

**RCA TUBE
HANDBOOK
HB-3**



**GENERAL
SECTION**

The information in this Section, in general, applies to all classes of RCA tubes. It includes such material as the Table of Contents for all Sections; Index of Tube Types arranged in numerical-alphabetical-numerical sequence; list of preferred types; list of not-recommended types; interchangeability list; discussion of ratings; outlines; cap and base drawings; as well as other general information of interest to the equipment designer.

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

Half-Wave Vacuum Rectifier

For Television Damper Service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	1.2	amp

Direct Interelectrode Capacitances (Approx.):^a

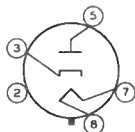
Plate to cathode and heater	8.5	μf
Cathode to heater and plate	11.5	μf
Heater to cathode	4	μf

Mechanical:

Operating Position	Any
Maximum Overall Length	3-13/16"
Maximum Seated Length	3-1/4"
Maximum Diameter	1-9/32"
Bulb	T9
Base	Short Intermediate-Shell Octal 5-Pin with External Barriers, Arrangement 2 (JEDEC Group 1, No. B5-85)

Basing Designation for BOTTOM VIEW 4CG

Pin 2 - Internal Con-
nection—
Do Not Use^b
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^c*

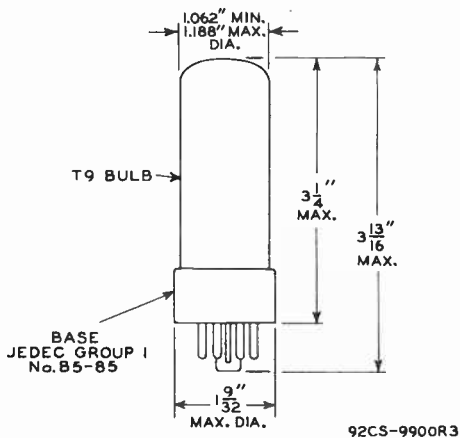
PEAK INVERSE PLATE VOLTAGE ^d	5000 max.	volts
PEAK PLATE CURRENT	1100 max.	ma
DC PLATE CURRENT	175 max.	ma
PLATE DISSIPATION	6.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

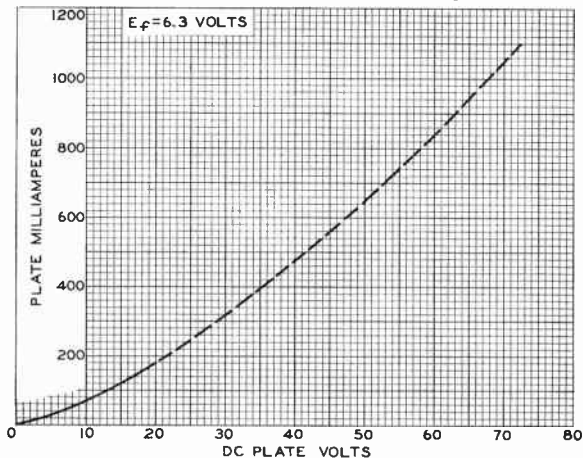
Heater negative with respect to cathode ^d	5000 ^e max.	volts
Heater positive with respect to cathode	300 ^f max.	volts

^a Without external shield.^b Socket terminals 1, 2, 4, and 6 should not be used as tie points.^c As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.^d 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.^e The dc component must not exceed 900 volts.^f The dc component must not exceed 100 volts.

6DM4



AVERAGE PLATE CHARACTERISTIC



92CS-9884

RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.





6DQ5

6DQ5

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.	0.5	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.3, grid No.2, and heater	23	$\mu\mu\text{f}$
Plate to cathode & grid No.3, grid No.2, and heater	11	$\mu\mu\text{f}$

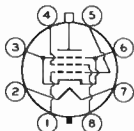
Characteristics, Class A₁ Amplifier:

Plate Voltage	125	70	175	volts
Grid-No.2 (Screen-Grid) Voltage	125	125	125	volts
Grid-No.1 (Control-Grid) Voltage.	-25	0	-25	volts
Mu-Factor, Grid No.2 to Grid No.1.	3.3	-	-	
Plate Resistance (Approx.).	-	-	5500	ohms
Transconductance.	-	-	10500	μmhos
Plate Current	-	550*	110	ma
Grid-No.2 Current	-	42*	5	ma
Grid-No.1 Voltage (Approx.) for plate current of 1 ma	-	-	-55	volts

Mechanical:

Mounting Position	Any
Maximum Overall Length.	5"
Seated Length	4-1/4" \pm 3/16"
Maximum Diameter.	1-9/16"
Bulb.	T12
Cap	Small (JETEC No.C1-1)
Base.	Short Medium-Shell Octal 8-Pin with External Barriers, Style B (JETEC No.B8-118)
Basing Designation for BOTTOM VIEW.	8JC

- Pin 1 - Grid No.1
- Pin 2 - Heater
- Pin 3 - Cathode,
Grid No.3
- Pin 4 - Grid No.2
- 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, grid-no.2 input, and cathode current will be kept within ratings in order to prevent damage to the tube.

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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	900	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute value) [#]	7000 [Ⓢ]	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE [#]	1500	max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE	175	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE	200	max.	volts
CATHODE CURRENT:			
Peak	1000	max.	ma
DC	285	max.	ma
GRID-No.2 INPUT	3.2	max.	watts
PLATE DISSIPATION [†]	24	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).	240	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

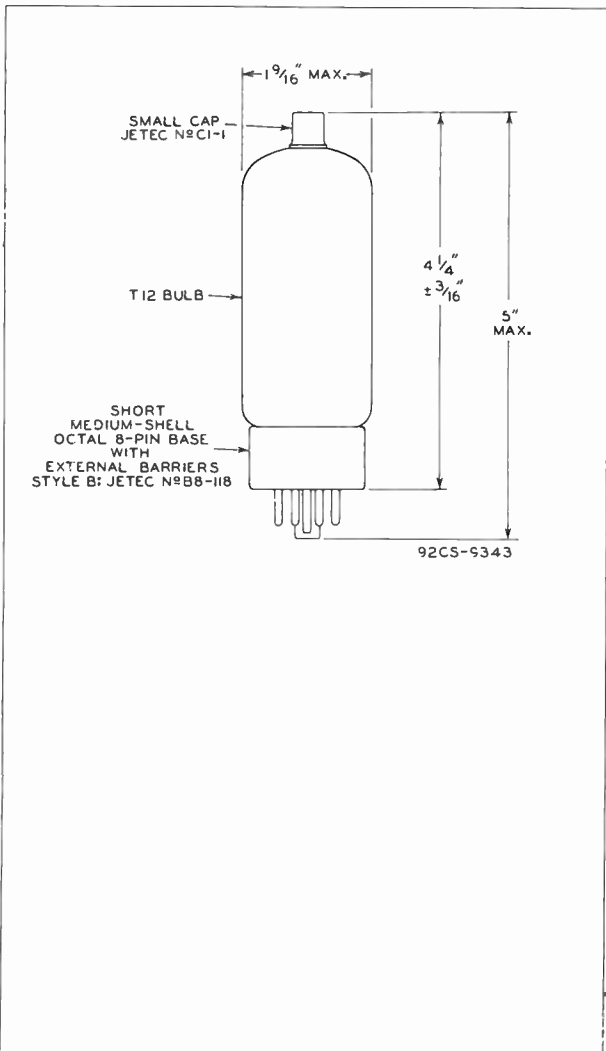
For grid-resistor-bias operation[‡] 0.47 max. megohm[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.[#] This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30 frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.[Ⓢ] 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.



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BEAM POWER TUBE

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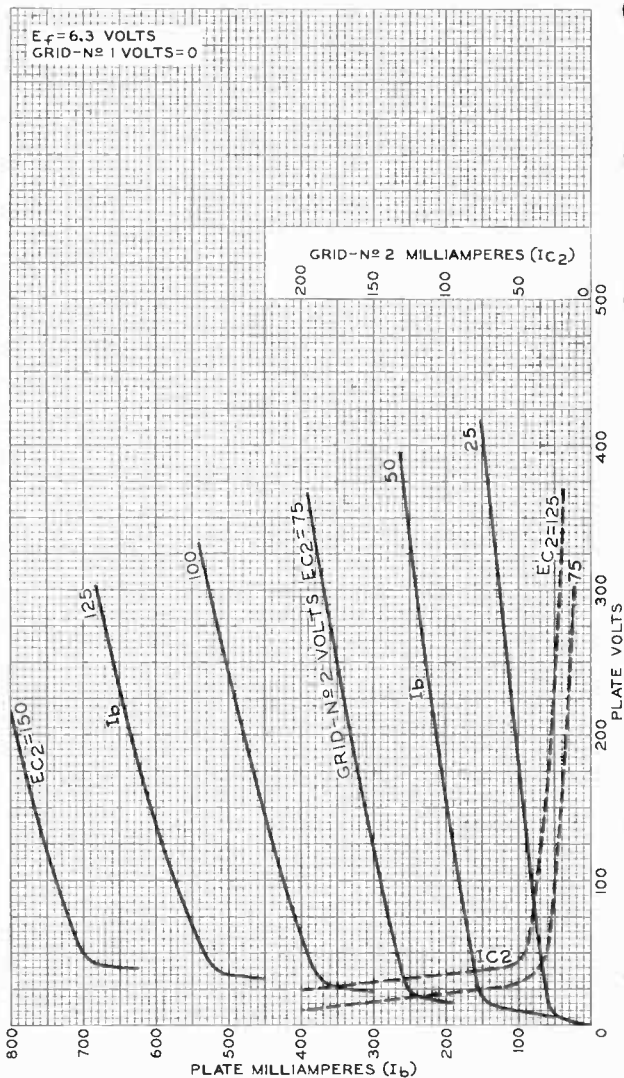


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AVERAGE CHARACTERISTICS



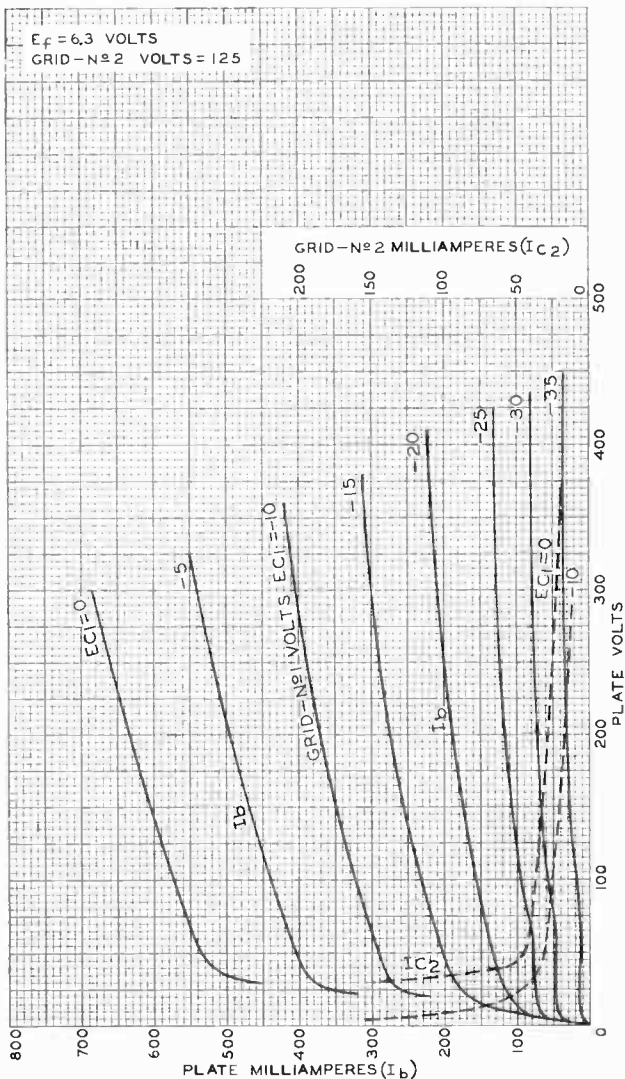
ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9311

RCA
6DQ5

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AVERAGE CHARACTERISTICS



ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

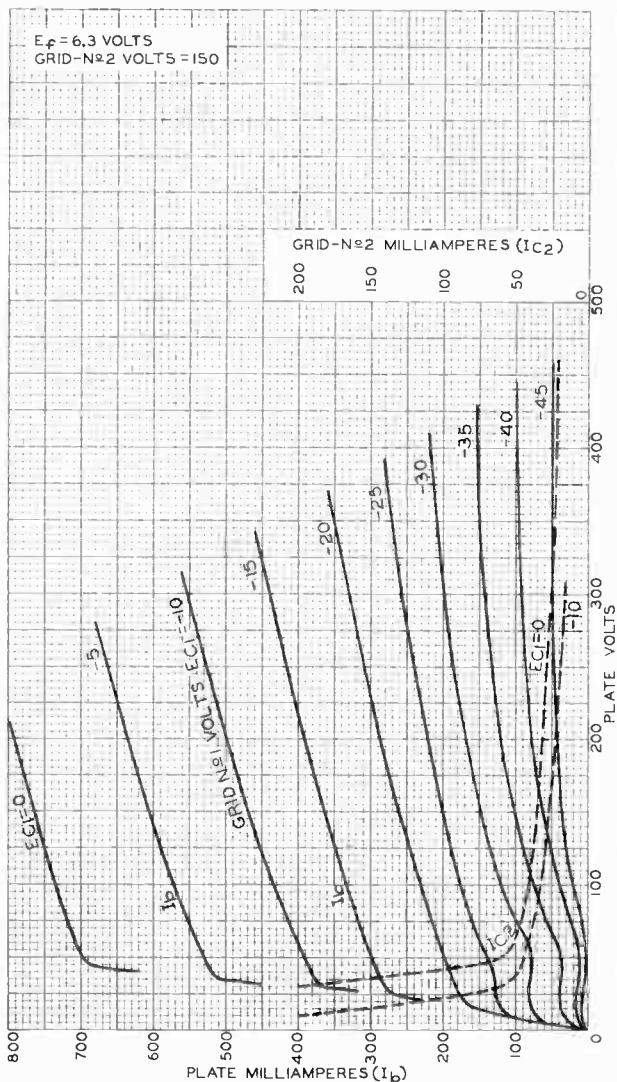
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AVERAGE CHARACTERISTICS

ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9310

Beam Power Tube

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	1.2	amp

Mu-Factor, Grid No.2 to Grid No.1

for plate volts = 150, grid-No.2 volts = 150, grid-No.1 volts = 22.5	4.5	
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Direct Interelectrode Capacitances
(Approx.):^a

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	7	μf

Characteristics, Class A₁ Amplifier:

Plate Voltage	60	250	volts
Grid-No.2 Voltage	150	150	volts
Grid-No.1 Voltage	0	-22.5	volts
Plate Resistance (Approx.)	-	20000	ohms
Transconductance.	-	6600	μmhos
Plate Current	315 ^b	55	ma
Grid-No.2 Current	25 ^b	1.5	ma
Grid-No.1 Voltage (Approx.) for grid-No.2 volts = 150, plate ma. = 1, plate volts =			
250	-	-40	volts
5000.	-	-100	volts

Mechanical:

Operating Position.	Any
Maximum Overall Length.	4-1/4"
Seated Length	3-1/2" ± 3/16"
Diameter.	1.438" to 1.562" ←
Bulb.	T12
Cap	Skirted Miniature (JEDEC No.C1-3)
Base.	Short Medium-Shell Octal 7-Pin ←
	with External Barriers, Style A, Arrangement 1 (JEDEC No. B7-111),
	Short Medium-Shell Octal 7-Pin
	with External Barriers, Style B, Arrangement 1 (JEDEC No. B7-119),
	Short Medium-Shell Octal 6-Pin
	With External Barriers, Style A, Arrangement 2 (JEDEC No. B6-148), or
	Short Medium-Shell Octal 6-Pin
	With External Barriers, Style B, Arrangement 2 (JEDEC No. B6-122)

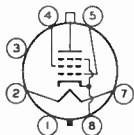
← Indicates a change.



6DQ6-A

Basing Designation for BOTTOM VIEW. 6AM

- Pin 1^c - 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

HORIZONTAL-DEFLECTION AMPLIFIER

→ Maximum Ratings, Design-Maximum Values:

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

DC PLATE-SUPPLY VOLTAGE	770	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^e	6000	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE.	220	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	330	max.	volts
CATHODE CURRENT:			
Peak.	540	max.	ma
Average	155	max.	ma
GRID-No.2 INPUT	3.6	max.	watts
PLATE DISSIPATION ^f	18	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^g	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 max. megohm

^a without external shield.

^b 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.

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

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

^e 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.

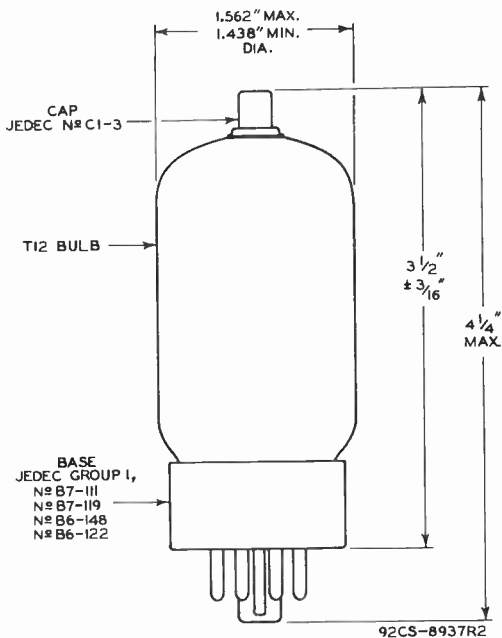
^f An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

^g The dc component must not exceed 100 volts.

→ Indicates a change.



6DQ6-A







6DQ6-A

6DQ6-A

AVERAGE CHARACTERISTICS

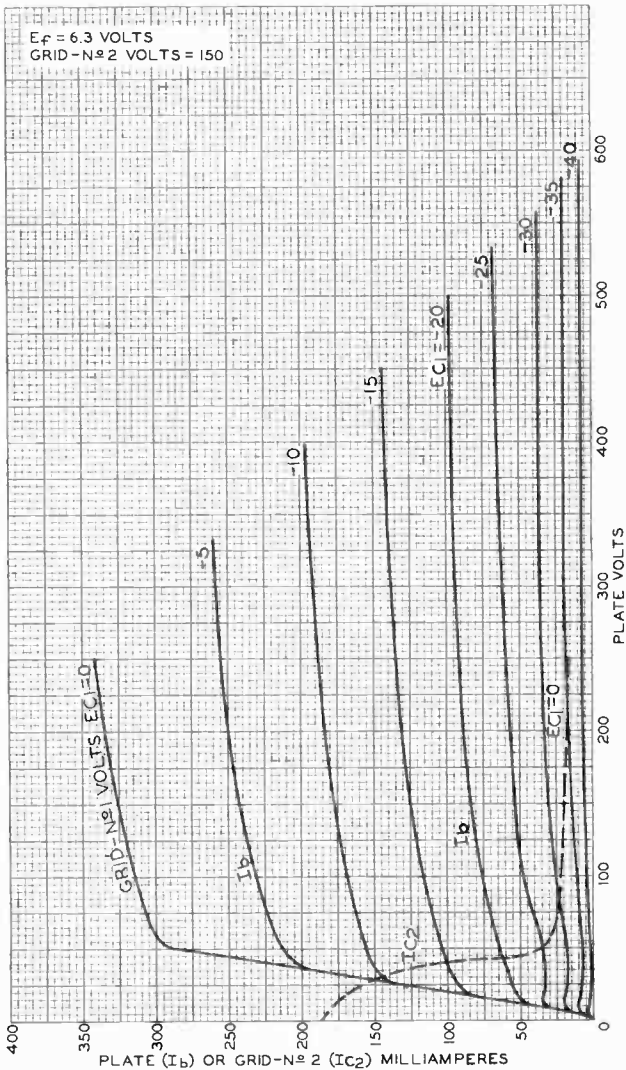


PLATE (I_b) OR GRID-N^o 2 (I_{c2}) MILLIAMPERES

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8953



Beam Power Tube

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC) 6.3 \pm 10% volts

Current at 6.3 volts. 1.2 amp

Mu-Factor, Grid No.2 to Grid No.1

for plate volts = 150, grid-No.2

volts = 150, grid-No.1 volts = -22.5. . . 4.4

Direct Interelectrode Capacitances

(Approx.):^aGrid No.1 to plate. 0.5 $\mu\mu\text{f}$ Grid No.1 to cathode & grid No.3,
grid No.2, and heater 15 $\mu\mu\text{f}$ Plate to cathode & grid No.3,
grid No.2, and heater 7 $\mu\mu\text{f}$ Characteristics, Class A₁ Amplifier:

Plate Voltage 60 250 volts

Grid-No.2 Voltage 150 150 volts

Grid-No.1 Voltage 0 -22.5 volts

Plate Resistance (Approx.). - 18000 ohms

Transconductance. - 7300 μmhos Plate Current 345^b 65 maGrid-No.2 Current 27^b 1.8 ma

Grid-No.1 Voltage (Approx.) for

grid-No.2 volts = 150, plate ma. = 1,

plate volts =

250 - -42 volts

5000. - -100 volts

Mechanical:

Operating Position. Any

Maximum Overall Length. 4-1/4"

Seated Length 3-1/2" \pm 3/16"

Diameter. 1.438" to 1.562"

Bulb. T12

Cap. Skirted Miniature (JEDEC No.C1-3)

Base. Short Medium-Shell Octal 7-Pin

with External Barriers, Style A, Arrangement 1

(JEDEC No.87-111),

Short Medium-Shell Octal 7-Pin

with External Barriers, Style B, Arrangement 1

(JEDEC No.87-119),

Short Medium-Shell Octal 6-Pin

with External Barriers, Style A, Arrangement 2

(JEDEC No.86-148), or

Short Medium-Shell Octal 6-Pin

with External Barriers, Style B, Arrangement 2

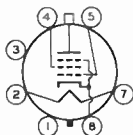
(JEDEC No.86-122)



6DQ6-B

Basing Designation for BOTTOM VIEW. 6AM

Pin 1^c - 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

HORIZONTAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Maximum Values:

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

DC PLATE-SUPPLY VOLTAGE	770	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^a	6500	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No. 2 (SCREEN-GRID) VOLTAGE.	220	max.	volts
PEAK NEGATIVE-PULSE GRID-No. 1 VOLTAGE	330	max.	volts
CATHODE CURRENT:			
Peak.	610	max.	ma
Average	175	max.	ma
GRID-No. 2 INPUT	3.6	max.	watts
PLATE DISSIPATION ^f	18	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 ^g	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 max. megohm

^a Without external shield.

^b 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.

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

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

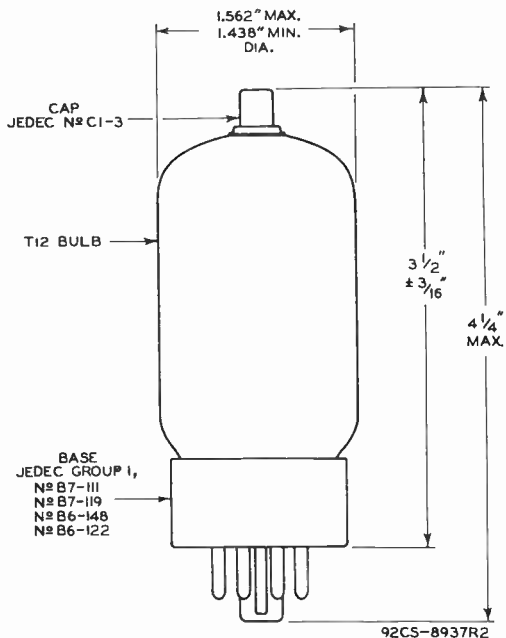
^e This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

^f An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

^g The dc component must not exceed 100 volts.



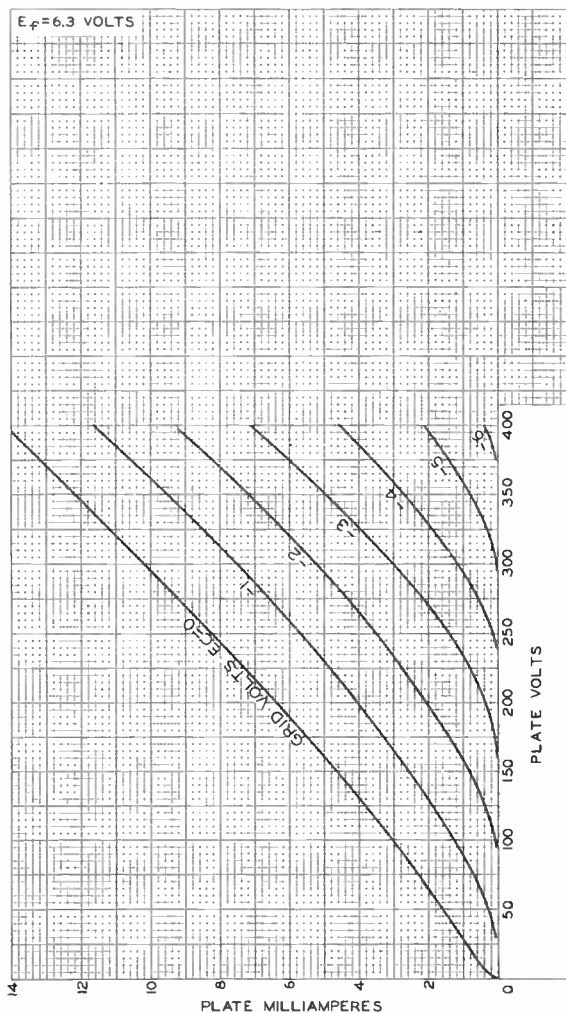
6DQ6-B





AVERAGE PLATE CHARACTERISTICS

Unit No.1



92CM-9912



High-Mu Triode

NUVISTOR TYPE

HAVING EXTENDED CUTOFF CHARACTERISTIC

For Use as Grounded-Cathode Neutralized RF-Amplifier Tube in Tuners of VHF Television and FM Receivers Featuring Improved Weak-Signal-Area Reception

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC) 6.3 \pm 10% volts

Current at 6.3 volts 0.135 amp

Direct Interelectrode Capacitances

(Approx.):

Grid to plate 0.92 μf

Grid to cathode, shell, and heater 4.1 μf

Plate to cathode, shell, and heater 1.7 μf

Plate to cathode 0.18 μf

Heater to cathode 1.3 μf

Characteristics, Class A₁ Amplifier:

Plate Supply Voltage 110 volts

Grid Supply Voltage 0 volts

Cathode Resistor 130 ohms

Amplification Factor 62

Plate Resistance (Approx.) 6900 ohms

Transconductance 9000 μmhos

Plate Current 6.5 ma

Grid Voltage (Approx.) for plate $\mu\text{a} = 100$ -5 volts

Grid Voltage (Approx.) for plate $\mu\text{a} = 10$ -6.8 volts

Mechanical:

Operating Position Any

Maximum Overall Length 0.800"

Maximum Seated Length 0.625"

Maximum Diameter 0.440"

Envelope Metal Shell MT4

Socket Cinch Mfg. Corp. No. 133 65 10 001, or equivalent

Base Medium Ceramic-Wafer Twelvar 5-Pin (JEDEC No. E5-65)

Basing Designation for BOTTOM VIEW 12AQ

Pin 1^a - Internal Connection—
Do Not Use

Pin 2 - Plate

Pin 3 - Same as Pin 1

Pin 4 - Grid

Pin 5 - Same as Pin 1

Pin 6 - Same as Pin 1

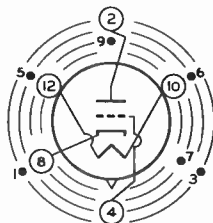
Pin 7 - Same as Pin 1

Pin 8 - Cathode

Pin 9 - Same as Pin 1

Pin 10 - Heater

Pin 12 - Heater



INDEX = LARGE LUG
● = PIN CUT OFF



6DS4

AMPLIFIER — Class A₁

Maximum Ratings, *Design-Maximum Values*:

PLATE SUPPLY VOLTAGE	300 ^b	max.	volts
PLATE VOLTAGE	135	max.	volts
GRID VOLTAGE:			
Negative-bias value	55	max.	volts
Peak-positive value	0	max.	volts
CATHODE CURRENT	15	max.	ma
PLATE DISSIPATION	1	max.	watt
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	100	max.	volts
Heater positive with respect to cathode.	100	max.	volts

Typical Operation:

Plate Voltage	70	volts
Grid Supply Voltage	0	volts
Grid Resistor	47000	ohms
Amplification Factor	68	
Plate Resistance (Approx.)	5440	ohms
Transconductance	12500	μ mhos
Plate Current	8	ma

Maximum Circuit Values:

Grid-Circuit Resistance:^c

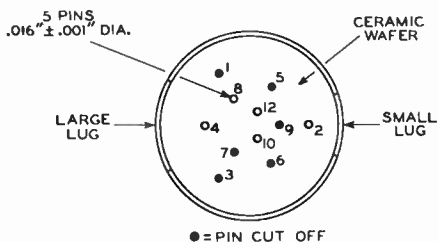
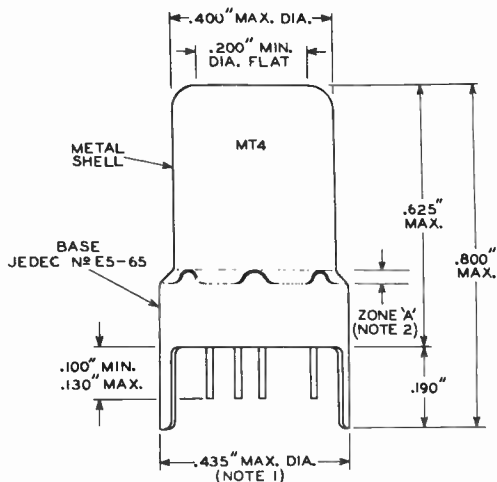
For fixed-bias operation	0.5	max.	megohm
For cathode-bias operation	2.2	max.	megohms

^a pin is cut off close to ceramic wafer.

^b A plate supply voltage of 300 volts may be used provided that a sufficiently large resistor is used in the plate circuit to limit the plate dissipation to one watt under any condition of operation.

^c For operation at metal-shell temperatures up to 125° C.





92CS-10970RI

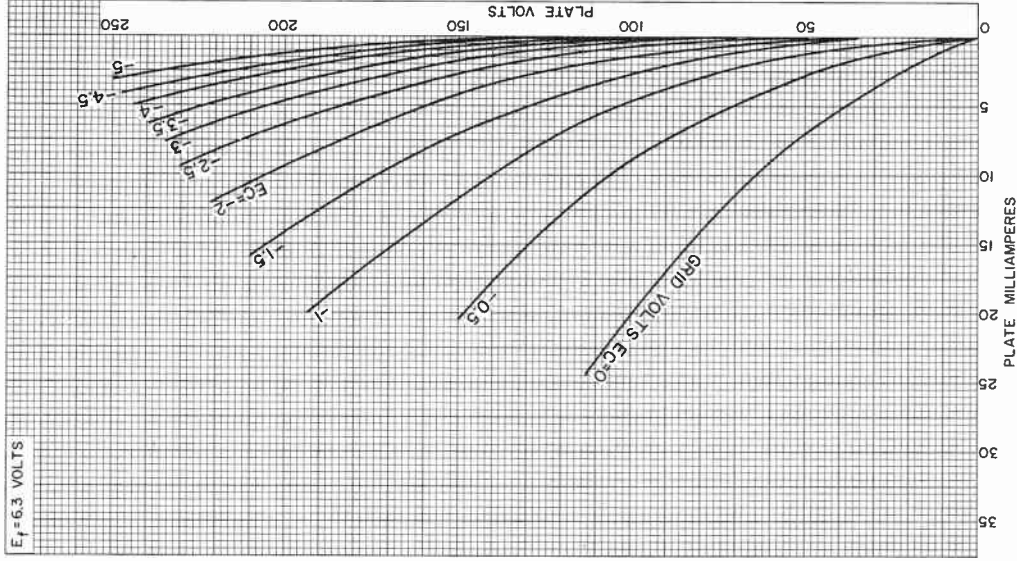
NOTE 1: MAXIMUM OUTSIDE DIAMETER OF 0.440" IS PERMITTED ALONG 0.190" LUG LENGTH.

NOTE 2: SHELL TEMPERATURE SHOULD BE MEASURED IN ZONE "A" BETWEEN BROKEN LINES.



6DS4

AVERAGE PLATE CHARACTERISTICS

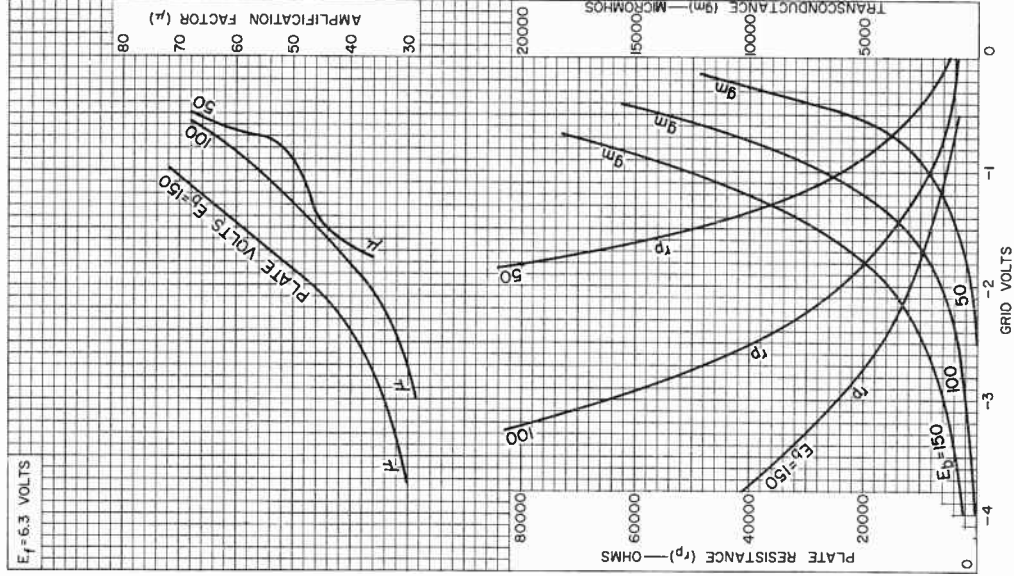


92CM-11209



RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

AVERAGE CHARACTERISTICS



92CM-11210







6DS5

BEAM POWER TUBE

7-PIN MINIATURE TYPE

6DS5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	. . . . .	ac or dc volts
Current	0.8	. . . . .	amp

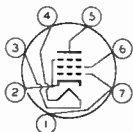
Direct Interelectrode Capacitances (Approx.):⁰

Grid No.1 to plate.	0.19		μ f
Grid No.1 to cathode & grid No.3, grid No.2, and heater	9.5		μ f
Plate to cathode & grid No.3, grid No.2, and heater	6.3		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	T5-1/2
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-GRID) VOLTAGE	250 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value	0 max.	volts
GRID-No.2 INPUT	2 max.	watts
PLATE DISSIPATION	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
BULB TEMPERATURE (At hottest point on bulb surface).	250 max.	$^{\circ}$ C

Typical Operation and Characteristics:

Fixed-Bias Operation

Plate Voltage	200	250	volts
Grid-No.2 Voltage	200	200	volts
Grid-No.1 Voltage	-7.5	-8.5	volts
Peak AF Grid-No.1 Voltage	7.5	8.5	volts

⁰ without external shield.



6DS5

BEAM POWER TUBE

Zero-Signal Plate Current	35	29	ma
Max.-Signal Plate Current	36	32	ma
Zero-Signal Grid-No.2 Current	3	3	ma
Max.-Signal Grid-No.2 Current	9	10	ma
Plate Resistance (Approx.)	28000	28000	ohms
Transconductance	6000	5800	μ hos
Load Resistance	6000	8000	ohms
Total Harmonic Distortion	9	10	%
Max.-Signal Power Output	3	3.8	watts

Cathode-Bias Operation

Plate-Supply Voltage	200	250	volts
Grid-No.2 Supply Voltage	200	200	volts
Cathode Resistor	180	270	ohms
Peak AF Grid-No.1 Voltage	7.5	9.2	volts
Zero-Signal Plate Current	34.5	27	ma
Max.-Signal Plate Current	32.5	25	ma
Zero-Signal Grid-No.2 Current	3.5	3	ma
Max.-Signal Grid-No.2 Current	9	9	ma
Plate Resistance (Approx.)	28000	28000	ohms
Transconductance	6000	5800	μ hos
Load Resistance	6000	8000	ohms
Total Harmonic Distortion	10	10	%
Max.-Signal Power Output	2.8	3.6	watts

Maximum Circuit Values:

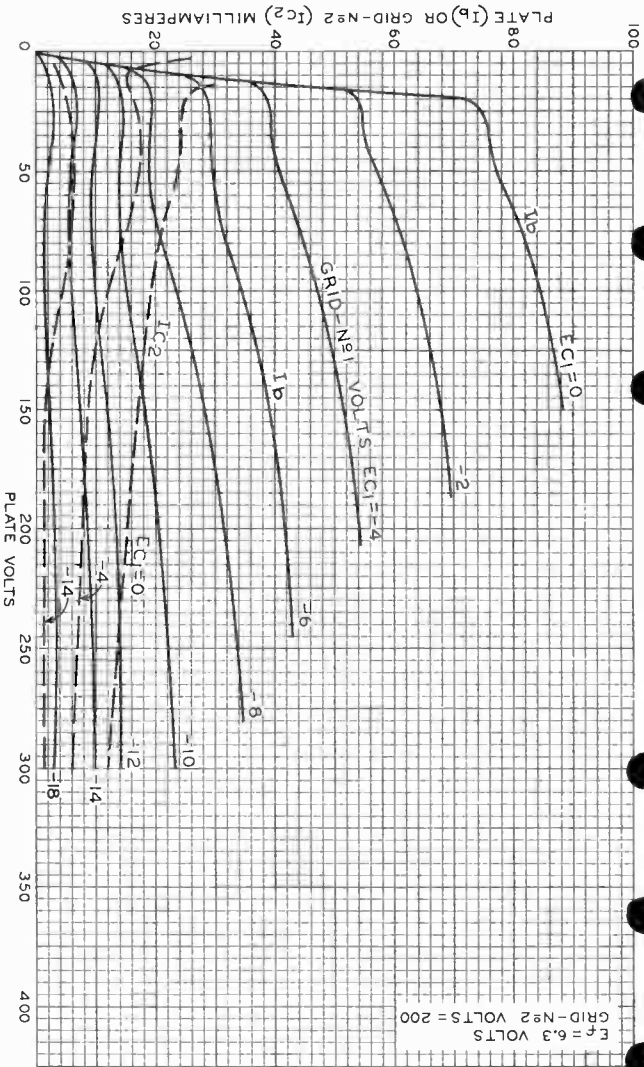
Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	1.0 max.	megohm

6DS5



AVERAGE CHARACTERISTICS



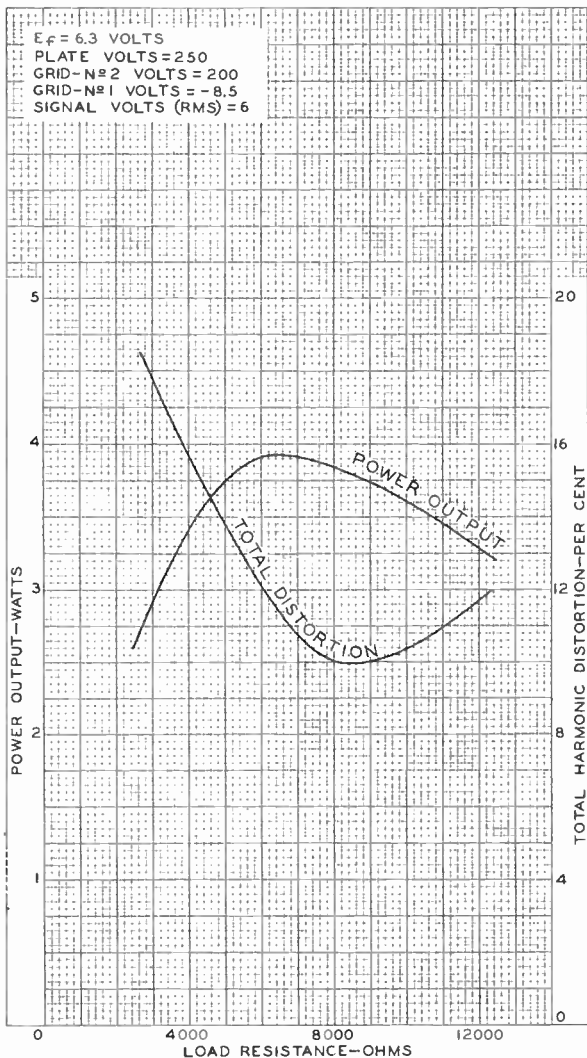
$E_{G1} = 6.3$ VOLTS
 $E_{G2} = 200$ VOLTS

6DS5



6DS5

OPERATION 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		μ f
Grid No.1 to cathode & internal shield, grid No.3, grid No.2, and heater.	5.8		μ f
Grid No.3 to plate.	1.4		μ f
Grid No.1 to grid No.3.	0.1		μ f
Grid No.3 to cathode & internal shield, plate, grid No.2, grid No.1, and heater	6.1		μ f

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	μ mhos
Transconductance, Grid No.3 to plate.	515	μ mhos
Plate Current	1.1	ma
Grid-No.2 Current	2.1	ma
Grid-No.1 Voltage (Approx.) for plate current of 10 μ amp.	-4.5	volts
Grid-No.3 Voltage (Approx.) for plate current of 10 μ amp.	-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" \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.	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

$E_f = 6.3$ VOLTS
GRID-N^o 3 VOLTS = 0
GRID-N^o 2 VOLTS = 100

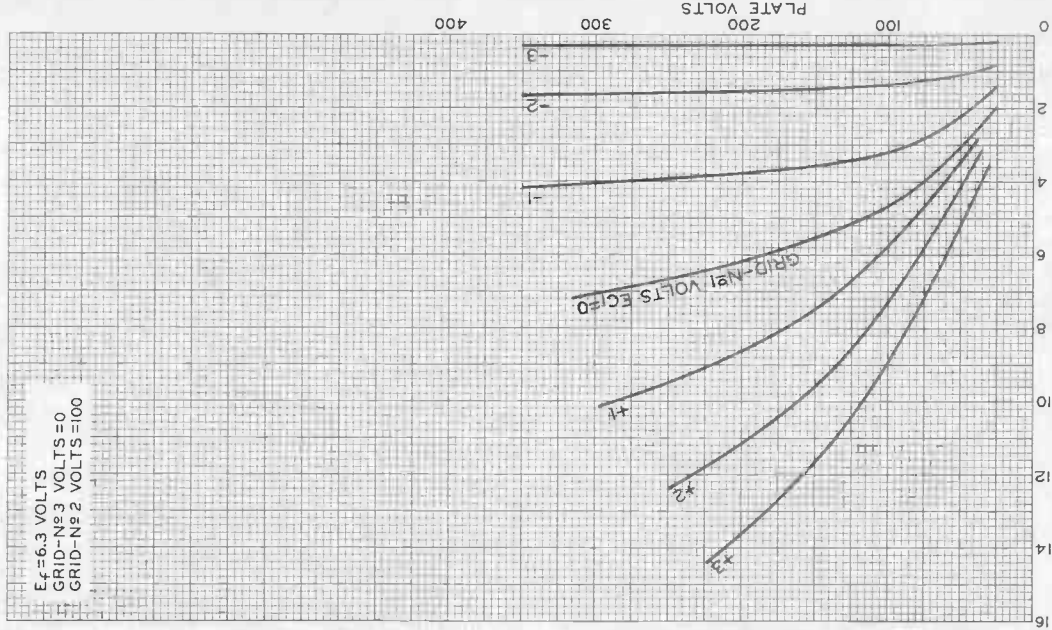
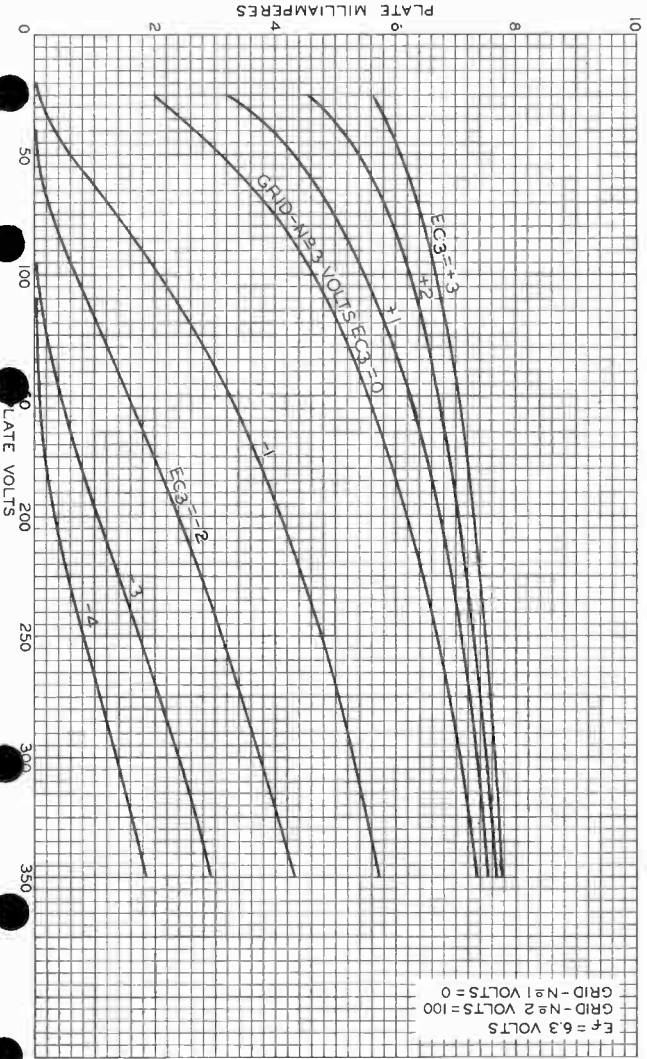


PLATE MILLIAMPERES

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8827



AVERAGE PLATE CHARACTERISTICS

E_f = 6.3 VOLTS
GRID - N#2 VOLTS = 100
GRID - N#1 VOLTS = 0

6DT6



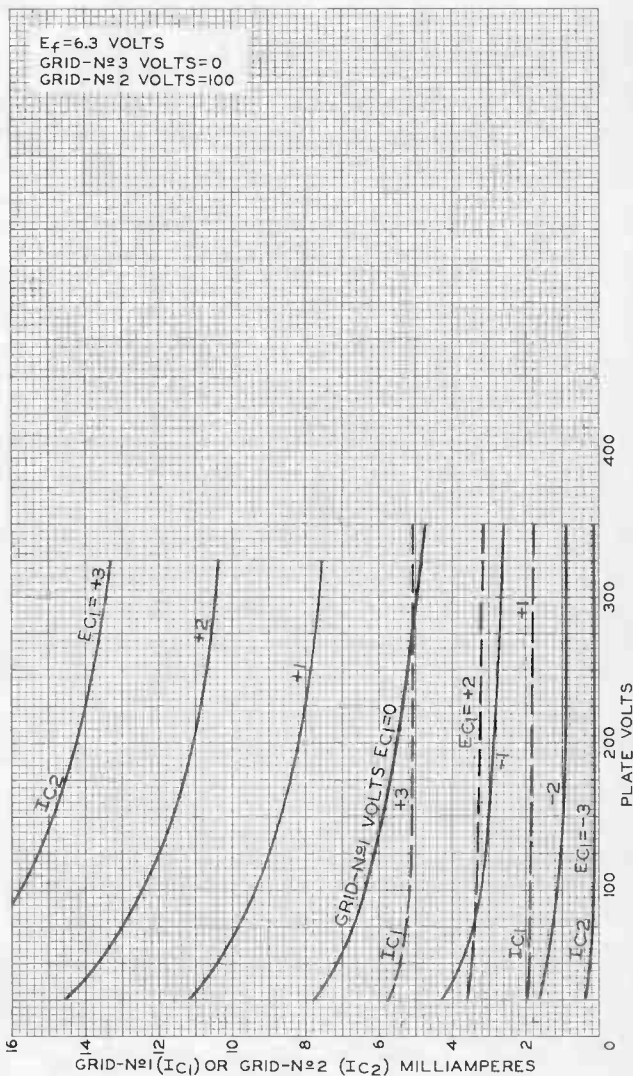
6DT6



6DT6

6DT6

AVERAGE CHARACTERISTICS



TUBE DIVISION

92CM-8828

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

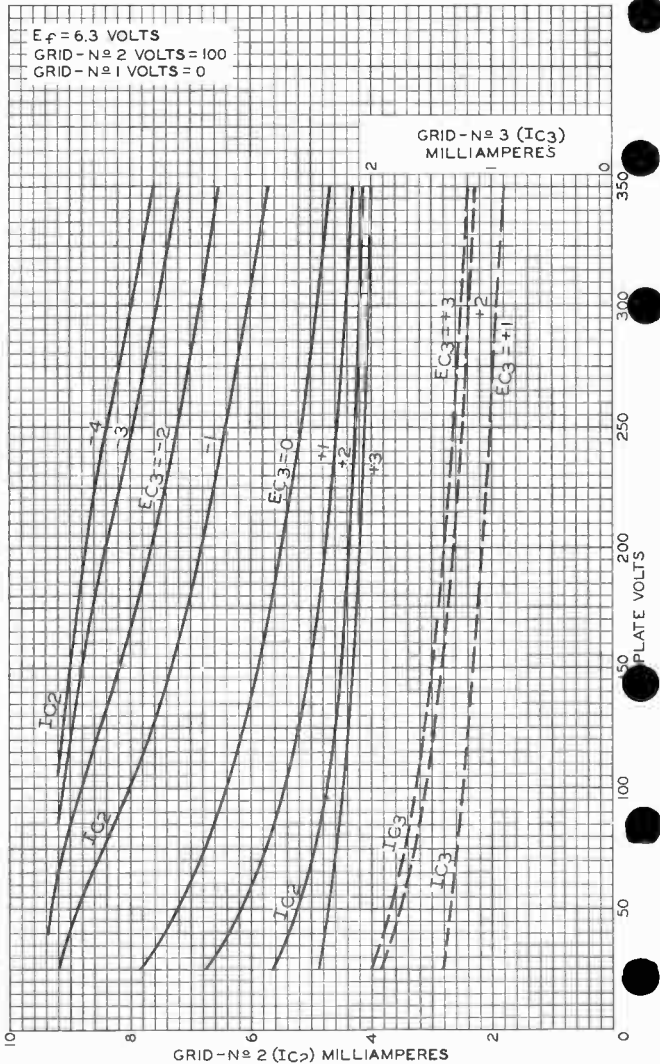
World Radio History

6DT6



6DT6

AVERAGE CHARACTERISTICS



TUBE DIVISION

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World Radio History

92CM-8829

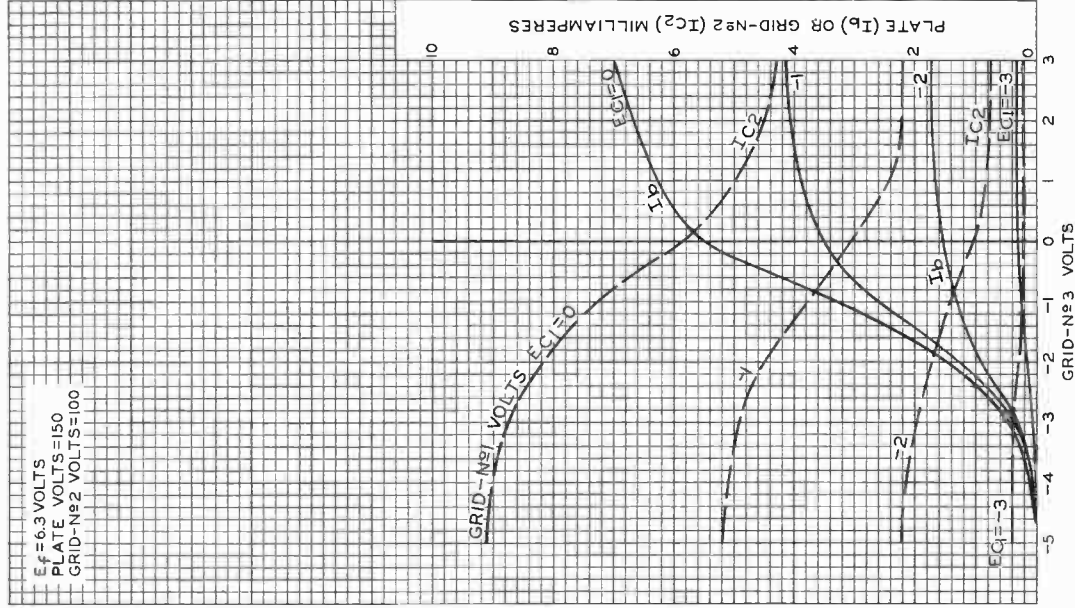


6DT6

6DT6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
PLATE VOLTS = 150
GRID-No2 VOLTS = 100



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

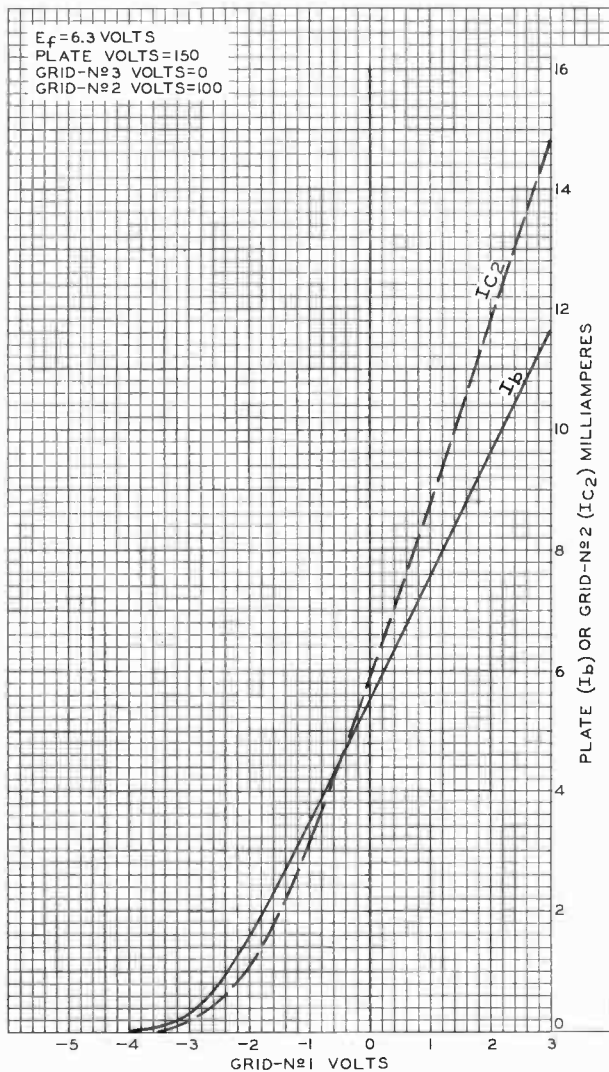
92CM-8826

6DT6



6DT6

AVERAGE CHARACTERISTICS



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

92CM-8825



6DT8

6DT8

HIGH-MU TWIN TRIODE

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3 ac or dc volts
 Current 0.3 amp

Direct Interelectrode Capacitances (Approx.):

	Unit No. 1	Unit No. 2	
<i>Grid-Drive Operation:</i> ^o			
Grid to plate	1.6	1.6	$\mu\mu\text{f}$
Grid to cathode, internal shield, and heater. . . .	2.7	2.7	$\mu\mu\text{f}$
Plate to cathode, internal shield, and heater. . . .	1.6	1.6	$\mu\mu\text{f}$
Heater to cathode ^o	3	3	$\mu\mu\text{f}$
<i>Cathode-Drive Operation:</i> ^o			
Cathode to grid, internal shield, and heater. . . .	-	5.3	$\mu\mu\text{f}$
Plate to grid, internal shield, and heater. . . .	-	2.8	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate-Supply Voltage.	100	250	volts
Cathode 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 μa	-5	-12	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"
 Maximum Diameter. 7/8"
 Dimensional Outline See General Section
 Bulb. T6-1/2
 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
Pin 5 - Heater		

^o with external shield JETEC No. 315 connected to cathode of unit under test except as noted.

^o, ^o: See next page.

6DT8



6DT8

HIGH-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	2.5	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.	0.25	max.	megohm
For cathode-bias operation.	1	max.	megohm

- With external shield JETEC No.315 connected to ground.
- With external shield JETEC No.315 connected to grid of unit under test.
- ▲ The dc component must not exceed 100 volts.



6DT8

6DT8

AVERAGE PLATE CHARACTERISTICS EACH UNIT

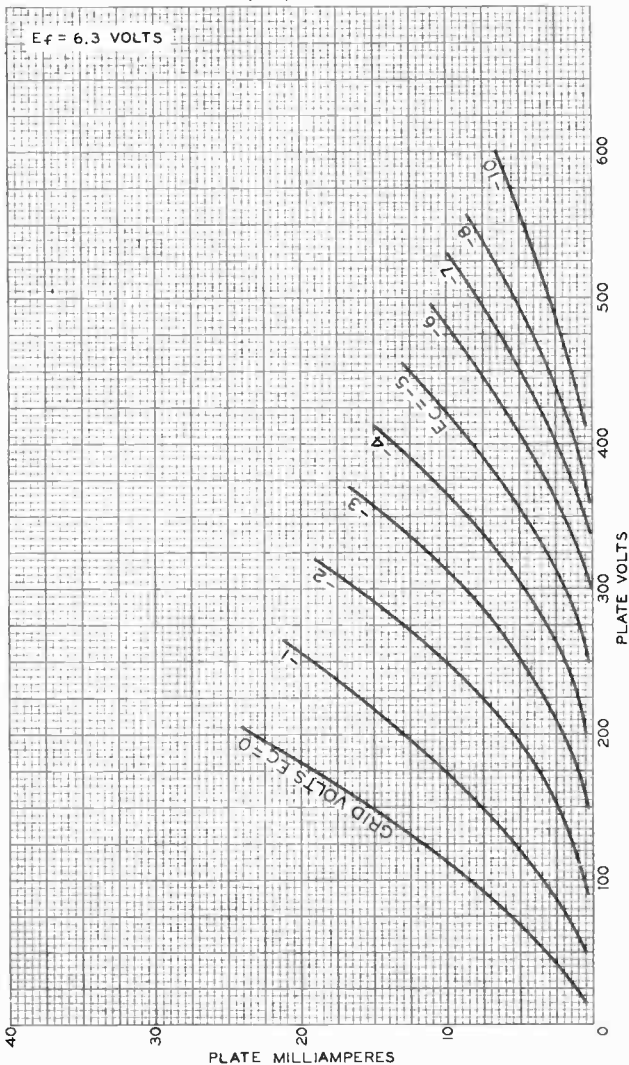


PLATE MILLIAMPERES

PLATE VOLTS

ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9397

World Radio History

6DT8



6DT8

AVERAGE CHARACTERISTICS EACH UNIT

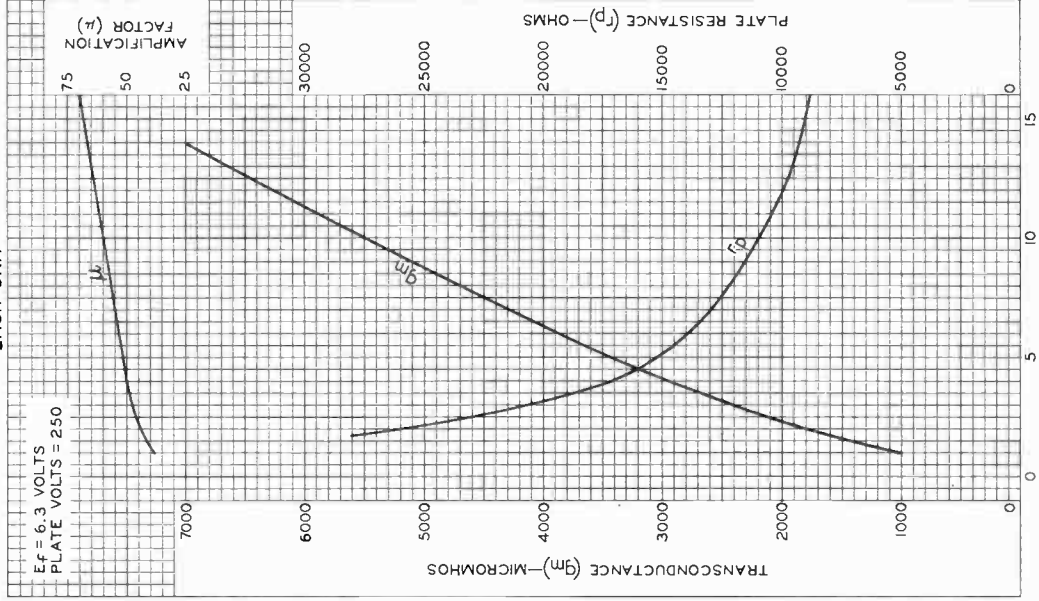


PLATE MILLIAMPERES

ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9396

Beam Power Tube

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	1.2	amp

Direct Interelectrode Capacitances

(Approx.):^a

Grid No.1 to plate.	0.5	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	14	μf
Plate to cathode & grid No.3, grid No.2, and heater	9	μf

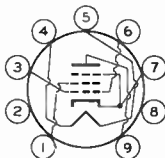
Characteristics, Class A₁ Amplifier:

	<i>Triode Con- nec- tion^b</i>			
Plate Voltage	60	200	150	volts
Grid-No.2 Voltage	150	150	150	volts
Grid-No.1 Voltage	0	-22.5	-22.5	volts
Amplification Factor.	-	-	4.3	
Plate Resistance (Approx.).	-	15000	-	ohms
Transconductance.	-	5500	-	μmhos
Plate Current	260 ^c	55	-	ma
Grid-No.2 Current	20 ^c	2	-	ma
Grid-No.1 Voltage (Approx.) for plate ma. = 0.1	-	-55	-	volts

Mechanical:

Operating Position.	Any
Maximum Overall Length.	3-1/16"
Maximum Seated Length	2-13/16"
Length, Base Seat to Bulb Top (Excluding tip)	2-7/16" ± 3/32"
Diameter.	0.750" to 0.875"
Dimensional Outline	See <i>General Section</i>
Bulb.	T6-1/2
Base.	Small-Button Noval 9-Pin (JEDEC No.E9-1)
Basing Designation for BOTTOM VIEW.	9CK

- Pin 1 - Grid No.2
- Pin 2 - No Con-
nection
- Pin 3 - Grid No.1
- Pin 4 - Heater
- Pin 5 - Heater



- Pin 6 - Grid No.1
- Pin 7 - Cathode,
Grid No.3
- Pin 8 - No Con-
nection
- Pin 9 - Plate



6DW5

VERTICAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^e	2200	max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE.	220	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE.	250	max.	volts
CATHODE CURRENT:			
Peak.	225	max.	ma
Average	65	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 ^f	max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For cathode-bias operation. 2.2 max. megohms

^a Without external shield.

^b With grid No.2 connected to plate.

^c 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.

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

^e 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.

^f The dc component must not exceed 100 volts.



Twin Power Pentode

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC) 6.3 \pm 10% volts

Current at 6.3 volts. 1.52 amp.

Direct Interelectrode Capacitances

(Approx.):^a

	Unit No. 1	Unit No. 2	
Grid No.1 to plate.	0.7	0.5	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.3, grid No.2, and heater	11	11	$\mu\mu\text{f}$
Plate to cathode & grid No.3, grid No.2, and heater	5	5	$\mu\mu\text{f}$
Grid No.1 of unit No.1 to grid No.1 of unit No.2.	0.03		$\mu\mu\text{f}$
Plate of unit No.1 to plate of unit No.2.	1.5		$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage 250 volts

Grid-No.2 Voltage 250 volts

Grid-No.1 Voltage -7.3 volts

Plate Resistance (Approx.) 38000 ohms

Transconductance. 11300 μmhos

Plate Current 48 ma

Grid-No.2 Current 5.5 ma

Mechanical:

Operating Position. Any

Maximum Overall Length. 3-7/8"

Maximum Seated Length 3-5/16"

Diameter. 1.438" to 1.562"

Bulb. T12

Base. Short Medium-Shell Octal 8-Pin

with External Barriers, Style A

(JEDEC Group 1, No. B8-110)

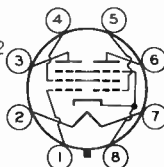
Basing Designation for BOTTOM VIEW. 8JP

Pin 1-Grid No.1
of Unit No.2

Pin 2-Heater

Pin 3-Plate of
Unit No.2

Pin 4-Grid No.2

Pin 5-Grid No.1
of Unit No.1Pin 6-Plate of
Unit No.1

Pin 7-Heater

Pin 8-Cathode,
Grid No.3

6DZ7

PUSH-PULL AF POWER AMPLIFIER — Class AB₁

Maximum Ratings, Design-Maximum Values:

Values are on a Per-Tube Basis

PLATE VOLTAGE	440	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	300	max.	volts
GRID-No.2 INPUT (TOTAL)	4	max.	watts
PLATE DISSIPATION	13.2	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 ^b	max.	volts

Typical Operation:

Values are on a Per-Tube Basis

	<i>Fixed Bias</i>	<i>Cathode Bias</i>	
Plate Voltage	400	300	volts
Grid-No.2 Voltage	250	250	volts
Grid-No.1 Voltage	-11	-	volts
Cathode Resistor.	-	120	ohms
Peak AF Grid-No.1-to-Grid-No.1 Voltage	22	22	volts
Zero-Signal Plate Current	40	66	ma
Max.-Signal Plate Current	100	80	ma
Zero-Signal Grid-No.2 Current	4	7	ma
Max.-Signal Grid-No.2 Current	13	15	ma
Effective Load Resistance (Plate to plate).	9000	9000	ohms
Total Harmonic Distortion	2.5	3.5	%
Max.-Signal Power Output.	18	12	watts

Maximum Circuit Values:

Value is for Each Unit

Grid-No.1-Circuit Resistance.	0.27	max.	megohm
---------------------------------------	------	------	--------

^a without external shield.

^b The dc component must not exceed 100 volts.



Dual Triode

With High-Mu Unit and Low-Mu Unit

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	1.05	amp

Direct Interelectrode Capacitances
(Approx.):^a

	Unit No. 1	Unit No. 2	
Grid to plate	4	8	μf
Grid to cathode and heater. . .	2.2	6	μf
Plate to cathode and heater . .	0.6	1.3	μf

Characteristics, Class A₁ Amplifier:

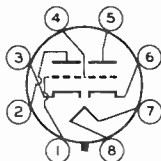
	Unit No. 1	Unit No. 2	
Plate Voltage	250	60 175	volts
Grid Voltage.	-3	0 -25	volts
Amplification Factor.	66	- 5.5	
Plate Resistance (Approx.). . . .	30000	- 920	ohms
Transconductance.	2200	- 6000	μmhos
Plate Current	2	100 ^b 40	ma
Grid Voltage (Approx.) for plate μa = 20	-5.3	- -	volts
Grid Voltage (Approx.) for plate μa = 200.	-	- -45	volts

Mechanical:

Operating Position.	Any
Maximum Overall Length.	3"
Maximum Seated Length	2-7/16"
Maximum Diameter.	1-9/32"
Bulb.	T9
Base.	Intermediate-Shell Octal 8-Pin (JEDEC Group 1, B8-6)

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



VERTICAL-DEFLECTION OSCILLATOR

Values are for Unit No. 1

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	350 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	400 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 ^d max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation.	1 max.	megohm
For cathode-bias operation.	2.2 max.	megohms

VERTICAL-DEFLECTION AMPLIFIER

Values are for Unit No. 2

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	550 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^e	1500 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	250 max.	volts
CATHODE CURRENT:		
Peak.	175 max.	ma
Average	50 max.	ma
PLATE DISSIPATION	10 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 ^d max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation.	1 max.	megohm
For cathode-bias operation.	2.2 max.	megohms

^a without external shield.

^b 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.

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

^d The dc component must not exceed 100 volts.

^e 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.





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

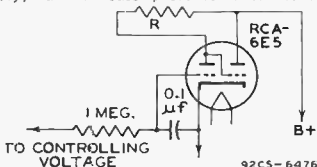
Plate-Supply Voltage		250 max. volts	
Target Voltage		250 max. volts ←	
		125 min. volts ←	
D-C Heater-Cathode Potential		90 max. volts ←	
Typical Operation:			
Plate and Target Supply	125	250	volts ←
Series Triode-Plate Resistor**	1	1	megohm ←
Target Current*** †	0.8	2	ma. ←
Triode-Plate Current***	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.



92CS-6476V

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

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

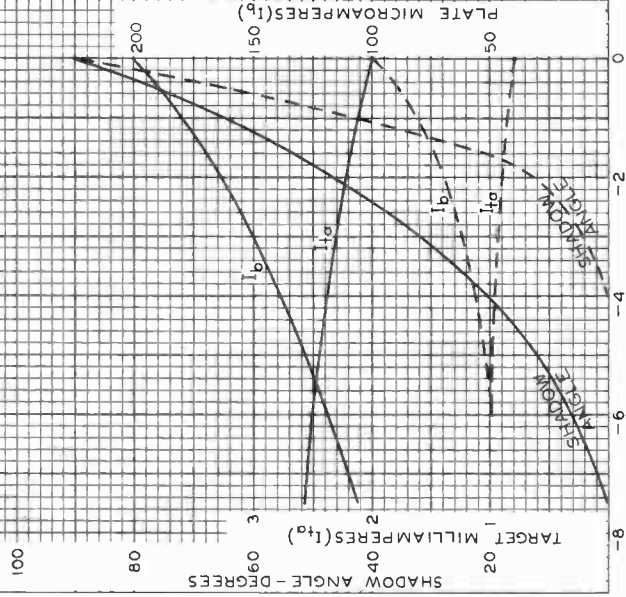
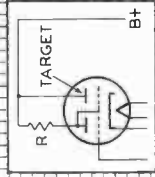


6E5

AVERAGE CONTROL CHARACTERISTICS

$E_f = 6.3$ VOLTS

CURVE	PLATE - SUPPLY VOLTS (B+)	SERIES PLATE RESISTOR (R) - MEG.	RE-RE-
---	250	1.0	
----	125	1.0	



Sharp-Cutoff Tetrode

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 \pm 10%	volts
Current at 6.3 volts.	0.7	amp

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^a</i>	
Grid No.1 to plate.	0.06 max.	0.05 max.	$\mu\mu\text{f}$
Grid No.1 to cathode & internal shield, grid No.2, and heater.	3.8	4.5	$\mu\mu\text{f}$
Plate to cathode & internal shield, grid No.2, and heater.	2.3	3	$\mu\mu\text{f}$

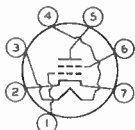
Characteristics, Class A₁ Amplifier:

Plate Voltage	250	volts
Grid-No.2 Voltage	140	volts
Grid-No.1 Voltage	-1	volt
Plate Resistance (Approx.)	0.15	megohm
Transconductance.	8000	μmhos
Plate Current	10	ma
Grid-No.2 Current	0.95	ma
Grid-No.1 Voltage (Approx.) for transconductance (μmhos) = 100 or less	-6	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	See <i>General Section</i>
Bulb.	T5-1/2
Base.	Small-Button Miniature 7-Pin (JEDEC No. E7-1)
Basing Designation for BOTTOM VIEW.	7EW

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 - Cathode,
Internal
Shield



6EA5

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	250	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	150	max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE: Positive-bias value	0	max.	volts
CATHODE CURRENT	20	max.	ma
GRID-No.2 INPUT	0.5	max.	watt
PLATE DISSIPATION	3.25	max.	watts
PEAK HEATER-CATHODE VOLTAGE: Heater negative with respect to cathode .	200	max.	volts
Heater positive with respect to cathode .	200 ^b	max.	volts

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

^b The dc component must not exceed 100 volts.



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 (AC or DC)	6.3	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^a	
<i>Triode Unit:</i>			
Grid to plate	1.7	1.7	μf →
Grid to cathode, pentode cathode & pentode grid No.3 & internal shield, and heater	3	3.2	μf
Plate to cathode, pentode cathode & pentode grid No.3 & internal shield, and heater	1.4	1.9	μf
<i>Pentode Unit:</i>			
Grid No.1 to plate	0.02 max.	0.01 max.	μf
Grid No.1 to cathode & grid No.3 & internal shield, grid-No.2, and heater	5	5	μf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater	2.6	3.4	μf
Heater to cathode (Each unit) .	3	3 ^b	μf

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	200000	ohms →
Transconductance	8500	6400	μmhos
Plate Current	18	12	ma
Grid-No.2 Current	—	4	ma
Grid-No.1 Voltage (Approx.) for plate $\mu a = 10$	-12	-9	volts

→ Indicates a change.

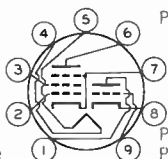


6EA8

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
 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

AMPLIFIER — Class A₁

Maximum Ratings, *Design-Maximum Values:*

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
PLATE VOLTAGE	330 max.	330 max.	volts
GRID-No. 2 (SCREEN-GRID) SUPPLY VOLTAGE.	-	330 max.	volts
GRID-No. 2 VOLTAGE	-	See <i>Grid-No. 2 Input</i>	

Rating Chart at front of Receiving Tube Section

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 <i>Grid-No. 2 Input</i>	

Rating Chart at front of Receiving Tube Section

→ PLATE DISSIPATION	2.5 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 ^c max.	200 ^c max.	volts

- ^a with external shield JEDEC No. 315 connected to cathode of unit under test except as noted.
^b with external shield JEDEC No. 315 connected to ground.
^c The dc component must not exceed 100 volts.

→ Indicates a change.





6EH5

6EH5

POWER PENTODE

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 1.2 amp

Direct Interelectrode Capacitances (Approx.):⁰

Grid No.1 to plate 0.65 $\mu\mu\text{f}$

Grid No.1 to cathode & grid No.3,
grid No.2, and heater. 17 $\mu\mu\text{f}$

Plate to cathode & grid No.3,
grid No.2, and heater. 9 $\mu\mu\text{f}$

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" \pm 3/32"

Diameter 0.650" to 0.750"

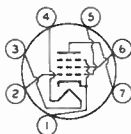
Dimensional Outline See General Section

Bulb T5-1/2

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-GRID) VOLTAGE 117 max. volts

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

Positive-bias value 0 max. volts

GRID-No.2 INPUT 1.75 max. watts

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

BULB TEMPERATURE (At hottest point
on bulb surface) 220 max. °C

Typical Operation and Characteristics:

Plate-Supply Voltage 110 volts

Grid-No.2 Supply Voltage 115 volts

Cathode Resistor 62 ohms

Peak AF Grid-No.1 Voltage 3 volts

⁰, [▲]: See next page.

