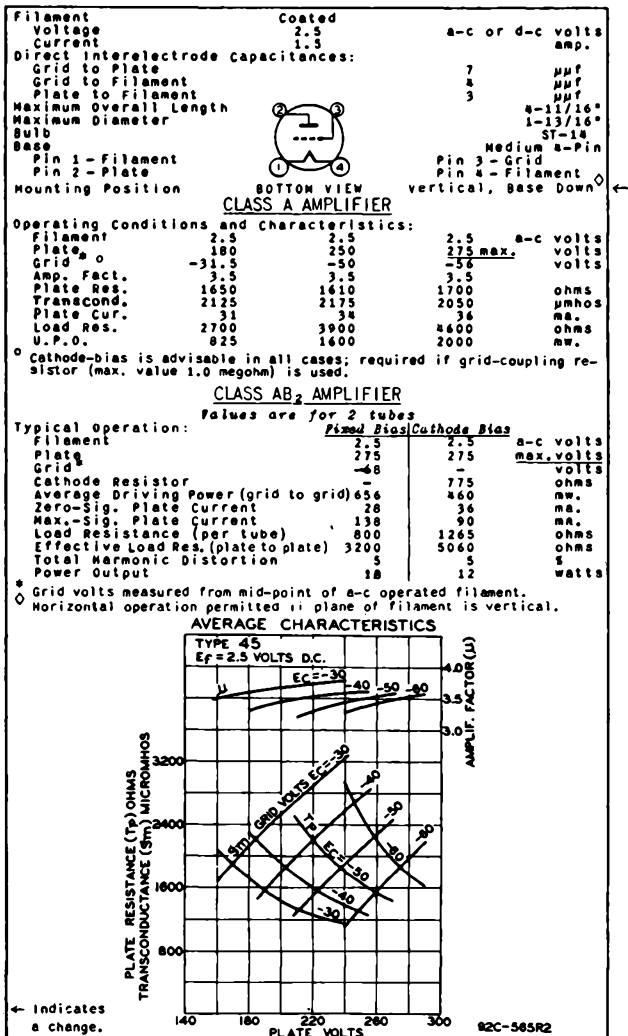
92S-5231R1



45

45

POWER AMPLIFIER



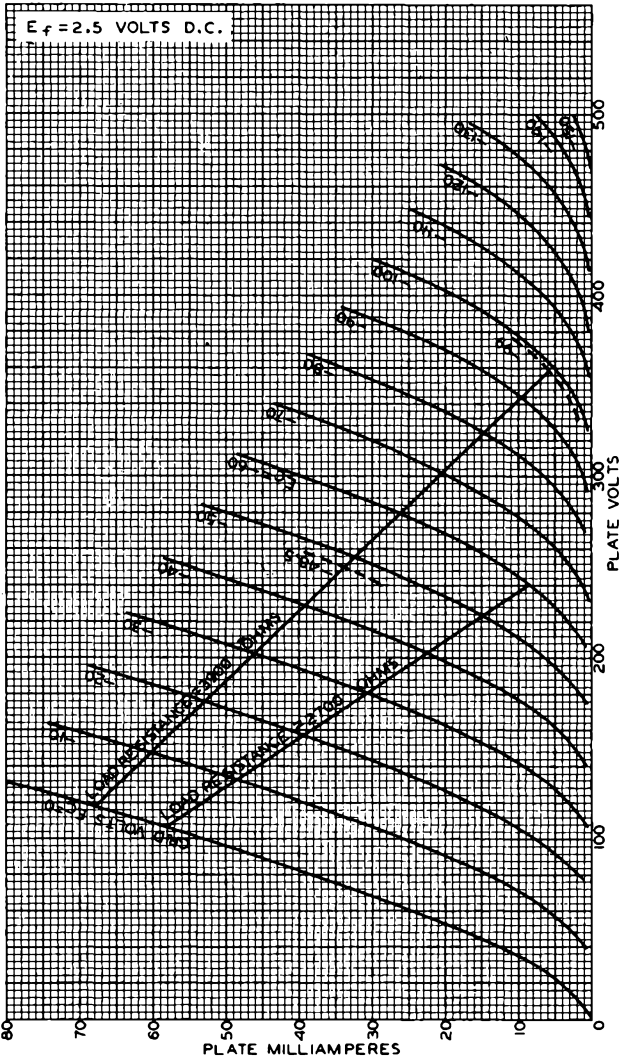
APRIL 20, 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



AVERAGE PLATE CHARACTERISTICS



NOV. 17, 1932

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

925-508R2



45Z3



45Z3

HALF-WAVE HIGH-VACUUM RECTIFIER

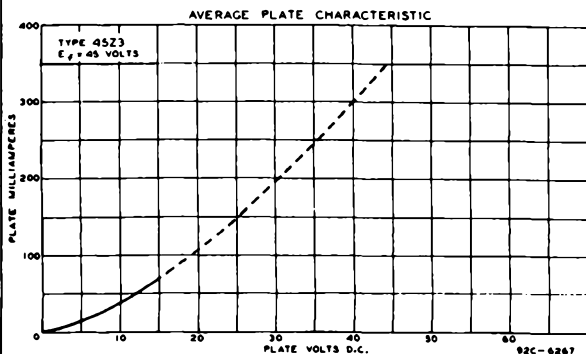
MINIATURE TYPE

Heater	Coated Unipotential Cathode	
Voltage	45	a-c or d-c volts
Current	0.075	amp.
Maximum Overall Length		2-1/8"
Maximum Seated Height		1-7/8"
Maximum Diameter		3/4"
Bulb		T-5-1/2
Base [▲]		Miniature Button 7-Pin
Pin 1-Heater		Pin 4 - Cathode
Pin 2-Plate		Pin 5 - No Connection
Pin 3-Internal Con. (Do Not Use)		Pin 6 - Plate
		Pin 7 - Heater

Mounting Position **BOTTOM VIEW (5AM)** AnyHalf-Wave Rectifier

Peak Inverse Voltage	350 max. volts
Peak Plate Current	390 max. ma.
D-C Heater-Cathode Potential	175 max. volts
With Condenser-Input Filter:	
A-C Plate Voltage (RMS)	117 max. volts
Total Effec. Plate-Supply Impedance	15 min. ohms
D-C Output Current	65 max. ma.

[▲] The center hole in sockets designed for this base provides for the possibility that this tube type may be manufactured with the exhaust-tube tip at the base end. For this reason, it is recommended that in equipment employing this tube type, no material be permitted to obstruct the socket hole.



May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

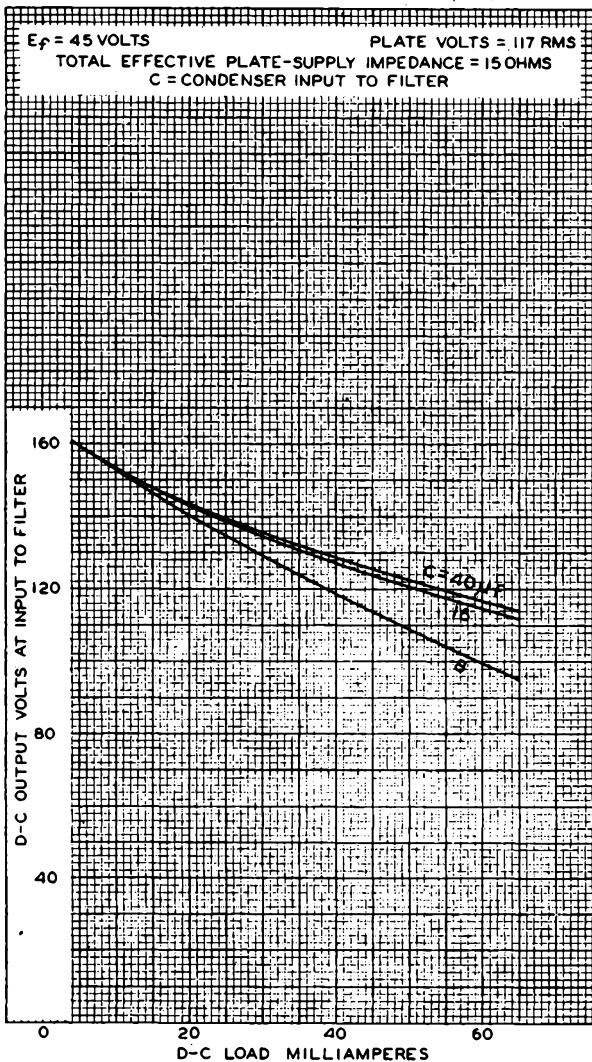
TENTATIVE DATA

4573



4523

OPERATION CHARACTERISTICS



APR. 23, 1941

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-6266R1

POWER AMPLIFIER PENTODE

Filament	Coated	
Voltage	2.5	a-c or d-c volts
Current	1.75	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	1.2	μf
Input	8.6	μf
Output	13.0	μf
Maximum Overall Length		5-3/8"
Maximum Diameter	③	2-1/16"
Bulb	② ④	ST-16
Base	① ⑤	Medium 5-Pin
Pin 1-Filament		Pin 4-Screen
Pin 2-Plate		Pin 5-Filament
Pin 3-Grid		

BOTTOM VIEW

AMPLIFIER—Class A

Operating Conditions and Characteristics:

Filament	2.5	a-c volts
Plate	250 maximum	volts
Screen	250 maximum	volts
Grid #	-16.5	volts
Amp. Fact.	150	
Plate Res.	60000	ohms
Transcond.	2500	μmhos
Plate Cur.	31	ma.
Screen Cur.	6	ma.
Load Res.	7000 ^o	ohms
Power Output	2.7 ^o	watts

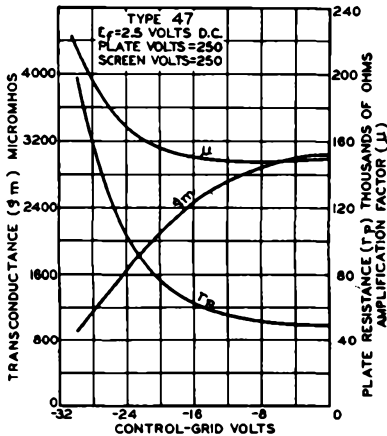
^o 6% total harmonic distortion.

* Grid volts measured from mid-point of a-c operated filament.

If a single 47 is self-biased, the self-biasing resistor (450 ohms) should be shunted by a suitable filter network to avoid degenerative effects at low audio frequencies. With two 47's in push-pull, the filter network may be omitted across the resistor (225 ohms).

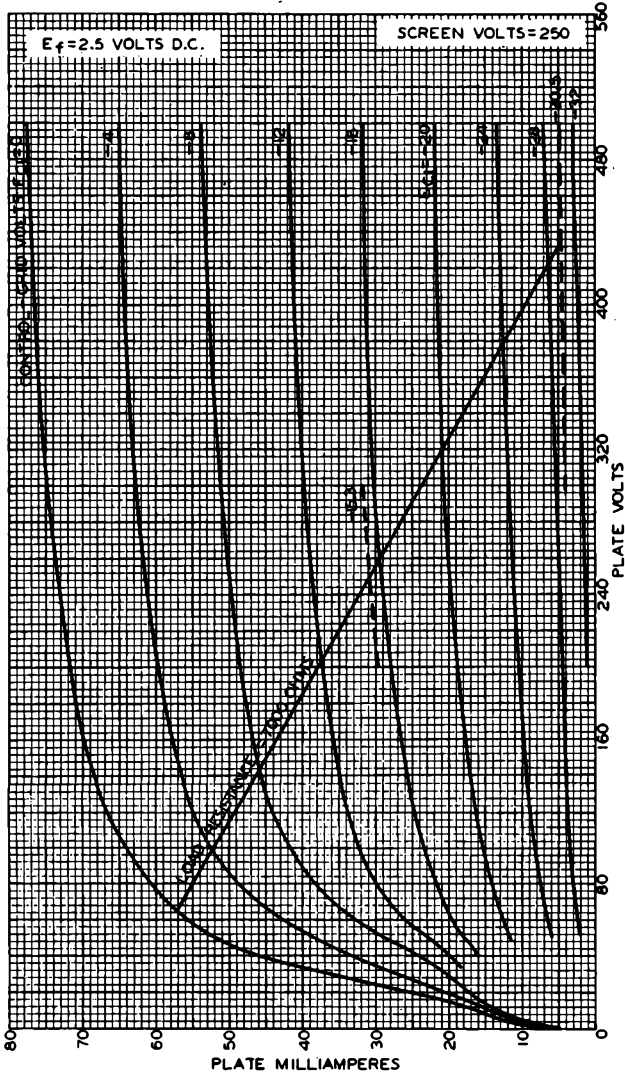
Transformer or impedance input-coupling devices are recommended. If, however, resistance coupling is employed, a grid resistor limited to 0.5 megohm may be used under self-bias conditions. Without self-bias, the grid resistor should not exceed 50000 ohms.

AVERAGE CHARACTERISTICS



92C-5136

AVERAGE PLATE CHARACTERISTICS



RCA-49

DUAL-GRID POWER AMPLIFIER

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.120	amp.
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 5-Pin

BOTTOM VIEW

Pin 1-Filament+	Pin 4-Grid #2
Pin 2-Plate	Pin 5-Filament-
Pin 3-Grid #1	

CLASS B POWER AMPLIFIER

Grids #1 & #2 connected together at socket

Plate Voltage	180 max.	volts
Peak Plate Current	50 max.	ma.
Typical Operation (2 tubes):		
Filament	2.0	2.0 volts
Plate	135	180 volts
Grid (#1 & #2 tied together)	0	0 volts
Zero-Sig. Plate Cur. (per tube)	1.3	2 ma.
Load Resistance (per tube)	2000	3000 ohms
Effective Load Resistance (plate to plate)	8000	12000 ohms
Power Output (2 tubes)	2.3	3.5 approx.watts

CLASS A AMPLIFIER

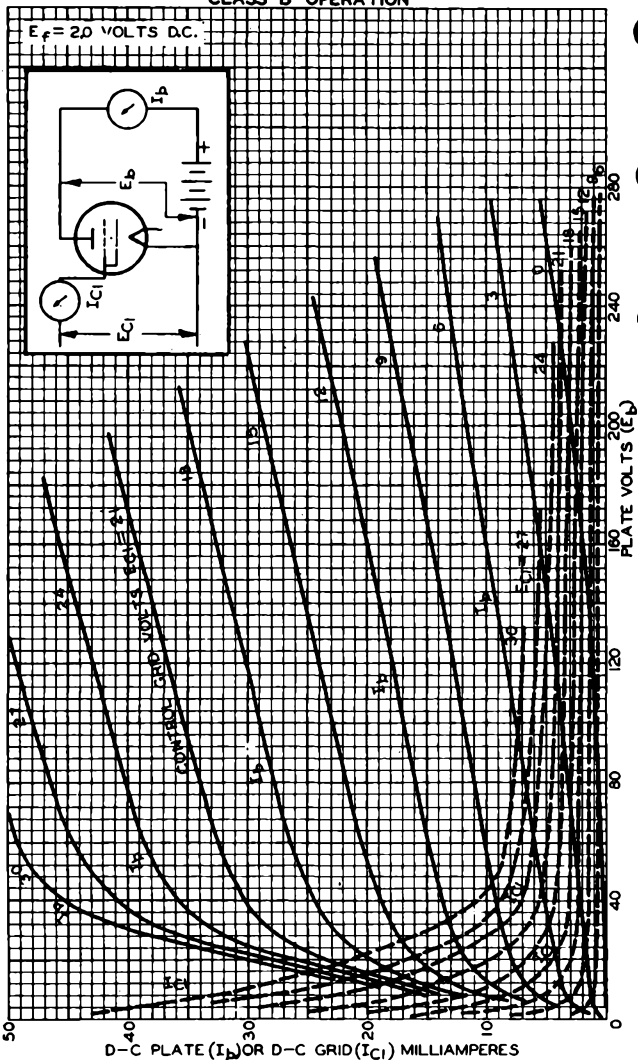
Grid #2 connected to plate at socket

Operating Conditions and Characteristics:

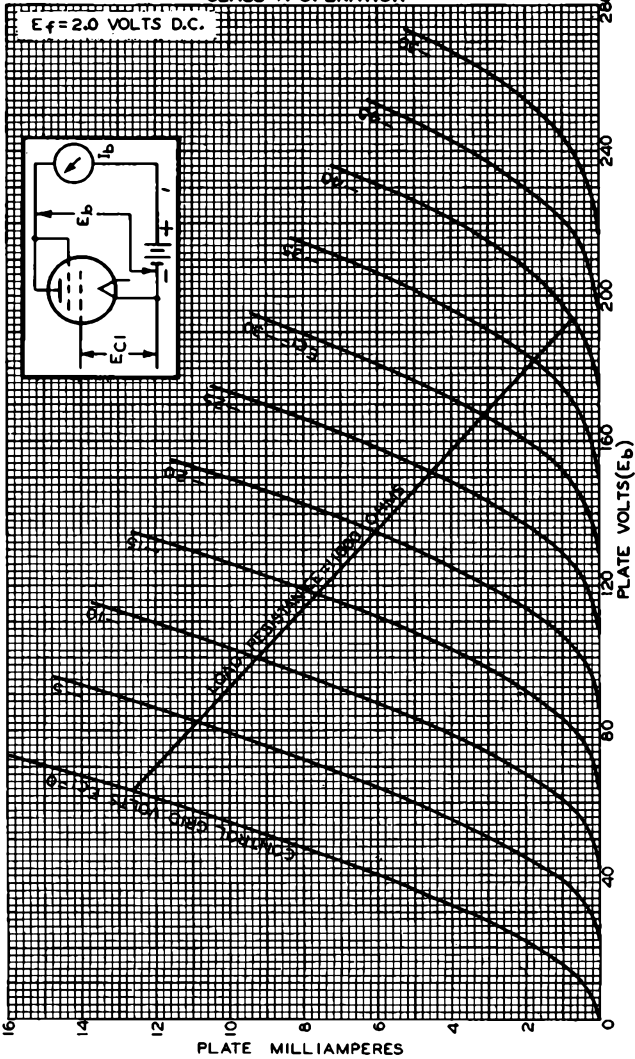
Filament	2.0	volts
Plate	135 max.	volts
Grid (#1 only)	-20	volts
Amp. Fact.	4.7	
Plate Res.	4175	ohms
Mut. Cond.	1125	µmhos
Plate Cur.	6.0	ma.
Load Res.	11000*	ohms
Power Output	0.170	approx.watts

* Approximately twice this value is recommended for load of this tube when used as driver for Class B stage.

AVERAGE PLATE CHARACTERISTICS
CLASS B OPERATION



AVERAGE PLATE CHARACTERISTICS
CLASS A OPERATION



RCA-50

POWER AMPLIFIER

Filament	Coated	
Voltage	7.5	a-c or d-c volts
Current	1.25	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	7.1	μmf
Grid to Filament	4.2	μmf
Plate to Filament	3.4	μmf
Maximum Overall Length		6-1/4"
Maximum Diameter	(2) (3)	2-7/16"
Bulb		ST-19
Base		Med. 4-Pin Bay.
Pin 1-Filament	(1) (4)	Pin 3-Grid
Pin 2-Plate		Pin 4-Filament

BOTTOM VIEW

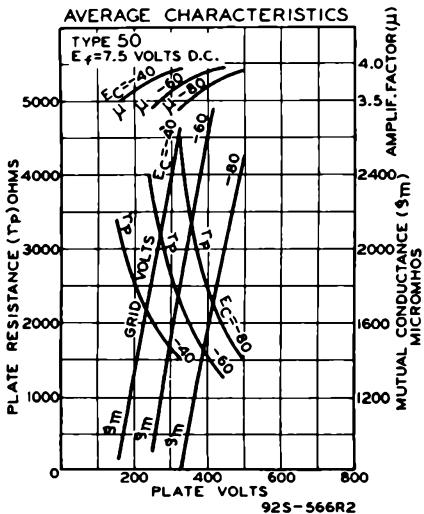
AMPLIFIER (Class A)

Operating Conditions and Characteristics:

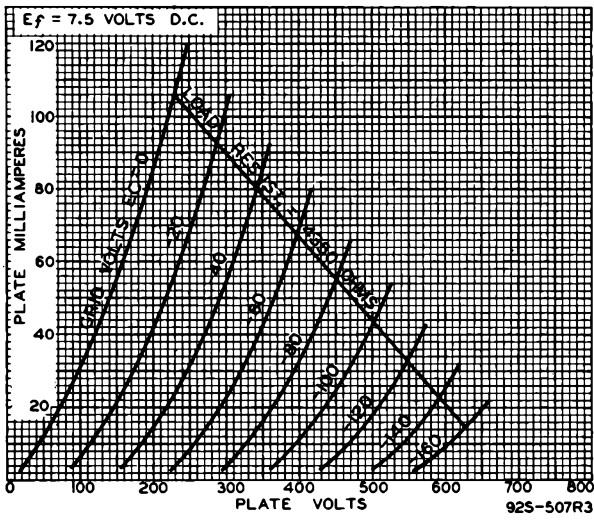
Filament	7.5	7.5	7.5	7.5	a-c volts
Plate	300	350	400	450 max.	volts
Grid*	-54	-63	-70	-84	volts
Amp. Fact.	3.8	3.8	3.8	3.8	
Plate Res.	2000	1900	1800	1800	ohms
Mut. Cond.	1900	2000	2100	2100	μmhos
Plate Cur.	35	45	55	55	ma.
Load Res.	4600	4100	3670	4350	ohms
U.P.O.	1.6	2.4	3.4	4.6	watts

Self-bias is advisable in all cases. The resistance in the grid-coupling circuit should not exceed 10000 ohms.

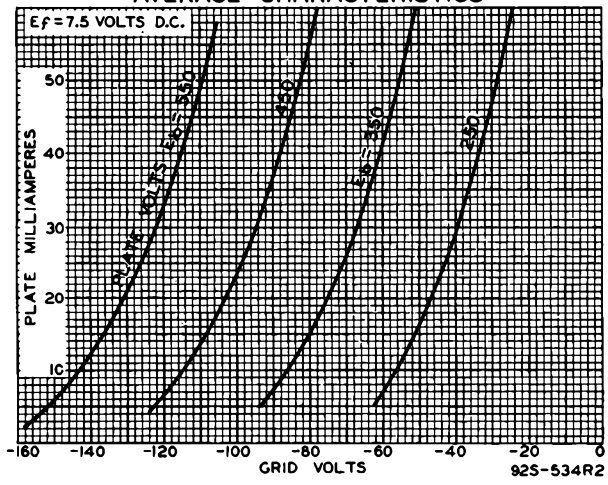
* Grid volts measured from mid-point of a-c operated filament.



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS





50B5

BEAM POWER AMPLIFIER

MINIATURE TYPE

50B5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 50 ac or dc volts

Current 0.15 amp.

Direct Interelectrode Capacitances (Approx.):^o

Grid-No.1 to Plate 0.5 μf

Input 13 μf

Output 6.5 μf

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length from Base Seat

to Bulb Top (excluding tip) 2" ± 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

Base Miniature Button 7-Pin

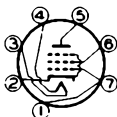
Basing Designation for BOTTOM VIEW 7BZ

Pin 1-Grid No.1

Pin 2-Cathode,

Grid No.3

Pin 3-Heater



Pin 4-Heater

Pin 5-Plate

Pin 6-Grid No.2

Pin 7-Grid No.1

CLASS A₁ AMPLIFIER

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 117 max. volts

GRID-No.2 (SCREEN) VOLTAGE 117 max. volts

PLATE DISSIPATION 5.5 max. watts

GRID-No.2 DISSIPATION 1.25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 90 max. volts

Heater positive with respect to cathode. 90 max. volts

Typical Operation and Characteristics:

Plate Voltage 110 . . . volts

Grid-No.2 Voltage 110 . . . volts

Grid-No.1 Voltage -7.5 . . . volts

Peak A-F Grid-No.1 Voltage 7.5 . . . volts

Zero-Signal Plate Current 49 . . . ma.

Max.-Signal Plate Current 50 . . . ma.

^oWith no external shield.

JAN. 2, 1946

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

50B5



50B5

BEAM POWER AMPLIFIER

Zero-Signal Grid-No.2 Current (Approx.) . .	4	. . .	ma.
Max.-Signal Grid-No.2 Current (Approx.) . .	8.5	. . .	ma.
Plate Resistance (Approx.)	14000	. . .	ohms
Transconductance	7500	. . .	μ mhos
Load Resistance	2500	. . .	ohms
Total Harmonic Distortion	9	. . .	%
Max.-Sig. Power Output	1.9	. . .	watts

Maximum Circuit Values (for maximum rated conditions):

Grid-No.1-Circuit Res. . .	{	fixed bias	0.1	. . .	megohm
		cathode bias	0.5	. . .	megohm

JAN. 2, 1946

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

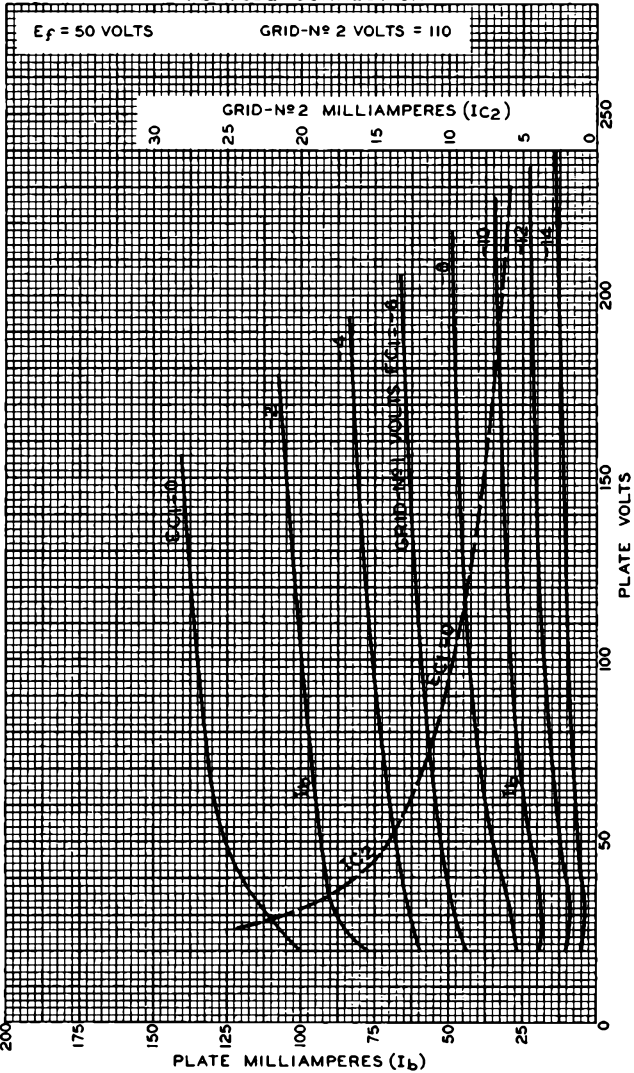
TENTATIVE DATA



50B5

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION

50B5



OCT. 8, 1945

RCA VICTOR DIVISION

92CM-6603

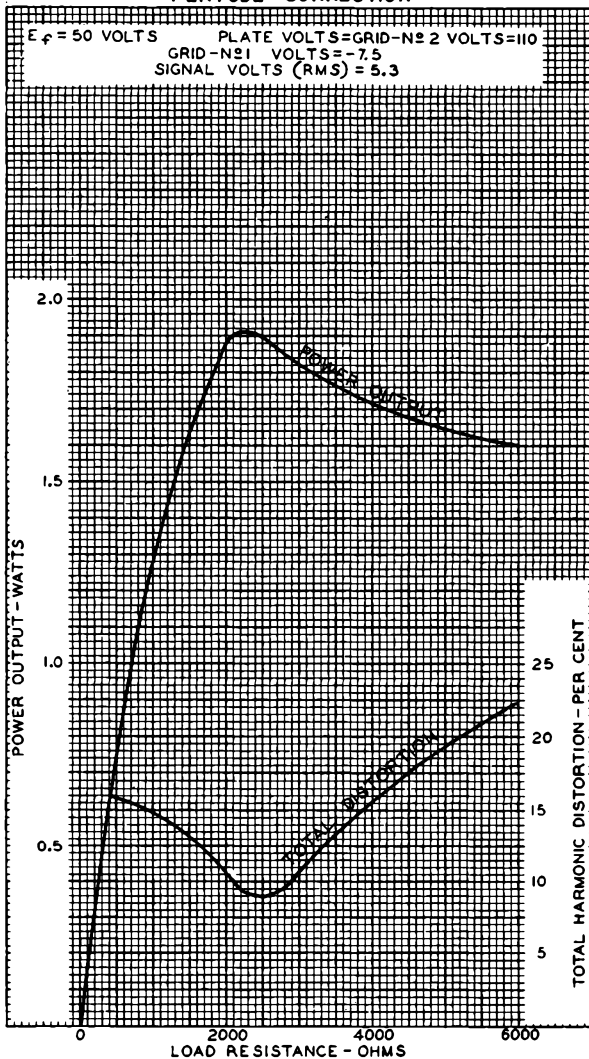
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

50B5



50B5

OPERATION CHARACTERISTICS PENTODE CONNECTION



OCT. 24, 1945

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6612



50C5

50C5

BEAM POWER TUBE

MINIATURE TYPE

Except for a different basing arrangement, which simplifies the problem of meeting Underwriters' Laboratories requirements in the design of ac/dc receivers, the 50C5 is similar to the miniature type 50B5.

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 50 ac or dc volts

Current 0.15 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate 0.55 μf

Grid No.1 to cathode & grid No.3,
grid No.2, and heater. 13 μf

Plate to cathode & grid No.3,
grid No.2, and heater. 9 μf

Mechanical:

Mounting Position Any

Maximum Overall Length 2-5/8"

Maximum Seated Length 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip) 2" \pm 3/32"

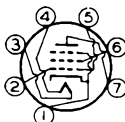
Maximum Diameter 3/4"

Bulb T-5-1/2

Base Small Button Miniature 7-Pin (JETEC No.E7-1)

Basing Designation for BOTTOM VIEW 7CV

- Pin 1 - Cathode,
Grid No.3
- Pin 2 - Grid No.1
- Pin 3 - Heater



- Pin 4 - Heater
- Pin 5 - Grid No.1
- Pin 6 - Grid No.2
- Pin 7 - Plate

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 135 max. volts

GRID-No.2 (SCREEN) VOLTAGE 117 max. volts

PLATE DISSIPATION 5.5 max. watts

GRID-No.2 INPUT 1.25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 180 max. volts

Heater positive with respect to cathode. 180 max. volts

BULB TEMPERATURE (At hottest point)^o 250 max. $^{\circ}\text{C}$

^o without external shield.

^o High ambient temperature and shielding may necessitate a reduction in operating dissipation. When tube shields are used it is advisable to paint both inside and outside surfaces of tube shield a dull black and to provide ventilation slots to reduce operating temperature.

←Indicates a change.