6EH5



6EH5

POWER PENTODE

Zero-Signal Plate Current.	42	ma
Max.-Signal Plate Current.	42	ma
Zero-Signal Grid-No.2 Current.	11.5	ma
Max.-Signal Grid-No.2 Current.	14.5	ma
Plate Resistance (Approx.)	11000	ohms
Transconductance	14600	μmhos
Load Resistance.	3000	ohms
Total Harmonic Distortion.	7	%
Max.-Signal Power Output	1.4	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:**

PLATE VOLTAGE.	150 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE.	130 max.	volts
GRID-No.2 INPUT.	1.75 max.	watts
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
BULB TEMPERATURE (At hottest point on bulb surface)		
	220 max.	°C

Typical Operation and Characteristics;*Values are for 2 tubes*

Plate-Supply Voltage	140	volts
Grid-No.2 Supply Voltage	120	volts
Cathode Resistor	68	ohms
Peak AF Grid-No.1-to-Grid-No.1 Voltage	9.4	volts
Zero-Signal Plate Current.	47	ma
Max.-Signal Plate Current.	51	ma
Zero-Signal Grid-No.2 Current.	11	ma
Max.-Signal Grid-No.2 Current.	17.7	ma
Effective Load Resistance (Plate to plate).	6000	ohms
Total Harmonic Distortion.	5	%
Max.-Signal Power Output	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

° without external shield.

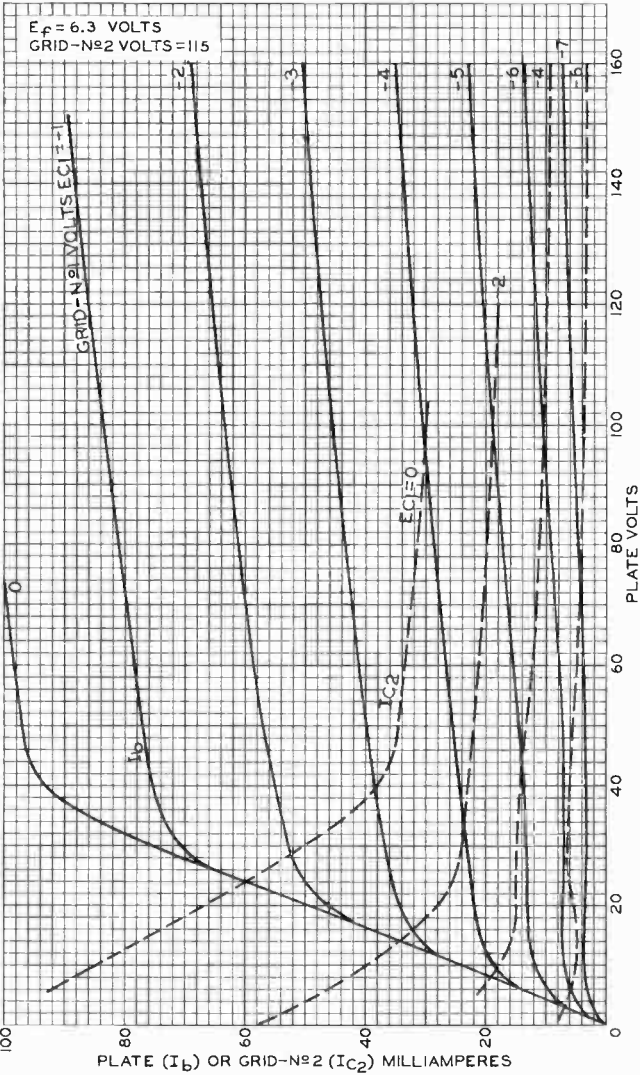
▲ The dc component must not exceed 100 volts.



6EH5

6EH5

AVERAGE CHARACTERISTICS



ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9623RI

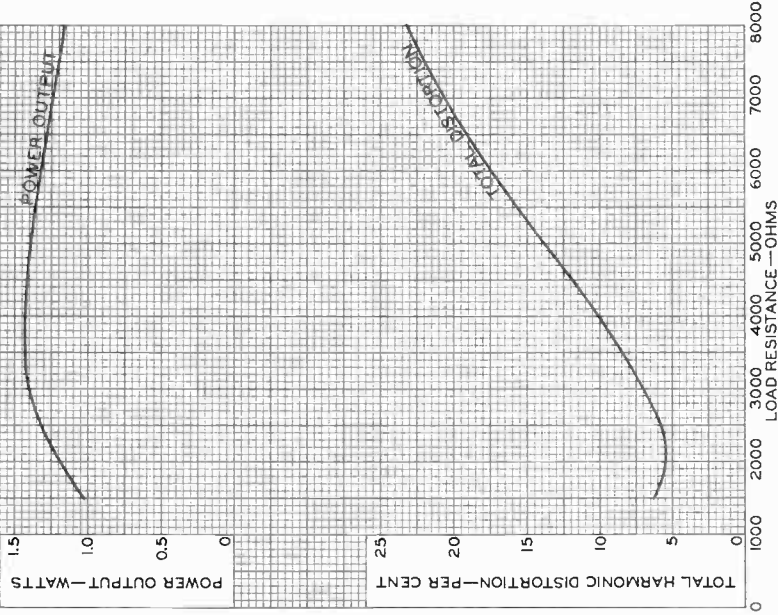
6EH5



6EH5

OPERATION CHARACTERISTICS

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 110
 GRID-N₂ VOLTS = 115
 CATHODE RESISTOR (OHMS) = 62
 CATHODE BYPASS CAPACITOR (μ f) = 100
 SIGNAL VOLTS (RMS) = 2.1



Beam Power Tube

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3	volts
Current	0.8	amp

Direct Interelectrode Capacitances:^a

Grid No.1 to plate	0.7 max.	μmf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	10	μmf
Plate to cathode & grid No.3, grid No.2, and heater	5.1	μmf

Characteristics, Class A₁ Amplifier:

Plate Voltage	60	250	volts
Grid-No.2 Voltage	250	250	volts
Grid-No.1 Voltage	0	-18	volts
Mu Factor, Grid No.1 to Grid No.2	-	8.7	
Plate Resistance (Approx.)	-	0.05	megohm
Transconductance	-	5100	μmhos
Plate Current	180 ^b	40	ma
Grid-No.2 Current	30 ^b	3	ma
Grid-No.1 Voltage (Approx.) for plate ma. = 0.2	-	-37	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	3-1/16"
Maximum Seated Length	2-13/16"
Length, Base Seat to Bulb Top (Excluding tip)	2-7/16" \pm 3/32"
Diameter	0.750" to 0.850"
Dimensional Outline	See <i>General Section</i>
Bulb	T6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No.E9-1)

Basing Designation for BOTTOM VIEW 9HN

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 - Internal
Connection—
Do Not Use

Pin 9 - Plate

VERTICAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

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

DC PLATE VOLTAGE	315 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) ^d	2200 ^e max.	volts

← Indicates a change.



6EM5

DC GRID-No.2 (SCREEN-GRID) VOLTAGE.	285	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE.	250	max.	volts
CATHODE CURRENT:			
Peak.	210	max.	ma
Average	60	max.	ma
GRID-No.2 INPUT	1.5	max.	watts
PLATE DISSIPATION	10	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^f	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).	250	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation.	2.2	max.	megohms
For cathode-bias operation.	2.2	max.	megohms

^a without external shield.

^b 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.

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

^d This rating is applicable when 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.

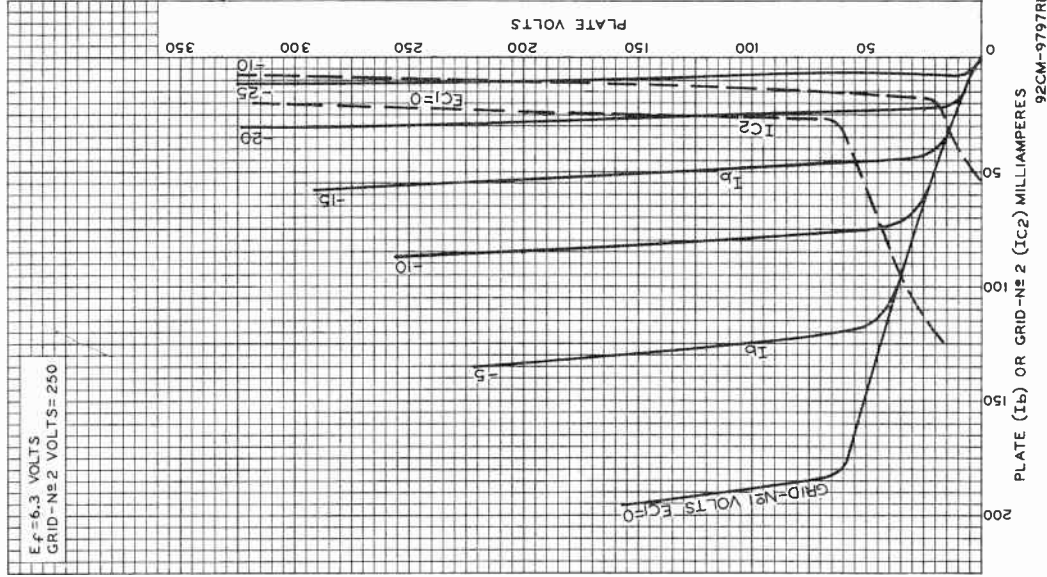
^e under no circumstances should this absolute-maximum value be exceeded.

^f The dc component must not exceed 100 volts.



6EM5

AVERAGE CHARACTERISTICS



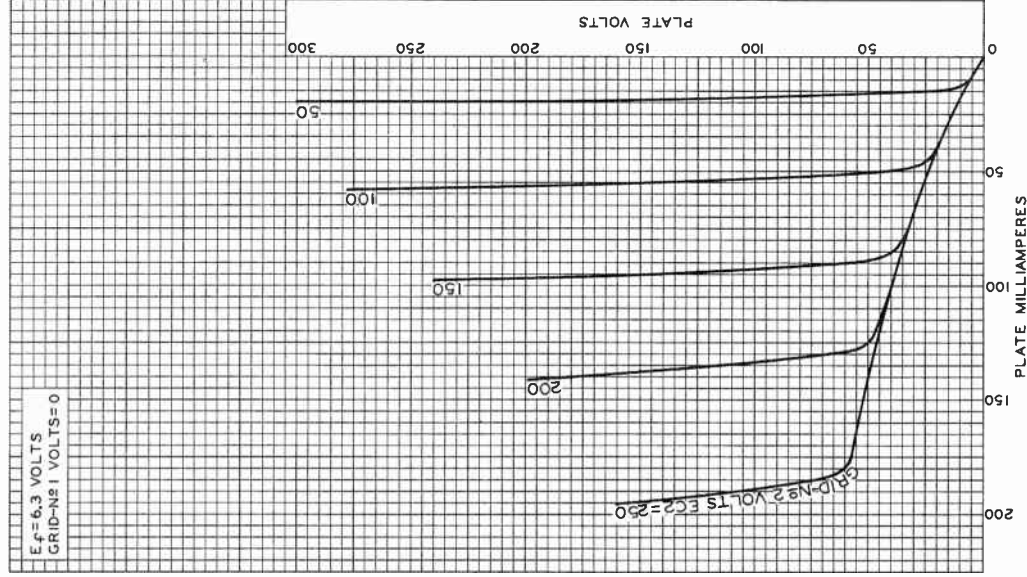
RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.

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6EM5

AVERAGE PLATE CHARACTERISTICS



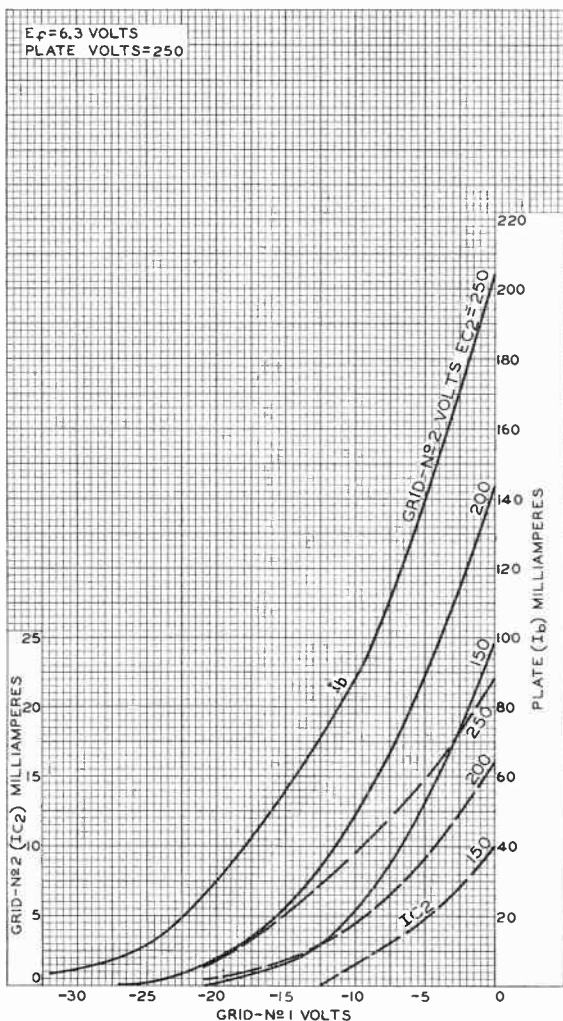
92CM-9672

RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



AVERAGE CHARACTERISTICS



92CM-9673RI







6EM5

BEAM POWER TUBE

9-PIN MINIATURE TYPE

For vertical-deflection-amplifier service in 110° systems

6EM5

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.8	amp

Direct Interelectrode Capacitances:^o

Grid No.1 to plate	0.7 max.	μmf
Grid No.1 to cathode & grid No.3, grid No.2, and heater.	10	μmf
Plate to cathode & grid No.3, grid No.2, and heater.	5.1	μmf

Characteristics, Class A₁ Amplifier:

Plate Voltage	60	250	volts
Grid-No.2 (Screen-Grid) Voltage	250	250	volts
Grid-No.1 (Control-Grid) Voltage	0	-18	volts
Mu Factor, Grid No.1 to Grid No.2	-	8.7	
Transconductance	-	5100	μmhos
Plate Current	180*	35	ma
Grid-No.2 Current	30*	3	ma
Grid-No.1 Voltage (Approx.) for plate ma. = 1.	-	-37	volts

Mechanical:

Operating Position Any

Maximum Overall Length 3-1/16"

Maximum Seated Length 2-13/16"

Length, Base Seat to Bulb Top (Excluding tip) 2-7/16" ± 3/32"

Diameter 0.750" to 0.850"

Dimensional Outline See General Section

Bulb T6-1/2

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

Basing Designation for BOTTOM VIEW 9HM

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 - Internal
Connection—
Do Not Use
Pin 9 - Plate

VERTICAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:

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

DC PLATE VOLTAGE	315 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE {Absolute maximum} [#]	2200 [■] max.	volts

^o, [■], [#]: See next page.

6EM5



6EM5

BEAM POWER TUBE

DC GRID-No.2 (SCREEN-GRID) VOLTAGE.	285	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE.	250	max.	volts
PEAK CATHODE CURRENT.	210	max.	ma
DC CATHODE CURRENT.	60	max.	ma
GRID-No.2 INPUT	1.5	max.	watts
PLATE DISSIPATION	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 on bulb surface).	250	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation.	2.2	max.	megohms
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 when 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.



6EM5

6EM5

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-№2 VOLTS = 250

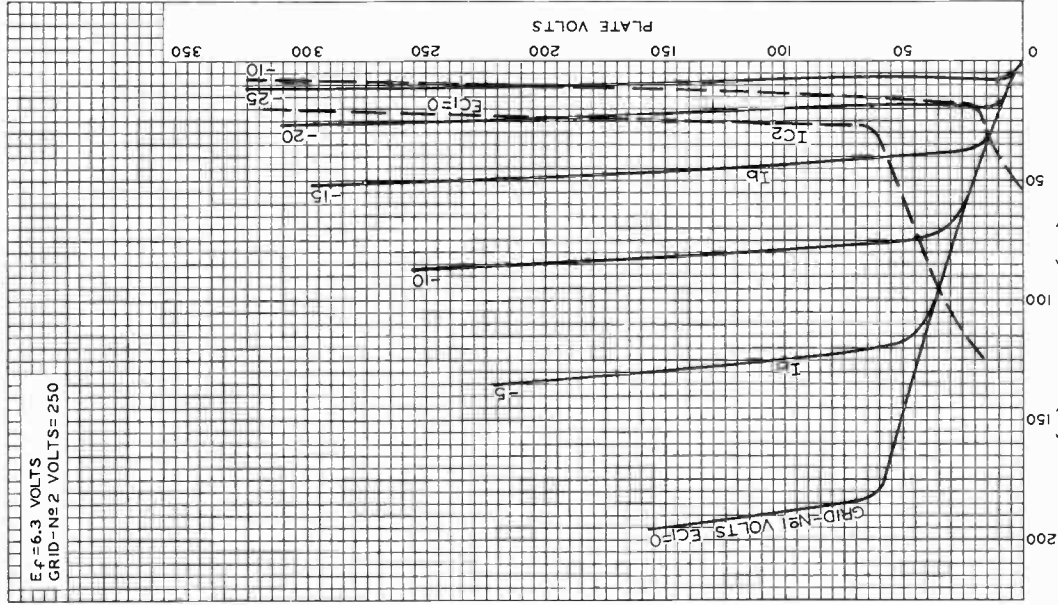


PLATE (I_b) OR GRID-№2 (I_{c2}) MILLIAMPERES

ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9797



6EM5

AVERAGE PLATE CHARACTERISTICS

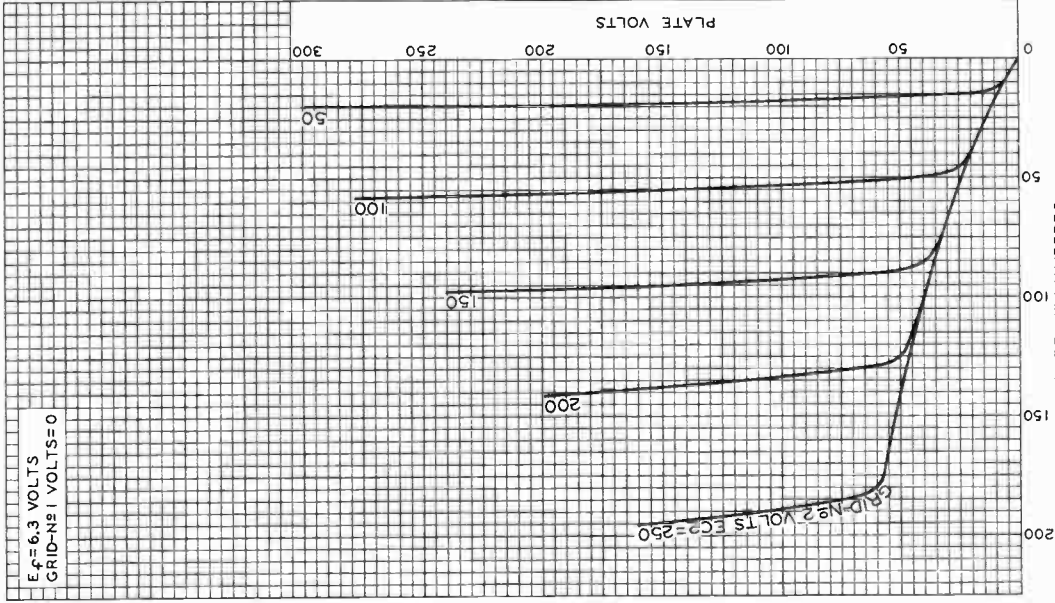


PLATE MILLIAMPERES
ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9672

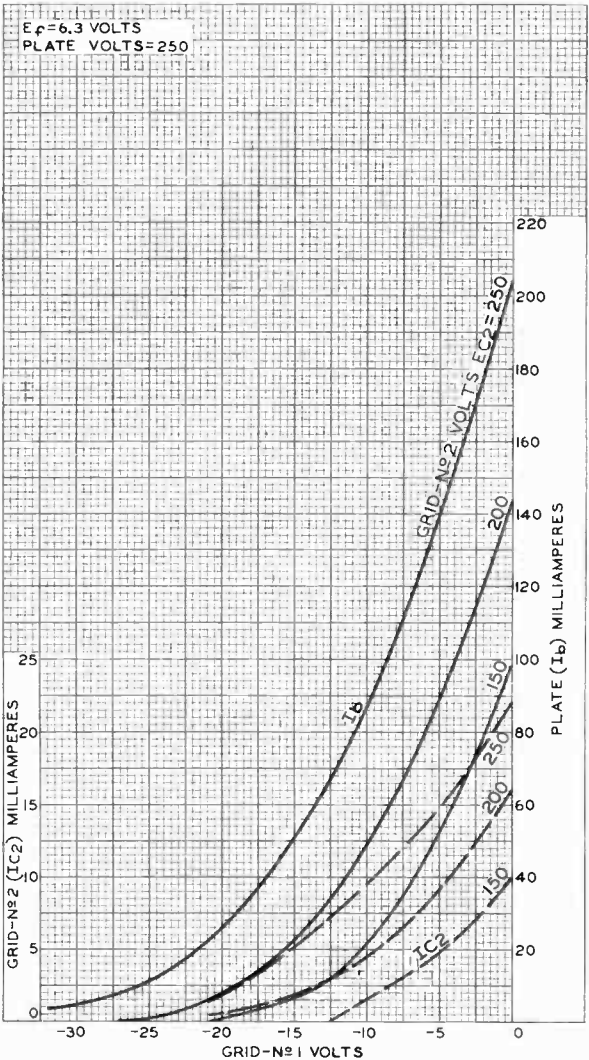
6EM5



6EM5

6EM5

AVERAGE CHARACTERISTICS





Dual Triode

With High-Mu Unit and Low-Mu Unit

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	0.925	amp

Direct Interelectrode Capacitances (Approx.):^a

	Unit No. 1	Unit No. 2	
Grid to plate	4.8	10	μμf
Grid to cathode and heater . . .	2.2	7	μμf
Plate to cathode and heater . . .	0.6	1.8	μμf

Characteristics, Class A₁ Amplifier:

	Unit No. 1	Unit No. 2	
Plate Voltage	250	150	volts
Grid Voltage	-3	-20	volts
Amplification Factor	68	5.4	
Plate Resistance (Approx.)	40000	750	ohms
Transconductance	1600	7200	μmhos
Plate Current	1.4	50	ma
Plate Current for plate volts = 60 and grid volts = 0	-	95	ma
Plate Current for grid volts = -28 .	-	10	ma
Grid Voltage (Approx.) for plate μa = 10	-5.5	-	volts
Grid Voltage (Approx.) for plate μa = 100	-	-45	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	2-7/8" ←
Maximum Seated Length	2-5/16" ←
Maximum Diameter	1-9/32"

Bulb T9

Base Short Intermediate-Shell Octal 8-Pin

with External Barriers (JEDEC Group 1, B8-58)

Basing Designation for BOTTOM VIEW 8BD

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

← indicates a change.



6EM7

VERTICAL-DEFLECTION OSCILLATOR

Values are for Unit No. 1

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	400	max.	volts
CATHODE CURRENT:			
Peak.	77	max.	ma
Average	22	max.	ma
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 ^c	max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For grid-resistor-bias or cathode-bias operation. 2.2 max. megohms

VERTICAL-DEFLECTION AMPLIFIER

Values are for Unit No. 2

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	1500	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	250	max.	volts
CATHODE CURRENT:			
Peak.	175	max.	ma
Average	50	max.	ma
PLATE DISSIPATION	10	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^c	max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For grid-resistor-bias or cathode-bias operation. 2.2 max. megohms

^a without external shield.

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

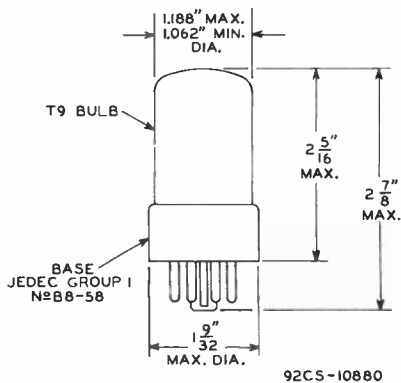
^c The dc component must not exceed 100 volts.

^d 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.

OPERATING CONSIDERATIONS

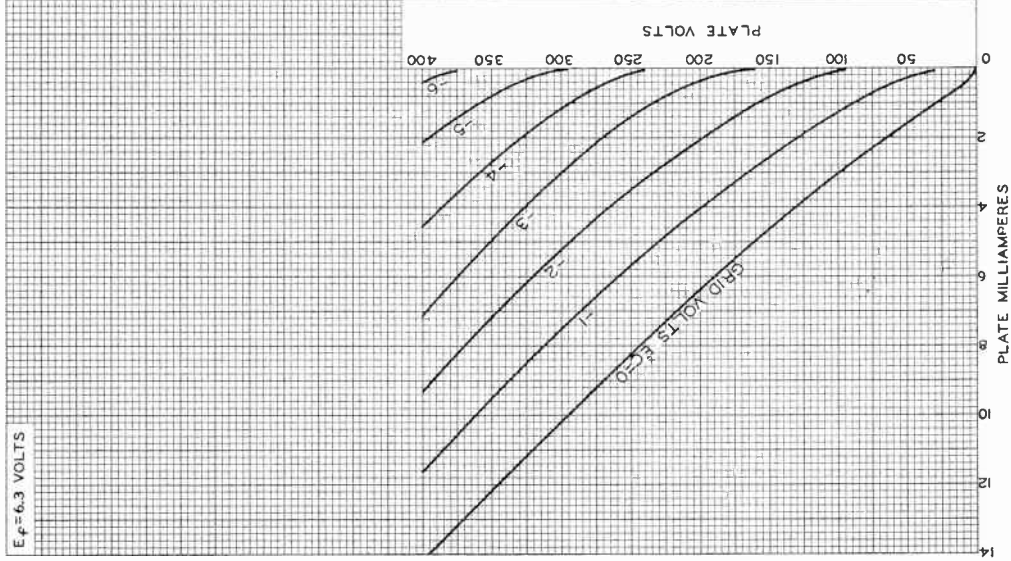
The bulb becomes hot during operation. To insure adequate cooling, therefore, it is essential that free circulation of air be provided.





6EM7

AVERAGE PLATE CHARACTERISTICS Unit No.1



92CM-9912

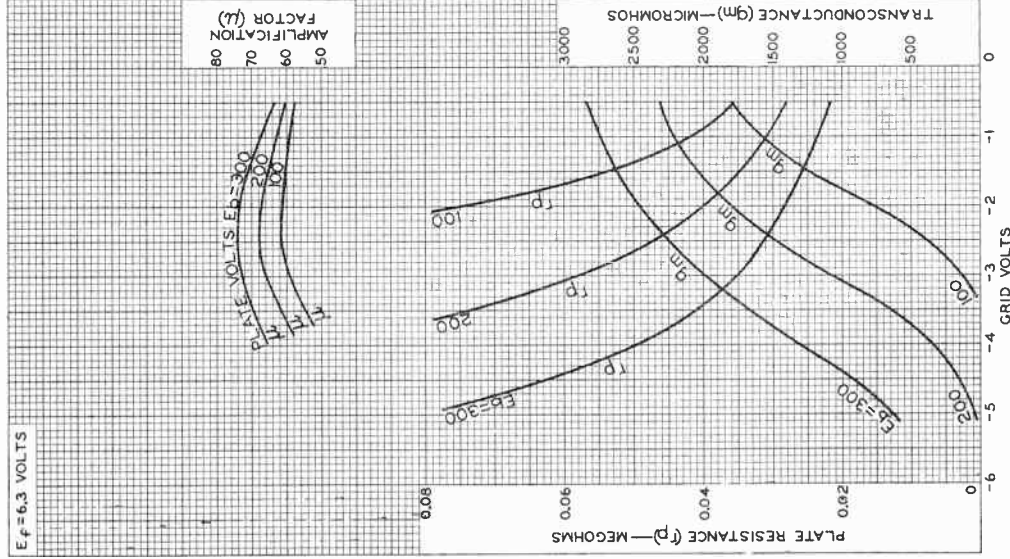
RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



6EM7

AVERAGE CHARACTERISTICS Unit No.1



92CM-9915RI

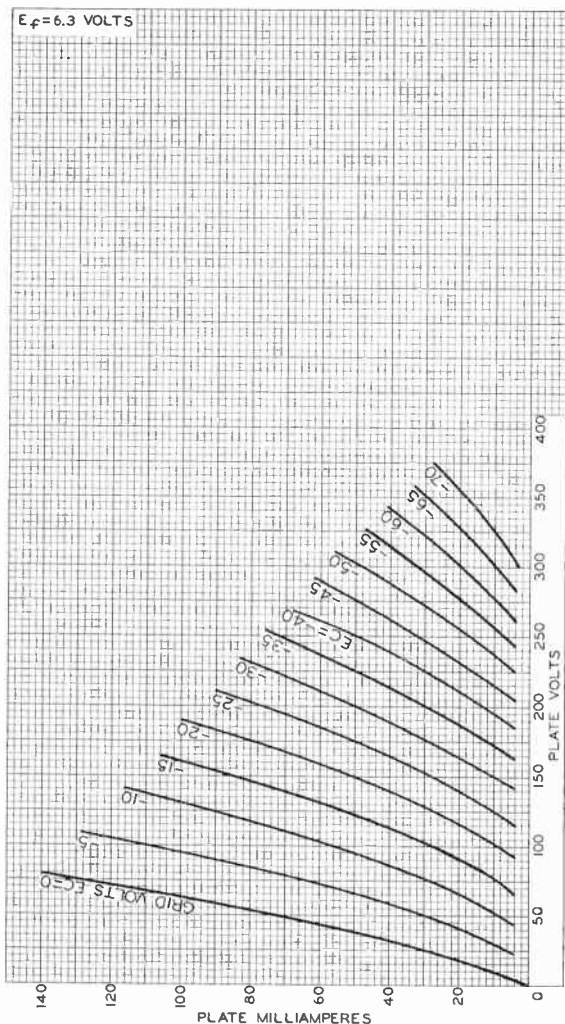


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Harrison, N. J.

DATA 3
5-61

6EM7

AVERAGE PLATE CHARACTERISTICS Unit No.2



92CM-10466

RADIO CORPORATION OF AMERICA
Electron Tube Division

World Radio History

Harrison, N. J.



Dual Triode

With High-Mu Unit and Low-Mu Unit

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	0.925	amp

Direct Interelectrode Capacitances (Approx.):[▲]

	Unit No. 1	Unit No. 2	
Grid to plate	4.8	10	μμf
Grid to cathode and heater. . .	2.2	7	μμf
Plate to cathode and heater . .	0.6	1.8	μμf

Characteristics, Class A₁ Amplifier:

	Unit No. 1	Unit No. 2	
Plate Voltage	250	150	volts
Grid Voltage	-3	-20	volts
Amplification Factor	68	5.4	
Plate Resistance (Approx.) . . .	40000	750	ohms
Transconductance	1600	7200	μmhos
Plate Current	1.4	50	ma
Plate Current for plate volts = 60 and grid volts = 0	-	95	ma
Plate Current for grid volts = -28 Grid Voltage (Approx.) for plate μa = 10	-5.5	-	volts
Grid Voltage (Approx.) for plate μa = 100.	-	-45	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	3"
Maximum Seated Length	2-7/16"
Maximum Diameter	1-9/32"
Bulb	T9
Base	Short Intermediate-Shell Octal 8-Pin with External Barriers (JEDEC Group 1, 88-58)

Basing Designation for BOTTOM VIEW 8BD

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

VERTICAL-DEFLECTION OSCILLATOR

Values are for Unit No. 1

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE	330 max.	volts
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6EM7

PEAK NEGATIVE-PULSE GRID VOLTAGE.	400	max.	volts
CATHODE CURRENT:			
Peak.	77	max.	ma
Average	22	max.	ma
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

Maximum Circuit Values:

Grid-Circuit Resistance:

For grid-resistor-bias or cathode-bias operation.	2.2	max.	megohms
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VERTICAL-DEFLECTION AMPLIFIER

Values are for Unit No. 2

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE [♦]	1500	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	250	max.	volts
CATHODE CURRENT:			
Peak.	175	max.	ma
Average	50	max.	ma
PLATE DISSIPATION	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

Maximum Circuit Values:

Grid-Circuit Resistance:

For grid-resistor-bias or cathode-bias operation.	2.2	max.	megohms
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▲ Without external shield.

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

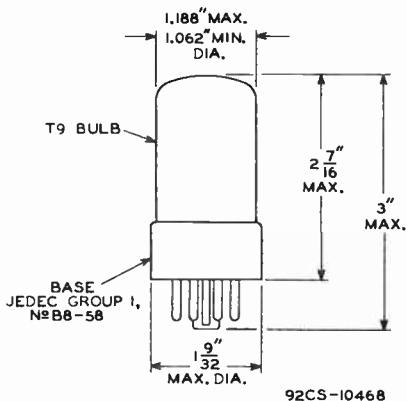
* The dc component must not exceed 100 volts.

♦ 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.

OPERATING CONSIDERATIONS

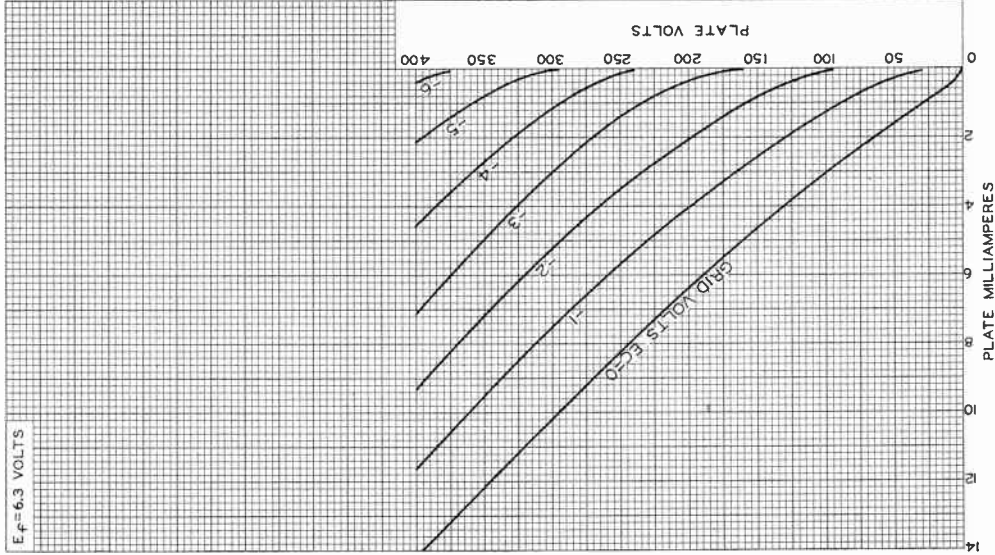
The *bulb* becomes hot during operation. To insure adequate cooling, therefore, it is essential that free circulation of air be provided.





6EM7

AVERAGE PLATE CHARACTERISTICS Unit No.1



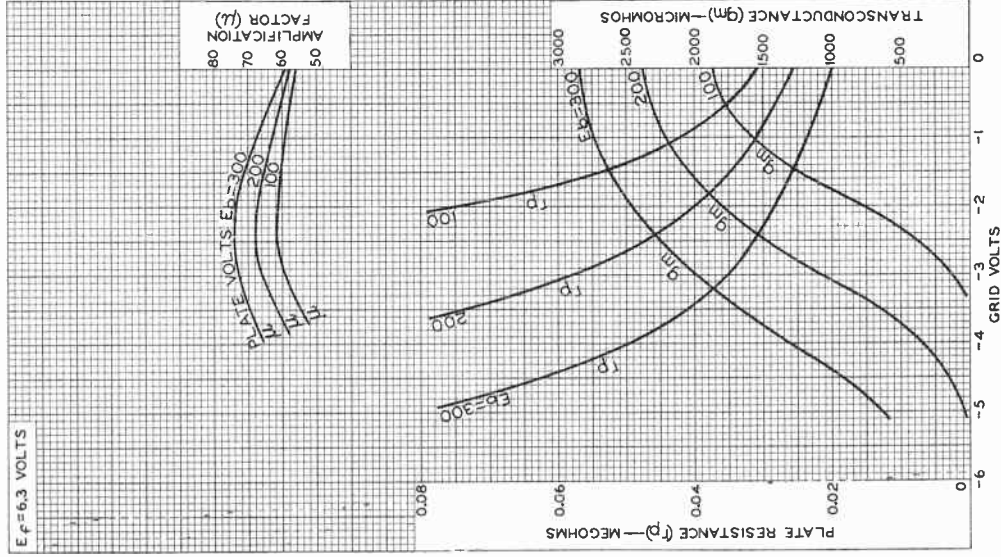
92CM-9912



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Electron Tube Division

6EM7

AVERAGE CHARACTERISTICS Unit No. 1



92CM-9915

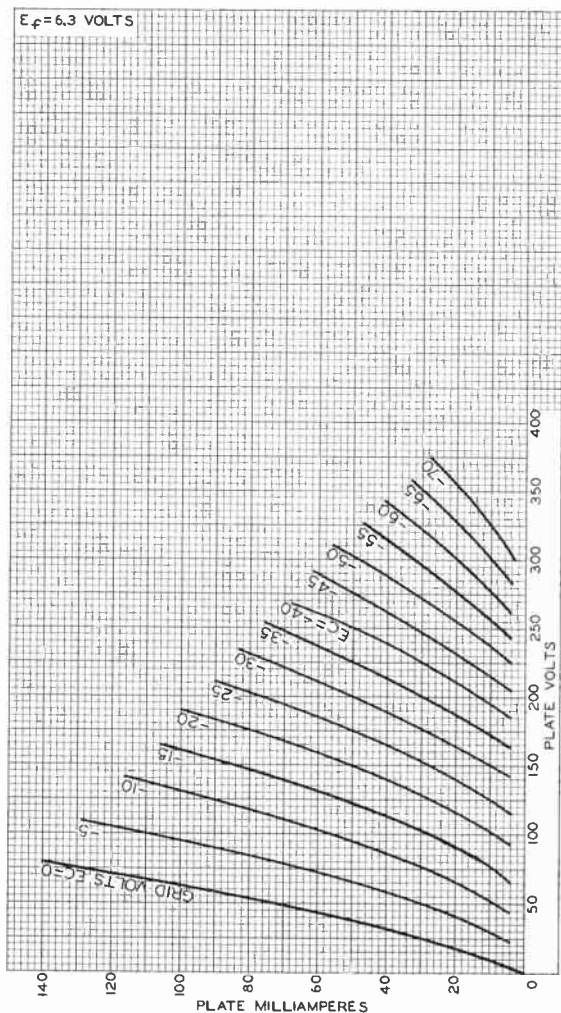


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Harrison, N. J.

DATA 3
8-60

6EM7

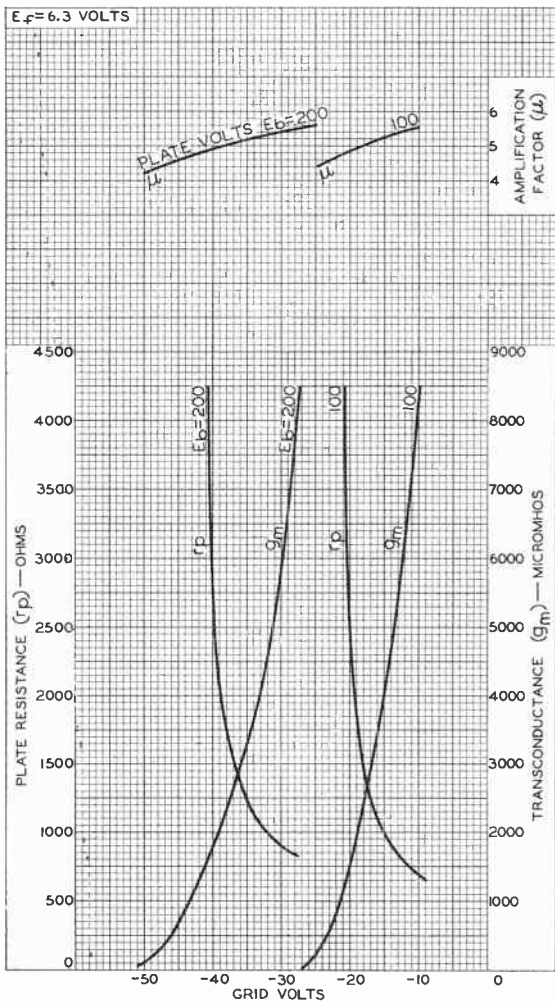
AVERAGE PLATE CHARACTERISTICS Unit No. 2



92CM-10466



AVERAGE CHARACTERISTICS Unit No. 2



92CM-10467





Diode—Remote-Cutoff Pentode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.3	amp

Direct Interelectrode Capacitances:[▲]

Pentode Unit:

Grid No.1 to plate.	0.002 max.	μf
Grid No.1 to cathode, grid No.3, grid No.2, internal shield, and heater.	5.5	μf
Plate to cathode, grid No.3, grid No.2, internal shield, and heater.	5	μf
Pentode grid No.1 to diode plate.	0.0015 max.	μf
Pentode plate to diode plate.	0.095	μf

Characteristics, Class A₁ Amplifier (Pentode Unit):

Plate Voltage	100	volts
Grid No.3	<i>Connected to cathode at socket</i>	
Internal Shield	<i>Connected to cathode at socket</i>	
Grid-No.2 Voltage	100	volts
Grid-No.1 Supply Voltage.	0	volts
Grid-No.1 Resistor (Bypassed)	2.2	megohms
Plate Resistance (Approx.)	0.25	megohm
Transconductance.	3800	μmhos
Plate Current	9	ma
Grid-No.2 Current	3.5	ma
Grid-No.1 Voltage (Approx.) for transconductance (μmhos) = 40	-20	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. . . . .	.0.750" to 0.875"
Dimensional Outline	See <i>General Section</i>
Bulb.	T6-1/2
Base.	Small-Button Noval 9-Pin (JEDEC No.E9-1)
Basing Designation for BOTTOM VIEW.	9LQ

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



- Pin 6—Pentode
Grid No.2
- Pin 7—Pentode
Plate
- Pin 8—Diode Plate
- Pin 9—Internal
Shield



6EQ7

PENTODE UNIT — AMPLIFIER — CLASS A₁

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE	300	max.	volts
GRID-No.3 (SUPPRESSOR-GRID) VOLTAGE:			
Positive value	300	max.	volts
Negative value	300	max.	volts
GRID-No.2 (SCREEN-GRID) 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
Negative-bias value	50	max.	volts
GRID-No.3 INPUT	0.2	max.	watt
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	<i>See Grid-No.2 Input Rating Chart at front of Receiving Tube Section</i>		
PLATE DISSIPATION	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
BULB TEMPERATURE (At hottest point on bulb surface)	150	max.	°C

DIODE UNIT

Maximum Ratings, *Design-Maximum Values:*

PLATE CURRENT	1	max.	ma
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Characteristics, *Instantaneous Test Condition:*

Plate Current for plate volts = 10.	2	ma
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▲ without external shield.

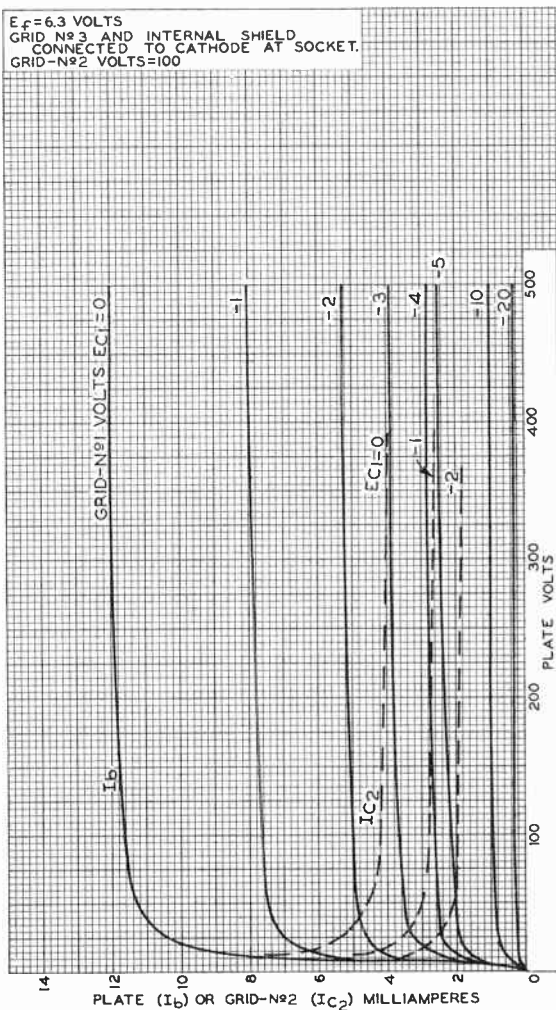
● The dc component must not exceed 100 volts.



AVERAGE CHARACTERISTICS

Pentode Unit

$E_f = 6.3$ VOLTS
 GRID N^o3 AND INTERNAL SHIELD
 CONNECTED TO CATHODE AT SOCKET.
 GRID-N^o2 VOLTS=100



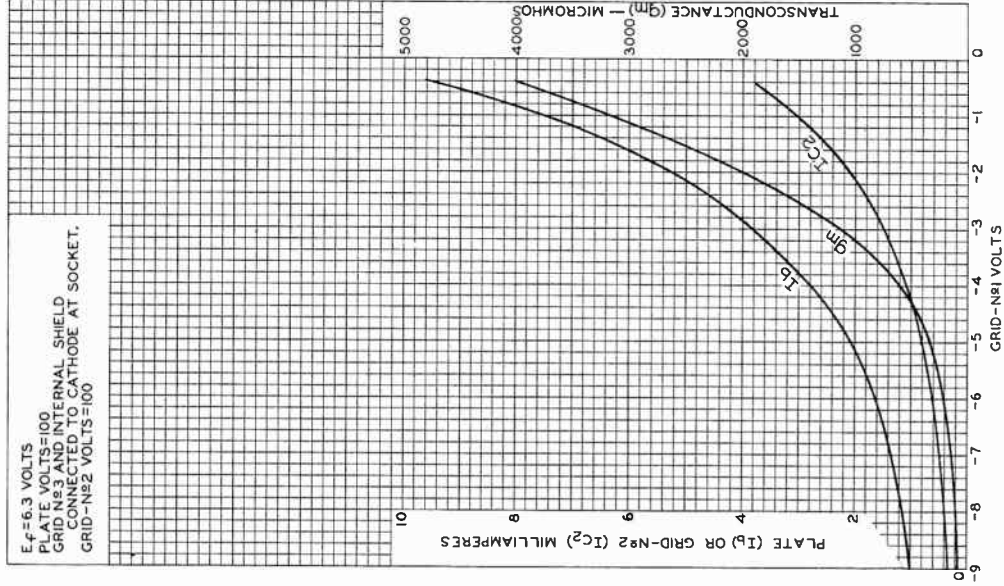
92CM-10680



6EQ7

AVERAGE CHARACTERISTICS Pentode Unit

$E_f = 6.3$ VOLTS
PLATE VOLTS = 100
GRID No. 3 AND INTERNAL SHIELD
CONNECTED TO CATHODE AT SOCKET.
GRID - No. 2 VOLTS = 100



92CM-10674

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High-Mu Triode

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3	volts
Current	0.18	amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Grid to plate	0.38	0.36	$\mu\mu\text{f}$
Grid to cathode, internal shield, and heater.	4.4	4.4	$\mu\mu\text{f}$
Plate to cathode, internal shield, and heater.	3	4	$\mu\mu\text{f}$
Grid to heater.	0.28 max.	0.28 max.	$\mu\mu\text{f}$
Plate to cathode.	0.24	0.2 ^o	$\mu\mu\text{f}$
Cathode to grid	3.1	3.1 ^o	$\mu\mu\text{f}$
Heater to cathode	2.5	2.5 ^o	$\mu\mu\text{f}$

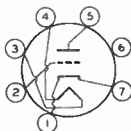
Characteristics, Class A₁ Amplifier:

Plate Voltage	200	volts
Grid Voltage	-1.2	volts
Amplification Factor	80	
Plate Resistance (Approx.)	8000	ohms
Transconductance	10500	μmhos
Plate Current	10	ma
Grid Voltage (Approx.) for transconductance (μmhos) = 500.	-3.8	volts
Grid Voltage (Approx.) for transconductance (μmhos) = 100.	-5.6	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	See <i>General Section</i>
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No. E7-1)
Basing Designation for BOTTOM VIEW	7FP

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



Pin 5 - Plate
Pin 6 - Internal
Shield
Pin 7 - Cathode

← Indicates a change.



6ER5

AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 max.	volts
GRID VOLTAGE:		
Negative-bias value	50 max.	volts
CATHODE CURRENT	20 max.	ma
PLATE DISSIPATION	2.2 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:

Grid-Circuit Resistance	1 max.	megohm
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○ With external shield JEDEC No.316 connected to cathode except as noted.

● With external shield JEDEC No.316 connected to ground.

→ Indicates a change.



High-Mu Triode

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	0.2	amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^a	
Grid to plate	0.5 max.	0.5 max.	μf
Grid to cathode, internal shield, and heater.	3.2	3.2	μf
Plate to cathode, internal shield, and heater.	3.2	4	μf

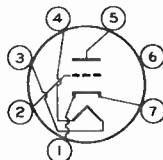
Characteristics, Class A₁ Amplifier:

Plate Voltage	200	volts
Grid Voltage.	-1	volt
Amplification Factor.	75	
Plate Resistance (Approx.).	8000	ohms
Transconductance.	9000	μmhos
Plate Current	10	ma
Grid Voltage (Approx.) for plate $\mu_a = 100$	-6	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 <i>General Section</i>
Bulb.	T5-1/2
Base.	Small-Button Miniature 7-Pin (JEDEC No. E7-1)
Basing Designation for BOTTOM VIEW.	7FP

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



Pin 5 - Plate
Pin 6 - Internal
Shield
Pin 7 - Cathode

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	250 max.	volts
GRID VOLTAGE:		
Positive-bias value	0 max.	volts



6ES5

CATHODE CURRENT 22 max. ma
PLATE DISSIPATION 2.2 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:

Grid-Circuit Resistance 1 max. megohm

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



Variable-Mu Twin Triode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3	volts
Current	0.365	amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^a	
Grid to plate (Each unit) . . .	1.9	1.9	$\mu\mu\text{f}$
Plate to cathode (Each unit). .	0.18	0.17	$\mu\mu\text{f}$
Heater to cathode (Each unit). .	3	3 ^b	$\mu\mu\text{f}$
Plate of unit No.2 to plate of unit No.1.	0.04 max.	0.015 max.	$\mu\mu\text{f}$
Plate of unit No.2 to grid of unit No.1.	0.003 max.	0.003 max.	$\mu\mu\text{f}$
Grid of unit No.1 to cathode of unit No.2.	0.002 max.	0.002 max.	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	90	90	90	volts
Grid Voltage	-1.2	-5	-9	volts
Plate Resistance (Approx.).	2500	-	-	ohms
Transconductance.	12500	625	125	μmhos
Plate Current	15	-	-	ma

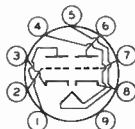
Mechanical:

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" \pm 3/32"
Diameter.	0.750" to 0.875"
Dimensional Outline	See <i>General Section</i>
Bulb.	T6-1/2
Base.	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW.	9AJ

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

Pin 4-Heater

Pin 5-Heater

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

6ES8

AMPLIFIER — Cascode Type

Maximum Ratings, Design-Center Values:

PLATE SUPPLY VOLTAGE with plate current = 0.	550 max.	volts
PLATE VOLTAGE (Each Unit)	130 max.	volts
GRID VOLTAGE: Negative-bias value (Each Unit)	50 max.	volts
CATHODE CURRENT (Each Unit)	22 max.	ma
PLATE DISSIPATION (Each Unit)	1.8 max.	watts
HEATER-CATHODE VOLTAGE: <i>Unit No. 1:</i> ^c RMS voltage between cathode and heater.	50 max.	volts
<i>Unit No. 2:</i> ^d RMS voltage between cathode and heater ^e	50 max.	volts
DC voltage between cathode and heater ^e	130 max.	volts

Typical Operation:

In a cascode-type circuit with the grid of the output unit connected to a voltage divider^f

Supply Voltage.	180	volts
Plate Current	15	ma
Transconductance.	12500	μ mhos
Noise Figure ^g	6.5	db
Grid Voltage (Approx.) for transconductance (μ mhos) = 125.	-9	volts
Input Voltage for cross-modulation factor = 0.01 and transconductance (μ mhos) = 125	500	millivolts

Maximum Circuit Values:

Grid-Circuit Resistance (Each Unit)	1 max.	megohm
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^a With external shield JEDEC No. 315 connected to cathode of unit under test except as noted.

^b With external shield JEDEC No. 315 connected to ground.

^c Grounded-cathode input unit—pins 6, 7, and 8.

^d Grounded-grid output unit—pins 1, 2, and 3.

^e Cathode positive with respect to heater.

^f In order not to exceed the maximum-rated plate voltage when the cascode-type amplifier is controlled, it is necessary to use a voltage divider for the grid of the grounded-grid output unit.

^g Measured with tube operating in a television tuner.



High-Mu Twin Triode

9-PIN MINIATURE TYPE

For High-Fidelity Audio-Amplifier Applications Critical as to Noise and Hum

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	0.3	amp

Direct Interelectrode Capacitances (Each Unit, Approx.):

Grid to plate	1.5	μf
Grid to cathode and heater	1.6	μf
Plate to cathode and heater	0.2	μf

Equivalent Noise and Hum Voltage (Referenced to Grid, Each Unit):

Average Value (RMS)	1.8	μvolts
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Measured in "true rms" units under the following conditions: Heater volts (AC)= 6.3; center-tap of heater transformer connected to ground; plate supply volts (DC)= 250; plate load resistor (megohms)= 0.1; cathode resistor (ohms)= 2700; cathode bypass capacitor (μf)= 100; grid resistor (ohms)= 0; amplifier frequency range 25 to 10000 cps.

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

Basing Designation for BOTTOM VIEW 9LS

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



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



6EU7

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:

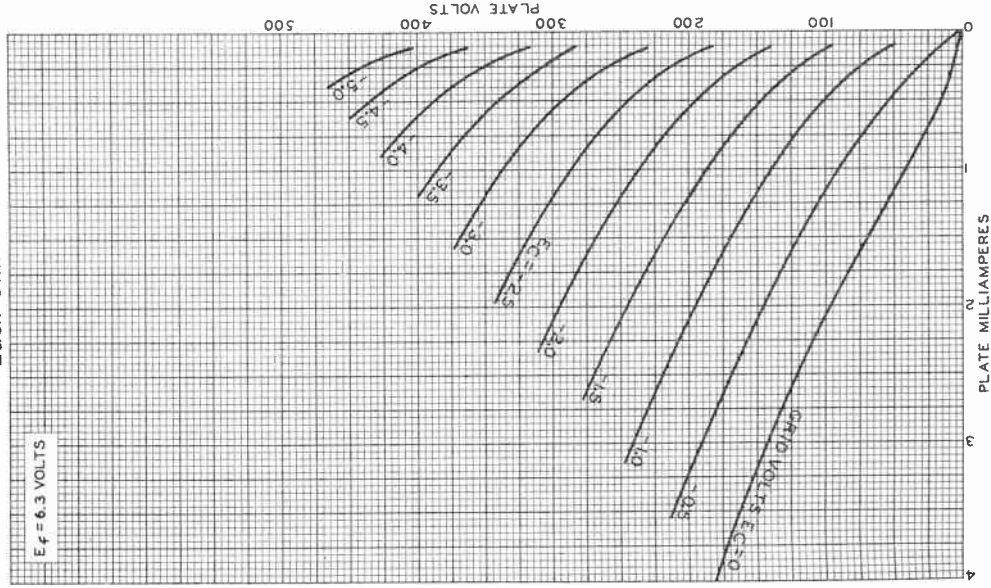
*See RESISTANCE-COUPLED-AMPLIFIER CHART No. 25
at front of this Section*

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



6EU7

AVERAGE PLATE CHARACTERISTICS Each Unit



92CM-10470

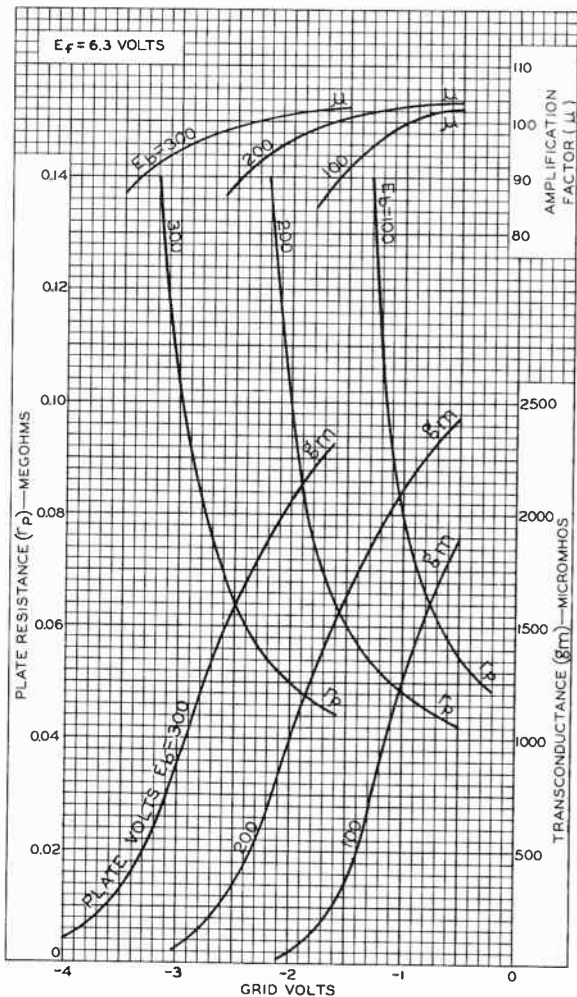


RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 2
8-60

6EU7

AVERAGE CHARACTERISTICS Each Unit



92CM-10471



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 (AC or DC)	6.3	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^a	
<i>Triode Unit:</i>			
Grid to plate	1.7	1.7	μf
Grid to cathode and heater.	3	3.2	μf
Plate to cathode and heater.	1.6	1.1	μf
<i>Pentode Unit:</i>			
Grid No.1 to plate.	0.02 max.	0.1 max.	μf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater	5	5	μf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater.	2.6	3.4	μf
Heater to cathode (Each unit)	3.6	3.6 ^b	μf

Characteristics, Class A₁ Amplifier:

	Triode Unit	Pentode Unit	
Plate Supply Voltage.	150	125	volts
Grid-No.2 Supply 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 $\mu a = 10$	-12	-9	volts
Cathode Warm-Up Time ^c	35	—	sec

Mechanical:

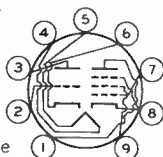
Operating Position.	Any
Maximum Overall Length.	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" ± 3/32"



6EU8

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. 9JF

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



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

AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
PLATE VOLTAGE.	330 max.	330 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE	-	330 max.	volts
GRID-No.2 VOLTAGE.	-	See <i>Grid-No.2 Input</i>	
<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 <i>Grid-No.2 Input</i>	
<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 ^d max.	200 ^d max.	volts

Maximum Circuit Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Grid-No.1-Circuit Resistance . .	0.1 max.	0.1 max.	megohm

^a with external shield JEDEC No.315 connected to cathode of unit under test except as noted.

^b with external shield JEDEC No.315 connected to ground.

^c The time required for the transconductance to reach 6500 μmhos when the tube is operated from a cold start with dc plate volts = 100, grid volts = 0, and heater volts = 5.5.

^d The dc component must not exceed 100 volts.



Sharp-Cutoff Tetrode

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.2	amp

Direct Interelectrode Capacitances:^a

Grid No.1 to plate.	0.035 max.	μf
Grid No.1 to cathode & internal shield, grid No.2, and heater	4.50	μf
Plate to cathode & internal shield, grid No.2, and heater	2.90	μf

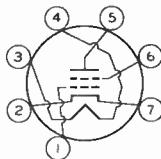
Characteristics, Class A₁ Amplifier:

Plate Voltage	250	volts
Grid-No.2 Voltage	80	volts
Grid-No.1 Voltage	-1	volt
Plate Resistance (Approx.).	0.15	megohm
Transconductance.	8800	μmhos
Plate Current	11.5	ma
Grid-No.2 Current	0.9	ma
Grid-No.1 Voltage (Approx.) for transconductance (μmhos) = 100.	-4.5	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)
Basing Designation for BOTTOM VIEW.	7EW

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 - Cathode,
Internal
Shield

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE.	275 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE	180 max.	volts
GRID-No.2 VOLTAGE.	See Grid-No.2 Input Rating Chart	at front of Receiving Tube Section



6EV5

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

Positive-bias value. 0 max. volts

CATHODE CURRENT. 20 max. ma

GRID-No.2 INPUT:

For grid-No.2 voltages up to 90 volts. . . 0.2 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

PLATE DISSIPATION. 3.25 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 100 max. volts

Heater positive with respect to cathode. 100^b max. volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance 0.5 max. megohm

^a with external shield JEDEC No.316 connected to cathode.

^b The dc component must not exceed 50 volts.



High-Mu Twin Triode

9-PIN MINIATURE TYPE

For Remote-Control Tuning Applications As Relay-Control Tube

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.6	amp

Direct Interelectrode Capacitances (Approx.):[▲]

	Unit No. 1	Unit No. 2	
Grid to plate	3.4	3.4	μμf
Grid to cathode and heater. . .	3	3	μμf
Plate to cathode and heater . .	0.33	0.23	μμf

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	250	volts
Grid Voltage.	-2	volts
Amplification Factor.	60	
Plate Resistance (Approx.)	11500	ohms
Transconductance.	5200	μmhos
Plate Current	9.2	ma
Grid Voltage (Approx.) for plate μa = 100.	-9	volts

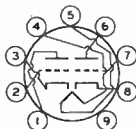
Mechanical:

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.	0.750" 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.	9LP

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

Pin 4 - Heater

Pin 5 - Heater

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

Pin 9 - No Connection

RELAY-CONTROL SERVICE

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	300 max.	volts
GRID VOLTAGE:		
Positive-bias value	0 max.	volts
CATHODE CURRENT	20 max.	ma



6EV7

PLATE DISSIPATION:

With "on" time greater than 30 seconds in any 2-minute interval. . .	2.5 max.	watts
With "on" time 30 seconds or less in any 2-minute interval.	4.5 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:

With 2500-ohm relay load

With "On" Time in Any

2-Minute Interval.	30 or Less	Greater than 30	sec
Plate Supply Voltage	250	150	volts
Zero-Bias Plate Current.	18.5	10	ma
Grid Voltage (Approx.) for plate $\mu a = 100$	-9	-5	volts

Maximum Circuit Values:

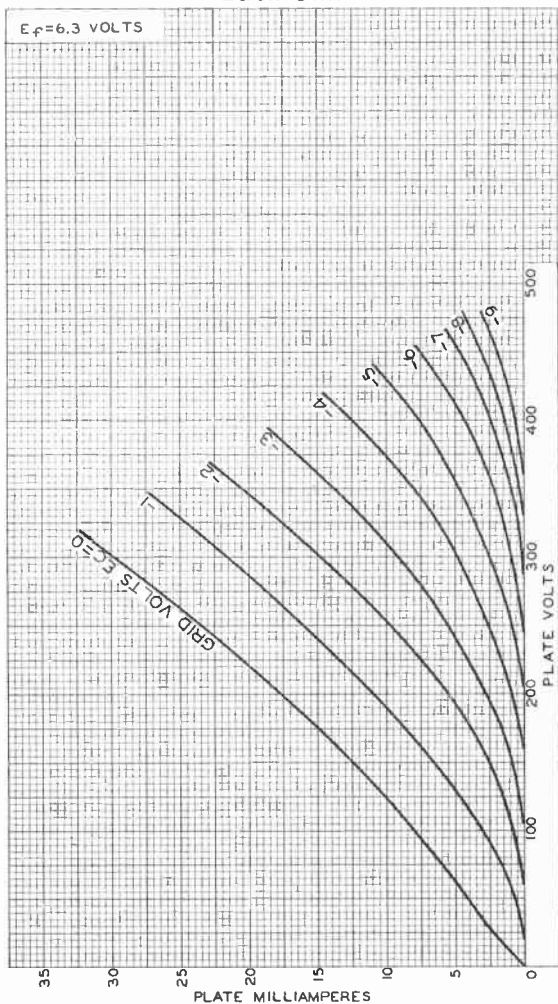
Grid-Circuit Resistance	3.9 max.	megohms
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[▲] Without external shield.

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



AVERAGE PLATE CHARACTERISTICS Each Unit

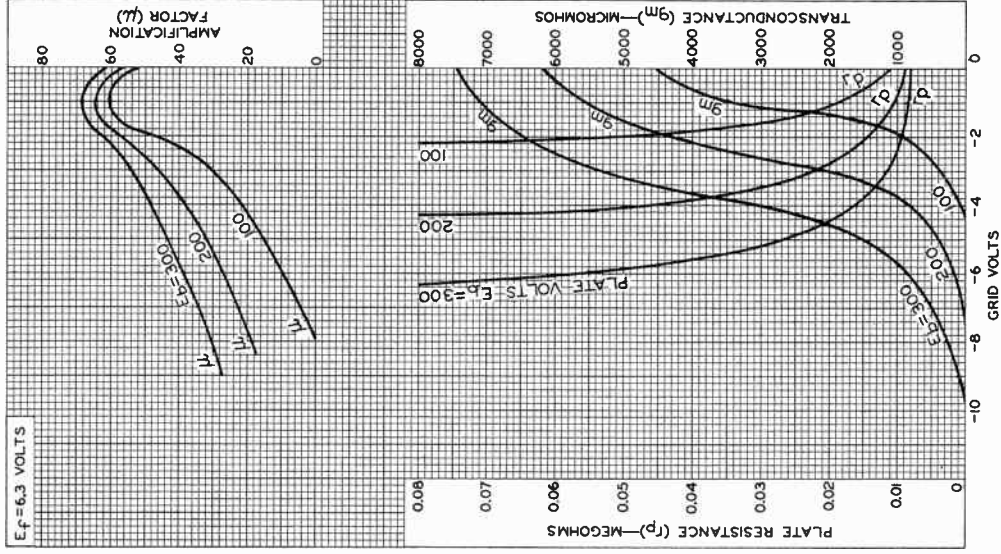


92CM-10393



6EV7

AVERAGE CHARACTERISTICS Each Unit



92CM-10392

RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



Dual Triode With Medium-Mu Unit and Low-Mu Unit

NEONOVAL TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	0.9	amp

Direct Interelectrode Capacitances (Approx.):^a

	Unit No. 1	Unit No. 2	
Grid to plate	4.2	9	μμf
Grid to cathode and heater . . .	2.2	7	μμf
Plate to cathode and heater . . .	0.4	1.2	μμf

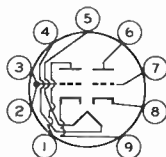
Characteristics, Class A₁ Amplifier:

	Unit No. 1	Unit No. 2	
Plate Voltage	250	150	volts
Grid Voltage	-11	-17.5	volts
Amplification Factor	17.5	6	
Plate Resistance (Approx.)	8750	800	ohms
Transconductance	2000	7500	μmhos
Plate Current	5.5	45	ma
Plate Current for plate volts = 60 and grid volts = 0	-	95	ma
Plate Current for grid volts = -25	-	8	ma
Grid Voltage (Approx.) for plate μa = 10	-20	-	volts
Grid Voltage (Approx.) for plate μa = 100	-	-40	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	2.93"
Maximum Seated Length	2.62"
Length, Base Seat to Bulb Top (Excluding tip)	2.07" to 2.31"
Diameter	1.062" to 1.188"
Bulb	T9
Base	Large-Button Neonoval 9-Pin (JEDEC No. E9-68)
Basing Designation for BOTTOM VIEW	9HF

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



VERTICAL-DEFLECTION OSCILLATOR

Values are for Unit No. 1

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	400 max.	volts
CATHODE CURRENT:		
Peak.	77 max.	ma
Average	22 max.	ma
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 ^c max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For grid-resistor-bias or cathode-bias operation. 2.2 max. megohms

VERTICAL-DEFLECTION AMPLIFIER

Values are for Unit No. 2

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	1500 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	250 max.	volts
CATHODE CURRENT:		
Peak.	175 max.	ma
Average	50 max.	ma
PLATE DISSIPATION	10 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 ^c max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For grid-resistor-bias or cathode-bias operation. 2.2 max. megohms

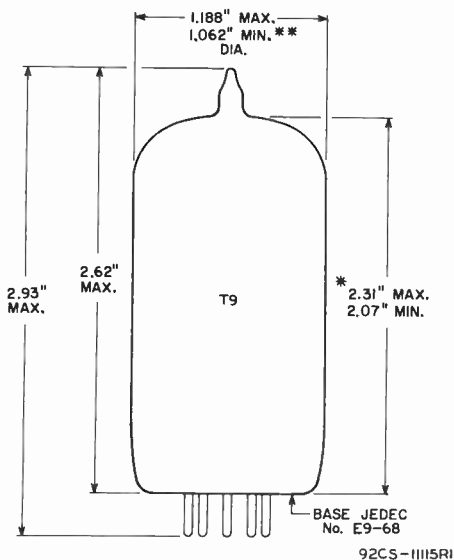
^a Without external shield.

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

^c The dc component must not exceed 100 volts.

^d 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.



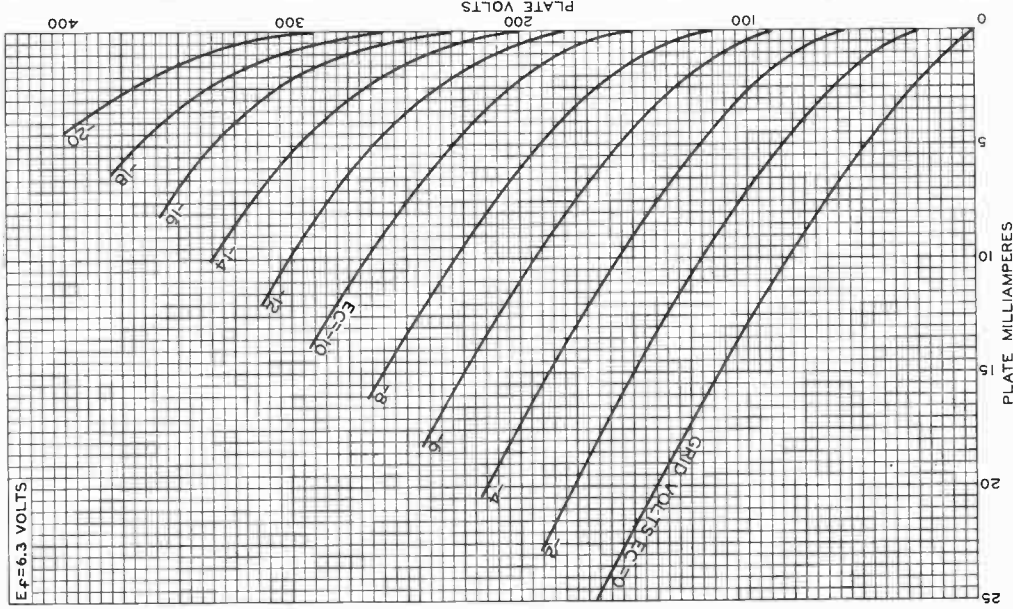


- * MEASURED FROM BASE SEAT TO BULB-TOP LINE AS DETERMINED BY A RING GAUGE OF 0.600" INTERNAL DIAMETER.
- ** APPLIES IN ZONE STARTING 0.375" FROM BASE SEAT.



6EW7

AVERAGE PLATE CHARACTERISTICS Unit No.1



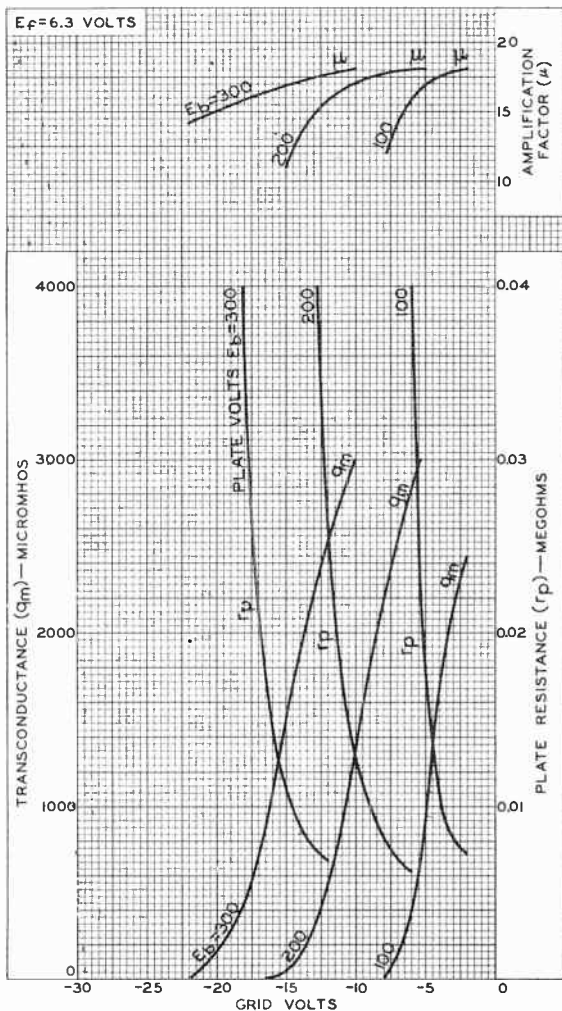
92CM-9988



RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

AVERAGE CHARACTERISTICS

Unit No.1

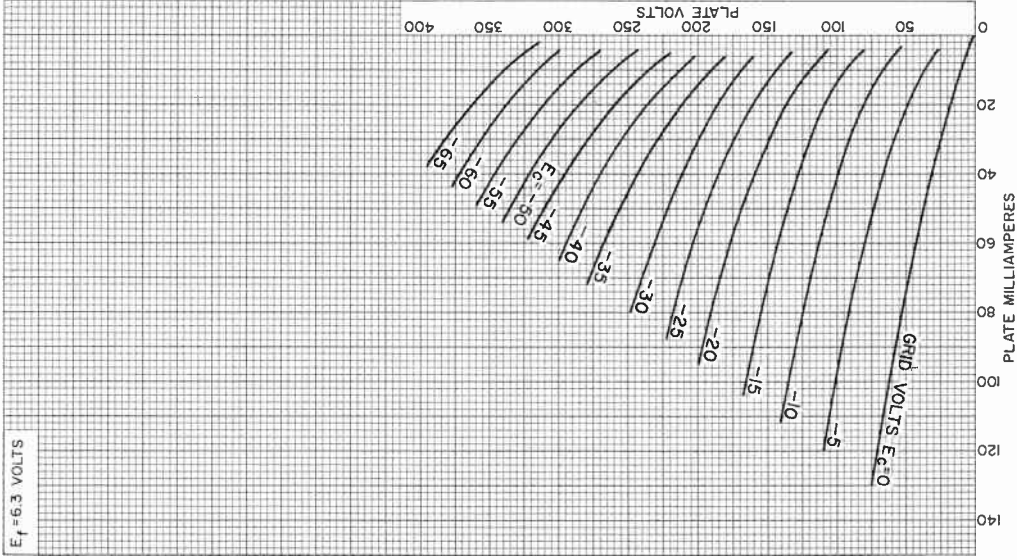


92CM-9991



6EW7

AVERAGE PLATE CHARACTERISTICS Unit No.2



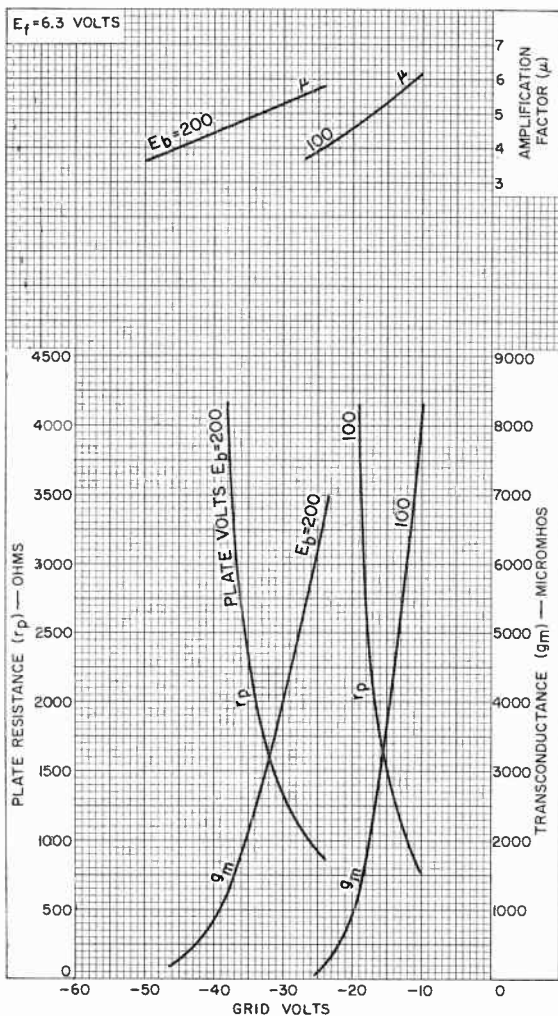
92CM-11111

RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



AVERAGE CHARACTERISTICS Unit No.2



92CM-11113





Beam Power Tube

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	2.25	amp

Direct Interelectrode Capacitances (Approx.):^a

Grid No.1 to plate.	1.1	μμf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	22	μμf
Plate to cathode & grid No.3, grid No.2, and heater	8.5	μμf

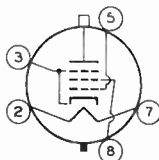
Characteristics, Class A₁ Amplifier:

Plate Voltage	60	60	175	volts
Grid-No.2 Voltage	125	150	175	volts
Grid-No.1 Voltage	0	0	-30	volts
Triode Amplification Factor	-	-	4.2	
Plate Resistance (Approx.)	-	-	8500	ohms
Transconductance	-	-	7700	μmhos
Plate Current	360 ^b	460 ^b	67	ma
Grid-No.2 Current	30 ^b	45 ^b	3.3	ma
Grid-No.1 Voltage (Approx.) for plate ma. = 1	-	-	-50	volts
Grid-No.1 Voltage (Approx.) for peak positive-pulse plate volts = 5000 and plate ma. = 1	-88	-94	-101	volts

Mechanical:

Operating Position.	Vertical, base down or up, or Horizontal with pins 2 and 7 in vertical plane
Maximum Overall Length.	5"
Seated Length	4-1/4" ± 3/16"
Diameter.	1.438" to 1.562"
Bulb.	T12
Cap	Small (JEDEC No.C1-1)
Base.	Short Medium-Shell Octal 5-Pin with External Barriers, Style B, Arrangement 2 (JEDEC Group 1, No.B5-123)
Basing Designation for BOTTOM VIEW.	5BT

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



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



6EX6

HORIZONTAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE	770	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	7000	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE	195	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	220	max.	volts
CATHODE CURRENT:			
Peak	770	max.	ma
Average	220	max.	ma
GRID-No.2 INPUT	3.5	max.	watts
PLATE DISSIPATION ^e	22	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^f	max.	volts
BULB TEMPERATURE (At hottest point			
on bulb surface).	225	max.	°C

Maximum Circuit Values:

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

^a Without external shield.