50C5



50C5

BEAM POWER TUBE

Typical Operation and Characteristics:

Plate Voltage.	110	volts
Grid-No.2 Voltage.	110	volts
Grid-No.1 (Control-Grid) Voltage	-7.5	volts
Peak AF Grid-No.1 Voltage.	7.5	volts
Zero-Signal Plate Current.	49	ma
Max.-Signal Plate Current.	50	ma
Zero-Signal Grid-No.2 Current.	4	ma
Max-Signal Grid-No.2 Current	8.5	ma
Plate Resistance (Approx.)	1000	ohms
Transconductance	7500	μmhos
Load Resistance.	2500	ohms
Total Harmonic Distortion.	9	%
Max.-Signal Power Output	1.9	watts

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

Curves shown under type 50B5 also apply to the 50C5



50C6-G

BEAM POWER AMPLIFIER

50C6-G

GENERAL DATA

Electrical:

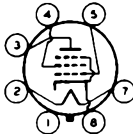
Heater, for Unipotential Cathode:

Voltage.	50	ac or dc volts
Current.	0.15	amp

Mechanical:

Mounting Position.	Any
Maximum Overall Length.	4-5/8"
Seated Length.	3-7/8" + 3/16" - 5/16"
Maximum Diameter.	1-13/16"
Bulb.	ST-14
Base.	Medium-Shell Octal 7-Pin
Basing Designation for BOTTOM VIEW.	G-7AC

Pin 1 - No
Connection
Pin 2 - Heater
Pin 3 - Plate
Pin 4 - Grid No.2



Pin 5 - Grid No.1
Pin 7 - Heater
Pin 8 - Cathode,
Grid No.3

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	200 max.	volts
GRID-No.2 (SCREEN) VOLTAGE.	135 max.	volts
PLATE DISSIPATION.	12.5 max.	watts
GRID-No.2 INPUT.	1.75 max.	watts

Typical Operation and Characteristics:

Plate Voltage.	135	200	volts
Grid-No.2 Voltage.	135	135	volts
Grid-No.1 (Control-Grid) Voltage.	-13.5	-14	volts
Peak AF Grid-No.1 Voltage.	13.5	14	volts
Zero-Signal Plate Current.	58	61	ma
Max.-Signal Plate Current.	60	66	ma
Zero-Signal Grid-No.2 Current.	3.5	2.2	ma
Max.-Signal Grid-No.2 Current.	11.5	9.0	ma
Plate Resistance (Approx.)	9300	18300	ohms
Transconductance.	7000	7100	μmhos
Load Resistance.	2000	2600	ohms
Total Harmonic Distortion.	10	10	%
Max.-Signal Power Output.	3.6	6.0	watts

Curves shown under Type 6Y6-G also apply to the 50C6-G.



50L6-GT

50L6-GT
★

BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	50	a-c or d-c volts
Current	0.15	amp.
Maximum Overall Length		3-5/16"
Maximum Seated Height		2-3/4"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 7-Pin	
Pin 1 - No Connection		Pin 5 - Grid
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Pin 4 - Screen		
Mounting Position		Any



BOTTOM VIEW (G-7AC)
AMPLIFIER

Plate Voltage	200 max.	volts
Screen Voltage	117 max.	volts
Plate Dissipation	10 max.	watts
Screen Dissipation	1.25 max.	watts
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate	110	200 volts
Screen	110	110 volts
Grid	-7.5	-8 volts
Peak A-F Grid Voltage	7.5	8 volts
Zero-Sig. Plate Cur.	49	50 ma.
Max.-Sig. Plate Cur.	50	55 ma.
Zero-Sig. Screen Cur.	4	2 approx. ma.
Max.-Sig. Screen Cur.	11	7 approx. ma.
Plate Resistance	13000	30000 approx. ohms
Transconductance	9000	9500 μ mhos
Load Resistance	2000	3000 ohms
Total Harmonic Dist.	10	10 %
Power Output	2.1	4.3 watts

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- The type of input coupling should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm.

Curves under type 25L6-GT also apply to the 50L6-GT.

← Indicates a change.

Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

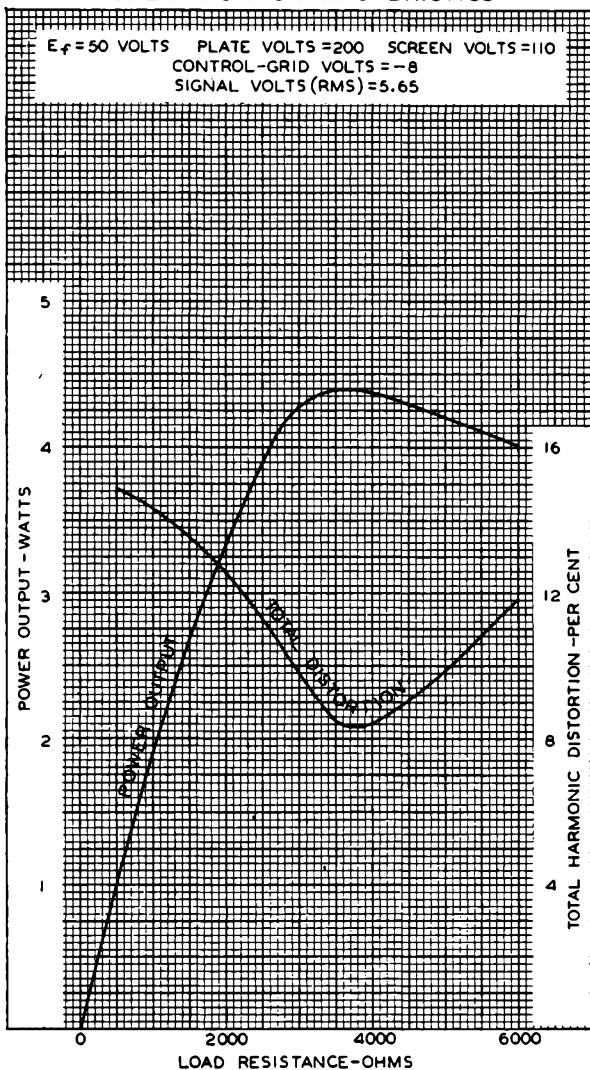
DATA

50L6-GT



50L6-GT

OPERATION CHARACTERISTICS



AUG. 7, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6308

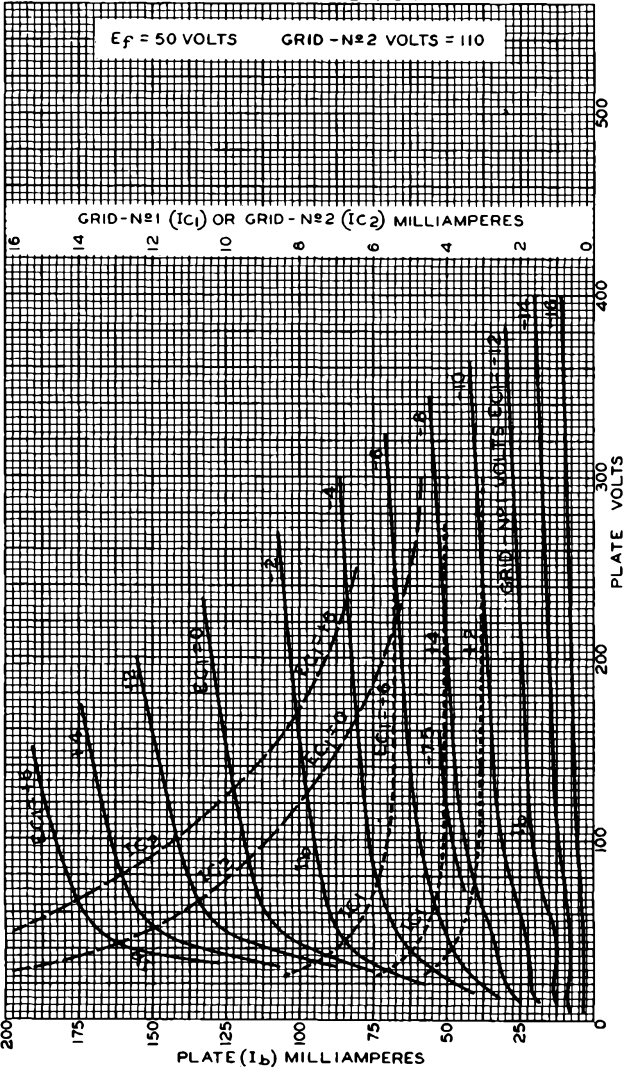


50L6-GT

50L6-GT

AVERAGE PLATE CHARACTERISTICS

PENTODE CONNECTION



JAN. 27, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6314 RI

50L6-GT



50L6-GT AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



APRIL 6, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6316R1



50X6

50X6

VACUUM RECTIFIER-DOUBLER

GENERAL DATA

Electrical:

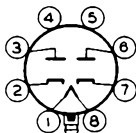
Heater, for Unipotential Cathodes:

Voltage. 50 ac or dc volts
Current. 0.150 amp

Mechanical:

Mounting Position. Any
Maximum Overall Length 3-5/32"
Maximum Seated Length. 2-5/8"
Maximum Diameter 1-3/16"
Bulb T-9
Base Lock-in 8-Pin
Basing Designation for BOTTOM VIEW 7AJ

Pin 1-Heater
Pin 2-Cathode of
Unit No.2
Pin 3- Plate of
Unit No.2
Pin 4-No
Connection



Pin 5-No Connection
Pin 6-Plate of
Unit No.1
Pin 7-Cathode of
Unit No.1
Pin 8-Heater
Plug - Base Shell

RECTIFIER OR DOUBLER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE 700 max. volts
PEAK PLATE CURRENT PER PLATE 450 max. ma
DC OUTPUT CURRENT PER PLATE. 75 max. ma
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode. . 350 max. volts
Heater positive with respect to cathode. . 350 max. volts

Typical Operation as Half-Wave Rectifier with Capacitor-Input to Filter:°

AC Plate-Supply Voltage
per Plate (RMS) . . . 117 150 235 volts
Filter-Input Capacitor 16 16 16 µf
Min. Total Effective Plate-
Supply Impedance per Plate . . . 15 40 100 ohms
DC Output Current per Plate. . . . 75 75 75 ma

Typical Operation as Voltage Doubler:

AC Plate-Supply Voltage
per Plate (RMS) . . . 117 117 volts
Filter-Input Capacitor
per Plate . . . 16 16 µf
Min. Total Effective Plate-
Supply Impedance per Plate . . 30 15 ohms
DC Output Current. 75 75 ma

° in half-wave rectifier service, the two units may be used separately or in parallel.

50Y6-GT



50Y6-GT

VACUUM RECTIFIER-DOUBLER

Heater, for Unipotential Cathodes:

Voltage. 50 ac or dc volts

Current. 0.15 amp

*The 50Y6-GT is the same as the 25Z6-GT except for
heater rating.*



50Y7-GT

50Y7-GT

VACUUM RECTIFIER-DOUBLER

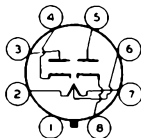
GENERAL DATA

Electrical:	Without	With No. 40	
	Panel Lamp	or No. 47 Panel Lamp	
Heater, for Unipotential Cathode:			
Voltage (AC or DC):			
Entire Heater (pins 2 & 7)	50	46	volts
Panel-Lamp Section (pins 6 & 7)	7.5	5.5	volts
Current	between pins 2 & 7	0.15	amp
	between pins 2 & 6	-	0.15 amp

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Bulb	T-9
Base	Intermediate-Shell Octal 8-Pin
Basing Designation for BOTTOM VIEW	G-BAN

- Pin 1 - No Connection
- Pin 2 - Heater
- Pin 3 - Plate No. 2
- Pin 4 - Cathode No. 2



- Pin 5 - Plate No. 1
- Pin 6 - Heater Tap
- Pin 7 - Heater
- Pin 8 - Cathode No. 1

RECTIFIER OR DOUBLER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	700 max.	volts
PEAK PLATE CURRENT PER PLATE	450 max.	ma
DC OUTPUT CURRENT PER PLATE		
With Panel Lamp & { No Shunting Resistor	60 max.	ma
{ Shunting Resistor*	65 max.	ma
Without Panel Lamp	75 max.	ma
PANEL-LAMP-SECTION VOLTAGE (RMS):		
When panel lamp fails	15 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	350 max.	volts
Heater positive with respect to cathode	350 max.	volts

Typical Operation with No. 40 or No. 47 Panel Lamp in

Half-Wave Rectifier Circuit with Capacitor-Input Filter:

AC Plate-Supply Volt. per Plate (RMS)	117	150	235	volts
Filter-Input Capacitor	16	16	16	μf
Min. Total Effect. Plate-				
Supply Imped. per Plate	15	40	100	ohms
Panel Lamp Shunting Resistor	250	250	250	ohms
DC Output Current per Plate	65	65	65	ma

* Max. value of this resistor is 250 ohms for dc output current of 65 ma.

50Y7-GT



50Y7-GT

VACUUM RECTIFIER-DOUBLER

**Typical Operation with No.40 or No.47 Panel Lamp in
Voltage-Doubler Circuit:**

	Half-Wave	Full-Wave	
AC Plate Supply Voltage per Plate (RMS)	117	117	volts
Filter-Input Capacitor	16	16	μ f
Min. Total Effect. Plate- Supply Imped. per Plate.	30	15	ohms
Panel Lamp Shunting Resistor	250	250	ohms
DC Output Current per Plate.	65	65	ma

**Typical Operation Without Panel Lamp in
Half-Wave Rectifier Circuit with Capacitor-Input Filter:^o**
Values are for both units connected in parallel

AC Plate Supply Voltage (RMS)	117	150	235	volts
Filter-Input Capacitor	16	16	16	μ f
Min. Total Effect. Plate- Supply Imped. per Plate.	15	40	100	ohms
Total DC Output Current.	150	150	150	ma
DC Output Voltage at Input to Filter (Approx.):				
At half-load current (75 ma.)	115	-	255	volts
At full-load current (150 ma.)	80	-	200	volts
Voltage Regulation (Approx.):				
Half-load to full-load current	35	-	55	volts

**Typical Operation Without Panel Lamp in
Full-Wave Voltage-Doubler Circuit:^o**

AC Plate Supply Voltage per Plate (RMS)	117	volts
Filter-Input Capacitor	16	μ f
Min. Total Effective Plate- Supply Impedance per Plate	15	ohms
DC Output Current.	75	ma
DC Output Voltage at Input to Filter (Approx.):		
At half-load current (37.5 ma.)	250	volts
At full-load current (75 ma.)	205	volts
Voltage Regulation (Approx.):		
Half-load to full-load	45	volts

^o Plate current must not flow through heater section between pins 6 and 7.

FEB. 1, 1950

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



50Y6-GT/G

50Y6-GT/G
50Z7-G

HIGH-VACUUM RECTIFIER-DOUBLER

Heater	Coated Unipotential Cathodes	
Voltage	50	a-c or d-c volts
Current	0.15	amp.

The 50Y6-GT/G is the same as the 25Z6-GT/G except for heater rating.

50Z7-G

HIGH-VACUUM RECTIFIER-DOUBLER

Heater	Coated Unipotential Cathodes	
Voltage	Entire Heater (pins #2 & #7)	50 a-c or d-c volts
	Panel Lamp Section (pins #6 & #7) with 0.15 amp. between pins #2 & #7	2.0 a-c or d-c volts
Current	0.15	amp.

Maximum Overall Length	4-1/8"
Maximum Seated Height	3-9/16"
Maximum Diameter	1-9/16"
Bulb	ST-12
Base	Small Shell Octal 8-Pin

Pin 1 - No Connection		Pin 5 - Plate #1
Pin 2 - Heater		Pin 6 - Heater Tap
Pin 3 - Plate #2		Pin 7 - Heater
Pin 4 - Cathode #2		Pin 8 - Cathode #1
Mounting Position		Any

BOTTOM VIEW (G-8AN)

Maximum Ratings Are Design-Center Values

RECTIFIER OR DOUBLER

Peak Inverse Plate Voltage	700 max. volts
Peak Plate Current per Plate	400 max. ma.
D-C Output Current per Plate with Panel Lamp	65 max. ma.
D-C Heater-Cathode Potential	350 max. volts
Panel-Lamp Sect. Volt. (between pins #6 & #7)	2.5 max. volts

Typical Operation as Half-Wave Rectifier- With #292 or #292A Panel Lamp:*

Heater Cur. (between pins #2 & #6)	0.15	0.15	amp.
Heater Volt. (between pins #2 & #7) approx.	50	50	volts
A-C Plate Supply Voltage per Plate (RMS)	117	235	volts
Min. Total Effect. Plate-Supply Imped. per Plate	15	100	ohms
D-C Output Current per Plate	65	65	ma.

Typical Operation as Voltage Doubler- With #292 or #292A Panel Lamp:

Heater Cur. (between pins #2 & #6)	0.15	amp.
Heater Voltage (between pins #2 & #7) approx.	50	volts
A-C Plate Supply Voltage per Plate (RMS)	117	volts
Min. Total Effect. Plate-Supply Imped. per Plate	15	ohms
D-C Output Current	65	ma.

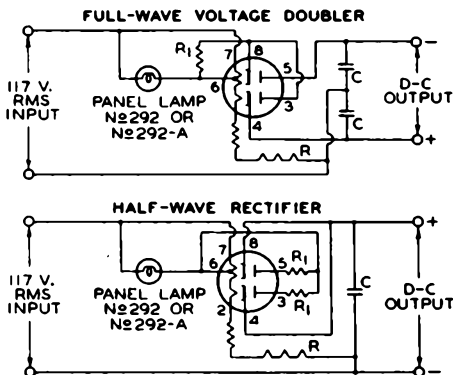
* In half-wave rectifier service, the two units may be used separately or in parallel.

50Z7-G



50Z7-G

HIGH-VACUUM RECTIFIER-DOUBLER



C = Filter Condenser.
 R = Heaters of Other Tubes in Series with Voltage-Dropping Resistor.
 R₁ = Protective Resistor.

NOTE: Drop across R and all heaters (with panel lamp) should equal 117 volts at 0.15 amp.

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

AUG. 2, 1943

RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

CLASS B TWIN AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	2.5	a-c or d-c volts
Current	2.0	amp.

For additional data and curves, see Types 6N7 and 6A6, and the RESISTANCE-COUPLED AMPLIFIER CHART. The operating conditions and characteristics of the 53 are identical with those of the 6N7 and 6A6 except for heater voltage and current. The physical characteristics of the 53 are the same as those of the 6A6.

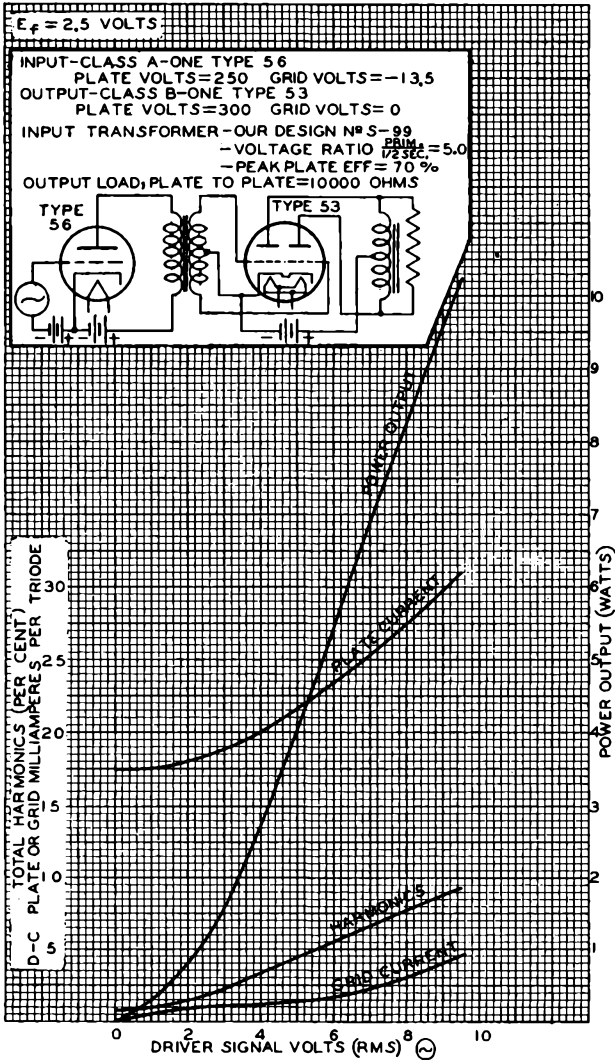
← Indicates a change

APRIL 5, 1937

RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

DATA

OPERATION CHARACTERISTICS





55

55
56
57

TWIN DIODE—MEDIUM-MU TRIODE

Heater, for Unipotential Cathode:		
Voltage.	2.5	ac or dc volts
Current.	1.0	amp

Type 55 is the same as Type 85 except for heater rating.

56

MEDIUM-MU TRIODE

Heater, for Unipotential Cathode:		
Voltage.	2.5	ac or dc volts
Current.	1.0	amp
Direct Interelectrode Capacitances: ^o		
Grid to Plate.	3.2	μf
Grid to Cathode.	3.2	μf
Plate to Cathode	2.4	μf

^o Without external shield.

Type 56 is the same as Type 76 except for heater rating and direct interelectrode capacitances.

57

SHARP-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:		
Voltage.	2.5	ac or dc volts
Current.	1.0	amp

Direct Interelectrode Capacitances:

Pentode Connection:

Grid No.1 to Plate ^o	0.007 max.	μf
Input ^{oo}	5	μf
Output ^{oo}	6.5	μf

Triode Connection:^{*oo}

Grid No.1 to Plate	2	μf
Grid No.1 to Cathode	3	μf
Plate to Cathode	10.5	μf

Mechanical:

Mounting Position.	Any
Maximum Overall Length	4-15/16"
Seated Length.	4-3/16" ± 1/8"
Maximum Diameter	1-9/16"
Bulb	ST-12

(continued on next page)

^o With external shield connected to cathode.

^{oo} Without external shield.

* With grid No.2 and grid No.3 connected to plate.



57

SHARP-CUTOFF PENTODE

Cap.	Small
Base	Small-Shell Small 6-Pin
Basing Designation for BOTTOM VIEW	6F

Pin 1-Heater		Pin 5-Cathode
Pin 2-Plate		Pin 6-Heater
Pin 3-Grid No.2		
Pin 4-Grid No.3		Cap - Grid No.1

Maximum Ratings, Characteristics, Typical Operating Conditions, and Curves are the same as for Type 6J7.

58

REMOTE-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	2.5	ac or dc volts
Current	1.0	amp

Direct Interelectrode Capacitances:

Grid No.1 to Plate ^o	0.007	$\mu\mu\text{f}$
Input	4.7	$\mu\mu\text{f}$
Output	6.3	$\mu\mu\text{f}$

^o With external shield connected to cathode.

Mechanical:

Mounting Position	Any
Maximum Overall Length	4-15/16"
Seated Length	4-3/16" \pm 1/8"
Maximum Diameter	1-9/16"
Bulb	ST-12
Cap.	Small
Base	Small-Shell Small 6-Pin
Basing Designation for BOTTOM VIEW	6F

Pin 1-Heater		Pin 5-Cathode
Pin 2-Plate		Pin 6-Heater
Pin 3-Grid No.2		
Pin 4-Grid No.3		Cap - Grid No.1

Maximum Ratings, Characteristics, and Typical Operating Conditions are the same as for Type 6D7-G.

Curves for Type 58 are the same as those for Types 6D7-G and 6D6.

For additional data, see RESISTANCE-COUPLED AMPLIFIER CHARTS at the front of this Section.



70L7-GT

70L7-GT
★

) RECTIFIER-BEAM POWER AMPLIFIER

Heater [■]	Coated Unipotential Cathodes	
Voltage	70	a-c or d-c volts
Current	0.15	amp.
Maximum Overall Length		3-7/16" ←
Maximum Seated Height		2-7/8" ←
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermed. Sh. Octal 8-Pin	
Pin 1 - Rectifier Cath.		Pin 5 - Amplifier Grid
Pin 2 - Heater		Pin 6 - Amplifier Cath.
Pin 3 - Amplifier Plate		Pin 7 - Heater
Pin 4 - Amplifier Screen		Pin 8 - Rectifier Plate
Mounting Position	BOTTOM VIEW (BAA)	Any

AMPLIFIER UNIT

Plate Voltage	117 max.	volts	←
Screen Voltage	117 max.	volts	←
Plate Dissipation	5.0 max.	watts	←
Screen Dissipation	1.0 max.	watt	←
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i> ←			
Plate	110	volts	←
Screen	110	volts	←
Grid [*]	-7.5	volts	←
Peak A-F Grid Voltage	7.5	volts	←
Zero-Signal Plate Cur.	40	ma.	←
Max.-Signal Plate Cur.	43	ma.	←
Zero-Signal Screen Cur.	3 approx.	ma.	←
Max.-Signal Screen Cur.	6 approx.	ma.	←
Plate Resistance	15000	ohms	←
Transconductance	7500	μmhos	←
Load Resistance	2000	ohms	←
Total Harmonic Distortion	10	%	←
Max.-Signal Power Output	1.8	watts	←

RECTIFIER UNIT

Peak Inverse Voltage	350 max.	volts	←
Peak Plate Current	420 max.	ma.	←
D-C Heater-Cathode Potential	175 max.	volts	←
<i>With Condenser-Input Filter:</i>			
A-C Plate Voltage (RMS)	117 max.	volts	←
Total Effective Plate-Supply Impedance [▲]	15 min.	ohms	←
D-C Output Current	70 max.	ma.	←

- It is recommended that the potential difference between heater and cathode of the amplifier unit be kept as low as possible by connecting pin #2 to the side of the line opposite that to which pins #7 & #8 are connected.
- * The type of input coupling used should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not higher than 0.5 megohm.
- ▲ When a filter-input condenser larger than 40 μf is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.
- ← Indicates a change.

Dec. 1, 1941

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RCA MANUFACTURING COMPANY, INC.

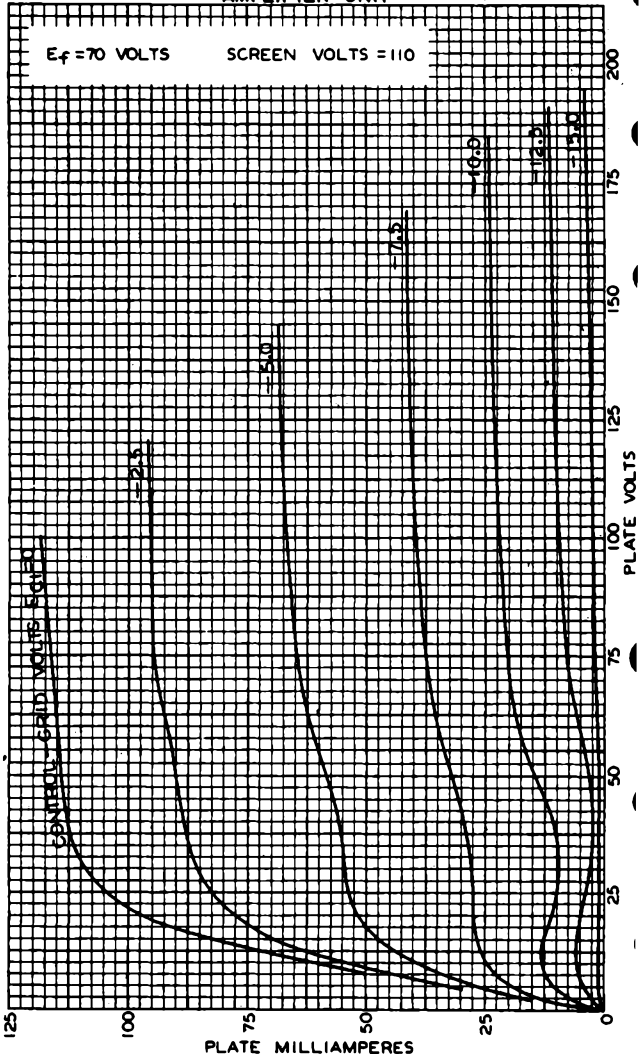
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70L7-GT



70L7-GT

AVERAGE PLATE CHARACTERISTICS AMPLIFIER UNIT



SEPT. 26, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6323

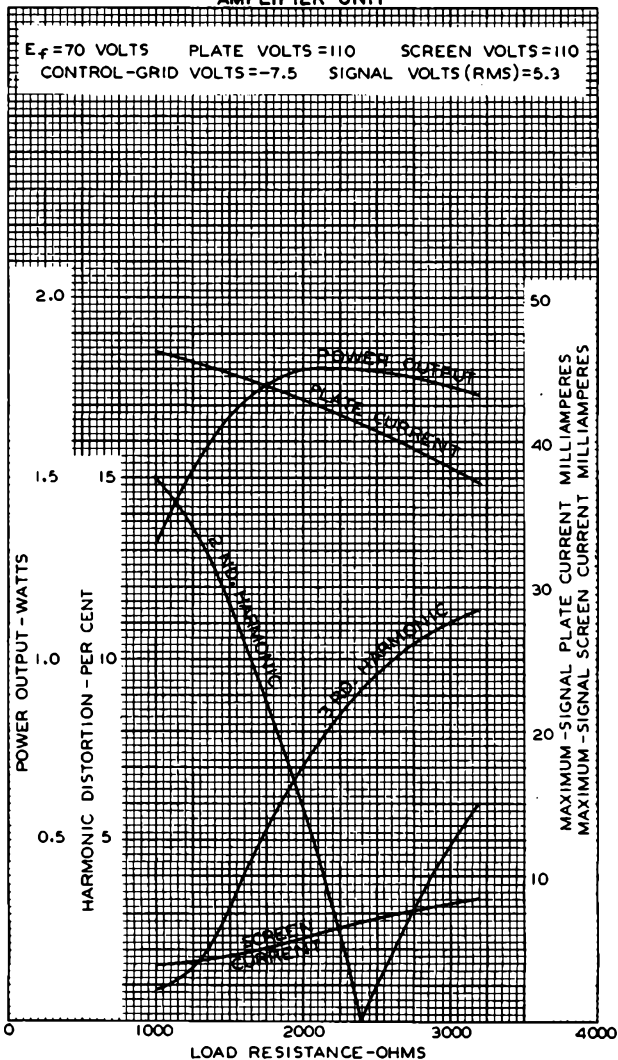


70L7-GT

OPERATION CHARACTERISTICS AMPLIFIER UNIT

70L7-GT

$E_f = 70$ VOLTS PLATE VOLTS = 110 SCREEN VOLTS = 110
CONTROL-GRID VOLTS = -7.5 SIGNAL VOLTS (RMS) = 5.3



OCT. 1, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

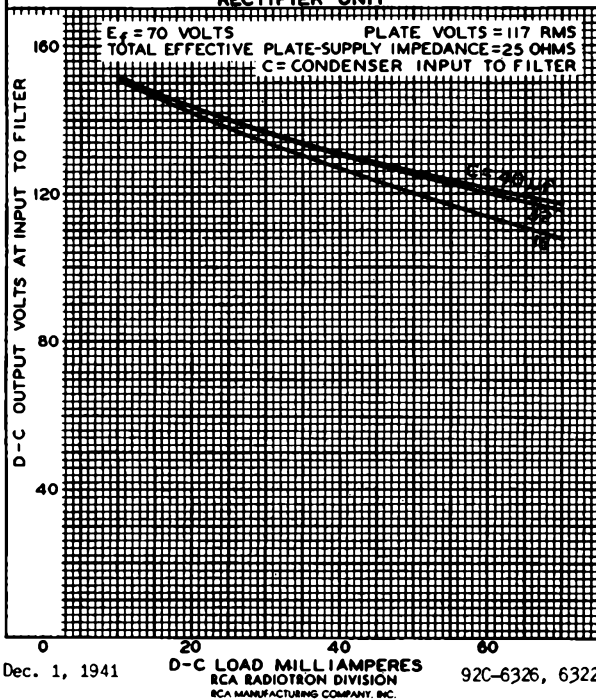
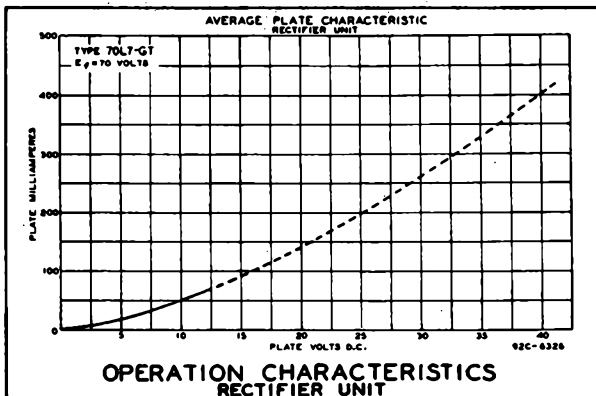
92C-6324

70L7-GT



70L7-GT

RECTIFIER-BEAM POWER AMPLIFIER



RCA-71-A

POWER AMPLIFIER

Filament	Coated		
Voltage	5.0		a-c or d-c volts
Current	0.25		amp.
Direct Interelectrode Capacitances:			
Grid to Plate	7.5		μpf
Grid to Filament	3.2		μpf
Plate to Filament	2.9		μpf
Maximum Overall Length:			4-11/16"
Maximum Diameter	(2)	(3)	1-13/16"
Bulb			ST-14
Base			Medium 4-Pin Bay.
Pin 1-Filament+	(1)	(4)	Pin 3-Grid
Pin 2-Plate			Pin 4-Filament-

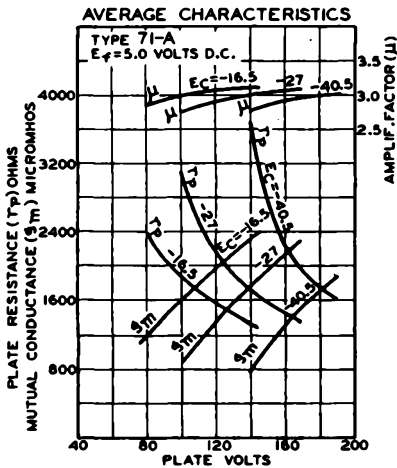
BOTTOM VIEW

AMPLIFIER (Class A)

Operating Conditions and Characteristics:

Filament	5.0	5.0	5.0	d-c volts
Plate	90	135	180 max.	volts
Grid	-16.5	-27	-40.5	volts
Amp. Fact.	3	3	3	
Plate Res.	2170	1820	1750	ohms
Mut. Cond.	1400	1650	1700	μmhos
Plate Cur.	10	17.3	20	ma.
Load Res.	3000	3000	4800	ohms
U.P.O.	125	400	790	mw.