^b 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.

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

^d 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.

^e An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

^f The dc component must not exceed 100 volts.



Beam Power Tube

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.68	amp

Direct Interelectrode Capacitances
(Approx.):^a

Grid No.1 to plate.	0.7	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	8.5	μf
Plate to cathode & grid No.3, grid No.2, and heater	7	μf

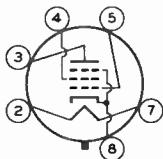
Characteristics, Class A₁ Amplifier:

Plate Voltage	50	250	volts
Grid-No.2 Voltage	250	250	volts
Grid-No.1 Voltage	0	-17.5	volts
Plate Resistance (Approx.)	-	60000	ohms
Transconductance	-	4400	μhos
Plate Current	153 ^b	44	ma
Grid-No.2 Current	21 ^b	3	ma
Grid-No.1 Voltage (Approx.) for plate μa = 100.	-	-48	volts

Mechanical:

Operating Position.	Any
Maximum Overall Length.	3-7/16"
Maximum Seated Length	2-7/8"
Maximum Diameter.	1-9/32"
Dimensional Outline	See <i>General Section</i>
Bulb.	T9
Base.	Intermediate-Shell Octal 6-Pin, Arrangement 2 (JEDEC Group 1, No. B6-81), or Short Intermediate-Shell Octal 6-Pin with External Barriers, Arrangement 2 (JEDEC Group 1, No. B6-84)
Basing Designation for BOTTOM VIEW. . . . .	.7S

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

VERTICAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	350	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	2500	max.	volts



6EY6

DC GRID-No.2 (SCREEN-GRID) VOLTAGE.	300	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE.	250	max.	volts
CATHODE CURRENT:			
Peak.	180	max.	ma
Average	60	max.	ma
GRID-No.2 INPUT	2.75	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 ^e	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).	200	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation.	1	max.	megohm
For cathode-bias operation.	2.2	max.	megohms

^a without external shield.

^b 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.

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

^d 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.

^e The dc component must not exceed 100 volts.



Beam Power Tube

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 \pm 10%	volts
Current at 6.3 volts.	0.8	amp

Direct Interelectrode Capacitances

(Approx.):^a

Grid No.1 to plate.	0.6	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.3, grid No.2, and heater	9	$\mu\mu\text{f}$
Plate to cathode & grid No.3, grid No.2, and heater	7	$\mu\mu\text{f}$

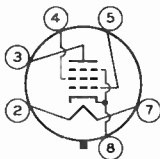
Characteristics, Class A₁ Amplifier:

Plate Voltage	60	250	volts
Grid-No.2 Voltage	250	250	volts
Grid-No.1 Voltage	0	-20	volts
Plate Resistance (Approx.)	-	50000	ohms
Transconductance.	-	4100	μmhos
Plate Current	180 ^b	43	ma
Grid-No.2 Current	26 ^b	3.5	ma
Grid-No.1 Voltage (Approx.) for plate $\mu\alpha = 100$	-	-50	volts

Mechanical:

Operating Position.	Any
Maximum Overall Length.	3-7/16"
Maximum Seated Length	2-7/8"
Maximum Diameter.	1-9/32"
Dimensional Outline	See General Section
Bulb.	T9
Base.	Intermediate-Shell Octal 6-Pin, Arrangement 2 (JEDEC Group 1, No.86-81)
Basing Designation for BOTTOM VIEW.	7S

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

VERTICAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	350	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	2500	max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE.	300	max.	volts



6EZ5

PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE.	250	max.	volts
CATHODE CURRENT:			
Peak.	260	max.	ma
Average	75	max.	ma
GRID-No.2 INPUT	2.75	max.	watts
PLATE DISSIPATION	12	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^e	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).	200	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation.	1	max.	megohm
For cathode-bias operation.	2.2	max.	megohms

^a Without external shield.

^b 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.

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

^d 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.

^e The dc component must not exceed 100 volts.



High-Mu Triple Triode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	0.45	amp

Direct Interelectrode Capacitances
(Approx.):

	Without External Shield	With External Shield ^a	
Grid to plate (Each Unit)	1.5	1.5	μf
Grid of unit No.1 to cathode of unit No.1 & cathode of unit No.2, and heater	2.4	2.6	μf
Grid of unit No.2 to cathode of unit No.2 & cathode of unit No.1, and heater	2.4	2.6	μf
Grid of unit No.3 to cathode of unit No.3 and heater	2.4	2.6	μf
Plate of unit No.1 to cathode of unit No.1 & cathode of unit No.2, and heater	0.21	1.4	μf
Plate of unit No.2 to cathode of unit No.2 & cathode of unit No.1, and heater	0.4	1.2	μf
Plate of unit No.3 to cathode of unit No.3 and heater	0.36	1.2	μf
Heater of unit No.3 to cathode of unit No.3	0.17	0.15 ^b	μf

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	125	volts
Grid Voltage	-1	volt
Amplification Factor	57	
Plate Resistance (Approx.)	13600	ohms
Transconductance	4200	μmhos
Plate Current	4.2	ma
Grid Voltage (Approx.) for plate $\mu a = 20$	-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" ± 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)



6EZ8

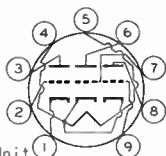
Basing Designation for BOTTOM VIEW. 9KA

Pin 1 - Cathode of
Unit No.3

Pin 2 - Grid of
Unit No.3

Pin 3 - Plate of
Unit No.3

Pin 4 - Cathode of
Unit No.2,
Cathode of Unit
No.1, Heater



Pin 5 - Heater

Pin 6 - Plate of
Unit No.2

Pin 7 - Grid of
Unit No.2

Pin 8 - Plate of
Unit No.1

Pin 9 - Grid of
Unit No.1

AMPLIFIER — Class A₁

Unless Otherwise Specified, Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE 330 max. volts

GRID VOLTAGE:

Negative-bias value 50 max. volts

Positive-bias value 0 max. volts

PLATE DISSIPATION 2 max. watts

TOTAL PLATE DISSIPATION (ALL PLATES). 5 max. watts

HEATER-CATHODE VOLTAGE (Unit No.3):

Heater negative with respect to cathode . . 100 max. volts

Heater positive with respect to cathode . . 100 max. volts

^a with external shield JEDEC No. 315 connected to cathode of unit under test except as noted.

^b with external shield JEDEC No. 315 connected to ground.





6F4

6F4 OSCILLATOR TRIODE ACORN TYPE

For use at frequencies up to 1200 Mc approx.

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.225	amp.
Direct Interelectrode Capacitances: ^o		
Grid to Plate	1.9	μf
Grid to Cathode & Heater	2.0	μf
Plate to Cathode & Heater	0.6	μf
Overall Length		1-7/32" \pm 5/32"
Overall Diameter (including radial pins)		1-3/32" \pm 1/16"
Bulb } Base }	{ See Outline in General Section }	{ Small Radial 7-Pin Pin 5-Grid Pin 6-Heater Pin 7-Cathode
Pin 1-Heater Pin 2-Grid Pin 3-Plate Pin 4-Plate		
Mounting Position		Any



BOTTOM VIEW (7BR)

Maximum Ratings Are Design-Center Values

A-F AMPLIFIER

Plate Voltage	150 max. volts
Plate Supply Voltage	300 max. volts
Plate Current	15 max. ma.
Plate Dissipation	2 max. watts
D-C Heater-Cathode Potential	80 max. volts

Characteristics - Class A₁ Amplifier:

Plate Voltage	80	volts
Cathode-Bias Resistor ^o	150	ohms
Amplification Factor	17	
Plate Resistance	2900	ohms
Transconductance	5800	μmhos
Plate Current	13	ma.

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

D-C Plate Voltage	150 max. volts
D-C Plate Supply Voltage	300 max. volts
D-C Grid Voltage	-50 max. volts
D-C Plate Current	20 max. ma.
D-C Grid Current	8 max. ma.
Plate Dissipation	2 max. watts
D-C Heater-Cathode Potential	80 max. volts

Typical Operation at Moderate Frequencies:^o

D-C Plate Voltage	150	volts
D-C Grid Voltage [♦]	$\left\{ \begin{array}{l} -15 \\ 550 \\ 2000 \end{array} \right.$	volts
		ohms
		ohms
D-C Plate Current	20	ma.
D-C Grid Current (Approx.) ^o	7.5	ma.
Driving Power (Approx.) ^o	0.2	watt
Power Output (Approx.)	1.8	watts

^o, \square , \bullet , \blacklozenge , \odot : See next page.

AUG. 15, 1944

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

TENTATIVE DATA

6F4



6F4

OSCILLATOR TRIODE

(continued from preceding page)

- With no external shield.
- Fixed-bias operation is not recommended. Under maximum rated conditions, the d-c resistance in the grid circuit should not exceed 0.5 megohm.
- Approximately 45 milliwatts can be obtained when the 6F4 is used at 1200 megacycles as an oscillator with 100 volts on plate, maximum rated plate dissipation, and grid resistor of 2000 ohms.
- ◆ Obtained from fixed supply, or by cathode resistor (550), grid resistor (2000), or partial self-bias methods.
- Subject to wide variations as explained under TUBE RATINGS in General Section.

The socket for the 6F4 should be electrically and mechanically compact, and be made with an insulating material having a loss factor not exceeding 0.035 to permit operation of the 6F4 at high frequencies. For most satisfactory performance of the 6F4, it is essential that the inductance of connections between tube and circuit be kept as low as possible.

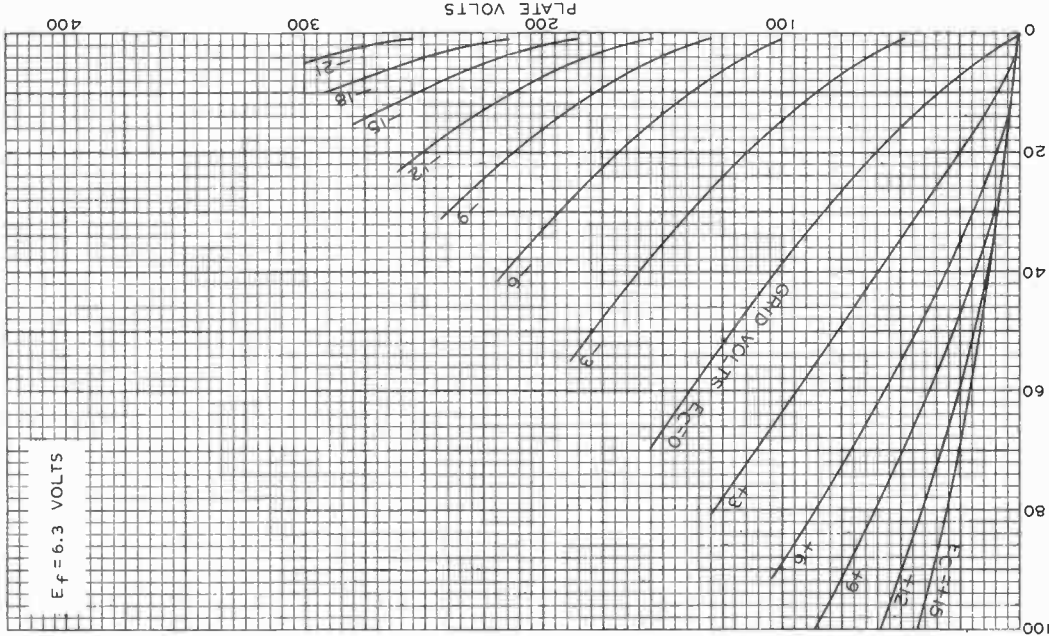


6F4

6F4

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS



JULY 12, 1944

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

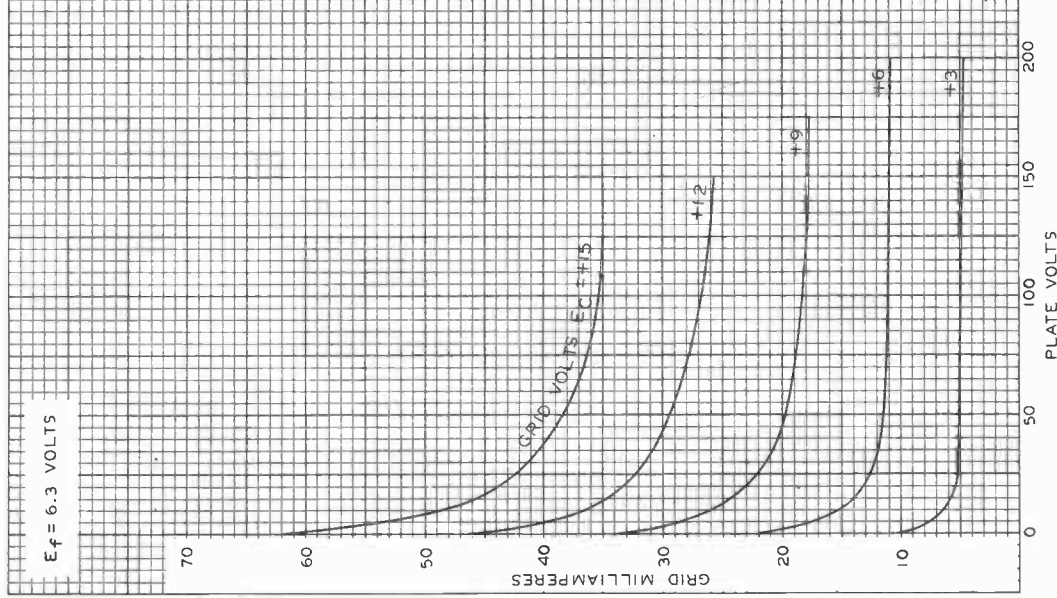
92CM-6567

6F4



6F4

TYPICAL CHARACTERISTICS



World Precision

JULY 13, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

92CM-6470



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 ^o	6F5-GT ^{oo}
Grid to Plate.	2.4	2.8 . . μf
Grid to Cathode.	5.5	2.2 . . μf
Plate to Cathode.	4.0	3.2 . . μf

^o With shell connected to cathode.

^{oo} With no external shield.

Mechanical:

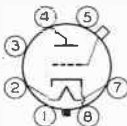
Mounting Position. . .	Any	Any
Maximum Overall Length	3-1/8"	3-5/16"
Seated Length.	2-7/16" ± 1/8"	2-5/16" - 2-3/4"
Maximum Diameter . . .	1-5/16"	1-5/16"
Bulb	Metal Shell, MTT8A	T-9
Cap	Miniature	Miniature
Base	Small-Wafer Octal 7-Pin	Intermed. Shell Octal 7-Pin
Basing Designation . .	5M ₁	G-5M ₁

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.

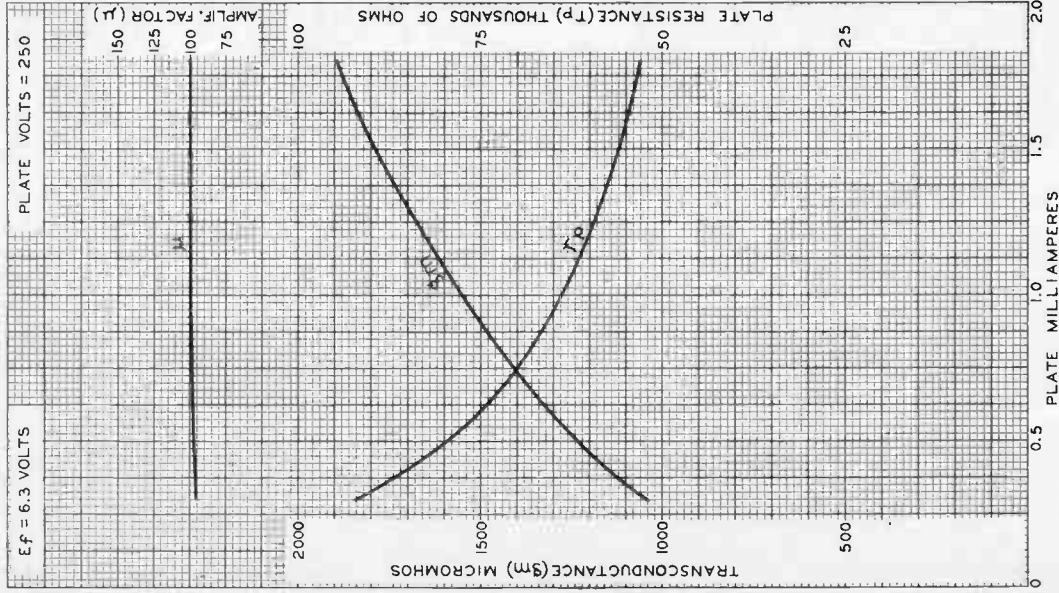
← Indicates a change.

6F5



6F5

AVERAGE CHARACTERISTICS



SEPT. 4, 1935

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4470



6F6

6F6

POWER PENTODE

METAL TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	. . . . .	ac or dc volts
Current	0.7	. . . . .	amp

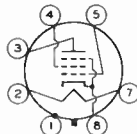
Direct Interelectrode Capacitances (Approx.):

Grid No.1 to plate.	0.26	$\mu\mu\text{f}$	←
Grid No.1 to cathode & grid No.3, grid No.2, shell, and heater	6.5	$\mu\mu\text{f}$	
Plate to cathode & grid No.3, grid No.2, shell, and heater	13.5	$\mu\mu\text{f}$	

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-1/4"
Maximum Seated Length	2-11/16"
Maximum Diameter	1-5/16"
Dimensional Outline	See General Section
Bulb	Metal Shell MT8B ←
Base	Small-Wafer Octal 7-Pin (JETEC No. B7-22) ←
Basing Designation for BOTTOM VIEW	7S

Pin 1 - Shell
 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	375 max.	volts
GRID-NO.2 (SCREEN-GRID) VOLTAGE	285 max.	volts
GRID-NO.2 INPUT	3.75 max.	watts
PLATE DISSIPATION	11 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:

	Fixed Bias		Cathode Bias		
Plate Voltage	250	285	250	285	volts
Grid-No.2 Voltage	250	285	250	285	volts
Grid-No.1 (Control-Grid) Voltage	-16.5	-20	-	-	volts
Cathode Resistor	-	-	410	440	ohms
Peak AF Grid-No.1 Voltage	16.5	20	16.5	20	volts
Zero-Signal Plate Current	34	38	34	38	ma

← Indicates a change.

6F6



6F6

POWER PENTODE

	Fixed Bias		Cathode Bias		
Max.-Signal Plate Current	36	40	35	38	ma
Zero-Signal Grid-No.2 Current	6.5	7	6.5	7	ma
Max.-Signal Grid-No.2 Current	10.5	13	9.7	12	ma
Plate Resistance (Approx.)	80000	78000	-	-	ohms
Transconductance.	2500	2550	-	-	μmhos
Load Resistance	7000	7000	7000	7000	ohms
Total Harmonic Distortion.	8	9	8.5	9	%
Max.-Signal Power Output.	3.2	4.8	3.1	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

AF POWER AMPLIFIER - Class A₁

Triode Connection - Grid No.2 Connected to Plate

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	350 max.	volts
PLATE DISSIPATION	10 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:

	Fixed Bias	Cathode Bias	
Plate Voltage	250	250	volts
Grid-No.1 (Control-Grid) Voltage	-20	-	volts
Cathode Resistor.	-	650	ohms
Peak AF Grid-No.1 Voltage	20	20	volts
Zero-Signal Plate Current	31	31	ma
Max.-Signal Plate Current	34	32	ma
Amplification Factor.	6.8	-	
Plate Resistance (Approx.)	2600	-	ohms
Transconductance.	2600	-	μmhos
Load Resistance	4000	4000	ohms
Total Harmonic Distortion	6.5	6.5	%
Max.-Signal Power Output.	0.85	0.8	watt

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

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

→ Indicates a change.



6F6

6F6

POWER PENTODE

PUSH-PULL AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	375 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE.	285 max.	volts
GRID-No.2 INPUT.	3.75 max.	watts
PLATE DISSIPATION.	11 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

	Fixed Bias	Cathode Bias	
Plate Voltage.	315	315	volts
Grid-No.2 Voltage.	285	285	volts
Grid-No.1 Voltage.	-24	-	volts
Cathode Resistor.	-	320	ohms
Peak AF Grid-No.1-to-			
Grid-No.1 Voltage.	48	58	volts
Zero-Signal Plate Current.	62	62	ma
Max.-Signal Plate Current.	80	73	ma
Zero-Signal Grid-No.2			
Current.	12	12	ma
Max.-Signal Grid-No.2			
Current.	19.5	18	ma
Effective Load Resistance			
(Plate to plate)	10000	10000	ohms
Total Harmonic Distortion.	4	3	%
Max.-Signal Power Output .	11	10.5	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 AB₂

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	375 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE.	285 max.	volts
GRID-No.2 INPUT.	3.75 max.	watts
PLATE DISSIPATION.	11 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

	Fixed Bias	Cathode Bias	
Plate Voltage.	375	375	volts

← Indicates a change.

6F6



6F6

POWER PENTODE

	Fixed Bias	Cathode Bias	
Grid-No.2 Voltage.	250	250	volts
Grid-No.1 Voltage.	-26	-	volts
Cathode Resistor	-	340	ohms
Peak AF Grid-No.1-to-			
Grid-No.1 Voltage.	82	94	volts
Zero-Signal Plate Current.	34	54	ma
Max.-Signal Plate Current.	82	77	ma
Zero-Signal Grid-No.2			
Current.	5	8	ma
Max.-Signal Grid-No.2			
Current.	19.5	18	ma
Effective Load Resistance			
(Plate to plate)	10000	10000	ohms
Total Harmonic Distortion.	3.5	5	%
Max.-Signal Power Output	18.5	19	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 AB₂*Triode Connection - Grid No.2 Connected to Plate***Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE.	350 max.	volts
PLATE DISSIPATION.	10 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*

	Fixed Bias	Cathode Bias	
Plate Voltage.	350	350	volts
Grid-No.1 (Control-Grid)			
Voltage.	-38	-	volts
Cathode Resistor	-	730	ohms
Peak AF Grid-No.1-to-			
Grid-No.1 Voltage.	123	132	volts
Zero-Signal Plate Current.	48	50	ma
Max.-Signal Plate Current.	92	60	ma
Effective Load Resistance			
(Plate to plate)	6000	10000	ohms
Total Harmonic Distortion.	2	3	%
Max.-Signal Power Output	13	9	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

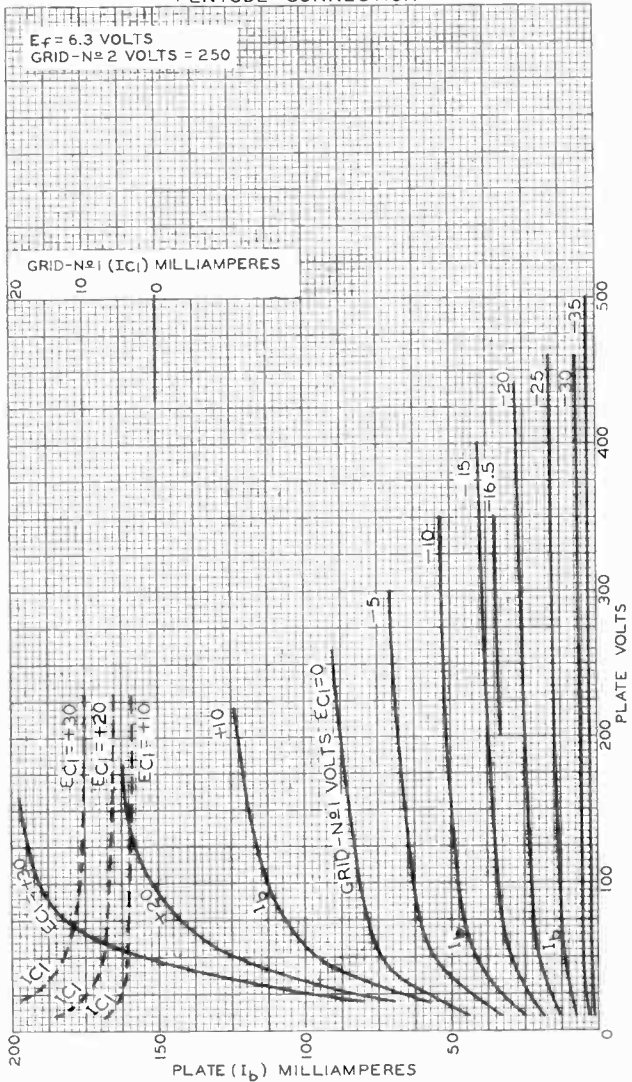
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6F6

6F6

AVERAGE CHARACTERISTICS PENTODE CONNECTION



TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4431R1

6F6



6F6

AVERAGE CHARACTERISTICS TRIODE CONNECTION

$E_f = 6.3$ VOLTS
GRID NO 2 CONNECTED TO PLATE

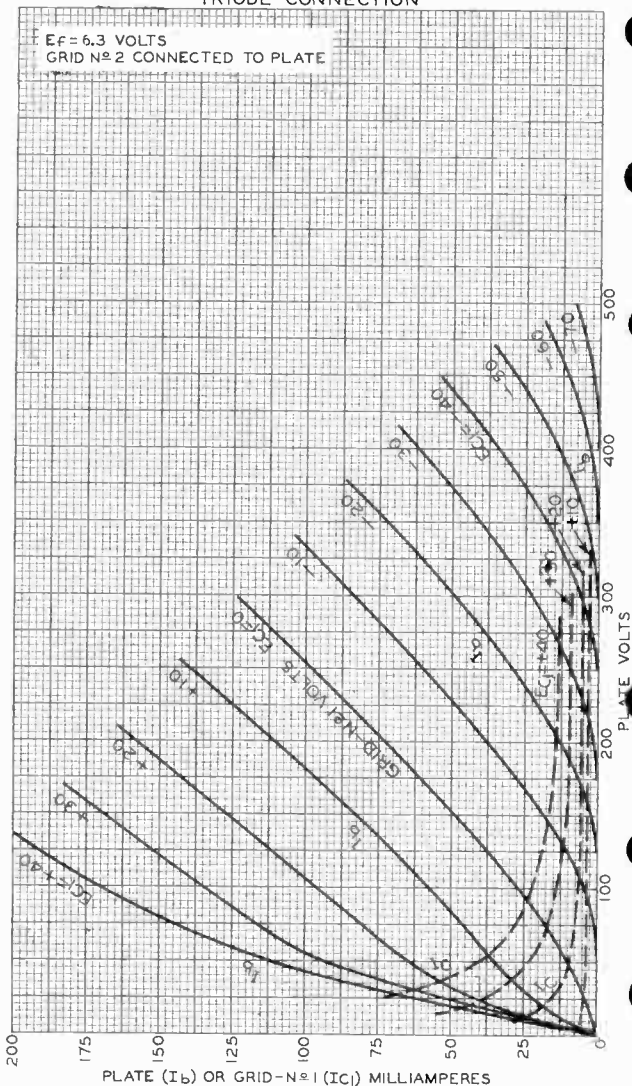


PLATE (I_b) OR GRID-NO 1 (I_c) MILLIAMPERES

TUBE DIVISION

92CM-4440R1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



6F6

6F6

OPERATION CHARACTERISTICS PENTODE CONNECTION—CLASS AB₂ OPERATION

$E_f = 6.3$ VOLTS

INPUT STAGE: CLASS A₁ DRIVER—ONE TYPE 6F6 AS TRIODE,
PLATE-SUPPLY VOLTS = 250

CATHODE RESISTOR (OHMS) = 650

OUTPUT STAGE: CLASS AB₂—TWO TYPE 6F6'S AS PENTODES,
ZERO-SIGNAL PLATE VOLTS = 375 FROM SOURCE HAVING

RESISTANCE (R_b) SHOWN IN TABLE.

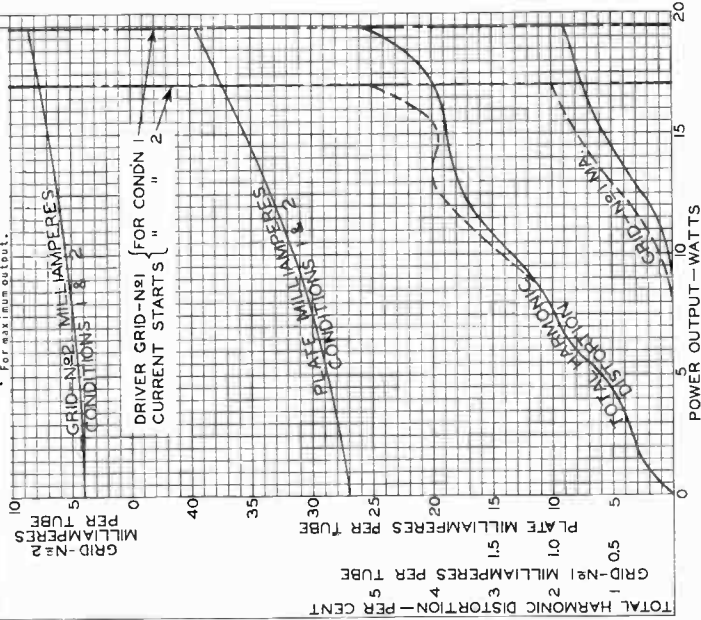
ZERO-SIGNAL GRID-N₂2 VOLTS = 250 FROM THE ABOVE
375-VOLT PLATE SUPPLY THROUGH RESISTANCE (R_b)
SHOWN IN TABLE.

ZERO-SIGNAL BIAS VOLTS = VALUE FROM GRID RESISTOR
(R_c) OF 340 OHMS.

EFFECTIVE LOAD RESISTANCE (PLATE TO PLATE) = 10000 OHMS

CONDI- TION	CURVE	DRIVER STAGE		INTERSTAGE TRANSFORMER		Peak Power Efficiency Per Cent
		Input-Sig. Volts* (RMS)	Plate Load Ohms	Voltage Ratio Prim.:1/2Sec.	Peak Power Efficiency Per Cent	
1	---	14.6	51100	2.50:1	47.7	
2	---	10.3	33100	1.74:1	64.4	

* For maximum output.







6F6-G

6F6-G
6F6-GT

POWER PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.7	amp

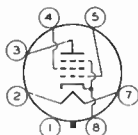
Direct Interelectrode Capacitances (Approx.):⁰

Grid No.1 to plate	0.5	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	8	μf
Plate to cathode & grid No.3, grid No.2, and heater	6.5	μf

Mechanical:

Mounting Position	Any
Maximum Overall Length	4-5/8"
Maximum Seated Length	4-1/16"
Maximum Diameter	1-13/16"
Dimensional Outline	See General Section
Bulb	ST-14
Base	Medium-Shell Octal 7-Pin (JETEC No.87-12)
Basing Designation for BOTTOM VIEW	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

Additional data and curves for the 6F6-G are the same as those shown under type 6F6

⁰ Without external shield.

← indicates a change.

6F6-GT

POWER PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.7	amp

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-7/16"
Maximum Seated Length	2-7/8"
Maximum Diameter	1-9/32"

6F6-GT

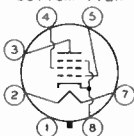


6F6-GT

POWER PENTODE

Dimensional Outline. See General Section
 Bulb T-9
 Base Intermediate-Shell Octal 7-Pin (JETEC No. B7-7),
 Short Intermediate-Shell Octal 7-Pin (JETEC No. B7-47),
 Intermediate-Shell Octal 6-Pin (JETEC No. B6-81),
 or Short Intermediate-Shell Octal 6-Pin
 with External Barriers (JETEC No. B6-84)
 Basing Designation for BOTTOM VIEW 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

Additional data and curves for the 6F6-GT are the same as those shown under type 6F6

♦ Pin 1 as well as pin 6 is omitted on the 6-pin bases.

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 μf
 Grid to Cathode 2.5 μf
 Plate to Cathode 3.0 μf

Pentode Unit:
 Grid to Plate 0.008 max. p μf
 Input 3.2 μf
 Output 12.5 μf

Overall Length 4-9/32" to 4-17/32"
 Maximum Diameter 1-9/16"
 Bulb ST-12
 Cap Small Metal
 Base Small 7-Pin Δ

Pin 1-Heater
 Pin 2-Pentode Plate
 Pin 3-Pentode Screen
 Pin 4-Triode Plate
 Pin 5-Triode Grid
 Pin 6-Cathode
 Pin 7-Heater
 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	900	
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.

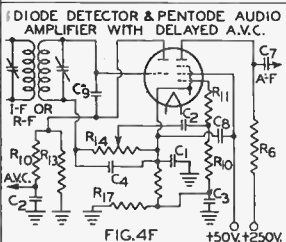
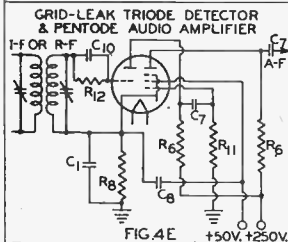
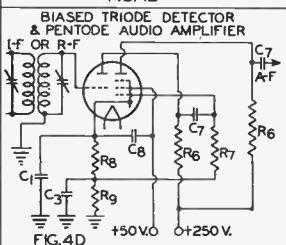
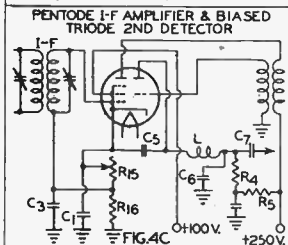
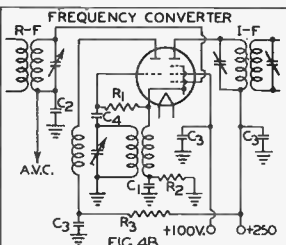
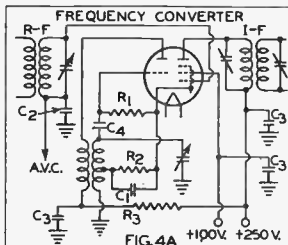
CONVERTER SERVICE

	<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 ^o	-	250	volts
Screen	-	-	100	volts
Grid Bias	##	-	-10 ^{oo}	volts
Plate Resistance	-	-	2	megohms
Conversion Conductance	-	-	300	μmhos
D-c Plate Current	2.4	-	2.8	ma.
D-c Grid 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.
^o May be obtained from 250-volt source through 60000-ohm dropping resistor.
^{oo} 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.
 Δ Requires different socket than medium 7-pin base.
^o With shield-can.

RCA-6F7

TYPICAL CIRCUITS



APPROXIMATE VALUES

$C_1 = 5 \mu f$
 $C_2 = 0.05 \mu f$
 $C_3 = 0.1 \mu f$
 $C_4 = 0.0002 \mu f$
 $C_5 = 0.0024 \mu f$
 $C_6 = 0.00016 \mu f$
 $C_7 = 0.01 \mu f$
 $C_8 = 0.5 \mu f$
 $C_9 = 0.0005 \text{ TO } 0.001 \mu f$
 $C_{10} = 0.00025 \mu f$
 $L = \text{I-F CHOKE COIL}$
 $R_1 = \text{OSCILLATOR GRID LEAK-0.1 MEGOHM}$

$R_2 = \text{PENTODE SELF-BIASING RESISTOR-1500 OHMS}$
 $R_3 = \text{VOLTAGE DROPPING RESISTOR-50000 OHMS}$
 $R_4 = \text{PLATE COUPLING RESISTOR-170000 OHMS}$
 $R_5 = \text{FILTER RESISTOR-30000 OHMS}$
 $R_6 = \text{PLATE COUPLING RESISTOR-300000 OHMS}$
 $R_7 = \text{PENTODE GRID LEAK-0.5 MEGOHM}$
 $R_8 = \text{PENTODE SELF-BIASING RESISTOR-5000 OHMS}$
 $R_9 = 10000 \text{ OHMS. } R_9 + R_8 = \text{TRIODE BIASING RESISTOR}$
 $R_{10} = \text{FILTER RESISTOR-1.0 MEGOHM}$
 $R_{11} = \text{GRID RESISTOR-500000 OHMS}$
 $R_{12} = \text{TRIODE GRID LEAK-1.0 MEGOHM}$
 $R_{13} = \text{A.V.C. DIODE LOAD-1.0 MEGOHM}$
 $R_{14} = \text{A-F DIODE-LOAD POTENTIOMETER-0.5 MEGOHM}$
 $R_{15} = \text{PENTODE SELF-BIASING RES. 4000 OHMS VAR.}$
 $R_{16} = 1500 \text{ OHMS. } R_{16} + R_{15} = \text{TRIODE BIASING RESISTOR}$

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



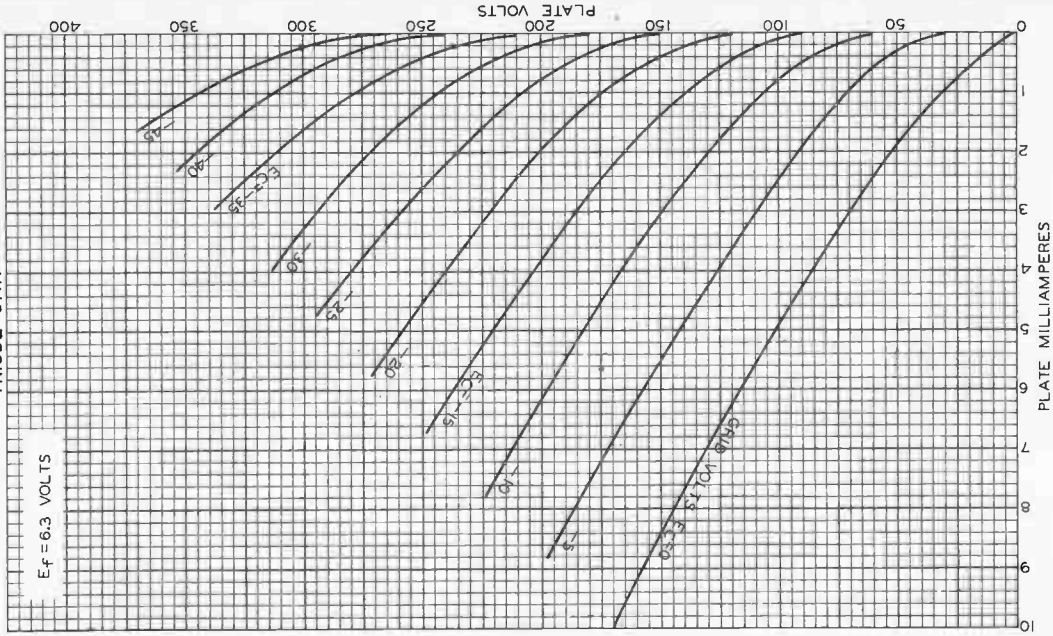
RCA-6F7



C-6F7

9F7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



RCA Radiotron

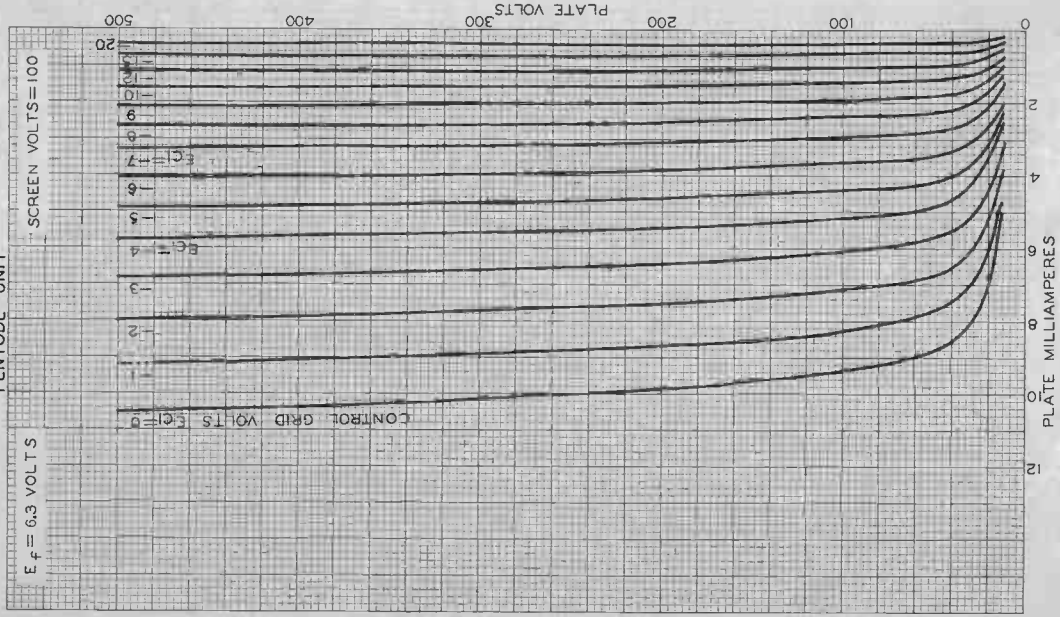
Cunningham
RADIO TUBES

RCA-6F7

C-6F7

6F7

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT





6F8-G

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 #1</u>	<u>Triode Unit #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 #1; the other as #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

Diode—Sharp-Cutoff Twin-Plate Tetrode

9-PIN MINIATURE TYPE

For Frequency-Divider and Complex-Wave-Generator
Circuits of Electronic Musical Instruments

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	0.3	amp

Direct Interelectrode Capacitances:^A

Tetrode Unit:

Grid No.1 to plate A	0.04	μf
Grid No.1 to plate B	0.03 max.	μf
Grid No.1 to cathode & internal shield, grid No.2, and heater . . .	5.5	μf
Plate A to cathode & internal shield, grid No.2, and heater . . .	1.8	μf
Plate B to cathode & internal shield, grid No.2, and heater . . .	1.8	μf
Tetrode grid No.1 to diode plate . . .	0.022	μf
Tetrode plate A to diode plate	0.02 max.	μf
Tetrode plate B to diode plate	0.055	μf

Characteristics, Class A₁ Amplifier (Tetrode Unit):

Plates A and B connected together

Plate Voltage	100	volts
Grid-No.2 Voltage	100	volts
Grid-No.1 Supply Voltage	0	volts
Grid-No.1 Resistor (Bypassed)	2.2	megohms
Plate Resistance (Approx.)	90000	ohms
Transconductance	3200	μmhos
Plate Current	3.8	ma
Grid-No.2 Current	1.7	ma
Grid-No.1 Voltage (Approx.) for plate $\mu_a = 20$	-4	volts

Using either Plate A or B, with plate not in use connected to ground

Plate Voltage	100	volts
Grid-No.2 Voltage	100	volts
Grid-No.1 Supply Voltage	0	volts
Grid-No.1 Resistor (Bypassed)	2.2	megohms
Plate Resistance (Approx.)	130000	ohms
Transconductance	1900	μmhos
Plate Current	2.2	ma
Grid-No.2 Current	3	ma

Mechanical:

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



6FA7

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. 9MR

Pin 1 - Tetrode Plate B
 Pin 2 - No Connection
 Pin 3 - Diode Plate
 Pin 4 - Heater
 Pin 5 - Heater



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

FREQUENCY-DIVIDER & COMPLEX-WAVE-GENERATOR SERVICE

TETRODE UNIT

Maximum Ratings, Design-Maximum Values:

PLATE A VOLTAGE 330 max. volts
 PLATE B VOLTAGE 330 max. volts

GRID-No. 2 (SCREEN-GRID)

SUPPLY VOLTAGE. 330 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

GRID-No. 2 INPUT:

For grid-No. 2 voltages

up to 165 volts 0.65 max. watt

For grid-No. 2 voltages

between 165 and 330 volts . See *Grid-No. 2 Input Rating Chart at front of Receiving Tube Section*

PLATE A DISSIPATION 1.5 max. watts

PLATE B 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

Maximum Circuit Values:

Grid-No. 1-Circuit Resistance:

For grid-No. 1-resistor-bias operation . 2.2 max. megohms

DIODE UNIT

Maximum Ratings, Design-Maximum Values:

PLATE CURRENT 1 max. ma

Characteristics, Instantaneous Test Condition:

Plate Current for plate volts = 10. 2 ma

[▲] without external shield.

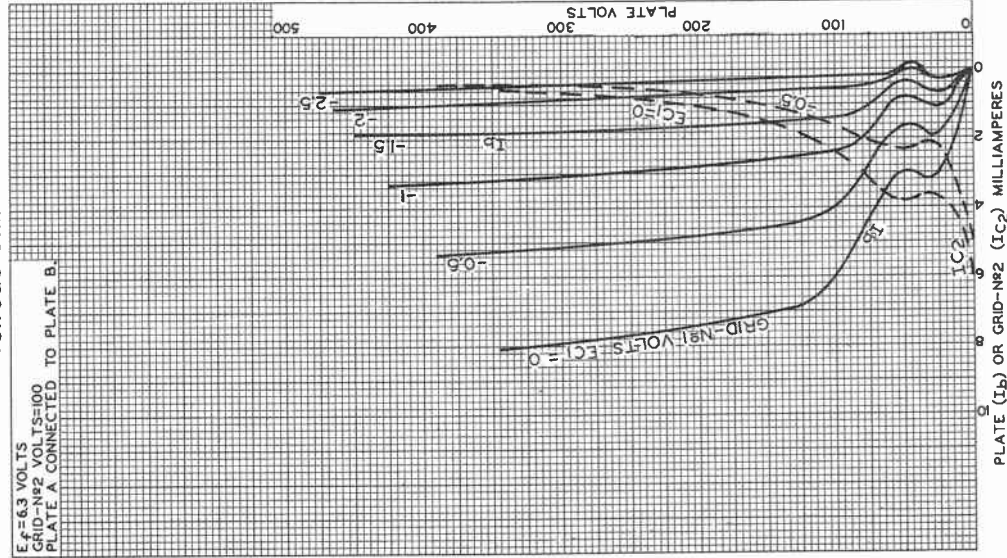
^{*} The dc component must not exceed 100 volts.



AVERAGE CHARACTERISTICS

Tetrode Unit

$E_f = 6.3$ VOLTS
 GRID-NP2 VOLTS=100
 PLATE A CONNECTED TO PLATE B.



92CM-10693

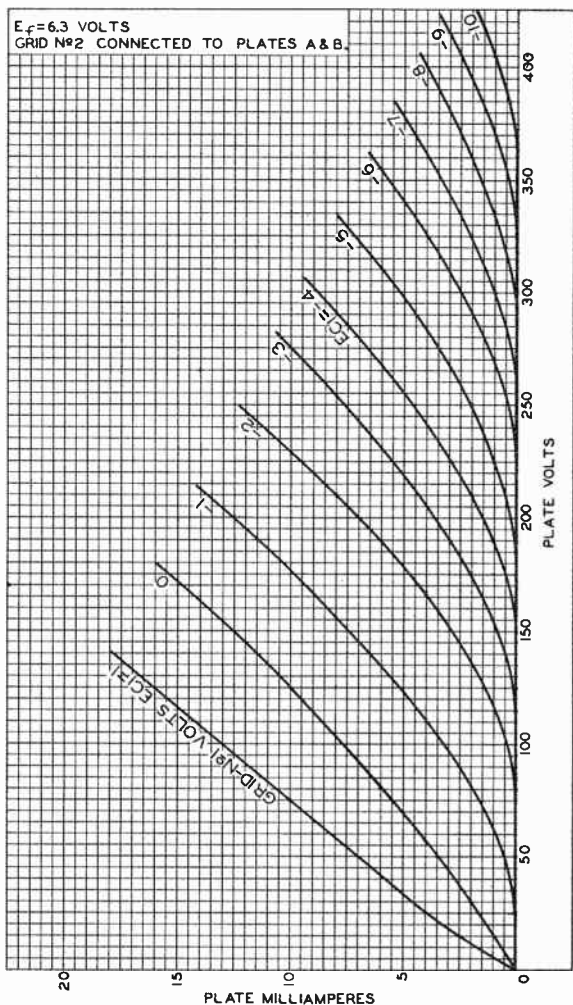


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 Electron Tube Division
 Harrison, N. J.

DATA 2
 8-60

6FA7

AVERAGE PLATE CHARACTERISTICS Tetrode Unit—Triode Connection



92CM-10695



Beam Power Tube

For Output Stages of Compact Audio Equipment

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	1.2	amp

Direct Interelectrode Capacitances
(Approx.):[▲]

Grid No.1 to plate	0.44	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

Characteristics, Class A₁ Amplifier:

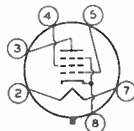
Plate Supply Voltage	130	volts
Grid-No.2 Supply Voltage	130	volts
Cathode Resistor	120	ohms
Plate Resistance (Approx.)	8000	ohms
Transconductance	9500	μmhos
Plate Current	88	ma
Grid-No.2 Current	5	ma

Mechanical:

Operating Position	Any
Maximum Overall Length	3-13/16"
Maximum Seated Length	3-1/4"
Maximum Diameter	1-9/32"
Dimensional Outline	See <i>General Section</i>
Bulb	T9
Base	Intermediate-Shell Octal 6-Pin, Arrangement 2, (JEDEC No. B6-81)

Basing Designation for BOTTOM VIEW 8KB

- 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-Maximum Values:

PLATE VOLTAGE	175	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	175	max.	volts
GRID-No.2 INPUT	2.4	max.	watts
PLATE DISSIPATION	14.5	max.	watts



6FE5

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode.	300 max.	volts
Heater positive with respect to cathode.	200 [•] max.	volts

Typical Operation:

Fixed-Bias Operation

Plate Voltage	130	145	volts
Grid-No.2 Voltage	130	145	volts
Grid-No.1 (Control-Grid) Voltage. . .	-12.5	-16	volts
Peak AF Grid-No.1 Voltage	12.5	15	volts
Zero-Signal Plate Current	82	80	ma
Max.-Signal Plate Current	94	100	ma
Zero-Signal Grid-No.2 Current	4	4	ma
Max.-Signal Grid-No.2 Current	15	18	ma
Load Resistance	1000	1000	ohms
Total Harmonic Distortion	12	15	%
Max.-Signal Power Output.	4.2	5.6	watts

Cathode-Bias Operation

Plate Supply Voltage.	130	145	volts
Grid-No.2 Supply Voltage.	130	145	volts
Cathode Resistor.	120	150	ohms
Peak AF Grid-No.1 Voltage	11.9	15.4	volts
Zero-Signal Plate Current	88	86	ma
Max.-Signal Plate Current	90	86	ma
Zero-Signal Grid-No.2 Current.	5	4.2	ma
Max.-Signal Grid-No.2 Current	9	17	ma
Load Resistance	1000	1000	ohms
Total Harmonic Distortion	10	13	%
Max.-Signal Power Output.	3.5	4.3	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

PUSH-PULL AF POWER AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	175 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	175 max.	volts
GRID-No.2 INPUT	2.4 max.	watts
PLATE DISSIPATION	14.5 max.	watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode.	300 max.	volts
Heater positive with respect to cathode.	200 [•] max.	volts

Typical Operation:

Values are for 2 tubes

Plate Supply Voltage.	130	145	volts
Grid-No.2 Supply Voltage.	130	145	volts



Cathode Resistor	75	75	ohms
Peak AF Grid-No.1-to- Grid-No.1 Voltage	25.8	28.8	volts
Zero-Signal Plate Current	150	160	ma
Max.-Signal Plate Current	154	172	ma
Zero-Signal Grid-No.2 Current	7.2	8	ma
Max.-Signal Grid-No.2 Current	17	20	ma
Effective Load Resistance (Plate to plate).	1600	1600	ohms
Total Harmonic Distortion	6	6	%
Max.-Signal Power Output.	7	8.5	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

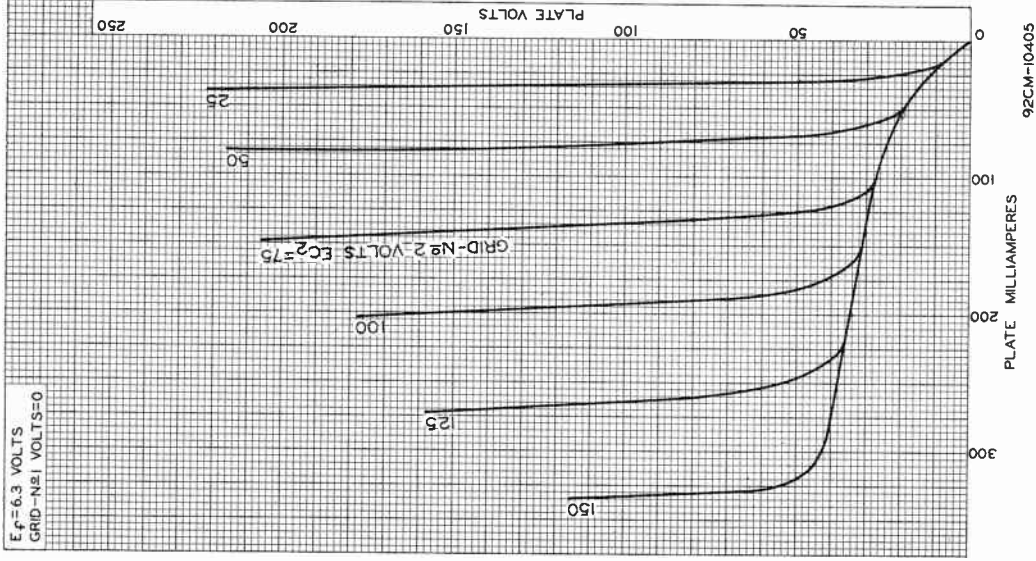
▲ Without external shield.

● The ac component must not exceed 100 volts.



6FE5

AVERAGE PLATE CHARACTERISTICS



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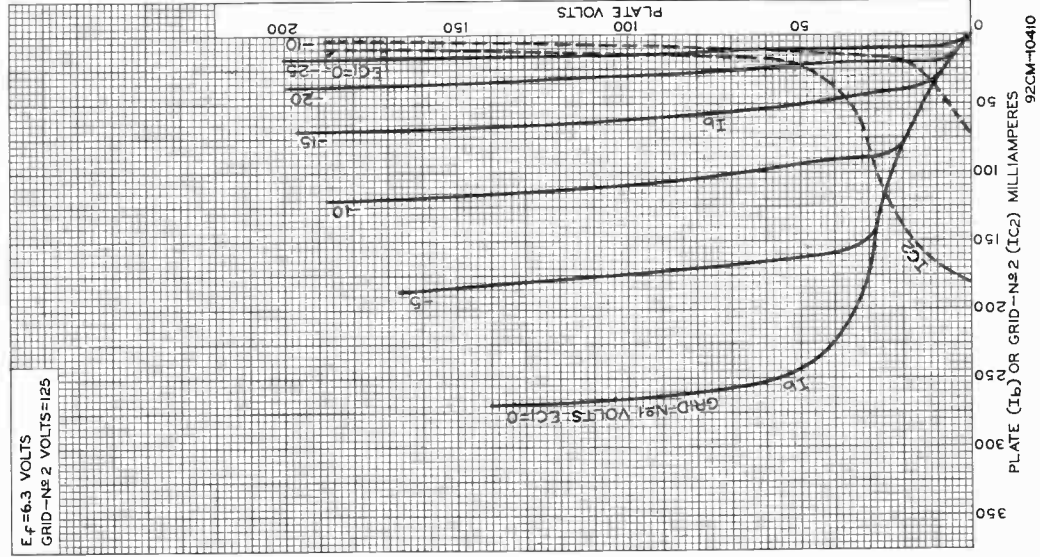
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6FE5

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID—N^o 2 VOLTS = 125



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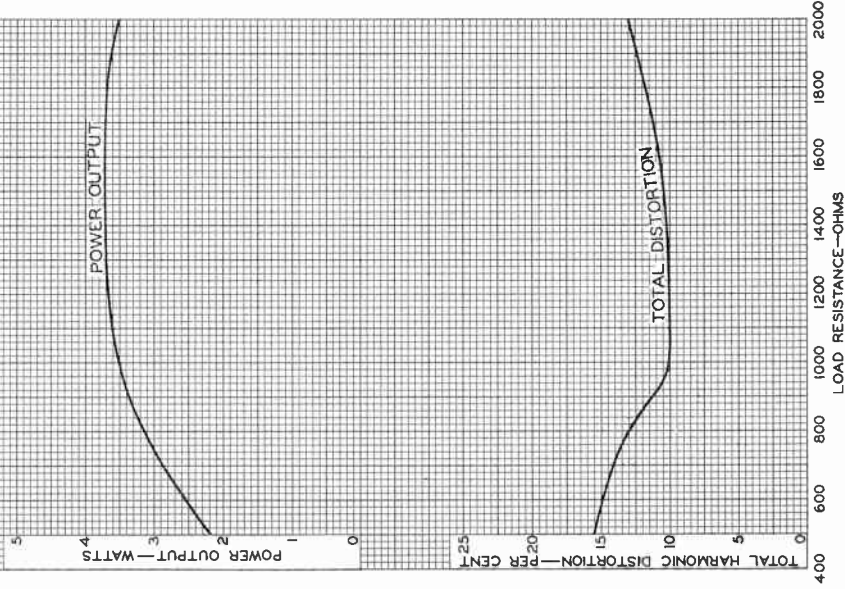
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DATA 3
8-60

92CM-10410

OPERATION CHARACTERISTICS

$E_f = 6.3$ VOLTS
 PLATE SUPPLY VOLTS = 130
 GRID-NO.2 SUPPLY VOLTS = 130
 CATHODE RESISTOR (OHMS) = 120
 CATHODE-BYPASS CAPACITOR (μF) = 50
 SIGNAL VOLTS (RMS) = 8.4



92CM-10408

High-Mu Triode

7-PIN MINIATURE TYPE

For VHF Tuner and Amplifier Applications

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	0.2	amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^o	
Grid to plate	0.6 max.	0.6 max.	μf
Grid to cathode, internal shield, and heater	3.2	3.2	μf
Plate to cathode, internal shield, and heater	3.2	4	μf

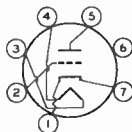
Characteristics, Class A₁ Amplifier:

Plate Voltage	135	volts
Grid Voltage	-1	volt
Amplification Factor	50	
Plate Resistance (Approx.)	5600	ohms
Transconductance	9000	μmhos
Plate Current	11	ma
Grid Voltage (Approx.) for plate μ _a = 100	-5.5	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 <i>General Section</i>
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No. E7-1)
Basing Designation for BOTTOM VIEW	7FP

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



Pin 5 - Plate
Pin 6 - Internal
Shield
Pin 7 - Cathode



6FH5

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE.	150 max.	volts
GRID VOLTAGE:		
Positive-bias value.	0 max.	volts
CATHODE CURRENT.	22 max.	ma
PLATE DISSIPATION.	2.2 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	100 max.	volts
Heater positive with respect to cathode	100 max.	volts

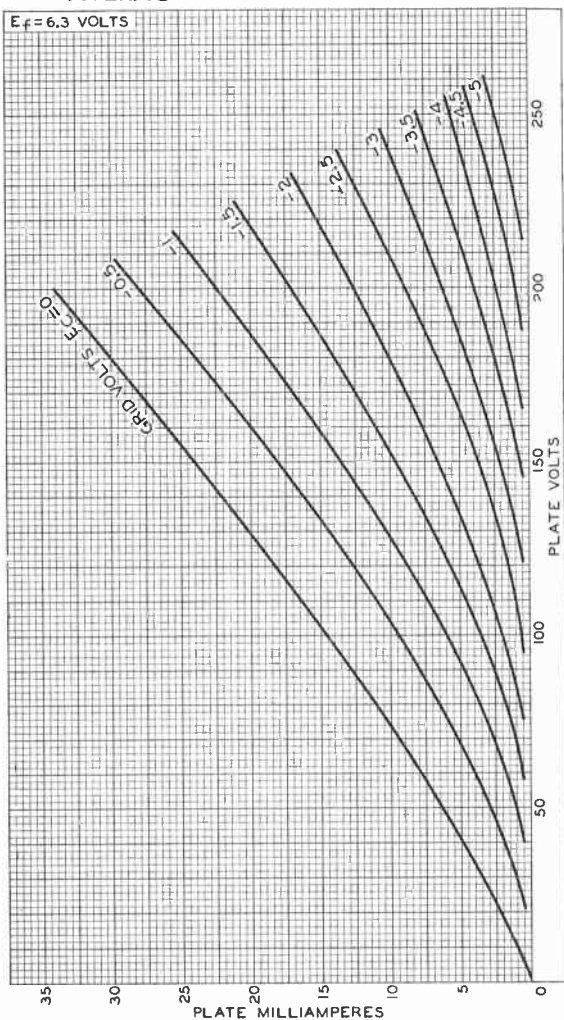
Maximum Circuit Values:

Grid-Circuit Resistance:		
For cathode-bias operation	1 max.	megohm

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



AVERAGE PLATE CHARACTERISTICS



92CM-10355RI



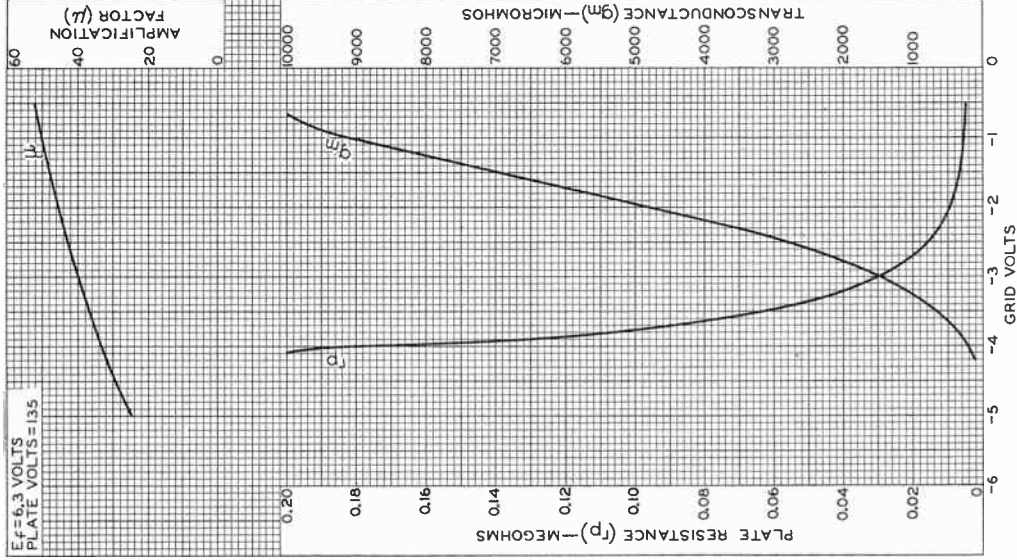
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Electron Tube Division

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DATA 2
8-60

6FH5

AVERAGE CHARACTERISTICS



92CM-10354RI

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Harrison, N. J.



Twin Diode—High-Mu Triode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.45	amp

Direct Interelectrode Capacitances
(Approx.):^a

Triode Unit:

Grid to plate	1.8	μμf
Grid to cathode and heater.	1.5	μμf
Plate to cathode and heater	0.16	μμf

Diode Units:

Diode—No.1 plate to triode grid	0.05	μμf
Diode—No.2 plate to triode grid	0.04	μμf
Diode—No.1 cathode to all other tube electrodes	4.6	μμf
Diode—No.2 cathode to all other tube electrodes	4.8	μμf
Diode—No.1 plate to cathode and heater.	2.4	μμf
Diode—No.2 plate to cathode and heater.	2.2	μμf

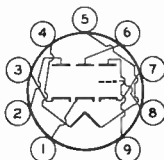
Characteristics, Class A₁ Amplifier (Triode Unit):

Plate Voltage	250	volts
Grid Voltage.	-3	volts
Amplification Factor.	70	
Plate Resistance (Approx.)	58000	ohms
Transconductance.	1200	μmhos
Plate Current	1	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
Base.	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW.	9KR

Pin 1—Diode—No. 2
Cathode
Pin 2—Diode—No. 1
Plate
Pin 3—Diode—No. 1
Cathode
Pin 4—Heater



Pin 5—Heater
Pin 6—Diode—No. 2
Plate
Pin 7—Triode
Cathode
Pin 8—Triode Grid
Pin 9—Triode Plate



6FM8

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 .	200	max.	volts
Heater positive with respect to cathode .	200 ^b	max.	volts

DIODE UNITS — Two

Values are for Each Unit

Maximum Ratings, *Design-Maximum Values:*

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 ^b	max.	volts

Characteristics, Instantaneous Test Condition:

Plate Current for plate volts = 5	20	ma
---	----	----

^a Without external shield.

^b The dc component must not exceed 100 volts.



Medium-Mu Twin Triode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances (Approx.):^a

	Unit No. 1	Unit No. 2	
Grid to plate	3.6	3.8	μμf
Grid to cathode and heater.	2.4	2.4	μμf
Plate to cathode and heater	0.34	0.26	μμf
Plate of unit No.1 to plate of unit No.2.		1	μμf

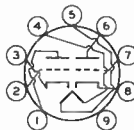
Characteristics, Class A₁ Amplifier (Each Unit):

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 volts = -12.5.	-	1.3	ma
Grid Voltage (Approx.) for plate μa = 10	-7	-18	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.	0.750" 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.	9LP

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 - No Connec-
tion



6FQ7

AMPLIFIER — Class A₁

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE.	330	max.	volts
GRID VOLTAGE:			
Positive-bias value.	0	max.	volts
CATHODE CURRENT.	22	max.	ma
PLATE DISSIPATION:			
Either plate	4	max.	watts
Both plates (Both units operating) . . .	5.7	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode. .	200	max.	volts
Heater positive with respect to cathode. .	200 ^b	max.	volts

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No. 29
at front of this Section

Maximum Circuit Values:

Grid-Circuit Resistance:			
For fixed-bias operation	1	max.	megohm

HORIZONTAL-DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	660	max.	volts
CATHODE CURRENT:			
Peak.	330	max.	ma
Average	22	max.	ma
PLATE DISSIPATION:			
Either plate.	4	max.	watts
Both plates (Both units operating). . .	5.7	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode .	200	max.	volts
Heater positive with respect to cathode .	200 ^b	max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance	2.2	max.	megohms
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VERTICAL-DEFLECTION OSCILLATOR

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	440	max.	volts
CATHODE CURRENT:			
Peak.	77	max.	ma
Average	22	max.	ma



PLATE DISSIPATION:

Either plate. 4 max. watts
Both plates (Both units operating). . . 5.7 max. watts

PEAK HEATER-CATHODE VOLTAGE:

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

Maximum Circuit Values:

Grid-Circuit Resistance 2.2 max. megohms

^a Without external shield.

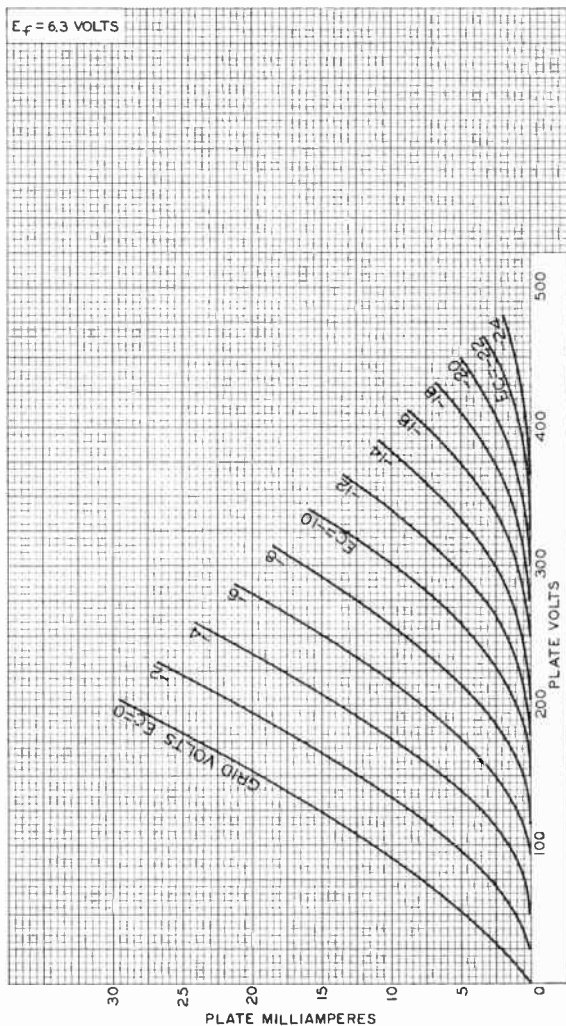
^b The dc component must not exceed 100 volts.

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



6FQ7

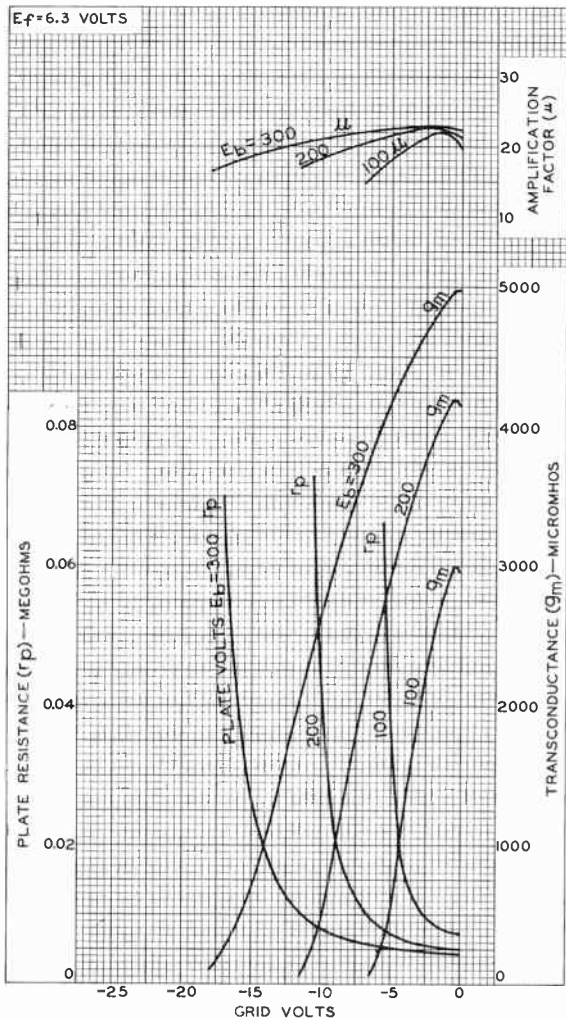
AVERAGE PLATE CHARACTERISTICS Each Unit



92CM-8442



AVERAGE CHARACTERISTICS Each Unit



92CM-8441R1





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 (AC or DC)	6.3	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^a	
<i>Triode Unit:</i>			
Grid to plate	1.8	1.8	μf
Grid to cathode, pentode cathode & pentode grid No.3 & internal shield, and heater.	2.8	2.8	μf
Plate to cathode, pentode cathode & pentode grid No.3 & internal shield, and heater.	1.5	2	μf
<i>Pentode Unit:</i>			
Grid No.1 to plate	0.02 max.	0.01 max.	μf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater	5	5	μf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater.	2	3	μf
Pentode plate to triode plate	0.15 max.	0.03 max.	μf

Characteristics, Class A₁ Amplifier:

	Triode Unit	Pentode Unit	
Plate Voltage	125	125	volts
Grid-No.2 Voltage	-	125	volts
Grid-No.1 Voltage	-1	-1	volt
Amplification Factor	40	-	
Plate Resistance (Approx.)	5000	20000	ohms
Transconductance	8000	6500	μmhos
Plate Current	14	12	ma
Grid-No.2 Current	-	4	ma
Grid-No.1 Voltage (Approx.) for plate μ _a = 20	-9	-9	volts

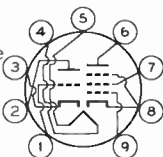


6FV8

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 <i>General Section</i>
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 2 - Triode Plate
- Pin 3 - Triode Cathode
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Pentode Plate
- Pin 7 - Pentode Grid No. 2



- Pin 8 - Pentode Cathode, Grid No. 3, Internal Shield
- Pin 9 - Pentode Grid No. 1

AMPLIFIER — Class A₁

Pentode Unit

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE	330 max.	volts
GRID-NO. 2 (SCREEN-GRID) SUPPLY VOLTAGE	330 max.	volts
GRID-NO. 2 VOLTAGE	See <i>Grid-No. 2 Input Rating Chart</i>	at front of Receiving Tube Section

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

Positive-bias value	0 max.	volts
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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 <i>Grid-No. 2 Input Rating Chart</i>	at front of Receiving Tube Section

PLATE DISSIPATION	2.3 max.	watts
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PEAK HEATER-CATHODE VOLTAGE:

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



VERTICAL-DEFLECTION OSCILLATOR

*Triode Unit*Maximum Ratings, *Design-Maximum Values:**For operation in a 525-line, 30-frame system^c*

DC PLATE VOLTAGE.	330	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	250	max.	volts
CATHODE CURRENT:			
Peak.	70	max.	ma
Average	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 ^b	max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation. 3 max. megohms

^a with external shield JEDEC No.315 connected to pin 4.^b The dc component must not exceed 100 volts.^c As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.