A grid coupling resistor, if used, should not exceed 0.5 megohm.



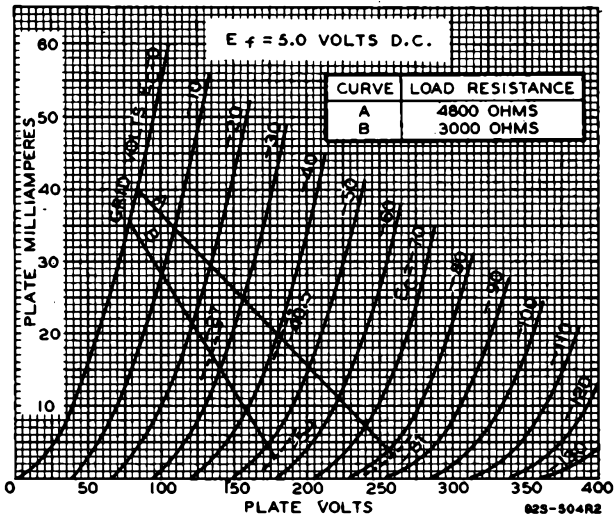
925-546R2

71-A

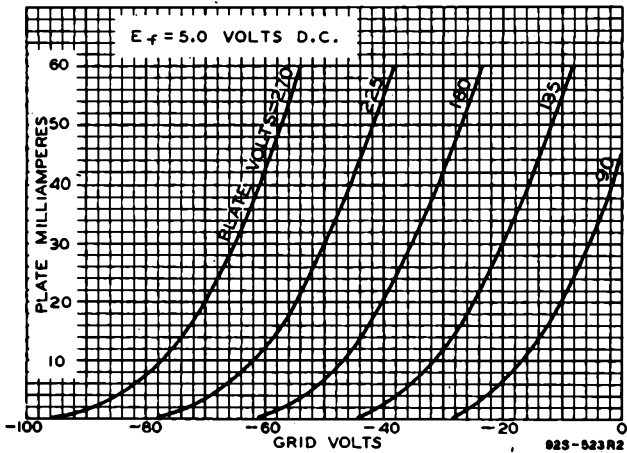

Cunningham
Radiotron

 RCA-71-A

AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



SEPT. 13, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4477



75



75

DUPLEX-DIODE HIGH-MU TRIODE

Heater [■] Coated Unipotential Cathode
 Voltage 6.3 a-c or d-c volts
 Current 0.3 amp.

Direct Interelectrode Capacitances (approx.):

Triode Unit

Grid to Plate 1.7 μ f

Grid to Cathode 1.7 μ f

Plate to Cathode 3.8 μ f

Overall Length 4-9/32" to 4-17/32" ←

Seated Height 3-21/32" to 3-29/32"

Maximum Diameter 1-9/16"

Bulb ST-12

Cap Small Metal

Base Small 6-Pin

Pin 1 - Heater

Pin 2 - Triode Plate

Pin 3 - Diode Plate #2

Pin 4 - Diode Plate #1



Pin 5 - Cathode

Pin 6 - Heater

Cap - Triode Grid

Mounting Position BOTTOM VIEW (6G) Any

AMPLIFIER

Plate Voltage . 250 max. volts

Characteristics and Curves are the same as for Type 6SQ7. For Typical Operating Conditions see RESISTANCE-COUPLED AMPLIFIER CHART. Diode Curves under Type 6B7 also apply to the 75.

■ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

← Indicates a change.

Sept. 2, 1941

RCA RADIOTRON DIVISION
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DATA

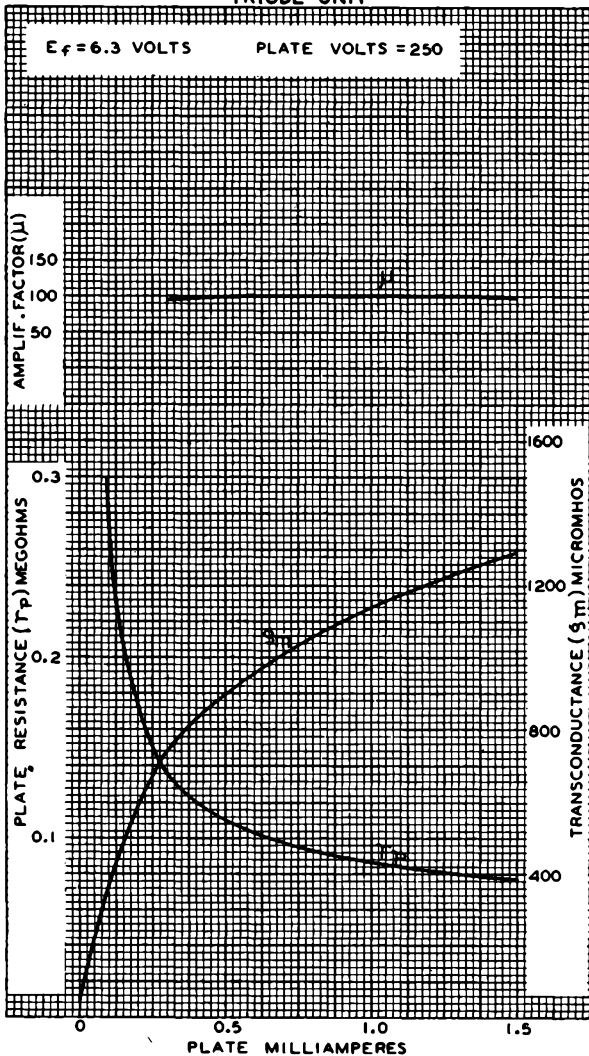
75



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AVERAGE CHARACTERISTICS TRIODE UNIT

$E_f = 6.3$ VOLTS PLATE VOLTS = 250



JULY 31, 1941

RCA RADIIOTRON DIVISION
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92C-5284R1



76

76

MEDIUM-MU TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances:^o

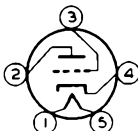
Grid to Plate	2.8	μf
Grid to Cathode	3.5	μf
Plate to Cathode	2.5	μf

^o with no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length	4-3/16"
Seated Length	3-3/8" ± 3/16"
Maximum Diameter	1-9/16"
Bulb	ST-12
Base	Small-Shell Small 5-Pin
Basing Designation for BOTTOM VIEW	5A

Pin 1 - Heater
 Pin 2 - Plate
 Pin 3 - Grid



Pin 4 - Cathode
 Pin 5 - Heater

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 max.	volts
PLATE DISSIPATION	1.4 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	100	250	volts
Grid Voltage	-5	-13.5	volts
Amplification Factor	13.8	13.8	
Plate Resistance	12000	9500	ohms
Transconductance	1150	1450	μmhos
Plate Current	2.5	5	ma

Maximum Circuit Values:

Grid-Circuit Resistance	1 max.	megohm
-----------------------------------	--------	--------

← indicates a change.



MEDIUM-MU TRIODE

DETECTOR

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	250 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	90 max.	volts
Heater positive with respect to cathode.	90 max.	volts

Typical Operation as Biased Detector:

Plate Voltage.	100	250	..	volts
Grid Voltage (Approx.)	-8	-20	..	volts
Plate Current.	Adjust to 0.2 ma. with no input signal			
Cathode-Bias Resistor ^Δ	30000	30000	}	ohms
	to	to		
	150000	150000		

Typical Operation as Grid-Resistor Detector:

Plate Voltage.	45	..	volts
Grid	Return to cathode		
Grid Resistor.	1 to 5	megohms	
Grid Capacitor	250	..	μmf

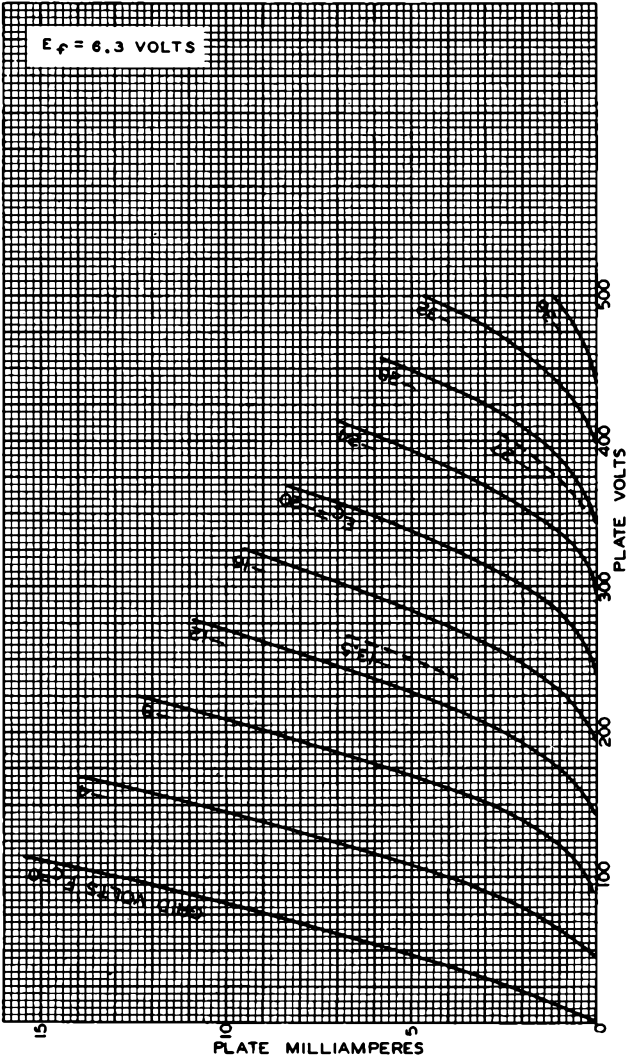
^Δ not critical.



76

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AVERAGE PLATE CHARACTERISTICS



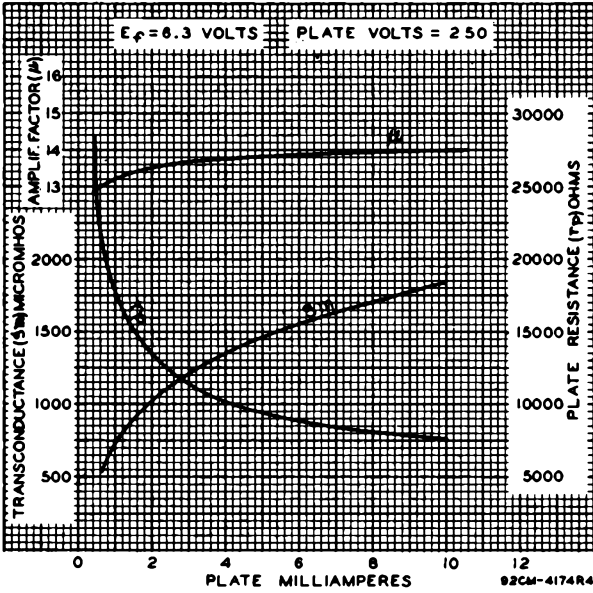
MAR. 5. 1934

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

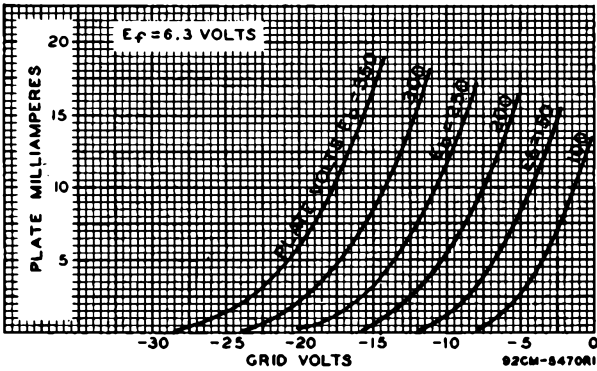
92CM-4175R2



AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



MAY 19, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6983



77

**TRIPLE-GRID DETECTOR AMPLIFIER**

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	0.007 max.	μ f
Input	4.7	μ f
Output	11	μ f
Overall Length	4-9/32" to 4-17/32"	
Seated Height	3-21/32" to 3-29/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Base	Small Metal	
Pin 1 - Heater	Small 6-Pin	
Pin 2 - Plate	Pin 5 - Cathode	
Pin 3 - Screen	Pin 6 - Heater	
Pin 4 - Suppressor	Cap - Grid	
Mounting Position	BOTTOM VIEW (6F)	Any

AMPLIFIER

Plate Voltage	300 max. volts	
Screen Voltage	100 max. volts	
Screen Supply Voltage	300 max. volts	
Grid Voltage	0 min. volts	
Plate Dissipation	0.75 max. watt	
Screen Dissipation	0.1 max. watt	
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate	100	250 volts
Screen	60	100 volts
Grid	-1.5	-3 volts
Suppressor	Connected to cathode at socket	
Plate Res. (approx.)	0.6	# megohm
Transcond.	1100	1250 μ mhos
Grid Bias for cathode-current cut-off	-5.5	-7.5 volts
Plate Cur.	1.7	2.3 ma.
Screen Cur.	0.4	0.5 ma.

DETECTOR

<i>Typical Operation as Biased Detector:</i>			
Plate Supply	100	250	250 volts
Screen	36	50	100 max. volts
Grid	-1.95	-1.95	-4.3 volts
Cathode Resistor	12500	3000	10000 ohms
Suppressor	Connected to cathode at socket		
Cathode Cur. (no signal)	0.155	0.650	0.43 ma.
Plate Resistor	0.25	0.25	0.5 megohm
Blocking Condenser	0.01	0.03	0.03 μ f
Grid Resistor for following			
amplifier tube	0.25	0.25	0.25 megohm
R-F Signal (RMS) ^{oo}	1.88	1.18	1.37 volts

- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- With shield-can connected to cathode. The internal shield within the dome of the 77 is connected to the screen within the tube.
- * The d-c resistance in the grid circuit should not exceed 1.0 megohm.
- ▲ Voltage at plate will be Plate-Supply voltage minus voltage drop in plate resistor caused by plate current.
- ^{oo} With these signal values modulated 20%, the voltage output for the 100-volt plate supply is 14 peak volts at the grid of the following amplifier; likewise, for the 250-volt conditions, 17 peak volts.
- # Greater than 1.0 megohm. ← indicates a change.

Sept. 2, 1941

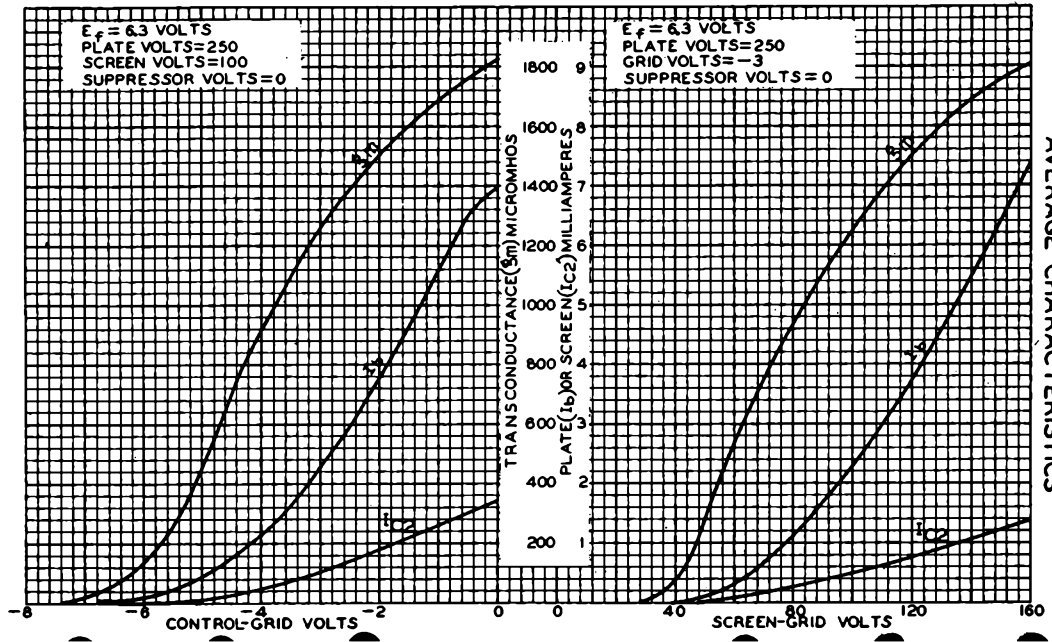
RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



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AVERAGE CHARACTERISTICS



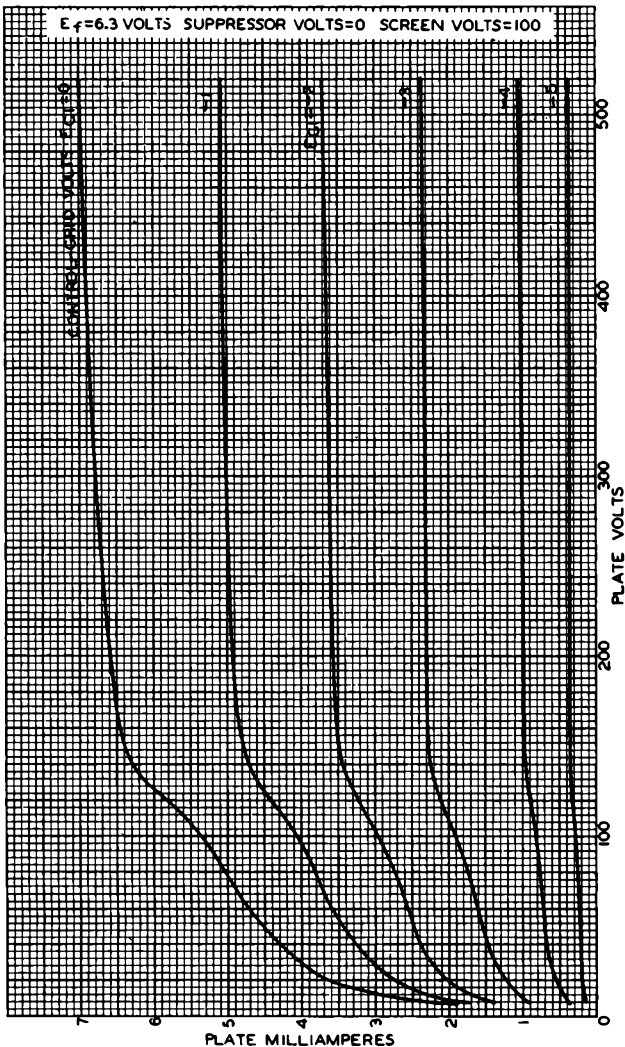
JULY 31, 1941

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RCA MANUFACTURING COMPANY, INC.

CE-5280RI
CE-5281RI

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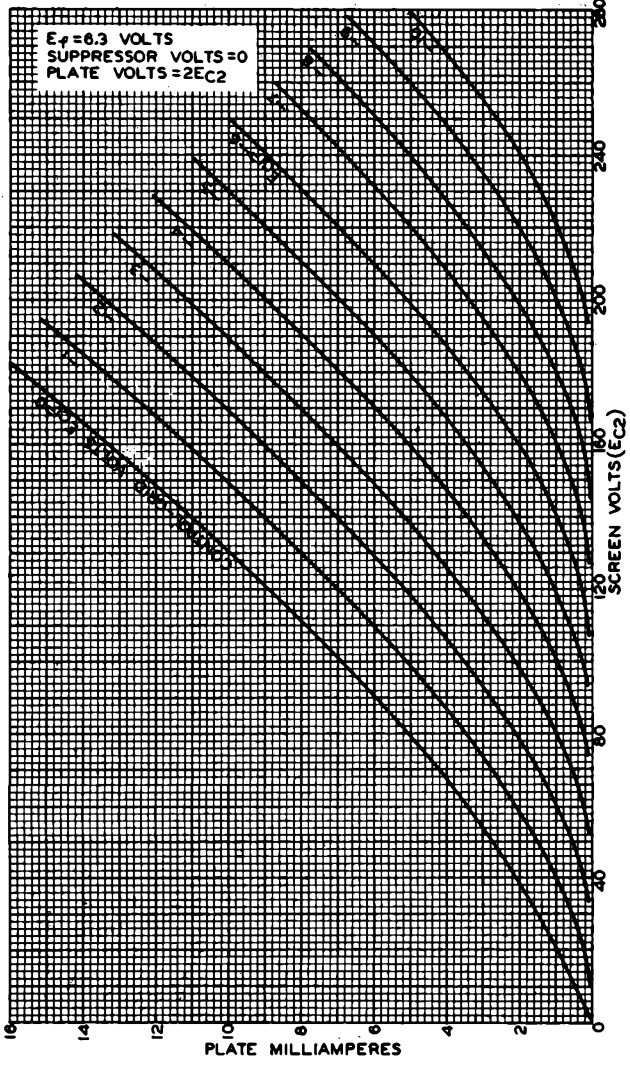
AVERAGE PLATE CHARACTERISTICS



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RCA-77

AVERAGE CHARACTERISTICS



JUNE 12, 1933

RCA RADHOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

925-5329

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

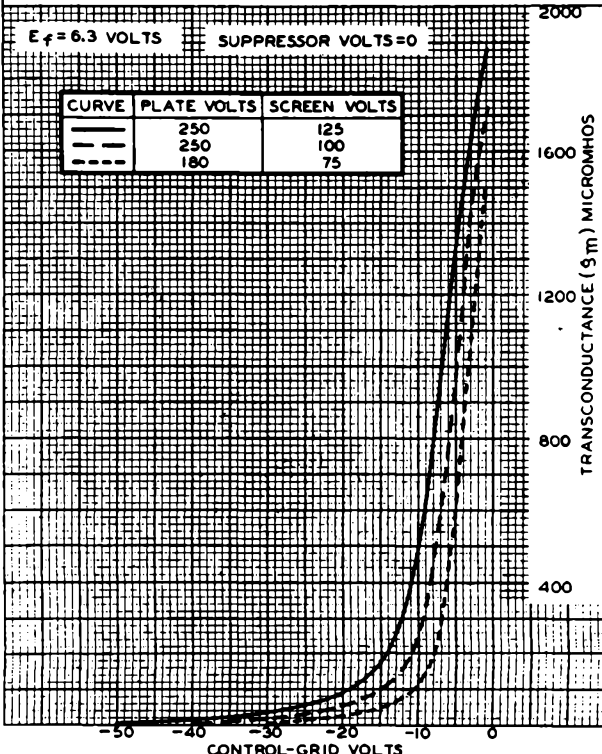
For additional data and curve, see Type 6K7. Except for capacitances, the characteristics of the 78 and 6K7 are identical. ←

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:⊙		
Grid to Plate	0.007 max.	μmf
Input	4.5	μmf
Output	11.0	μmf
Overall Length		4-9/32" to 4-17/32"
Maximum Diameter		1-9/16"
Bulb	(3) (4)	ST-12
Cap		Small Metal
Base	(2) (5)	Small 6-Pin
Pin 1-Heater		Pin 5-Cathode
Pin 2-Plate	(1) (6)	Pin 6-Heater
Pin 3-Screen		Cap -Grid
Pin 4-Suppressor		

⊙ With shield can. **BOTTOM VIEW**

← Indicates a change

AVERAGE CHARACTERISTICS



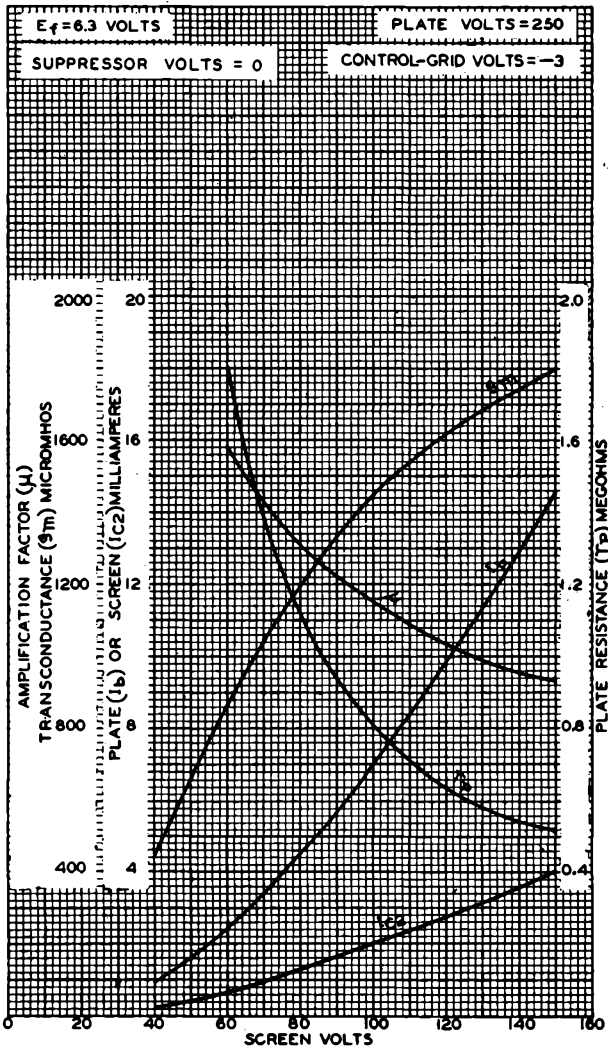
78


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RCA-78

AVERAGE CHARACTERISTICS



SEPT. 11, 1933

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

925-5247R1

RCA-79

CLASS B TWIN AMPLIFIER

Heater		Coated Uni-potential Cathode	
Voltage	6.3	a-c or d-c volts	
Current	0.6	amp.	
Overall Length	4-9/32" to 4-17/32"		
Maximum Diameter	1-9/16"		
Bulb	ST-12!		
Cap	③ ④	Small Metal	
Base	Small 6-Pin		
Pin 1-Heater	②	⑤	Pin 5-Plate (Triode T ₁)
Pin 2-Plate (Triode T ₂)	Pin 6-Heater		
Pin 3-Grid (Triode T ₂)	① ⑥	Cap -Grid (Triode T ₁)	
Pin 4-Cathode	BOTTOM VIEW		

For convenience, one triode unit is identified as T₁, the other as T₂.

CLASS "B" POWER AMPLIFIER

Plate Voltage	250 max. volts	
Peak Plate Current (per plate)	90 max. ma.	
Average Plate Dissipation	11.5 max. watts	

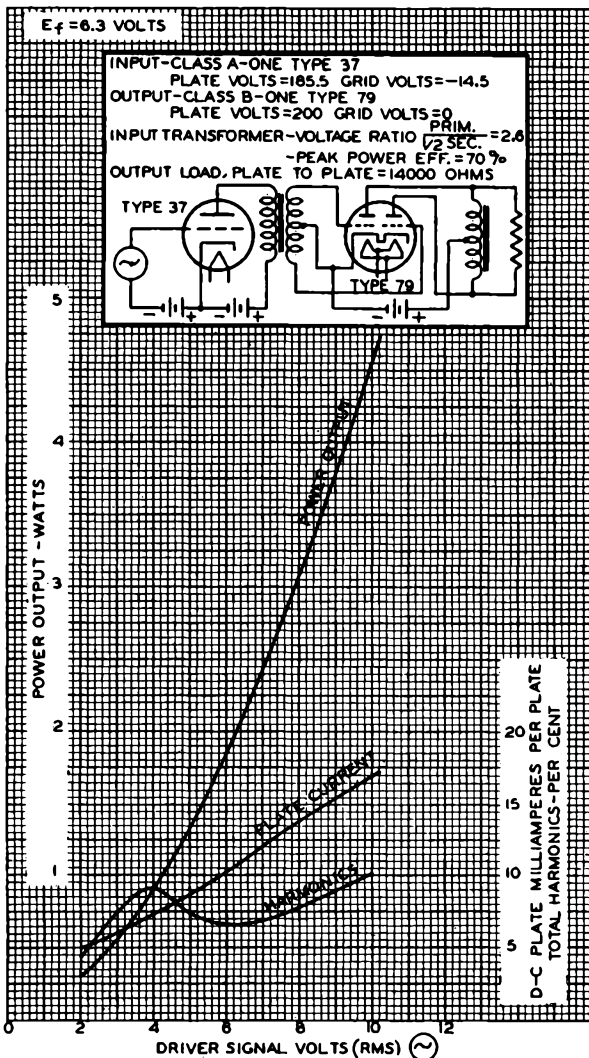
Typical Operation:

Heater	6.3	6.3	volts
Plate	180	250	volts
Grid	0	0	volts
Zero-Sig. Plate Current (per plate)	3.8	5.3	ma.
Load Res. (per plate)	1750	3500	ohms
Effective Load Res. (plate to plate)	7000	14000	ohms
Power Output ^o	5.5	8.0	<u>approx. watts</u>

* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

^o With average power input of 380 milliwatts applied between grids.

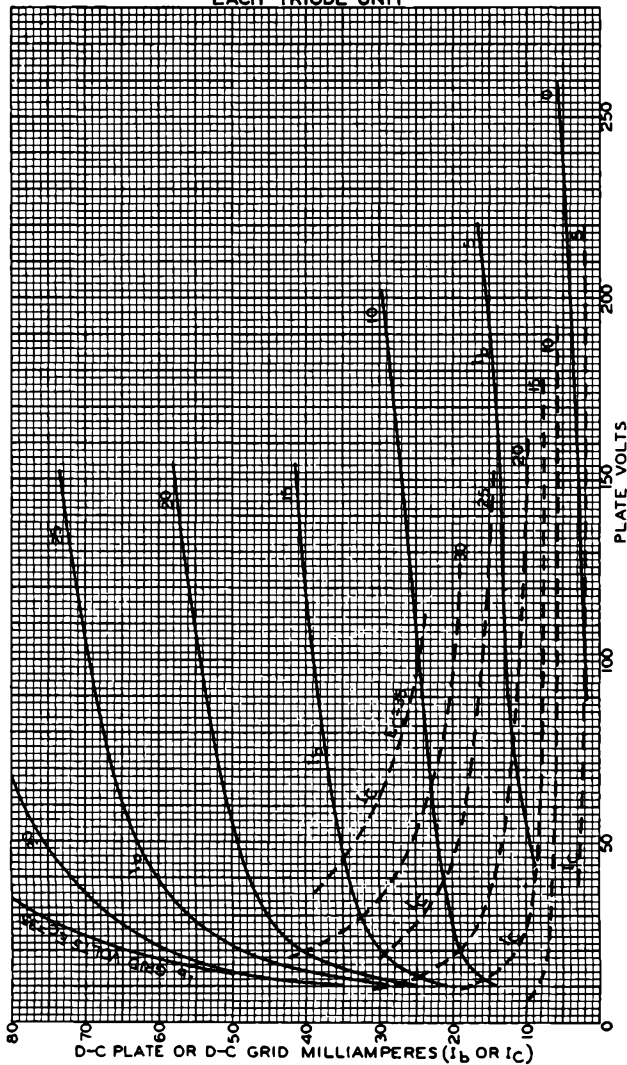
OPERATION CHARACTERISTICS



RCA-79

C-79

**AVERAGE PLATE CHARACTERISTICS
EACH TRIODE UNIT**



DEC. 6, 1932

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

925-5226

79



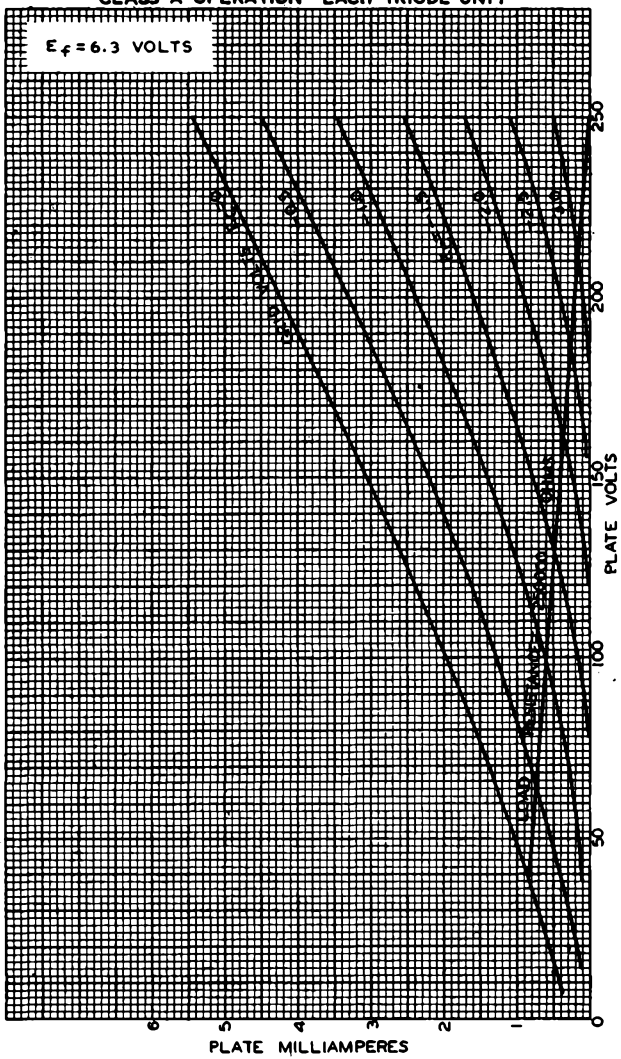
Radiotron

Cunningham
ELECTRON TUBES

RCA-79

C-79

AVERAGE PLATE CHARACTERISTICS
CLASS A OPERATION - EACH TRIODE UNIT





80

80,81
★

FULL-WAVE HIGH-VACUUM RECTIFIER

Filament Voltage	Coated 5.0	a-c volts
Current	2.0	amp.
Maximum Overall Length		4-11/16"
Maximum Diameter		1-13/16"
Bulb Base		ST-14
Pin 1 - Filament		Medium 4-Pin
Pin 2 - Plate #2		Pin 3 - Plate #1
Mounting Position	BOTTOM VIEW (4C)	Pin 4 - Filament Vertical ◊



◊ Horizontal operation permitted if pins 1 and 4 are in horizontal plane.

Maximum Ratings, Typical Operating Conditions, and Curves are the same as those for Type 5Y3-G.

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HALF-WAVE HIGH-VACUUM RECTIFIER

Filament Voltage	Coated 7.5	a-c volts
Current	1.25	amp.
Maximum Overall Length		6-1/4"
Maximum Diameter		2-7/16"
Bulb Base		ST-19
Pin 1 - Filament		Medium 4-Pin, Bay.
Pin 2 - Plate		Pin 3 - No Connection
Mounting Position	BOTTOM VIEW (4B)	Pin 4 - Filament Vertical ◊

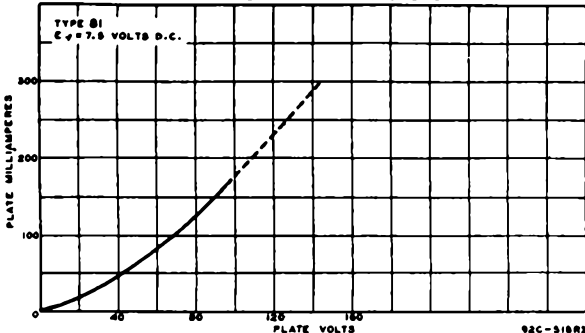


HALF-WAVE RECTIFIER

Peak Inverse Voltage	2000 max. volts
Peak Plate Current	500 max. ma.
Typical Operation with Condenser- or Choke-Input Filter:	
A-C Plate Voltage (RMS)	700 max. volts
D-C Output Current	85 max. ma.

◊ Horizontal operation permitted if pins 1 and 4 are in vertical plane.

AVERAGE PLATE CHARACTERISTIC



FEB. 2, 1940

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RCA MANUFACTURING COMPANY, INC.

DATA

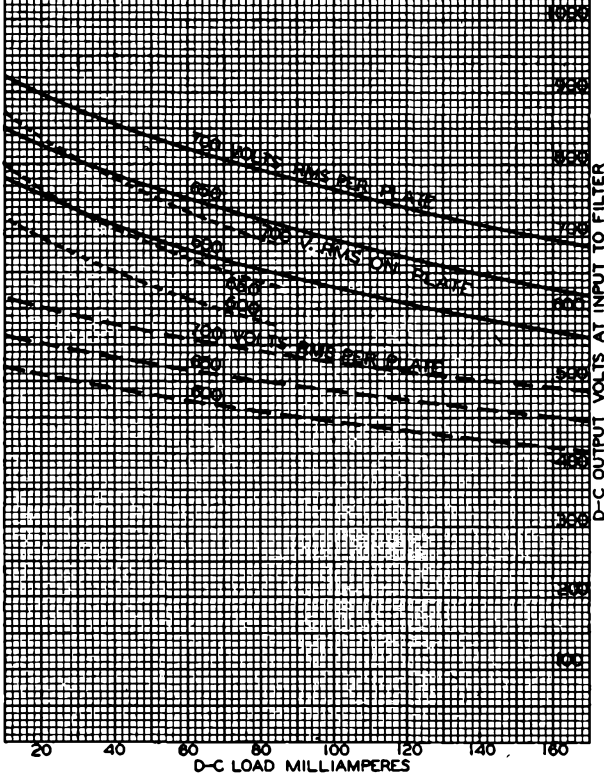
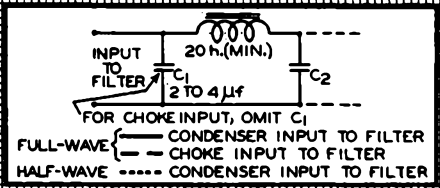
81



81

OPERATION CHARACTERISTICS

$E_f = 7.5$ VOLTS A.C.



JAN. 18, 1940

RCA RADISTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-580R3



82

**FULL-WAVE MERCURY-VAPOR RECTIFIER**

Filament	Coated	
Voltage	2.5	a-c volts
Current	3.0	amp.
Maximum Overall Length		4-11/16" ←
Maximum Seated Height		4-1/16" ←
Maximum Diameter		1-13/16" ←
Bulb		ST-14
Base		Medium 4-Pin
Pin 1 - Filament		Pin 3 - Plate #1
Pin 2 - Plate #2		Pin 4 - Filament
Mounting Position		Vertical, base down



BOTTOM VIEW (4C)

FULL-WAVE RECTIFIER

Peak Inverse Voltage	1550 max. volts
Peak Plate Current per Plate	600 max. ma.
Condenser Mercury Temperature Range	24° - 60°C
<i>With Condenser-Input Filter:</i>	
A-C Plate Voltage per Plate (RMS)	450 max. volts
Total Effective Plate-Supply Impedance per Plate [▲]	50 min. ohms
D-C Output Current	115 max. ma.
<i>With Choke-Input Filter:</i>	
A-C Plate Voltage per Plate (RMS)	550 max. volts
Input-Choke Inductance	6 min. henries
D-C Output Current	115 max. ma.
Tube Voltage Drop	15 approx. volts

HALF-WAVE RECTIFIER

As a half-wave rectifier, the 82 is operated with plates connected in parallel. Two 82's so connected in a full-wave circuit can supply twice the output current of a single tube. Both plates within the same tube should be connected to the same terminal of the plate transformer. To equalize the current distribution between plates, a resistor of not less than 100 ohms should be connected in series with each plate.

[▲] When a filter-input condenser larger than 40 μ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

← Indicates a change.

Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.


DATA

83
83-v

83

FULL-WAVE MERCURY VAPOR RECTIFIER

Filament Voltage	Coated 5.0	a-c volts
Current	3.0	amp.
Maximum Overall Length		5-3/8"
Maximum Seated Height		4-3/4"
Maximum Diameter		2-1/16"
Bulb Base		ST-16 Medium 4-Pin
Pin 1 - Filament		Pin 3 - Plate #1
Pin 2 - Plate #2		Pin 4 - Filament
Mounting Position		Vertical, base down



BOTTOM VIEW (4C)

FULL-WAVE RECTIFIER

Peak Inverse Voltage	1550 max.	volts
Peak Plate Current per Plate	1.0 max.	amp.
Condensed Mercury Temperature Range	20° - 60°C	
<i>With Condenser-Input Filter:</i>		
A-C Plate Voltage per Plate (RMS)	450 max.	volts
Total Effective Plate-Supply Impedance per Plate ^Δ	50 min.	ohms
D-C Output Current	225 max.	ma.
<i>With Choke-Input Filter:</i>		
A-C Plate Voltage per Plate (RMS)	550 max.	volts
Input-Choke Inductance	3 min.	henries
D-C Output Current	225 max.	ma.
Tube Voltage Drop	15 approx.	volts

HALF-WAVE RECTIFIER

As a half-wave rectifier, the 83 is operated with plates connected in parallel. Two 83's so connected in a full-wave circuit can supply twice the output current of a single tube. Both plates within the same tube should be connected to the same terminal of the plate transformer. To equalize the current distribution between plates, a resistor of not less than 50 ohms should be connected in series with each plate.

^Δ When a filter-input condenser larger than 40 μf is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.


← Indicates a change.

83-v



FULL-WAVE HIGH-VACUUM RECTIFIER

Heater Voltage	Coated Unipotential Cathode [*] 5.0	a-c volts
Current	2.0	amp.
Maximum Overall Length		4-11/16"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb Base		ST-14 Medium 4-Pin
Pin 1 - Heater		Pin 3 - Plate #1
Pin 2 - Plate #2		Pin 4 - Heater & Cathode
Mounting Position		Any



BOTTOM VIEW (4AD)

For Curves and additional data, see Type 574-0.

^{*} The cathode of the 83-v is connected to the heater within the tube.

← Indicates a change.

Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



84/6Z4

**FULL-WAVE HIGH-VACUUM RECTIFIER**

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.5	amp.
Maximum Overall Length		4-3/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small 5-Pin
Pin 1-Heater		Pin 4-Cathode
Pin 2-Plate		Pin 5-Heater
Pin 3-Plate		
Mounting Position		Any

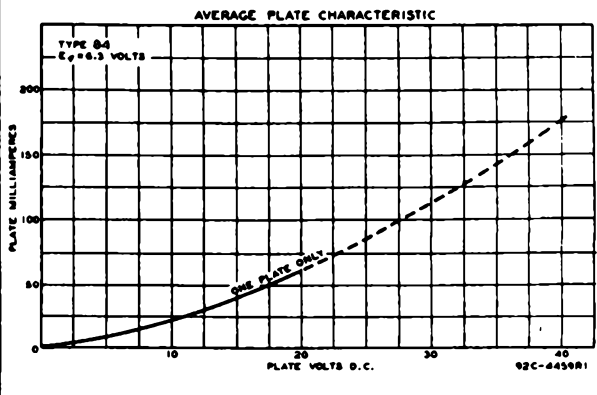


BOTTOM VIEW (5D)

FULL-WAVE RECTIFIER

Peak Inverse Voltage	1250 max. volts
Peak Plate Current per Plate	180 max. ma.
D-C Heater-Cathode Potential	450 max. volts
<i>Typical Operation with Condenser-Input Filter:</i>	
A-C Plate Voltage per Plate (RMS)	325 max. volts
Total Effective Plate-Supply Impedance per Plate [▲]	65 min. ohms
D-C Output Current	60 max. ma.
<i>Typical Operation with Choke-Input Filter:</i>	
A-C Plate Voltage per Plate (RMS)	450 max. volts
Input-Choke Inductance	10 min. henries
D-C Output Current	60 max. ma.

- The heater voltage should never fluctuate to exceed 7.5 volts.
 ▲ When a filter-input condenser larger than 40 μf is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.



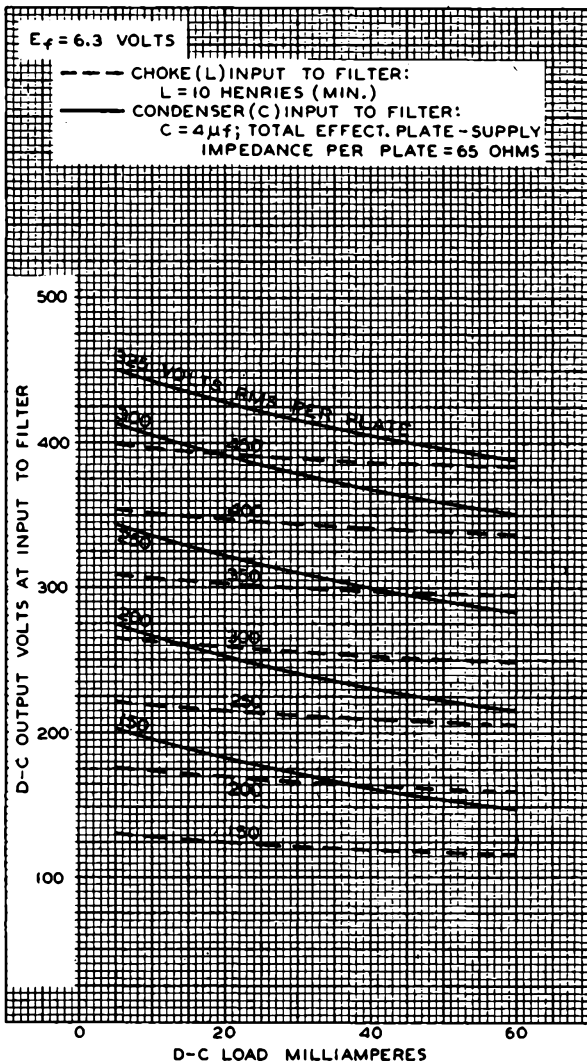
FEB. 2, 1940

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



OPERATION CHARACTERISTICS





85

85

TWIN DIODE—MEDIUM-MU TRIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.3	amp

Direct Interelectrode Capacitances - Triode Unit:*

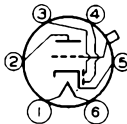
Grid to Plate	1.5	$\mu\mu\text{f}$
Grid to Cathode	1.5	$\mu\mu\text{f}$
Plate to Cathode	4.3	$\mu\mu\text{f}$

* With no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length	4-17/32"
Seated Length	3-25/32" \pm 1/8"
Maximum Diameter	1-9/16"
Bulb	ST-12
Cap.	Small
Base	Small-Shell Small 6-Pin
Basing Designation for BOTTOM VIEW	6G

Pin 1 - Heater
 Pin 2 - Triode
 Plate
 Pin 3 - Diode No. 2
 Plate



Pin 4 - Diode No. 1
 Plate
 Pin 5 - Cathode
 Pin 6 - Heater
 Cap - Triode Grid

TRIODE UNIT AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode . .	90 max.	volts
Heater positive with respect to cathode . .	90 max.	volts

Typical Operation and Characteristics:

Plate Voltage	135	180	250	volts
Grid Voltage	-10.5	-13.5	-20	volts
Amplification Factor	8.3	8.3	8.3	
Plate Resistance	11000	8500	7500	ohms
Transconductance	750	975	1100	μmhos
Plate Current	3.7	6.0	8.0	ma
Load Resistance	25000	20000	20000	ohms
Power Output	75	160	350	mw

← Indicates a change.

(continued on next page)

85



85

TWIN DIODE—MEDIUM-MU TRIODE

DIODE UNITS - Two

Consideration of these units, including typical circuits and diode curves, is given at the front of this Section. Diode biasing of the triode unit of the 85 may be used only when at least 20000 ohms resistance is in the triode plate circuit.

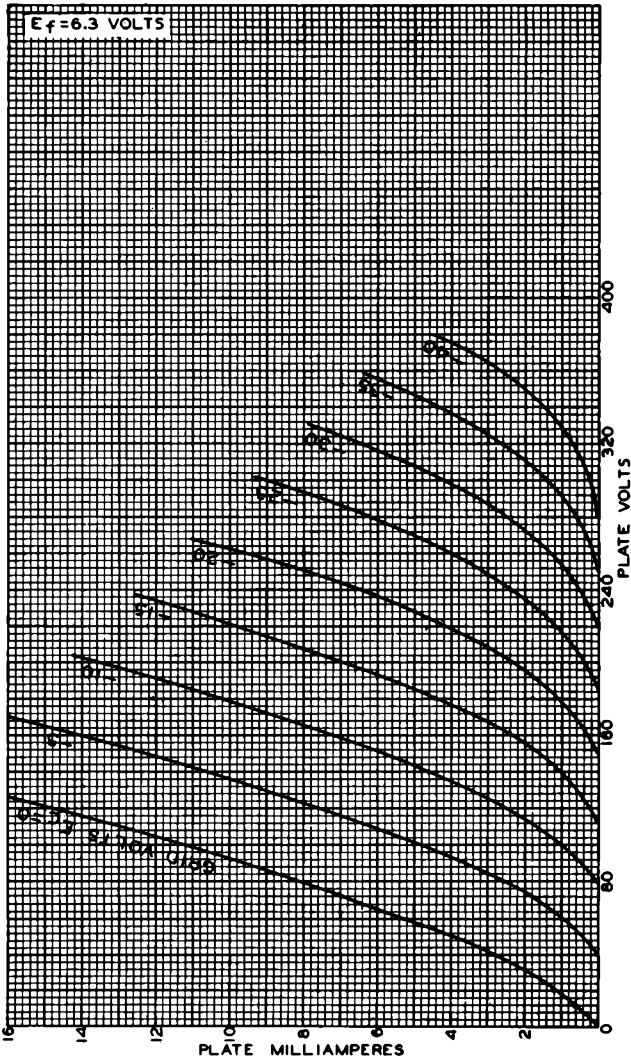
For additional data, see RESISTANCE-COUPLED AMPLIFIER CHARTS at the front of this Section.



85

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

85



MAY 13, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

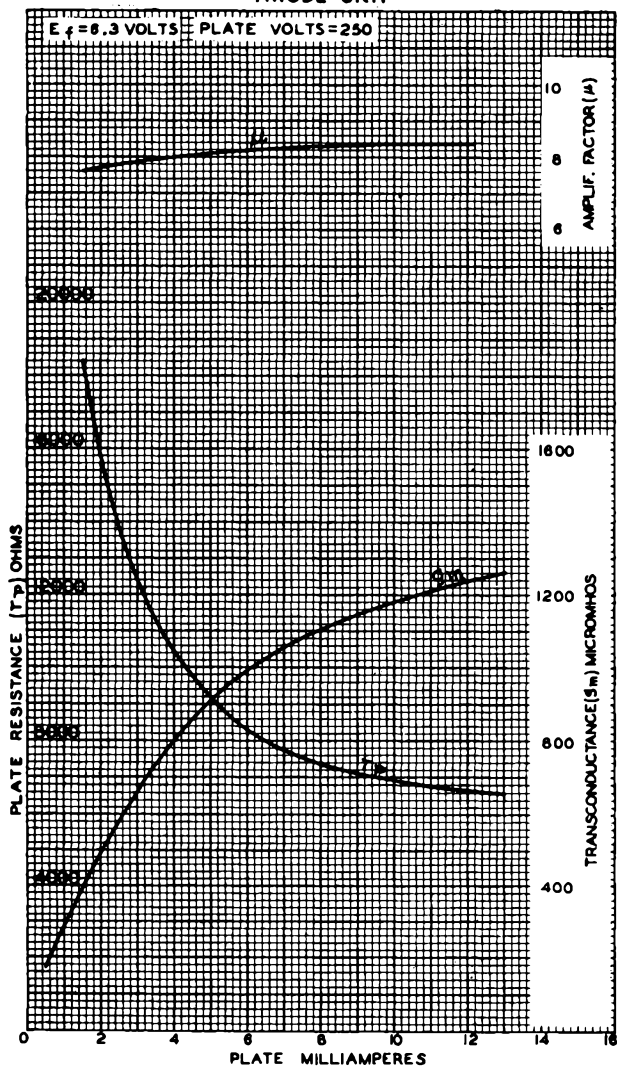
92CM-5107RI

85



85

AVERAGE CHARACTERISTICS TRIODE UNIT



MAY 14, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4748R1



117L7-GT/117M7-GT



117L7-GT

RECTIFIER-BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathodes	
Voltage	117	a-c or d-c volts
Current	0.09	amp.
Maximum Overall Length		3-7/16"
Maximum Seated Height		2-7/8"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 8-Pin	
Pin 1 - Rectifier Cathode		Pin 5 - Amplifier Screen
Pin 2 - Heater		Pin 6 - Rectifier Plate
Pin 3 - Amplifier Plate		Pin 7 - Heater
Pin 4 - Amplifier Grid		Pin 8 - Amplifier Cathode
Mounting Position		Any

BOTTOM VIEW (8A0)

RECTIFIER UNIT (Half-Wave)

Peak Inverse Voltage	350 max.	volts
Peak Plate Current	450 max.	volts
D-C Heater to Cathode Potential	175 max.	volts
<i>With Condenser-Input Filter:</i>		
A-C Plate Voltage (RMS)	117 max.	volts
Total Effective Plate Supply Impedance	15 min.	ohms
D-C Output Current	75 max.	ma.

AMPLIFIER UNIT

Plate Voltage	117 max.	volts
Screen Voltage	117 max.	volts
Plate Dissipation	6.0 max.	watts
Screen Dissipation	1.0 max.	watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate	105	volts
Screen	105	volts
Grid	-5.2	volts
Peak A-F Grid Voltage	5.2	volts
Zero-Sig. Plate Cur.	43	ma.
Max.-Sig. Plate Cur.	43	ma.
Zero-Sig. Screen Cur.	4	ma.
Max.-Sig. Screen Cur.	5.5	ma.
Plate Resistance	17000 approx.	ohms
Transconductance	5300	μmhos
Load Resistance	4000	ohms
Total Harmonic Distortion	5	%
Max.-Sig. Power Output	0.85	watt

It is recommended that the potential difference between heater and cathode of the amplifier unit be kept as low as possible by connecting pin #2 to the side of the line opposite that to which pins #6 & #7 are connected.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

117N7-GT



117N7-GT

RECTIFIER-BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathodes	
Voltage	117	a-c or d-c volts
Current	0.09	amp.
Maximum Overall Length		3-7/16"
Maximum Seated Height		2-7/8"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 8-Pin	
Pin 1 - No Connection		Pin 6 - Amplifier Cathode
Pin 2 - Heater		Pin 7 - Rectifier Plate, Heater
Pin 3 - Amplifier Plate		Pin 8 - Rectifier Cathode
Pin 4 - Amplifier Grid		
Pin 5 - Amplifier Screen		
Mounting Position		Any



BOTTOM VIEW (BAV)

RECTIFIER UNIT (Half-Wave)

Peak Inverse Voltage	350 max.	volts
Peak Plate Current	450 max.	ma.
D-C Heater-Cathode Potential	175 max.	volts
<i>With Condenser-Input Filter:</i>		
A-C Plate Voltage (RMS)	117 max.	volts
Total Effective Plate-Supply Impedance [▲]	15 min.	ohms
D-C Output Current	75 max.	ma.

AMPLIFIER UNIT

Plate Voltage	117 max.	volts
Screen Voltage	117 max.	volts
Plate Dissipation	5.5 max.	watts
Screen Dissipation	1 max.	watt
<i>Typical Operation and Characteristics - Class A₂ Amplifier:</i>		
Plate Voltage	100	volts
Screen Voltage	100	volts
Grid Voltage [□]	-6	volts
Peak A-F Grid Voltage	6	volts
Zero-Signal Plate Current	51	ma.
Zero-Signal Screen Current	5	ma.
Plate Resistance	16000 approx.	ohms
Transconductance	7000	μmhos
Load Resistance	3000	ohms
Total Harmonic Distortion	6	%
Max.-Signal Power Output	1.2	watts

[▲] When a filter-input condenser larger than 40 μf is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

[□] Type of input coupling used should not introduce too much resistance in the grid circuit. With fixed bias, the resistance should not exceed 0.25 megohm; with cathode bias, 1.0 megohm.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



I17P7-GT



I17P7-GT

RECTIFIER—BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathodes	
Voltage	117	a-c or d-c volts
Current	0.090	amp.
Maximum Overall Length		3-7/16"
Maximum Seated Height		2-7/8"
Maximum Diameter		1-5/16"
Bulb		T-9
Base	Intermediate Shell Octal 8-Pin	
Pin 1—No Connection		Pin 6—Amplifier Cathode
Pin 2—Heater		Pin 7—Rectifier Plate, Heater
Pin 3—Amplifier Plate		Pin 8—Rectifier Cathode
Pin 4—Amplifier Grid		
Pin 5—Amplifier Screen		
Mounting Position	Any	



BOTTOM VIEW (8AV)

RECTIFIER UNIT (Half-Wave)

Peak Inverse Voltage	350 max.	volts
Peak Plate Current	450 max.	ma.
D-C Heater to Cathode Potential	175 max.	volts
<i>With Condenser-Input Filter:</i>		
A-C Plate Voltage (RMS)	117 max.	volts
Total Effective Plate-Supply Impedance	15 min.	ohms
D-C Output Current	75 max.	ma.

AMPLIFIER UNIT

Plate Voltage	117 max.	volts
Screen Voltage	117 max.	volts
Plate Dissipation	6.0 max.	watts
Screen Dissipation	1.0 max.	watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate Voltage	105	volts
Screen Voltage	105	volts
Grid Voltage #	-5.2	volts
Peak A-F Grid Voltage	5.2	volts
Zero-Sig. Plate Current	43	ma.
Max.-Sig. Plate Current	43	ma.
Zero-Sig. Screen Current	4	ma.
Max.-Sig. Screen Current	5.5	ma.
Plate Resistance	17000 approx.	ohms
Transconductance	5300	μmhos
Load Resistance	4000	ohms
Total Harmonic Distortion	5.0	%
Max.-Sig. Power Output	0.85	watt

The type of input coupling used should not introduce too much resistance in the grid circuit. With fixed bias, the resistance should not exceed 0.25 megohm; with cathode bias, 0.5 megohm.

Dec. 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

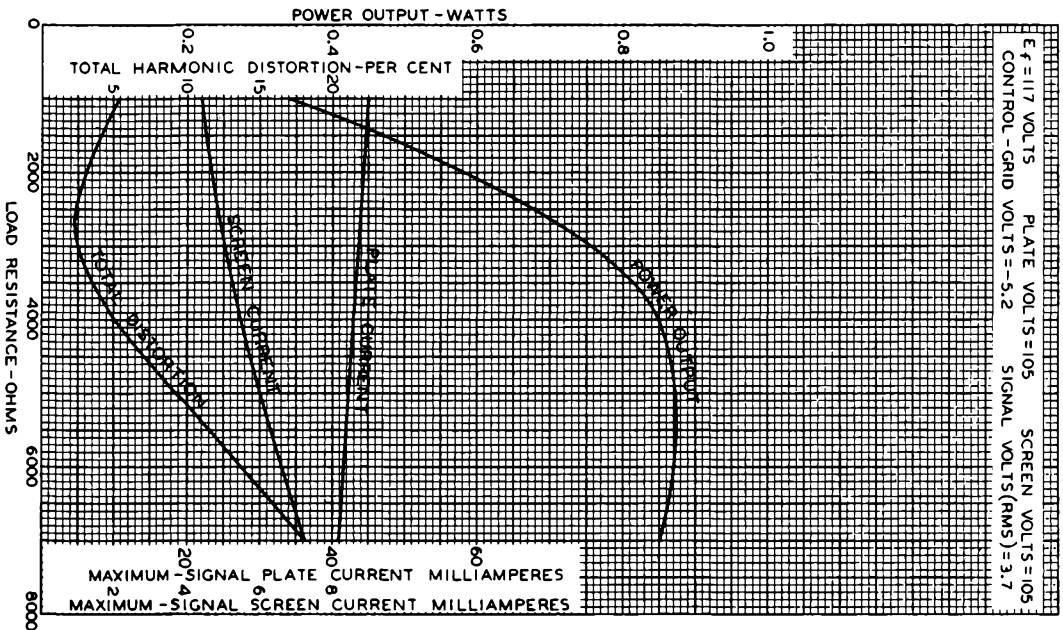


117P7-GT

117P7-GT

OPERATION CHARACTERISTICS

$E_f = 117$ VOLTS PLATE VOLTS = 105 SCREEN VOLTS = 105
CONTROL - GRID VOLTS = -5.2 SIGNAL VOLTS (RMS) = 3.7



NOV. 18, 1941

RCA RADIOELECTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

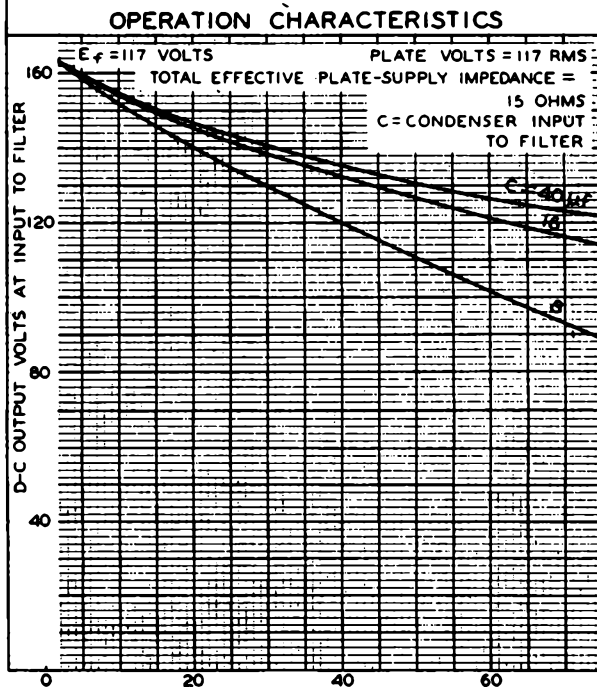
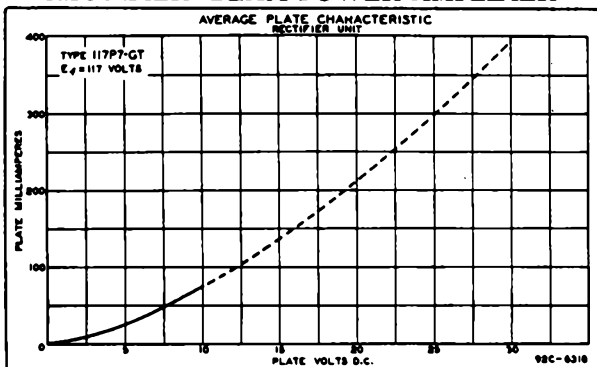
92C-6340

117P7-GT



117P7-GT

RECTIFIER-BEAM POWER AMPLIFIER



Dec. 1, 1941

D-C LOAD MILLIAMPERES
RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6318, 6319



117Z3

117Z3

HALF-WAVE VACUUM RECTIFIER

MINIATURE TYPE

GENERAL DATA

Electrical:

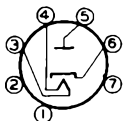
Heater, for Unipotential Cathode:

Voltage.	117	. . . . .	ac or dc volts
Current.	0.04	. . . . .	amp

Mechanical:

Mounting Position.	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length.	2-3/8"
Maximum Diameter	3-4"
Bulb	T-5-1/2
Base	Miniature Button 7-Pin
Basing Designation for BOTTOM VIEW	4CB

Pin 1 - Internal Con.-
Do Not Use
Pin 2 - No Connection
Pin 3 - Heater



Pin 4 - Heater
Pin 5 - Plate
Pin 6 - Cathode
Pin 7 - No Con.-

HALF-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	330 max.	volts	←
PEAK PLATE CURRENT	540 max.	ma	
DC OUTPUT CURRENT.	90 max.	ma	
HOT-SWITCHING TRANSIENT PLATE CURRENT			
For duration of 0.2 second maximum	2.5 max.	amp	
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	175 max.	volts	
Heater positive with respect to cathode.	100 max.	volts	

Typical Operation with Capacitor-Input to Filter:

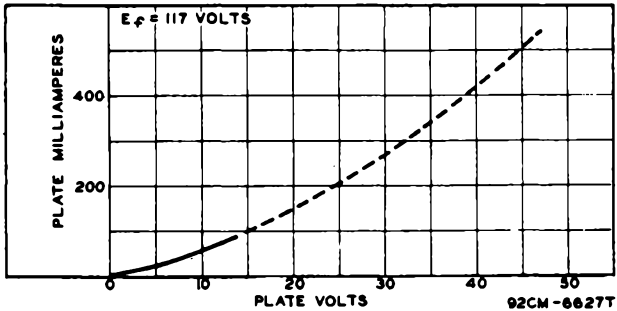
AC Plate-Supply Voltage (RMS).	117	volts	←
Filter-Input Capacitor	30	μf	
Min. Total Effective Plate-Supply Impedance.	20	ohms	
DC Output Current.	90	ma	
DC Output Voltage at Input to Filter (Approx.):			
At half-load current (45 ma.).	130	volts	
At full-load current (90 ma.).	110	volts	
Voltage Regulation (Approx.):			
Half-load to full-load current	20	volts	

← Indicates a change.