Medium-Mu Twin Triode

9-PIN MINIATURE TYPE

For Use in Cascode-Type Circuits of VHF TV Tuners

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	0.4	amp

Direct Interelectrode Capacitances (Approx.):⁰

	Unit No. 1	Unit No. 2	
Grid to plate	1.9	1.9	μf
Grid to cathode, internal shield, and heater.	3.4	-	μf
Plate to cathode, internal shield, and heater.	2.4	-	μf
Cathode to heater	2	2	μf
Cathode to grid, internal shield, and heater.	-	5.2	μf
Plate to grid, internal shield, and heater.	-	4	μf

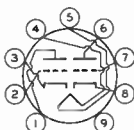
Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	100	volts
Grid Voltage	-1.2	volts
Amplification Factor	33	
Plate Resistance (Approx.)	2500	ohms
Transconductance	13000	μmhos
Plate Current	15	ma
Grid Voltage (Approx.) for transconductance (μmhos) = 70	-6	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" ± 3/32"
Diameter	0.750" to 0.875"
Dimensional Outline	See <i>General Section</i>
Bulb	T6-1/2
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



6FW8

AMPLIFIER — Class A₁

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE.	250 [■] max.	volts
CATHODE CURRENT.	22 max.	ma
PLATE DISSIPATION.	2.2 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.	0.5 max.	megohm
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[○] With external shield JEDEC No.315 connected to pin 9.

[■] In cathode-drive circuits with direct-coupled drive, it is permissible for this voltage to be as high as 300 volts.

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





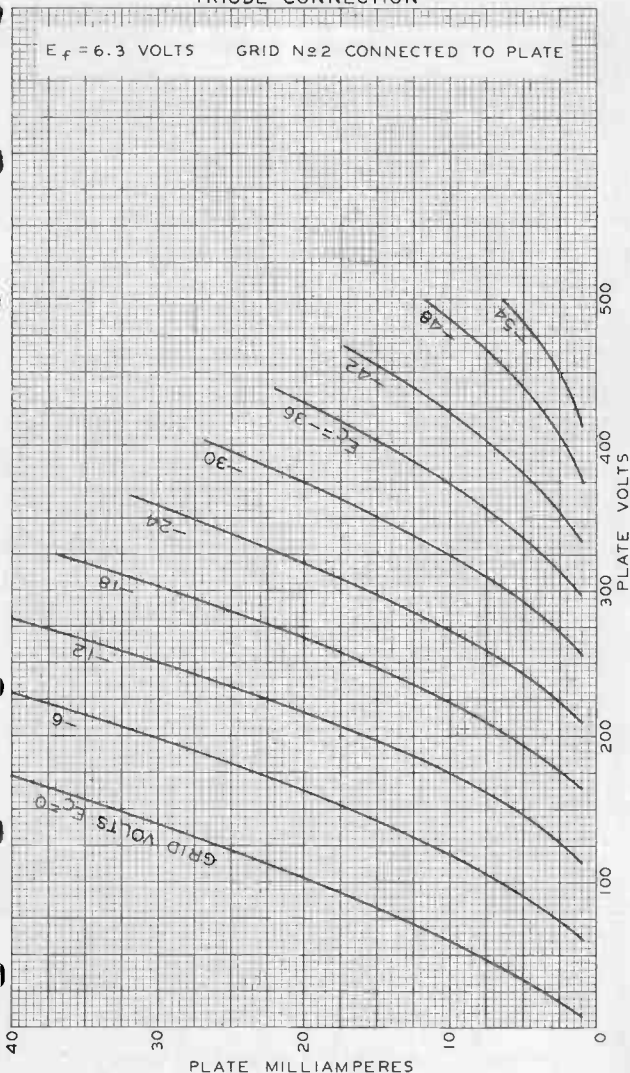
6G6-G

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION

6G6-G

$E_f = 6.3$ VOLTS

GRID No2 CONNECTED TO PLATE



AUG. 12, 1943

PLATE MILLIAMPERES

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6122R1



6G6-G

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION

$E_f = 6.3$ VOLTS SCREEN VOLTS = 180

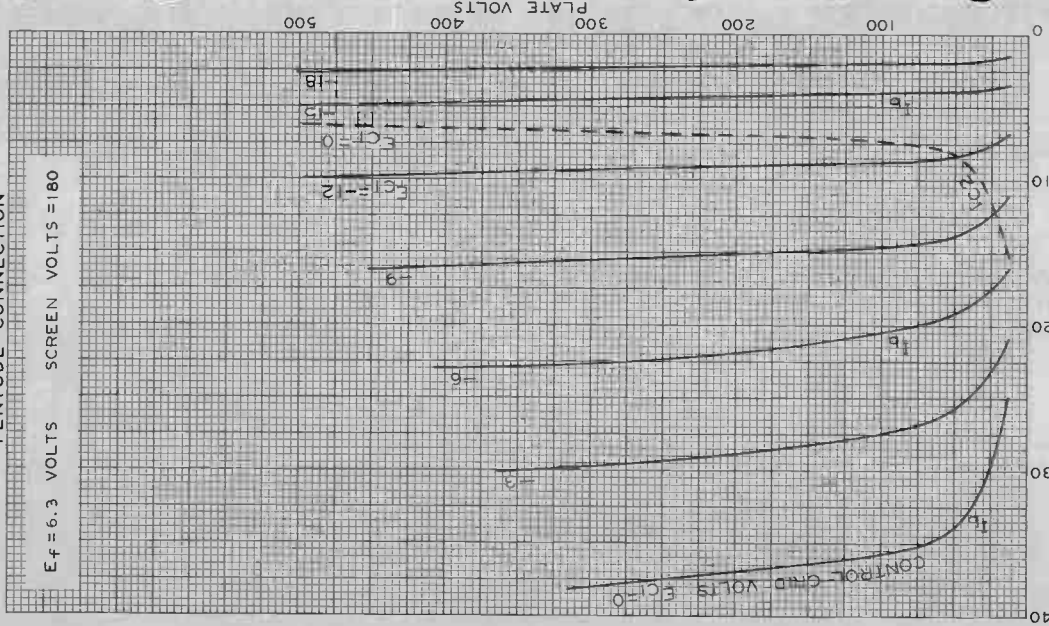


PLATE (I_b) OR SCREEN (I_c) MILLIAMPERES

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4956R1

AUG. 19, 1943

6G6-G

Medium-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3	volts
Current at 6.3 volts	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^A	
<i>Triode Unit:</i>			
Grid to plate	1.6	1.6	μf
Grid to cathode, pentode grid No.3 & pentode cathode & internal shield, and heater . . .	3.4	3.6	μf
Plate to cathode, pentode grid No.3 & pentode cathode & internal shield, and heater . . .	1.7	2.2	μf
Heater to cathode	3	3 [•]	μf
<i>Pentode Unit:</i>			
Grid No.1 to plate	0.02 max.	0.015 max.	μf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater	5.5	5.5	μf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater . .	2.6	3.4	μf
Heater to cathode & grid No.3 & internal shield . .	3	3 [•]	μf

Characteristics, Class A₁ Amplifier:

	Triode Unit	Pentode Unit	
Plate Voltage	125	125	volts
Grid-No.2 Voltage	-	125	volts
Grid-No.1 Voltage	-1	-1	volt
Amplification Factor	46	-	
Plate Resistance (Approx.)	5400	200000	ohms
Transconductance	8500	7500	μmhos
Plate Current	13.5	12	ma
Grid-No.2 Current	-	4	ma
Grid-No.1 Voltage (Approx.) for plate $\mu a = 10$	-8	-8	volts



6GH8

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 <i>General Section</i>
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

HORIZONTAL-DEFLECTION OSCILLATOR

Maximum Ratings, Design-Maximum Values:

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

	Triode Unit	Pentode Unit	
PLATE VOLTAGE.	330 max.	350 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
Peak-negative value.	-	175 max.	volts
CATHODE CURRENT:			
Peak.	-	300 max.	ma
Average.	-	20 max.	ma
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.	2.5 max.	2.5 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:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Grid-No.1-Circuit Resistance: For fixed-bias or cathode- bias operation.	2.2 max.	2.2 max.	megohms

▲ 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.

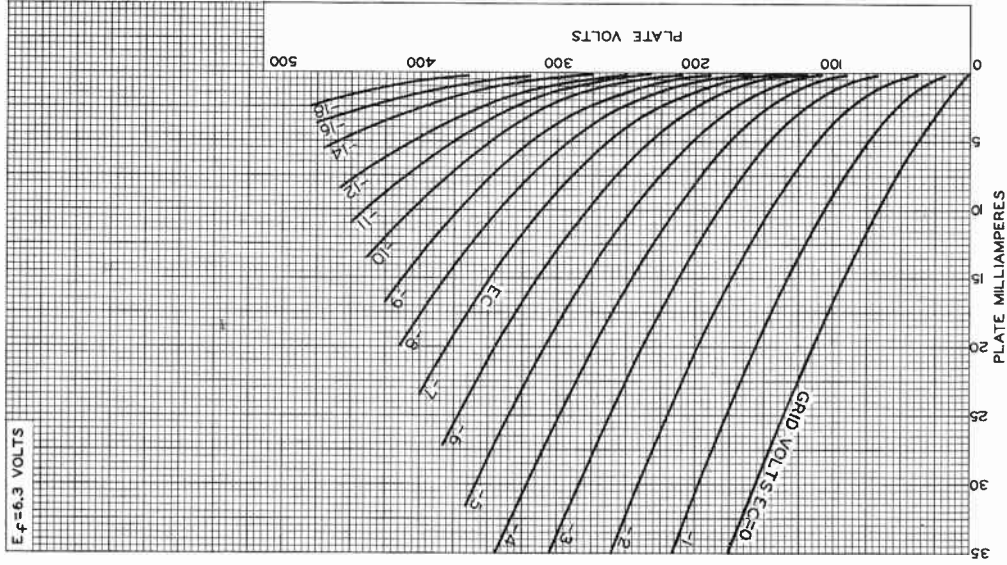
★ As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

♦ The dc component must not exceed 100 volts.



6GH8

AVERAGE PLATE CHARACTERISTICS Triode Unit



92CM-1042IR1

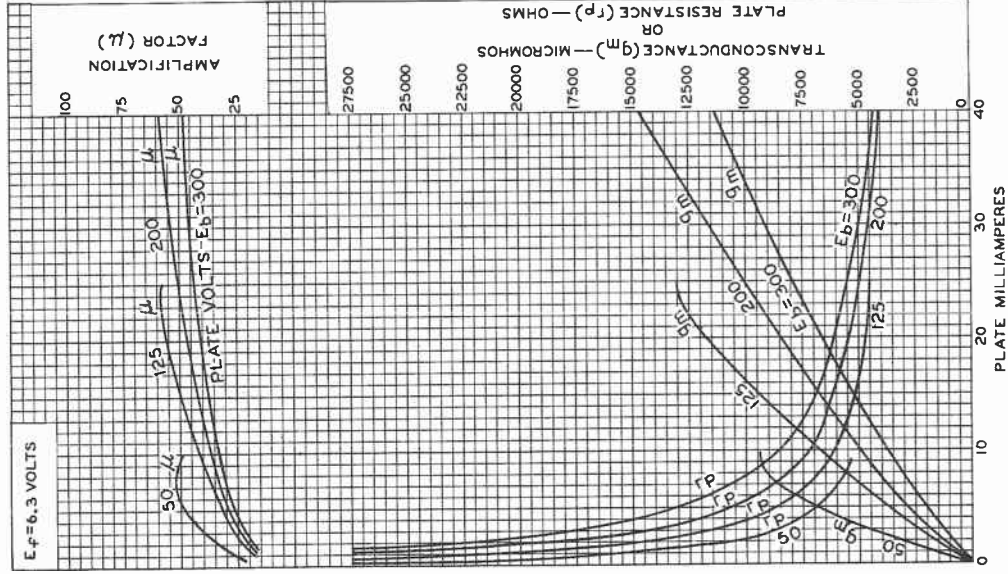
RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



6GH8

AVERAGE CHARACTERISTICS Triode Unit



92CM-1042B



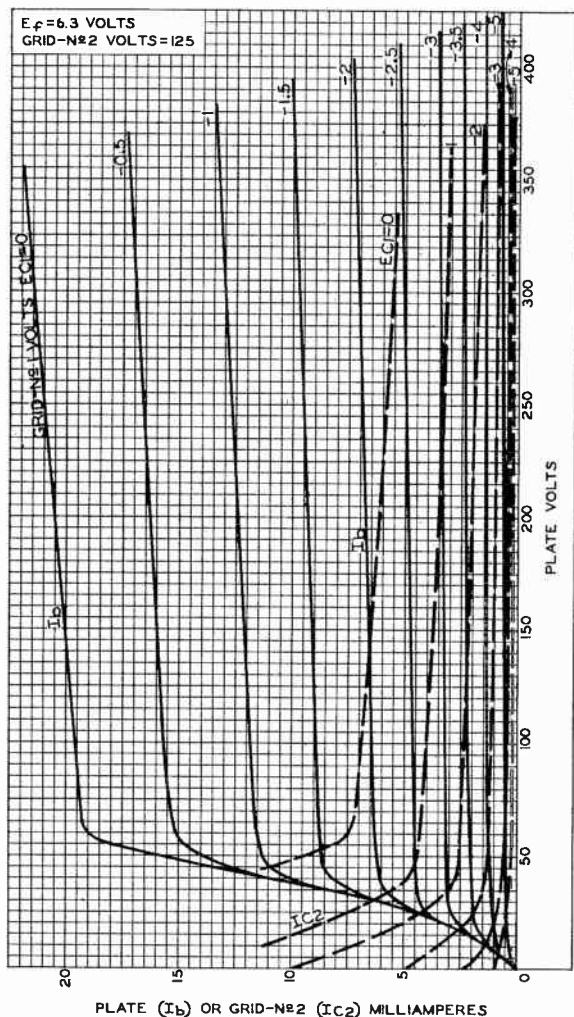
RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.

DATA 3
8-60

6GH8

AVERAGE CHARACTERISTICS Pentode Unit



92CM-10436

RADIO CORPORATION OF AMERICA
Electron Tube Division

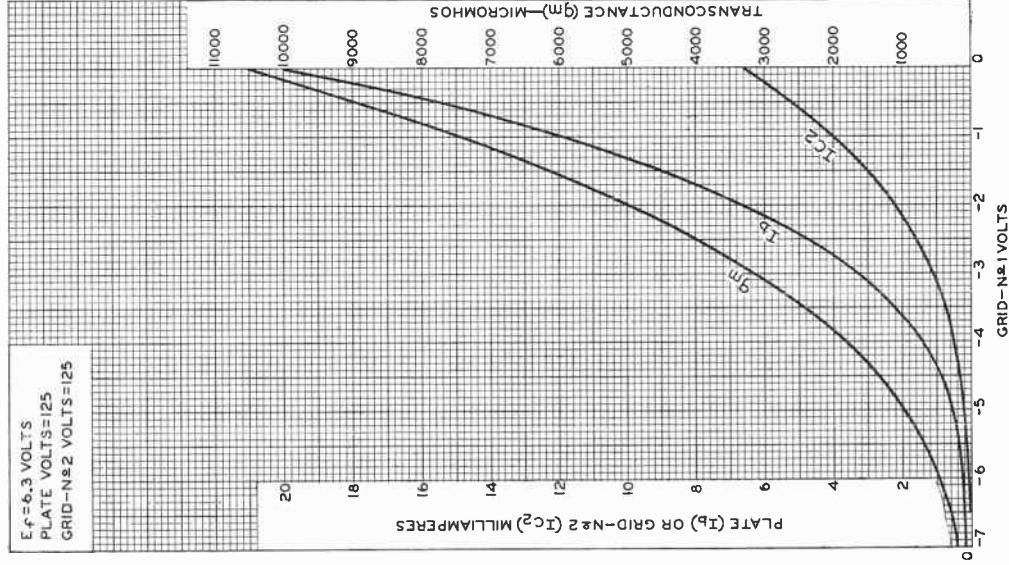
Harrison, N. J.



AVERAGE CHARACTERISTICS

Pentode Unit

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 125
 GRID-N#2 VOLTS = 125



92CM-10417





Beam Power Tube

NOVAR TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	1.2	amp

Mu-Factor, Grid No.2 to Grid No.1 for

plate volts = 150, grid-No.2 volts = 150, grid-No.1 volts = -22.5.	4.4
--	-----

Direct Interelectrode Capacitances

(Aprox.):^a

Grid No.1 to plate.	0.26	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	6.5	μf

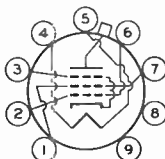
Characteristics, Class A₁ Amplifier:

Plate Voltage	60	250	volts
Grid-No.2 Voltage	150	150	volts
Grid-No.1 Voltage	0	-22.5	volts
Plate Resistance (Approx.).	-	15000	ohms
Transconductance.	-	7100	μmhos
Plate Current	390 ^b	70	ma
Grid-No.2 Current	32 ^b	2.1	ma
Grid-No.1 Voltage (Approx.) for plate ma. = 1	-	-42	volts

Mechanical:

Operating Position.	Any
Maximum Overall Length.	3.55"
Seated Length	3.04" ± 0.13"
Diameter.	1.438" to 1.562"
Bulb.	T12
Cap	Skirted Miniature (JEDEC C1-2 or C1-3)
Socket.	Cinch Mfg. Co. No.149 1900 24, Industrial Electronic Hardware Co. No. S0-0968-M, or equivalent
Base.	Large-Button Novar 9-Pin (JEDEC No.E9-76)
Basing Designation for BOTTOM VIEW.	9NM

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



- Pin 6-Grid No.1
- Pin 7-Grid No.2
- Pin 8-Do Not Use
- Pin 9-Do Not Use
- Cap-Plate



6GJ5

HORIZONTAL-DEFLECTION AMPLIFIER

Maximum Ratings, *Design-Maximum Values:*

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

DC PLATE-SUPPLY VOLTAGE	770	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	6500	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE.	220	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-55	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	330	max.	volts
CATHODE CURRENT:			
Peak.	550	max.	ma
Average	175	max.	ma
GRID-No.2 INPUT	3.5	max.	watts
PLATE DISSIPATION ^e	17.5	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^f	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).	240	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For grid resistor-bias operation. 1 max. megohm

^a without external shield.

^b 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.

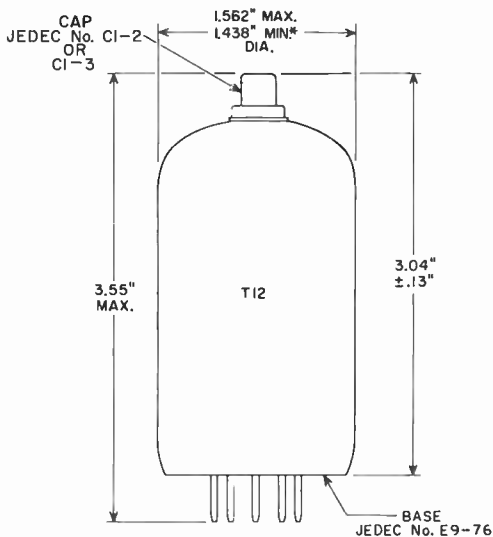
^c As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

^d 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.

^e An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

^f The dc component must not exceed 100 volts.





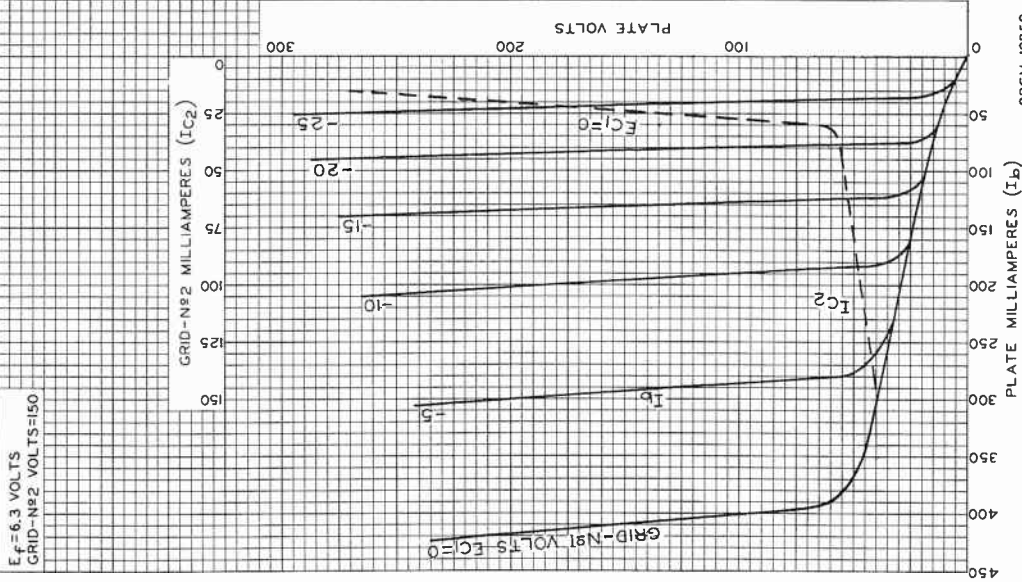
92CS-11127R1

* APPLIES IN ZONE STARTING 0.375" FROM BASE SEAT.



6GJ5

AVERAGE CHARACTERISTICS



High-Mu Triode

7-PIN MINIATURE TYPE
For VHF-Amplifier Applications

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts	0.18	amp
Direct Interelectrode Capacitances (Approx.): ^a		
Grid to plate	0.52	μμf
Grid to cathode, internal shield, and heater	5	μμf
Plate to cathode, internal shield, and heater	3.5	μμf
Heater to cathode	2.5 ^b	μμf

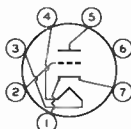
Characteristics, Class A₁ Amplifier:

Plate Voltage	135	volts
Grid Voltage	-1	volt
Amplification Factor	78	
Plate Resistance (Approx.)	5400	ohms
Transconductance	15000	μmhos
Plate Current	11.5	ma
Grid Voltage (Approx.) for transconductance (μmhos) =		
150	-4.2	volts
1500	-2.5	volts
Input Resistance ^c	275	ohms
Input Capacitance ^c	11.2	μμf
Noise Figure ^d	4.7	db

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 <i>General Section</i>
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No. E7-1)
Basing Designation for BOTTOM VIEW	7FP

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



Pin 5 - Plate
Pin 6 - Internal Shield
Pin 7 - Cathode



6GK5

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE.	200 max.	volts
GRID VOLTAGE:		
Negative-bias value.	50 max.	volts
Positive-bias value.	0 max.	volts
AVERAGE CATHODE CURRENT.	22 max.	ma
PLATE DISSIPATION.	2.5 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:

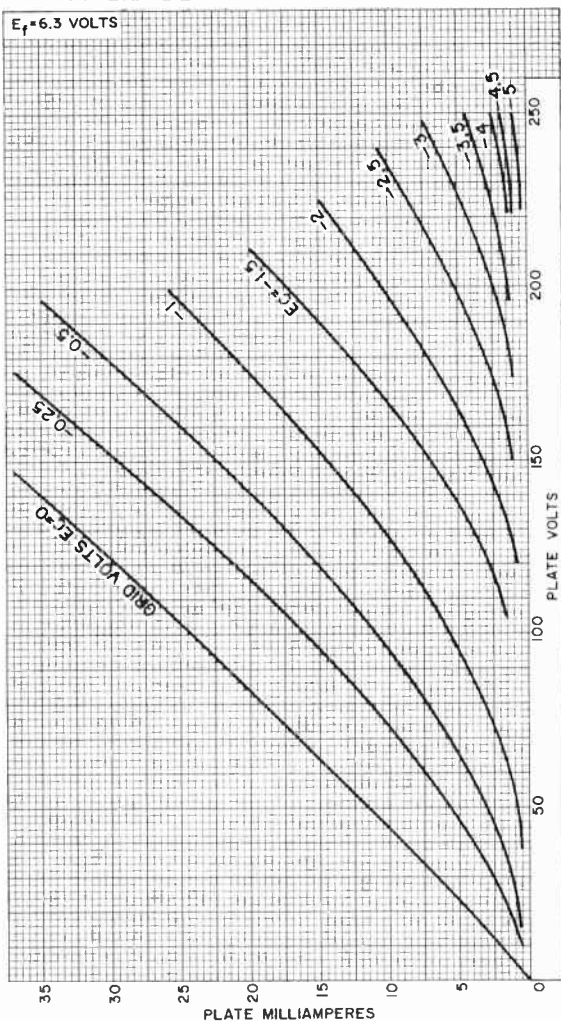
Grid-Circuit Resistance:

For cathode-bias operation 1 max. megohm

- ^a With external shield JEDEC No.316 connected to cathode except as noted.
- ^b With external shield JEDEC No.316 and internal shield connected to ground.
- ^c Measured at 200 Mc with heater volts = 6.3 and plate effectively grounded for rf voltages.
- ^d For a neutralized triode amplifier at a frequency of 200 Mc with signal-source impedance adjusted for minimum noise output.



AVERAGE PLATE CHARACTERISTICS



92CM-11024



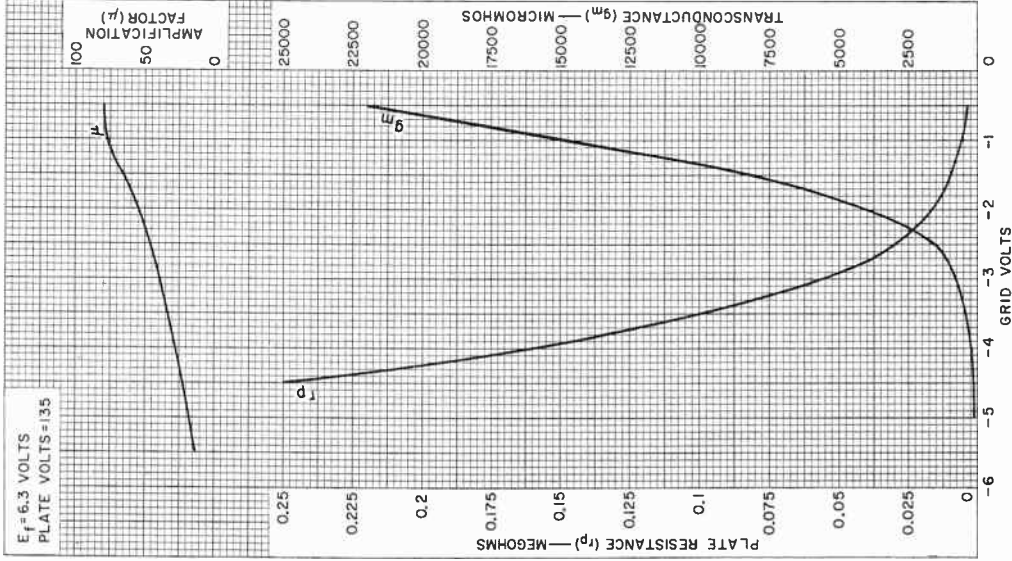
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 Electron Tube Division

Harrison, N. J.

DATA 2
 5-61

6GK5

AVERAGE CHARACTERISTICS



92CM-11023

RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.



Power Pentode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.76	amp

Direct Interelectrode Capacitances:^a

Grid No.1 to plate.	0.14 max.	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater.	10	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater.	7	μf

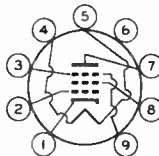
Characteristics, Class A₁ Amplifier:

Plate Supply Voltage.	250	volts
Grid-No.2 Supply Voltage.	250	volts
Cathode Resistor.	135	ohms
Mu-Factor, Grid No.2 to Grid No.1	19	
Plate Resistance (Approx.).	38000	ohms
Transconductance.	11300	μmhos
Plate Current	48	ma
Grid-No.2 Current	5.5	ma

Mechanical:

Operating Position.	Any
Maximum Overall Length.	3-1/16"
Maximum Seated Length	2-13/16"
Length, Base Seat to Bulb Top (Excluding tip)	2-7/16" ± 3/32"
Diameter.	0.750" to 0.875"
Dimensional Outline	See <i>General Section</i>
Bulb.	T6-1/2
Base.	Small-Button Noval 9-Pin (JEDEC No.E9-1)
Basing Designation for BOTTOM VIEW.	9GK

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



- Pin 6 - No Connection
- Pin 7 - Plate
- Pin 8 - Grid No.2
- Pin 9 - Grid No.3,
Internal
Shield

AF POWER AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE SUPPLY VOLTAGE.	600 max.	volts
PLATE VOLTAGE	330 max.	volts
GRID-NO.2 SUPPLY VOLTAGE.	600 max.	volts
GRID-NO.2 (SCREEN-GRID) VOLTAGE	330 max.	volts



6GK6

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

Negative-bias value	100 max.	volts
CATHODE CURRENT	65 max.	ma

GRID-NO.2 INPUT:

Peak	4 max.	watts
Average	2 max.	watts
PLATE DISSIPATION	13.2 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:

Plate Supply Voltage.	250	volts
Grid-No.2 Supply Voltage.	250	volts
Cathode Resistor.	135	ohms
Peak AF Grid-No.1 Voltage	7.3	volts
Zero-Signal Plate Current	48	ma
Max.-Signal Plate Current	50.6	ma
Zero-Signal Grid-No.2 Current	5.5	ma
Max.-Signal Grid-No.2 Current	10	ma
Effective Load Resistance	5200	ohms
Total Harmonic Distortion	10	%
Max.-Signal Power Output.	5.7	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation.	0.3 max.	megohm
For cathode-bias operation.	1 max.	megohm

PUSH-PULL AF POWER AMPLIFIER — Class AB₁

Maximum Ratings, Design-Maximum Values:

PLATE SUPPLY VOLTAGE.	600 max.	volts
PLATE VOLTAGE	330 max.	volts
GRID-NO.2 SUPPLY VOLTAGE.	600 max.	volts
GRID-NO.2 (SCREEN-GRID) VOLTAGE	330 max.	volts

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

Negative-bias value	100 max.	volts
CATHODE CURRENT	65 max.	ma

GRID-NO.2 INPUT:

Peak	4 max.	watts
Average	2 max.	watts
PLATE DISSIPATION	13.2 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:

Values are for 2 tubes

Plate Supply Voltage.	250	300	volts
Grid-No.2 Supply Voltage.	250	300	volts
Cathode Resistor.	130	130	ohms
Peak AF Grid-No.1-to-Grid-No.1 Voltage. . .	22.4	28	volts
Zero-Signal Plate Current	62	72	ma



Max.-Signal Plate Current	75	92	ma
Zero-Signal Grid-No.2 Current	7	8	ma
Max.-Signal Grid-No.2 Current	15	22	ma
Effective Load Resistance (Plate to plate).	8000	8000	ohms
Total Harmonic Distortion	3	4	%
Max.-Signal Power Output	11	17	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.3 max.	megohm
For cathode-bias operation	1 max.	megohm

PUSH-PULL AF POWER AMPLIFIER — Class B

Maximum Ratings, Design-Maximum Values:

PLATE SUPPLY VOLTAGE	600 max.	volts
PLATE VOLTAGE	330 max.	volts
GRID-No.2 SUPPLY VOLTAGE	600 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	330 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Negative-bias value	100 max.	volts
CATHODE CURRENT	65 max.	ma
GRID-No.2 INPUT:		
Peak	4 max.	watts
Average	2 max.	watts
PLATE DISSIPATION	13.2 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:

Values are for 2 tubes

Plate Voltage	250	300	volts
Grid-No.2 Voltage	250	300	volts
Grid-No.1 Voltage	-11.6	-14.7	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage. .	22.4	28	volts
Zero-Signal Plate Current	20	15	ma
Max.-Signal Plate Current	75	92	ma
Zero-Signal Grid-No.2 Current	2.2	1.6	ma
Max.-Signal Grid-No.2 Current	15	22	ma
Effective Load Resistance (Plate to plate).	8000	8000	ohms
Total Harmonic Distortion	3	4	%
Max.-Signal Power Output	11	17	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.3 max.	megohm
For cathode-bias operation	1 max.	megohm

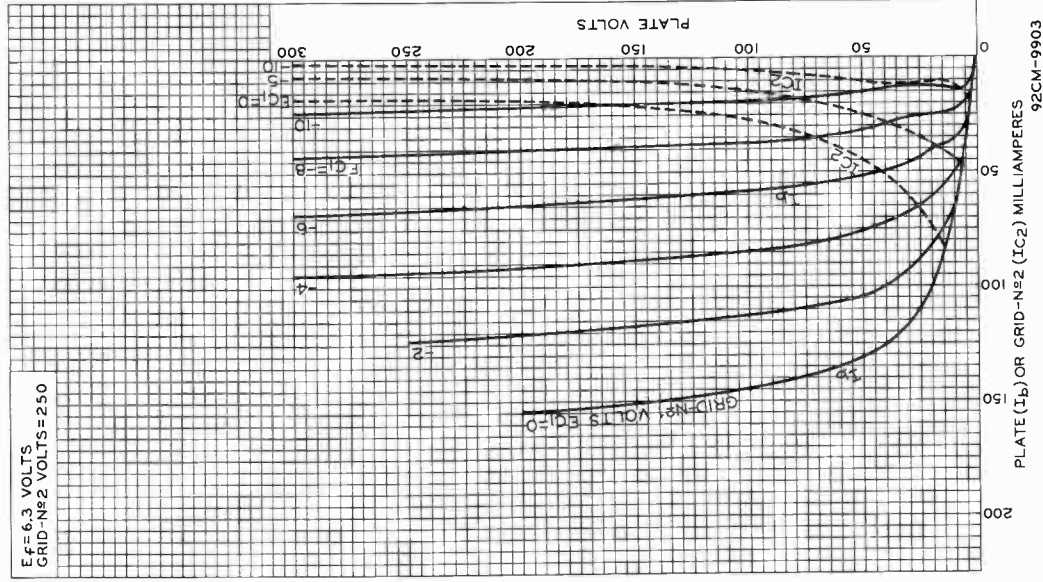
^a Without external shield.



6GK6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-N^o2 VOLTS = 250



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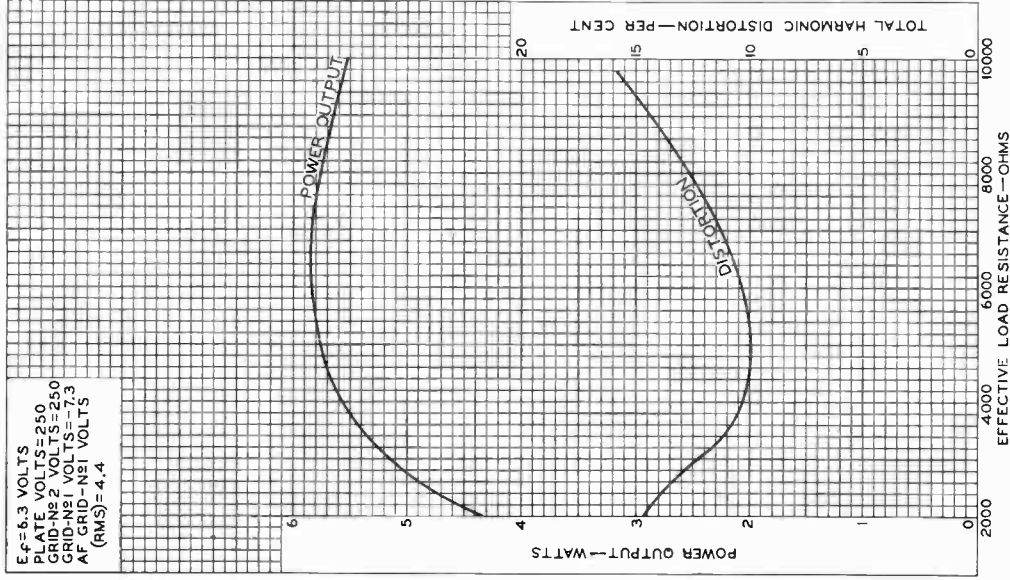
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6GK6

OPERATION CHARACTERISTICS

$E_f = 6.3$ VOLTS
PLATE VOLTS = 250
GRID-N₂ VOLTS = 250
GRID-N₁ VOLTS = -7.3
AF GRID-N₁ VOLTS
(RMS) = 4.4



92CM-9902



RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 3
7-61



Semiremote-Cutoff Pentode

7-PIN MINIATURE TYPE

For Gain-Controlled, 40-Mc, Picture-IF Stages of TV Receivers

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.4	amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^a	
Grid No.1 to plate.	0.036 max.	0.026 max.	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater . . .	10	10	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater.	2.4	3.4	μf

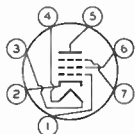
Characteristics, Class A₁ Amplifier:

Plate Supply Voltage.	125	volts
Grid No.3 and Internal Shield. .	<i>Connected to cathode at socket</i>	
Grid-No.2 Supply Voltage.	125	volts
Cathode Resistor.	56	ohms
Plate Resistance (Approx.).	0.2	megohm
Transconductance.	13000	μmhos
Plate Current	14	ma
Grid-No.2 Current	3.4	ma
Grid-No.1 Voltage (Approx.) for transconductance (μmhos) = 60.	-15	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)
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



6GM6

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE. 330 max. volts

GRID No.3 (SUPPRESSOR GRID). *Connect to cathode at socket*

GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE . . . 330 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

GRID-No.2 INPUT:

For grid-No.2 voltages up

to 165 volts 0.65 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. 3.1 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 200 max. volts

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

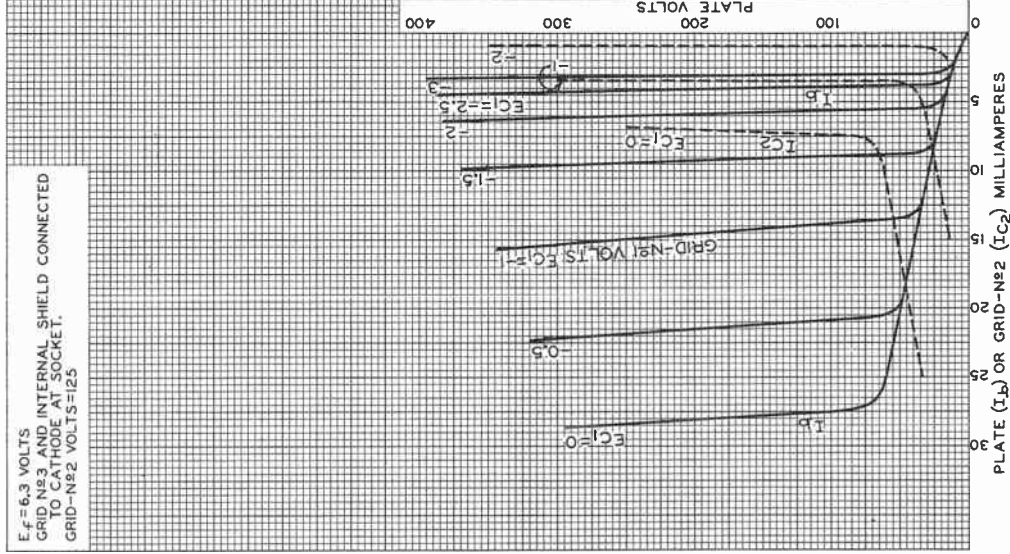
▲ With external shield JEDEC No.316 connected to cathode.

• The dc component must not exceed 100 volts.



AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
 GRID N₃ AND INTERNAL SHIELD CONNECTED
 TO CATHODE AT SOCKET.
 GRID-N₂ VOLTS=125



92CM-10390RI



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DATA 2
 8-60

6GM6

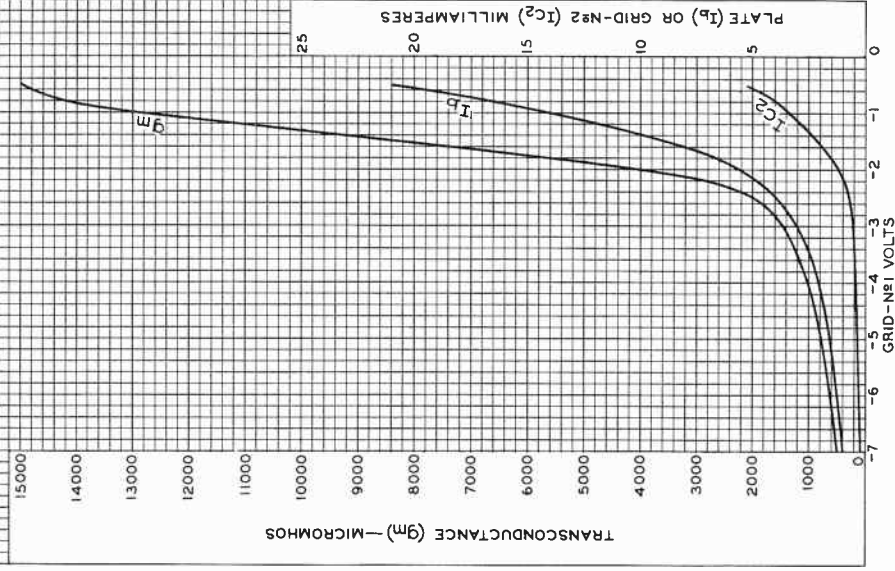
AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS

PLATE VOLTS=125

GRID N \circ 3 AND INTERNAL SHIELD CONNECTED
TO CATHODE AT SOCKET.

GRID-N \circ 2 VOLTS=125



92CM-1039IRI

RADIO CORPORATION OF AMERICA
Electron Tube Division

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High-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.75	amp

Direct Interelectrode Capacitances:^a

Triode Unit:

Grid to plate	4.4	μμf
Grid to cathode and heater.	2.4	μμf
Plate to cathode and heater	0.36	μμf

Pentode Unit:

Grid No.1 to plate.	0.1 max.	μμf
Grid No.1 to cathode & internal shield & grid No.3, grid No.2, and heater.	11	μμf
Plate to cathode & internal shield & grid No.3, grid No.2, and heater.	4.2	μμf
Triode grid to pentode plate.	0.018 max.	μμf
Pentode grid No.1 to triode plate	0.005 max.	μμf
Pentode plate to triode plate	0.17 max.	μμf

Characteristics, Class A₁ Amplifier:

	<i>Triode Unit</i>	<i>Pentode Unit</i>		
Plate Supply Voltage.	250	60	200	volts
Grid-No.2 Supply Voltage.	-	150	150	volts
Grid-No.1 Voltage	-2	0	-	volts
Cathode Resistor.	-	-	100	ohms
Amplification Factor.	100	-	-	
Plate Resistance (Approx.).	37000	-	60000	ohms
Transconductance.	2700	-	11500	μmhos
Plate Current	2	55 ^b	25	ma
Grid-No.2 Current	-	18 ^b	5.5	ma
Grid-No.1 Voltage (Approx.) for plate μ _a = 100.	-	-	-10	volts
Grid Voltage (Approx.) for plate μ _a = 20	-5	-	-	volts

Mechanical:

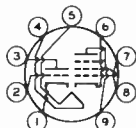
Operating Position.	Any
Maximum Overall Length.	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip).	2" ± 3/32"
Diameter.	0.750" to 0.875"
Dimensional Outline	See <i>General Section</i>
Bulb.	T6-1/2



6GN8

Base Small-Button Noval 9-Pin (JEDEC 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-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	

Rating Chart at front of Receiving Tube Section

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

Positive-bias value	0 max.	0 max.	volts
PLATE DISSIPATION	1 max.	5 max.	watts

GRID-No.2 INPUT:

For grid-No.2 voltages up to 165 volts - 1.1 max. watts

For grid-No.2 voltages between 165 and 330 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^a max. 200^a 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

^a without external shield.

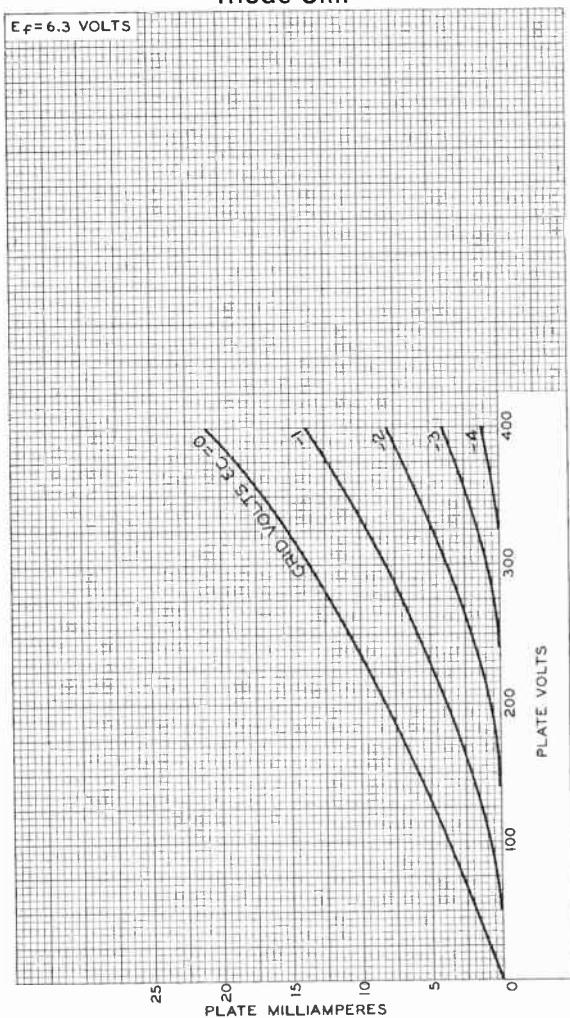
^b This value can be measured by a method involving a recurrent wave form such that the maximum ratings of the tube will not be exceeded.

^c The dc component must not exceed 100 volts.



AVERAGE PLATE CHARACTERISTICS

Triode Unit

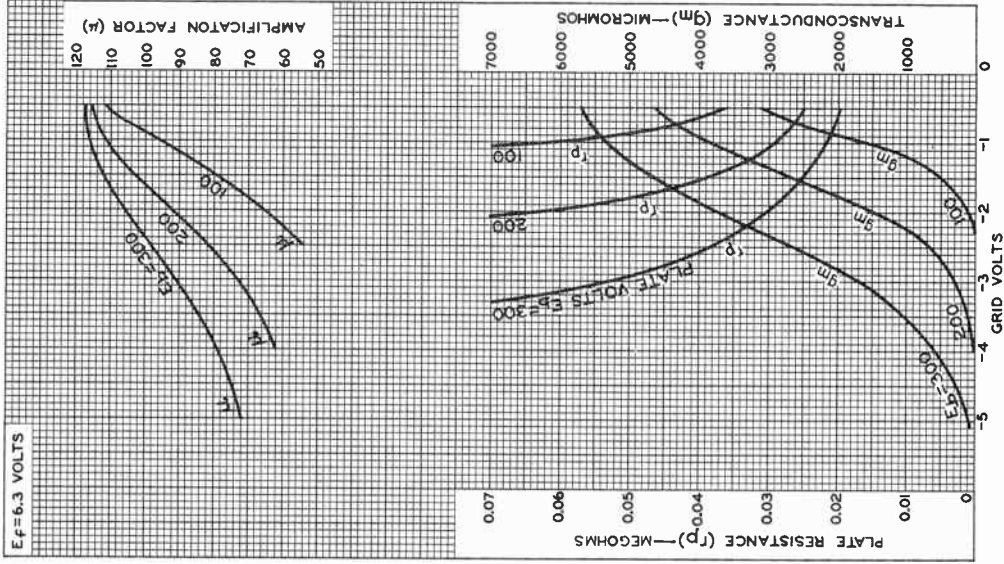


92CM-9907R1



6GN8

AVERAGE CHARACTERISTICS Triode Unit



92CM-11025

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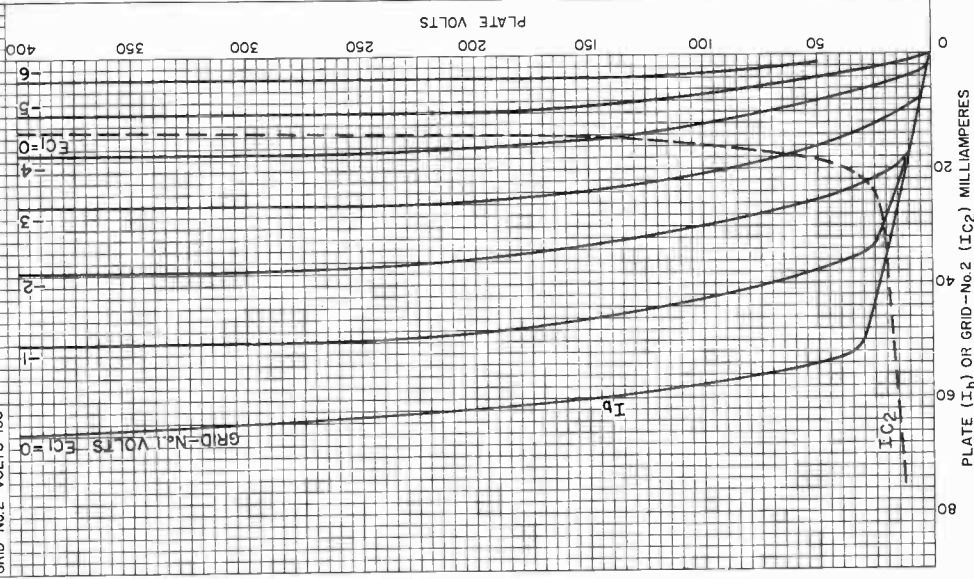


6GN8

AVERAGE CHARACTERISTICS Pentode Unit

$E_f = 6.3$ VOLTS
GRID-No.2 VOLTS = 150

GRID-No.1 VOLTS $E_{c1} = 0$



92CM-11021

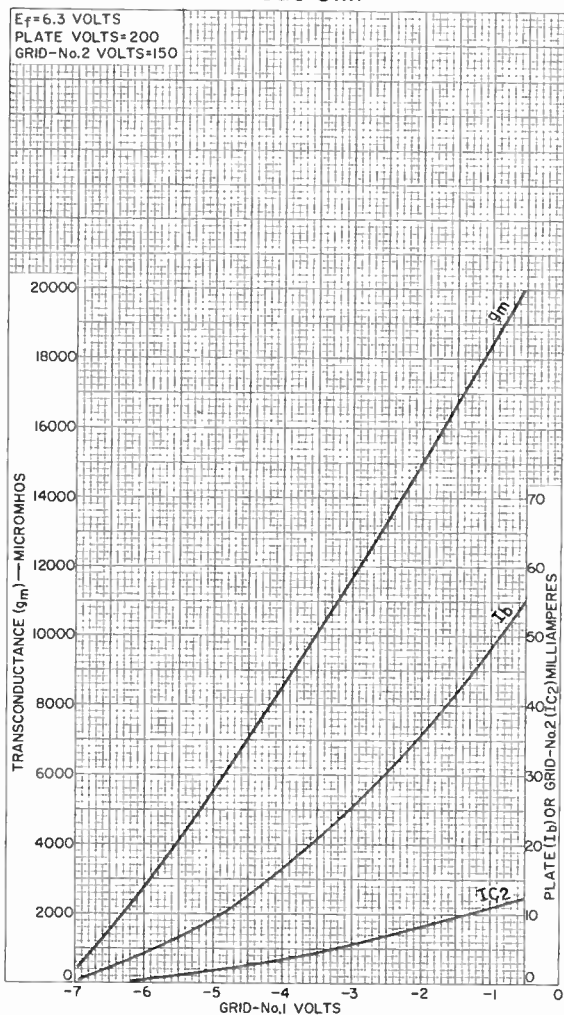


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DATA 3
5-61

6GN8

AVERAGE CHARACTERISTICS Pentode Unit



92CM-11022

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Electron Tube Division

Harrison, N. J.



Beam Power Tube

NOVAR TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	1.2	amp

Mu-Factor, Grid No.2 to Grid No.1

for plate volts = 150, grid-No.2 volts = 150, grid-No.1 volts = -22.5. . .	4.4	
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Direct Interelectrode Capacitances

(Approx.):^a

Grid No.1 to plate.	0.26	μmf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	15	μmf
Plate to cathode & grid No.3, grid No.2, and heater	6.5	μmf

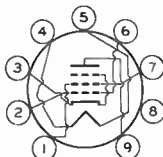
Characteristics, Class A₁ Amplifier:

Plate Voltage	60	250	volts
Grid-No.2 Voltage	150	150	volts
Grid-No.1 Voltage	0	-22.5	volts
Plate Resistance (Approx.).	-	15000	ohms
Transconductance.	-	7100	μmhos
Plate Current	390 ^b	70	ma
Grid-No.2 Current	32 ^b	2.1	ma
Grid-No.1 Voltage (Approx.) for plate ma. = 1	-	-42	volts

Mechanical:

Operating Position.	Any
Maximum Overall Length.	3.54"
Maximum Seated Length	3.16"
Length, Base Seat to Bulb Top (Excluding tip).	2.60" ± 0.09"
Diameter.	1.438" to 1.562"
Bulb.	T12
Socket.	Cinch Mfg. Co. No.149 19 00 024, or equivalent
Base.	Large-Button Novar 9-Pin (JEDEC No.E9-76)
Basing Designation for BOTTOM VIEW.	9NZ

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



- Pin 6-Grid No.1
- Pin 7-Grid No.2
- Pin 8-Internal Con-
nection—
Do Not Use
- Pin 9-Plate



6GT5

HORIZONTAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Maximum Values:

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

DC PLATE-SUPPLY VOLTAGE	770	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	6500	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE	220	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-55	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE . .	330	max.	volts
CATHODE CURRENT:			
Peak	550	max.	ma
Average	175	max.	ma
GRID-No.2 INPUT	3.5	max.	watts
PLATE DISSIPATION ^e	17.5	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^f	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).	240	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For grid-resistor-bias operation. 1 max. megohm

^a without external shield.

^b 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.

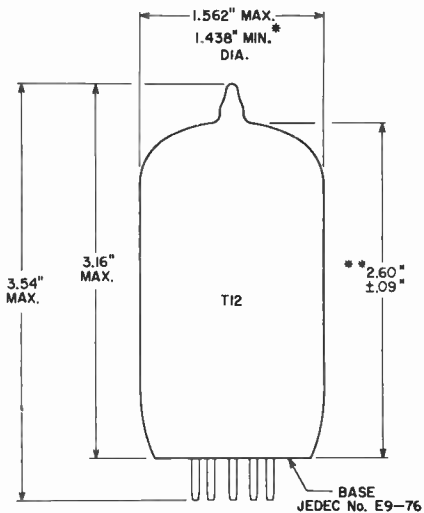
^c As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

^d 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 micro-seconds.

^e An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

^f The dc component must not exceed 100 volts.





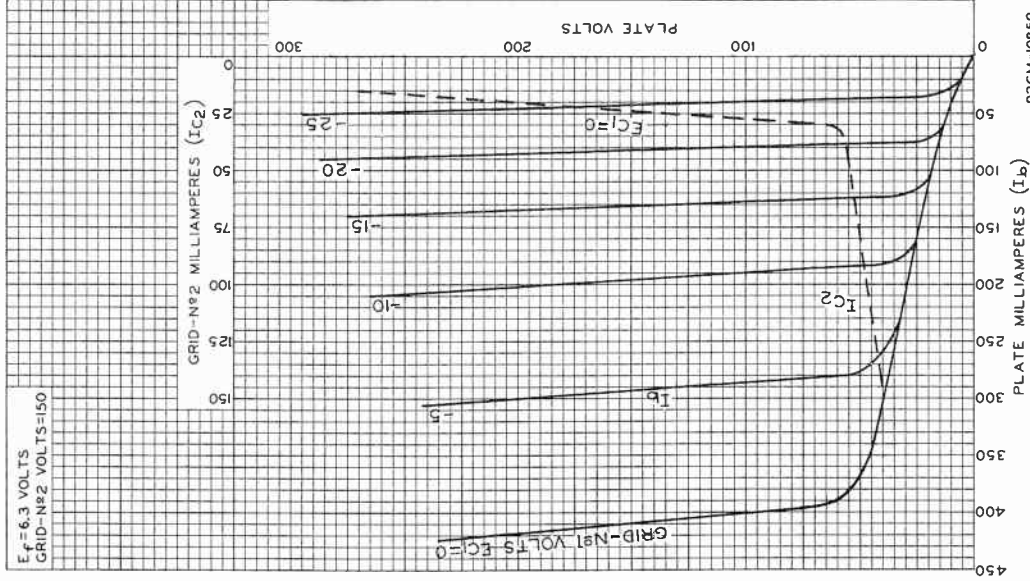
92CS-11227

- * APPLIES IN ZONE STARTING 0.375" FROM BASE SEAT.
- ** MEASURED FROM BASE SEAT TO BULB-TOP LINE AS DETERMINED BY A RING GAUGE OF C.600" INSIDE DIAMETER.



6GT5

AVERAGE CHARACTERISTICS



92CM-10859

RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



Beam Power Tube

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC) 6.3 ± 10% volts

Current at 6.3 volts 1.2 amp

Mu-Factor, Grid No.2 to Grid No.1

for plate volts = 150, grid-No.2

volts = 150, grid-No.1 volts =

-22.5 4.4

Direct Interelectrode Capacitances

(Approx.):^a

Grid No.1 to plate 0.5 μμf

Grid No.1 to cathode & grid No.3,
grid No.2, and heater 17 μμfPlate to cathode & grid No.3,
grid No.2, and heater 7 .μμfCharacteristics, Class A₁ Amplifier:

Plate Voltage 60 250 volts

Grid-No.2 Voltage 150 150 volts

Grid-No.1 Voltage 0 -22.5 volts

Plate Resistance (Approx.) - 15000 ohms

Transconductance - 7100 μμhos

Plate Current 390^b 70 maGrid-No.2 Current 32^b 2.1 ma

Grid-No.1 Voltage (Approx.) for

plate ma. = 1 - -42 volts

Mechanical:

Operating Position Any

Maximum Overall Length 4-1/4"

Seated Length 3-1/2" ± 3/16"

Diameter 1.438" to 1.562"

Bulb T12

Cap Skirted Miniature (JEDEC No.C1-3)

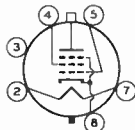
Base Short Medium-Shell Octal 6-Pin

with External Barriers, Style B, Arrangement 2

(JEDEC No.86-122)

Basing Designation for BOTTOM VIEW 6AM

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



6GW6

HORIZONTAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Maximum Values:

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

DC PLATE-SUPPLY VOLTAGE	770	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	6500	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE	220	max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-55	max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 VOLTAGE	330	max.	volts
CATHODE CURRENT:			
Peak	550	max.	ma
Average	175	max.	ma
GRID-No.2 INPUT	3.5	max.	watts
PLATE DISSIPATION ^e	17.5	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200	max.	volts
Heater positive with respect to cathode	200 ^f	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)			
	240	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For grid resistor-bias operation. 1 max. megohm

^a Without external shield.

^b 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.

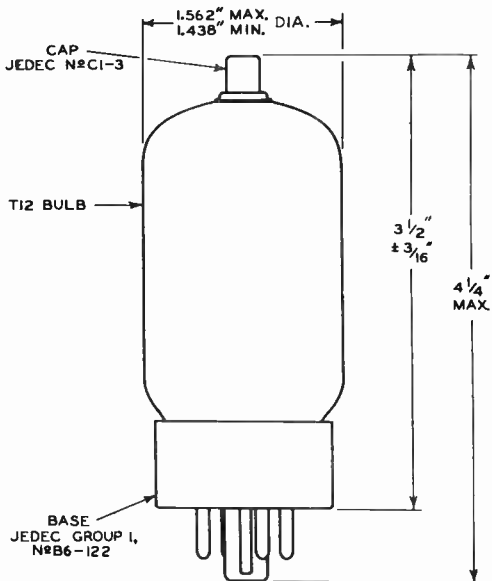
^c As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

^d 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.

^e An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

^f The dc component must not exceed 100 volts.



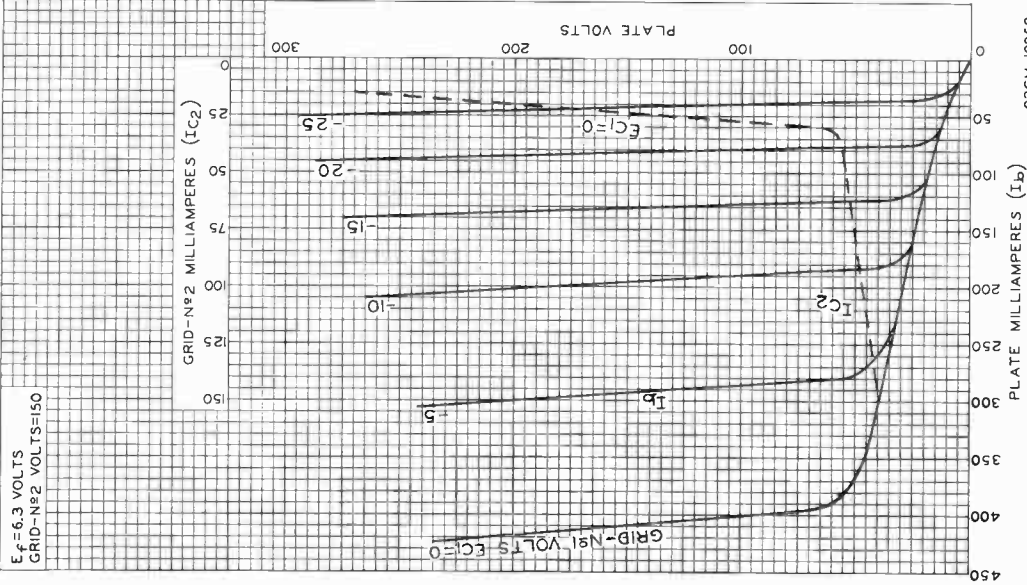


92CS-10820R1



6GW6

AVERAGE CHARACTERISTICS



92CM-10859

RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



Sharp-Cutoff Pentode

With Two Independent Control Grids

7-PIN MINIATURE TYPE
For FM Sound-Detector Service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances
(Approx.):^a

Grid No.1 to plate	0.022	μf
Grid No.1 to cathode & internal shield, grid No.3, grid No.2, and heater	8	μf
Grid No.3 to plate	1.6	μf
Grid No.1 to grid No.3	0.11	μf
Grid No.3 to cathode & internal shield, plate, grid No.2, grid No.1, and heater	7.5	μf

Characteristics, Class A₁ Amplifier:

Plate Supply Voltage	150	volts
Grid-No.3 Supply Voltage	0	volts
Grid-No.2 Supply Voltage	100	volts
Grid-No.1 Supply Voltage	0	volts
Cathode Resistor	180	ohms
Plate Resistance (Approx.)	0.14	megohm
Transconductance, Grid No.1 to Plate . .	3700	μhos
Transconductance, Grid No.3 to Plate . .	750	μhos
Plate Current	3.7	ma
Grid-No.2 Current	3	ma
Grid-No.1 Supply Voltage (Approx.) for plate $\mu a = 20$	-4.5	volts
Grid-No.3 Supply Voltage (Approx.) for plate $\mu a = 20$	-7	volts

Mechanical:

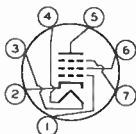
Operating Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip) . .	1-1/2" ± 3/32"
Diameter	0.650" to 0.750"
Dimensional Outline	See <i>General Section</i>
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No.E7-1)



6GX6

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

FM SOUND-DETECTOR SERVICE

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE	300	max.	volts
GRID-No.3 (CONTROL-GRID) VOLTAGE:			
Negative value (DC and Peak AC)	100	max.	volts
Positive value (DC and Peak AC)	25	max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE.	300	max.	volts
GRID-No.2 VOLTAGE . . . . .	.See <i>Grid-No.2 Input Rating Chart</i> at front of Receiving Tube Section		
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Negative-bias value	50	max.	volts
Positive-bias value	0	max.	volts
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 <i>Grid-No.2 Input Rating Chart</i> at front of Receiving Tube Section		
GRID-No.3 INPUT	0.1	max.	watt
PLATE DISSIPATION	1.7	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^b	max.	volts

Maximum Circuit Values:

Grid-No.3-Circuit Resistance.	0.68	max.	megohm
Grid-No.1-Circuit Resistance:			
For fixed-bias operation.	0.22	max.	megohm
For cathode-bias operation.	0.47	max.	megohm

^a without external shield.

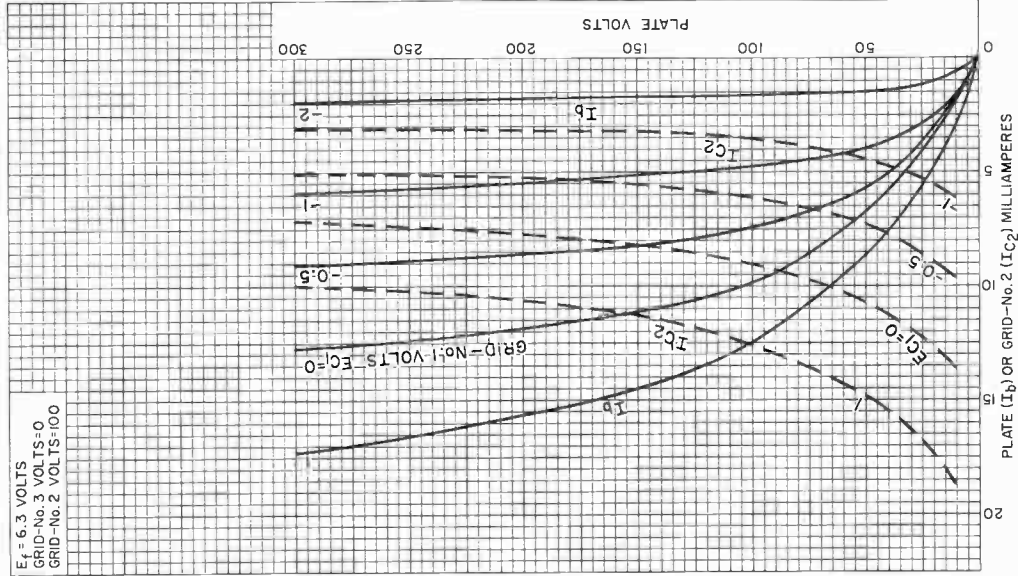
^b The dc component must not exceed 100 volts.



6GX6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-NO. 3 VOLTS = 0
GRID-NO. 2 VOLTS = 100



92CM-11002



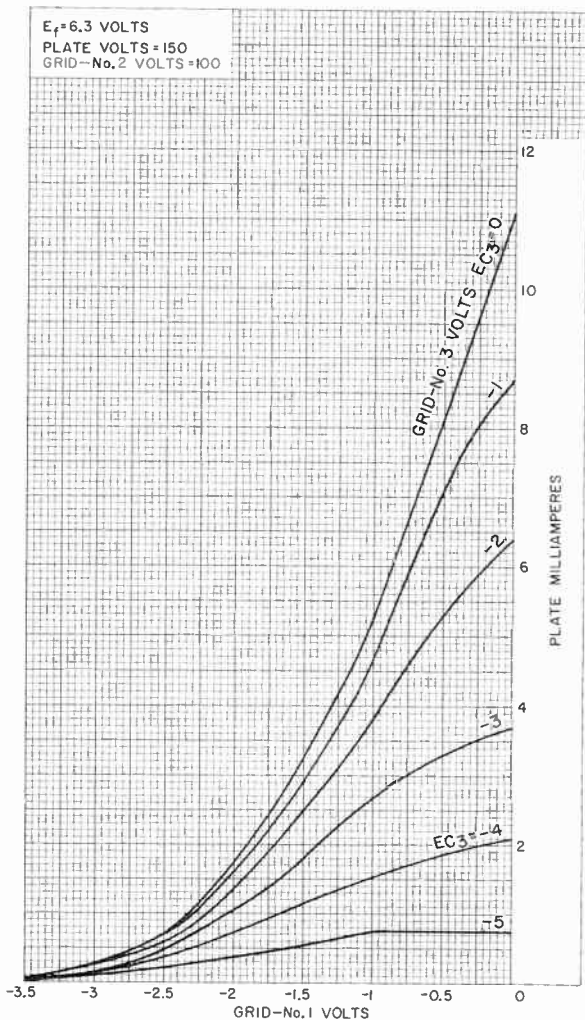
RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 2
5-61

6GX6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
PLATE VOLTS = 150
GRID-No. 2 VOLTS = 100



92CM-11005

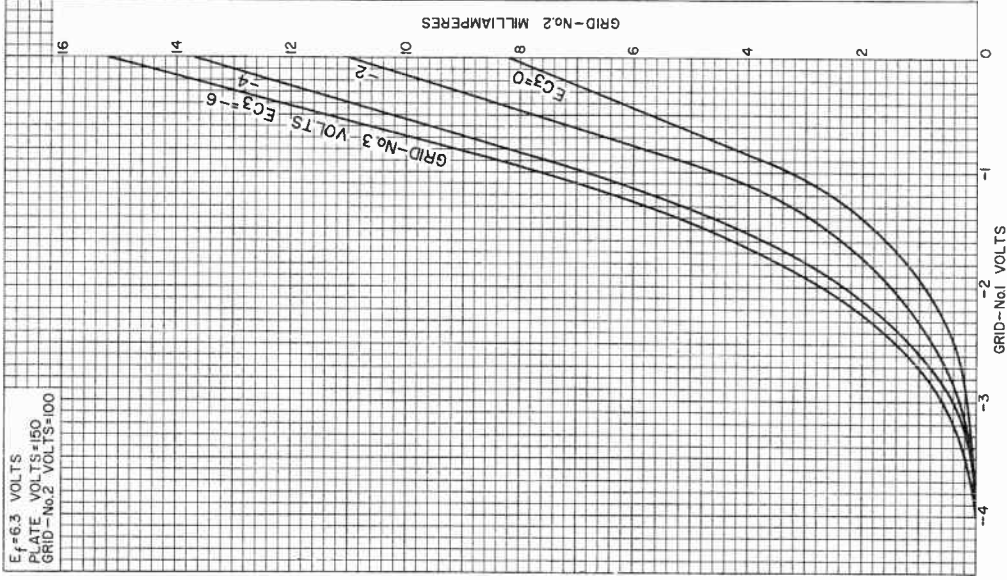
RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



World Radio History

AVERAGE CHARACTERISTICS



92CM-11007

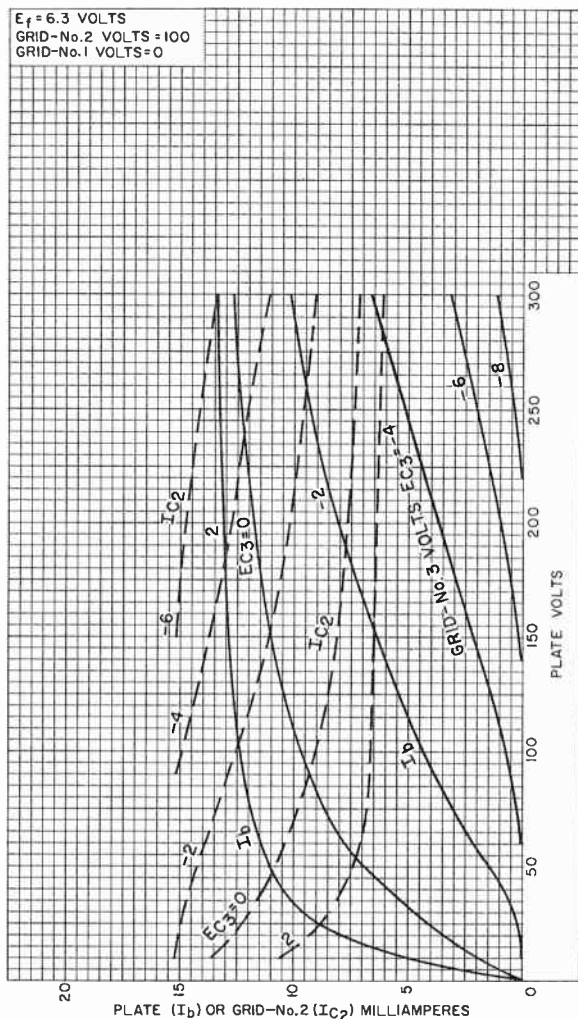

 RADIO CORPORATION OF AMERICA
 Electron Tube Division
 Harrison, N. J.

 DATA 3
 5-61

6GX6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-No.2 VOLTS = 100
GRID-No.1 VOLTS = 0



92CM-11003

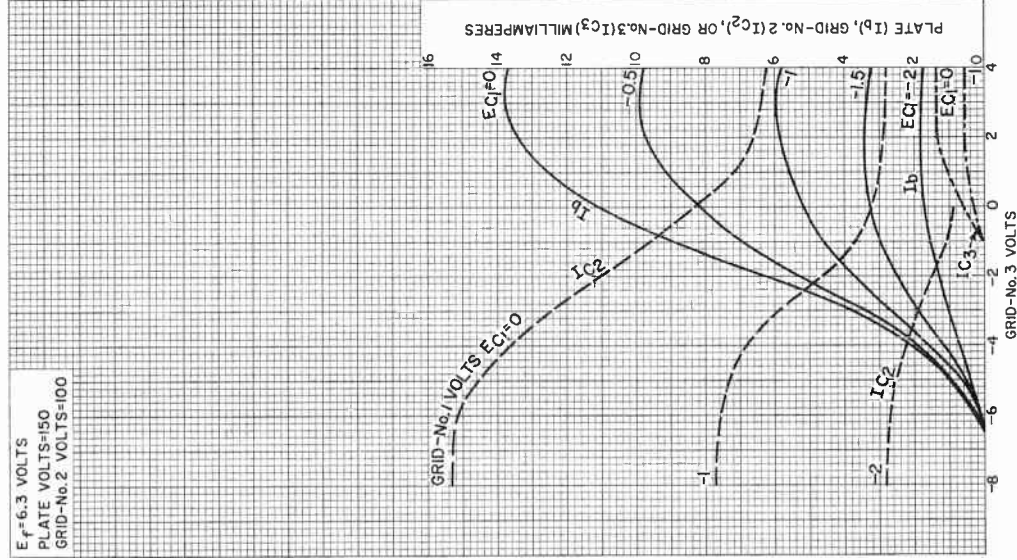
RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
 PLATE VOLTS=150
 GRID-No.2 VOLTS=100



92CM-11006

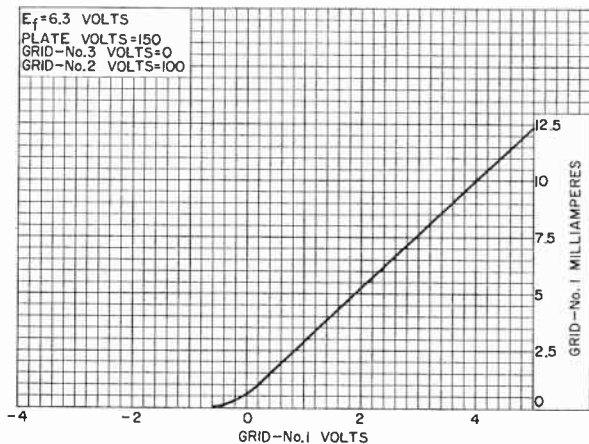


RADIO CORPORATION OF AMERICA
 Electron Tube Division
 Harrison, N. J.