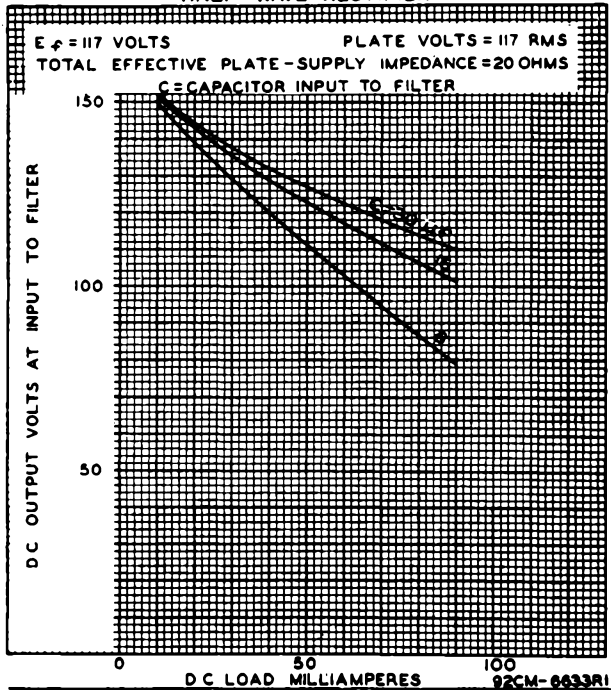
117Z3

RCA
117Z3

AVERAGE PLATE CHARACTERISTIC



OPERATION CHARACTERISTICS
HALF-WAVE RECTIFIER



JULY 3, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6627T-6633R1



117Z4-GT

117Z4-GT

HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

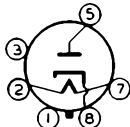
Heater, for Unipotential Cathode:

Voltage.	117	ac or dc volts
Current.	0.04	amp

Mechanical:

Mounting Position.	Any
Maximum Overall Length.	3"
Maximum Seated Length.	2-7/16"
Maximum Diameter.	1-9/32"
Bulb.	T-9
Base.	Intermediate-Shell Octal 6-Pin
Basing Designation for BOTTOM VIEW.	5AA

Pin 1 - No Connection
 Pin 2 - Heater
 Pin 3 - No Connection



Pin 5 - Plate
 Pin 7 - Heater
 Pin 8 - Cathode

HALF-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE	350 max.	volts
PEAK PLATE CURRENT	540 max.	ma
DC OUTPUT CURRENT.	90 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	175 max.	volts
Heater positive with respect to cathode	175 max.	volts

Typical Operation with Capacitor-Input to Filter:

AC Plate-Supply Voltage (RMS).	117	volts
Filter-Input Capacitor	40	μf
Min. Total Effective Plate-Supply Impedance*	30	ohms
DC Output Current.	90	ma

* When a filter-input capacitor larger than 40μf is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

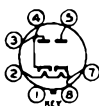


117Z6-GT/G

117Z6-GT/G

HIGH-VACUUM RECTIFIER-DOUBLER

Heater Coated Unipotential Cathodes
 Voltage 117 a-c or d-c volts
 Current 0.075 amp.
 Maximum Overall Length 3-5/16"
 Maximum Seated Height 2-3/4"
 Maximum Diameter 1-5/16"
 Bulb T-9
 Base Intermediate Shell Octal 7-Pin
 Pin 1 - No Connection
 Pin 2 - Heater
 Pin 3 - Plate #2
 Pin 4 - Cathode #2
 Pin 5 - Plate #1
 Pin 7 - Heater
 Pin 8 - Cathode #1
 Mounting Position Any



BOTTOM VIEW (G-7Q)

Maximum Ratings Are Design-Center Values
RECTIFIER OR DOUBLER

Peak Inverse Plate Voltage	700 max. volts
Peak Plate Current per Plate	360 max. ma.
D-C Output Current per Plate	60 max. ma.
D-C Heater-Cathode Potential	350 max. volts

Typical Operation As Half-Wave Rectifier
 with Condenser-Input Filter:^o

A-C Plate Supply Voltage per Plate (RMS)	117	150	235	volts
Filter Input Condenser	40	40	40	μf
Min. Total Effect. Plate-Supply Imped. per Plate	15	40	100	ohms
D-C Output Current per Plate	60	60	60	ma.

Typical Operation As Voltage Doubler:

	Half-Wave	Full-Wave	
A-C Plate Supply Voltage per Plate (RMS)	117	117	volts
Filter Input Condenser	40	40	μf
Min. Total Effect. Plate-Supply Imped. per Plate	30	15	ohms
D-C Output Current	60	60	ma.

^o In half-wave rectifier service, the two units may be used separately or in parallel.

For Typical Rectifier-Doubler Circuits, see Type 2525.

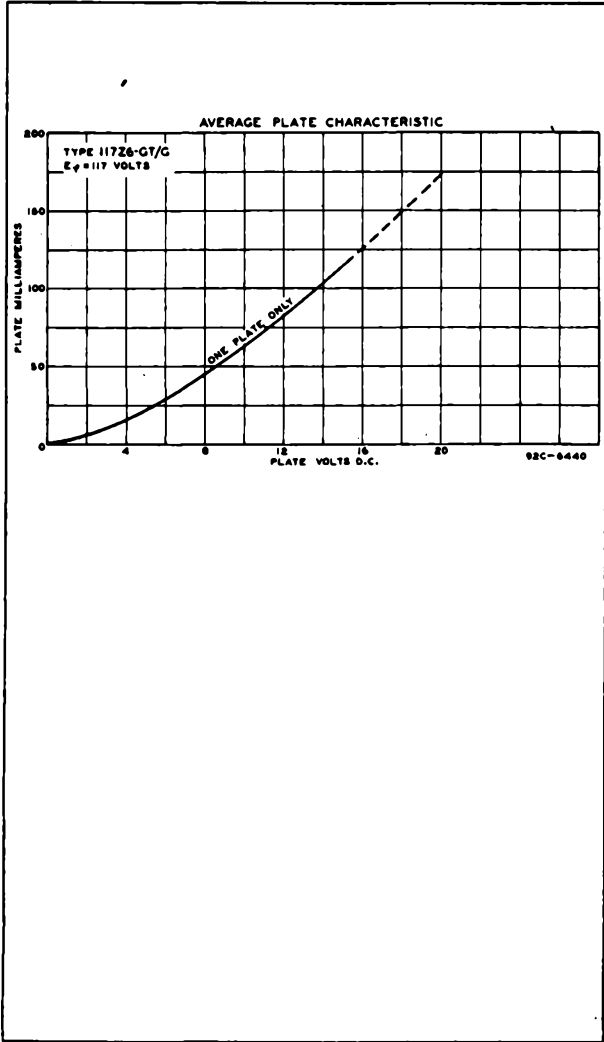
→ Indicates a change.

117Z6-GT/G



117Z6-GT/G

HIGH-VACUUM RECTIFIER-DOUBLER



AUG. 2, 1943

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

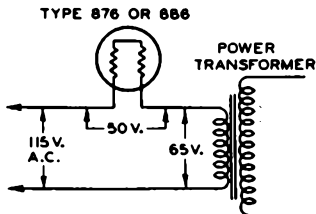
CE-6440

CURRENT REGULATOR
(BALLAST TUBE)

8876
886

Filament	Iron	
	Type 876	Type 886
Maximum Overall Length	8"	8"
Maximum Diameter	2-1/16"	2- 1/16"
Bulb	T-16	T-16
Base	Mogul Screw	Mogul Screw
Operating Conditions:		
Voltage Range	40 to 60	40 to 60 volts
Operating Current	1.7	2.05 amp.
Ambient Temperature	150	150 °F

TYPICAL CIRCUIT CONNECTION FOR TYPE 876 OR 886



NOTE: THESE TUBES OPERATE AT A HIGH BULB TEMPERATURE AND MUST BE SURROUNDED BY A METAL VENTILATING STACK

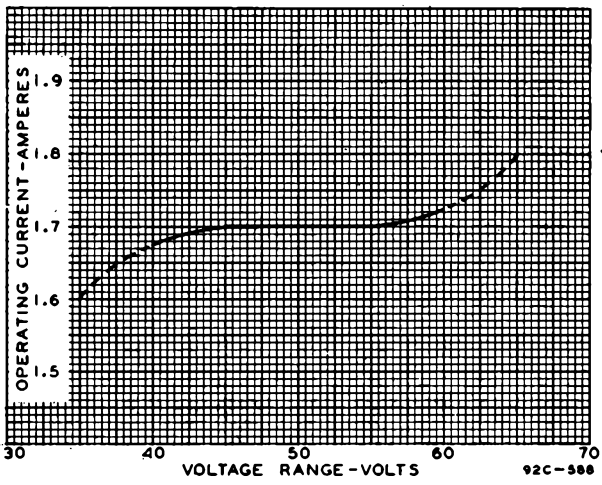
The 876 and 886 are, within their range of operation, constant current regulating devices. Either type may be used in series with the primary of a suitably designed transformer (or in series with a resistive load) to maintain essentially constant input voltage to the primary (or load) over a range of 20 volts variation in line voltage. In other words, these tubes absorb line-voltage variation and maintain the wattage input to the primary of the transformer under load essentially constant. Therefore, the voltage output from the secondary is also essentially constant.

The primary of the transformer should be designed for a voltage input equal to the average line voltage minus 50 volts. The diagram above shows values for a line voltage of 115 volts a.c.

The primary current of the transformer under load should be 1.7 amperes for Type 876 and 2.05 amperes for Type 886. If less than this specified current is drawn, adjustment to the rated value for average line voltage must be made either by means of a shunt resistor across the primary or by an increase in the load on the secondary. If more than the specified current is drawn, two or more of these tubes connected in parallel will be required.

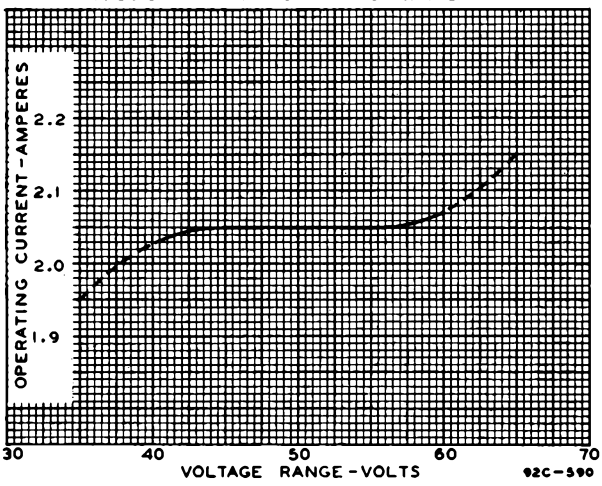
876
886

REGULATION CHARACTERISTIC



RCA-886

REGULATION CHARACTERISTIC





7025

7025

HIGH-MU TWIN TRIODE

9-PIN MINIATURE TYPE

For high-fidelity audio-amplifier applications critical as to noise and hum. In other respects, the 7025 is similar to the 12AX7.

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage	12.6	6.3	ac or dc volts
Current	0.15	0.3	. . . . . amp

Direct Interelectrode Capacitances (Approx.):^o

	Unit No. 1	Unit No. 2	
Grid to plate. . .	1.7	1.7	. . . . . μμf
Grid to cathode and heater . . .	1.6	1.6	. . . . . μμf
Plate to cathode and heater . . .	0.46	0.34	. . . . . μμf

Equivalent-Noise and Hum Voltage (Referenced to Grid):

Values are for Each Unit

Average Value (RMS). 1.8 microvolts
 Measured in "true rms" units under the following conditions:
 heater volts = 6.3 ac (parallel connection), center-tap of
 heater transformer connected to ground, dc plate-supply volts
 = 250, plate load resistor (megohms) = 0.1, cathode resistor
 (ohms) = 2700, cathode-bypass capacitor (μf) = 100, grid
 resistor (ohms) = 0, and amplifier covering frequency range
 between 25 and 10,000 cps.

Maximum Value (RMS). 7 microvolts
 Measured in "true rms" units under the same conditions as
 for "Average Value" except that the cathode resistor is
 unbypassed, and grid resistor (megohms) = 0.05.

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage.	100	250	volts
Grid Voltage	-1	-2	volts
Amplification Factor	100	100	
Plate Resistance (Approx.)	80000	62500	ohms
Transconductance	1250	1600	μmhos
Plate Current	0.5	1.2	ma

Mechanical:

Operating Position . . . . .	. . . . .	Any
Maximum Overall Length . . . . .	. . . . .	2-3/16"
Maximum Seated Length. . . . .	. . . . .	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip) . . . . .	. . . . .	1-9/16" ± 3/32"
Diameter . . . . .	. . . . .	0.750" to 0.875"
Dimensional Outline. . . . .	. . . . .	See General Section
Bulb . . . . .	. . . . .	T6-1/2

^o: See next page.



HIGH-MU TWIN TRIODE

Base Small-Button Noval 9-Pin (JEDEC No.E9-1)
 Basing Designation for BOTTOM VIEW 9A

Pin 1-Plate of
 Unit No.2

Pin 2-Grid of
 Unit No.2

Pin 3-Cathode of
 Unit No.2

Pins 4 & 9-Heater of
 Unit No.2

Pins 5 & 9-Heater of
 Unit No.1



Pin 6-Plate of
 Unit No.1

Pin 7-Grid of
 Unit No.1

Pin 8-Cathode of
 Unit No.1

Pin 9-Heater
 Mid-Tap

AMPLIFIER — Class A₁

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE. 330 max. volts

GRID VOLTAGE:

Negative-bias value. 55 max. volts

Positive-bias value. 0 max. volts

PLATE DISSIPATION. 1.2 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 200 max. volts

Heater positive with respect to cathode. 200[▲] max. volts

Typical Operation as Resistance-Coupled Amplifier (Each Unit):

See RESISTANCE-COUPLED AMPLIFIER CHART No. 25
 at front of Receiving Tube Section

[○] Without external shield.

[▲] The dc component must not exceed 100 volts.

OPERATING CONSIDERATIONS

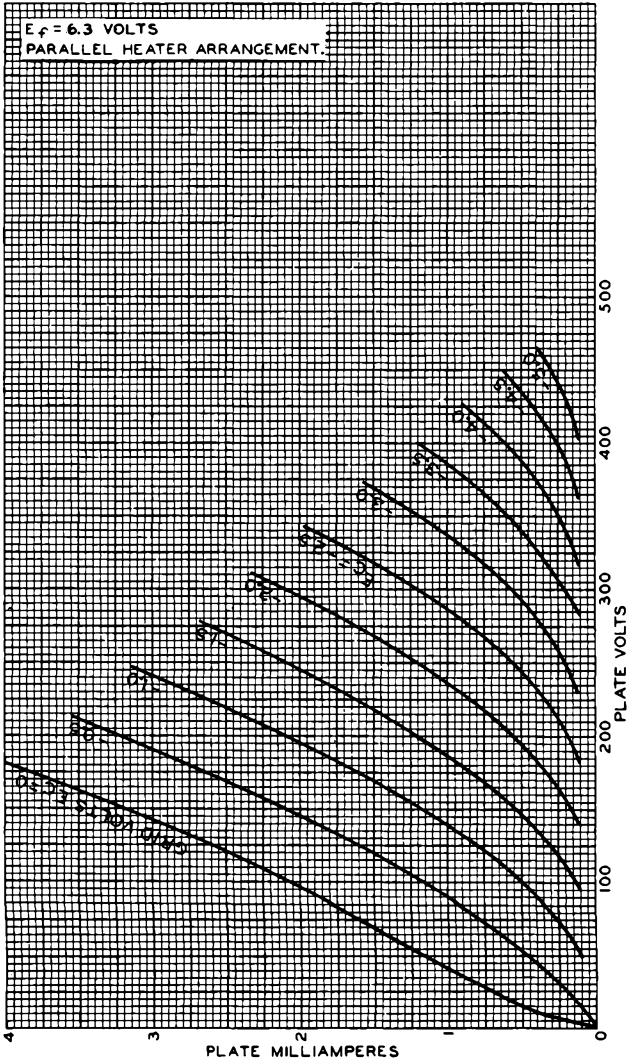
Parallel heater arrangement is recommended for use in high-gain, resistance-coupled-amplifier applications such as in the preamplifier stages of phonographs, microphones, and tape recorders. With closely paired, electrostatically shielded heater leads, a hum-balance control is unnecessary when the center-tap of the heater transformer is connected to ground. In applications where the heater-transformer winding does not have a center-tap, a 100-ohm hum-balancing potentiometer should be connected across the heater leads with the slider connected to ground.



7025

AVERAGE PLATE CHARACTERISTICS EACH UNIT

7025

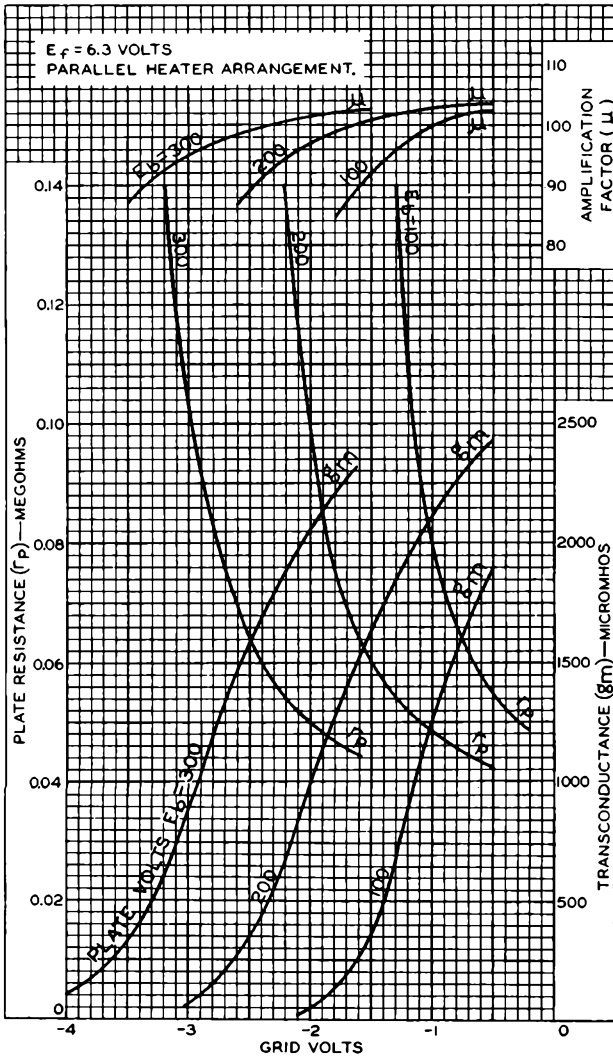


7025



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AVERAGE CHARACTERISTICS EACH UNIT





7199

7199

**MEDIUM-MU TRIODE—
SHARP-CUTOFF PENTODE**

9-PIN MINIATURE TYPE

*For high-fidelity audio-amplifier applications critical as to noise and hum***GENERAL DATA****Electrical:**

Heater, for Unipotential Cathodes:

Voltage. 6.3 ± 10% ac or dc volts

Current. 0.45 amp

Direct Interelectrode Capacitances:^o*Triode Unit:*

Grid to plate. 2 μf

Grid to cathode and heater 2.3 μf

Plate to cathode and heater. 0.3 μf

Pentode Unit:

Grid No.1 to plate 0.06 max. μf

Grid No.1 to cathode & internal shield & grid No.3, grid No.2, and heater 5 μf

Plate to cathode & internal shield & grid No.3, grid No.2, and heater 2 μf

Equivalent-Hum and Noise Voltage (Referenced to Grid):*Triode Unit*

Median Value (RMS) 10 microvolts

Maximum Value (RMS). 150 microvolts

Measured in "true rms" units under the following conditions: heater volts = 6.3 ac, center-tap of heater transformer connected to ground, plate-supply volts = 250, plate load resistor (megohms) = 0.1, cathode resistor (ohms) = 1500, grid resistor (megohms) = 0.05, and amplifier covering frequency range between 25 and 10,000 cps.

Pentode Unit

Median Value (RMS) 35 microvolts

Maximum Value (RMS). 100 microvolts

Measured in "true rms" units under the following conditions: heater volts = 6.3 ac, center-tap of heater transformer connected to ground, plate-supply volts = 250, plate-load resistor (megohms) = 0.1, grid-No.2 supply volts = 250, grid-No.2 resistor (megohms) = 0.33, grid-No.2-bypass capacitor (μf) = 0.22, cathode resistor (ohms) = 1200, grid-No.1 resistor (megohms) = 0.05, and amplifier covering frequency range between 25 and 10,000 cps.

Characteristics, Class A₁ Amplifier:

	<i>Triode Unit</i>	<i>Pentode Unit</i>		
Plate-Supply Voltage	215	100	220	volts

^o: See next page.



MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

	Triode Unit	Pentode Unit	
Grid-No.2 Supply voltage . . .	-	50 130	volts
Grid-No.1 Voltage	-8.5	- -	volts
Cathode Resistor	-	1000 62	ohms
Amplification Factor	17	- -	
Plate Resistance (Approx.) . .	0.0081	1 0.4	megohm
Transconductance	2100	1500 7000	μ mhos
Plate Current	9	1.1 12.5	ma
Grid-No.2 Current	-	0.35 3.5	ma
Grid-No.1 Voltage (Approx.) for plate μ a = 10	-40	-4 -	volts

Mechanical:

Operating Position . . . . .	. . . . . Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" \pm 3/32"
Diameter	0.750" to 0.875"
Dimensional Outline	See General Section
Bulb	T6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW . . . . .	. . . . . 9JT

Pin 1 - Triode
Plate
Pin 2 - Pentode
Plate
Pin 3 - Pentode
Grid No.2
Pin 4 - Heater
Pin 5 - Heater



Pin 6 - Pentode
Cathode,
Grid No.3,
Internal
Shield
Pin 7 - Pentode
Grid No.1
Pin 8 - Triode
Cathode
Pin 9 - Triode
Grid

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

	Triode Unit	Pentode Unit	
PLATE VOLTAGE	330 max.	330 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE	-	330 max.	volts
GRID-No.2 VOLTAGE	-	See Grid-No.2 Input	
<i>Rating Chart at front of Receiving Tube Section</i>			
GRID-No.1 (CONTROL-GRID) VOLTAGE: Positive-bias value	0 max.	0 max.	volts

0: See next page.



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MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

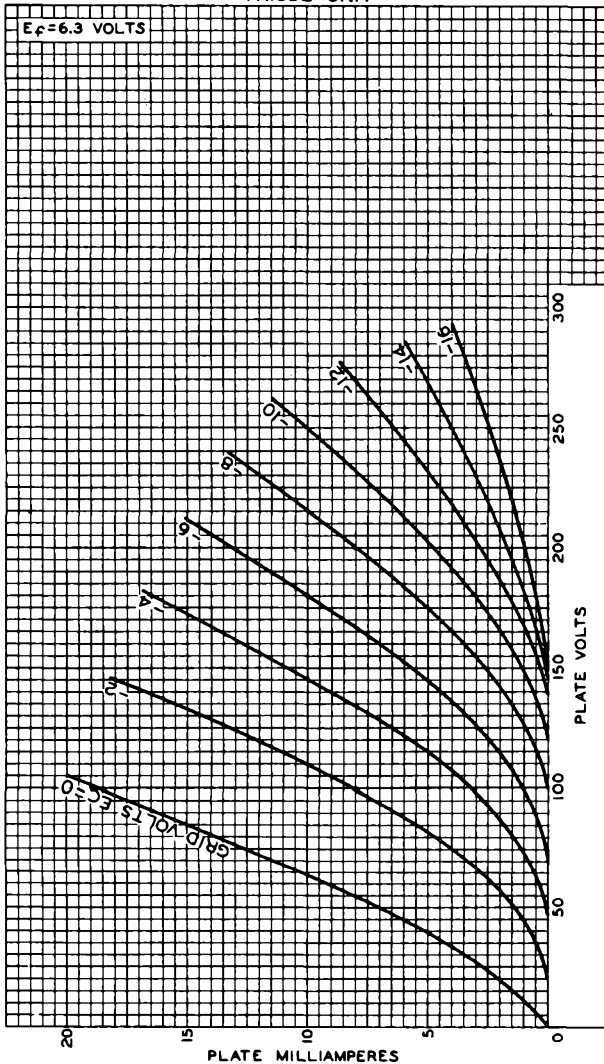
	Triode Unit	Pentode Unit	
GRID-NO.2 INPUT:			
For grid-No.2 voltages up to 165 volts.	-	0.6 max.	watt
For grid-No.2 voltages between 165 and 330 volts.	-	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>	
PLATE DISSIPATION.	2.4 max.	3 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	200 [▲] max.	volts
Maximum Circuit Values:			
	Triode Unit	Pentode Unit	
Grid-No.1-Circuit Resistance:*			
For fixed-bias operation.	0.5 max.	0.25 max.	megohm
For cathode-bias operation.	1 max.	1 max.	megohm
[○] Without external shield. [▲] The dc component must not exceed 100 volts. [*] If either unit is operated at maximum rated conditions, grid-no.1- circuit resistances for both units should not exceed the stated values.			
DEFINITIONS			
<i>Median.</i> That value in a series such that half of the tubes in the series are on one side of it, and half on the other.			

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AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

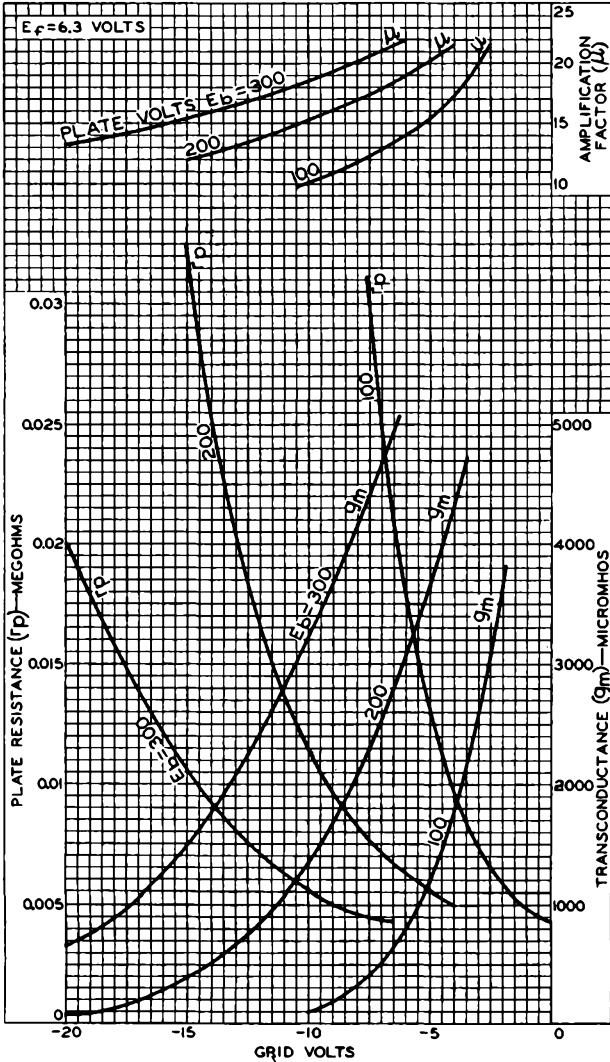




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AVERAGE CHARACTERISTICS TRIODE UNIT

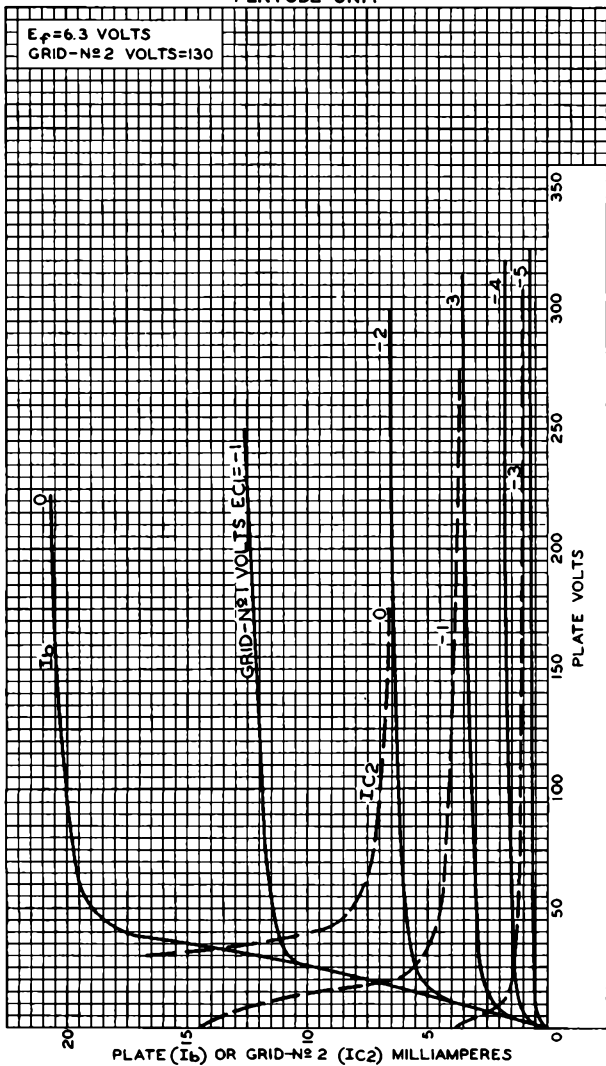


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AVERAGE CHARACTERISTICS PENTODE UNIT

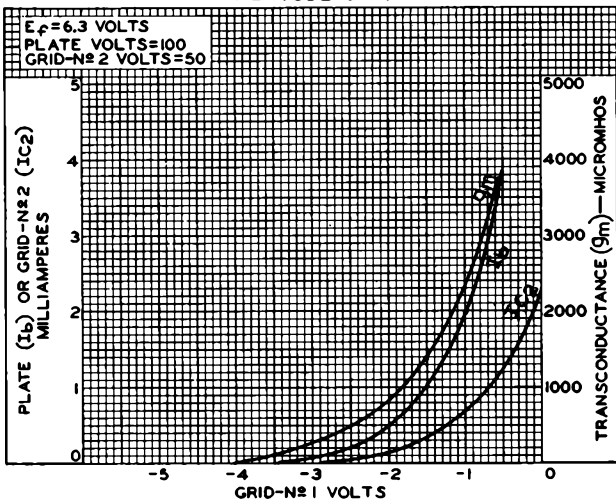




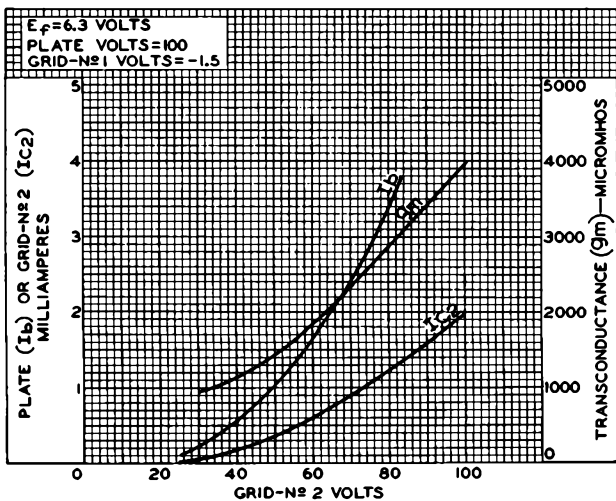
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AVERAGE CHARACTERISTICS PENTODE UNIT



92CS-9702



92CS-9703

**RCA TUBE
HANDBOOK
HB-3**

**SEMICONDUCTOR
DEVICE
SECTION**



In this section data are given for semiconductor devices such as crystal diodes and transistors. These electron devices depend for their functioning on the flow of electrons in a solid—a semiconductor.

*For further Technical Information, write to
Commercial Engineering, Tube Department,
Radio Corporation of America, Harrison, N. J.*



TRANSISTORS

Transistors are a new form of electron device. They can perform many of the functions of an electron tube and, in addition, can do some things better and more efficiently than electron tubes. Unlike electron tubes which depend for their functioning on the flow of electrons through a vacuum, a gas, or a vapor, transistors make use of the flow of electrons in a solid — a semiconductor.

A semiconductor is a material having a conductivity lower than that of metals but higher than that of insulators. There are many varieties of semiconductors, but the one employed for the transistors described in this section is germanium. Germanium in its very purest state behaves like an insulator, but its conductivity can be increased by the addition of exact but almost infinitesimal amounts of certain impurities. Peculiarly, the manner in which a germanium crystal conducts can be changed by the choice of the impurity. Thus, by the addition of the proper amount of certain impurities to pure germanium, its conductivity is increased because a surplus of electrons which can migrate freely through the crystal is provided. A conducting germanium crystal so made is identified as *n*-type because it depends on negative particles of electricity, electrons, for conduction.

On the other hand, the addition of other impurities provides a deficiency of electrons which effectively behave like positive particles of electricity. This deficiency of electrons leaves vacancies or holes in the crystal structure. These holes which are free to migrate can carry current but in a direction opposite to that of the *n*-type crystal. Because these carriers of the conduction current are positive in nature, a germanium crystal of this type is identified as *p*-type.

It should be noted that whereas electron tubes depend ordinarily on electrons for conduction, transistors not only make use of electrons but also of holes for obtaining conduction.

The transistors described in this section make use of both kinds of conduction and employ two different types of structures. These two types of structures are identified as "point-contact" and "junction".

Fig.1 shows the structure of a point-contact transistor. It consists of a crystal of *n*-type germanium having three electrical contacts. Two of these are point contacts and are known as the emitter and collector. A third, the



TRANSISTORS

base, makes area contact with the germanium crystal. The complete assembly is encased in plastic to provide ruggedness and freedom from atmospheric contaminants.

Fig. 1 also shows the point-contact transistor connected in a simple circuit in which the base connection serves as the common return for the input circuit and the output circuit. The input circuit on the left is completed through the battery, the emitter, and the germanium crystal to the base connection. When a positive voltage is applied to the emitter, electrons will be drawn from the crystal into the emitter and thus leave holes in the crystal structure. Under the influence of the negative field of the collector, these holes flow to the collector and thereby increase the collector current appreciably. Or as is sometimes stated, the emitter electrode injects holes into the germanium crystal. Holes near the collector allow electrons to pass into the crystal. Some of these electrons neutralize the holes; others flow to the base connection and thus complete the circuit.

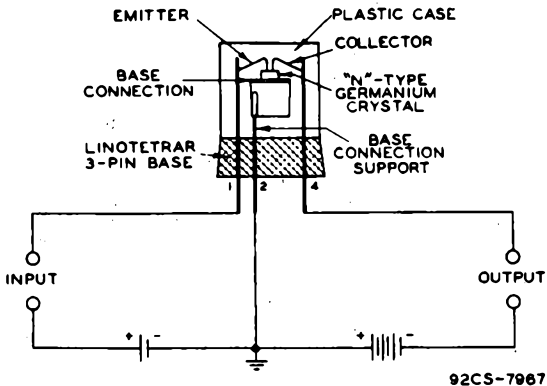


Fig. 1 - Diagrammatic Sketch Showing Structural Arrangement of Type 2N32 or Type 2N33 with Associated Simple Circuit.

If the assumption is made that every unit of hole current which leaves the emitter reaches the collector, it follows that a small change in emitter current will result in an equivalent change in collector current, and consequently produce a current amplification factor of one. The current



TRANSISTORS

amplification factor or "alpha" of a transistor is defined as the ratio of change in collector current to a change in emitter current when collector voltage is maintained constant. In point-contact transistors "alpha" is greater than unity; in junction-type transistors, it is less than but approaches unity.

If the germanium crystal employed in Fig.1 is of the p-type, a negative voltage is applied to the emitter and holes will be drawn from the crystal into the emitter and thus leave an excess of electrons in the crystal structure. Under the influence of the positive field of the collector, these electrons flow through the crystal to the collector. In general, the p-type germanium crystal has characteristics similar to the n-type except that in operation all battery polarities are reversed.

Fig.2 shows the structure of a junction transistor of the n-p-n type. It is composed of a wafer of p-type germanium between two smaller layers of n-type germanium. Low-resistance connections are made to the n-layers, one of which serves as the emitter and the other as the collector. A third low-resistance connection to the p-layer is the base connection. The complete assembly is encased in plastic to provide ruggedness and freedom from atmospheric contaminants.

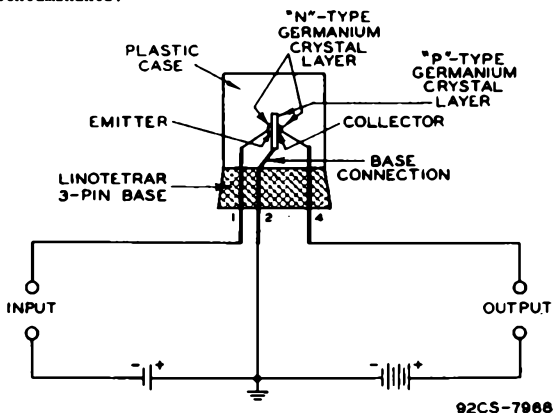


Fig.2 - Diagrammatic Sketch Showing Structural Arrangement of Type 2N35 with Associated Simple Circuit. For Illustration Purposes, the Crystal Assembly is Rotated 90° Within the Plastic Case.



TRANSISTORS

The principle of operation of the junction transistor is somewhat different from that of the point-contact transistor. In the $n-p-n$ junction transistor, electrons from the n -layer diffuse through the p -layer and are attracted to the collector. The p -layer has a surplus of holes. Because the p -layer is very thin, most of the electrons entering the base region from the emitter will reach the collector region without recombining (neutralizing) the holes. Practically all of the electrons leaving the emitter reach the collector, thus resulting in a current amplification factor approaching unity.

The action of the $p-n-p$ type of junction transistor is similar to that of the $n-p-n$ type except that the polarities of the battery voltages are reversed and conduction is caused by holes instead of electrons.

Transistors are essentially low-impedance devices, that is, they deal with current changes rather than voltage changes. They are small in size and the power requirements for their operation are extremely small. In addition, they operate instantaneously on application of voltages to the electrodes.

The point-contact transistor has a current amplification factor greater than unity. This feature contributes to its usefulness in oscillator and triggering applications. In addition, the point-contact transistor can be operated at relatively high frequencies. Because of this feature, it has considerable application in switching circuits and in radio circuits such as intermediate-frequency amplifiers, radio-frequency amplifiers, and radio-frequency oscillators.

The junction transistor has a current amplification factor approaching unity. This characteristic contributes to the stability of the junction transistor even under short-circuit conditions. It has a high operating power gain and can operate with extremely low values of input power — features which are of primary importance in oscillator and amplifier applications in the audio-frequency and low-frequency ranges.



TENTATIVE DEFINITIONS of Semiconductor-Device Terms

Small-Signal Current Gain (Current Transfer Ratio). The quotient of the change of output current with ac output circuit shorted divided by the change in input current producing the change in output current. The current components are understood to be small enough so that linear relations hold between them.

Large-Signal DC Current Gain. The quotient of the dc output current with the dc output circuit shorted divided by the dc input current producing the dc output current.

Circuit-Stability Factor. The quotient of the change of dc collector current divided by the change in collector saturation current producing the change in dc collector current.

Collector Saturation Current. The temperature-sensitive dc collector current that flows when a dc collector-to-base voltage greater than -0.2 volt is applied with emitter circuit open.

Class A Amplifier. An amplifier in which the bias of the input electrode and the alternating input signal are such that output current flows at all times.

Class B Amplifier. An amplifier in which the bias of the input electrode is such that the output current is approximately zero when no alternating input signal is applied, and such that when an alternating input signal is applied, the output current flows approximately one-half cycle.

Collector Transition Capacitance. The capacitance across the collector-to-base transition region. (A transition region is a region between two homogeneous semiconductor regions, in which the impurity concentration changes).

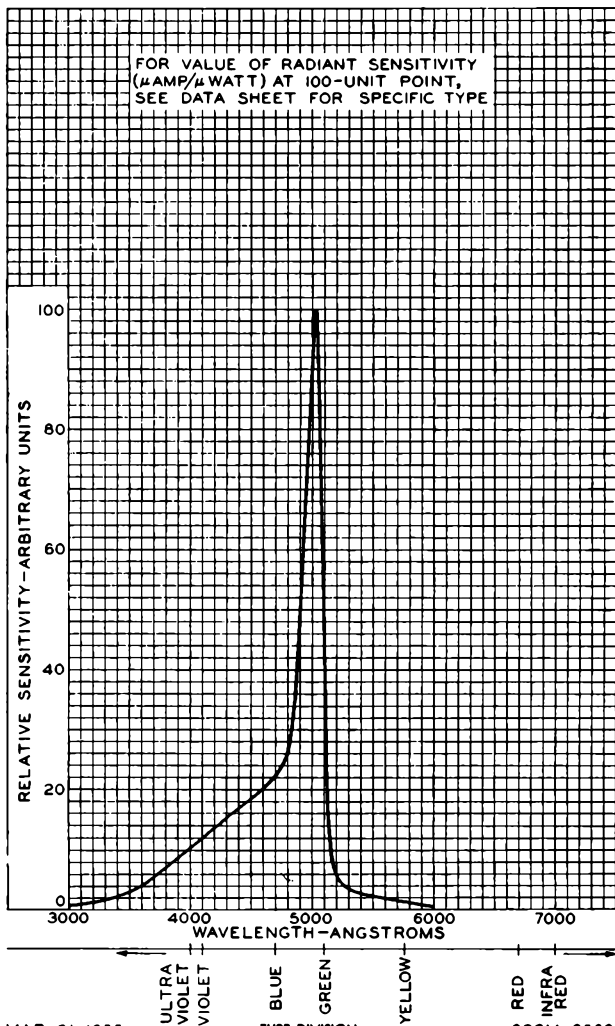
Unilateralization. Unilateralization is a special case of neutralization in that the feedback parameters are completely balanced out. In the case of transistors, these feedback parameters include a resistive component in addition to a capacitive component. Unilateralization changes a bilateral network into a unilateral network.

Alpha-Cutoff Frequency. Frequency at which the forward current gain drops to 0.707 times its low-frequency (1-kc) value.



SPECTRAL SENSITIVITY CHARACTERISTIC OF PHOTOCONDUCTIVE CELL HAVING S-12 RESPONSE

FOR EQUAL VALUES OF RADIANT FLUX AT ALL WAVELENGTHS



MAR. 31, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8569



PRICES[□]
OF SEMICONDUCTOR DEVICES

Type	Schedule D [•]	Schedule U [▲]
1N34-A.....	\$ 2.00	-
1N38-A.....	-	\$ 2.55
1N54-A.....	-	1.45
1N55-A.....	-	4.70
1N56-A.....	-	1.45
1N58-A.....	-	1.80
2N32.....	-	15.40
2N33.....	-	23.00
2N34.....	-	13.40
2N35.....	-	18.40

□ This price list applies only in the United States of America and is subject to change without notice. All prices are exclusive of all Federal, State and local excise, sales, and similar taxes.

▲ Schedule U shows user prices for types priced for distribution through other than dealer and service channels.

• Schedule D shows list prices for types priced for distribution through dealer and service channels.

INFORMATION ON PURCHASING ABOVE TYPES

Information as to where *RCA Semiconductor Devices* can be purchased may be obtained from our regional office nearest you or from Tube Department, Radio Corporation of America, Harrison, N.J.

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

**SEMICONDUCTOR
DEVICE PRICES**



IN34-A

IN34-A CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A general-purpose type intended for low-power rectification in applications such as isolating, clipping, and switching circuits, as well as in certain meter circuits.

DATA

General:

Maximum Envelope Length (including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2"
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	60 max.	volts
FORWARD CURRENT:		
Peak	150 max.	ma
Average*	50 max.	ma
FAULT CURRENT [▲] (For duration of 1 sec. max.)	500 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	5	ma
Maximum Average Inverse Current:		
At dc volts = -10	30	μamp
At dc volts = -50	500	μamp
Minimum Peak Inverse Voltage for zero-dynamic resistance	75	volts
Shunt Capacitance (Approx.) - Measured Between Studs	1	μmf

* Averaged over one conduction cycle.

▲ Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

AUG. 1, 1953

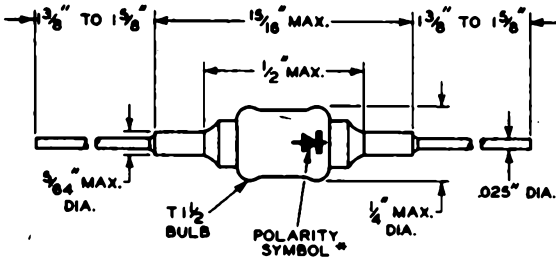
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

IN34-A

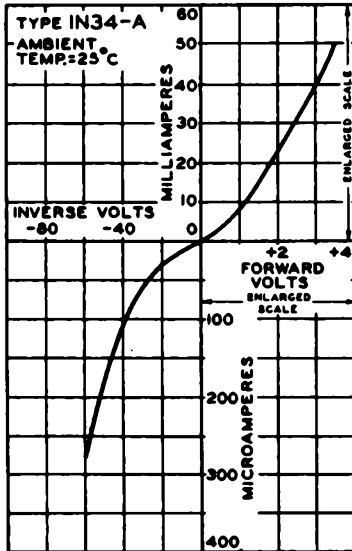


IN34-A CRYSTAL DIODE



*ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT AS INDICATED BY DC AMMETER. 92CS-7980

STATIC CHARACTERISTIC



92CS-7976T



1N38-A

CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A large-signal type having a high peak inverse voltage rating and intended for use in electronic computers and clamping circuits.

1N38-A

DATA

General:

Maximum Envelope Length (including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	100 max.	volts
FORWARD CURRENT:		
Peak	150 max.	ma
Average	50 max.	ma
FAULT CURRENT* (For duration of 1 sec. max.)	500 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	4	ma
Maximum Average Inverse Current:		
At dc volts = -3	5	µamp
At dc volts = -100	500	µamp
Minimum Peak Inverse Voltage for zero dynamic resistance	120	volts
Shunt Capacitance (Approx.) - Measured Between Studs	1	µf

* Averaged over one conduction cycle.

▲ Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

DIMENSIONAL OUTLINE

for Type 1N38-A is the same as that shown for Type 1N34-A

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

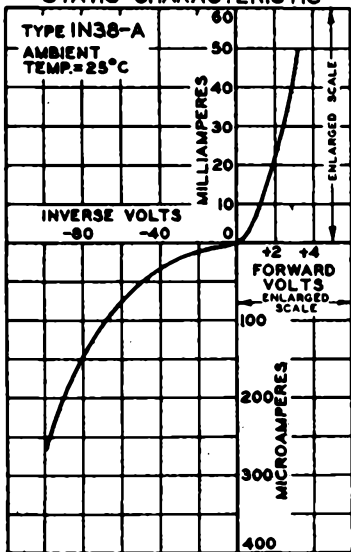
TENTATIVE DATA

IN38-A



IN38-A CRYSTAL DIODE

STATIC CHARACTERISTIC



92CS-8022T

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8022T



IN54-A

IN54-A

CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A high-back-resistance type intended for use in clipping circuits, high-impedance high-voltage probes, dc restorer circuits, and high-impedance detector circuits.

DATA

General:

Maximum Envelope Length (Including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (Including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	50 max.	volts
FORWARD CURRENT:		
Peak	150 max.	ma
Average ^a	50 max.	ma
FAULT CURRENT ^a (For duration of 1 sec. max.)	500 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	5	ma
Maximum Average Inverse Current:		
At dc volts = -10	7	μamp
At dc volts = -50	100	μamp
Minimum Peak Inverse Voltage for zero dynamic resistance	75	volts
Shunt Capacitance (Approx.) Measured Between Studs	1	μf

^a Averaged over one conduction cycle.

^a Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

DIMENSIONAL OUTLINE

for Type IN54-A is the same as that shown for Type 1N34-A

AUG. 1, 1953

TUBE DEPARTMENT

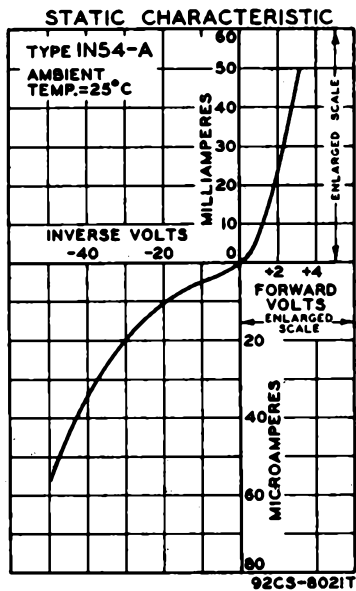
TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

IN54-A



IN54-A CRYSTAL DIODE



AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8021T



IN55-A

IN55-A

CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A large-signal type having a high peak inverse voltage rating and intended for use in electronic computers, clamping circuits, dc restorer circuits, and in high-voltage probes.

DATA

General:

Maximum Envelope Length (including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	150 max.	volts
FORWARD CURRENT:		
Peak	150 max.	ma
Average	50 max.	ma
FAULT CURRENT [▲] (For duration of 1 sec. max.)	500 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	4	ma
Maximum Average Inverse Current:		
At dc volts = -150	500	μamp
Minimum Peak Inverse Voltage for zero dynamic resistance	170	volts
Shunt Capacitance (Approx.)—		
Measured Between Studs	1	μf

[•] Averaged over one conduction cycle.

[▲] Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

DIMENSIONAL OUTLINE

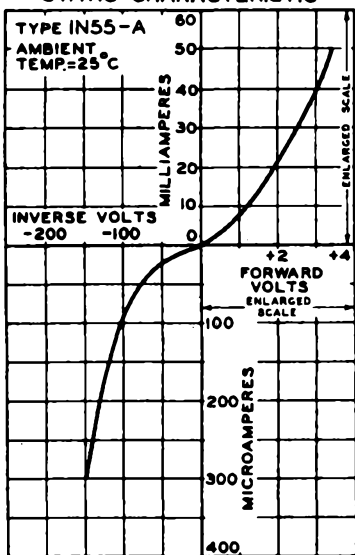
for Type 1N55-A is the same as that shown for Type 1N34-A

IN55-A



IN55-A CRYSTAL DIODE

STATIC CHARACTERISTIC



92CS-7977T

AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7977T



1N56-A

CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A high-conduction type featuring exceptionally low dynamic impedance and intended for limiter service in FM receivers.

1N56-A

DATA

General:

Maximum Envelope Length (Including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (Including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	40 max.	volts
FORWARD CURRENT:		
Peak	200 max.	ma
Average*	60 max.	ma
FAULT CURRENT [▲] (For duration of 1 sec. max.)	1000 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	15	ma
Maximum Average Inverse Current:		
At dc volts = -30	300	μamp
Minimum Peak Inverse Voltage for zero dynamic resistance	50	volts
Shunt Capacitance (Approx.) - Measured Between Studs)	1	μf

* Averaged over one conduction cycle.

▲ Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

DIMENSIONAL OUTLINE

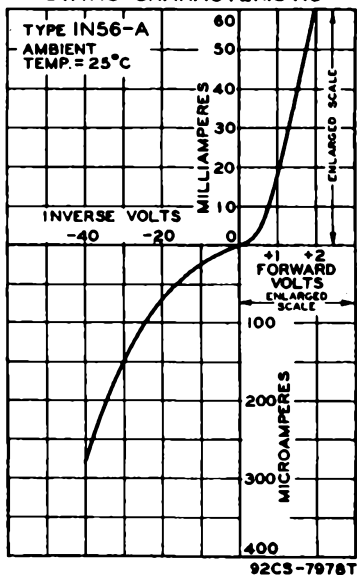
for Type 1N56-A is the same as that shown for Type 1N34-A

IN56-A



IN56-A CRYSTAL DIODE

STATIC CHARACTERISTIC



AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7978T



IN58-A

CRYSTAL DIODE

GERMANIUM POINT-CONTACT TYPE

A large-signal type having a high peak inverse voltage rating and intended for use in electronic computers, clamping circuits, dc restorer circuits, and in high-voltage probes.

IN58-A

DATA

General:

Maximum Envelope Length (including studs)	15/16"
Maximum Envelope Diameter	1/4"
Maximum Overall Length (including flexible leads)	4-3/16"
Leads, Flexible	2
Length	1-3/8" to 1-5/8"
Diameter	0.025"
Envelope, Glass	T-1-1/2
Operating Position	Any

RECTIFIER SERVICE

For frequencies of 25 cps and above

Maximum Ratings, Absolute Values:

PEAK INVERSE VOLTAGE	100 max.	volts
FORWARD CURRENT:		
Peak	150 max.	ma
Average*	50 max.	ma
FAULT CURRENT [▲] (For duration of 1 sec. max.)	500 max.	ma
AMBIENT TEMPERATURE RANGE	-50 to +75	°C

Characteristics at Ambient Temperature of 25°C:

Minimum Forward Current at dc volts = 1	4	ma
Maximum Average Inverse Current:		
At dc volts = -100	600	μamp
Minimum Peak Inverse Voltage for zero dynamic resistance	120	volts
Shunt Capacitance (Approx.)- Measured Between Studs	1	μmf

* Averaged over one conduction cycle.

▲ Maximum fault current is the highest value of current that should be permitted to flow through the diode under a fault condition such as load short circuit.

DIMENSIONAL OUTLINE

for Type 1N58-A is the same as that shown for Type 1N34-A

AUG. 1, 1953

TUBE DEPARTMENT

TENTATIVE DATA

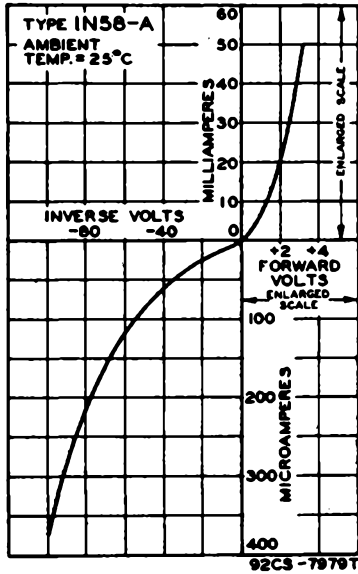
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

IN58-A



IN58-A CRYSTAL DIODE

STATIC CHARACTERISTIC



AUG. 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7979T



INI763

INI763

SILICON RECTIFIER

DIFFUSED-JUNCTION TYPE

For use in power supplies of color and black-and-white television receivers, radio receivers, phonographs, and other electronic equipment

GENERAL DATA

Mechanical:

Operating Position.	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter.	0.400"
Case.	Metal
Envelope Seals.	Hermetic
Leads, Flexible	2
Minimum length.	1.250"
Diameter.	0.027" to 0.035"

RECTIFIER SERVICE

Maximum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps and with capacitor input to filter

PEAK INVERSE VOLTAGE.	400 max.	volts
RMS SUPPLY VOLTAGE.	140 max.	volts
FORWARD CURRENT:		
<i>At ambient temperatures . . . Up to 75° C Above 75° C</i>		
DC.	0.5 max.	amp
Peak, recurrent	5 max.	amp
Surge, for a "turn-on" transient of 2-milli-seconds duration.	35 max.	amp
		} See Rating Chart
AMBIENT TEMPERATURE (During operation).	100 max.	°C
STORAGE-TEMPERATURE RANGE	-65 to +150	°C

Characteristics:

At ambient temperature of 25° C

Maximum Instantaneous Forward Voltage at instantaneous forward amperes = 15	3	volts
Maximum Reverse Current at peak inverse volts = 400.	100	µa

At ambient temperature of 100° C

Maximum Reverse Current at peak inverse volts = 400.	1	ma
--	---	----

Typical Operation:

As half-wave rectifier

RMS Supply Voltage.	117	117	117	volts
Filter-Input Capacitor (C).	50	100	250	µf
Surge-Limiting Resistance [▲]	5.6	5.6	5.6	ohms

[▲]: See next page.

INI763



INI763

SILICON RECTIFIER

DC Output Voltage at input to filter (Approx.):				
At half-load ma. = 250. . . .	126	146	150	volts
At full-load ma. = 500. . . .	100	132	139	volts
Voltage Regulation (Approx.):				
Half-load to full-load				
current	26	14	11	volts
<i>As half-wave voltage doubler</i>				
RMS Supply Voltage.	117	117	117	volts
Filter-Input Capacitor (C). . .	100	250	250	μ f
Surge-Limiting Resistance [▲] . . .	5.6	5.6	5.6	ohms
DC Output Voltage at input to filter (Approx.):				
At half-load ma. = 250. . . .	273	288	288	volts
At full-load ma. = 500. . . .	235	262	262	volts
Voltage Regulation (Approx.):				
Half-load to full-load				
current	38	26	26	volts
<i>As full-wave voltage doubler</i>				
RMS Supply Voltage.	117	117	117	volts
Filter-Input Capacitor (C). . .	50	100	250	μ f
Surge-Limiting Resistance [▲] . . .	5.6	5.6	5.6	ohms
DC Output Voltage at input to filter (Approx.):				
At half-load ma. = 250. . . .	260	280	290	volts
At full-load ma. = 500. . . .	220	260	275	volts
Voltage Regulation (Approx.):				
Half-load to full-load				
current	40	20	15	volts

[▲] The transformer series resistance or other resistance in the line may be deducted from the value shown.

OPERATING CONSIDERATIONS

A surge-limiting resistor should always be connected in series with the rectifier. The resistance value must be sufficient to limit the peak and surge currents to the value specified under the maximum ratings.

The flexible leads of the INI763 are usually soldered to the circuit elements. The rectifier, however, may be mounted in a holder of the fuse-clip type. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.

When dip soldering is employed in the assembly of printed circuitry using the INI763, the temperature of the solder should



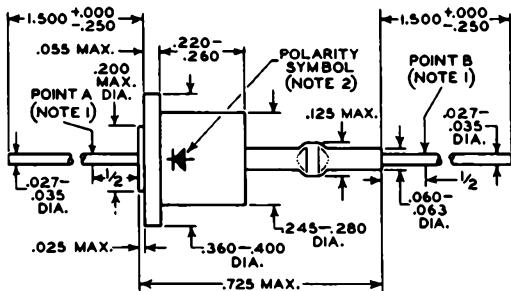
INI763

INI763

SILICON RECTIFIER

not exceed 255° C for a maximum immersion period of 10 seconds. Furthermore, the leads should not be dip soldered beyond points A and B indicated on the *Dimensional Outline*.

Because the metal case of the INI763 is operated at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the metal case. It is recommended that the rectifier be mounted on the underside of the chassis.



DIMENSIONS IN INCHES

92CS-9726R1

- NOTE 1: DO NOT DIP SOLDER BEYOND POINTS A AND B.
NOTE 2: ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT FLOW AS INDICATED BY DC AMMETER.