DATA 4
 5-61

6GX6

AVERAGE GRID-No.1 OPERATION CHARACTERISTIC



92CS-11004



Sharp-Cutoff Pentode

With Two Independent Control Grids

7-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances
(Approx.):^a

Grid No.1 to plate	0.026	μf
Grid No.1 to cathode & internal shield, grid No.3, grid No.2, and heater	8	μf
Grid No.3 to plate	1.6	μf
Grid No.1 to grid No.3	0.12	μf
Grid No.3 to cathode & internal shield, plate, grid No.2, grid No.1, and heater	6.5	μf

Characteristics, Class A₁ Amplifier:

Plate Supply Voltage	150	volts
Grid-No.3 Supply Voltage	0	volts
Grid-No.2 Supply Voltage	100	volts
Grid-No.1 Supply Voltage	0	volts
Cathode Resistor	180	ohms
Plate Resistance (Approx.)	0.14	megohm
Transconductance, Grid No.1 to Plate	3700	μmhos
Transconductance, Grid No.3 to Plate	750	μmhos
Plate Current	3.7	ma
Grid-No.2 Current	3	ma
Grid-No.1 Supply Voltage (Approx.) for plate $\mu_a = 20$	-4.5	volts
Grid-No.3 Supply Voltage (Approx.) for plate $\mu_a = 20$	-7	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 <i>General Section</i>
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No.E7-1)



6GY6

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

GATED AGC AMPLIFIER & NOISE INVERTER

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

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE. 300 max. volts
PEAK POSITIVE-PULSE PLATE VOLTAGE^c 600 max. volts

GRID-NO.3 (CONTROL-GRID) VOLTAGE:

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

GRID-NO.2 (SCREEN-GRID) 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

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

PLATE DISSIPATION. 1.7 max. watts

PEAK HEATER-CATHODE VOLTAGE:

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

Maximum Circuit Values:

Grid-No.3-Circuit Resistance 0.68 max. megohm

Grid-No.1-Circuit Resistance:

For fixed-bias operation 0.22 max. megohm
For cathode-bias operation 0.47 max. megohm

^a Without external shield.

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

^c This rating is applicable when 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.

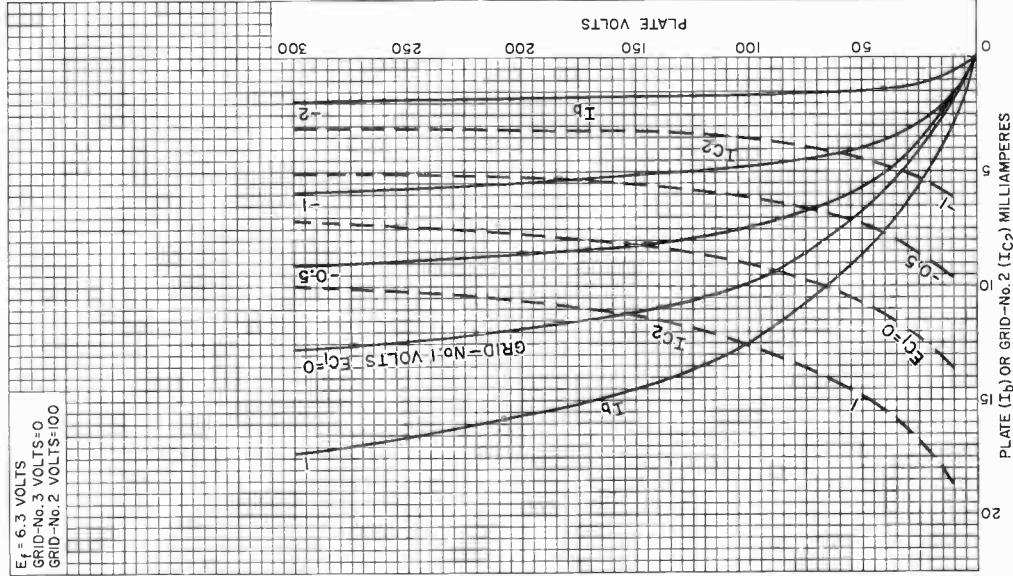
^d The dc component must not exceed 100 volts.



6GY6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-No. 3 VOLTS=0
GRID-No. 2 VOLTS=100



92CM-11002



RADIO CORPORATION OF AMERICA
Electron Tube Division

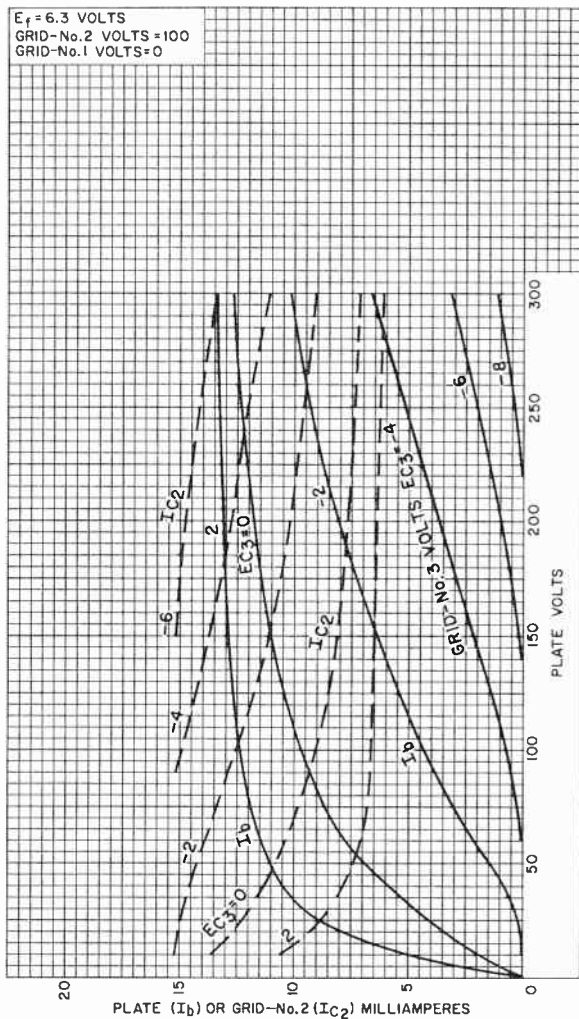
Harrison, N. J.

DATA 2
5-61

6GY6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
 GRID-No.2 VOLTS = 100
 GRID-No.1 VOLTS = 0



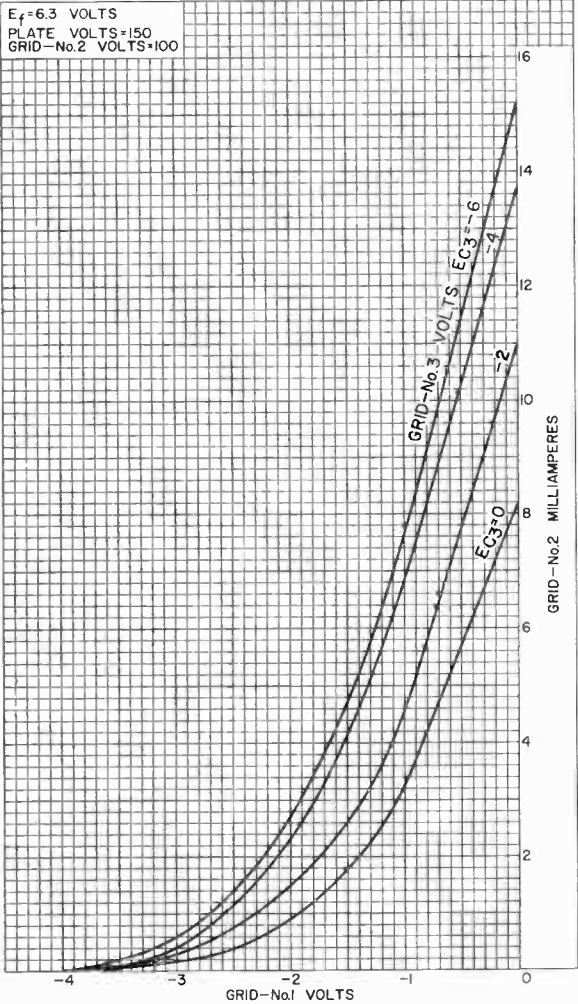
92CM-11003

RADIO CORPORATION OF AMERICA
 Electron Tube Division

Harrison, N. J.



AVERAGE CHARACTERISTICS



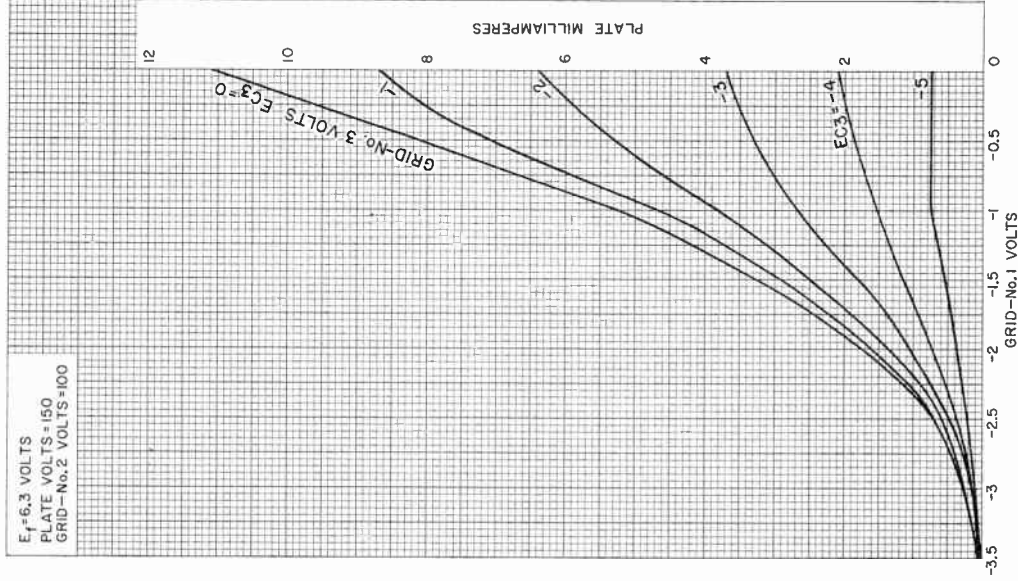
92CM-11007



6GY6

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
PLATE VOLTS = 150
GRID-NO. 2 VOLTS = 100



92CM-11005

RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.



High-Mu Triple Triode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.45	amp

Direct Interelectrode Capacitances (Approx.):

	<i>Without External Shield</i>	<i>With External Shield^a</i>	
<i>Unit No. 1:</i>			
Grid & heater & cathode of unit No.3 to plate	1.6	1.5	μf
Cathode to grid & heater & cathode of unit No.3 (grounded-grid)	5	5 ^b	μf
Plate to grid & heater & cathode of unit No.3 (grounded-grid)	1.6	2.4 ^b	μf
heater & grid & cathode of unit No.3 to cathode	5	5	μf
<i>Unit No. 2:</i>			
Grid to plate	1.4	1.4	μf
Grid to cathode and heater & grid of unit No.1 & cathode of unit No.3.	2.4	2.6 ^b	μf
Plate to cathode and heater & grid of unit No.1 & cathode of unit No.3.	0.4	1.4 ^b	μf
Heater & grid of unit No.1 & cathode of unit No.3 to cathode.	2.8	2.8	μf
<i>Unit No. 3:</i>			
Grid to plate	1.5	1.5	μf
Grid to cathode & heater & grid of unit No.1	2.2	2.4 ^b	μf
Plate to cathode & heater & grid of unit No.1	0.2	1 ^b	μf

Characteristics, Class A₁ Amplifier:

	<i>Unit No. 1</i>	<i>Units No. 2 or No. 3</i>	
Plate Supply Voltage.	125	125	volts
Grid Voltage.	-	-1	volt
Cathode Resistor.	220	-	ohms
Amplification Factor.	63	63	
Plate Resistance (Approx.).	14000	14000	ohms
Transconductance.	4500	4500	μmhos



6GY8

Plate Current	4.5	4.5	ma
Grid Voltage (Approx.) for plate $\mu a = 20$	-	-4	volts

Mechanical:

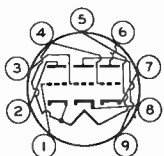
Operating Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" \pm 3/32"
Diameter	0.750" to 0.875"
Dimensional Outline	See <i>General Section</i>
Bulb	T6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for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

Pin 1-Grid of
Unit No.3

Pin 2-Plate of
Unit No.3

Pin 3-Grid of
Unit No.2

Pin 4-Cathode of
Unit No.3,
Grid of
Unit No.1, Heater



Pin 5-Heater

Pin 6-Plate of
Unit No.1

Pin 7-Cathode of
Unit No.1

Pin 8-Cathode of
Unit No.2

Pin 9-Plate of
Unit No.2

AMPLIFIER — Class A₁

Unless Otherwise Specified, Values are for each Unit

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	330 max.	volts
GRID VOLTAGE:		
Positive-bias value	0 max.	volts
PLATE DISSIPATION	2 max.	watts
TOTAL PLATE DISSIPATION (ALL PLATES)	5 max.	watts
PEAK HEATER-CATHODE VOLTAGE (Units No.1 and No.2):		
Heater negative with respect to cathode	100 max.	volts
Heater positive with respect to cathode	100 max.	volts

^a With external shield JEDEC No.315 connected to ground except as noted.

^b With external shield JEDEC No.315 connected to pin 4.



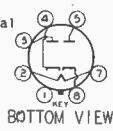


6H6
6H6-GT/G

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. ¹⁾		
Plate #1 to Cathode #1	3.0	3.0 $\mu\mu\text{f}$
Plate #2 to Cathode #2	3.4	4.0 $\mu\mu\text{f}$
Plate #1 to Plate #2	0.10 max.	0.10 max. $\mu\mu\text{f}$
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



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
<i>As Half-Wave Rectifier:*</i>		
A-C Plate Voltage per Plate (RMS)	117	150 max. volts
Total Effect. Plate-Supply Impedance per Plate [▲]	15 min.	40 min. ohms
D-C Output Current per Plate	8 max.	8 max. ma.
<i>As Voltage Doubler:</i>		

	<i>Half-Wave</i>	<i>Full-Wave</i>
A-C Plate Voltage per Plate (RMS)	117	117 volts
Total Effect. Plate-Supply Impedance per Plate [▲]	30 min.	15 min. ohms
D-C Output Current	8 max.	8 max. ma.

¹⁾ With shell or external and internal shields connected to cathodes.
^{*} In half-wave service, the two units may be used separately or in parallel.
[▲] 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.

Circuits for the 6H6 and 6H6-GT/G are the same as those shown under Type 2525.

← Indicates a change.

AUG. 1, 1942

DATA

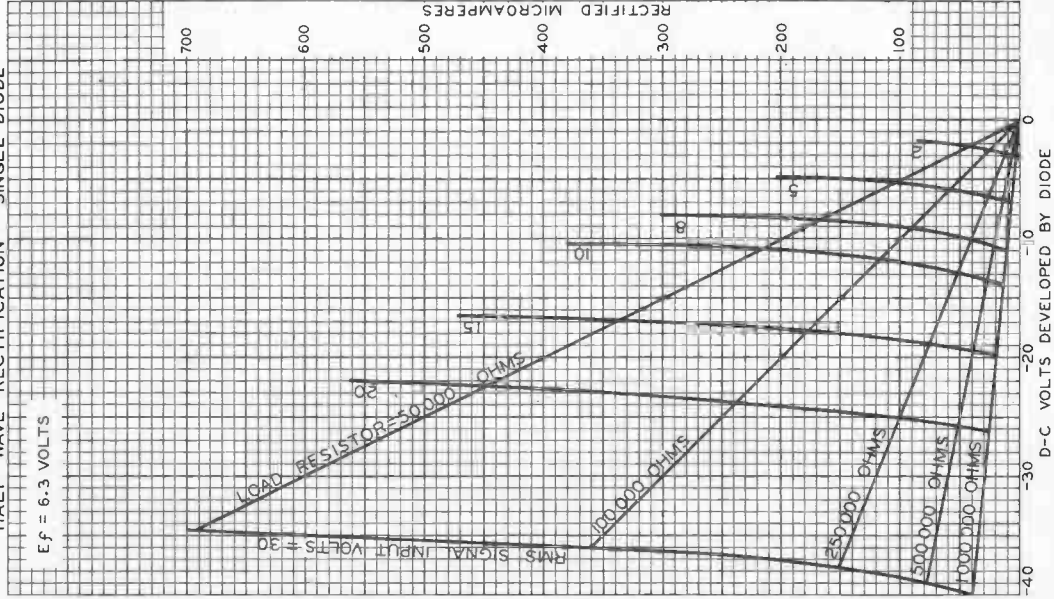
6H6



6H6

AVERAGE CHARACTERISTICS

HALF-WAVE RECTIFICATION - SINGLE DIODE



Word Precision

JULY 26, 1935

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4446

High-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.75	amp

Direct Interelectrode Capacitances:▲

Triode Unit:

Grid to plate	3.5	μf
Grid to cathode, pentode cathode & grid No.3 & internal shield, and heater.	2.8	μf
Plate to cathode, pentode cathode & grid No.3 & internal shield, and heater.	2.6	μf

Pentode Unit:

Grid No.1 to plate.	0.1 max.	μf
Grid No.1 to cathode & internal shield & grid No.3, grid No.2, and heater.	10	μf
Plate to cathode & internal shield & grid No.3, grid No.2, and heater.	4.2	μf
Triode grid to pentode plate.	0.015 max.	μf

Characteristics, Class A₁ Amplifier:

	Triode Unit	Pentode Unit	
Plate Supply Voltage.	200	45	200 volts
Grid-No.2 Supply Voltage.	—	125	125 volts
Grid-No.1 Voltage	-2	0	— volts
Cathode Resistor.	—	—	68 ohms
Amplification Factor.	70	—	—
Plate Resistance (Approx.).	17500	—	75000 ohms
Transconductance.	4000	—	12500 μhos
Plate Current	4	40●	25 ma
Grid-No.2 Current	—	15●	7 ma
Grid-No.1 Voltage (Approx.) for plate μa = 100.	—	—	-9 volts
Grid-No.1 Voltage (Approx.) for plate μa = 20	-6	—	— volts

Mechanical:

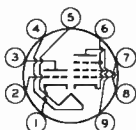
Operating Position.	Any
Maximum Overall Length.	2-5/8"
Maximum Seated Length	2-3/8"



6HF8

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 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-Maximum Values:*

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
PLATE VOLTAGE.	330 max.	330 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE	-	330 max.	volts
GRID-No.2 VOLTAGE.	-	See <i>Grid-No.2 Input</i>	
<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.	-	1.1 max.	watts
For grid-No.2 voltages between 165 and 330 volts.	-	See <i>Grid-No.2 Input</i>	
<i>Rating Chart at front of Receiving Tube Section</i>			
PLATE DISSIPATION.	1 max.	5 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:

	<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 max.	1 max.	megohm



▲ Without external shield.

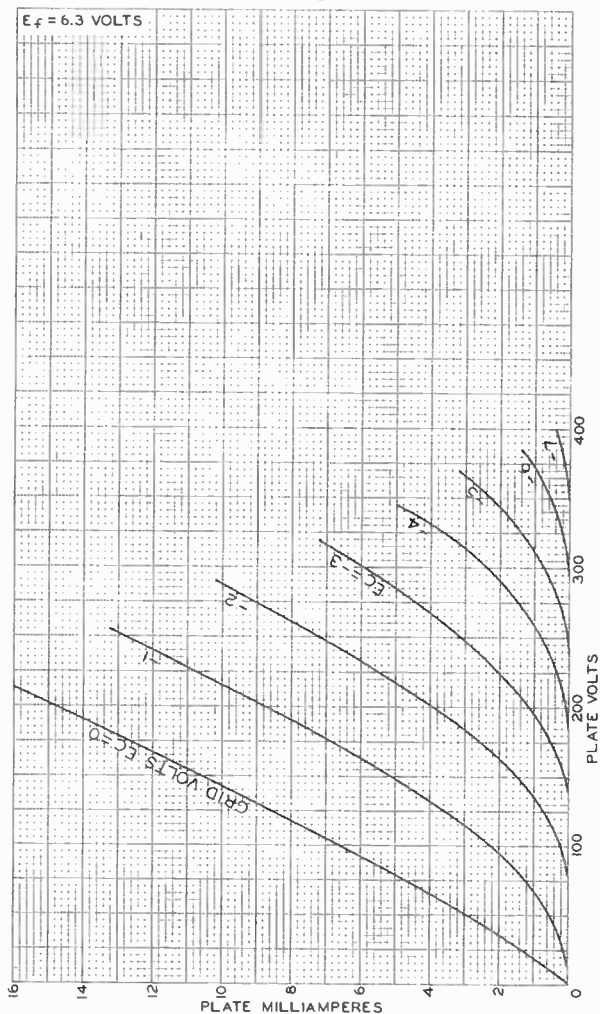
● This value can be measured by a method involving a recurrent wave form such that the maximum ratings of the tube will not be exceeded.

★ The dc component must not exceed 100 volts.



6HF8

AVERAGE PLATE CHARACTERISTICS Triode Unit

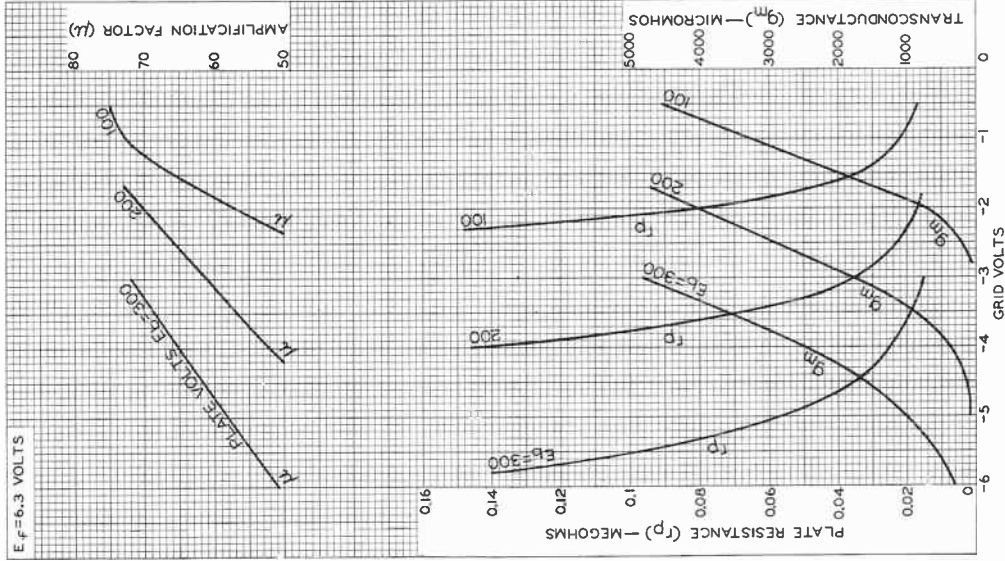


92CM-8644



6HF8

AVERAGE CHARACTERISTICS Triode Unit



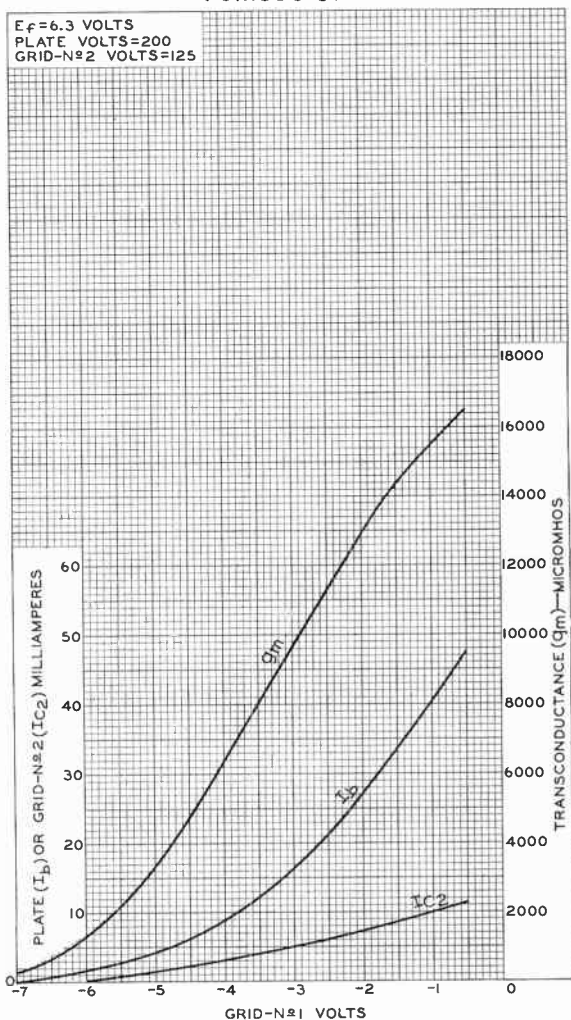
92CM-10874



RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 3
3-61

AVERAGE CHARACTERISTICS Pentode Unit



92CM-9905RI



RADIO CORPORATION OF AMERICA
 Electron Tube Division Harrison, N. J.

DATA 4
 3-61



Sharp-Cutoff Twin Pentode

With Common Cathode, Grid No.1, & Grid No.2

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.3	amp

Direct Interelectrode Capacitances:^a

Grid No.3 to plate (Each unit)	2	μmf
Grid No.1 to all other electrodes	6	μmf
Grid No.3 (Each unit) to all other electrodes	3.6	μmf
Plate (Each unit) to all other electrodes	3	μmf
Grid No.3 (Unit No.1) to grid No.3 (Unit No.2)	0.015 max.	μmf

Characteristics, Class A₁ Amplifier:

With one unit operating and plate and grid No.3 of other unit connected to ground

Plate Voltage	100	100	volts
Grid-No.3 Voltage	0	0	volts
Grid-No.2 Voltage	67.5	67.5	volts
Grid-No.1 Voltage	0	b	volts
Grid-No.3-to-Plate Transconductance	-	450	μmhos
Grid-No.1-to-Plate Transconductance	1100	-	μmhos
Plate Current	-	2	ma
Grid-No.3 Voltage (Approx.) for plate $\mu a = 25$	-	-3	volts
Grid-No.1 Voltage (Approx.) for plate $\mu a = 100$	-	-2.3	volts

With both units operating

Plate Voltage (Each unit)	100	100	volts
Grid-No.3 Voltage (Each unit)	-10	0	volts
Grid-No.2 Voltage	67.5	67.5	volts
Grid-No.1 Voltage	b	b	volts
Plate Current (Each unit)	-	2	ma
Grid-No.2 Current	7	4.4	ma
Cathode Current	7.1	8.5	ma

Mechanical:

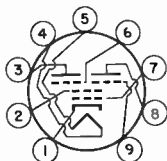
Operating Position.	Any
Maximum Overall Length.	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" ± 3/32"
Diameter.	0.750" to 0.875"
Dimensional Outline	See General Section
Bulb. . . . .	.T6-1/2



6HS8

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

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



Pin 6 - Grid No. 3 of
 Unit No. 2
 Pin 7 - Grid No. 1
 Pin 8 - Plate of
 Unit No. 1
 Pin 9 - Grid No. 3 of
 Unit No. 1

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE (Each unit)	300 max.	volts
GRID-No. 3 (SUPPRESSOR-GRID) VOLTAGE (Each unit):		
Peak positive value	50 max.	volts
DC negative value	50 max.	volts
DC positive value	3 max.	volts
GRID-No. 2 (SCREEN-GRID) VOLTAGE	150 max.	volts
GRID-No. 1 (CONTROL-GRID) VOLTAGE:		
Negative-bias value	50 max.	volts
CATHODE CURRENT	12 max.	ma
GRID-No. 2 INPUT	0.75 max.	watt
PLATE DISSIPATION (Each unit)	1.1 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	200 max.	volts
Heater positive with respect to cathode.	200 ^c max.	volts

Maximum Circuit Values:

Grid-No. 3-Circuit Resistance (Each unit).	0.5 max.	megohm
Grid-No. 1-Circuit Resistance.	0.5 max.	megohm

^a Without external shield.

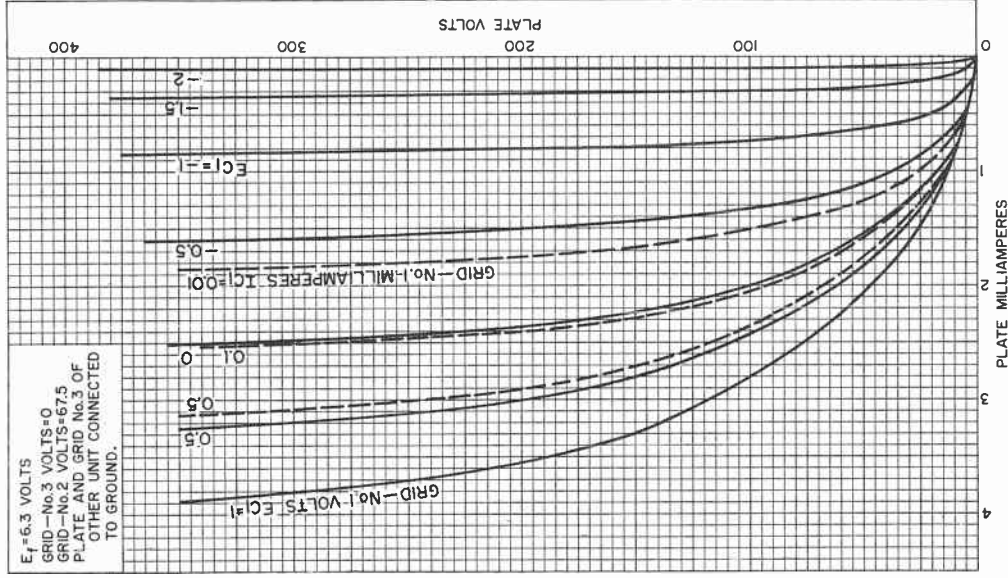
^b Adjusted to give a dc grid-no. 1 current of 100 microamperes.

^c The dc component must not exceed 100 volts.



AVERAGE PLATE CHARACTERISTICS

Each Unit



92CM-11099

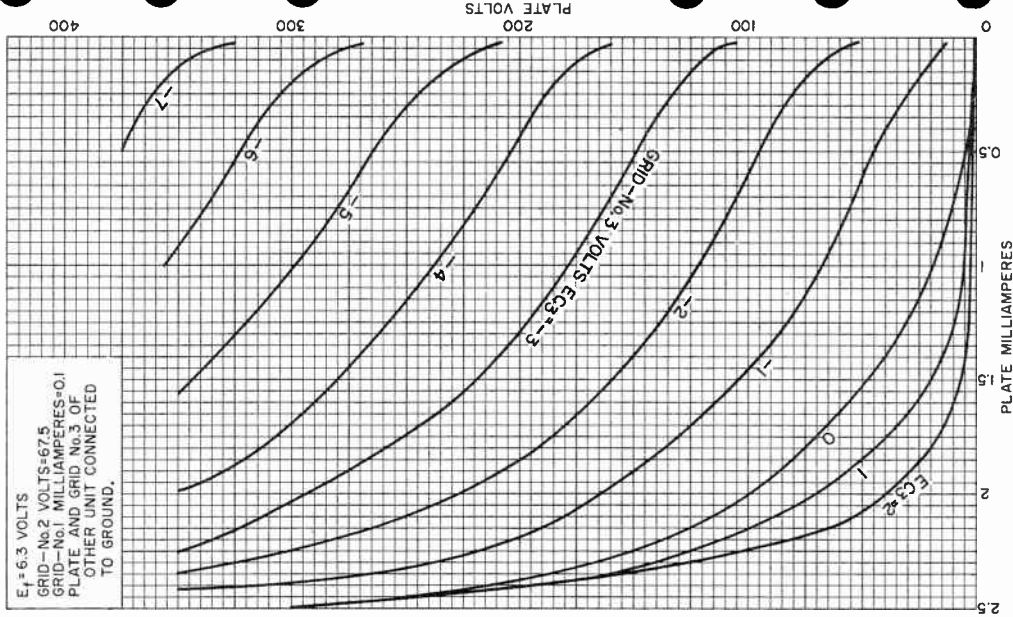


RADIO CORPORATION OF AMERICA
 Electron Tube Division
 Harrison, N. J.

DATA 2
 1-62

6HS8

AVERAGE PLATE CHARACTERISTICS Each Unit

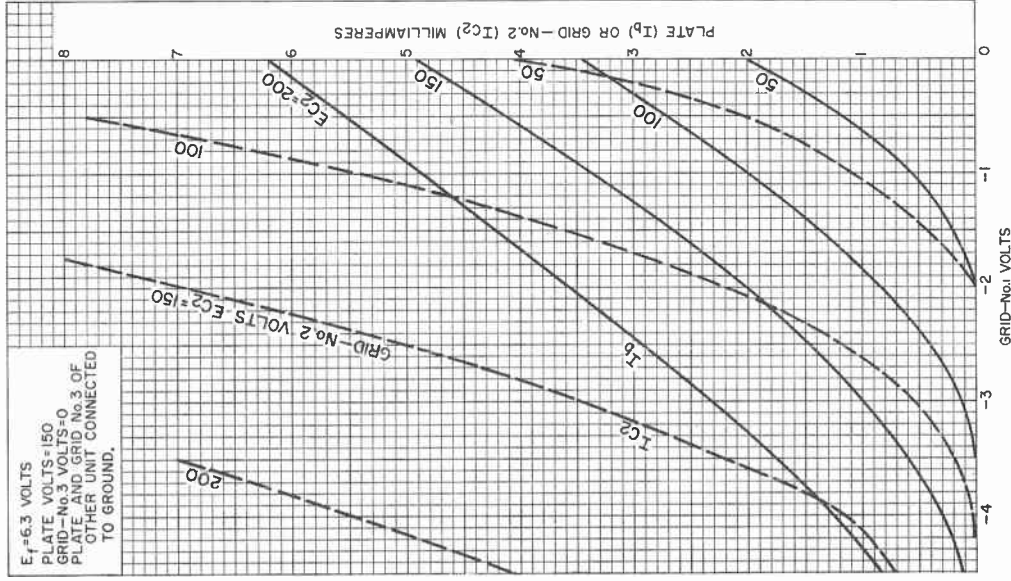


RADIO CORPORATION OF AMERICA
Harrison, N. J.

Electron Tube Division

AVERAGE CHARACTERISTICS

Each Unit



92CM-11104

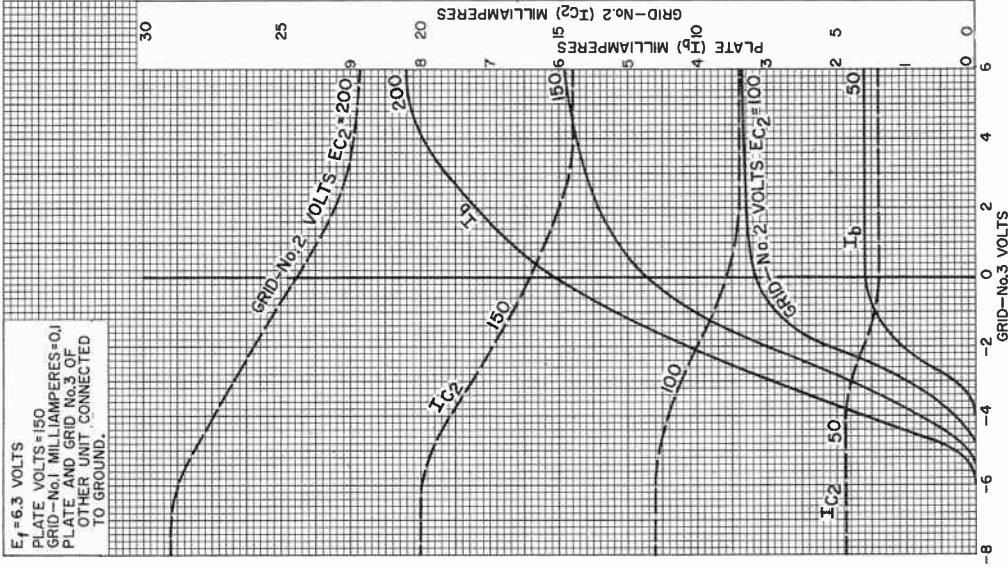


RADIO CORPORATION OF AMERICA
 Electron Tube Division

DATA 3
 1-62

6HS8

AVERAGE CHARACTERISTICS Each Unit



92CM-1105





6J4

6J4

U-H-F AMPLIFIER TRIODE

GROUNDED-GRID, MINIATURE TYPE

For use at frequencies up to 500 Mc. approx.

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.4	amp.
Direct Interelectrode Capacitances (Approx.): ^o		
Plate to Cathode & Heater	0.24 max.	μf
Grid to Cathode & Heater	5.5	μf
Grid to Plate	4	μf
Heater to Cathode	2.8	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 ^A	Miniature Button 7-Pin	
Pin 1-Grid	Pin 5-Grid	
Pin 2-Cathode	Pin 6-Grid	
Pin 3-Heater	Pin 7-Plate	
Pin 4-Heater		
RCA Socket		Stock No.9914
Mounting Position		Any



BOTTOM VIEW (7BQ)

Maximum Ratings Are Design-Center Values

GROUNDED-GRID AMPLIFIER

Plate Voltage		150 max. volts
Plate Dissipation		2.25 max. watts
Plate Current		20 max. ma.
D-C Heater-Cathode Potential		90 max. volts
Typical Operation and Characteristics - Class A ₁ Amplifier:		
Plate Voltage	100	150 volts
Cathode-Bias Resistor* (Suitably by-passed)	100	100 ohms
Amplification Factor	55	55
Plate Resistance	5000	4500 ohms
Transconductance	11000	12000 μmhos
Plate Current	10	15 ma.

^o With close-fitting shield connected to grid.

* The 6J4 should always be used with a cathode-bias resistor suitably by-passed. The d-c resistance in the grid circuit under maximum rated conditions should be limited to 0.25 megohm.

^A 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.

APRIL 1, 1944

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
 World Radio History

TENTATIVE DATA

6J4



6J4

U-H-F AMPLIFIER TRIODE

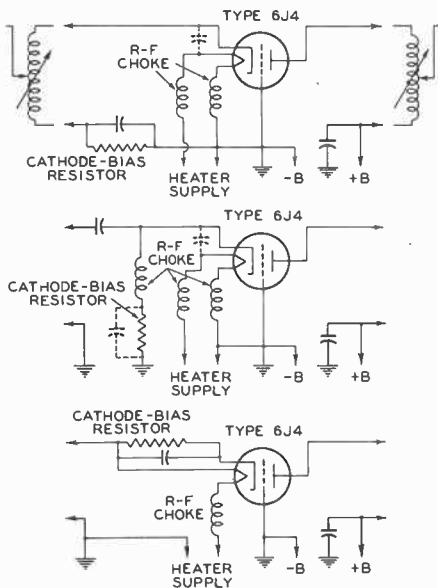
(continued from preceding page)

NOTE:

For grounded-grid operation, all three grid terminals should be grounded to minimize the effects of grid-lead inductance on u-h-f performance.

In arranging the circuit for the 6J4 used as a grounded-grid r-f amplifier or mixer, it is preferable to have the heater operate at the same r-f potential as the cathode, so that the cathode-heater capacitance will not be added across the input-circuit capacitance. Placing r-f chokes in series with the heater leads is suggested as a suitable method of operating heater and cathode at the same r-f potential.

TYPICAL GROUNDED-GRID CIRCUITS Having Heater at R-F Cathode Potential



92CM-6550

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

APRIL 1, 1944

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

TENTATIVE DATA

World Radio History

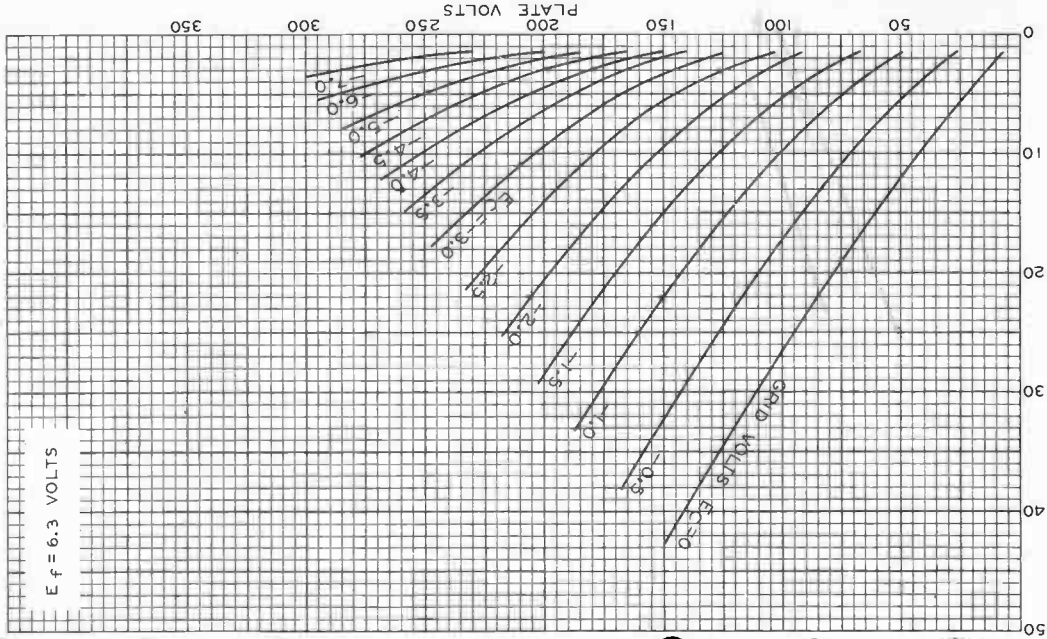


6J4

6J4

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS



FEB. 19 1944

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

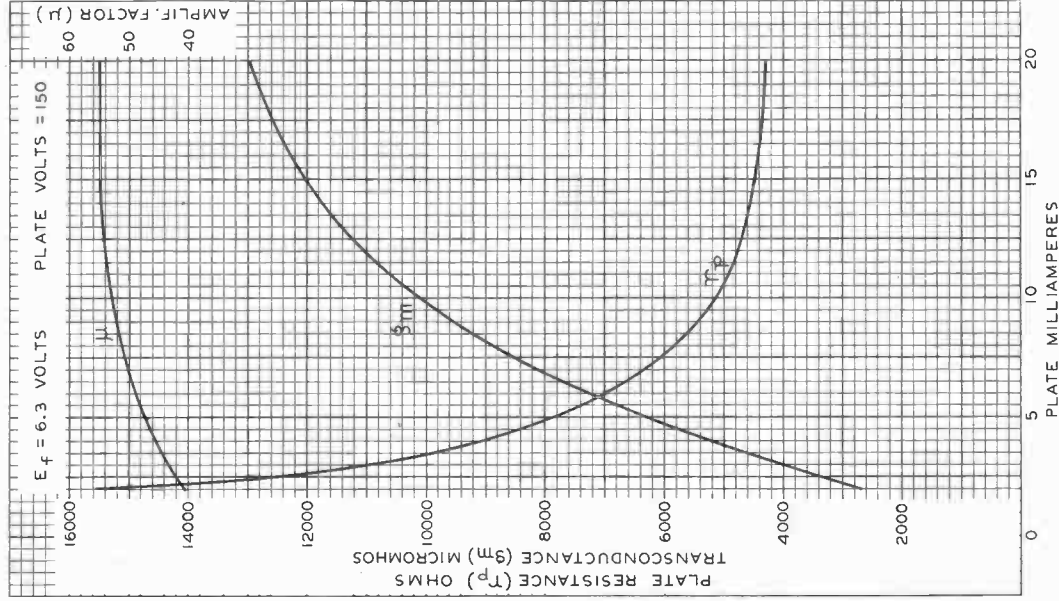
92CM-6543

6J4



6J4

AVERAGE CHARACTERISTICS



MARCH 21, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

PLATE MILLIAMPERES

92CM-6548



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

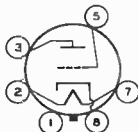
	6J5	6J5-GT	
Direct Interelectrode Cap. (Approx.):	-	▲▲	
Grid to Plate.	3.4	3.8	μμf
Grid to Cathode.	3.4	4.2	μμf
Plate to Cathode	3.6	5.0	μμf

▲▲ 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
Basing Designation for BOTTOM VIEW	6Q	GT-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 A_i

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

SEPT. 1, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
World Radio History

DATA

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.*

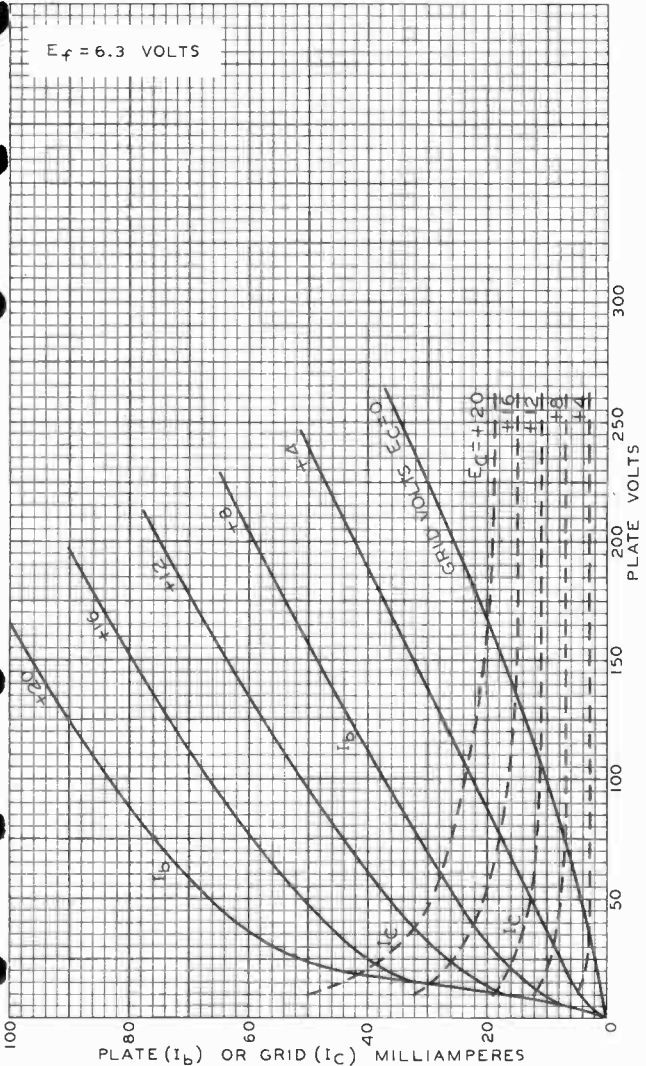


6J5

6J5

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS



AUG. 10, 1943

TUBE DEPARTMENT

92CM-6448

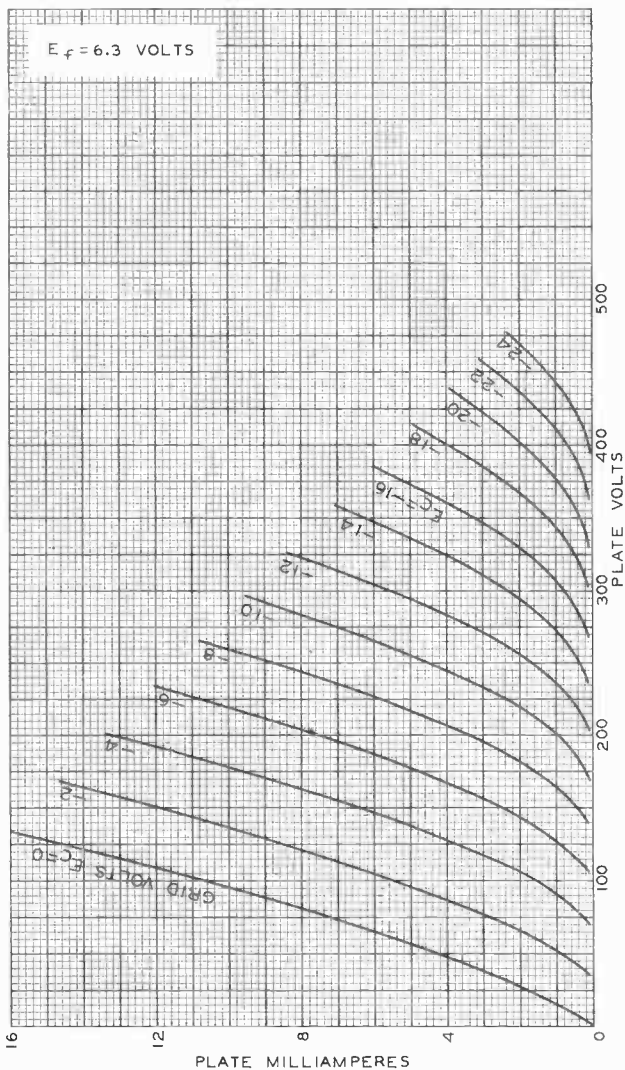
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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:

	Without External Shield	With External Shield ^o	
<i>Unit No. 1</i>			
Grid to plate	1.6	1.5	μf
Grid to cathode and heater	2.2	2.6	μf
Plate to cathode and heater	0.4	1.6	μf
<i>Unit No. 2</i>			
Grid to plate	1.6	1.5	μf
Grid to cathode and heater	2.2	2.6	μf
Plate to cathode and heater	0.4	1.0	μf

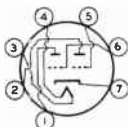
Characteristics, Class A₁ Amplifier (Each Unit):

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 (JETEC No. E7-1)
- Basing Designation for BOTTOM VIEW 7BF

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



^o with external shield JETEC 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

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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

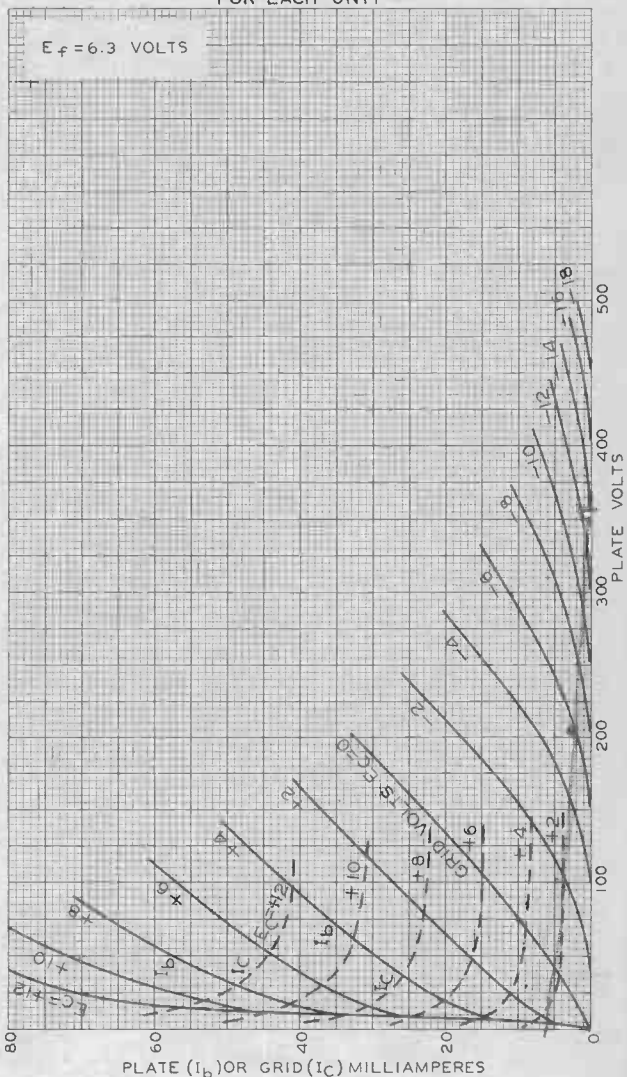


6J6

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT

6J6

$E_f = 6.3$ VOLTS



OCT. 21, 1944

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

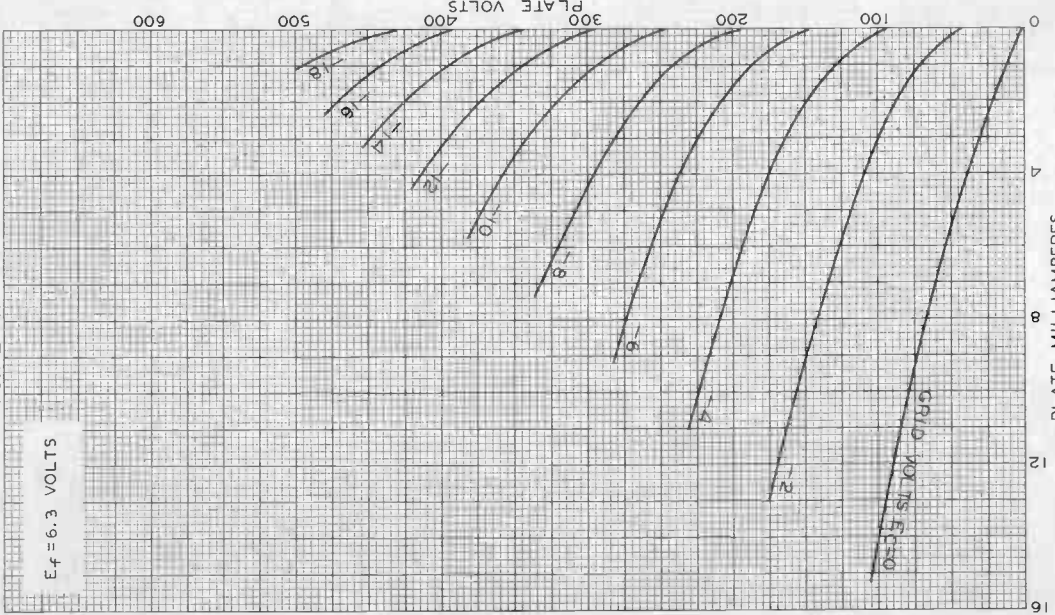
92CM-6403R1

6J6



6J6

AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT



Medium-Mu Twin Triode

7-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances (Approx.):

	Without External Shield	With External Shield ^a	
<i>Unit No. 1</i>			
Grid to plate	1.6	1.5	μμf
Grid to cathode and heater . . .	2.2	2.6	μμf
Plate to cathode and heater . . .	0.4	1.6	μμf
<i>Unit No. 2</i>			
Grid to plate	1.6	1.5	μμf
Grid to cathode and heater . . .	2.2	2.6	μμf
Plate to cathode and heater . . .	0.4	1	μμf

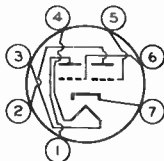
Characteristics, Class A₁ Amplifier (Each Unit):

Plate Supply Voltage	100	volts
Cathode Resistor ^b	50 ^c	ohms
Amplification Factor	38	
Plate Resistance (Approx.)	7100	ohms
Transconductance	5300	μmhos
Plate Current	8.5	ma

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)
Basing Designation for BOTTOM VIEW . . . . .	.78F

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



Pin 5 - Grid of
Unit No. 1
Pin 6 - Grid of
Unit No. 2
Pin 7 - Cathode



6J6A

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:

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:^d

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.) ^e	16	ma
Driving Power (Approx.) ^e	0.35	watt
Useful Power Output (Approx.)	3.5	watts

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

^b Fixed-bias operation is not recommended.

^c Value is for both units operating at the specified conditions.

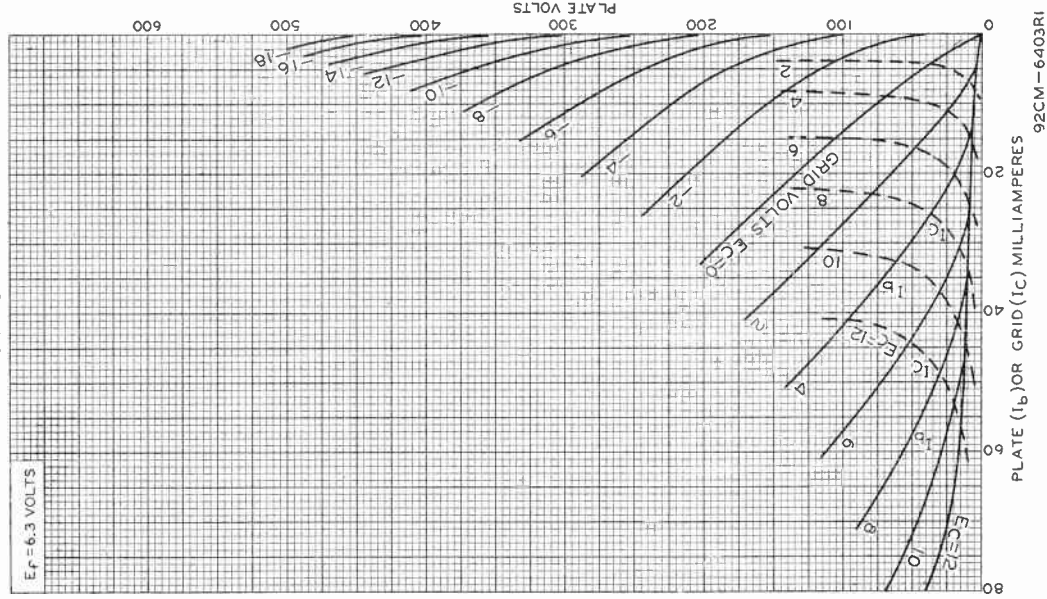
^d Approximately 1 watt can be obtained when the 6J6A is used at 250 Mc as a push-pull oscillator with a plate voltage of 150 volts, with maximum-rated plate dissipation, and with a grid resistor of 2000 ohms common to both units

^e For effect of load resistance on grid current and driving power, refer to **TUBE RATINGS—Grid Current and Driving Power** in the General Section.



6J6A

AVERAGE CHARACTERISTICS Each Unit



RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.

DATA 2
7-61

6J6A

AVERAGE PLATE CHARACTERISTICS Each Unit



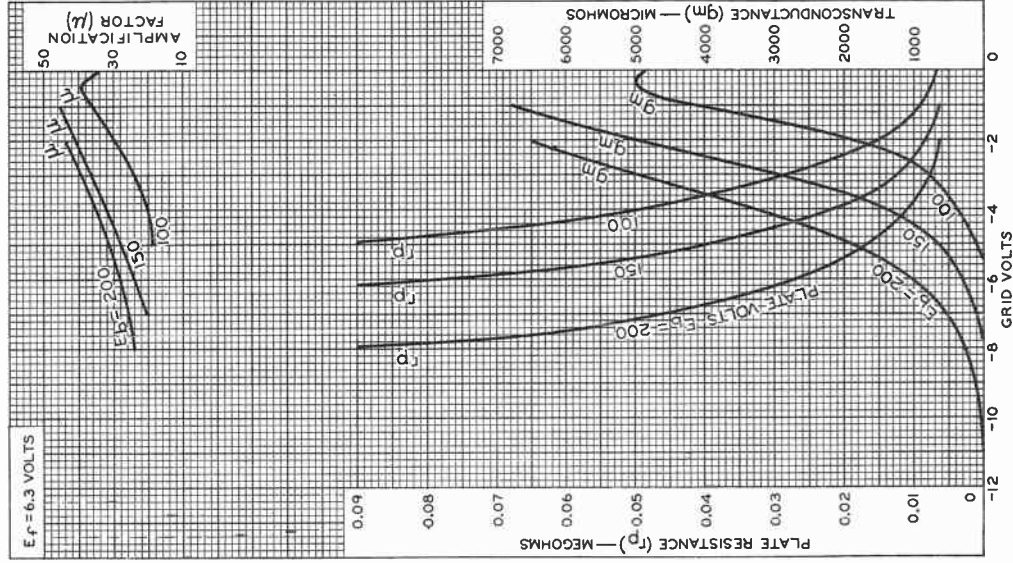
92CM-6402RI



RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

6J6A

AVERAGE CHARACTERISTICS Each Unit



92CM-7672RI



RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 3
7-61





6J7, 6J7-G, 6J7-GT SHARP-CUTOFF PENTODE

6J7
6J7-G
6J7-GT

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts
Current 0.3 amp

Direct Interelectrode Capacitances:

Pentode Connection:	6J7 [▲]	6J7-G	6J7-GT	
Grid No. 1 to Plate	0.005 max.	0.007 max. ●	0.005 max. ●	144f
Input	7 . .	4.6 ● . .	4.6 ● . .	144f
Output	12 . .	12 ● . .	12 ● . .	144f
Triode Connection:*				
Grid No. 1 to Plate	2 . .	1.8 [□] . .	1.8 [□] . .	144f
Grid No. 1 to Cath.	5 . .	2.6 [□] . .	2.6 [□] . .	144f
Plate to Cathode.	14 . .	17 [□] . .	17 [□] . .	144f

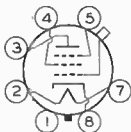
Mechanical:

Mounting Position . .	Any	Any	Any
Max. Overall Length .	3-1/8"	4-15/32"	3-5/16"
Seated Length . . .	2-7/16" ± 1/8"	3-3/4" ± 5/32"	{ 2-5/16" to 2-3/4" }
Maximum Diameter. . .	1-5/16"	1-9/16"	1-5/16"
Bulb	{ Metal Shell MTT8A }	ST-12	T-9
Cap	Miniature	{ Skirted Miniature }	{ Skirted Miniature }
Base	{ Small-Wafer Octal 7-Pin }	{ Small-Shell Octal 7-Pin }	{ Small-Wafer Octal 7-Pin, Sleeve }
Basing Designation	7R	G-7R	GT-7R

BOTTOM VIEW

Pin 1 { 6J7-Shell
6J7-G-Internal
Shield
6J7-GT-Base
Sleeve

Pin 2-Heater
Pin 3-Plate



Pin 4-Grid No.2
Pin 5-Grid No.3
Pin 7-Heater
Pin 8-Cathode

Cap - Grid No. 1

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
PLATE DISSIPATION 0.75 max. watt
GRID-No.2 DISSIPATION 0.1 max. watt

(continued on next page)

- ▲ with shell connected to cathode. □ without external shield.
- with external shield connected to cathode.
- * with grid No.2 and grid No.3 connected to plate.

6J7
6J7-G
6J7-GT



6J7, 6J7-G, 6J7-GT SHARP-CUTOFF PENTODE

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.)	1	#	..	megohm
Transconductance	1185	1225	..	μhos
Grid-No.1 Bias (Approx.) for cathode-current cutoff.	-7	-7	..	volts
Plate Current.	2	2	..	ma
Grid-No.2 Current.	0.5	0.5	..	ma

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

AMPLIFIER - Class A₁

Triode Connection - Grids No.2 & No.3 Connected to Plate

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	250 max.	volts
PLATE DISSIPATION (Total).	1.75 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.	-5.3	-8	..	volts
Amplification Factor	20	20		
Plate Resistance (Approx.)	11000	10500	..	ohms
Transconductance	1800	1900	..	μhos
Plate Current.	5.3	6.5	..	ma

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

BIASED DETECTOR

Typical Operation:

Plate-Supply Voltage♦.	100	100	250	250	volts
Grid No.3.	Connected to cathode at socket				
Grid-No.2 Voltage.	12	30	50	100	volts
RF Grid-No.1 Volts (RMS)*	1.05	1.6	1.18	1.37	volts

#, ♦, *: See next page.



6J7
6J7-G
6J7-GT

6J7, 6J7-G, 6J7-GT SHARP-CUTOFF PENTODE

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



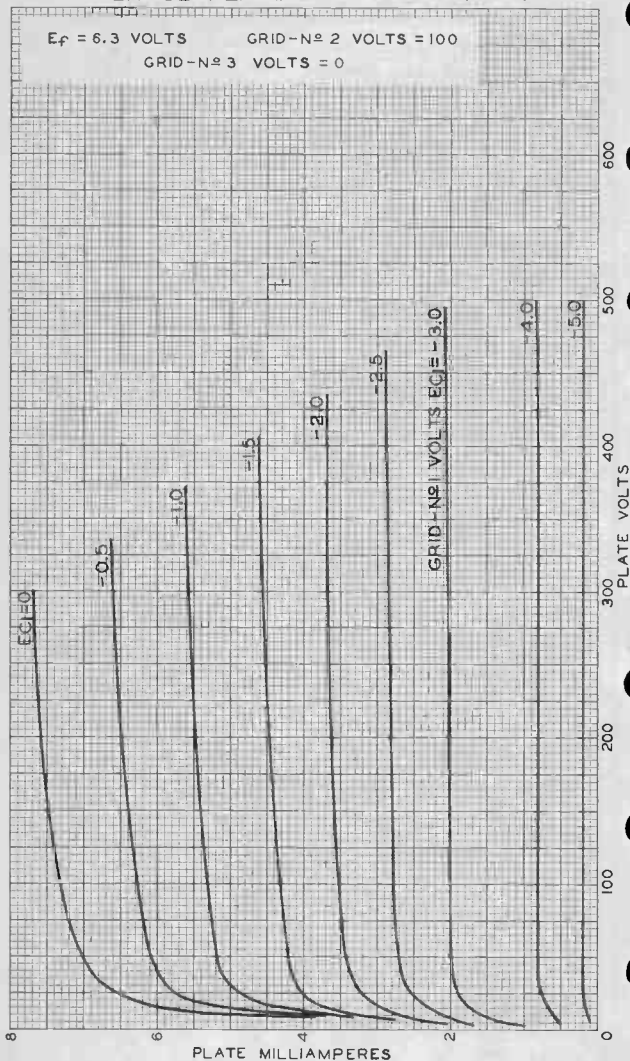
6J7

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS

GRID-N^o 2 VOLTS = 100

GRID-N^o 3 VOLTS = 0



MAY 12, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
World Radio History

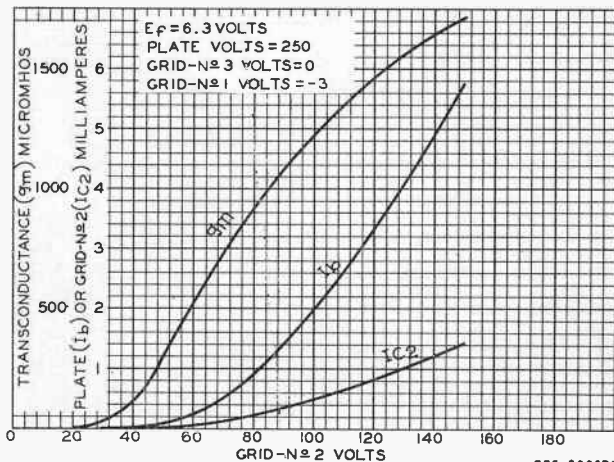
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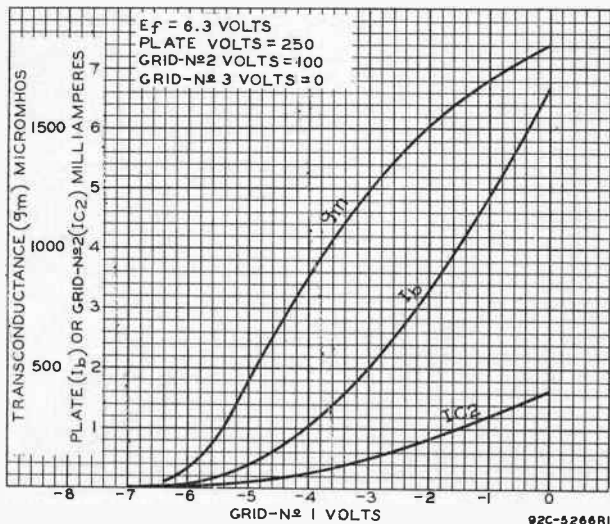
6J7

6J7

AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



MAY 18, 1948

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
 World Radio History

92CM-6007R1

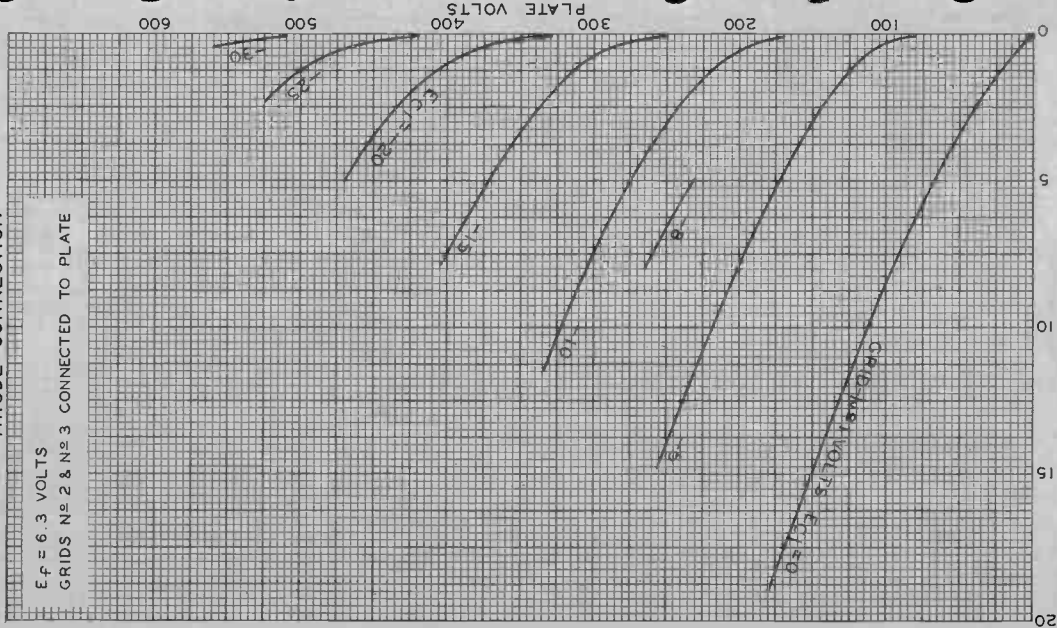
6J7



6J7

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION

$E_f = 6.3$ VOLTS
GRIDS N^o 2 & N^o 3 CONNECTED TO PLATE



600

500

400

300

200

100

0

5

10

15

20

MAY 11, 1948

PLATE MILLIAMPERES

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

92CM-4842RI



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.):^oGrid No.1 to plate. 0.5 μf Grid No.1 to cathode & grid No.3,
grid No.2, and heater 5.5 μf Plate to cathode & grid No.3,
grid No.2, and heater 6 μf

Mechanical:

Mounting 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 T-9

Base Intermediate-Shell Octal 7-Pin (JETEC No. B7-7),
Short Intermediate-Shell Octal 7-Pin
with External Barriers (JETEC No. B7-59),
Intermediate-Shell Octal 6-Pin (JETEC No. B6-81),
or Short Intermediate-Shell Octal 6-Pin
with External Barriers (JETEC No. B6-84)

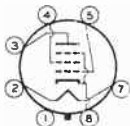
Basing Designation for BOTTOM VIEW 7S

Pin 1 \blacklozenge - No Con-
nection

Pin 2 - Heater

Pin 3 - Plate

Pin 4 - Grid No.2



Pin 5 - Grid No.1

Pin 7 - Heater

Pin 8 - Cathode,
Grid No.3AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 315 max. volts

GRID-No.2 (SCREEN-GRID) VOLTAGE 285 max. volts

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

Positive bias value 0 max. volts

GRID-No.2 INPUT 2.8 max. watts

PLATE DISSIPATION 8.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 200 max. volts

Heater positive with respect to cathode 200[▲]max. volts^o without external shield. \blacklozenge Pin 1 as well as pin 6 is omitted on the 6-Pin bases.[▲]: See next page.

← Indicates a change.



6K6-GT

POWER PENTODE

Typical Operation and Characteristics:

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-Signal Plate Current . .	9	32	25.5	ma
Max.-Signal Plate Current . .	9.5	33	28	ma
Zero-Signal Grid-No.2 Current	1.6	5.5	4	ma
Max.-Signal Grid-No.2 Current	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.-Signal Power Output . .	0.35	3.4	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 A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	315 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	285 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value	0 max.	volts
GRID-No.2 INPUT	2.8 max.	watts
PLATE DISSIPATION	8.5 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:

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

▲: See next page.

→ Indicates a change.



6K6-GT

6K6-GT

POWER PENTODE

	Fixed Bias	Cathode Bias	
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:

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

Triode Connection - Grid No.2 Connected to Plate

Characteristics:

Plate Voltage	250	volts
Grid-No.1 Voltage	-18	volts
Amplification Factor.	6.8	
Plate Resistance (Approx.)	2500	ohms
Transconductance.	2700	μmhos
Plate Current	37.5	ma
Grid-No.1 Voltage (Approx.) for plate current of 0.5 ma	-48	volts

VERTICAL DEFLECTION AMPLIFIER

Triode Connection - 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.	315 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [#]	1200 [■] max.	volts
PEAK NEGATIVE-PULSE GRID-NO.1 VOLTAGE . . .	-250 max.	volts
CATHODE CURRENT:		
Peak.	75 max.	ma
Average	25 max.	ma
PLATE DISSIPATION	7 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 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 percent of one vertical scanning cycle is 2.5 milliseconds.
[■] Under no circumstances should this absolute value be exceeded.

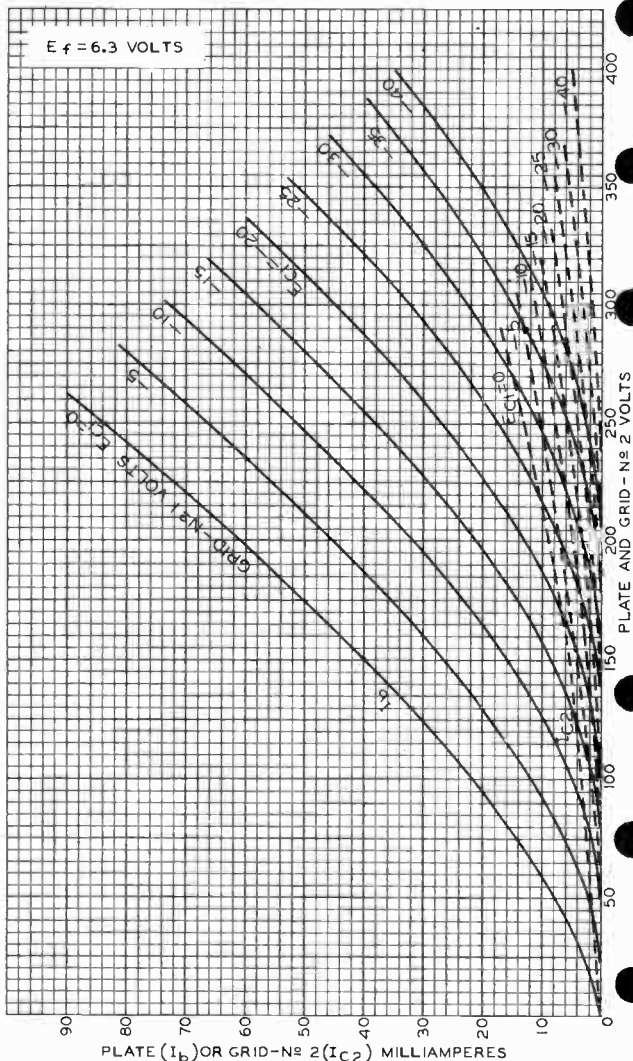
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6K6-GT



6K6-GT

AVERAGE CHARACTERISTICS



TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-5209R2

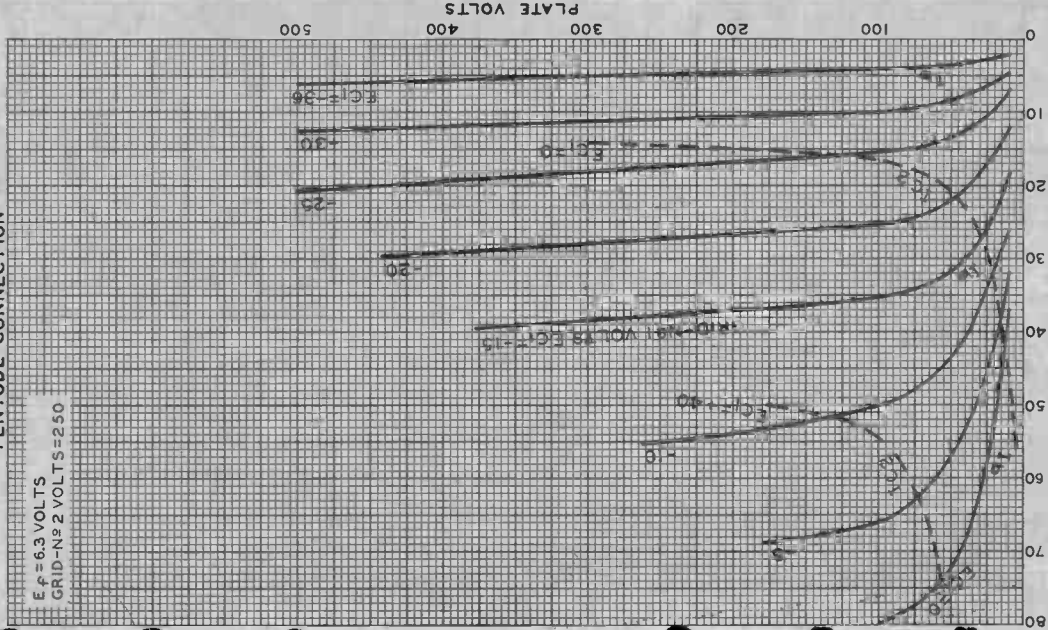


6K6-GT

6K6-GT

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION

$E_f = 6.3$ VOLTS
GRID-N₂ 2 VOLTS = 250



FEB. 13, 1948

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

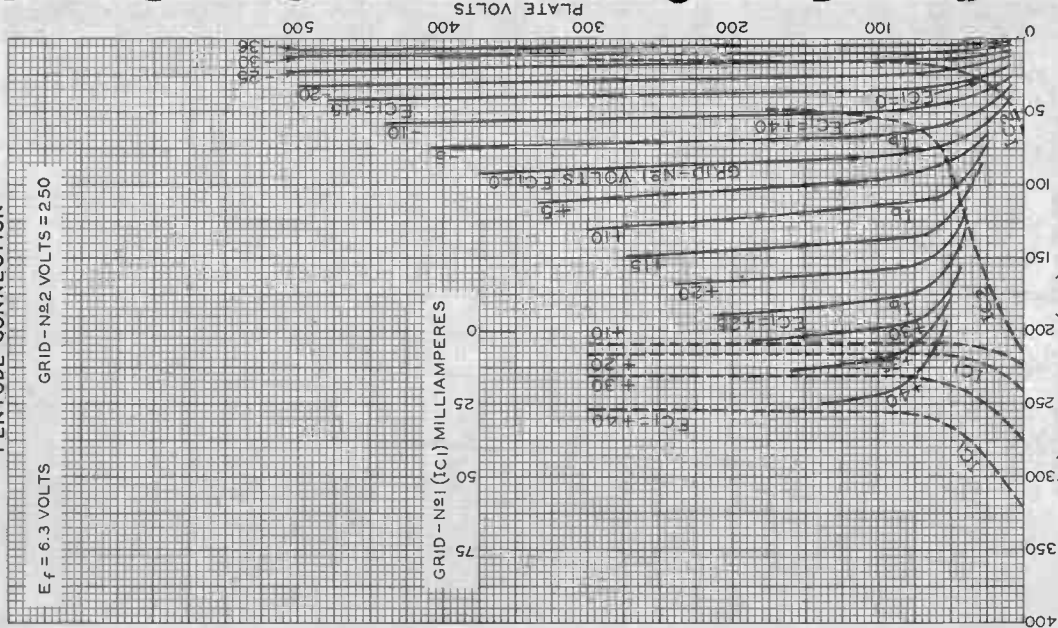
92CM-4881R2

6K6-GT



6K6-GT

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



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92CM-6311R1



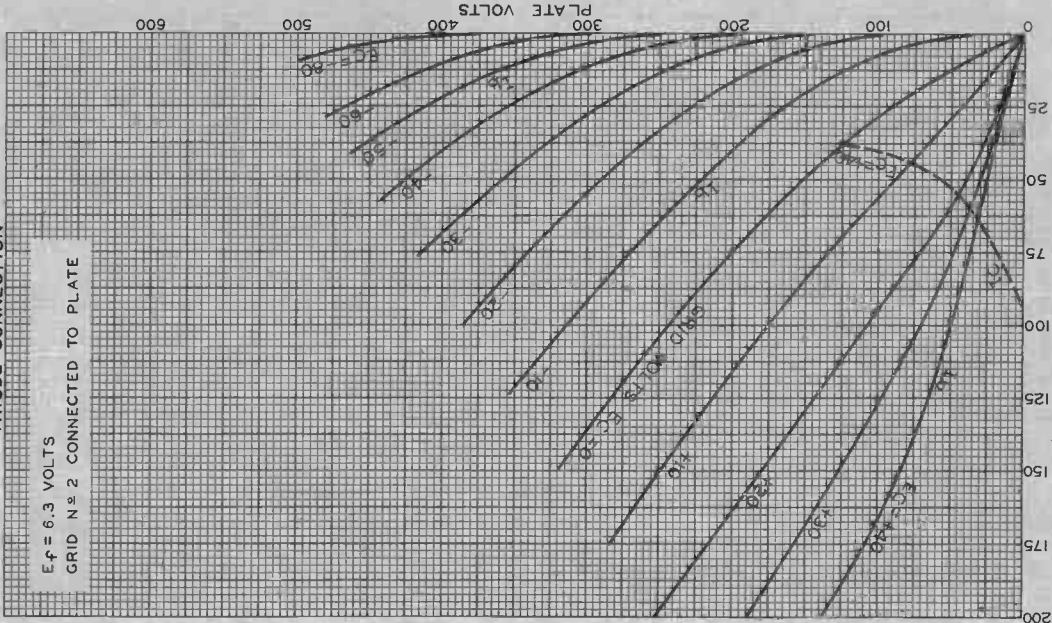
6K6-GT

6K6-GT

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION

$E_f = 6.3$ VOLTS

GRID N^o 2 CONNECTED TO PLATE



AUG. 18, 1941

PLATE (I_b) OR GRID (I_c) MILLIAMPERES

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

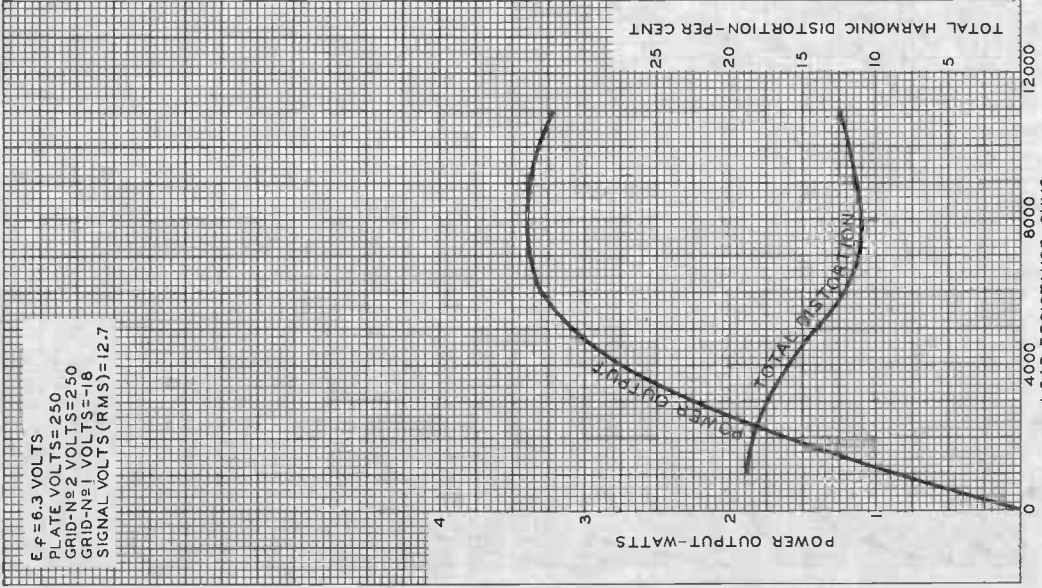
92CM-6313

6K6-GT



6K6-GT

OPERATION CHARACTERISTICS PENTODE CONNECTION



FEB. 2, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6317RI



6K7
6K7-G
6K7-GT

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 μf
Input	7	5	4.6 μf
Output	12	12	12 μf
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 2 - Heater
 Pin 3 - Plate



Pin 4 - Screen
 Pin 5 - Suppressor
 Pin 7 - Heater
 Pin 8 - Cathode
 Cap - Grid

Mounting Position **AMPLIFIER** Any

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 A₁ 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.

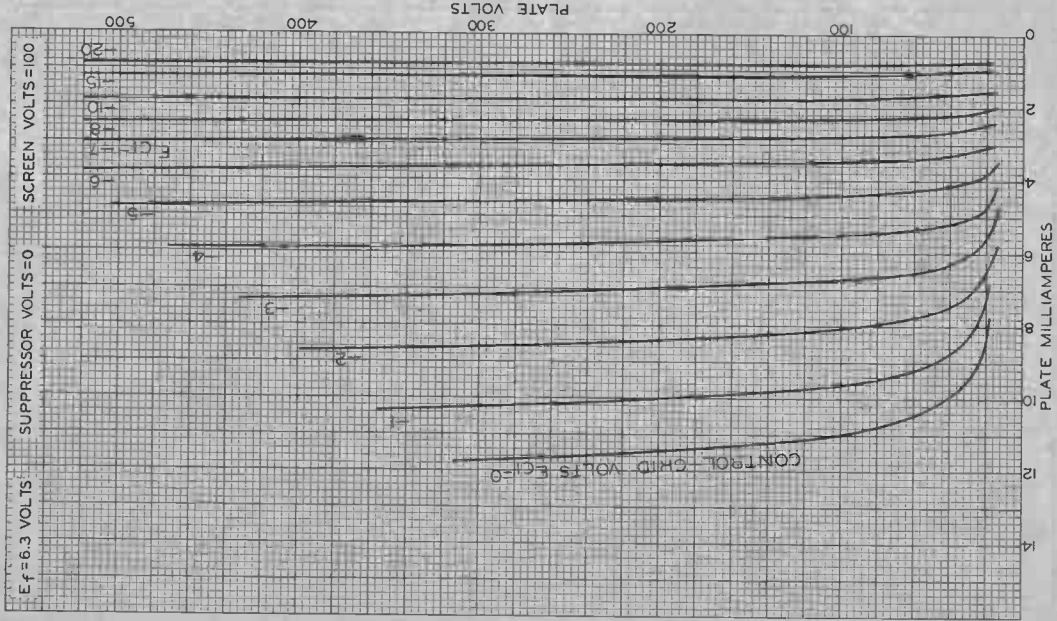
Curves under Type 78 also apply to the 6K7, 6K7-G, and 6K7-GT.

← Indicates a change.



6K7

AVERAGE PLATE CHARACTERISTICS



6K7

FEB. 24, 1937

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4742



6KB
6KB-G
6KB-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 ^o	6K8-G [▲]	6K8-GT [▲]
Hexode Grid #3 to Hexode Plate	0.03	0.08	0.08 max. μ f
Hexode Grid #3 to Triode Plate	0.02	0.05	0.05 max. μ f
Hexode Grid #3 to Triode Grid & Hexode Grid #1	0.2	0.2	0.2 max. μ f
Triode Grid & Hexode Grid #1 to Triode Plate	1.1	1.8	1.8 μ f
Triode Grid & Hexode Grid #1 to Hexode Plate	0.1	0.15	0.15 max. μ f
Hexode Grid #3 to All Other Electrodes (R-F Input)	6.6	4.6	4.6 μ f
Triode Plate to All Other Electrodes Except Triode Grid & Hexode Grid #1 (Osc. Output)	3.2	3.4	3.4 μ f
Triode Grid & Hexode Grid #1 to All Other Electrodes Except Triode Plate (Osc. Input)	6.0	6.5	6.5 μ f
Hexode Plate to All Other Electrodes (Mixer Output)	3.5	4.8	4.8 μ f
Overall Length	{ 3-1/8" max. 2-9/16" max.	{ 4-7/32" to 4-15/32" to 3-21/32" to 3-29/32" to 1-9/16"	{ 3-9/16" max. 3" max.
Seated Height	{ 1-5/16" max. Metal Shell, MT-8 Miniature	{ Skirted Min. Sm. Shell Octal 8-Pin	{ T-9 Skirted Min. Sm. Wafer Oct. 8-Pin, Sleeve GT-8K
Maximum Diameter	1-5/16"	1-9/16"	1-5/16"
Bulb Cap	Metal Shell, MT-8 Miniature	Skirted Min. Sm. Shell Octal 8-Pin	Skirted Min. Sm. Wafer Oct. 8-Pin, Sleeve GT-8K
Base	{ Small Wafer Octal 8-Pin		

Basing Designation
Pin 1 { 6KB, Shell
6KB-G, No Con.
6KB-GT, Sleeve
Pin 2 - Heater
Pin 3 - Hexode Plate
Pin 4 - Hexode Grids #2 & #4



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 hos
Conversion Transcond. with Hexode Grid #3 Bias of -30 volts (approx.)	2	2 μ hos
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 hos 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.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6K8



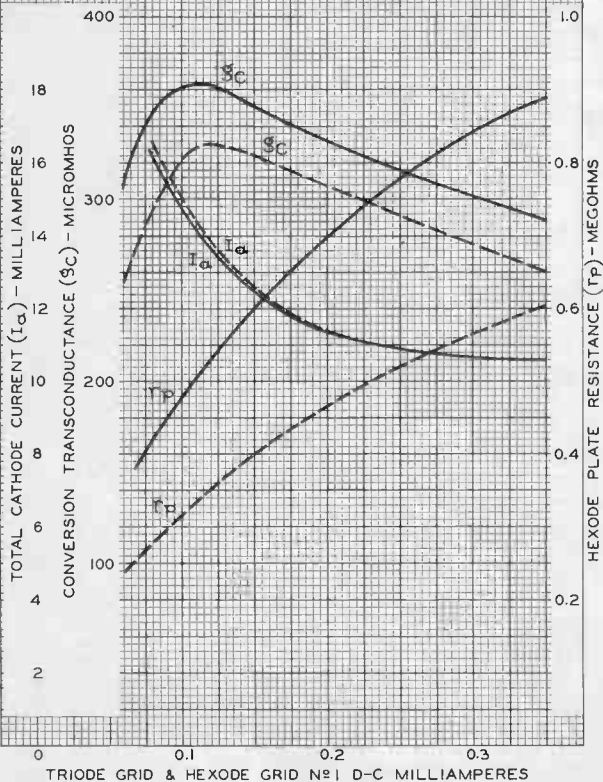
6K8

OPERATION CHARACTERISTICS

 $E_f = 6.3$ VOLTS

CURVE

	---	—
HEXODE PLATE VOLTS	100	250
TRIODE PLATE VOLTS	100	100
HEXODE SCREEN (GRIDS N ^o 2 & 4) VOLTS	100	100
HEXODE CONTROL-GRID (GRID N ^o 3) VOLTS	-3	-3
TRIODE GRID RESISTOR (OHMS)	50000	50000



APRIL 8, 1938

 RCA RADOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

World Radio History

92C-4866R1



6L6-GB

6L6-GB

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.):^o

Grid No.1 to plate.	0.9	μ f
Grid No.1 to cathode & grid No.3, grid No.2, and heater	11.5	μ f
Plate to cathode & grid No.3, grid No.2, and heater	9.5	μ f

Mechanical:

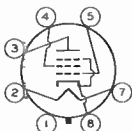
Mounting Position	Any
Maximum Overall Length.	4-1/4"
Maximum Seated Length	3-11/16"
Maximum Diameter.	1-9/16"

Bulb. T12

Base. Medium-Shell Octal 7-Pin (JETEC No. B7-12),
Short Medium-Shell Octal 7-Pin
with External Barriers, Style A (JETEC No. B7-111),
or Short Medium-Shell Octal 7-Pin
with External Barriers, Style B (JETEC No. B7-119)

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

AF POWER AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	360 max.	volts
GRID-NO.2 (SCREEN-GRID) VOLTAGE	270 max.	volts
GRID-NO.2 INPUT	2.5 max.	watts
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 Operation

Plate Voltage	200	250	300	350	volts
Grid-No.2 Voltage	200	250	200	250	volts
Grid No.1 (Control-Grid) Voltage	-11.5	-14	-12.5	-18	volts

^o Without external shield.



6L6-GB

BEAM POWER TUBE

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	2.5	2.5	ma
Max.-Signal Grid-No.2 Current.	5.7	7.3	4.7	7	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-Supply Voltage	200	250	300	volts
Grid-No.2 Supply Voltage	200	250	200	volts
Cathode 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	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:

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*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:

	<i>Fixed Bias</i>	<i>Cathode Bias</i>	
Plate-Supply Voltage	250	250	volts
Grid-No.1 (Control-Grid) Voltage	-20	-	volts
Cathode Resistor	-	490	ohms
Peak AF Grid-No.1 Voltage.	20	20	volts
Zero-Signal Plate Current.	40	40	ma
Max.-Signal Plate Current.	44	42	ma
Plate Resistance (Approx.)	1700	-	ohms



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6L6-GB

BEAM POWER TUBE

	Fixed Bias	Cathode Bias	
Amplification Factor	8	-	
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:

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-GRID) VOLTAGE	270 max.	volts
GRID-NO.2 INPUT	2.5 max.	watts
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:

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 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 (Approx., per tube)	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

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

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



6L6-GB

BEAM POWER TUBE

PUSH-PULL AF POWER AMPLIFIER - Class AB₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	360 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	270 max.	volts
GRID-No.2 INPUT	2.5 max.	watts
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:

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 (Control-Grid) Voltage*	-22.5	-22.5	-	volts
Cathode 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:

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-GRID) VOLTAGE	270 max.	volts
GRID-No.2 INPUT	2.5 max.	watts
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

* 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.



6L6-GB

6L6-GB

BEAM POWER TUBE

Typical Operation:

Values are for 2 tubes

Plate Voltage.	360	360	volts
Grid-No.2 Voltage.	225	270	volts
Grid-No.1 (Control-Grid) 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
Total Harmonic Distortion.	2	2	%
Max.-Signal Power Output	31	47	watts

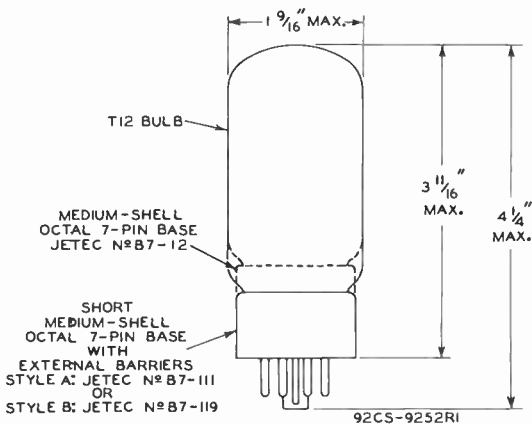
Maximum Circuit Values:

Grid-No.1-Circuit Resistance: [▲]

For fixed-bias operation 0.1 max. megohm

For cathode-bias operation Not recommended

[▲] 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.



6L6-GB



6L6-GB

AVERAGE PLATE CHARACTERISTICS

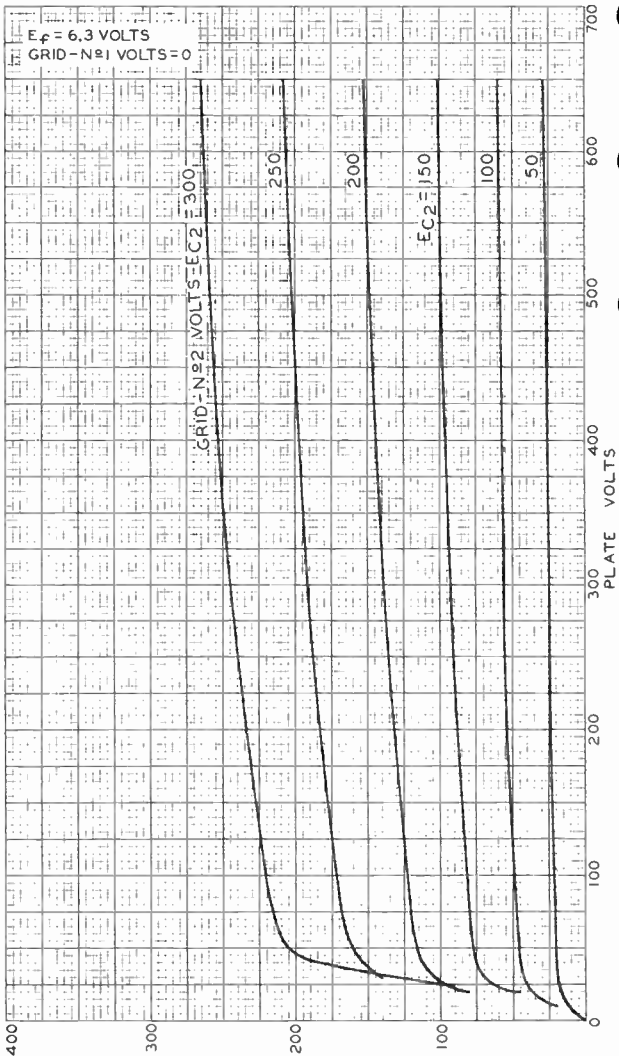


PLATE MILLIAMPERES

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4580R2

6L6-GB



6L6-GB AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-N \approx 2 VOLTS = 250

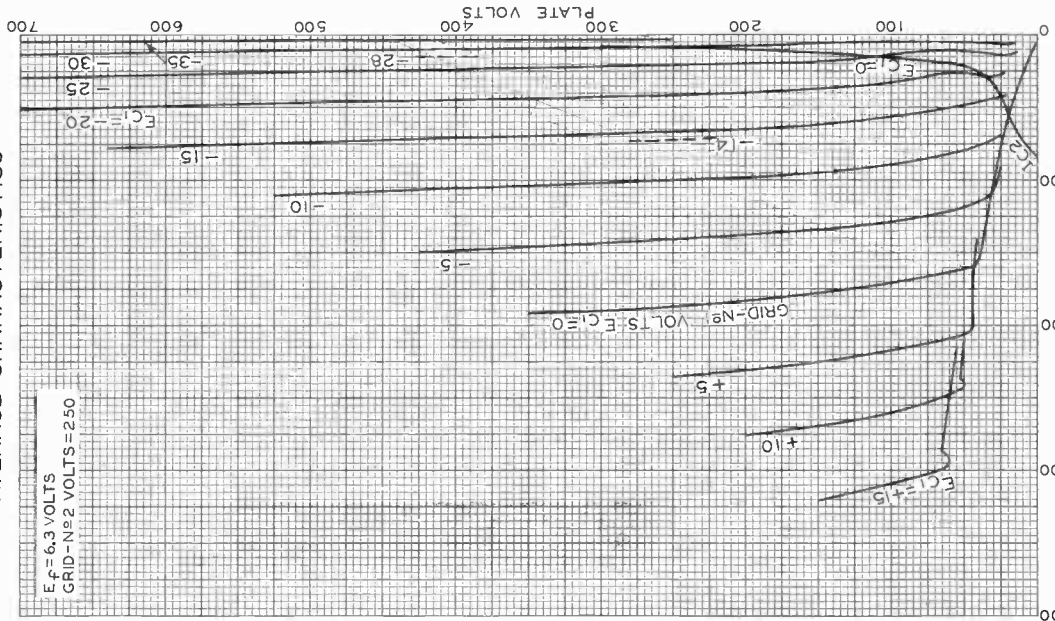


PLATE (1^a) OR GRID-N \approx 2 (1_{c2}) MILLIAMPERES
TUBE DIVISION
92CM-4581R2

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6L6-CB

World Radio History



6L6-CB

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



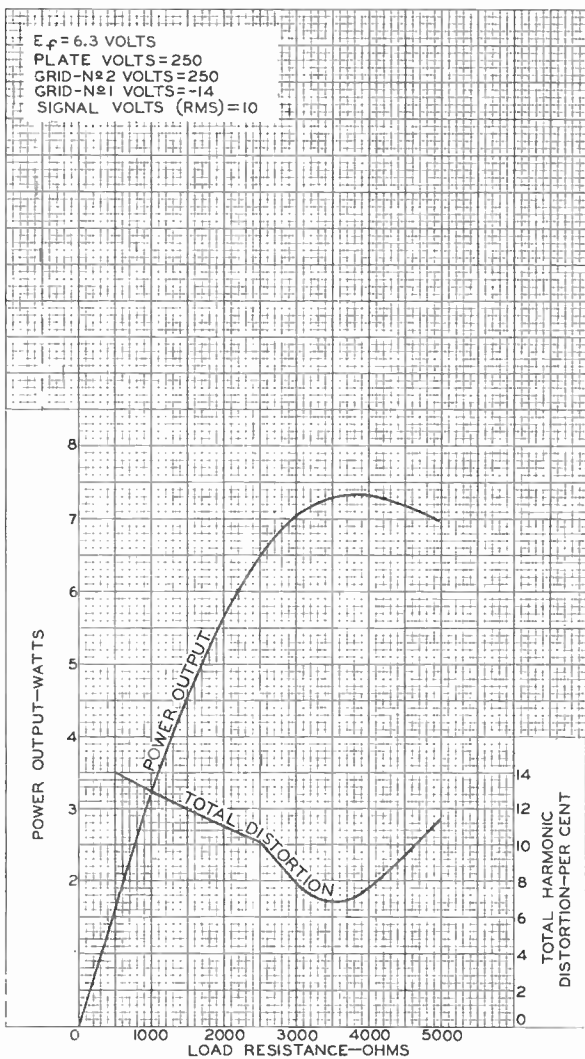
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
92CM-4966R2



6L6-GB

6L6-GB

OPERATION CHARACTERISTICS





Beam Power Tube

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.9	amp

Direct Interelectrode Capacitances
(Approx.):^A

Grid-No.1 to plate.	0.6	μμf
Grid-No.1 to cathode & grid No.3, grid No.2, and heater	10	μμf
Plate to cathode & grid No.3, grid No.2, and heater	6.5	μμf

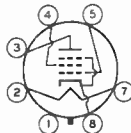
Characteristics, Class A₁ Amplifier:

Plate Voltage	250	volts
Grid-No.2 Voltage	250	volts
Grid-No.1 Voltage	-14	volts
Plate Resistance (Approx.)	22500	ohms
Transconductance.	6000	μmhos
Plate Current	72	ma
Grid-No.2 Current	5	ma

Mechanical:

Operating Position.	Any
Maximum Overall Length.	4-1/4"
Maximum Seated Length	3-11/16"
Diameter.	1.438" to 1.562"
Bulb.	T-12
Base.	Medium-Shell Octal 7-Pin (JEDEC Group 1, No.B7-12), Short Medium-Shell Octal 7-Pin with External Barriers Style A (JEDEC Group 1, No.B7-111) or Style B (JEDEC Group 1, No.B7-119), or Short Medium-Shell Octal 6-Pin with External Barriers Style A (JEDEC Group 1, No.B6-148) or Style B (JEDEC Group 1, No.B6-122)
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

AF POWER AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE.	500	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE.	450	max.	volts
GRID-No.2 INPUT.	5	max.	watts
PLATE DISSIPATION.	30	max.	watts



6L6-GC

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:

Fixed-Bias Operation

Plate Voltage.	200	250	300	350	volts
Grid-No.2 Voltage.	200	250	200	250	volts
Grid-No.1 (Control-Grid) 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	2.5	2.5	ma
Max.-Signal Grid-No.2 Current.	5.7	7.3	4.7	7	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 Supply Voltage	200	250	300	volts
Grid-No.2 Supply Voltage	200	250	200	volts
Cathode 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	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:

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

Triode Connection — Grid No.2 Connected to Plate

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE.	450 max.	volts
PLATE DISSIPATION.	30 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 and Characteristics:

	Fixed Bias	Cathode Bias	
Plate Supply Voltage	250	250	volts
Grid-No.1 (Control-Grid) Voltage . . .	-20	-	volts
Cathode Resistor	-	490	ohms
Peak AF Grid-No.1 Voltage	20	20	volts
Zero-Signal Plate Current	40	40	ma
Maximum-Signal Plate Current	44	42	ma
Plate Resistance (Approx.)	1700	-	ohms
Amplification Factor	8	-	
Transconductance	4700	-	μmhos
Load Resistance	5000	6000	ohms
Total Harmonic Distortion	5	6	%
Maximum-Signal Power Output	1.4	1.3	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

PUSH-PULL AF POWER AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	500	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	450	max.	volts
GRID-No.2 INPUT	5	max.	watts
PLATE DISSIPATION	30	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 and Characteristics:

Unless otherwise specified, values are for 2 tubes

	Fixed Bias		Cathode Bias		
Plate Supply Voltage	250	270	250	270	volts
Grid-No.2 Supply Voltage	250	270	250	270	volts
Grid-No.1 Voltage	-16	-17.5	-	-	volts
Cathode 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 (Approx., per tube)	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



6L6-GC

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-Maximum Values:

PLATE VOLTAGE 500 max. volts
 GRID-No.2 VOLTAGE 450[♠] max. volts
 GRID-No.2 INPUT 5 max. watts
 PLATE DISSIPATION 30 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:

Values are for 2 tubes

	Fixed Bias			Cathode Bias	
Plate Supply Voltage.	360	450	450	360	volts
Grid-No.2 Supply Voltage.	270	350	400	270	volts
Grid-No.1 (Control-Grid) Voltage [♠]	-22.5	-30	-37	-	volts
Cathode Resistor.	-	-	-	248	ohms
Peak Af Grid-No.1-to-Grid-No.1 Voltage	45	60	70	40.6	volts
Zero-Signal Plate Current.	88	95	116	88	ma
Max.-Signal Plate Current	132	194	210	100	ma
Zero-Signal Grid-No.2 Current	5	3.4	5.6	5	ma
Max.-Signal Grid-No.2 Current	15	19.2	22	17	ma
Effective Load Resistance (Plate to plate).	6600	6000	5600	9000	ohms
Total Harmonic Distortion	2	1.5	1.8	4	%
Max.-Signal Power Output.	26.5	50	55	24.5	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 AMPLIFIER — Class AB₂

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE. 500 max. volts
 GRID-No.2 (SCREEN-GRID) VOLTAGE. 450[♠] max. volts
 GRID-No.2 INPUT. 5 max. watts
 PLATE DISSIPATION. 30 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:

Values are for 2 tubes

	Fixed Bias		
Plate Voltage.	360	360	volts
Grid-No.2 Voltage.	225	270	volts
Grid-No.1 (Control-Grid) 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:

Grid-No.1-Circuit Resistance:[▲]

For fixed-bias operation	0.1 max. megohm
For cathode-bias operation	Not recommended

[▲] Without external shield.

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

★ The dc component must not exceed 100 volts.

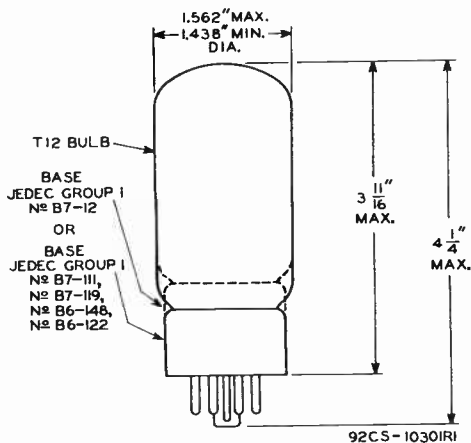
[◆] In push-pull circuits where grid No.2 of each tube is connected to a tap on the plate winding of the output transformer, it is permissible for this voltage to be as high as 500 volts.[♣] The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.[♠] 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.

OPERATING CONSIDERATIONS

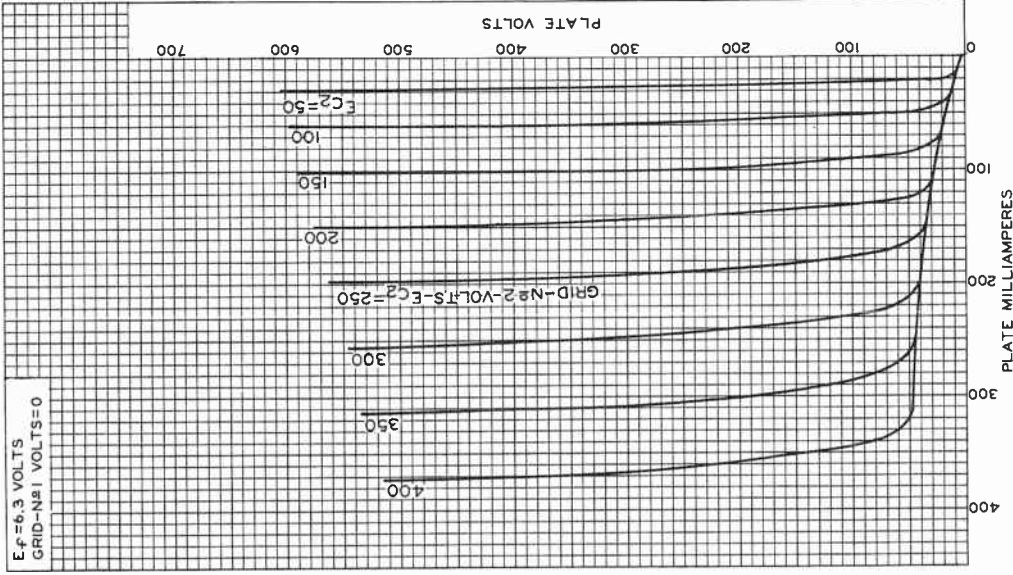
The *bulb* becomes hot during operation. To insure adequate cooling, therefore, it is essential that free circulation of air be provided.



6L6-GC



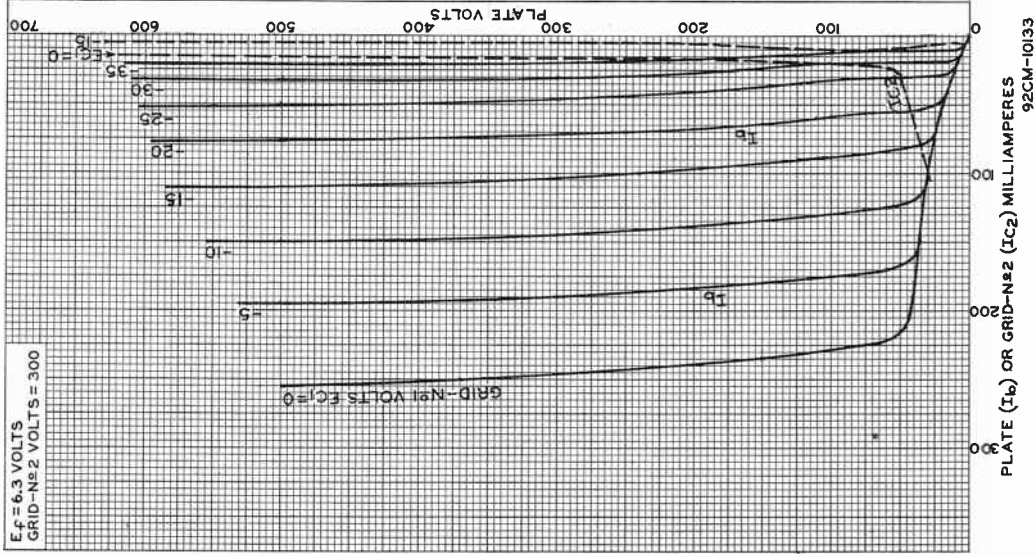
AVERAGE PLATE CHARACTERISTICS



6L6-GC

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-N₂ VOLTS = 300



92CM-10133

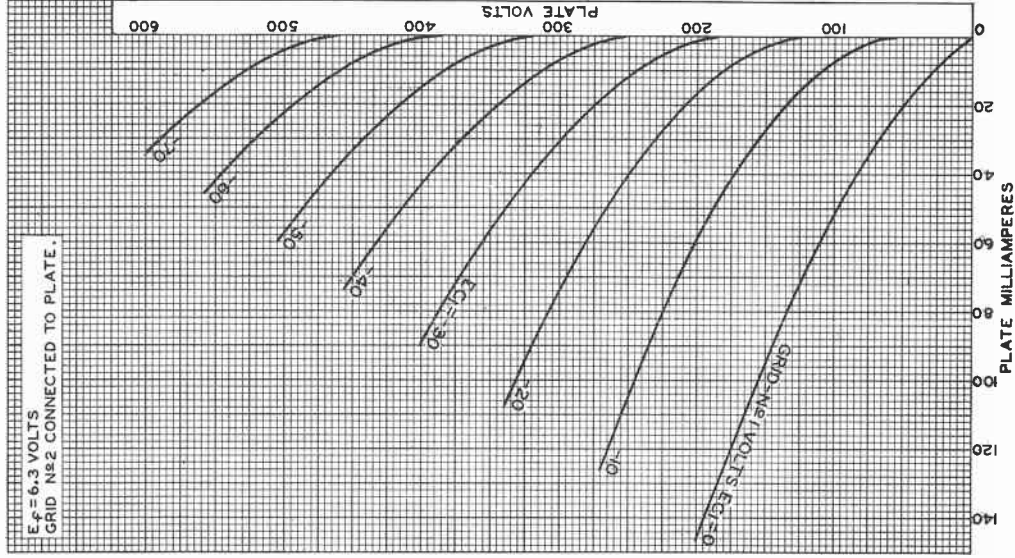
RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



6L6-GC

AVERAGE PLATE CHARACTERISTICS Triode Connection



92CM-9568

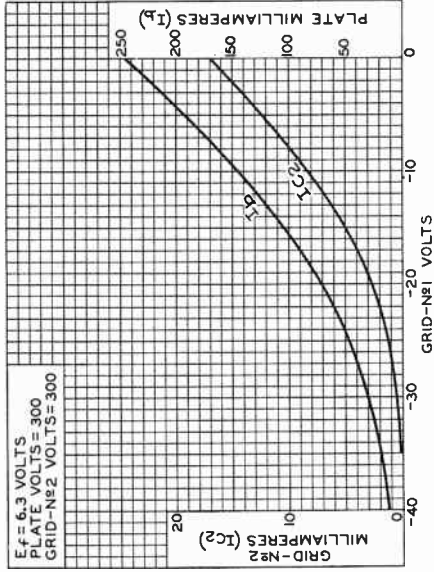


RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 5
8-60

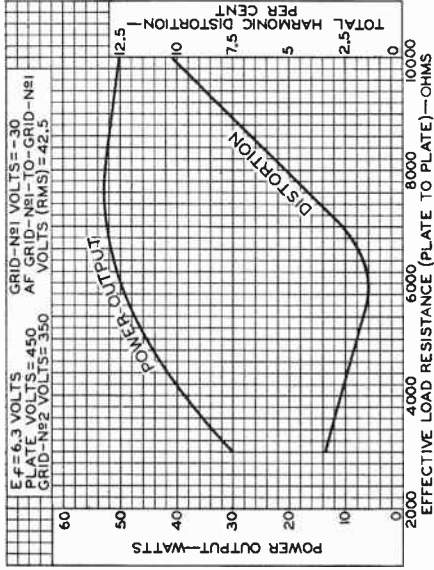
6L6-GC

AVERAGE CHARACTERISTICS



92CS-10126

OPERATION CHARACTERISTICS Push-Pull Class AB₁



92CS-9575



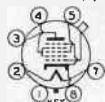
6L7, 6L7-G

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. μf
Grid #1 to Plate	0.001 max.	0.005 max. μf
Grid #3 to Plate	0.1	0.24 μf
Grid #1 to All Other Electrodes	7.5	6 μf
Grid #3 to All Other Electrodes	10	12 μf
Plate to All Other Electrodes	11	10 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	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		Any



BOTTOM VIEW

AMPLIFIER - Class A₁

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.

MIXER

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 RADIOTRON 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	μ hos
Conversion Transcond.	5 \bullet	5 Δ	μ hos
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.
 \bullet With grid #1 bias of -30 volts. Δ With grid #1 bias of -45 volts.
 $\#$ These conditions are recommended for multi-range receiver applications.

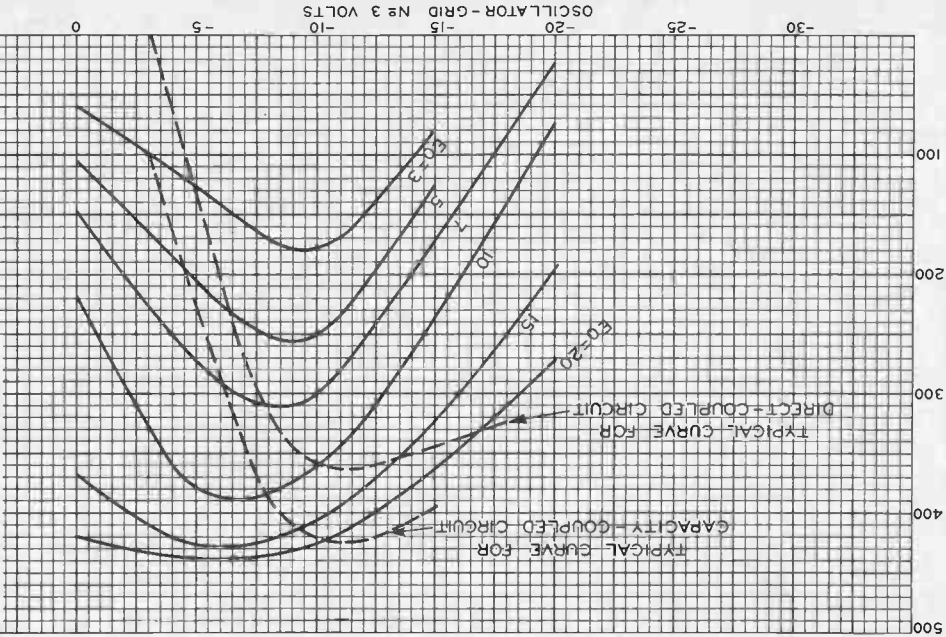


RCA-6L7

6L7

OPERATION CHARACTERISTICS

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 250
 SCREEN VOLTS = 100
 SIGNAL-GRID No 1 VOLTS = -3
 PEAK OSCILLATOR VOLTS = E_0



JULY 30, 1935

CONVERSION CONDUCTANCE (SC) MICROMHOS

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

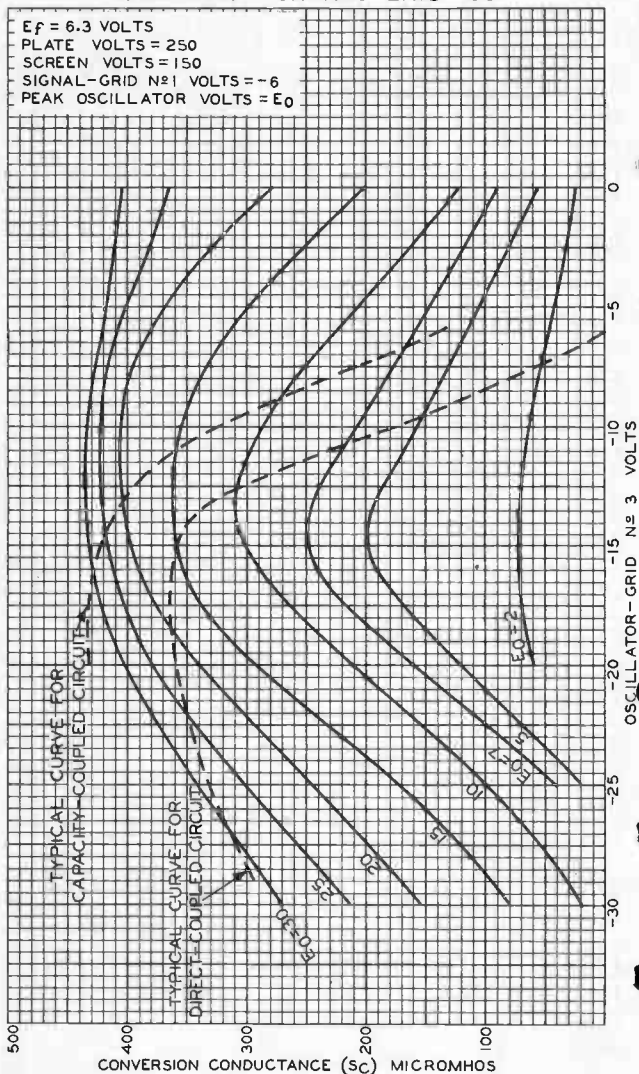
92C-4447

6L7


Punningham
Radiotron


RCA-6L7

OPERATION CHARACTERISTICS



JULY 26, 1935

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

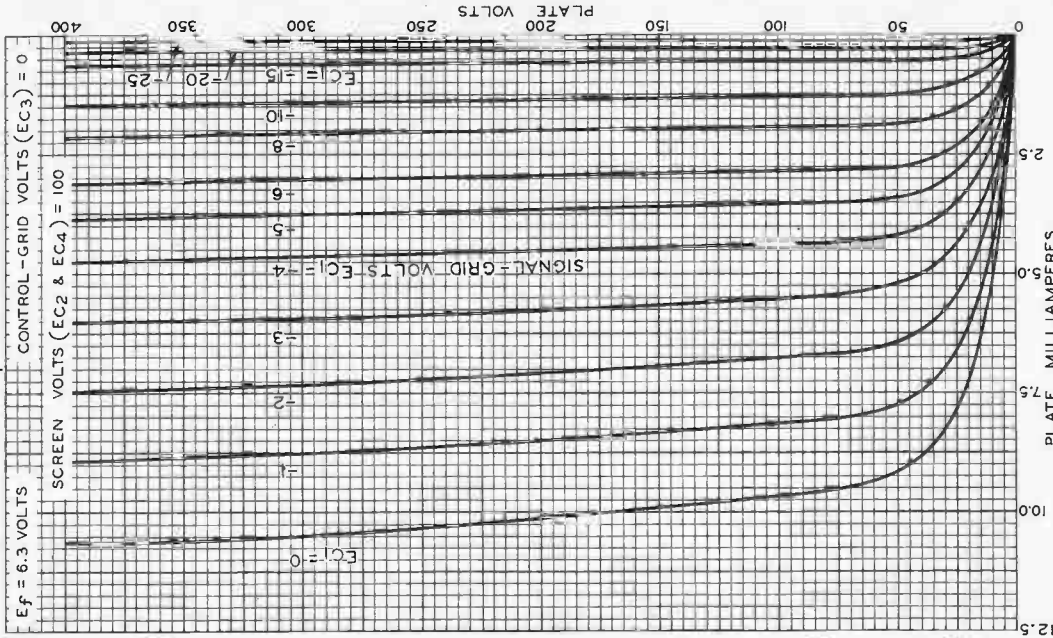
92C-4445



6L7

6L7

AVERAGE PLATE CHARACTERISTICS WITH E_{C1} AS VARIABLE



JAN. 3, 1936

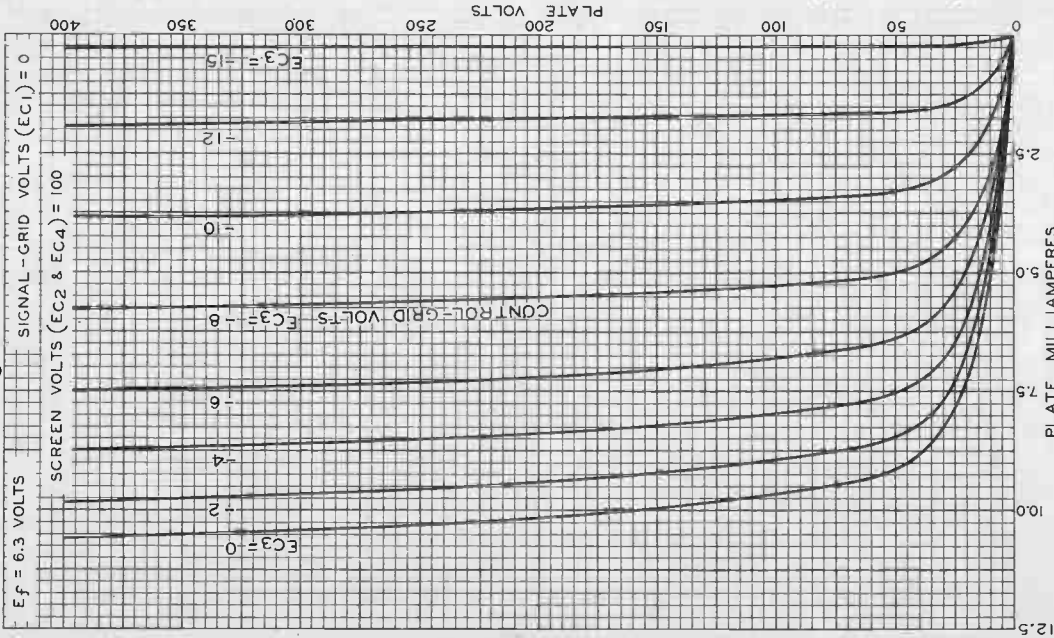
RCA RADIIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4531



6L7

AVERAGE PLATE CHARACTERISTICS WITH E_{C3} AS VARIABLE



6L7

JAN. 7, 1936

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4534



6L7

6L7

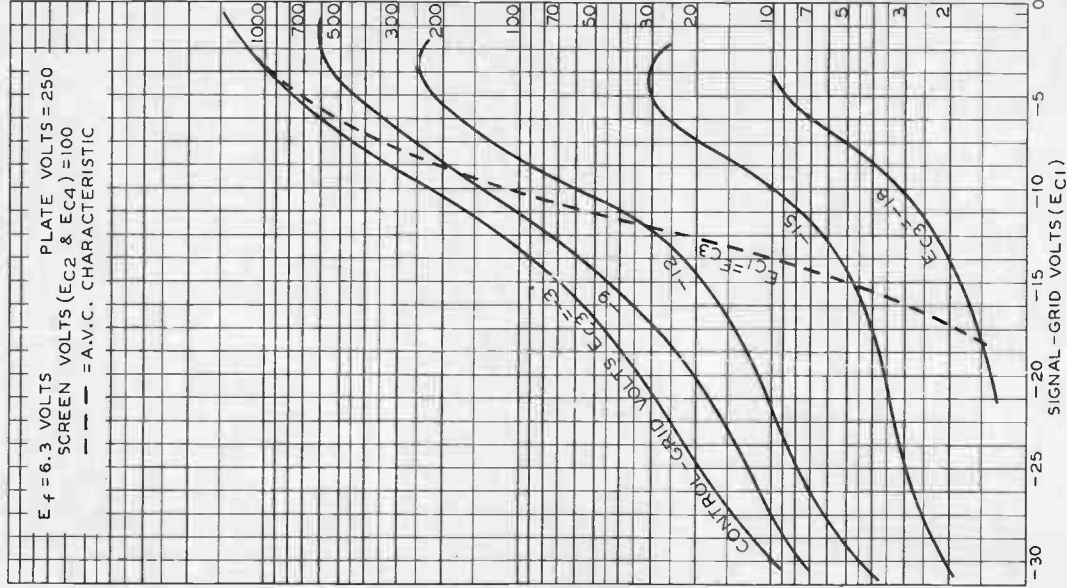
AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS

PLATE VOLTS = 250

SCREEN VOLTS (E_{C2} & E_{C4}) = 100

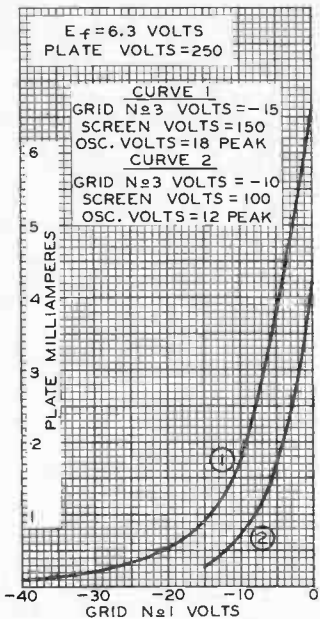
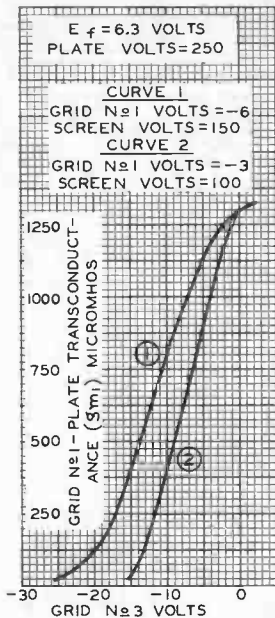
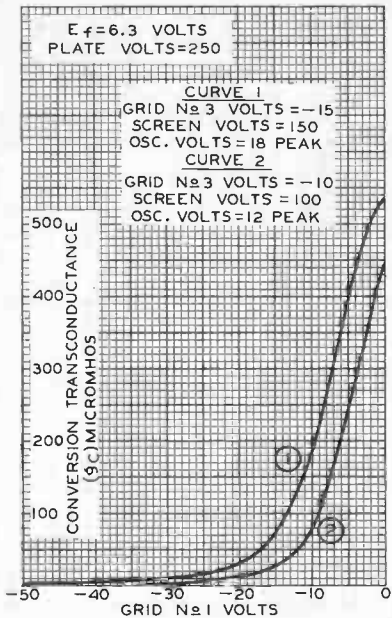
--- = A.V.C. CHARACTERISTIC



AVERAGE CHARACTERISTICS



6L7



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	
	{ Small Wafer	{ Intermed. Sh.	
Base	{ Octal 8-Pin	{ 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 RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.
World Radio History

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.

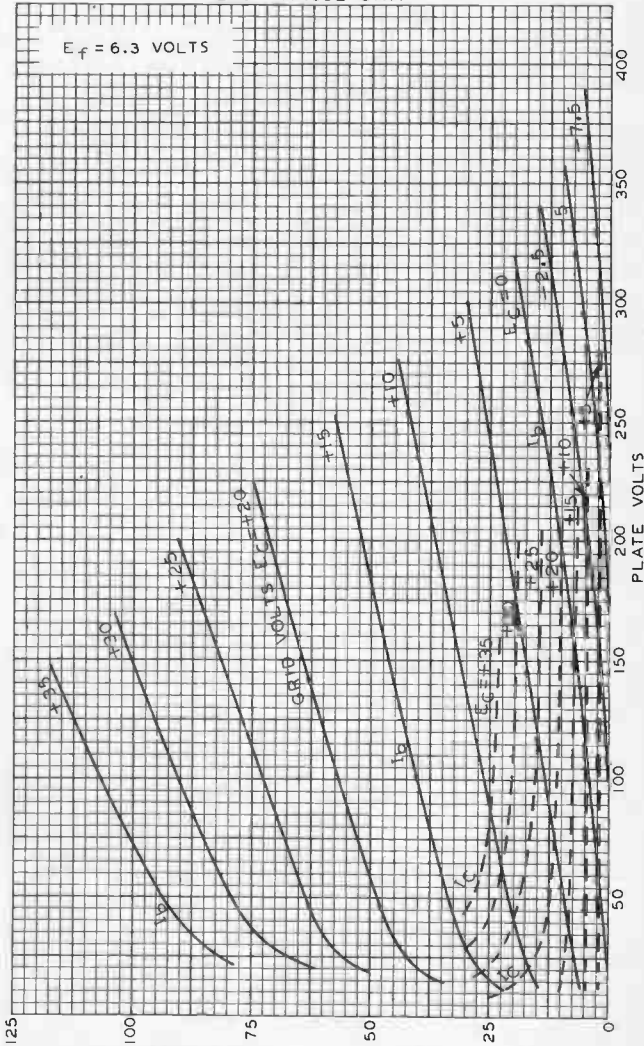


6N7

6N7

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT

$E_f = 6.3$ VOLTS



D-C PLATE (I_b) OR D-C GRID (I_c) MILLIAMPERES

DEC. 18, 1939

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4611

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	μf
Grid to Cathode	3.4	μf
Plate to Cathode	5.5	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 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
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate	100	250 volts
Grid #	-5	-13.5 volts
Amp. Fact.	13.8	13.8
Plate Res.	12000	9500 ohms
Transcond.	1150	1450 μmhos
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.
- ^o 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.



6P7-G

6P7-G

TRIODE-PENTODE

Heater [■]	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances: [○]		
<i>Triode Unit</i>		
Grid to Plate	2.0	μf
Grid to Cathode	3.5	μf
Plate to Cathode	3.0	μf
<i>Pentode Unit</i>		
Grid to Plate	0.088 max.	μf
Input	3.5	μf
Output	12	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 6 - Triode Plate	
Pin 2 - Heater	Pin 7 - Triode Grid	
Pin 3 - Heater	Pin 8 - Cathode	
Pin 4 - Pentode Plate	Cap - Pentode Grid	
Pin 5 - Pentode Screen		



Mounting Position BOTTOM VIEW (G-7U) 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 shield-can. connected to cathode.

Maximum Ratings, Typical Operating Conditions and Curves of the 6P7-G are the same as for Type 6P7.



6Q7
6Q7-G
6Q7-GT

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 μf
Grid to Cathode	5.0	3.2	2.2 μf
Plate to Cathode	3.8	5.0	5.0 μf
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 7 - Heater
 Pin 8 - Cathode
 Cap. - Triode Grid

Mounting Position

BOTTOM VIEW

Any

TRIODE UNIT

Plate Voltage 300 max. volts

Characteristics - Class A₂ Amplifier:

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.

Typical Operation - Resistance-Coupled Amplifier:

See 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 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.

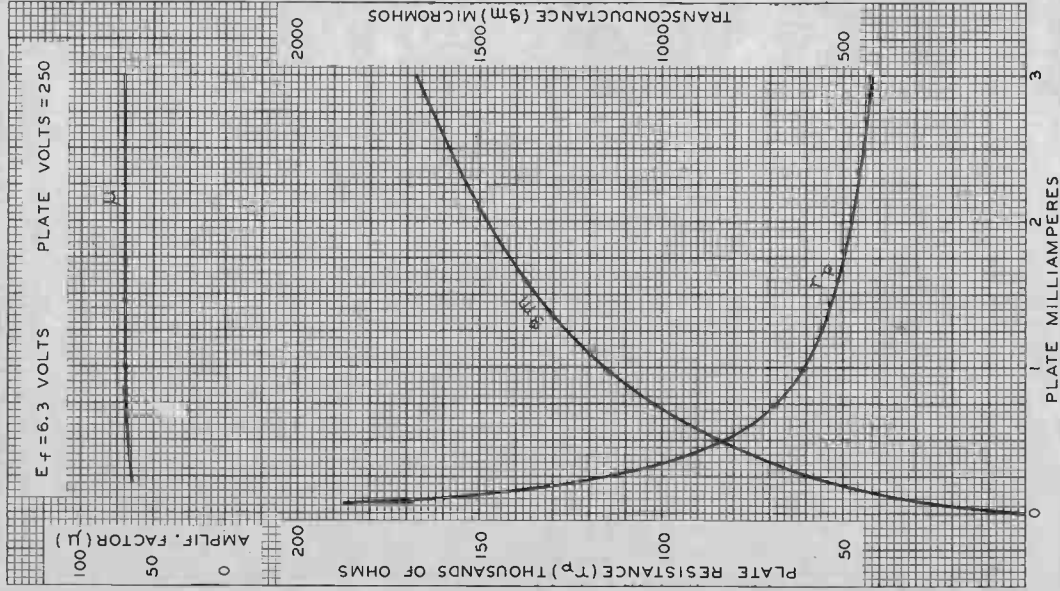


6Q7

6Q7

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS PLATE VOLTS = 250



JUNE 29, 1936

RCA RADIONRON DIVISION
RCA MANUFACTURING COMPANY, INC.

PLATE MILLIAMPERES

92C-4577



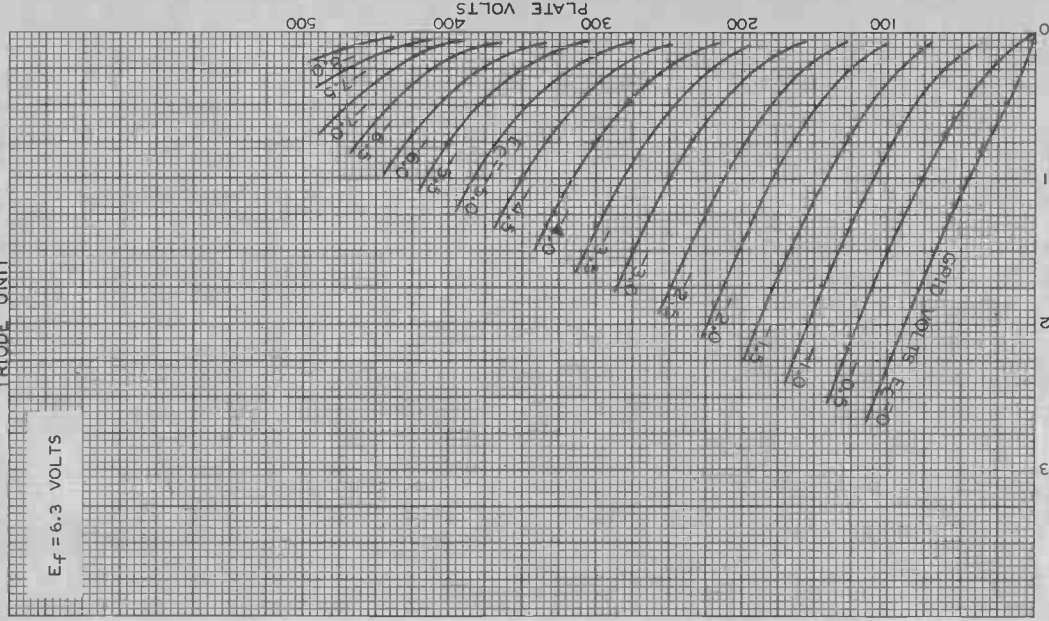
6Q7

6Q7

AVERAGE PLATE CHARACTERISTICS

TRIODE UNIT

$E_f = 6.3$ VOLTS



SEPT. 10, 1941

PLATE MILLIAMPERES

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4522R2

6R7
6R7-GT/G

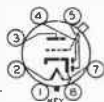
6R7, 6R7-GT/G

DUPLEX-DIODE TRIODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.

	6R7	6R7-GT/G
Direct Interelectrode Cap.	▲	
Grid to Plate	2.4	-
Grid to Cathode	4.8	-
Plate to Cathode	3.8	-
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 Octal 7-Pin	{ Intermed. Shell Octal 7-Pin
Basing Designation	7V	G-7V
Pin 1 { 6R7, Shell 6R7-GT/G, No Connection		Pin 4 - Diode Plate #2
Pin 2 - Heater		Pin 5 - Diode Plate #1
Pin 3 - Triode Plate		Pin 7 - Heater
Mounting Position		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 687 apply to the 6R7 and 6R7-GT/G.

▲ Triode unit with shell connected to cathode. Values are approximate.

A₂ additional curve applying to Types 6R7 and 6R7-GT/G is shown under Type 6SR7.

DEC. 1, 1943

RCA VICTOR DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

6R7

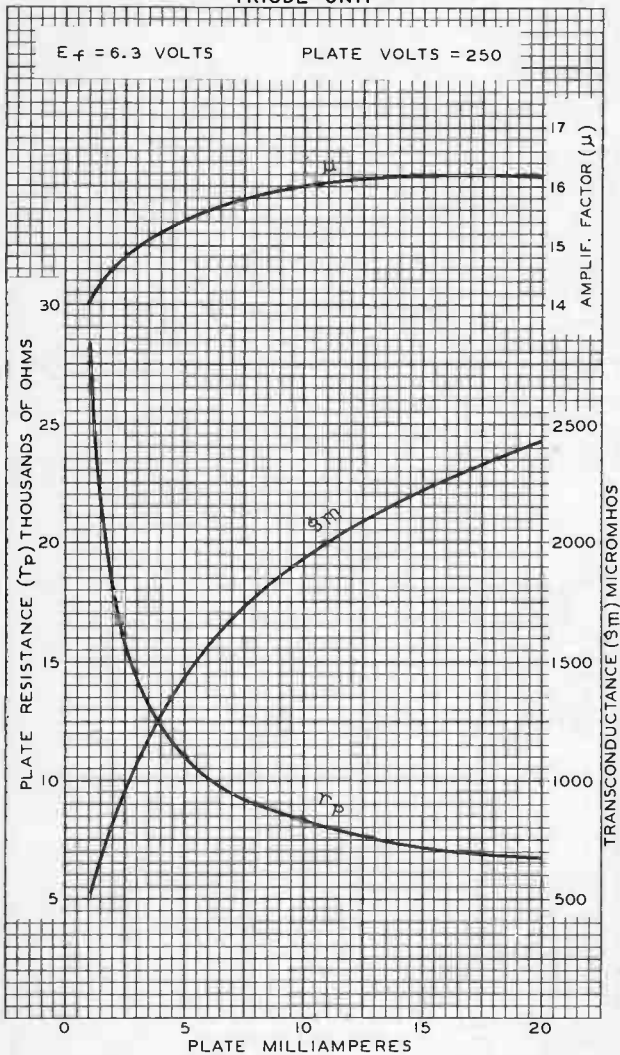


6R7

AVERAGE CHARACTERISTICS TRIODE UNIT

$E_f = 6.3$ VOLTS

PLATE VOLTS = 250



DEC. 14, 1943

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

92CM-4546RI



6S4

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

6S4

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.



Medium-Mu Triode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances (Approx.):^a

Grid to plate	2.4	μf
Grid to cathode and heater	4.2	μf
Plate to cathode and heater	0.6	μf

Characteristics, Class A₁ Amplifier:

Plate Voltage	250	volts
Grid Voltage	-8	volts
Amplification Factor	16.5	
Plate Resistance (Approx.)	3700	ohms
Transconductance	4500	μmhos
Plate Current	24	ma
Plate Current for grid volts = -15	4	ma
Grid Voltage (Approx.) for plate μ a = 50	-22	volts

Mechanical:

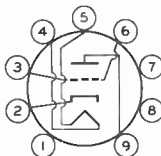
Operating Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip)	2" ± 3/32"
Diameter	0.750" to 0.875"
Dimensional Outline	See General Section
Bulb	T6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW	9AC

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

VERTICAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE	550 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^c	2200 max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE	250 max.	volts

← Indicates a change.



6S4A

CATHODE CURRENT:

Peak	105	max.	ma
Average	30	max.	ma
PLATE DISSIPATION	8.5	max.	watts

PEAK HEATER-CATHODE VOLTAGE:

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

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation.	2.2	max.	megohms
-------------------------------------	-----	------	---------

^a Without external shield.

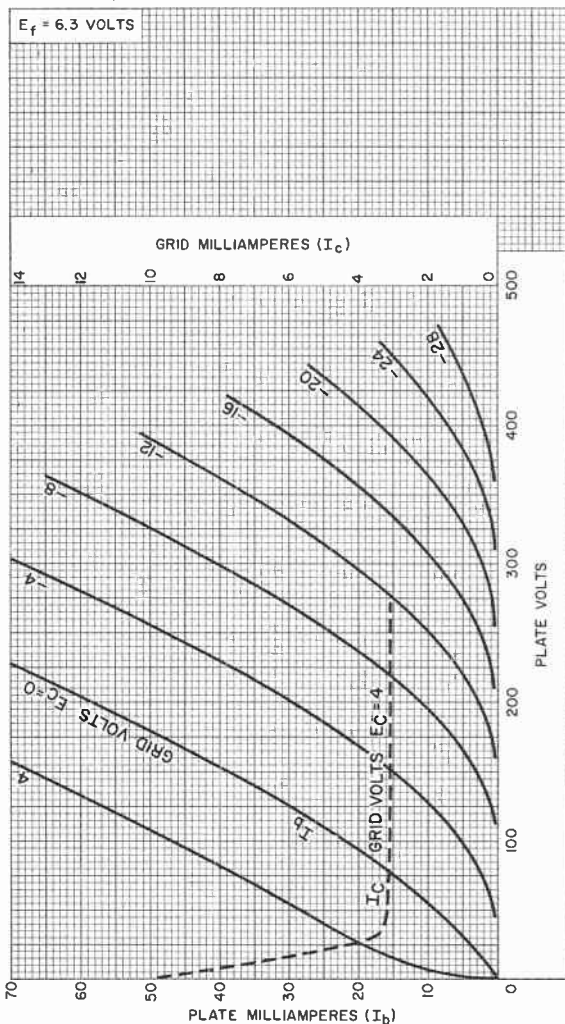
^b As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

^c 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.

^d The dc component must not exceed 100 volts.



AVERAGE CHARACTERISTICS



92CM-7373RI







6S4-A

6S4-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.):⁰

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	$\mu\mu\text{f}$

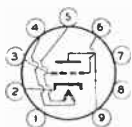
Characteristics, Class A₁ Amplifier:

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 5 - Heater |
| Pin 2 - Cathode | Pin 6 - Grid |
| Pin 3 - Grid | Pin 7 - Same as Pin 1 |
| Pin 4 - Heater | Pin 8 - Same as Pin 1 |
| | Pin 9 - Plate |



⁰ without external shield.

654-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

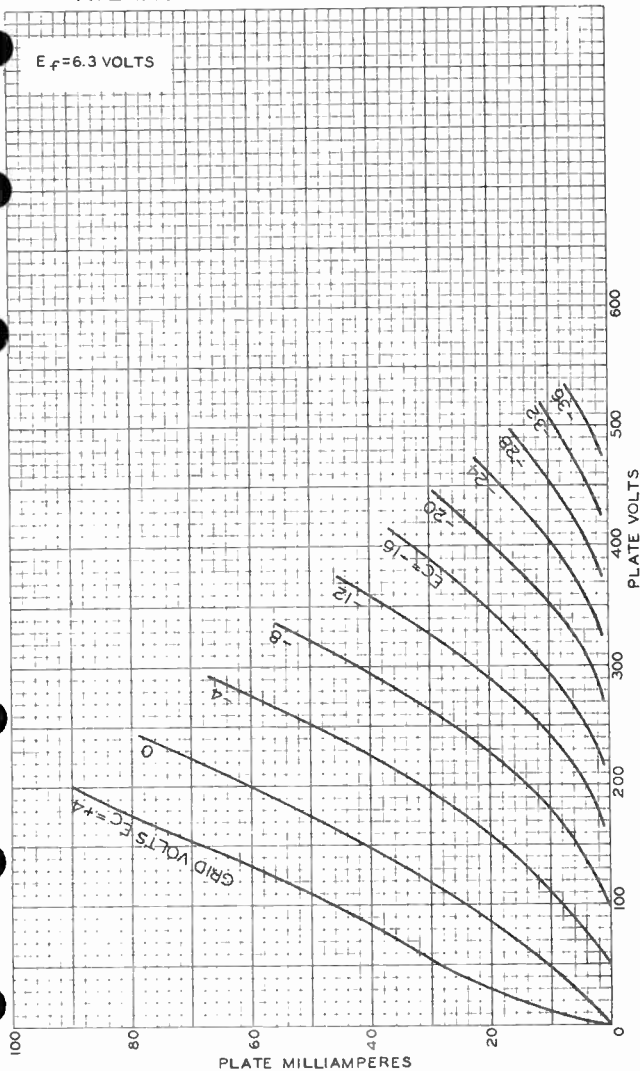
World Radio History



6S4-A

6S4-A

AVERAGE PLATE CHARACTERISTICS



SEPT. 22, 1949

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7373



6S7, 6S7-G

6S7
6S7-G

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

Heater [■] Coated Unipotential Cathode
 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.	μmf
Input	6.5	4.4	μmf
Output	10.5	8	μmf

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 { Small Shell

Basing Designation 7R G-7R

Pin 1 { 6S7, Shell
 { 6S7-G, No Con.

Pin 2 - Heater

Pin 3 - Plate

Pin 4 - Screen



BOTTOM VIEW

Pin 5 - Suppressor
 Pin 7 - Heater
 Pin 8 - Cathode
 Cap - Grid

Mounting Position

Any

AMPLIFIER - Class A₁

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.

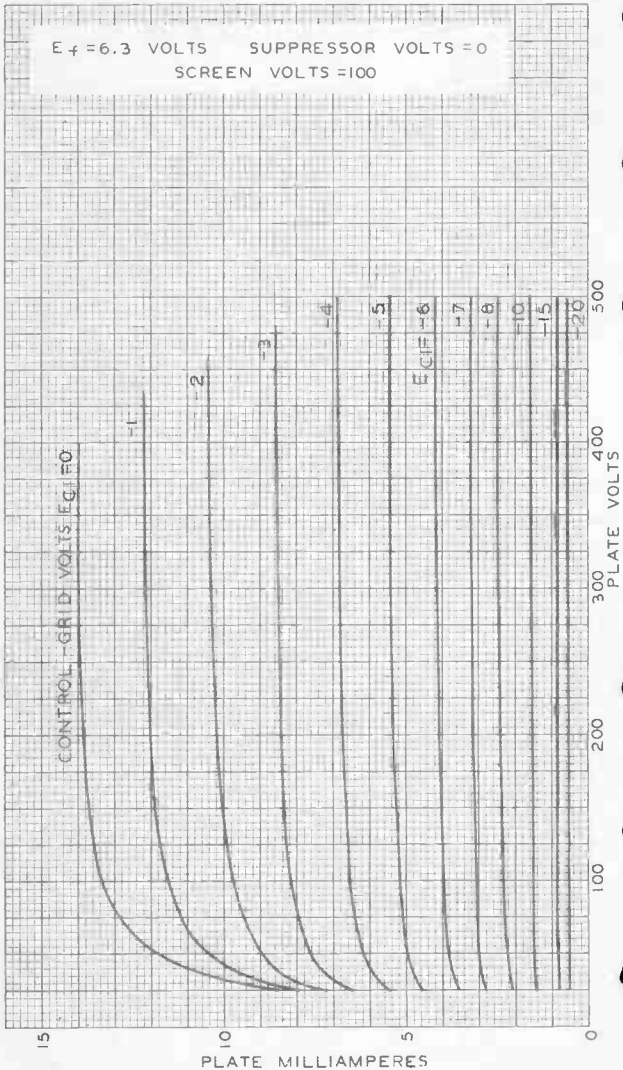
6S7



6S7

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS SUPPRESSOR VOLTS = 0
SCREEN VOLTS = 100



JAN. 17, 1938

RCA RADOTRON 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.