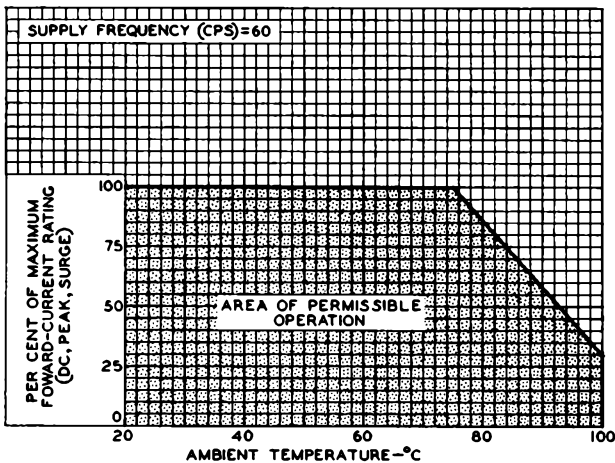
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INI763



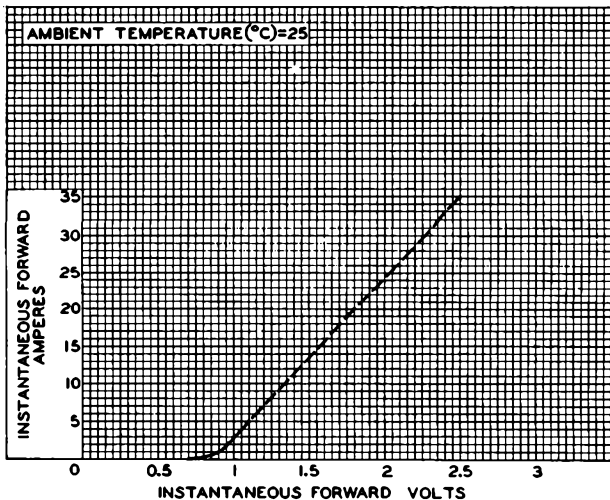
INI763

RATING CHART



92CS-9727

TYPICAL CHARACTERISTIC



SEMICONDUCTOR and MATERIALS DIVISION
RADIO CORPORATION OF AMERICA, SOMERVILLE, NEW JERSEY

92CS-9730

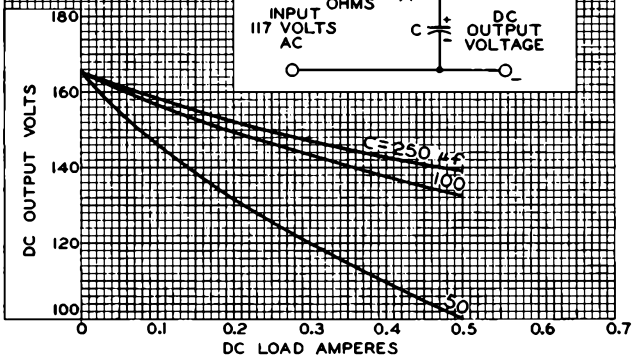
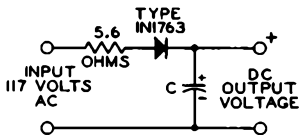


INI763

INI763

TYPICAL CHARACTERISTICS HALF-WAVE RECTIFIER

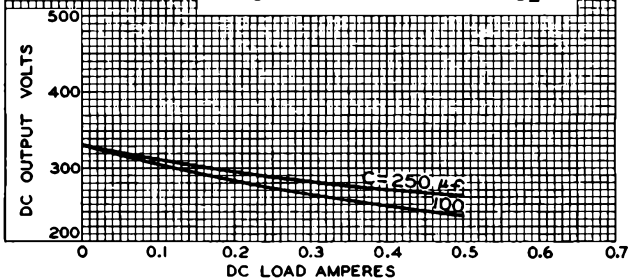
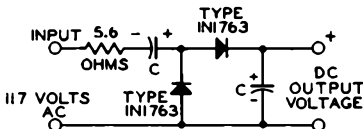
AMBIENT TEMPERATURE ($^{\circ}\text{C}$) = 25
SUPPLY FREQUENCY (CPS) = 60



92CS-9723

HALF-WAVE VOLTAGE DOUBLER

AMBIENT TEMPERATURE ($^{\circ}\text{C}$) = 25
SUPPLY FREQUENCY (CPS) = 60

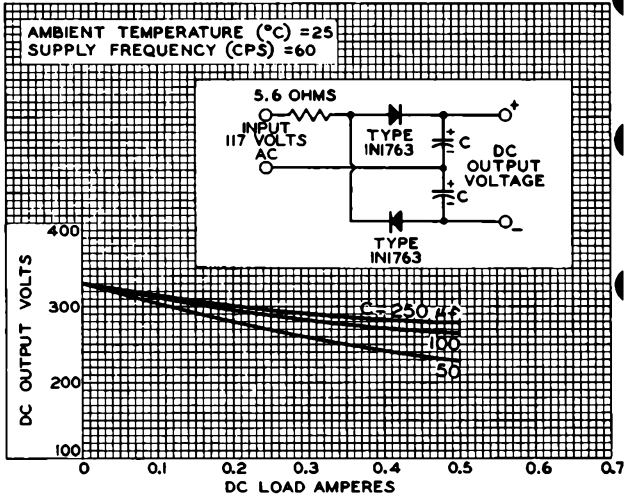


INI763

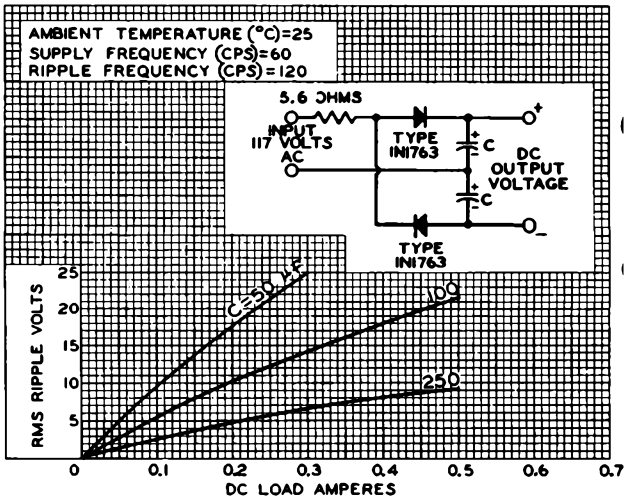


INI763

TYPICAL CHARACTERISTICS FULL-WAVE VOLTAGE DOUBLER



92CS-9716



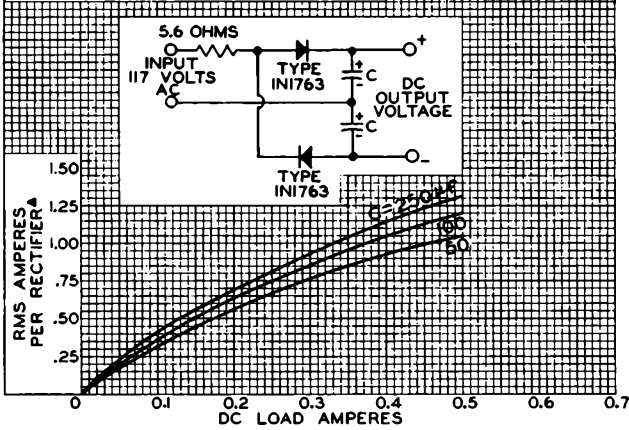


INI763

INI763

TYPICAL CHARACTERISTICS
FULL-WAVE VOLTAGE DOUBLER

▲ MULTIPLY BY $\sqrt{2}$ FOR BOTH RECTIFIERS
AMBIENT TEMPERATURE ($^{\circ}\text{C}$) = 25
SUPPLY FREQUENCY (CPS) = 60



92CS-9982



INI764

SILICON RECTIFIER

DIFFUSED-JUNCTION TYPE

For use in power supplies of color and black-and-white television receivers, radio receivers, phonographs, and other electronic equipment

INI764

GENERAL DATA

Mechanical:

Operating Position	Any
Maximum Length (Excluding flexible leads)	0.725"
Maximum Diameter	0.400"
Case	Metal
Envelope Seals	Hermetic
Leads, Flexible	2
Minimum length	1.250"
Diameter	0.027" to 0.035"

RECTIFIER SERVICE

Maximum Ratings, Absolute-Maximum Values:

For power-supply frequency of 60 cps and with capacitor input to filter

PEAK INVERSE VOLTAGE	500 max.	volts	
RMS SUPPLY VOLTAGE	175 max.	volts	
FORWARD CURRENT:			
At ambient temperatures	Up to 75° C	Above 75° C	
DC	0.5 max.	} See Rating Chart	amp
Peak, recurrent	5 max.		amp
Surge, for a "turn-on" transient of 2-milli-seconds duration	35 max.		amp
AMBIENT TEMPERATURE (During operation)	100 max.	°C	
STORAGE-TEMPERATURE RANGE	-65 to +150	°C	

Characteristics:

At ambient temperature of 25° C

Maximum Instantaneous Forward Voltage at instantaneous forward amperes = 15	3	volts
Maximum Reverse Current at peak inverse volts = 500	100	µa

At ambient temperature of 100° C

Maximum Reverse Current at peak inverse volts = 500	1	ma
---	---	----

Typical Operation:

As half-wave rectifier

RMS Supply Voltage	150	150	150	volts
Filter-Input Capacitor (C)	50	100	250	µf
Surge-Limiting Resistance [▲]	6.8	6.8	6.8	ohms

▲: See next page.

INI764



INI764

SILICON RECTIFIER

DC Output Voltage at input				
to filter (Approx.):				
At half-load ma. = 250. . . .	158	184	190	volts
At full-load ma. = 500. . . .	128	170	178	volts
Voltage Regulation (Approx.):				
Half-load to full-load				
current	30	14	12	volts
<i>As half-wave voltage doubler</i>				
RMS Supply Voltage.	150	150		volts
Filter-Input Capacitor (C). . .	100	250		μ f
Surge-Limiting Resistance [▲] . . .	6.8	6.8		ohms
DC Output Voltage at input				
to filter (Approx.):				
At half-load ma. = 250. . . .	345	367		volts
At full-load ma. = 500. . . .	301	336		volts
Voltage Regulation (Approx.):				
Half-load to full-load				
current	44	31		volts
<i>As full-wave voltage doubler</i>				
RMS Supply Voltage.	150	150	150	volts
Filter-Input Capacitor (C). . .	50	100	250	μ f
Surge-Limiting Resistance [▲] . . .	6.8	6.8	6.8	ohms
DC Output Voltage at input				
to filter (Approx.):				
At half-load ma. = 250. . . .	340	370	380	volts
At full-load ma. = 500. . . .	290	340	360	volts
Voltage Regulation (Approx.):				
Half-load to full-load				
current	50	30	20	volts
▲ The transformer series resistance or other resistance in the line may be deducted from the value shown.				
OPERATING CONSIDERATIONS				
A surge-limiting resistor should always be connected in series with the rectifier. The resistance value must be sufficient to limit the peak and surge currents to the value specified under the maximum ratings.				
The flexible leads of the INI764 are usually soldered to the circuit elements. The rectifier, however, may be mounted in a holder of the fuse-clip type. It is desirable in all soldering operations to provide some slack or an expansion elbow in the leads to prevent excessive tension on the leads. It is important during the soldering operation to avoid excessive heat in order to prevent possible damage to the rectifier. To absorb some of the heat, grip the flexible lead of the rectifier between the case and the soldering point with a pair of pliers.				
When dip soldering is employed in the assembly of printed circuitry using the INI764, the temperature of the solder should				



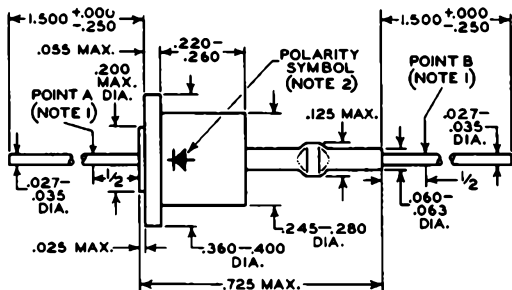
INI764

SILICON RECTIFIER

INI764

not exceed 255° C for a maximum immersion period of 10 seconds. Furthermore, the leads should not be dip soldered beyond points A and B indicated on the *Dimensional Outline*.

Because the metal case of the INI764 is operated at voltages which are dangerous, care should be taken in the design of equipment to prevent the operator from coming in contact with the metal case. It is recommended that the rectifier be mounted on the underside of the chassis.



DIMENSIONS IN INCHES

92CS-9728R1

NOTE 1: DO NOT DIP SOLDER BEYOND POINTS A AND B.

NOTE 2: ARROW INDICATES DIRECTION OF FORWARD (EASY) CURRENT FLOW AS INDICATED BY DC AMMETER.

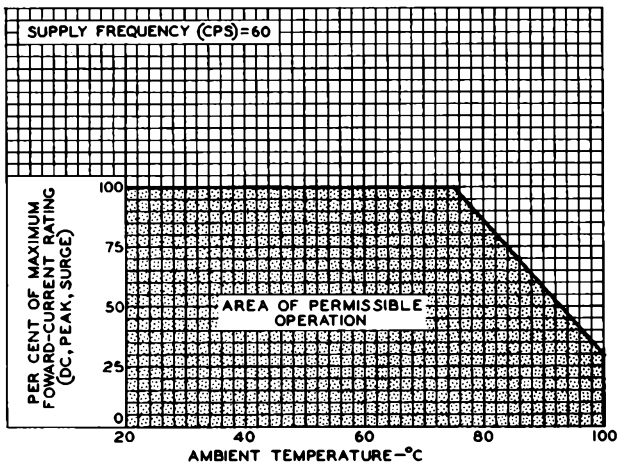
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INI764



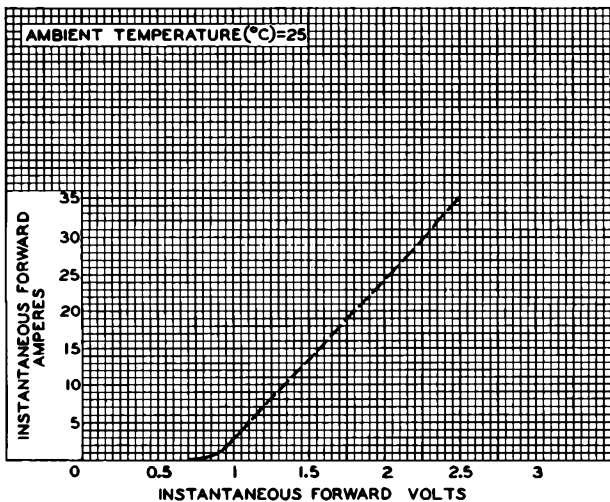
INI764

RATING CHART



92CS-9727

TYPICAL CHARACTERISTIC



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RADIO CORPORATION OF AMERICA, SOMERVILLE, NEW JERSEY

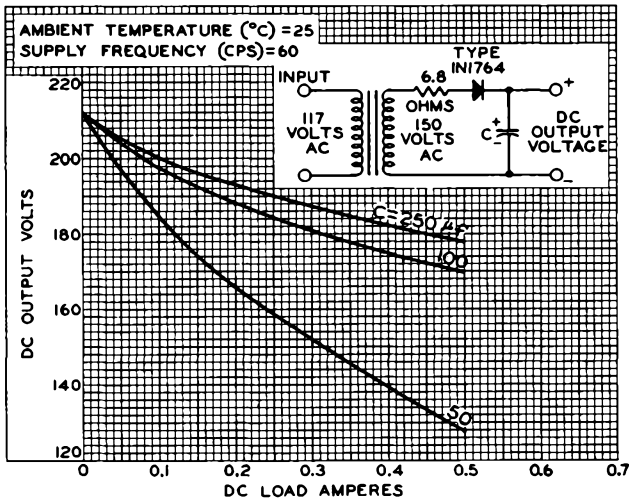
92CS-9730



INI764

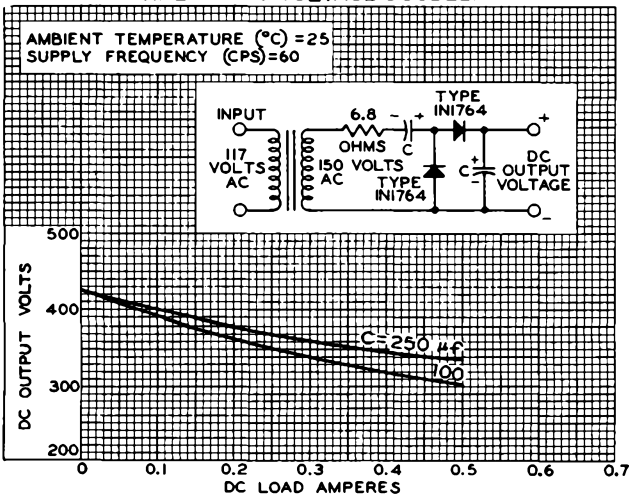
INI764

TYPICAL CHARACTERISTICS HALF-WAVE RECTIFIER



92CS-9722

HALF-WAVE VOLTAGE DOUBLER

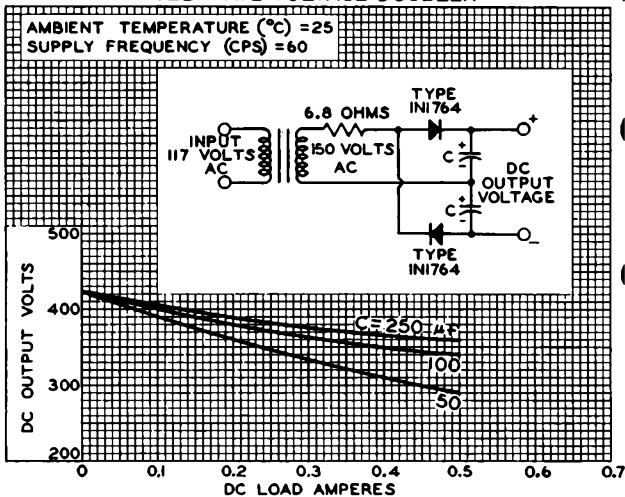


INI764

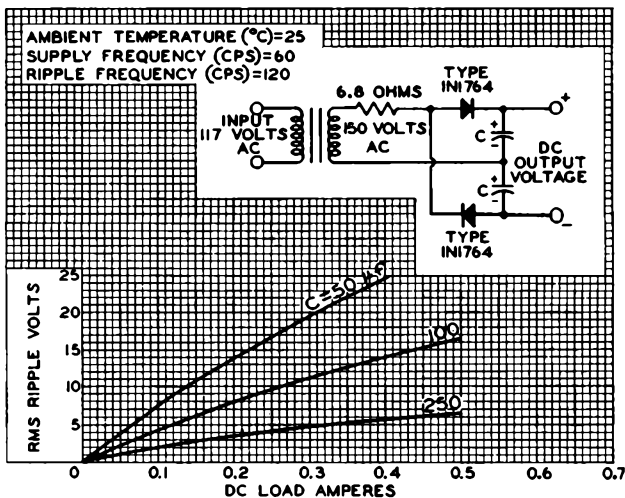


INI764

TYPICAL CHARACTERISTICS
FULL-WAVE VOLTAGE DOUBLER



92CS-9717



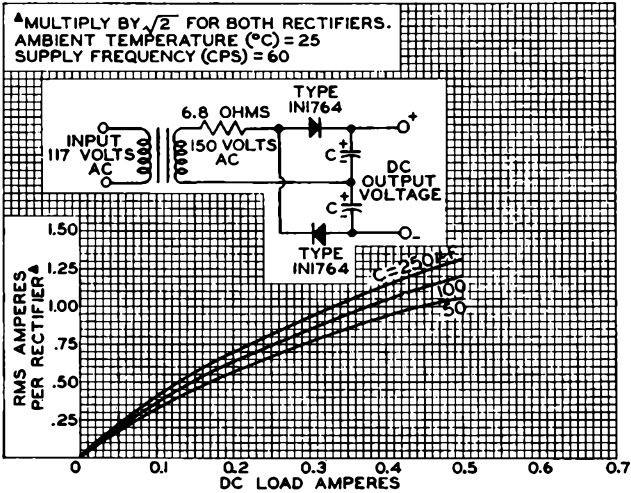


INI764

INI764

TYPICAL CHARACTERISTICS

FULL-WAVE VOLTAGE DOUBLER



92CS-9988



2N32

2N32

POINT-CONTACT TRANSISTOR

GERMANIUM TYPE FOR PULSE OR SWITCHING APPLICATIONS

DATA

General:

Maximum Overall Length	0.660"
Maximum Seated Length	0.445"
Width	0.320" ± 0.020"
Maximum Depth	0.240"
Case	Plastic
Base	Small-Oblong Linotetrar 3-Pin
Mounting Position	Any

PULSE or SWITCHING SERVICE

Voltage values are given with respect to base connection

Maximum Ratings, Absolute Values:

COLLECTOR:

DC Voltage	-40 max.	volts
DC Current	-8 max.	ma
Dissipation	50 max.	mW

EMITTER:

DC Voltage	-40 max.	volts
DC Current	3 max.	ma

AMBIENT TEMPERATURE

40 max. °C

Characteristics at Ambient Temperature of 25°C:

With input circuit between emitter and base connection, and output circuit between collector and base connection

DC Collector Voltage	-25	volts
DC Emitter Current ^o	0.5	ma
Current Amplification Factor	2.2	

Resistance:

Open-Circuit Input	400	ohms
Open-Circuit Output	31000	ohms
Feedback	140	ohms

Power Gain[#]

21 db

Frequency:

For Voltage-gain cutoff ^{††}	0.9	Mc
For alpha cutoff ^{†††}	2.7	Mc

Minimum Circuit Values:

Emitter-Circuit Resistance	1000 min.	ohms
--------------------------------------	-----------	------

^o obtained by adjusting a variable resistor in series with power supply to give the desired current.

[#] with collector load resistance of 10000 ohms, signal-source impedance of 500 ohms, and signal frequency of 5000 cycles per second.

[†] measured at a point 3 decibels down from the low-frequency value (100 kc) and with collector load resistance of 20000 ohms, signal-source impedance of 300 ohms, and signal voltage of 25 millivolts rms. The cutoff frequency is defined as the frequency at which the output voltage has dropped to 0.7 of its low-frequency value.

^{††}, see next page.

2N32



2N32

POINT-CONTACT TRANSISTOR

†† Measured at a point 3 decibels down from its low-frequency value (100 KC). The cutoff frequency is defined as the frequency at which the current amplification factor has dropped to 0.7 of its low-frequency value.

The 2N32 should not be inserted into or withdrawn from its socket with the power "on" because high transient currents may cause permanent damage to the transistor.

JUNE 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

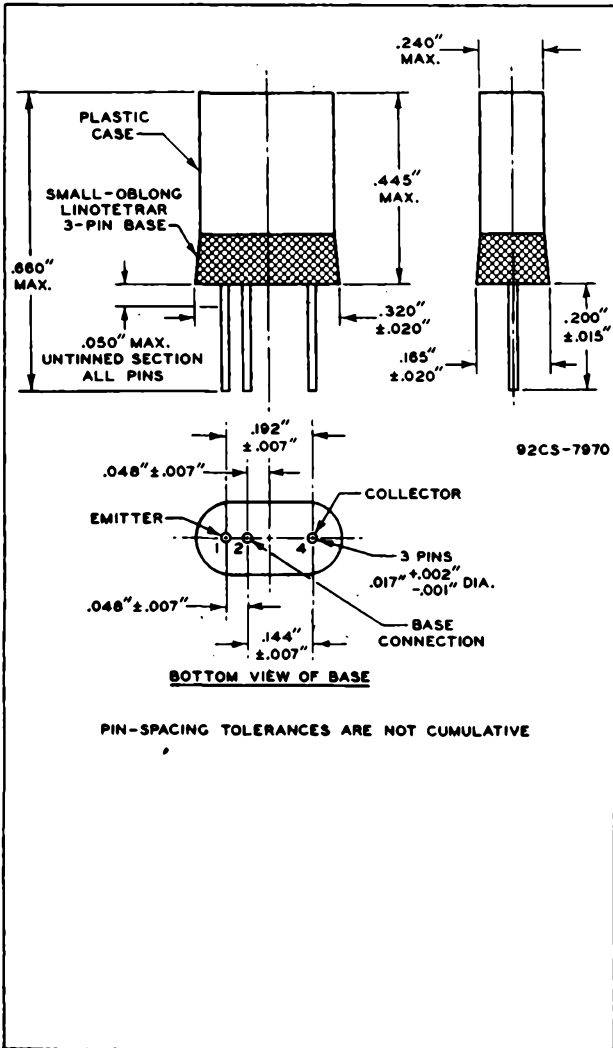
TENTATIVE DATA



2N32

2N32

POINT-CONTACT TRANSISTOR



JUNE 1, 1953

TUBE DEPARTMENT
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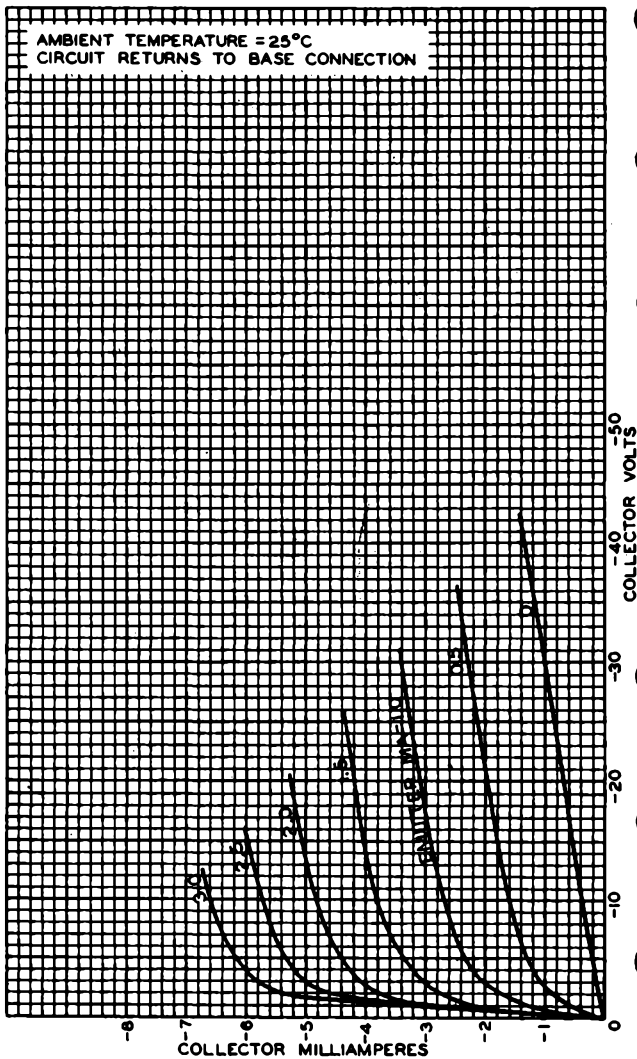
CE-7970

2N32



2N32

AVERAGE COLLECTOR CHARACTERISTICS



APR. 6, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7963



2N33

2N33

POINT-CONTACT TRANSISTOR

GERMANIUM TYPE FOR OSCILLATOR APPLICATIONS UP TO 50 Mc

DATA

General:

Maximum Overall Length	0.660"
Maximum Seated Length	0.445"
Width	0.320" ± 0.020"
Maximum Depth	0.240"
Case	Plastic
Base	Small-Oblong Linotetrar 3-Pin
Mounting Position	Any

VHF OSCILLATOR SERVICE

Voltage values are given with respect to base connection

Maximum Ratings, Absolute Values:

COLLECTOR:

DC Voltage	-8.5 max.	volts
DC Current	-7 max.	ma
Dissipation	30 max.	mW

EMITTER:

DC Current	0.8 max.	ma
AMBIENT TEMPERATURE	40 max.	°C

Typical Operation in Accompanying 50-Mc Oscillator Test Circuit:

COLLECTOR:

DC Supply Voltage	-8	volts
DC Current	-3.3	ma
DC Emitter Current	0.3	ma
Useful Power Output (Approx.)	1.0	mW

The 2N33 should not be inserted into or withdrawn from its socket with the power "on" because high transient currents may cause permanent damage to the transistor.

OUTLINE DIMENSIONS and TERMINAL CONNECTIONS for Type 2N33 are the same as those shown for Type 2N32

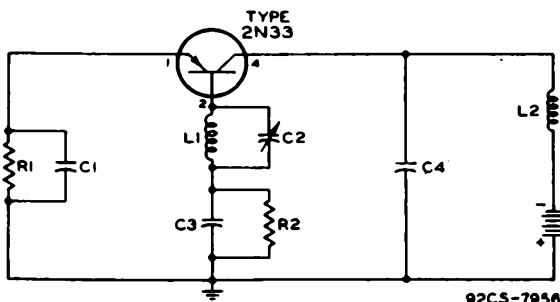
2N33



2N33

POINT-CONTACT TRANSISTOR

50-Mc Oscillator Test Circuit



92CS-7956

C1: 1 μ f, ceramic, 25 volts
C2: 8 to 30 μ f, ceramic adjustable, 25 volts
C3: 270 μ f, mica, 25 volts

C4: 470 μ f, mica, 25 volts
L1: 0.46 μ h tank inductance
L2: 1 mh rf choke
R1: 5100 ohms, 0.5 watt
R2: 1000 ohms, 0.5 watt

Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.

JUNE 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7956



2N34

2N34

JUNCTION TRANSISTOR

P-N-P GERMANIUM TYPE
FOR LOW-POWER, LOW-FREQUENCY APPLICATIONS

DATA

General:

Maximum Overall Length	0.885"
Maximum Seated Length	0.670"
Width	0.320" ± 0.020"
Depth	0.165" ± 0.020"
Case	Plastic
Base	Small-Oblong Linotetrar 3-Pin
Mounting Position	Any

AUDIO-FREQUENCY AMPLIFIER SERVICE

Voltages are given with respect to base connection

Maximum Ratings, Absolute Values:

COLLECTOR:

DC Voltage	-25 max.	volts
DC Current	-8 max.	ma
Dissipation	50 max.	mw

EMITTER:

DC Current	8 max.	ma
----------------------	--------	----

AMBIENT TEMPERATURE	50 max.	°C
-------------------------------	---------	----

Characteristics at Ambient Temperature of 25°C:

*With input circuit between base connection and emitter,
and output circuit between collector and emitter*

Collector:

DC Voltage	-6	volts
DC Current	-10 [▲]	μamp
DC Emitter Current*	1	ma
DC Base-Connection Current	-25	μamp
Current Amplification Factor (Approx.):		
Between Emitter and Collector	0.98	
Between Base Connection and Collector	40	
Power Gain#	40	db

- ▲ with collector voltage of -12 volts and emitter current of 0 milli-amperes.
- obtained by adjusting a variable resistor in series with the power supply to give the desired current.
- # with collector load resistance of 30000 ohms, signal-source impedance of 500 ohms, and signal frequency of 5000 cycles per second.

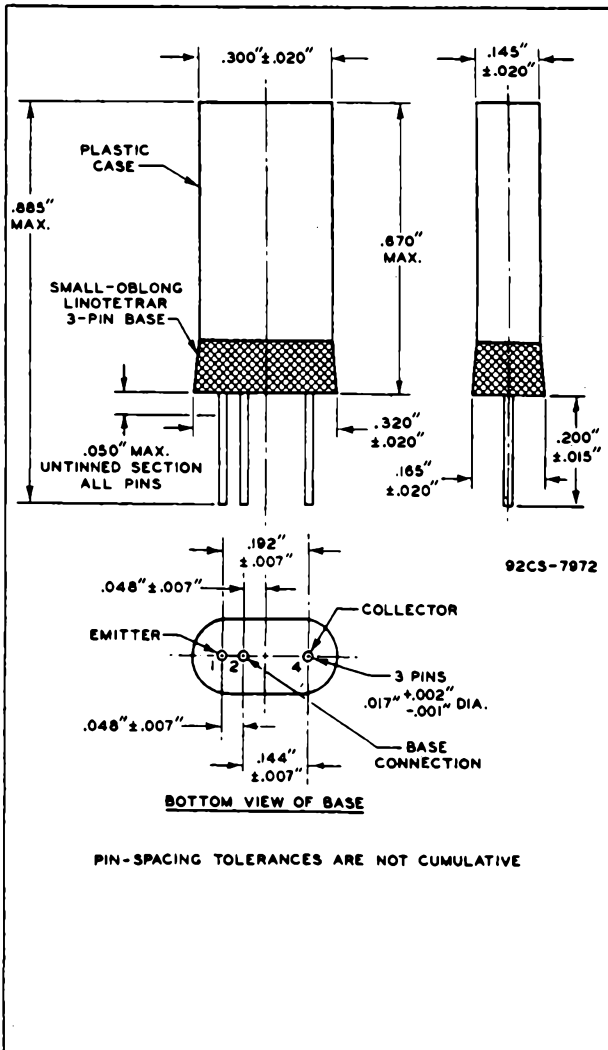
The 2N34 should not be inserted into or withdrawn from its socket with the power "on" because high transient currents may cause permanent damage to the transistor.