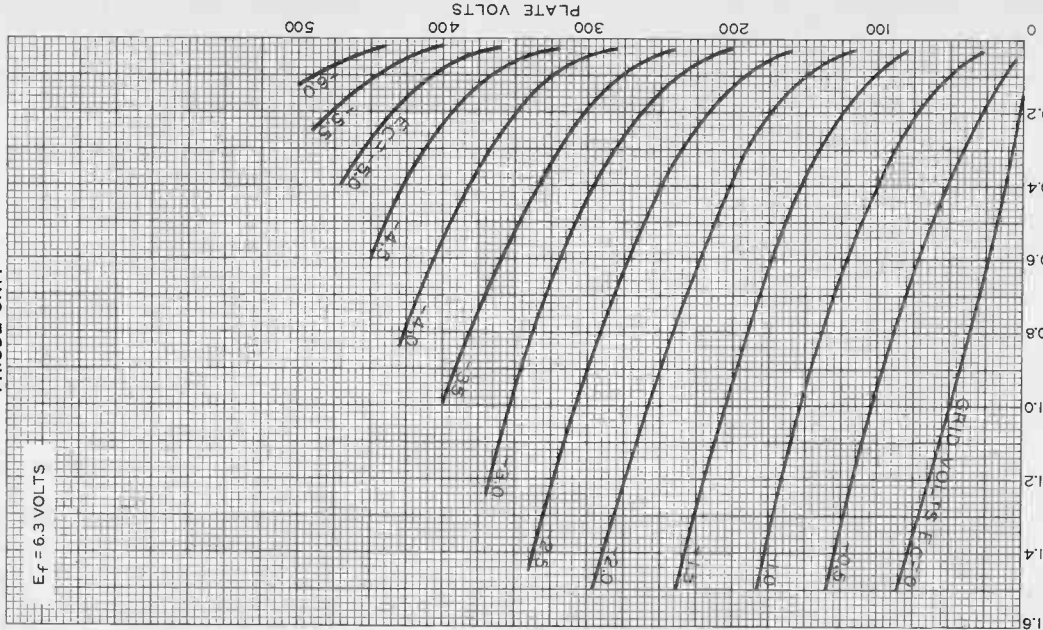
Further consideration of these units, including diode curves, is given at the front of this section. Diode biasing of the triode unit of the 6S8-GT is not suitable.



6S8-GT

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

$E_f = 6.3$ VOLTS



6S8-GT

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 ^{▲▲} μmf
Plate to All Other Electrodes (Mixer Output)	12 [▲]	11 ^{▲▲} μmf
Grid #1 to All Other Electrodes (Osc. Input)	7 [▲]	8 ^{▲▲} μmf
Grid #3 to Plate	0.13 max. [▲]	0.5 max. ^{▲▲} μmf
Grid #3 to Grid #1	0.15 max. [▲]	0.4 max. ^{▲▲} μmf
Grid #1 to Plate	0.06 max. [▲]	0.2 max. ^{▲▲} μmf
Grid #1 to Shell, Grid #5, and All Other Electrodes except Cathode	4.4	- μmf
Grid #1 to All Other Electrodes except Cathode & Grid #5	-	5 μmf
Grid #1 to Cathode	2.6	- μmf
Grid #1 to Cathode & Grid #5	-	3 μmf
Cathode to Shell, Grid #5, and All Other Electrodes except Grid #1	5	- μmf
Cathode and Grid #5 to All Other Electrodes except Grid #1	-	14 μmf

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	{ Intermed. Sh.
{ Octal 8-Pin	{ 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



BOTTOM VIEW (8R)



BOTTOM VIEW (6-8AD)

Mounting Position

Any

Maximum And Minimum Ratings Are Design-Center Values

CONVERTER SERVICE

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

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

6SA7
6SA7-GT/G



6SA7, 6SA7-GT/G PENTAGRID CONVERTER

(continued from preceding page)

Characteristics:

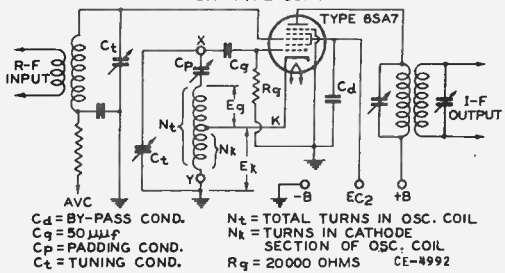
	Self-excitation*		Separate Excitation		
Plate Voltage	100	250	100	250	volts
Grids #2 & #4 Volt.	100	100	100	100	volts
Grid #3 (Control) Volt.	0	0	-2	-2	volts
Grid #1 Resistor	20000	20000	20000	20000	ohms
Plate Res. (Approx.)	0.5	1.0	0.5	1.0	megohm
Conversion Transcond.	425	450	425	450	μ mhos
Conversion Transcond. (Approx.) †	2	2	2	2	μ mhos
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 mhos 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

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

DATA

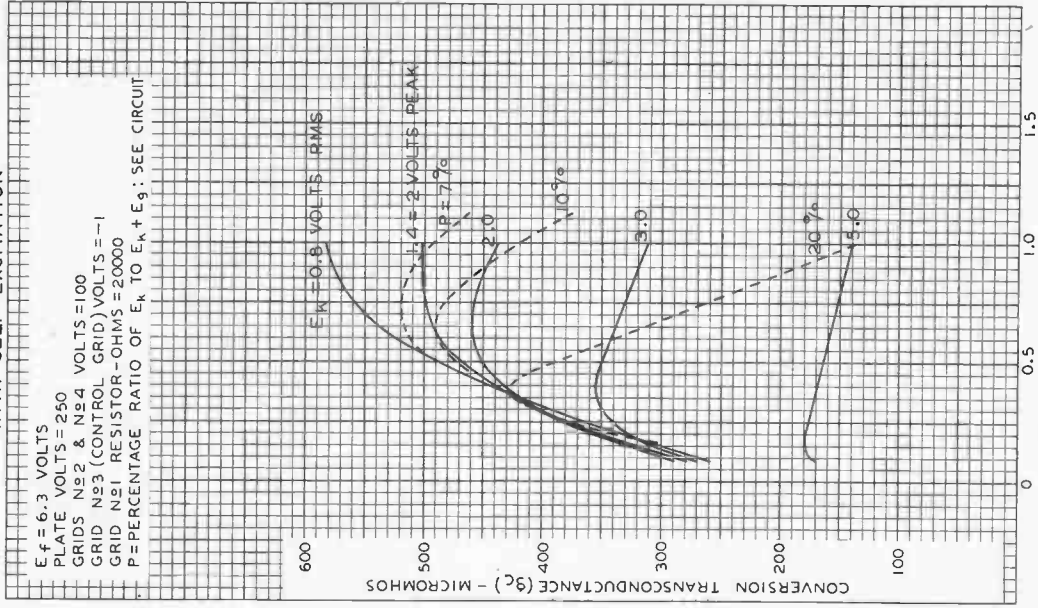


6SA7

6SA7

OPERATION CHARACTERISTICS
WITH SELF-EXCITATION

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 250
 GRIDS No 2 & No 4 VOLTS = 100
 GRID No 3 (CONTROL GRID) VOLTS = -1
 GRID No 1 RESISTOR - OHMS = 20000
 P = PERCENTAGE RATIO OF E_k TO $E_k + E_g$: SEE CIRCUIT



NOV. 2, 1938

GRID No 1 MILLIAMPERES (I_{c1})RCA RADIIOTRON DIVISION
ECA MANUFACTURING COMPANY, INC.

92C-4993

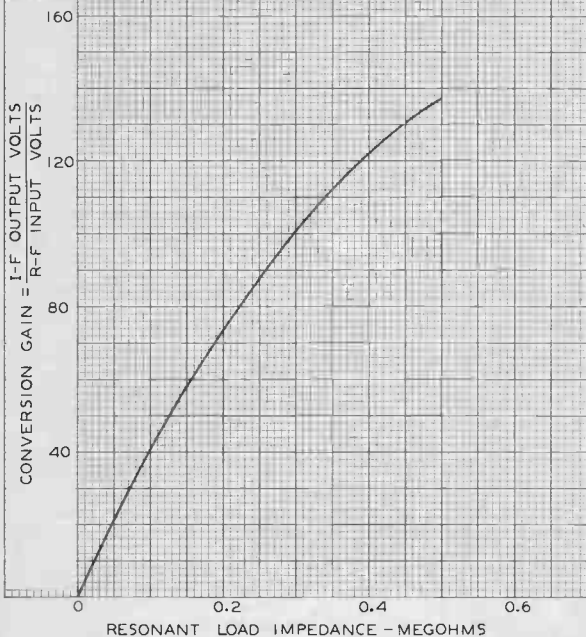
6SA7



6SA7

OPERATION CHARACTERISTIC WITH SELF-EXCITATION

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 250
 GRIDS No2 & No4 VOLTS = 100
 GRID No3 (CONTROL GRID) VOLTS = 0
 GRID No1 RESISTOR-OHMS = 20000
 GRID No1 MILLIAMPERES = 0.5



APR. 25, 1941

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

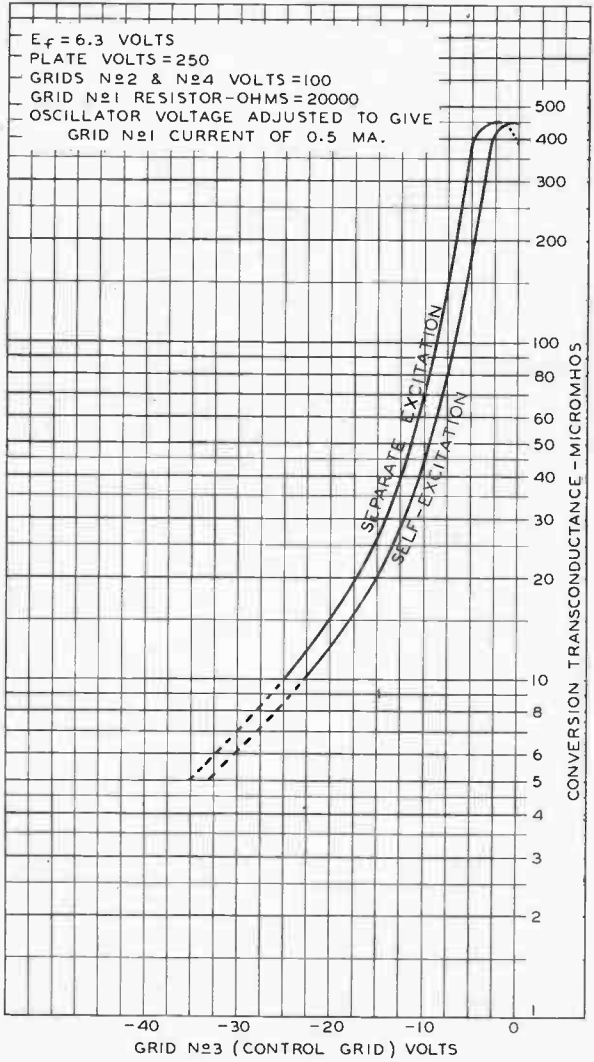
CE-4994



6SA7

6SA7

OPERATION CHARACTERISTICS



OCT. 25, 1938

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4989

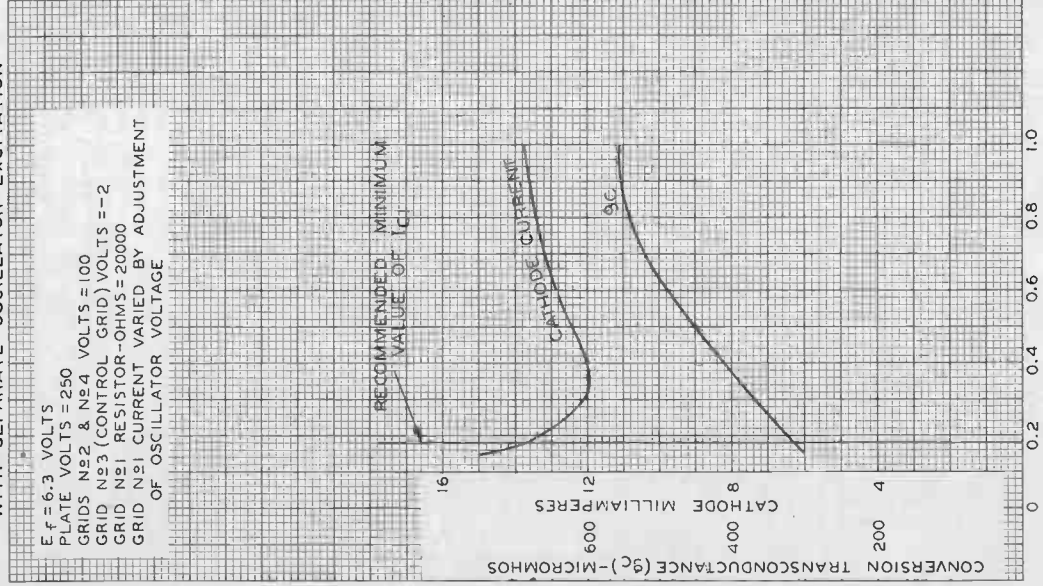
6SA7



6SA7

OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 250
 GRIDS No2 & No4 VOLTS = 100
 GRID No3 (CONTROL GRID) VOLTS = -2
 GRID No1 RESISTOR-OHMS = 20000
 GRID No1 CURRENT VARIED BY ADJUSTMENT
 OF OSCILLATOR VOLTAGE



APR. 24, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

GRID No1 MILLIAMPERES (I_{c1})

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.

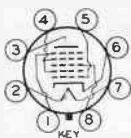
Direct Interelectrode Capacitances:

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 5 - Grid No.1
Pin 2 - Heater	Pin 6 - Cathode
Pin 3 - Plate	Pin 7 - Heater
Pin 4 - Grids No.2 & No.4	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
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 1



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	. . μ mhos
Conversion Transconductance**	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.

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

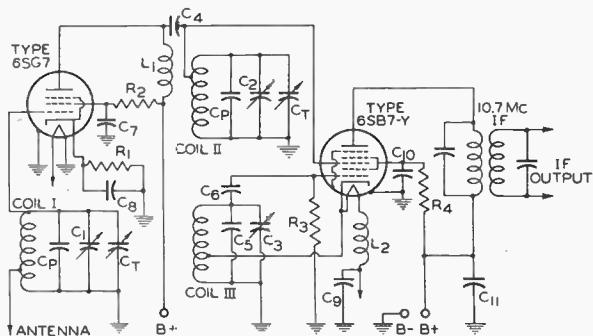
6SB7-Y

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 μ f

C4 C5 C6 = 22 μ f

C7 C8 C9 C10 C11 = BY-PASS CONDENSERS

Cp = PADDING CONDENSERS

Ct = TRIMMER CONDENSERS

L1 L2 = RF 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

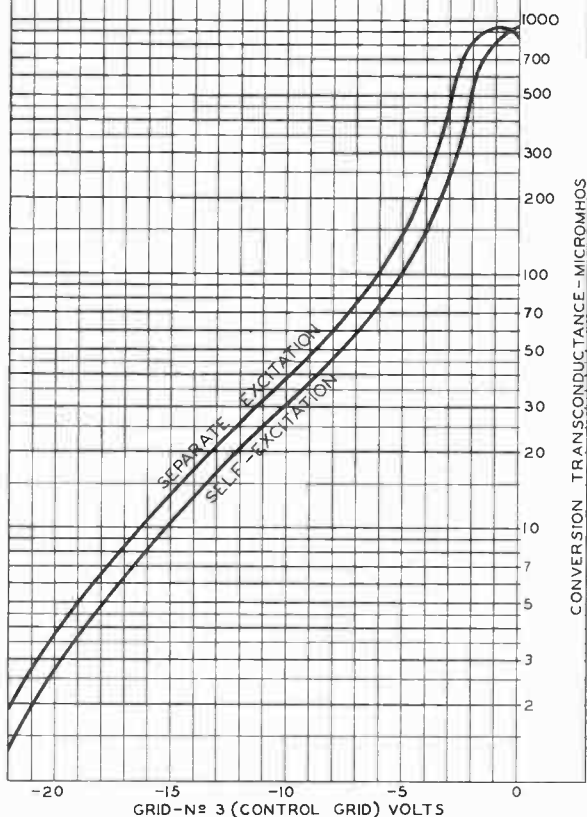
6SB7-Y



6SB7-Y

OPERATION CHARACTERISTICS

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 250
 GRIDS - N^o 2 & N^o 4 VOLTS = 100
 GRID - N^o 1 RESISTOR - OHMS = 20000
 OSCILLATOR VOLTAGE ADJUSTED TO GIVE
 GRID - N^o 1 CURRENT OF 0.35 MA.



NOV. 8, 1945

 RCA VICTOR DIVISION
 RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY

92CM-6619

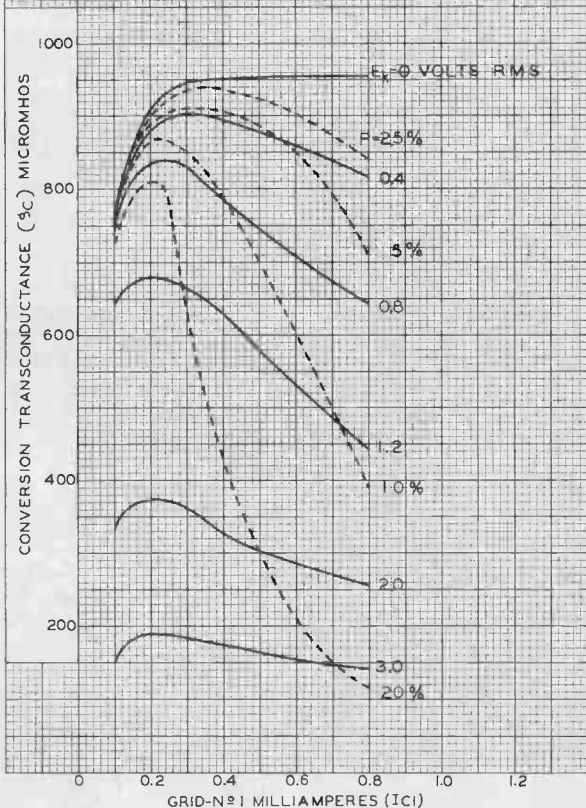


6SB7-Y

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



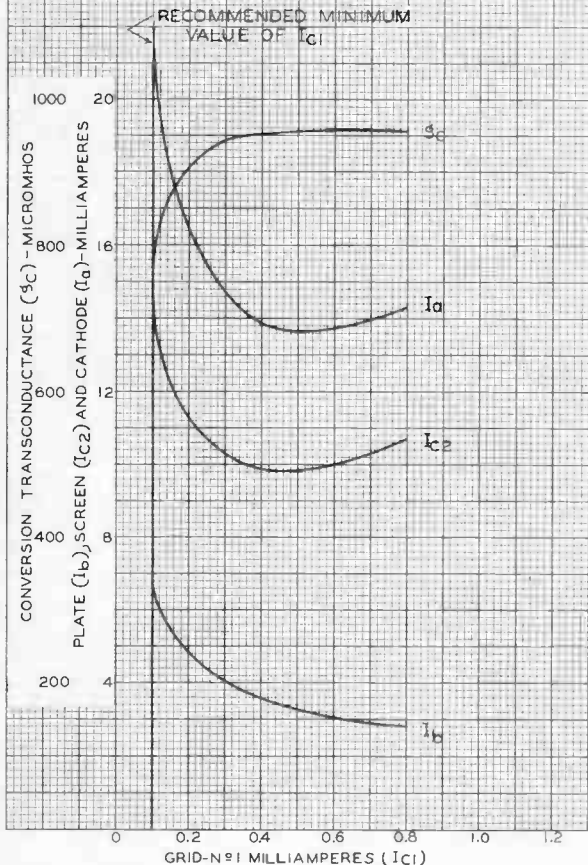
6SB7-Y



6SB7-Y

OPERATION CHARACTERISTICS
WITH SEPARATE OSCILLATOR EXCITATION

$E_f = 6.3$ VOLTS
 PLATE VOLTS = 250
 GRIDS-Nº 2 & Nº 4 VOLTS = 100
 GRID-Nº 3 (CONTROL GRID) VOLTS = -1
 GRID-Nº 1 RESISTOR-OHMS = 20000
 GRID-Nº 1 CURRENT VARIED BY ADJUSTMENT
 OF OSCILLATOR VOLTAGE.



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

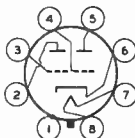
Direct Interelectrode Capacitances (Approx.):*

Grid to plate	2	$\mu\mu\text{f}$
Grid to cathode, heater, and shell	2	$\mu\mu\text{f}$
Plate to cathode, heater, and shell	3	$\mu\mu\text{f}$

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.

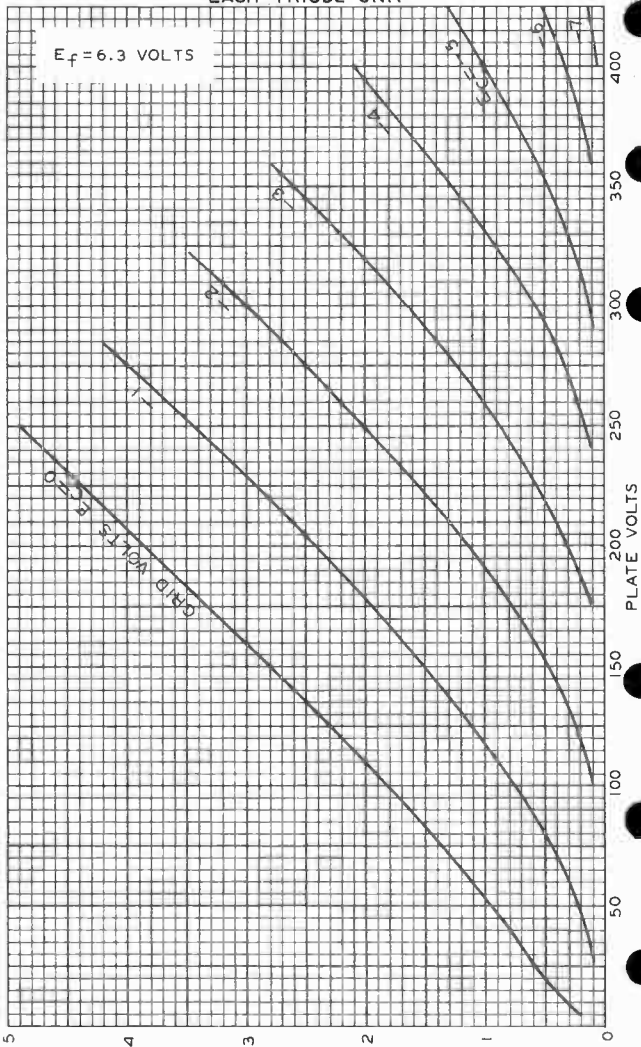
←Indicates a change.

6SC7



6SC7

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



OCT. 16, 1940

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6096RI

World Radio History

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	-	μf
Grid to Cathode	4.0	-	μf
Plate to Cathode	3.6	-	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 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 ←

Characteristics - Class A₁ Amplifier:

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.

Typical Operation - Resistance Coupled Amplifier:

Same as 6F5 in 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 shell connected to cathode. Values are approximate.

The curve under Type 6F5 also applies to the 6SF5 and 6SF5-GT.

← Indicates a change.

May 1, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

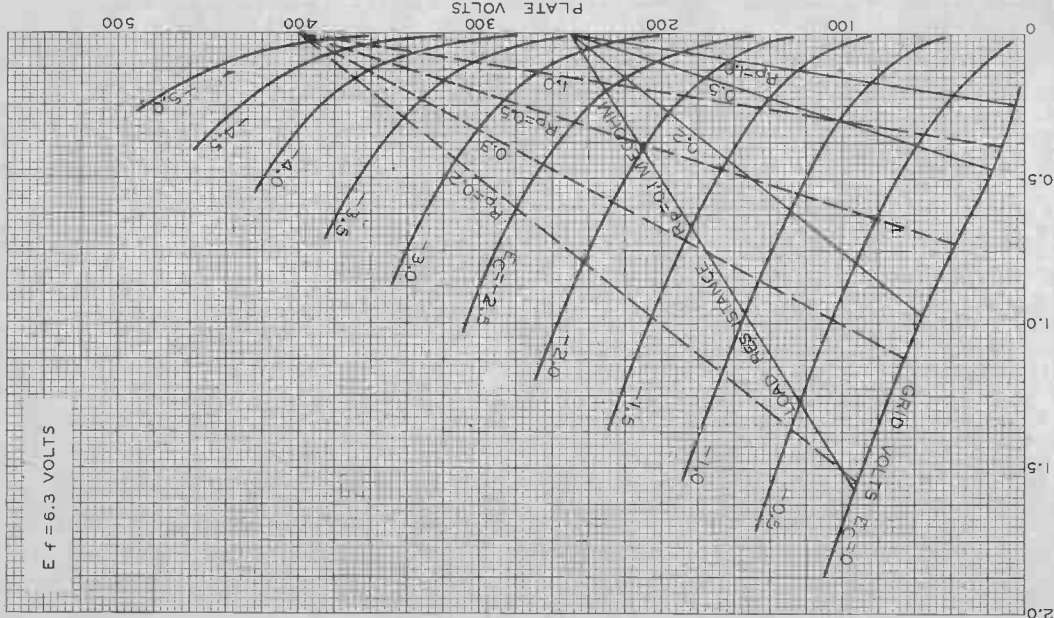
DATA



6SF5

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS



6SF5

SEPT. 23 1938

RCA RADIIOTRON DIVISION,
RCA MANUFACTURING COMPANY, INC.

PLATE MILLIAMPERES

92C-4974



6SF7

6SF7

**DIODE—SUPER-CONTROL AMPLIFIER PENTODE**

SINGLE-ENDED METAL TYPE

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	0.004 max.	μf
Input	5.5	μf
Output	6.0	μf
<i>Pentode Grid to Diode</i>	0.002 max.	μf
<i>Pentode Plate to Diode</i>	0.8	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
Pin 2—Pentode Grid		Pin 6—Pentode Plate
Pin 3—Cathode		Pin 7—Heater
Pin 4—Screen		Pin 8—Heater
Mounting Position		Any



BOTTOM VIEW (7AZ)

PENTODE UNIT - AMPLIFIER

Plate Voltage		300 max. volts
Screen Voltage		100 max. volts
Screen-Supply Voltage		300 max. volts
Grid Voltage		0 min. volts
Plate Dissipation		3.5 max. watts
Screen Dissipation		0.5 max. watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>		
Plate	100	250 volts
Screen	100	100 volts
Grid	-1	-1 volts
Plate Resistance (Approx.)	0.2	0.7 megohm
Transconductance	1975	2050 μmhos
Grid Bias (Approx.) †	-35	-35 volts
Plate Current	12	12.4 ma.
Screen Current	3.4	3.3 ma.

DIODE UNIT - One

Consideration of this unit is similar to that given under Type 6B8-G with the exception that there is one diode in Type 6SF7. Diode curves shown under Type 6B7 apply to the 6SF7.

■ 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 transconductance of 10 μmhos.

← Indicates a change.

Dec. 1, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

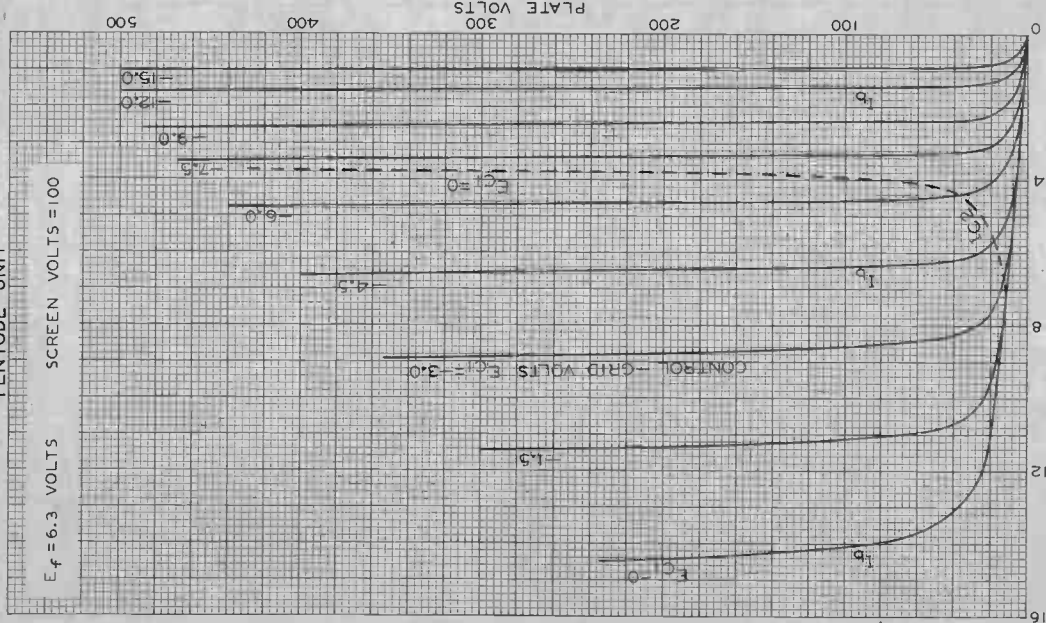
TENTATIVE DATA

6SF7



6SF7

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



FEB. 20, 1941

PLATE (I_b) OR SCREEN (I_{c2}) MILLIAMPERESRCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6254

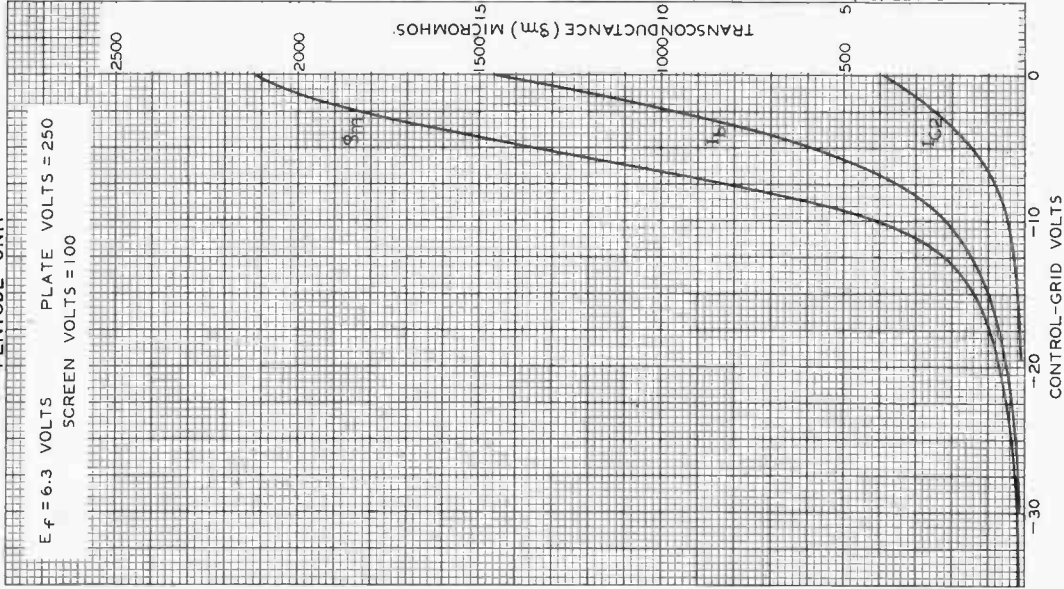


6SF7

6SF7

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT

$E_f = 6.3$ VOLTS PLATE VOLTS = 250
SCREEN VOLTS = 100



FEB. 20, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6256



65G7

65G7

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: ^o		
Grid to Plate	0.003 max.	μf
Input	8.5	μf
Output	7.0	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 - 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.

o with shell connected to cathode.

← Indicates a change.

May 1, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

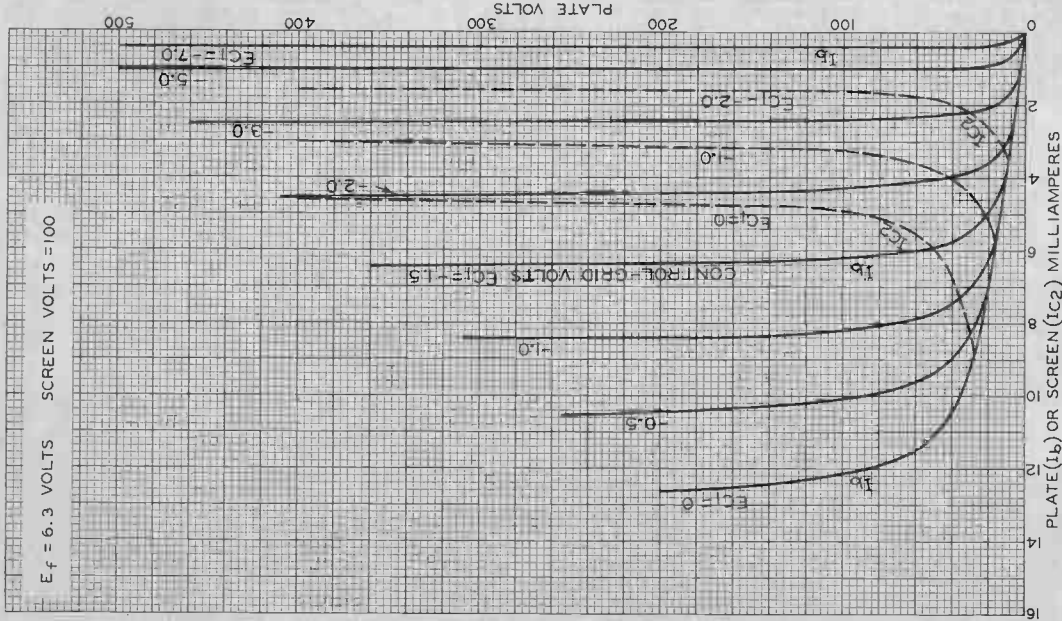
TENTATIVE DATA

6SG7



6SG7

AVERAGE PLATE CHARACTERISTICS



APRIL 16, 1942

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6253R2



6SG7

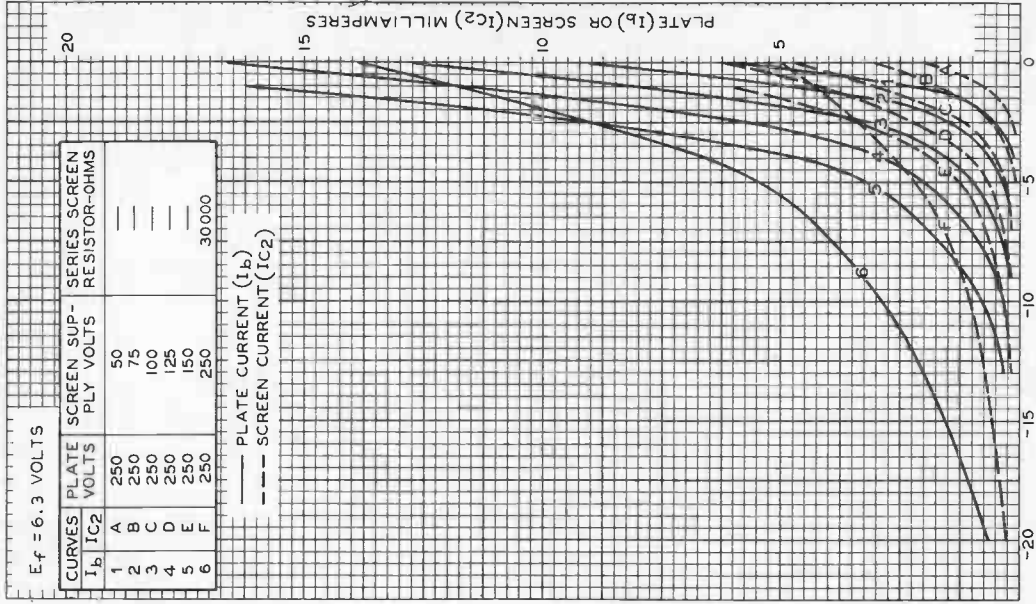
6SG7

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS

CURVES I_b	PLATE VOLTS I_{c2}	SCREEN SUP- PLY VOLTS	SERIES SCREEN RESISTOR-OHMS
1 A	250	50	—
2 B	250	75	—
3 C	250	100	—
4 D	250	125	—
5 E	250	150	—
6 F	250	250	30000

— PLATE CURRENT (I_b)
 - - - SCREEN CURRENT (I_{c2})



6SG7

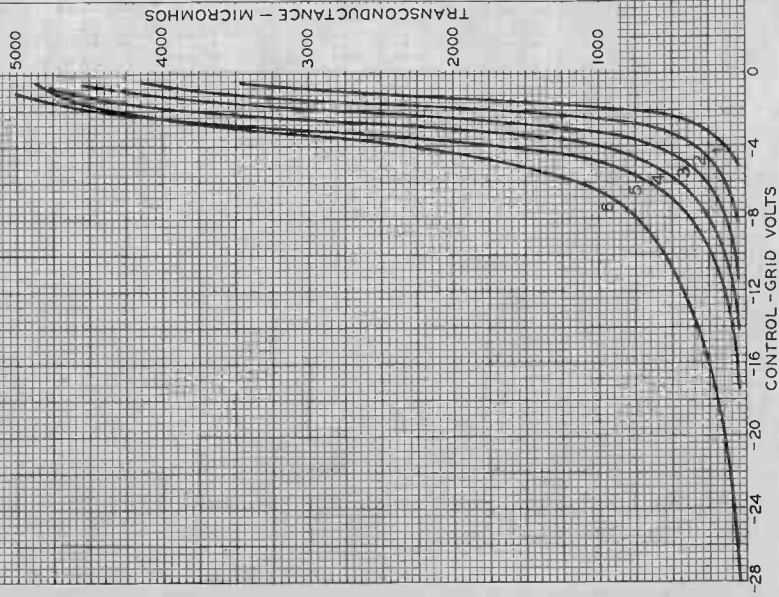


6SG7

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

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: [○]		
Grid to Plate	0.003 max.	μf
Input	8.5	μf
Output	7.0	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 - 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

Typical Operation and Characteristics - Class A₁ Amplifier:

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	μmhos
Grid Bias for			
Plate Current = 10 μamp.	-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.
- With shell connected to cathode.

← Indicates a change.

June 1, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

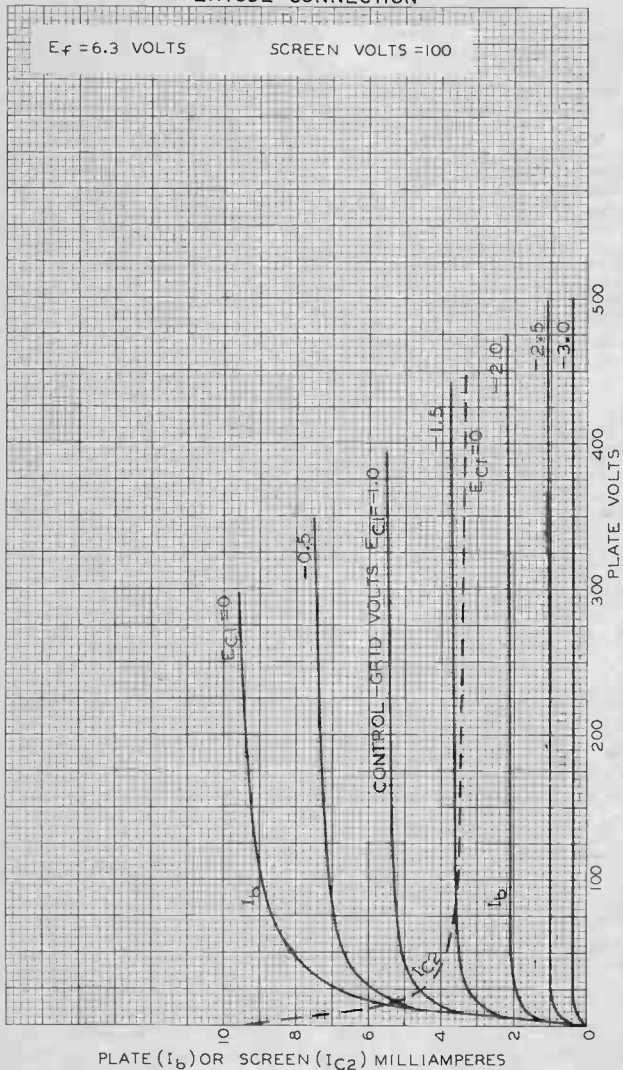
TENTATIVE DATA

6SH7



6SH7

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



JULY 24, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY INC

92C-6300



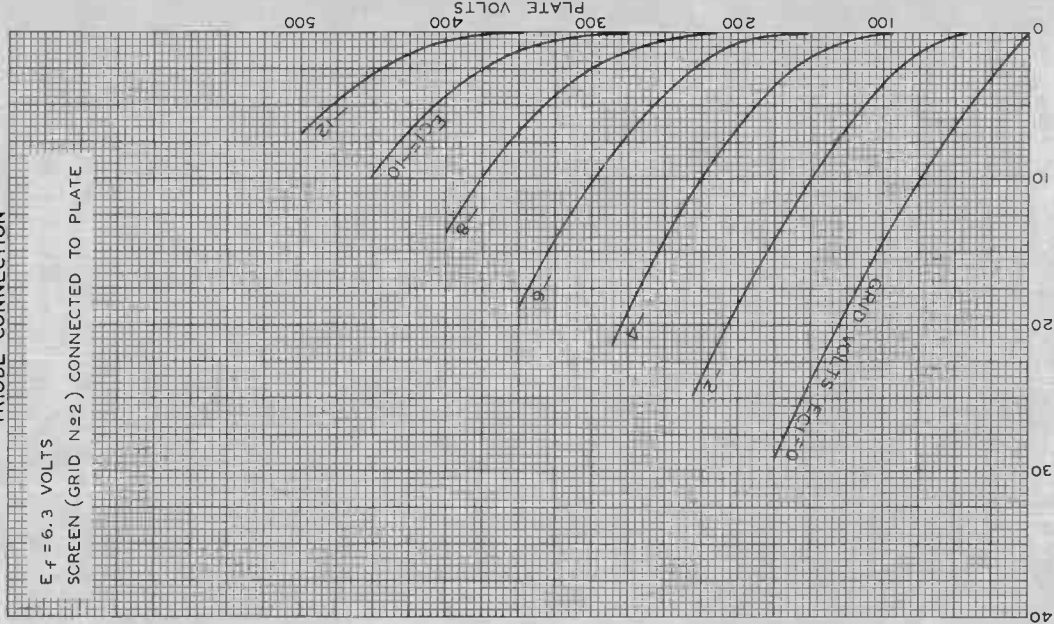
6SH7

6SH7

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION

$E_f = 6.3$ VOLTS

SCREEN (GRID N=2) CONNECTED TO PLATE



MAY 11, 1942

PLATE MILLIAMPERES

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

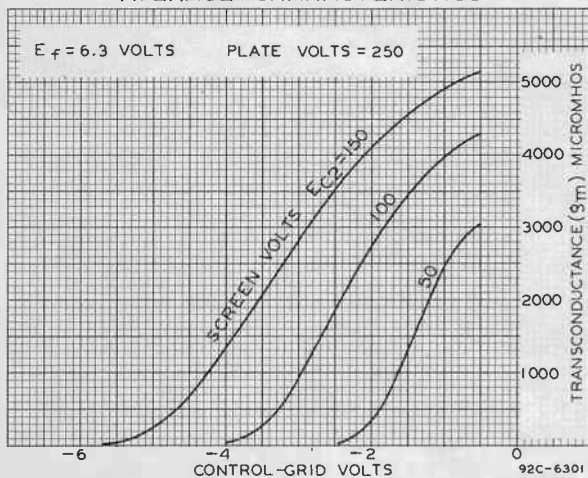
92C-6395

6SH7

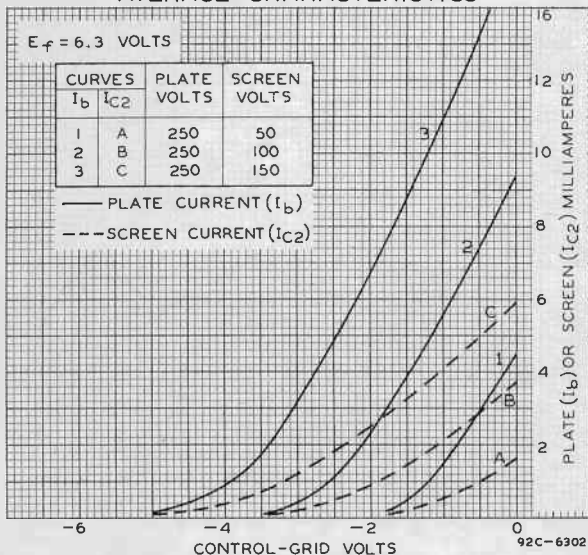


6SH7

AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS



MAY 14, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6401

World Radio History



6SJ7
6SJ7-GT

6 SJ7, 6SJ7-GT SHARP-CUTOFF PENTODE

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.	μf ←
Input	6	7	μf ←
Output	7	7	μf ←
Triode Connection*:			
Grid No.1 to Plate	2.8	2.8	μf ←
Grid No.1 to Cathode.	3.4	3.4	μf ←
Plate to Cathode	11	11	μf ←

^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:

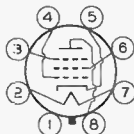
Mounting Position.	Any	Any
Maximum Overall Length	2-5/8"	3-5/16"
Maximum Seated Length.	2-1/16"	2-3/4"
Maximum Diameter	1-5/16"	1-5/16"
Bulb	Metal Shell, MT8G	T-9
Base	{ Small-Wafer Octal 8-Pin	Sm.-Wafer Octal 8-Pin, Sleeve
Basing Designation	8N	GT-8N

BOTTOM VIEW

Pin 1 { 6SJ7, Shell
6SJ7-GT,
Base Sleeve

Pin 2 - Heater

Pin 3 - Grid No. 3



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
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

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	..	μmhos
Grid-No.1 Bias (Approx.) for plate current of 10 μamp	-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	..	μmhos
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*

→ Indicates a change.

6SJ7
RCS9



6SJ7

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION

$E_f = 6.3$ VOLTS
GRID-N ϕ 2 VOLTS=100
GRID-N ϕ 3 VOLTS=0

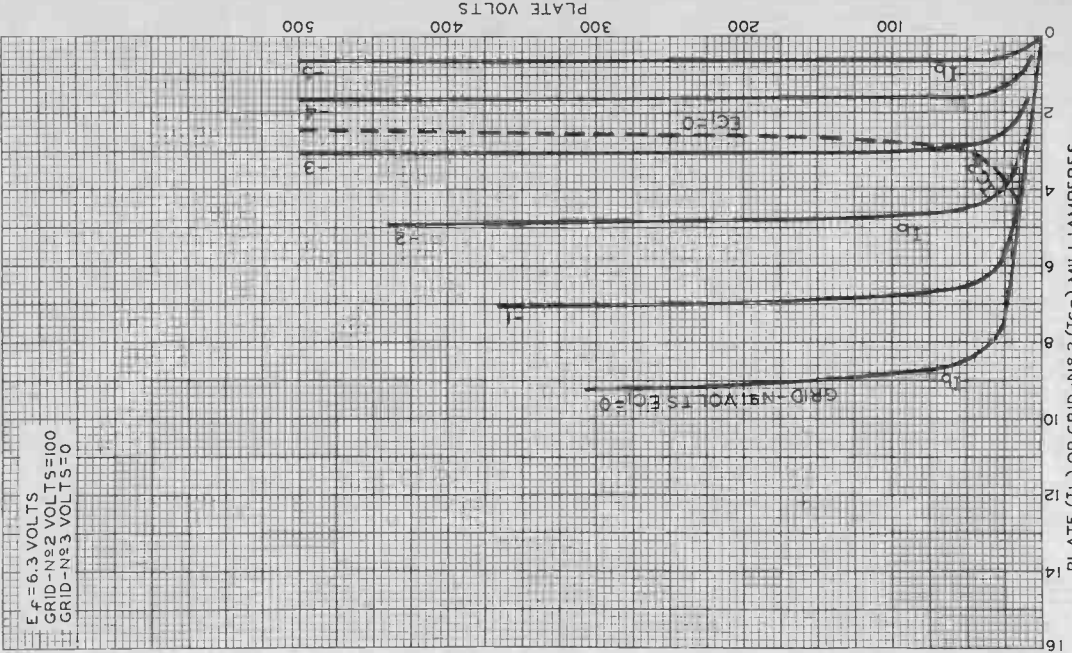


PLATE (I_b) OR GRID-N ϕ 2 (I_{c2}) MILLIAMPERES

OCT. 16, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4939R1

6SJ7



6SJ7

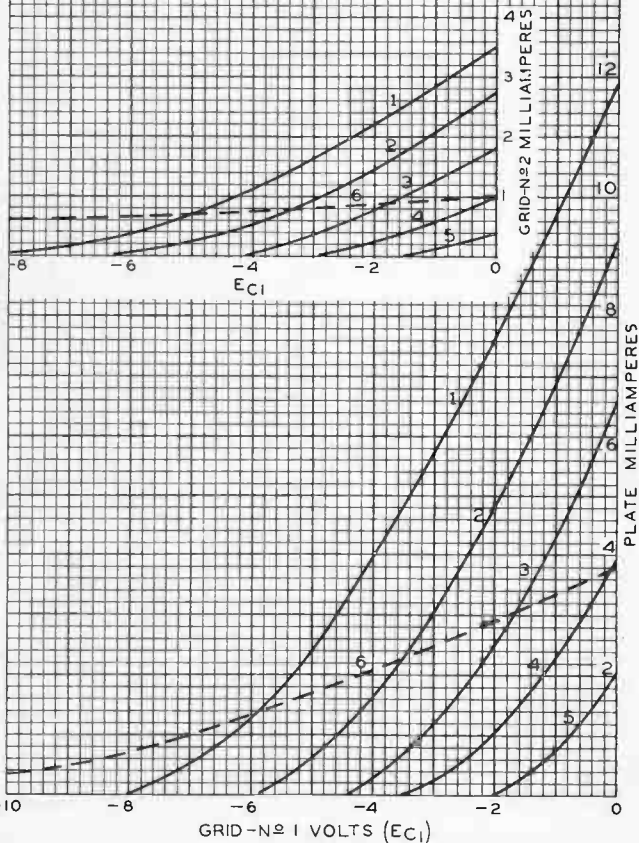
AVERAGE CHARACTERISTICS
PENTODE CONNECTION

$E_f = 6.3$ VOLTS

PLATE VOLTS = 300

GRID-N^o3 VOLTS = 0

CURVE	GRID-N ^o 2 SUPPLY VOLTS	SERIES GRID-N ^o 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



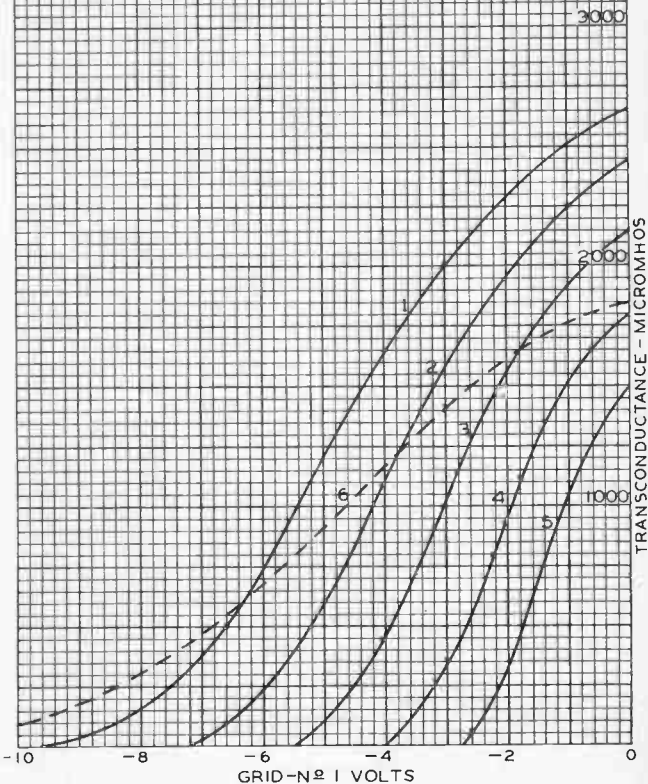
6SJ7

AVERAGE CHARACTERISTICS
PENTODE CONNECTION

6SJ7

$E_f = 6.3$ 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
World Radio History

92CM-6444R1

6SJ7

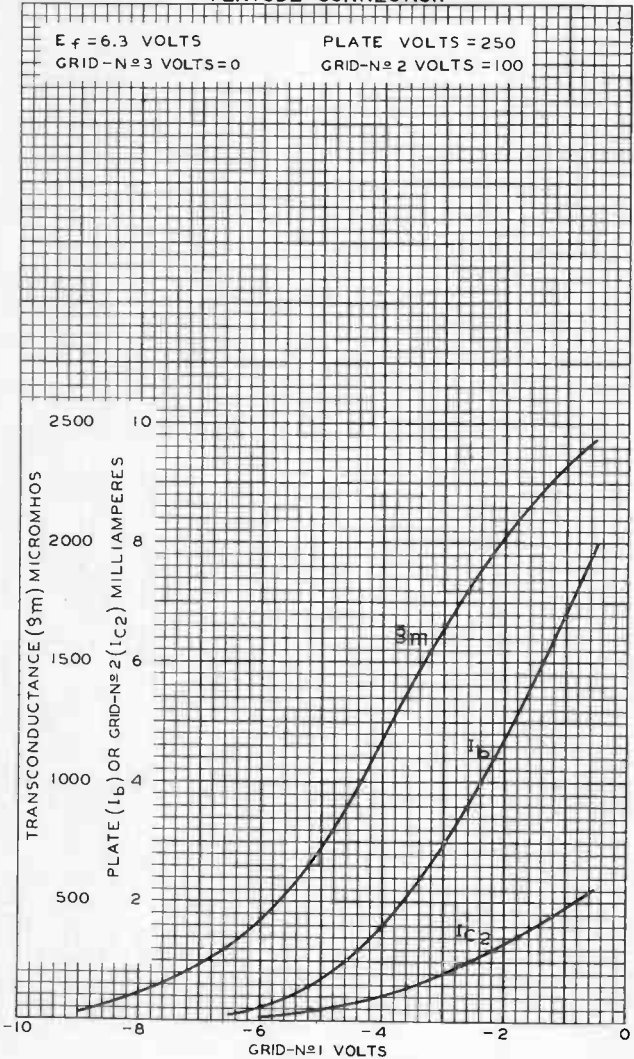


6SJ7

AVERAGE CHARACTERISTICS PENTODE CONNECTION

$E_f = 6.3$ VOLTS
GRID-N \circ 3 VOLTS = 0

PLATE VOLTS = 250
GRID-N \circ 2 VOLTS = 100



MARCH 5, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-4937R1

World Radio History



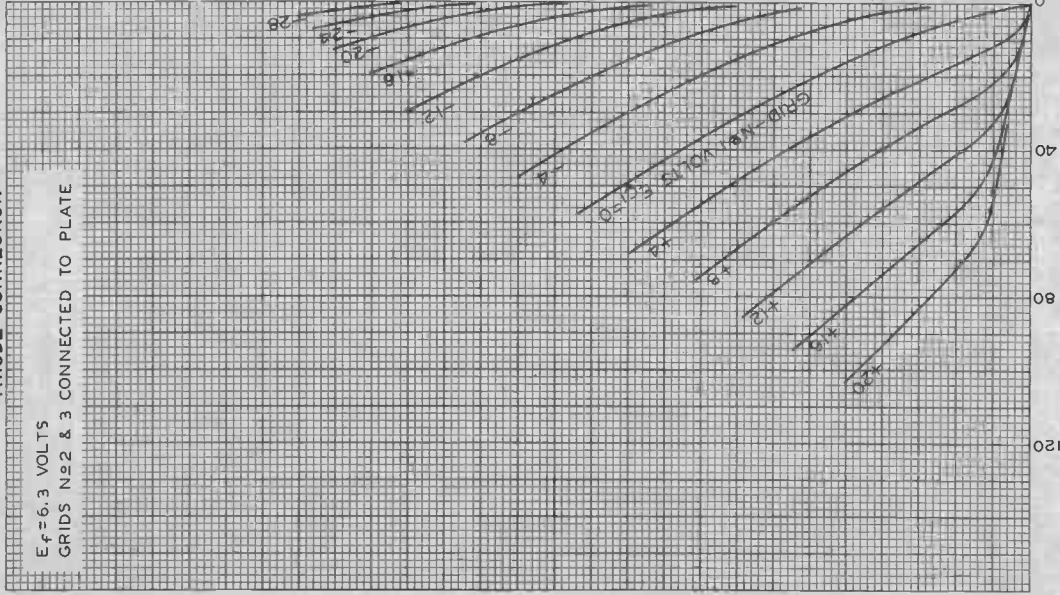
6SJ7

6SJ7

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION

$E_f = 6.3$ VOLTS

GRIDS No 2 & 3 CONNECTED TO PLATE



MAY 12, 1948

PLATE MILLIAMPERES

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6409RI



6SK7, 6SK7-GT/G

6SK7
6SK7-GT/G

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

	Coated Unipotential Cathode	
Heater Voltage	6.3	a-c or d-c volts
Heater Current	0.3	amp.
	<u>6SK7</u>	<u>6SK7-GT/G</u>
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
Mounting Position		Pin 7 - Heater
		Pin 8 - Plate



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 A₁ 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
Transcond.	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.

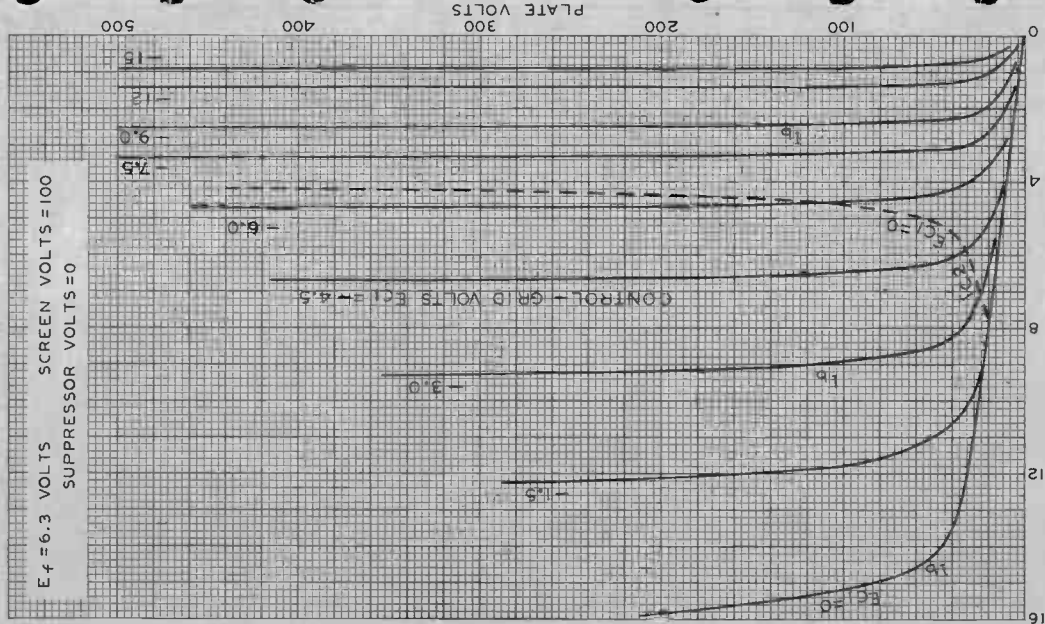
6SK7



6SK7

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS SCREEN VOLTS = 100
SUPPRESSOR VOLTS = 0



JUNE 24, 1938

RCA RADIIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

PLATE (I_b) OR SCREEN (I_{c2}) MILLIAMPERES

92C-4940



6SK7

6SK7

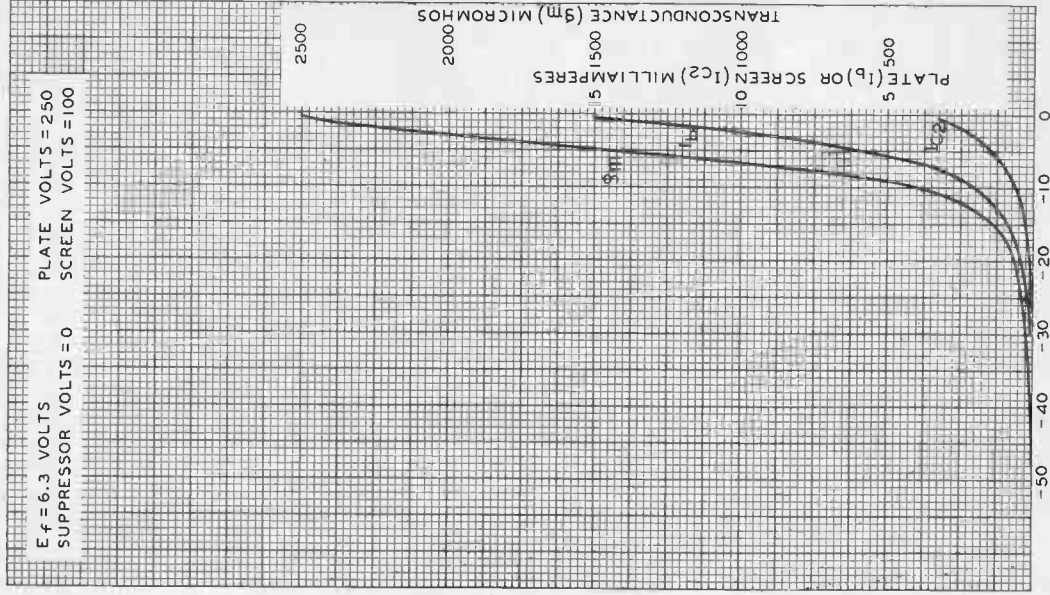
AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS

PLATE VOLTS = 250

SUPPRESSOR VOLTS = 0

SCREEN VOLTS = 100



JUNE 23, 1938

RCA RADIIOTRON 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 (JETEC No. B8-6)
 or Short Intermediate-Shell Octal 8-Pin (JETEC No. B8-46)
 Basing Designation for BOTTOM VIEW 8B0

- | | | |
|-------------------------------|--|-------------------------------|
| Pin 1 - Grid of Unit No. 1 | | Pin 5 - Plate of Unit No. 1 |
| Pin 2 - Plate of Unit No. 2 | | Pin 6 - Cathode of Unit No. 1 |
| Pin 3 - Cathode 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. 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 (JETEC 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 hos
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
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

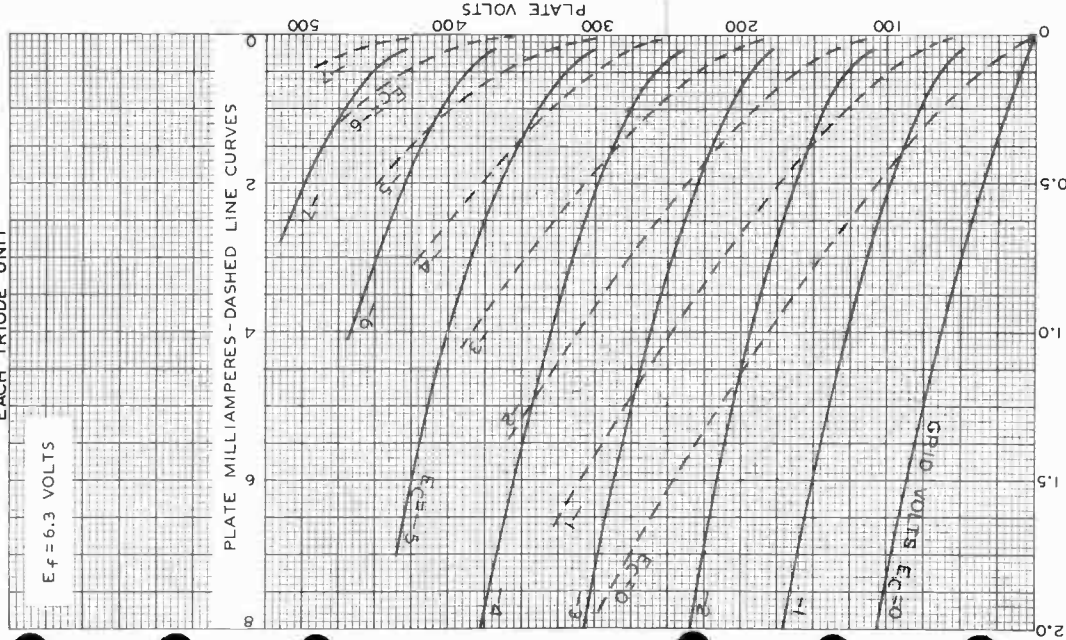
DATA



6SL7-GT

AVERAGE PLATE CHARACTERISTICS
EACH TRIODE UNIT

$E_f = 6.3$ VOLTS



JUNE 16, 1941

PLATE MILLIAMPERES - SOLID LINE CURVES
TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6298

6SL7-GT



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			
	<u>Triode Unit f_1</u>	<u>Triode Unit f_2</u>	
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.	6700	7700	ohms
Transcond.	3000	2600	μmhos
Plate Cur.	10	9	ma.

Typical Operation with Resistance Coupling:

Same as for Type 6F8-G in RESISTANCE-COUPLED AMPLIFIER CHART.

^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

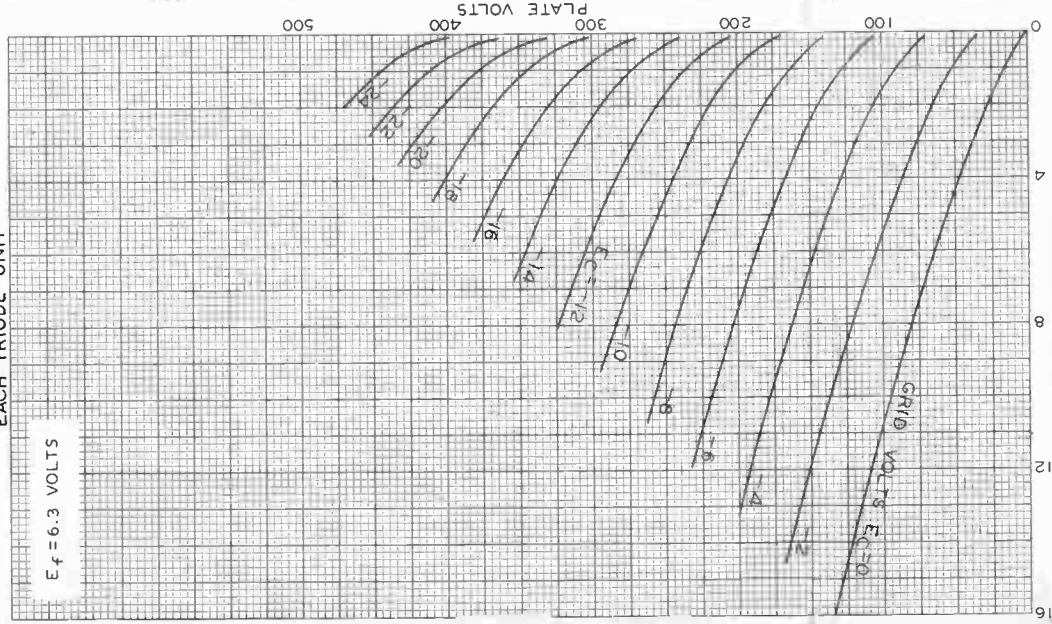
6SN7GT



6SN7-GT

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT

$E_f = 6.3$ VOLTS



FEB. 21, 1941

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

92CM-6257



6SN7-GTA

6SN7-GTA

MEDIUM-MU TWIN TRIODE

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	$\mu\mu\text{f}$

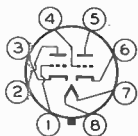
Characteristics, Class A₁ Amplifier (Each Unit):

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	8B8

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
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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.

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
World Radio History



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
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PEAK POSITIVE-PULSE PLATE VOLTAGE [#] (Absolute Maximum)	1500 [■]	max.	volts
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PEAK NEGATIVE-PULSE GRID VOLTAGE	250	max.	volts
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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.

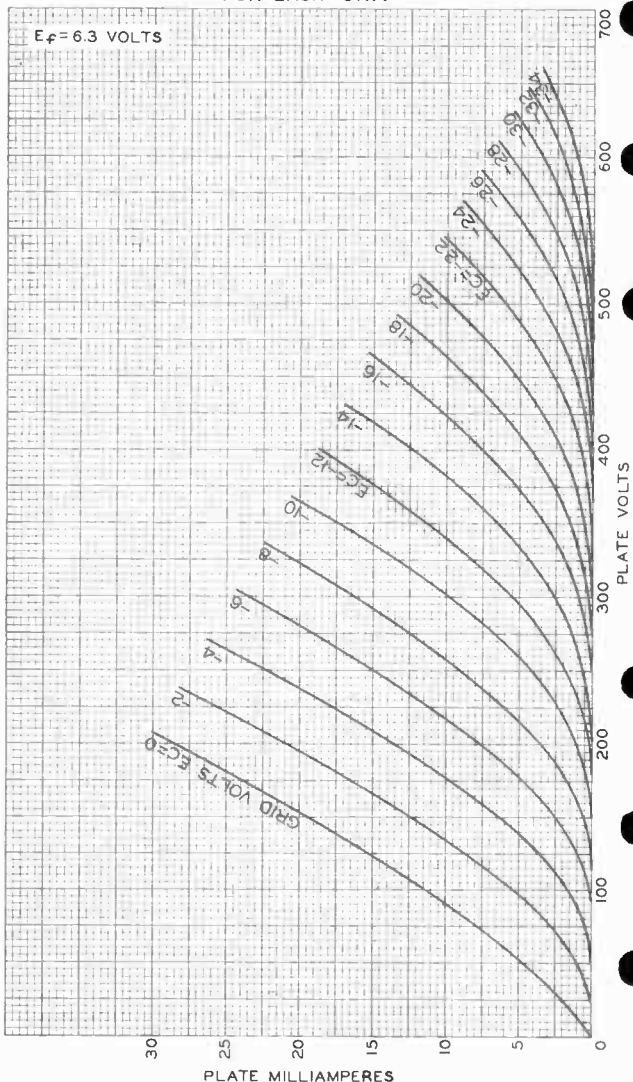
[■] under no circumstances should this absolute value be exceeded.

6SN7-GTA



6SN7-GTA

AVERAGE PLATE CHARACTERISTICS
FOR EACH UNIT



APRIL 28, 1954

PLATE MILLIAMPERES

TUBE DIVISION

92CM-8322

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

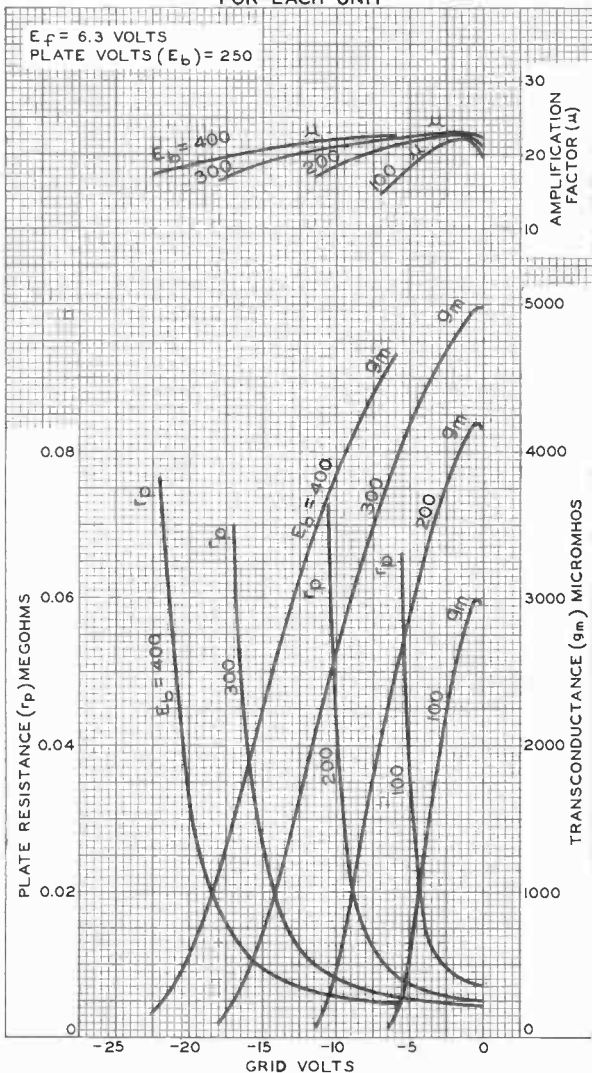
World Radio History



6SN7-GTA

6SN7-GTA

AVERAGE CHARACTERISTICS FOR EACH UNIT



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:

Grid to Plate	1.6	1.8 μmf
Grid to Cathode	3.2	4.2 μmf
Plate to Cathode	3.0	3.4 μmf
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 8Q	{ Small Wafer Octal 8-Pin, Sleeve GT-8Q
------	------------------------------------	---

Basing Designation

Pin 1	{ 6SQ7, Shell
	{ 6SQ7-GT/G, Base Sleeve
Pin 2	-Triode Grid
Pin 3	-Cathode



Pin 4	-Diode Plate #2
Pin 5	-Diode Plate #1
Pin 6	-Triode Plate
Pin 7	-Heater
Pin 8	-Heater

Mounting Position		Any
-------------------	--	-----

BOTTOM VIEW

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

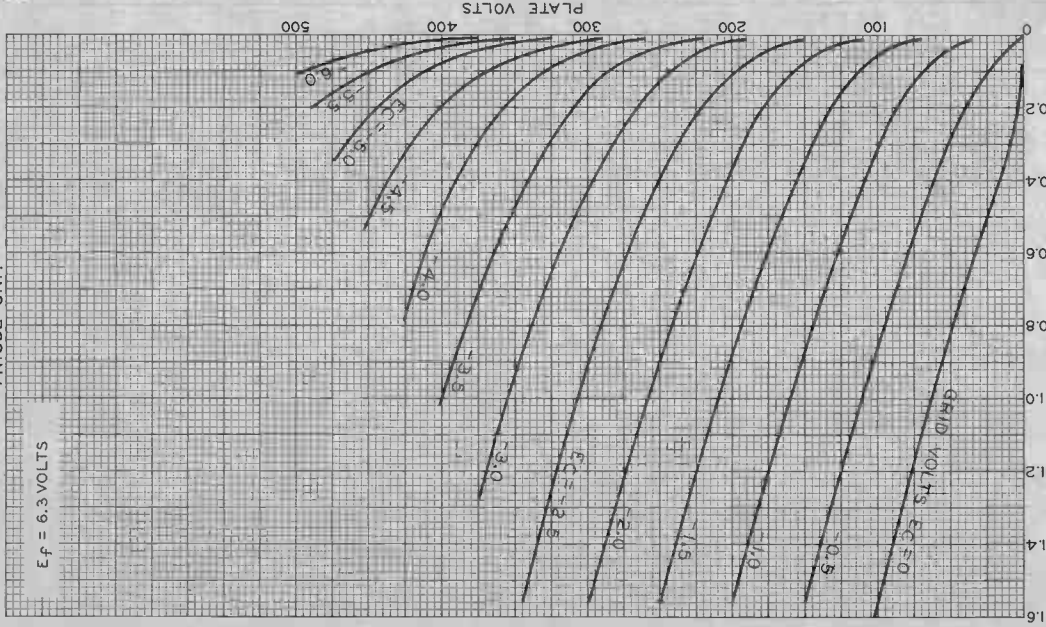
65Q7



65Q7

AVERAGE PLATE CHARACTERISTICS

TRIODE UNIT



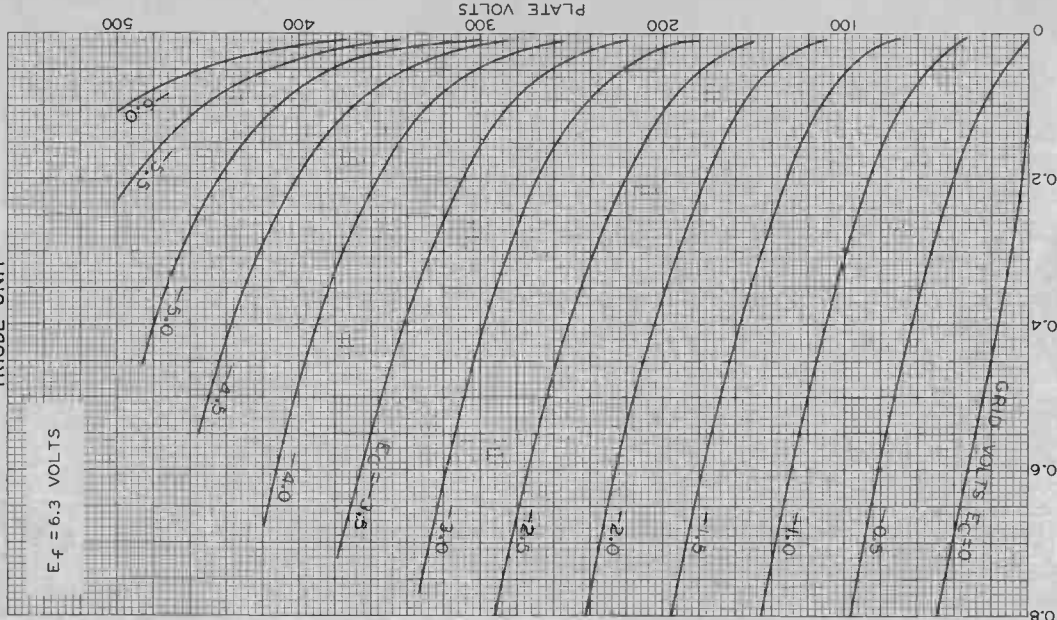


6SQ7

6SQ7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

$E_f = 6.3$ VOLTS



AUG. 13, 1941

PLATE MILLIAMPERES

RCA TRIODION 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 RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

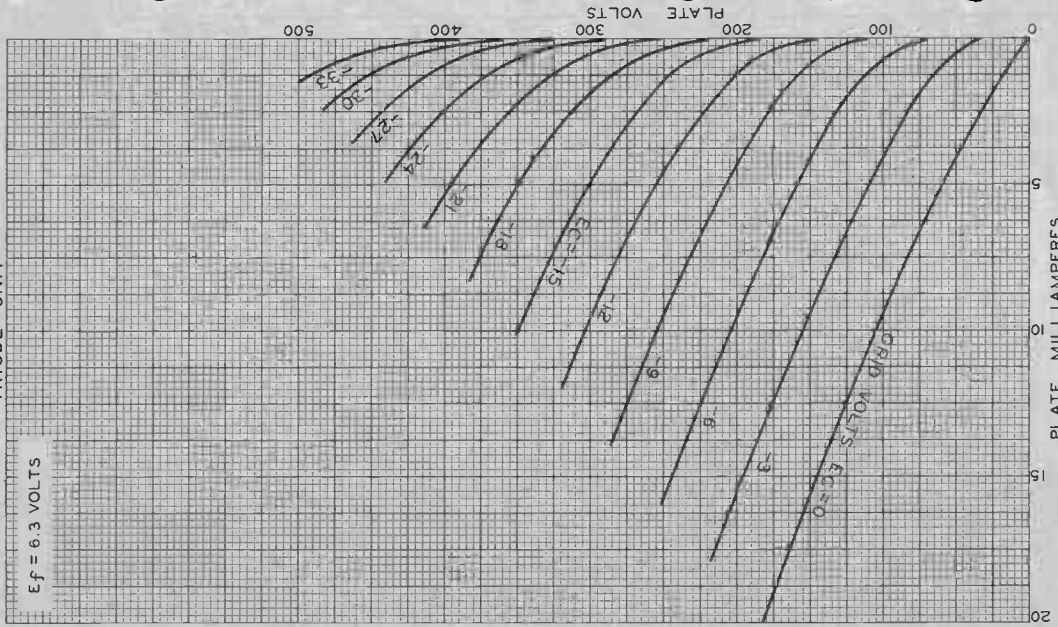
TENTATIVE DATA



6SR7

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

$E_f = 6.3$ VOLTS



6SR7

JAN. 14, 1936

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

PLATE MILLIAMPERES

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: [○]			
Grid to Plate	0.004 max.	μf	
Input	5.5	μf	
Output	7.0	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 - 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.
- With shell connected to cathode.