2N34



2N34

JUNCTION TRANSISTOR



JUNE 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

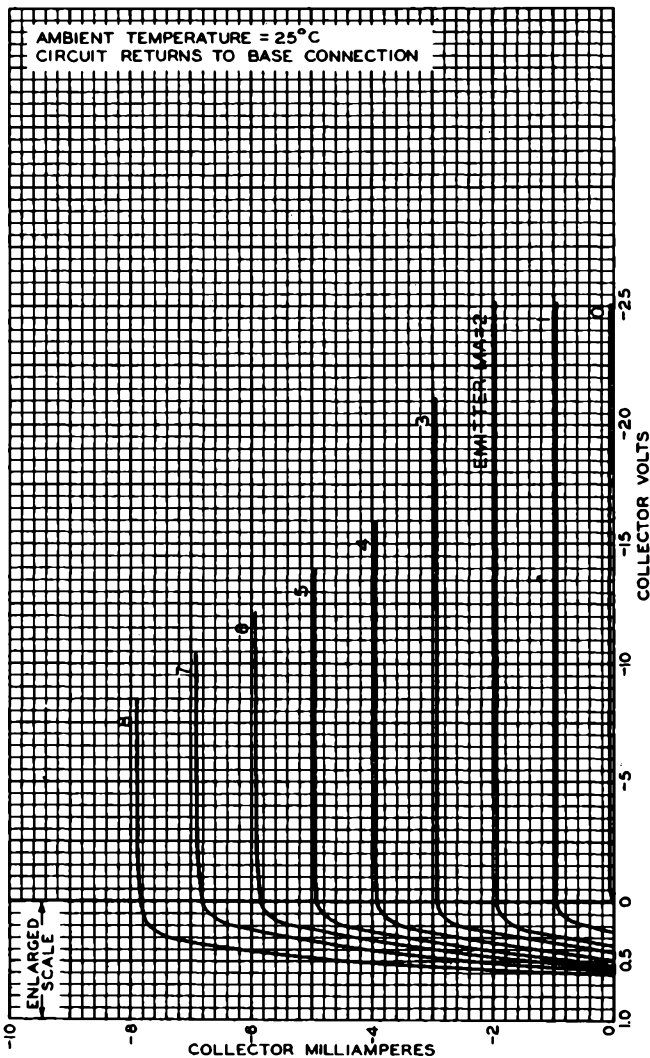
CE-7972



2N34

2N34

AVERAGE COLLECTOR CHARACTERISTICS



APR. 8, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

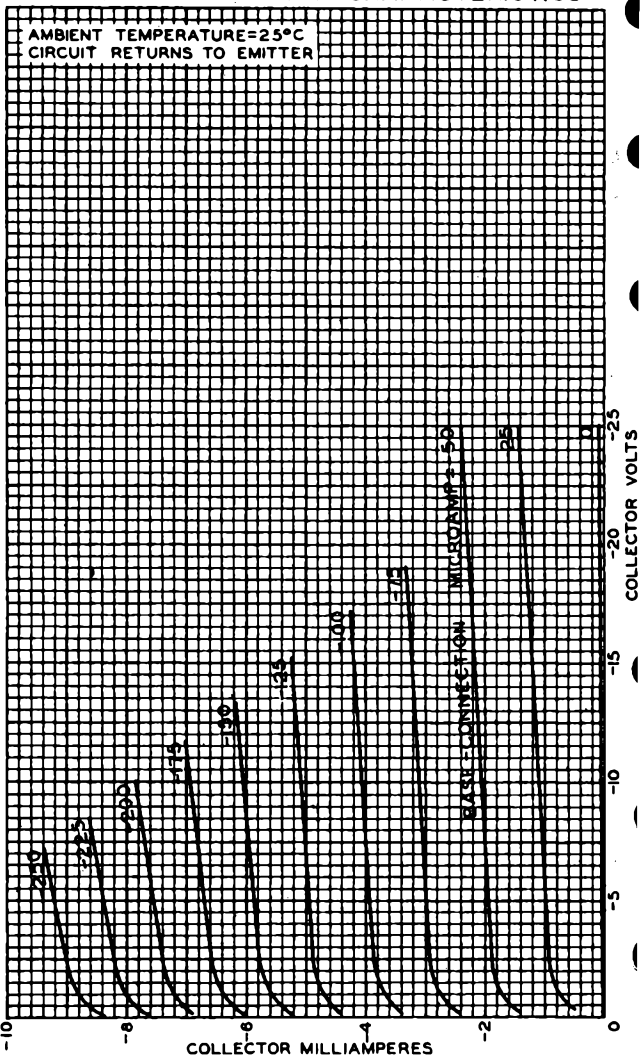
92CM-7962

2N34



2N34

AVERAGE COLLECTOR CHARACTERISTICS



APR. 8, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7961



2N35

2N35

JUNCTION TRANSISTOR

N-P-N GERMANIUM TYPE

FOR LOW-POWER, LOW-FREQUENCY APPLICATIONS

DATA

General:

Maximum Overall Length	0.885"
Maximum Seated Length	0.670"
Width	0.320" ± 0.020"
Depth	0.165" ± 0.020"
Case	Plastic
Base	Small-Oblong Linotetrar 3-Pin
Mounting Position	Any

AUDIO-FREQUENCY AMPLIFIER SERVICE

Voltages are given with respect to base connection

Maximum Ratings, Absolute Values:

COLLECTOR:		
DC Voltage	25 max.	volts
DC Current	8 max.	ma
Dissipation	50 max.	mW
EMITTER:		
DC Current	-8 max.	ma
AMBIENT TEMPERATURE	50 max.	°C

Characteristics at Ambient Temperature of 25°C:

With input circuit between base connection and emitter, and output circuit between collector and emitter

Collector:		
DC Voltage	6	volts
DC Current	10 ^{▲▲}	μamp
DC Emitter Current*	-1	ma
DC Base-Connection Current	25	μamp
Current Amplification Factor (Approx.):		
Between Emitter and Collector	0.98	
Between Base Connection and Collector	40	
Power Gain#	40	db

^{▲▲} with collector voltage of 12 volts and emitter current of 0 milli-amperes.

* obtained by adjusting a variable resistor in series with the power supply to give the desired current.

with collector load resistance of 30000 ohms, signal-source impedance of 500 ohms, and signal frequency of 5000 cycles per second.

The 2N35 should not be inserted into or withdrawn from its socket with the power "on" because high transient currents may cause permanent damage to the transistor.

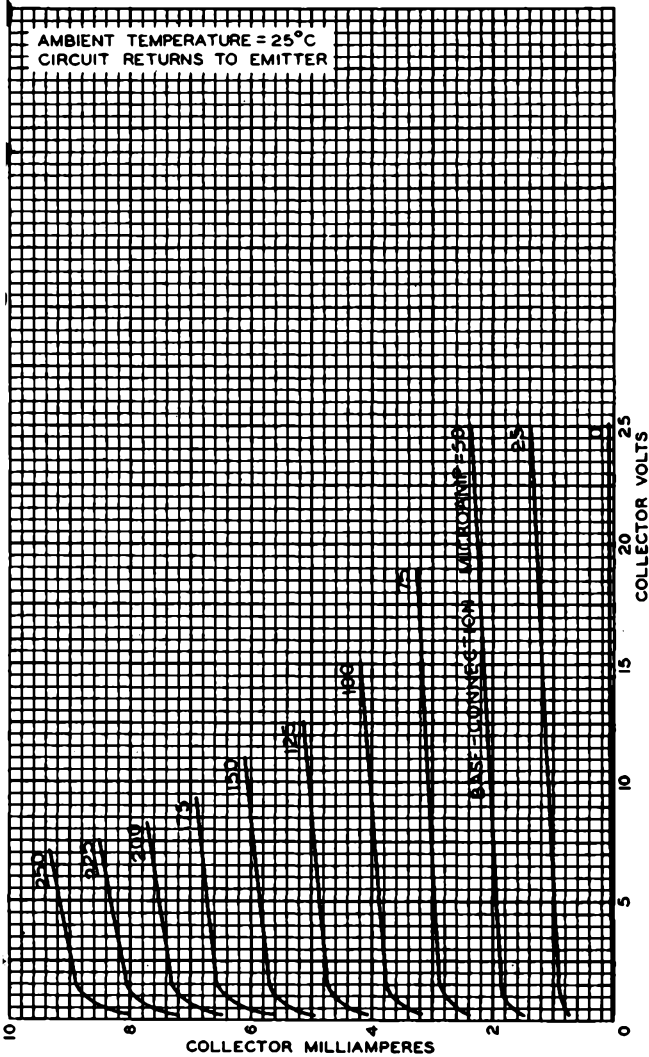
OUTLINE DIMENSIONS and TERMINAL CONNECTIONS for Type 2N35 are the same as those shown for Type 2N34



2N35

2N35

AVERAGE COLLECTOR CHARACTERISTICS



APR. 7, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

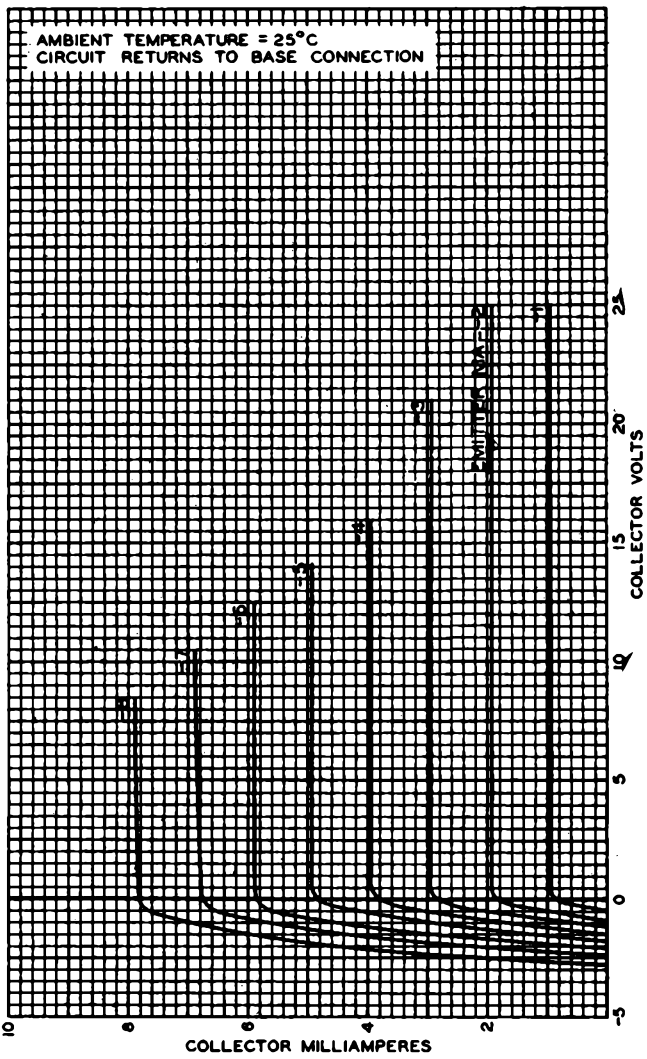
92CM-7959

2N35



2N35

AVERAGE COLLECTOR CHARACTERISTICS



APR. 7, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7960



2N218

JUNCTION TRANSISTOR

GERMANIUM P-N-P ALLOY TYPE

For 455-kc intermediate-frequency applications

2N218

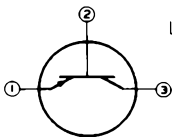
The 2N218 is the same as the 2N139 except for the following items:

Mechanical:

- Maximum Length (Excluding flexible leads) 0.405"
- Leads, Flexible 3
- Length 1.5" ± 0.015"
- Orientation and diameter See Dimensional Outline

BOTTOM VIEW

Lead 1 - Emitter



Lead 3 - Collector
(Adjacent to red dot on side of envelope)

Lead 2 - Base

OPERATING CONSIDERATIONS

The 2N218 should not be connected into or disconnected from circuits with the power on because high transient currents may cause permanent damage to the transistor.

The flexible leads of the 2N218 are usually soldered to the circuit elements. Soldering of the leads may be made close to the glass stem provided care is taken to conduct excessive heat away from the lead seal. Otherwise, the heat of the soldering operation will crack the seals of the leads and damage the transistor.

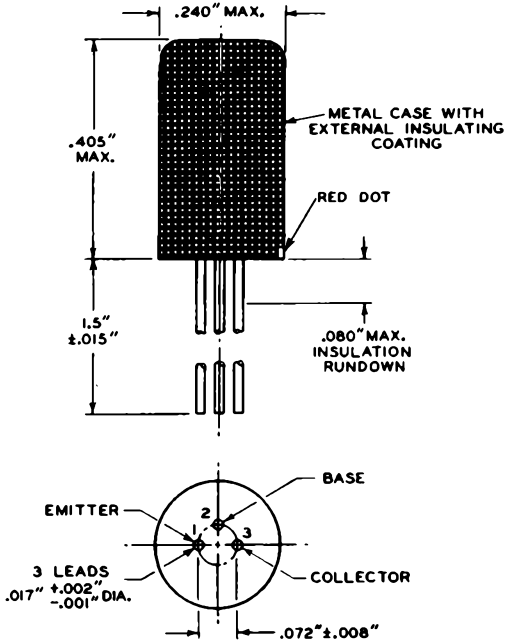
When dip soldering is employed in the assembly of printed circuitry using the 2N218, the temperature of the solder should not exceed 230°C for a maximum immersion period of 10 seconds.

2N218



2N218

JUNCTION TRANSISTOR



92CS-9025



2N219

JUNCTION TRANSISTOR

GERMANIUM P-N-P ALLOY TYPE

For 540 to 1600 kc converter applications

2N219

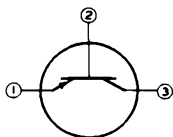
The 2N219 is the same as the 2N140 except for the following items:

Mechanical:

- Maximum Length (Excluding flexible leads) 0.405"
- Leads, Flexible 3
- Length 1.5" ± 0.015"
- Orientation and diameter See Dimensional Outline

BOTTOM VIEW

Lead 1 - Emitter



Lead 3 - Collector
(Adjacent to red dot on side of envelope)

Lead 2 - Base

OPERATING CONSIDERATIONS

The 2N219 should not be connected into or disconnected from circuits with the power on because high transient currents may cause permanent damage to the transistor.

The flexible leads of the 2N219 are usually soldered to the circuit elements. Soldering of the leads may be made close to the glass stem provided care is taken to conduct excessive heat away from the lead seal. Otherwise, the heat of the soldering operation will crack the seals of the leads and damage the transistor.

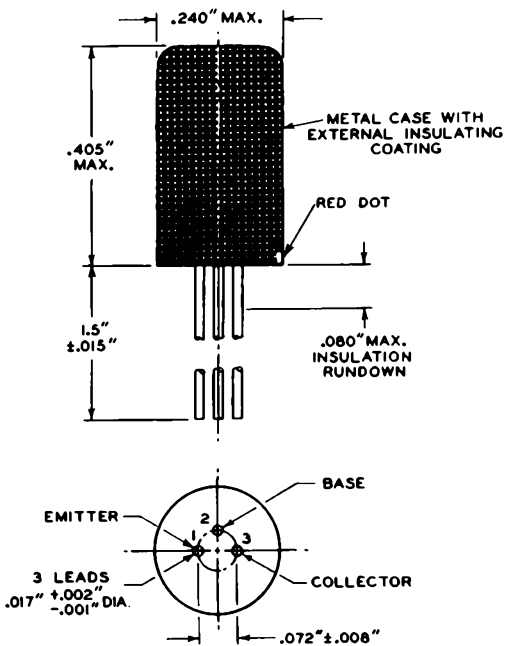
When dip soldering is employed in the assembly of printed circuitry using the 2N219, the temperature of the solder should not exceed 230°C for a maximum immersion period of 10 seconds.

2N219



2N219

JUNCTION TRANSISTOR



92CS-9025



2N220

JUNCTION TRANSISTOR

GERMANIUM P-N-P ALLOY TYPE

For low-noise audio-frequency applications

2N220

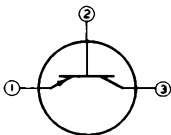
The 2N220 is the same as the 2N175 except for the following items:

Mechanical:

Maximum Length (Excluding flexible leads)	0.405"
Leads, Flexible	3
Length	1.5" ± 0.015"
Orientation and diameter	See Dimensional Outline

BOTTOM VIEW

Lead 1 - Emitter



Lead 3 - Collector
(Adjacent to red dot on side of envelope)

Lead 2 - Base

OPERATING CONSIDERATIONS

The 2N220 should not be connected into or disconnected from circuits with the power on because high transient currents may cause permanent damage to the transistor.

The flexible leads of the 2N220 are usually soldered to the circuit elements. Soldering of the leads may be made close to the glass stem provided care is taken to conduct excessive heat away from the lead seal. Otherwise, the heat of the soldering operation will crack the seals of the leads and damage the transistor.

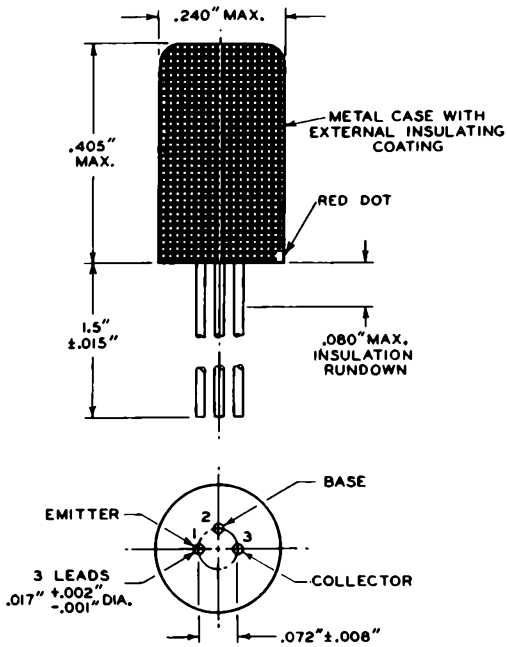
When dip soldering is employed in the assembly of printed circuitry using the 2N220, the temperature of the solder should not exceed 230°C for a maximum immersion period of 10 seconds.

2N220



2N220

JUNCTION TRANSISTOR



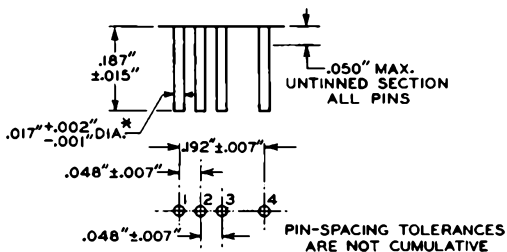
92CS-9025



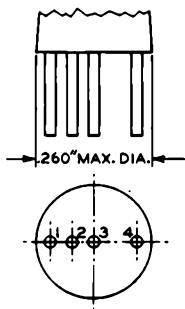
BASES

SEMICONDUCTOR DEVICES

"LINOTETRAR" PIN DIMENSIONS AND ORIENTATION



SMALL-ROUND LINOTETRAR



No. of Pins	Pins	JETEC No.	RCA No.
4-Pin	1, 2, 3, 4	E4-24	-
3-Pin	1, 2, 4	E3-25	-

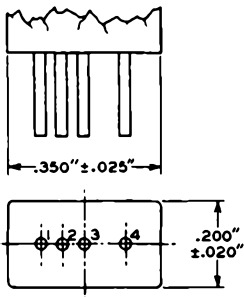
* The specified pin diameter applies only in the zone between 0.050" from the base seat and the end of the pin.



BASES

SEMICONDUCTOR DEVICES

SMALL-RECTANGLE LINOTETRAR



No. of Pins	Pins	JETEC No.	RCA No.
4-Pin	1, 2, 3, 4	E4-31	-
3-Pin	1, 2, 4	E3-32	-
2-Pin	1, 4	E2-33	FS6151

For other dimensions, see first page of the "Linotetrar" series



6694-A

6694-A

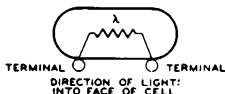
PHOTOCONDUCTIVE CELL

CADMIUM-SULFIDE TYPE

DATA

General:

Spectral Response	S-12
Wavelength of Maximum Response	5000 ± 500 angstroms
Sensitive Area:	
Shape	Rectangular
Dimensions (Minimum)	0.020" x 0.018"
Direct Interelectrode Capacitance	0.6 μmf
Maximum Overall Length	0.500"
Maximum Seated Length	0.300"
Width	0.350" ± 0.025"
Depth	0.200" ± 0.020"
Mounting Position	Any
Weight (Approx.)	0.02 oz
Base	Small-Rectangle Linotetrar 2-Pin (JETEC No. E2-33)
Socket	Cinch Part No. 46AZ20248, or equivalent



λ indicates that the primary characteristic of the element within the envelope symbol is designed to vary under the influence of light.

Maximum Ratings, Absolute Values:

POLARIZING VOLTAGE	150 max. volts
POWER DISSIPATION	30 max. mw
AMBIENT-TEMPERATURE RANGE	0 to +70 °C

Characteristics:

Under conditions with polarizing voltage of 90 volts and at ambient temperature of 25°C

Min. Median Max.

Sensitivity:

Radiant [†] , at			
5000 angstroms	-	415	- μamp/μwatt
Luminous [*] , at 0 cps.	-	1	- amp/lumen
Luminous intensity [▲] , at 0 cps	1.9	4	- μamp/ft-c
Dynamic			See Curves
Dark Current	-	-	0.1 μamp
Dark Noise			Essentially lower than that of associated circuit

Photocurrent:

Rise	See Curves
Decay	See Curves

[†] For conditions where the incident power is 0.2 μwatt.

^{*} For conditions where the light source is a tungsten-filament lamp operated at a color temperature of 2870°K. A light flux of about 100 microlumens is used.

[▲]: See next page.

6694-A



6694-A

PHOTOCONDUCTIVE CELL

▲ For light conditions the same as shown under (*) except that an incident light intensity of 30 foot-candles is used.

DEFINITIONS

Radiant Sensitivity. The quotient of output current by incident radiant power of a given wavelength, at constant electrode voltages.

Luminous Sensitivity. The quotient of output current by incident luminous flux, at constant electrode voltages.

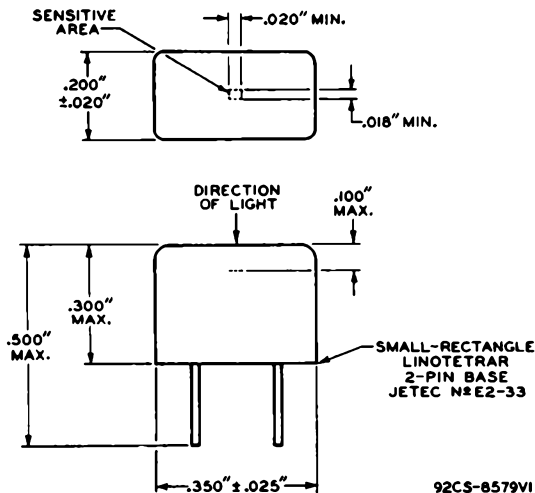
Luminous Intensity Sensitivity. The quotient of output current by the incident luminous intensity, at constant electrode voltages.

Dynamic Sensitivity. The quotient of the modulated component of the electrical output by the modulated component of the incident radiation.

OPERATING CONSIDERATIONS

The *polarizing voltage* for the 6694-A may be applied without regard to polarity. To obtain the full sensitivity of the cell, it is essential that its entire photosensitive area be illuminated. Otherwise, a blocking action produced by the unilluminated area of the cell will occur and cause unsatisfactory operation.

SPECTRAL-SENSITIVITY CHARACTERISTIC
of Photoconductive Cell having S-12 Response
is shown at the front of this Section

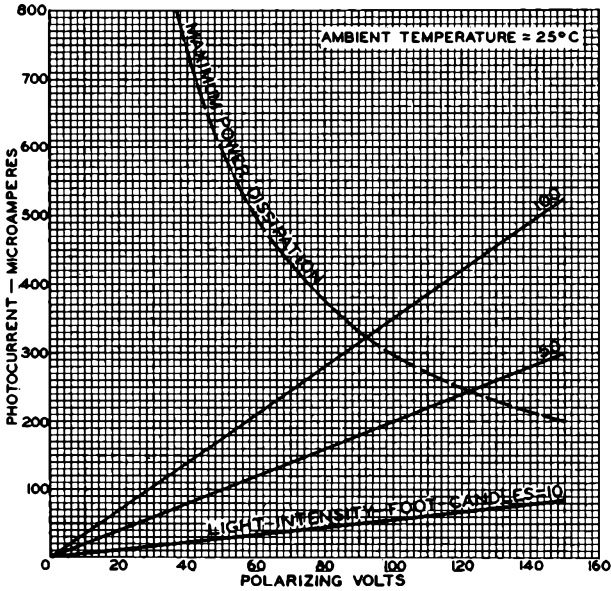




6694-A

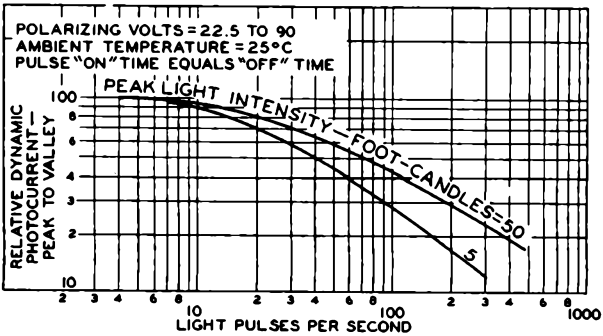
6694-A

AVERAGE CHARACTERISTICS



92CM-8583VI

DYNAMIC SENSITIVITY CHARACTERISTICS



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

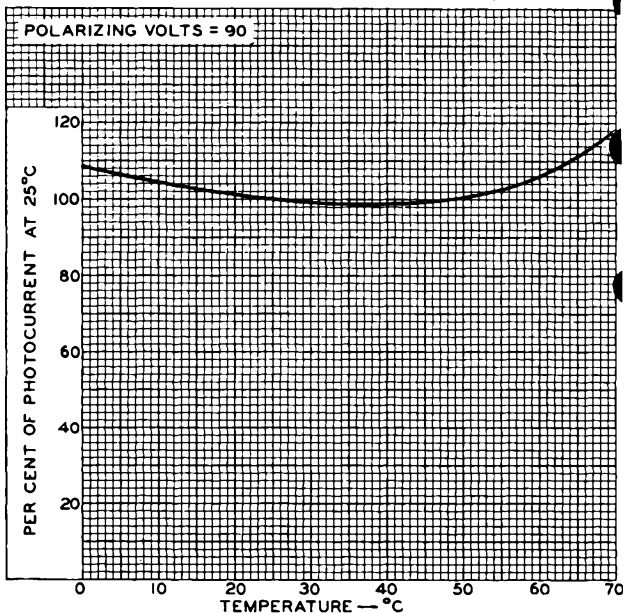
92CM-8872V

6694-A

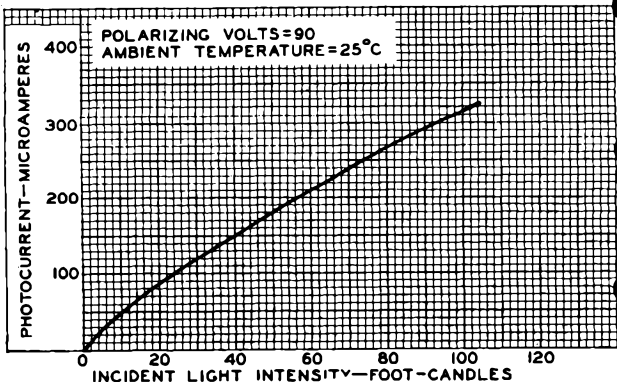


6694-A

TYPICAL CHARACTERISTICS



92CM-8585RI



TUBE DIVISION

92CM-8584RI

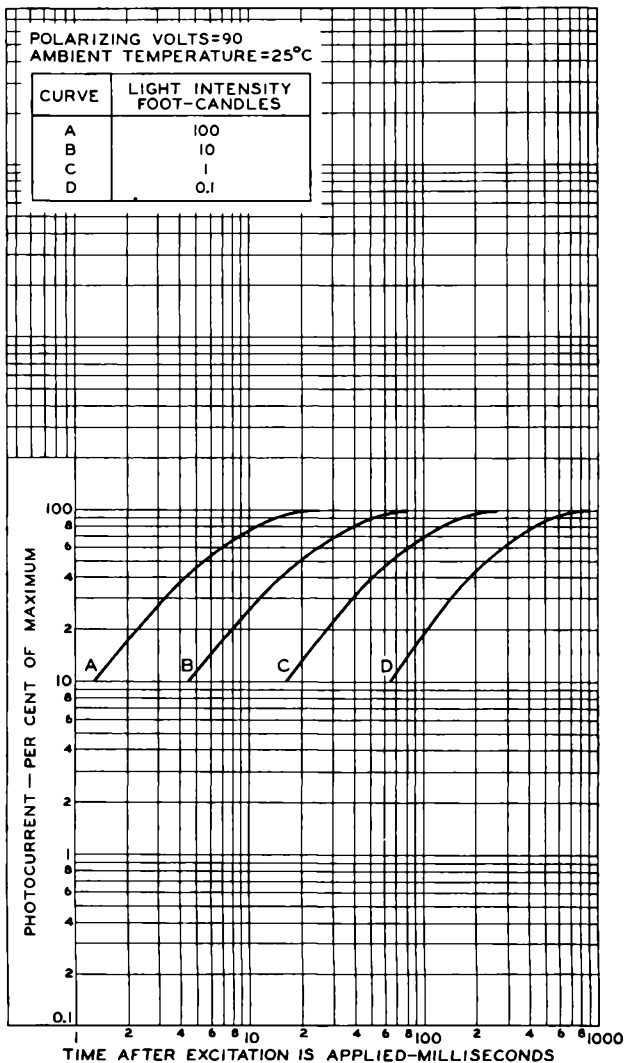
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6694-A

6694-A

TYPICAL RISE CHARACTERISTICS



TUBE DIVISION

92CM-8873

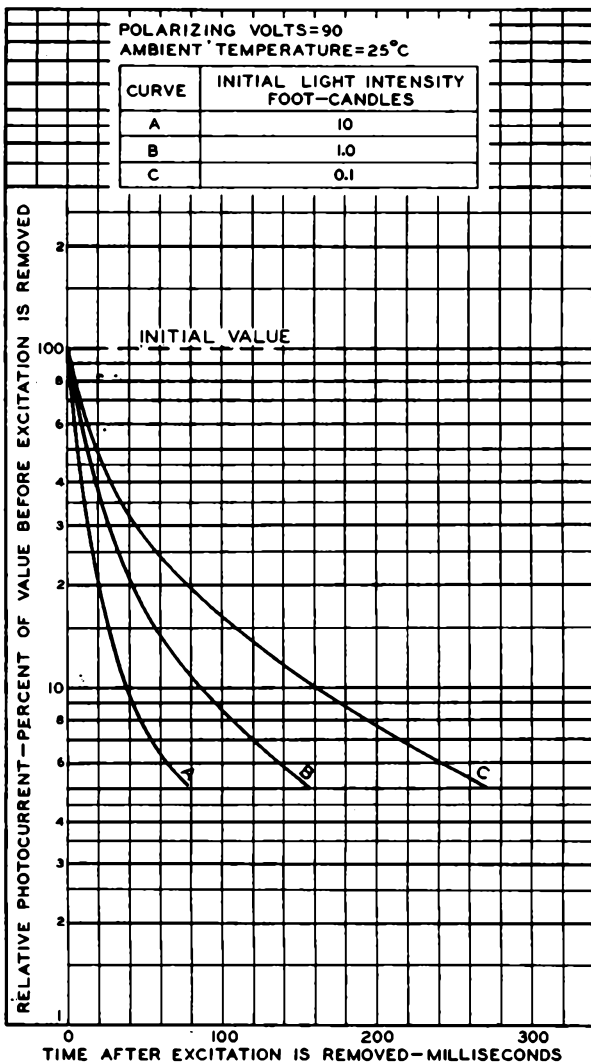
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6694-A



6694-A

TYPICAL DECAY CHARACTERISTICS



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8593R1