May 1, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA

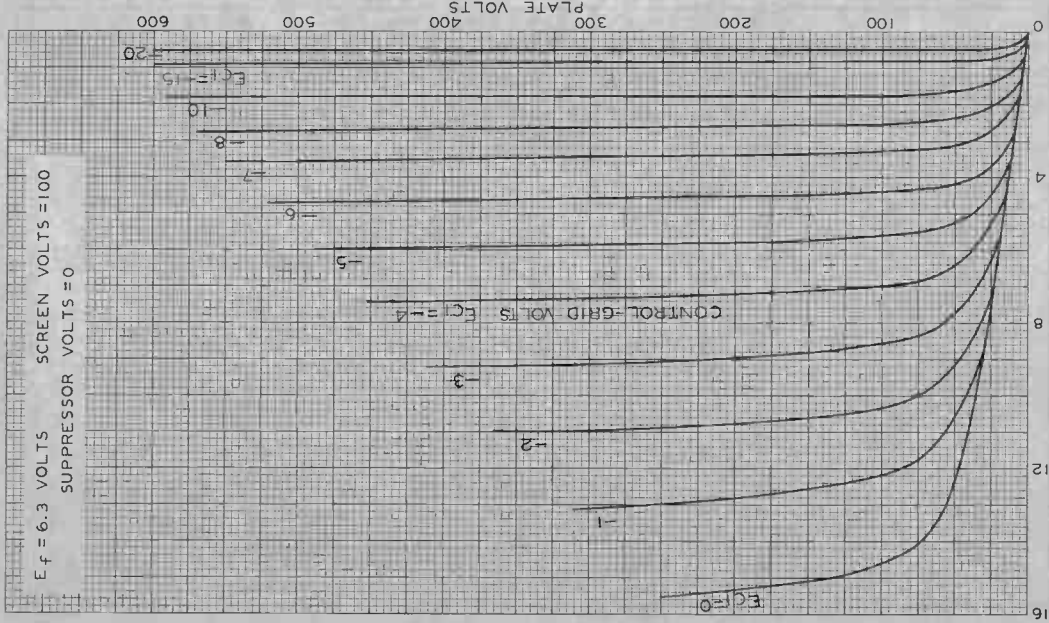


6SS7

6SS7

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS
SCREEN VOLTS = 100
SUPPRESSOR VOLTS = 0



APR. 31, 1941

PLATE MILLIAMPERES

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6270



6ST7



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

Triode Unit:

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

TRIODE UNIT

Plate Voltage 250 max. volts

Plate Dissipation 2.5 max. watts

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.

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 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.

6ST7

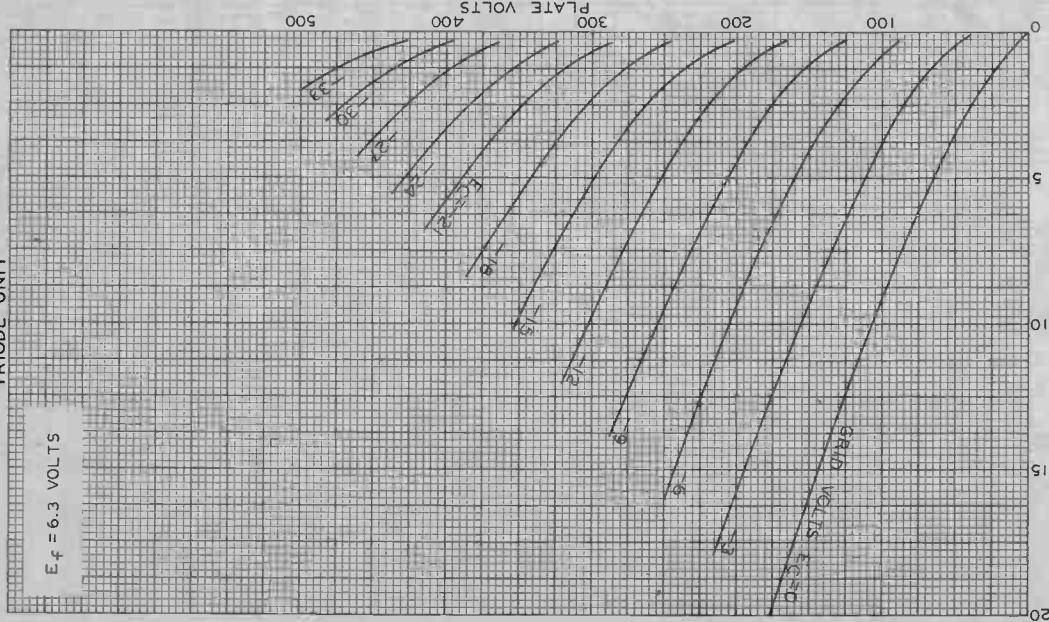


6ST7

AVERAGE PLATE CHARACTERISTICS

TRIODE UNIT

$E_f = 6.3$ VOLTS



DEC. 4, 1941

PLATE MILLIAMPERES

RCA RADIIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6342



6T4

6T4

MEDIUM-MU TRIODE

7-PIN MINIATURE TYPE

For UHF TV service

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	With External Shield ^o	
Grid to plate.	1.7	1.7	$\mu\mu\text{f}$
Grid to cathode and heater .	2.6	3.2	$\mu\mu\text{f}$
Plate to cathode and heater.	0.40	2.0	$\mu\mu\text{f}$
Heater to cathode.	3.0	3.0*	$\mu\mu\text{f}$
Grid to cathode.	2.4	2.4*	$\mu\mu\text{f}$
Plate to cathode	0.24	0.22	$\mu\mu\text{f}$

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:

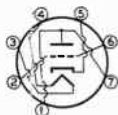
Mounting Position.	Any
Maximum Overall Length	1-3/4"
Maximum Seated Length.	1-1/2"
Length, Base Seat to Bulb Top (Excluding tip).	1-1/8" \pm 3/32"
Maximum Diameter	3/4"
Dimensional Outline.	See General Section
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM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

PLATE VOLTAGE.	200 max.	volts
GRID CURRENT	8 max.	ma

^o with external shield JETEC No.316 connected to cathode, except as noted.

* with external shield JETEC 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

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:⁰

Triode unit:

Grid to plate	1.8	$\mu\mu\text{f}$
Grid to cathode & internal shield (pin 7), and heater	1.6	$\mu\mu\text{f}$
Plate to cathode & internal shield (pin 7), and heater	1.1	$\mu\mu\text{f}$
Diode-No.1 plate to cathode & internal shield (pin 7), and heater	3.8	$\mu\mu\text{f}$
Diode-No.2 plate to cathode & internal shield (pin 3), and heater	4.5	$\mu\mu\text{f}$
Diode-No.3 plate to cathode & internal shield (pin 7), and heater	3.8	$\mu\mu\text{f}$
Diode-No.2 cathode & internal shield (pin 3) to all other electrodes	8.5	$\mu\mu\text{f}$
Triode grid to any diode plate	0.035 max.	$\mu\mu\text{f}$

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" \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 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	



⁰ 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.

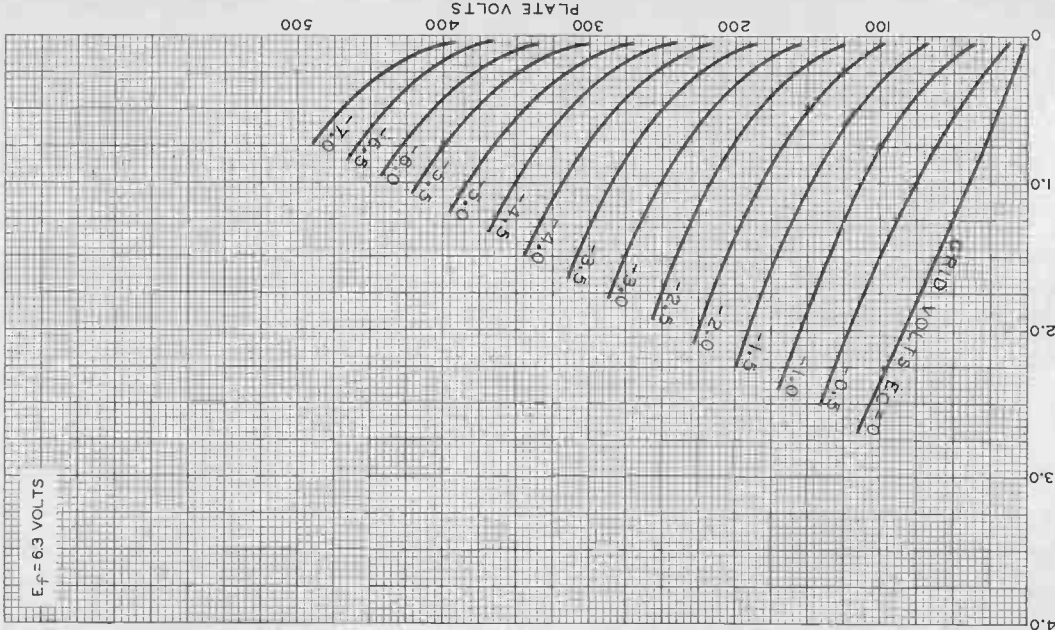
→ Indicates a change.



6T8

6T8

AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



AUG. 19, 1948

PLATE MILLIAMPERES

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7063



6U7-G

6U7-G



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. $\mu\mu\text{f}$
Input	5	5 $\mu\mu\text{f}$
Output	9	9 $\mu\mu\text{f}$
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	μmhos
Grid Bias for			
Transcond. of 2 μmhos	-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.

Sept. 2, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6U7-G



6U7-G

AVERAGE PLATE CHARACTERISTICS



AUG. 20, 1941

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6011R1



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*[▲] *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:

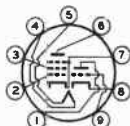
	Triode Unit	Pentode Unit	
Plate Supply Voltage	150	250	volts
Grid-No.2 Voltage	—	110	volts
Cathode-Bias Resistor	56	68	ohms
Amplification Factor	40	—	
Plate Resistance (Approx.)	5000	400000	ohms
Transconductance	8500	5200	μmhos
Grid-No.1 Bias (Approx.) for Plate Cur. of 10 μamp	-12	-10	volts
Plate Current	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

[▲] According to RTMA Standard ET-109A with external shield No. 315 tied to cathode of unit under test.

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

World Radio History



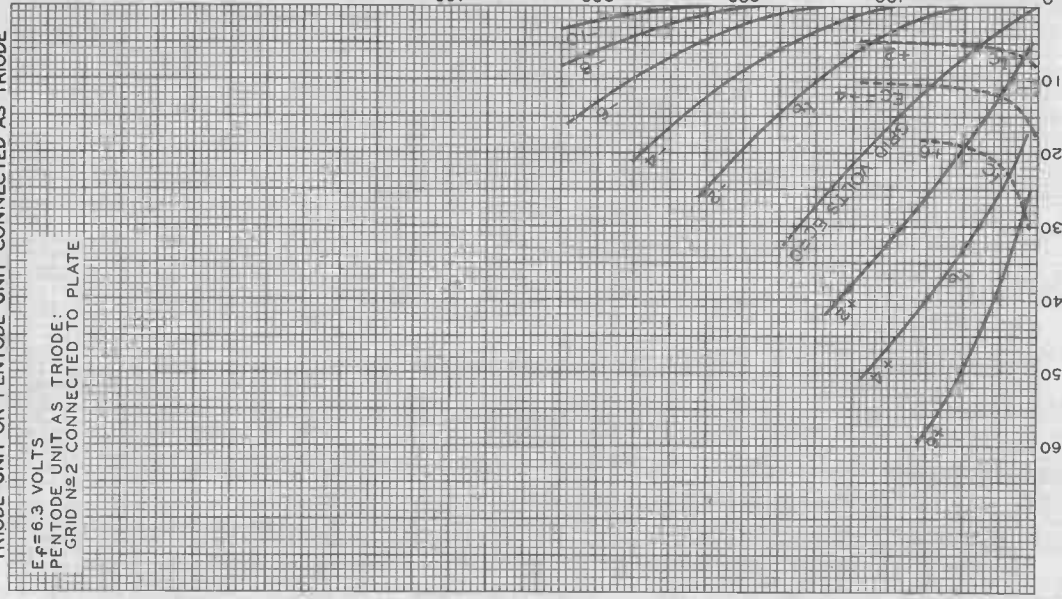
6U8

8U9

AVERAGE PLATE CHARACTERISTICS

TRIODE UNIT OR PENTODE UNIT CONNECTED AS TRIODE

$E_f = 6.3$ VOLTS
PENTODE UNIT AS TRIODE:
GRID N₂2 CONNECTED TO PLATE



NOV. 12, 1952

PLATE (I_b) OR GRID (I_c) MILLIAMPERES

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

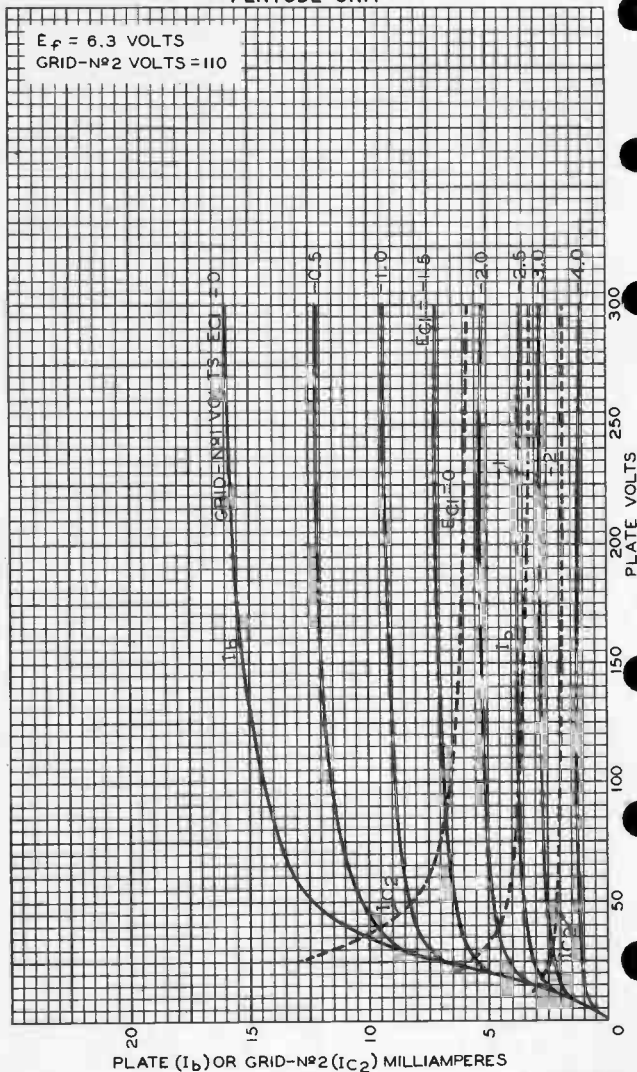
92CM-7873

6U8



6U8

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT



NOV. 11, 1952

TUBE DEPARTMENT

92CM-7869

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

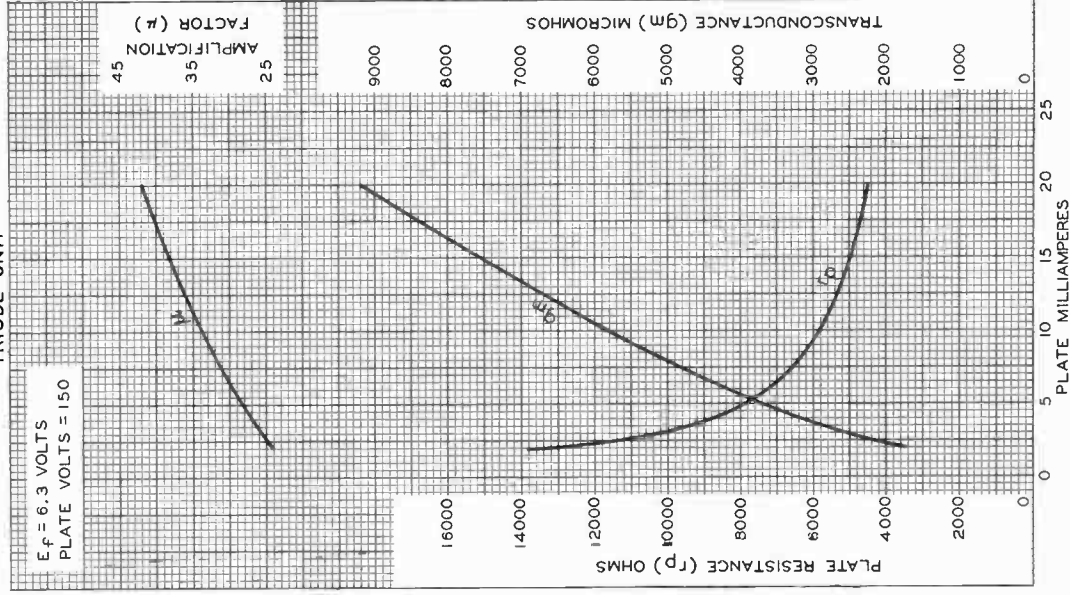


6U8

6U8

AVERAGE CHARACTERISTICS TRIODE UNIT

$E_f = 6.3$ VOLTS
PLATE VOLTS = 150



NOV. 12, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7871



6U8-A

6U8-A MEDIUM-MU TRIODE — SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

Intended for use in equipment having
series heater-strip arrangement

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.	2.5	2.5	μf
Plate to cathode and heater.	0.4	1	μf
<i>Pentode Unit:</i>			
Grid No.1 to plate.	0.010 max.	0.005 max.	μf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater.	5	5	μf
Plate to cathode & grid No.3 & internal shield, grid No.2, and heater	2.6	3.5	μf
Heater to cathode (Each unit)	3	3*	μf

Characteristics:

	Triode Unit	Pentode Unit	
Plate-Supply Voltage.	150	250	volts
Grid-No.2 (Screen-Grid) Supply Voltage.	—	110	volts
Cathode Resistor.	56	58	ohms
Amplification Factor.	40	—	
Plate Resistance (Approx.).	5000	400000	ohms
Transconductance.	8500	5200	μmhos
Plate Current	18	10	ma
Grid-No.2 Current	—	3.5	ma
Grid-No.1 Voltage (Approx.) for plate current of 10 μamp	-12	-10	volts

^o with external shield JETEC No.315 connected to cathode of unit under test; except as noted.

* with external shield JETEC No.315 connected to ground.



6U8-A

MEDIUM-MU TRIODE — SHARP-CUTOFF PENTODE

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	TC-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

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	

Rating Chart at front of Receiving Tube Section

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

Rating Chart at front of Receiving Tube Section

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

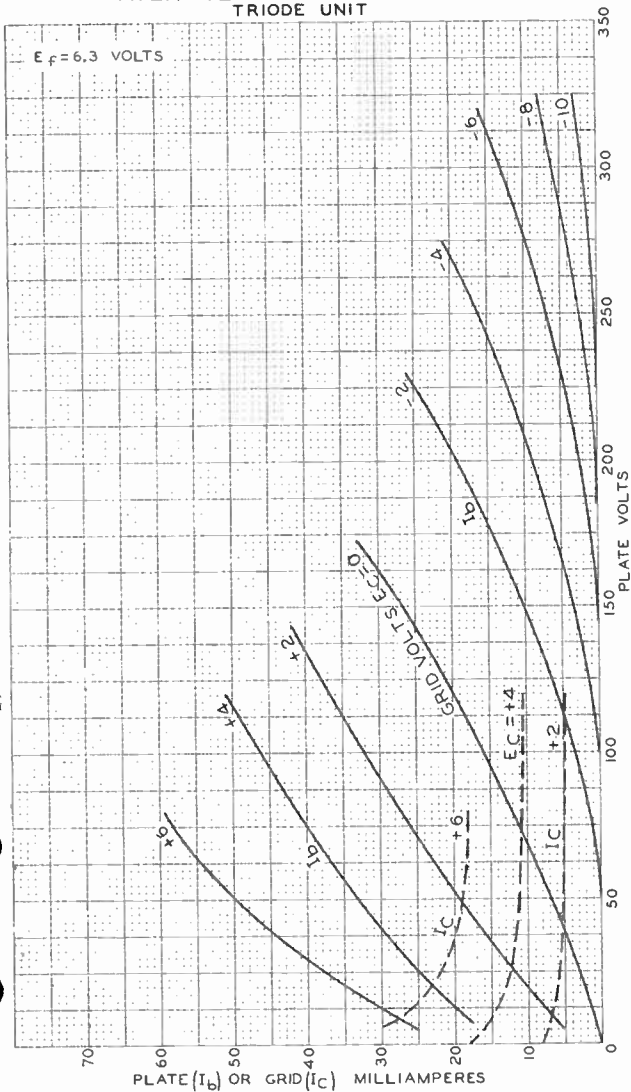
▲ The dc component must not exceed 100 .01's.



6U8-A

AVERAGE CHARACTERISTICS
TRIODE UNIT

6U8-A



TUBE DIVISION

92CM-7873R1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

6U8-A



6U8-A

AVERAGE CHARACTERISTICS PENTODE UNIT

$E_f = 6.3$ VOLTS
GRID-N₂ VOLTS = 110

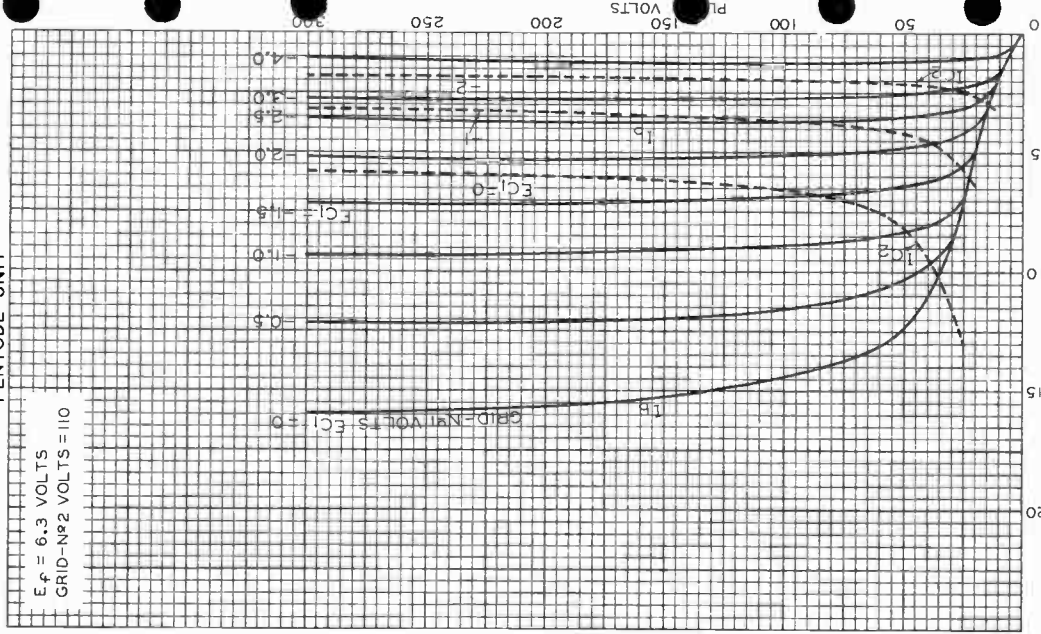


PLATE (I_b) OR GRID-N₂ (I_{C2}) MILLIAMPERES

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

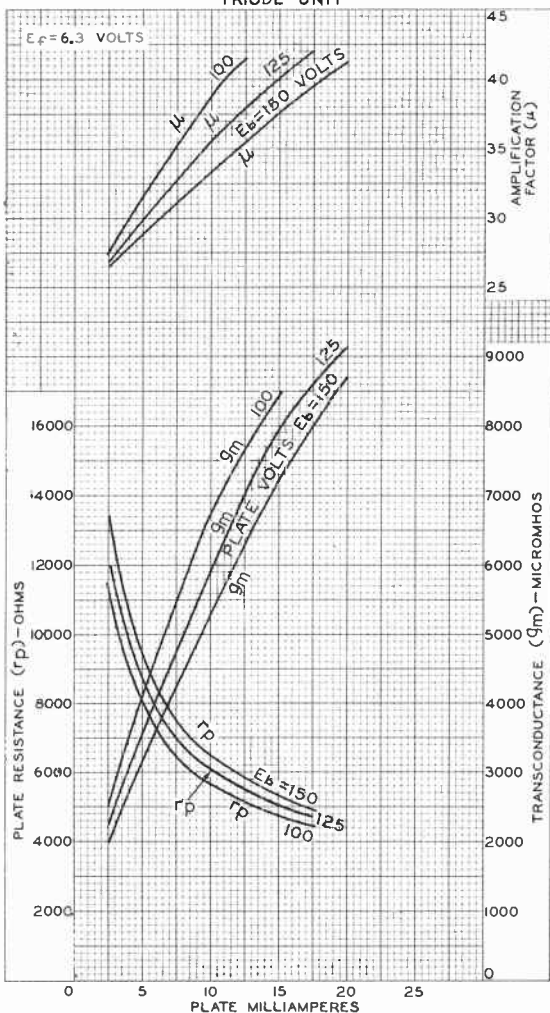
92CM-7869



6U8-A

6U8-A

AVERAGE CHARACTERISTICS
TRIODE UNIT



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-787IRI





6V3-A

6V3-A

HALF-WAVE VACUUM RECTIFIER

9-PIN MINIATURE TYPE

For Television Damper Service

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	$\mu\mu\text{f}$
Plate to cathode and heater	8	$\mu\mu\text{f}$
Cathode to plate and heater	9	$\mu\mu\text{f}$

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	9BD

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.

[□] 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

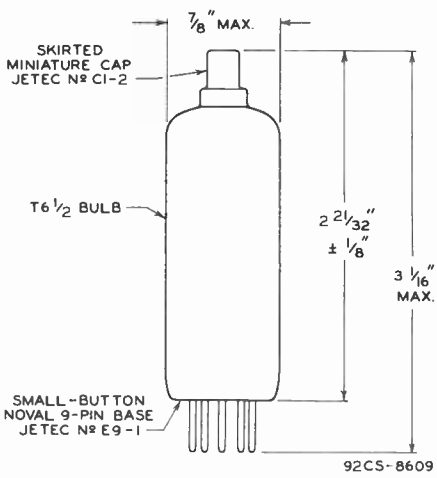
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

6V3-A



6V3-A

HALF-WAVE VACUUM RECTIFIER



MAY 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-8609

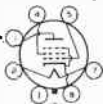


6V6, 6V6-GT/G

6V6
6V6-GT/G

BEAM POWER AMPLIFIER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.45	amp.
Direct Interelectrode Capacitances (Approx.):		
	6V6 ⁰⁰	6V6-GT/G ⁰⁰
Grid to Plate	0.3	0.7 μf
Input	10	9.5 μf
Output	11	7.5 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 { Octal 7-Pin	{ Intermed. Sh. { Octal 7-Pin
Basing Designation	7AC	G-7AC
Pin 1 { 6V6, Shell { 6V6-GT/G, No Con.		Pin 4 - Screen
Pin 2 - Heater		Pin 5 - Grid
Pin 3 - Plate		Pin 7 - Heater
Mounting Position		Pin 8 - Cathode
		Any



BOTTOM VIEW

Maximum Ratings Are Design-Center Values

SINGLE-TUBE AMPLIFIER

Plate Voltage		315 max.	volts
Screen Voltage		285 max.	volts
Plate Dissipation		12 max.	watts
Screen Dissipation		2 max.	watts
Typical Operation and Characteristics - Class A ₁ Amplifier:			
Plate Voltage	180	250	315 volts
Screen Voltage	180	250	225 volts
Grid Voltage	-8.5	-12.5	-13 volts
Peak A-F Grid Volt.	8.5	12.5	13 volts
Zero-Sig. Plate Cur.	29	45	34 ma.
Max.-Sig. Plate Cur.	30	47	35 ma.
Zero-Sig. Screen Cur.	3	4.5	2.2 approx. ma.
Max.-Sig. Screen Cur.	4	7	6 approx. ma.
Plate Resistance	58000	52000	77000 ohms
Transconductance	3700	4100	3750 μmhos
Load Resistance	5500	5000	8500 ohms
Tot. Harmonic Dist.	8	8	12 %
Max.-Sig. Power Output	2	4.5	5.5 watts

PUSH-PULL AMPLIFIER

Plate Voltage	315 max.	volts
Screen Voltage	285 max.	volts
Plate Dissipation	12 max.	watts
Screen Dissipation	2 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.
 00 With shell connected to cathode.
 00 With no external shield.

*: See next page.

← Indicates a change.

May 1, 1942

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

6V6
6V6-GT/G

6V6, 6V6-GT/G

BEAM POWER AMPLIFIER

(continued from preceding page)

Typical Operation and Characteristics - Class AB₁ Amplifier:
 Unless otherwise specified, values are for 2 tubes

Plate Voltage	250	285	volts
Screen Voltage	250	285	volts
Grid Voltage	-15	-19	volts
Peak A-F Grid-to-Grid Volt.	30	38	volts
Zero-Sig. Plate Cur.	70	70	ma.
Max.-Sig. Plate Cur.	79	92	ma.
Zero-Sig. Screen Cur.	5	4	approx. ma.
Max.-Sig. Screen Cur.	13	13.5	approx. ma.
Plate Resistance	60000	65000	approx. ohms
Transconductance	3750	3600	μmhos
Effec. Load Res.	10000	8000	ohms
Total Harmonic Dist.	5	3.5	%
Max.-Sig. Power Output	10	14	watts

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 to exceed 0.5 megohm.

May 1, 1942

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

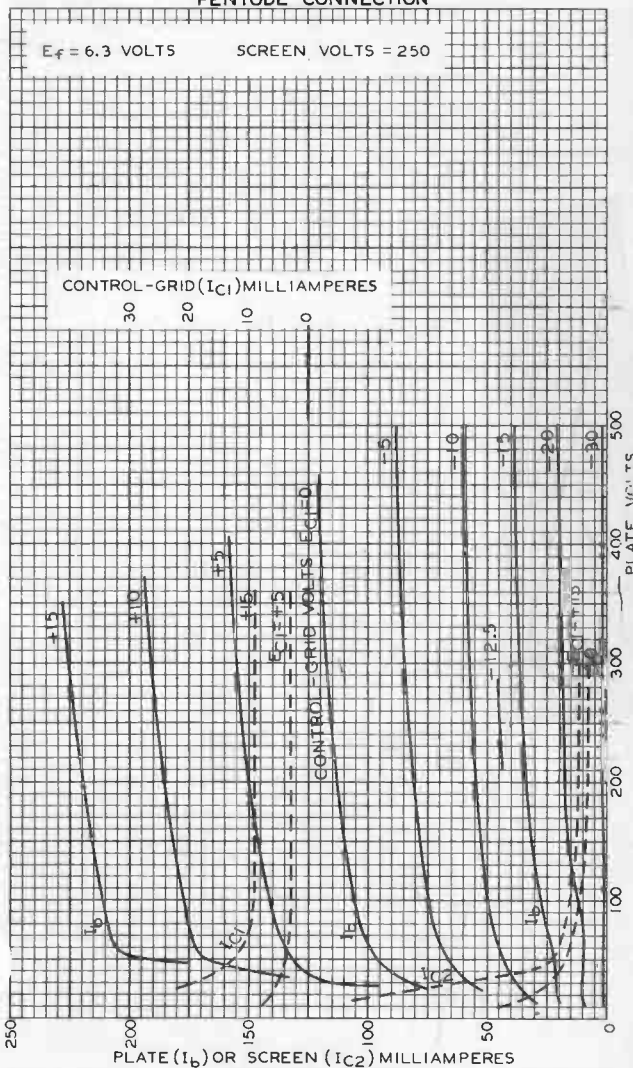
DATA



6V6

6V6

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



NOV. 3, 1941

RCA RADITRON DIVISION
RCA MANUFACTURING COMPANY, INC.

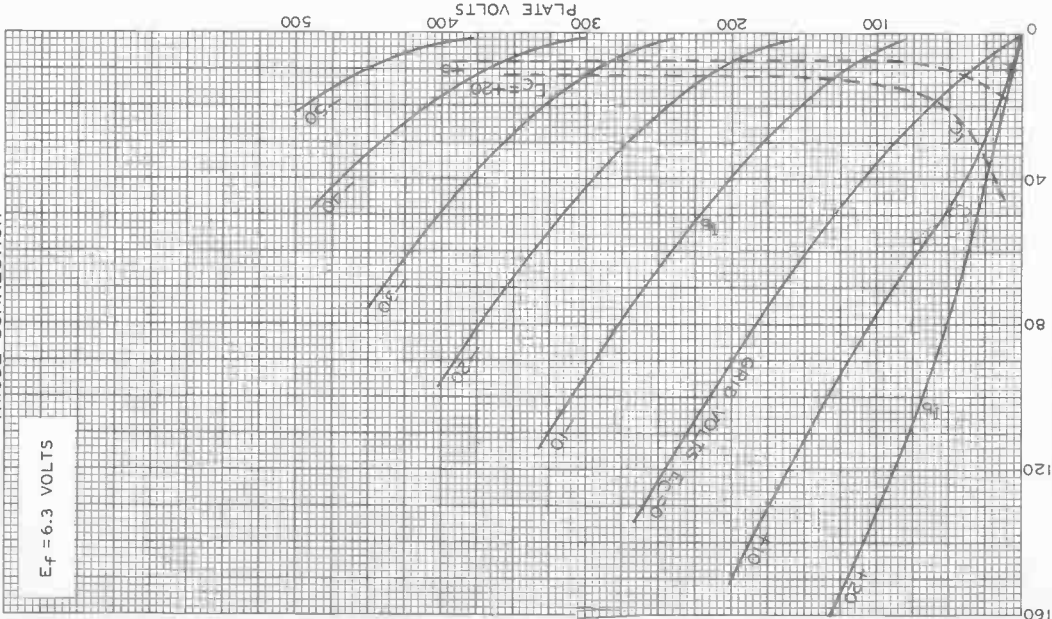
92C-4807R1



6V6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION

$E_f = 6.3$ VOLTS



6V6

NOV. 3, 1941

PLATE (I_b) OR GRID (I_c) MILLIAMPERES
RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6333

Beam Power Tube

The 6V6 is the same as the 6V6GTA except for the following items:

Electrical:

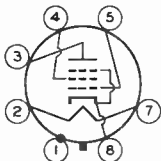
Heater, for Unipotential Cathode:

Warm-up time (Average)	a	sec
Direct Interelectrode Capacitances (Approx.): ^b		
Grid No.1 to plate.	0.3	μf
Grid No.1 to cathode & grid No.3, metal shell, grid No.2, and heater.	10	μf
Plate to cathode & grid No.3, metal shell, grid No.2, and heater.	11	μf

Mechanical:

Maximum Overall Length.	3-1/4"
Maximum Seated Length	2-11/16"
Maximum Diameter.	1-5/16"
Dimensional Outline	See <i>General Section</i>
Bulb.	Metal Shell MT8B
Base.	Small-Wafer Octal 7-Pin (JEDEC Group 1, No. B7-22)
Basing Designation for BOTTOM VIEW.	7AC

Pin 1 - Shell
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

6V6GT

Beam Power Tube

The 6V6GT is the same as the 6V6GTA except for the following items:

Heater, for Unipotential Cathode:

Warm-up time (Average)	a	sec
----------------------------------	---	-----

^a The heater for this type does not have controlled warm-up time.
^b without external shield.





6V6GTA

Beam Power Tube

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	6.3	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances

(Approx.): ^a		
Grid-No.1 to plate	0.7	μf
Grid-No.1 to cathode & grid No.3, grid No.2, and heater	9	μf
Plate to cathode & grid No.3, grid No.2, and heater	7.5	μf

Characteristics, Class A₁ Amplifier:

		Triode Connection ^b	
Plate Voltage	250	250	volts
Grid-No.2 Voltage	250	-	volts
Grid-No.1 Voltage	-12.5	-12.5	volts
Amplification Factor	-	9.8	
Plate Resistance (Approx.)	50000	1960	ohms
Transconductance	4100	5000	μmhos
Plate Current	45	49.5	ma
Grid-No.2 Current	4.5	-	ma
Grid-No.1 Voltage (Approx.) for plate ma. = 0.5	-	-36	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	3-5/16"
Maximum Seated Length	2-3/4"
Maximum Diameter	1-9/32"
Dimensional Outline	See <i>General Section</i>
Bulb	T9

Bases (Alternates):

Intermediate-Shell Octal:

7-Pin, Arrangement 1, (JEDEC Group 1, No. B7-7)

6-Pin, Arrangement 2, (JEDEC Group 1, No. B6-81)

Short Intermediate-Shell Octal with External Barriers:

7-Pin, (JEDEC Group 1, No. B7-59)

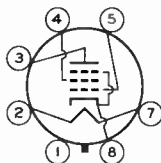
6-Pin, Arrangement 2, (JEDEC Group 1, No. B6-84)



6V6GTA

Basing Designation for BOTTOM VIEW. 7AC

Pin 1^c-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-Maximum Values:

PLATE VOLTAGE	350	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	315	max.	volts
GRID-No.2 INPUT	2.2	max.	watts
PLATE DISSIPATION	14	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^d	max.	volts

Typical Operation and Characteristics:

Plate Voltage	180	250	315	volts
Grid-No.2 Voltage	180	250	225	volts
Grid-No.1 (Control-Grid) Voltage.	-8.5	-12.5	-13	volts
Peak AF Grid-No.1 Voltage	8.5	12.5	13	volts
Zero-Signal Plate Current	29	45	34	ma
Max.-Signal Plate Current	30	47	35	ma
Zero-Signal Grid-No.2 Current	3	4.5	2.2	ma
Max.-Signal Grid-No.2 Current	4	7	6	ma
Plate Resistance (Approx.)	50000	50000	80000	ohms
Transconductance.	3700	4100	3750	μmhos
Load Resistance	3500	5000	8500	ohms
Total Harmonic Distortion	8	8	12	%
Max.-Signal Power Output.	2	4.5	5.5	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 A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	350	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	315	max.	volts
GRID-No.2 INPUT	2.2	max.	watts
PLATE DISSIPATION	14	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^d	max.	volts



Typical Operation and Characteristics:

Values are for two tubes

Plate Voltage	250	285	volts
Grid-No.2 Voltage	250	285	volts
Grid-No.1 (Control-Grid) Voltage	-15	-19	volts
Peak 4F 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-Signal Grid-No.2 Current	5	4	ma
Max.-Signal Grid-No.2 Current	13	13.5	ma
Effective Load Resistance (Plate to plate)	10000	8000	ohms
Total Harmonic Distortion	5	3.5	%
Maximum-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

VERTICAL-DEFLECTION AMPLIFIER

Triode Connection — Grid No.2 Connected to Plate

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE	350 max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^f	1200 max.	volts
PEAK NEGATIVE-PULSE GRID-No.1 (CONTROL-GRID) VOLTAGE	275 max.	volts
CATHODE CURRENT:		
Peak	115 max.	ma
Average	40 max.	ma
PLATE DISSIPATION	10 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 ^d max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

For cathode-bias operation	2.2 max.	megohms
--------------------------------------	----------	---------

^a without external shield.

^b Grid No.2 connected to plate.

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

^d The dc component must not exceed 100 volts.

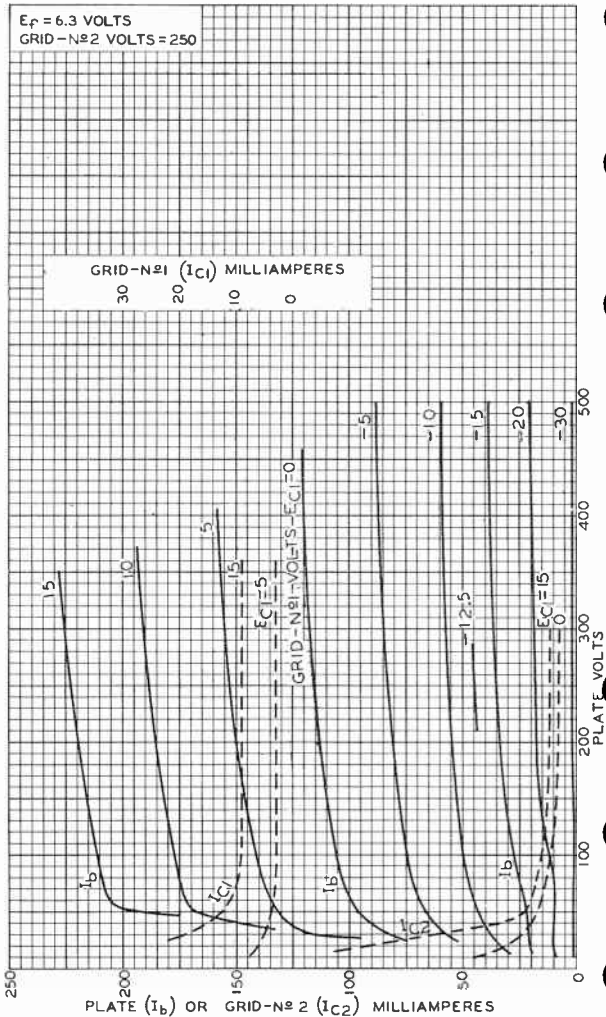
^e As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.

^f This rating is applicable when 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.



6V6GTA

AVERAGE CHARACTERISTICS



92CM-4807R2

RADIO CORPORATION OF AMERICA
 Electron Tube Division

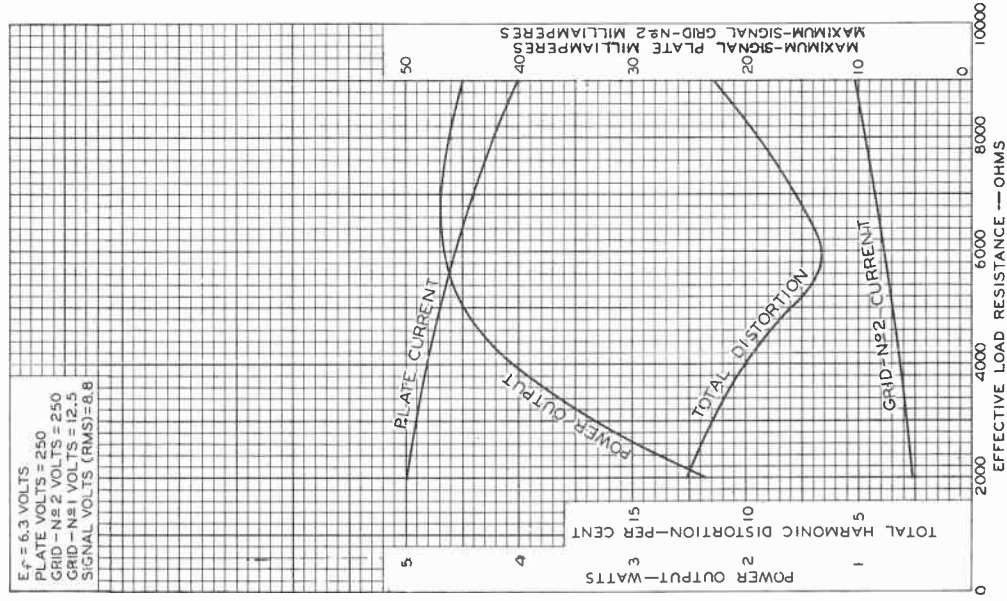
Harrison, N. J.



6V6GTA

OPERATION CHARACTERISTICS

$E_f = 6.3$ VOLTS
PLATE VOLTS = 250
GRID - N#2 VOLTS = 250
GRID - N#1 VOLTS = 12.5
SIGNAL VOLTS (RMS) = 8.8



92CM-6339R2



RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 3
1-62



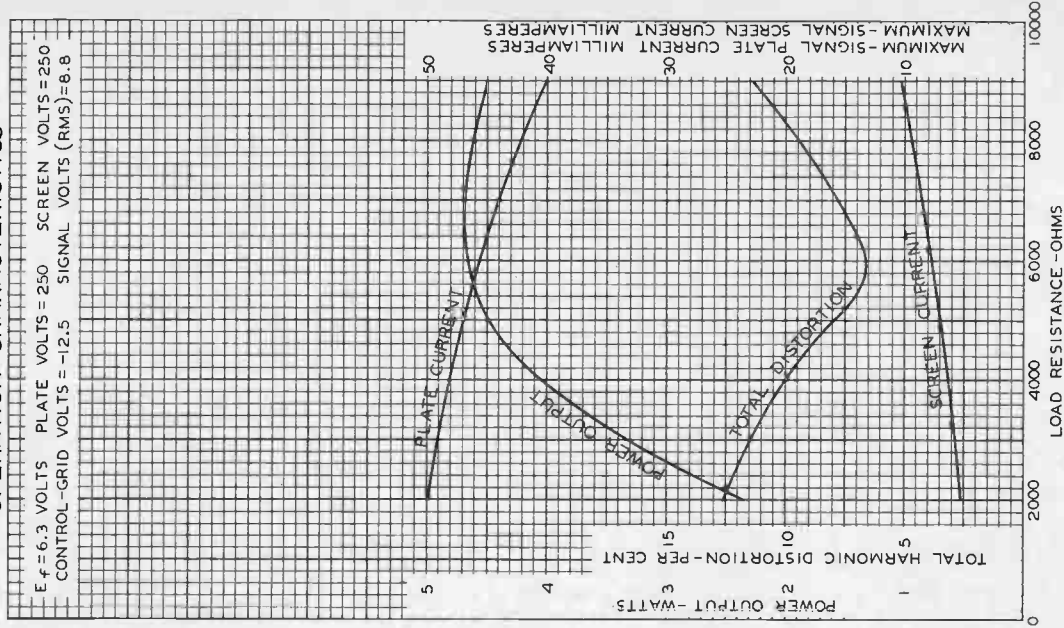


6V6

6V6

OPERATION CHARACTERISTICS

$E_f = 6.3$ VOLTS PLATE VOLTS = 250 SCREEN VOLTS = 250
 CONTROL-GRID VOLTS = -12.5 SIGNAL VOLTS (RMS) = 8.8



NOV. 14, 1941

LOAD RESISTANCE - OHMS

RCA RADIIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C - 6339



6V7-G

6V7-G

DUPLEX-DIODE TRIODE

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	1.7	μf
Grid to Cathode	2.0	μf
Plate to Cathode	3.5	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 - Diode Plate #1
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Triode Plate		Pin 8 - Cathode
Pin 4 - Diode Plate #2		Cap - Triode Grid
Pin 5 - Diode Plate #1		
Mounting Position	BOTTOM VIEW (G-7V)	Any

Maximum Ratings, Typical Operating Conditions, and Curves for the 6V7-G are the same as for type 85.

- [■] 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.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

World Radio History

TENTATIVE DATA

Half-Wave Vacuum Rectifier

For Television Damper Service

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3	volts
Current	1.2	amp

Direct Interelectrode Capacitances (Approx.):^a

Plate to cathode and heater	6	μf
Cathode to plate and heater	13	μf
Heater to cathode	7	μf

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

Bases (Alternates):

Intermediate-Shell Octal:

6-Pin, Arrangement 1 (JEDEC Group 1, No. B6-8)

5-Pin, Arrangement 2 (JEDEC Group 1, No. B5-82)

Short Intermediate-Shell Octal with External Barriers:

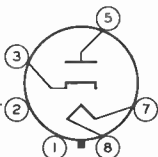
6-Pin, Arrangement 1 (JEDEC Group 1, No. B6-60)

5-Pin, Arrangement 2 (JEDEC Group 1, No. B5-85)

Basing Designation for BOTTOM VIEW 4CG

Pin 1^b - Same as
Pin 2

Pin 2 - Internal
Connection -
Do Not Use^c



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^d

PEAK INVERSE PLATE VOLTAGE

(Absolute maximum)^e 3850^f max. volts

PEAK PLATE CURRENT 750 max. ma

DC PLATE CURRENT 125 max. ma

PLATE DISSIPATION 3.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 2300^g max. volts

Heater positive with respect to cathode. 300^h max. volts

← Indicates a change.



6W4GT

Characteristics, Instantaneous Value:

Tube Voltage Drop for plate ma. = 250. . . . 21 volts

- a Without external shield.
- b On the 5-pin bases, pin 1 as well as pins 4 and 6 is omitted.
- c Socket terminals 1, 2, 4 and 6 should not be used as tie points.
- d As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.
- e 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 micro-seconds.
- f Under no circumstances should this absolute-maximum value be exceeded.
- g The dc component (Absolute maximum) must not exceed 500 volts.
- h The dc component must not exceed 100 volts.





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

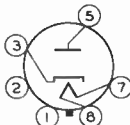
Heater to Cathode.	7.0	μmf
Plate to Heater and Cathode.	5.3	μmf

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



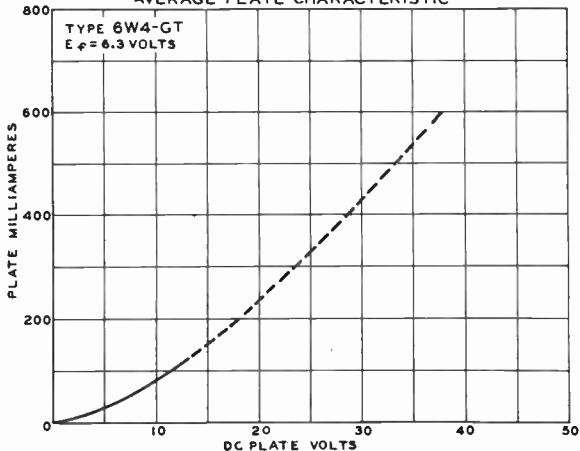
6W4-GT

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
		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

AVERAGE PLATE CHARACTERISTIC



92CM-7069T



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.	μf
Input	15	μf
Output	9	μf

Characteristics as Beam Power Amplifier:

See AMPLIFIER—Class A₁ below:

Characteristics as Triode-Connected Amplifier:

(Grid No.2 connected to plate)

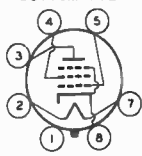
Plate Voltage	225	volts
Grid-No.1 Voltage	-30	volts
Amplification Factor	6.2	
Plate Resistance	1600	ohms
Transconductance	3800	μmhos
Plate Current	22	ma
Grid-No.1 Voltage (Approx.) for plate current of 50 μa	-42	volts

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 7-Pin (JETEC No.87-7)
 or Short Intermediate-Shell Octal 7-Pin (JETEC No.87-47)
 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
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 [▲] max.	volts

▲: See next page.

APRIL 1, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA



BEAM POWER AMPLIFIER

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	μ mhos
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.
- # 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.

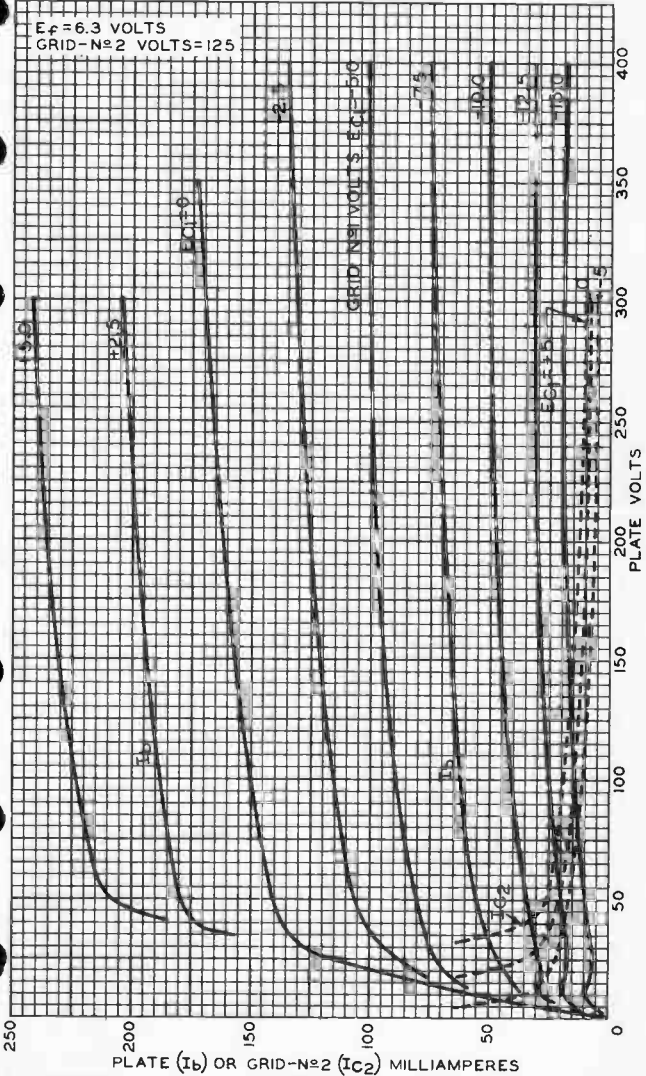


6W6-GT

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION

6W6-GT

$E_f = 6.3$ VOLTS
GRID-N \circ 2 VOLTS = 125



MAR. 20, 1953

TUBE DEPARTMENT

92CM-7942

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

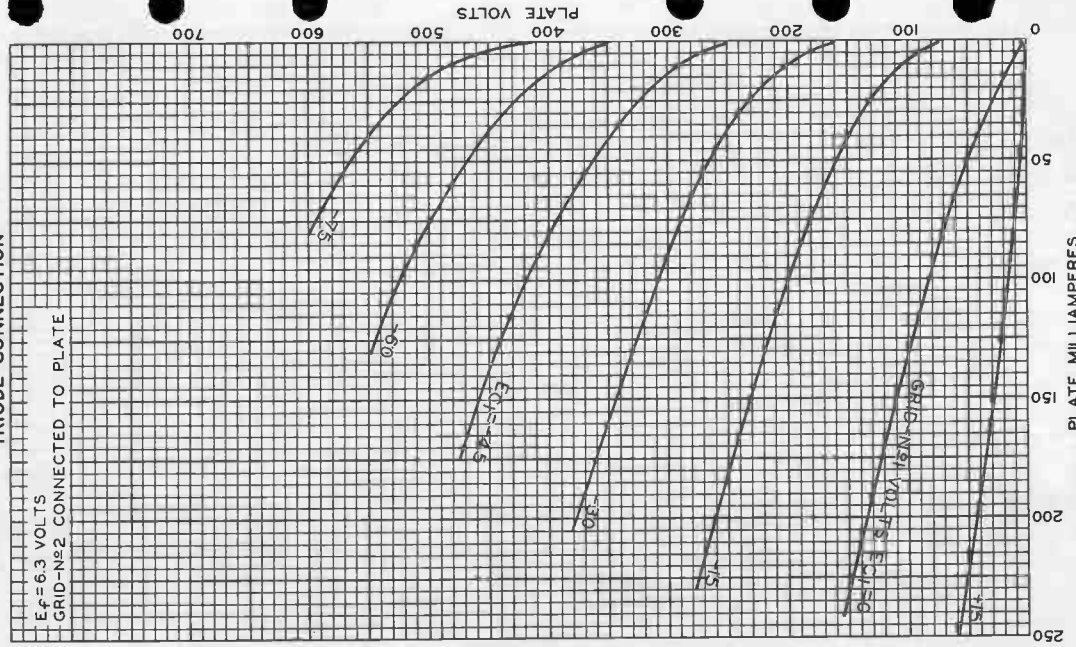
World Radio History

6W6-GT



6W6-GT

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



World Precision

MAR. 11, 1953

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7943



6X4

6X4

FULL-WAVE HIGH-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	Miniature Button 7-Pin
Basing Designation for BOTTOM VIEW	7CF

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



Pin 5 - No Connection
 Pin 6 - Plate No. 1
 Pin 7 - Cathode

FULL-WAVE RECTIFIER

Maximum Ratings, Design-Center Values:

PEAK INVERSE PLATE VOLTAGE.	1250 max. volts
PEAK PLATE CURRENT.	210 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:

	Condenser- Input to Filter	Choke- Input to Filter
AC Plate-to-Plate Supply		
Voltage (RMS)	650	900 . . volts
Filter Input Condenser.	4	- . . . μf
Total Effective Plate-Supply		
Impedance per Plate*.	150	- . . ohms
Min. Filter Input Choke.	-	8 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 cur.	35	10 . . volts

* Indicated value for conditions shown will limit peak plate current to maximum rated value. When a filter-input condenser 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.



6X5
6X5-GT/G

6X5, 6X5-GT/G

FULL-WAVE HIGH-VACUUM RECTIFIER

Heater Voltage	Coated Unipotential Cathode	a-c or d-c volts
Current	6.3	amp.
	0.6	

	6X5	6X5-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 6-Pin	{ Intermed. Sh. Octal 6-Pin

Basing Designation
 Pin 1 { 6X5, Shell
 { 6X5-GT/G, No Con.
 Pin 2 - Heater
 Pin 3 - Plate #2



Pin 5 - Plate #1
 Pin 7 - Heater
 Pin 8 - Cathode

Mounting Position

{ 6X5: Vertical
 { 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:

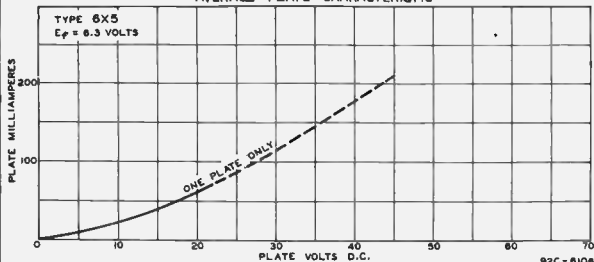
	Condenser- Input Filter	Choke- Input Filter
A-C Plate-to-Plate Supply Voltage (RMS)	650	900 volts
Filter Input Condenser	4	- μ f
Min. Total Effect. Plate Supply Imped. per Plate	150	- ohms
Filter Input Choke	-	8 henries
D-C Output Current	70	70 ma.
D-C Voltage (At input to filter):*		
At half-load current (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
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

6X5

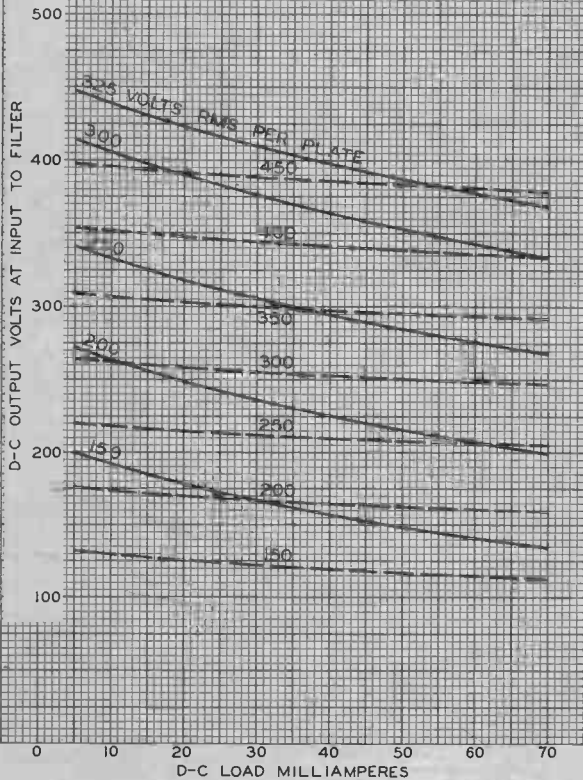


6X5

OPERATION CHARACTERISTICS

 $E_f = 6.3$ VOLTS

- CHOKE (L) INPUT TO FILTER:
L = 8 HENRIES (MIN.)
- CONDENSER (C) INPUT TO FILTER:
C = 4 μ f; TOTAL EFFECT. PLATE-SUPPLY
IMPEDANCE PER PLATE = 150 OHMS



NOV. 15, 1939

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
World Radio History

92C-4576R1

Medium-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ± 10%	volts
Current at 6.3 volts.	0.45	amp

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^A</i>	
<i>Triode Unit:</i>			
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
<i>Pentode Unit:</i>			
Grid No.1 to plate.	0.09 max.	0.06 max.	μf
Grid No.1 to cathode, grid No.3, grid No.2, and heater.	4.6	4.8	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.	0.008 max.	μf
Heater to cathode	6.5	6.5 ^B	μf

Characteristics, Class A₁ Amplifier:

	<i>Triode Unit</i>	<i>Pentode Unit</i>		
Plate Voltage	125	100	125	volts
Grid No.3	—	<i>Connected to cathode at socket</i>		
Grid-No.2 Voltage	—	70	125	volts
Grid-No.1 Voltage	-1	—	-1	volt
Amplification Factor.	40	—	—	
Plate Resistance (Approx.)	6000	—	300000	ohms
Transconductance.	6500	5700	5500	μmhos
Plate Current	12	—	9	ma
Grid-No.2 Current	—	—	2.2	ma
Grid-No.1 Voltage (Approx.) for plate $\mu_a = 20$	-7	—	-6.5	volts

← Indicates a change.



6X8

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 <i>General Section</i>
Bulb.	T6-1/2
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

AMPLIFIER — Class A₁

Maximum Ratings, *Design-Maximum Values:*

	Triode Unit	Pentode Unit
PLATE VOLTAGE	275 max.	275 max. volts
GRID No.3 (SUPPRESSOR GRID)	-	Connect to cathode at socket
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE.	-	275 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 137.5 volts	-	0.45 max. watt
For grid-No.2 voltages between 137.5 and 275 volts	-	See Grid-No.2 Input <i>Rating Chart at front of Receiving Tube Section</i>
PLATE DISSIPATION	1.7 max.	2.3 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

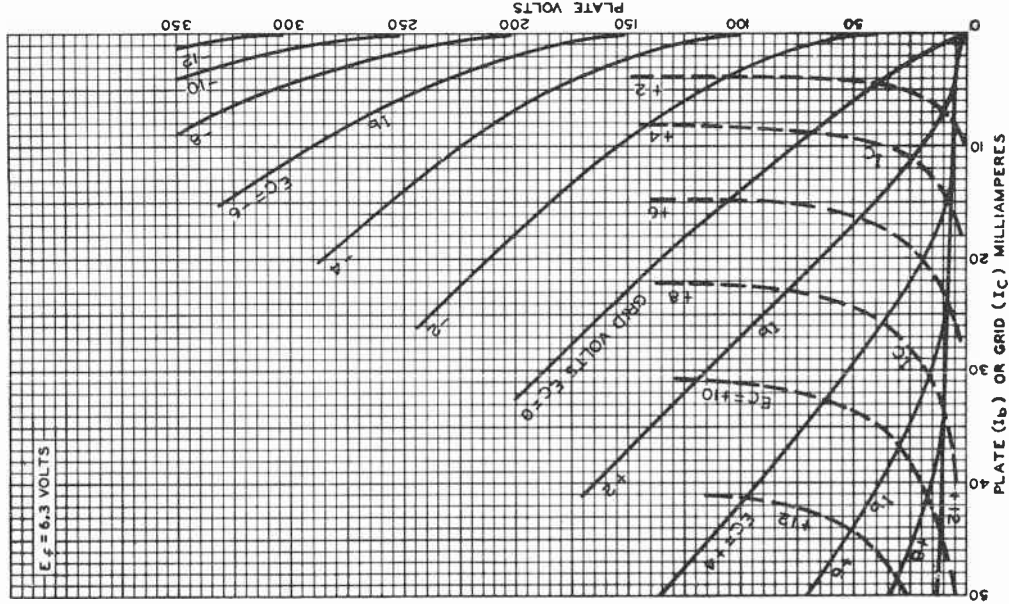
▲ With external shield JEDEC NO.315 connected to cathode except as noted.
● With external shield JEDEC NO.315 connected to pentode plate.
* The dc component must not exceed 100 volts.

→ Indicates a change.



6X8

AVERAGE CHARACTERISTICS Triode Unit



92CM-7531

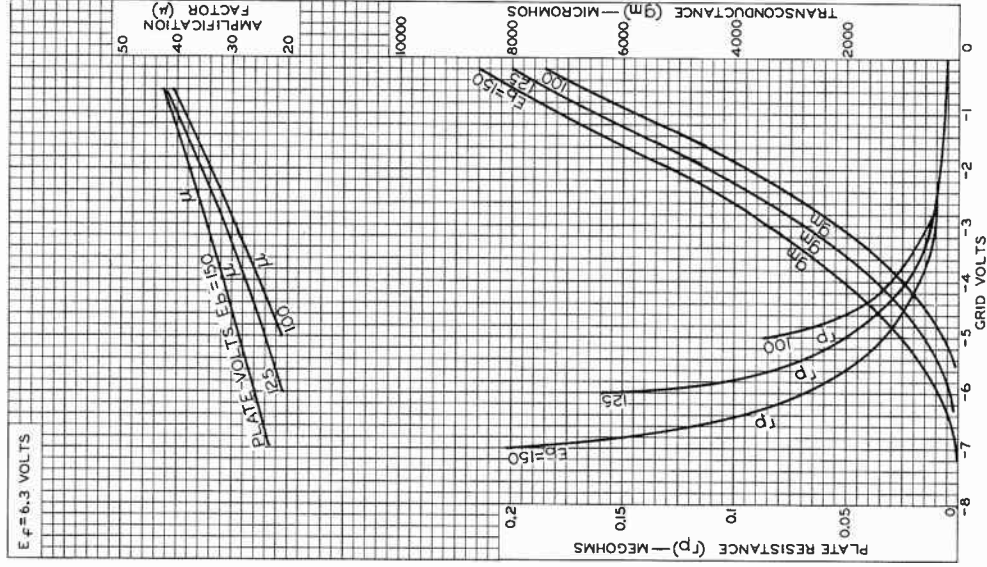


RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 2
8-60

6X8

AVERAGE CHARACTERISTICS Triode Unit



92CM-10809

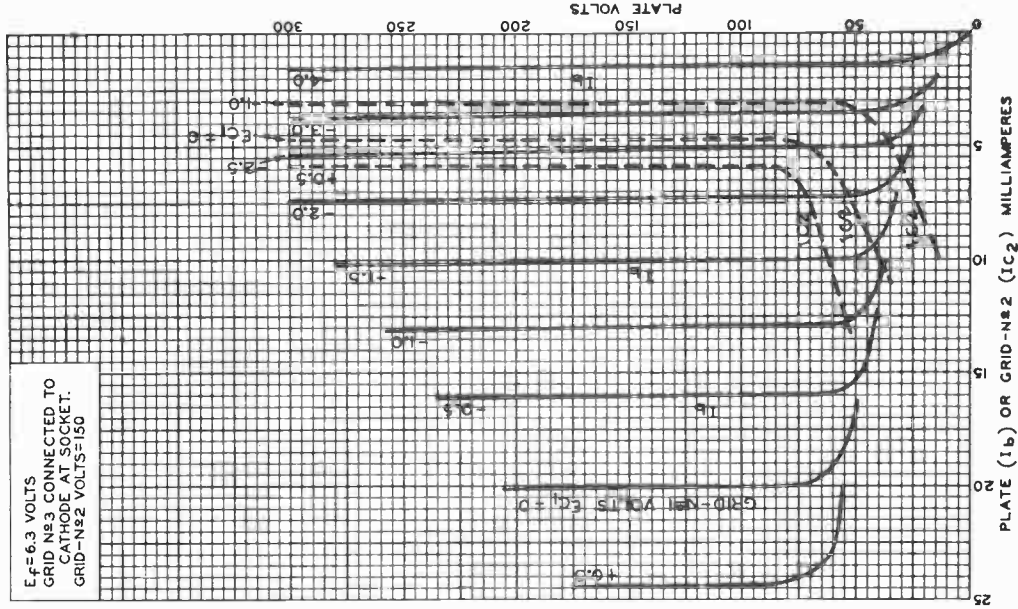


RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

6X8

AVERAGE CHARACTERISTICS Pentode Unit

$E_f = 6.3$ VOLTS
GRID No 3 CONNECTED TO
CATHODE AT SOCKET.
GRID-No 2 VOLTS = 150



92CM-7532R1

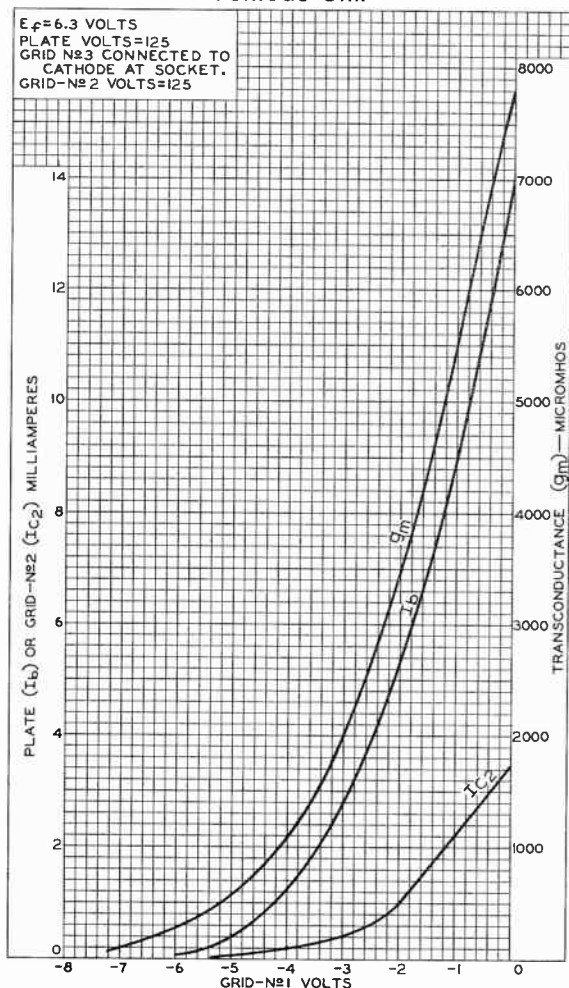


RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 3
8-60

6X8

AVERAGE CHARACTERISTICS Pentode Unit



92CM-10810

RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.





6Y6-G

6Y6-G

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	1.25	amp

Direct Interelectrode Capacitances (Approx.):^o

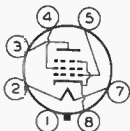
Grid No.1 to Plate	0.7	$\mu\mu\text{f}$
Input	15	$\mu\mu\text{f}$
Output	11	$\mu\mu\text{f}$

^o With no external shield.

Mechanical:

Mounting Position	Any
Maximum Overall Length	4-5/8"
Seated Length	3-7/16" + 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 5 - Grid No.1
Pin 2 - Heater	Pin 7 - Heater
Pin 3 - Plate	Pin 8 - Cathode, Grid No.3
Pin 4 - Grid No.2	



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.

→ Indicates a change.

OCTOBER 15, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

DATA



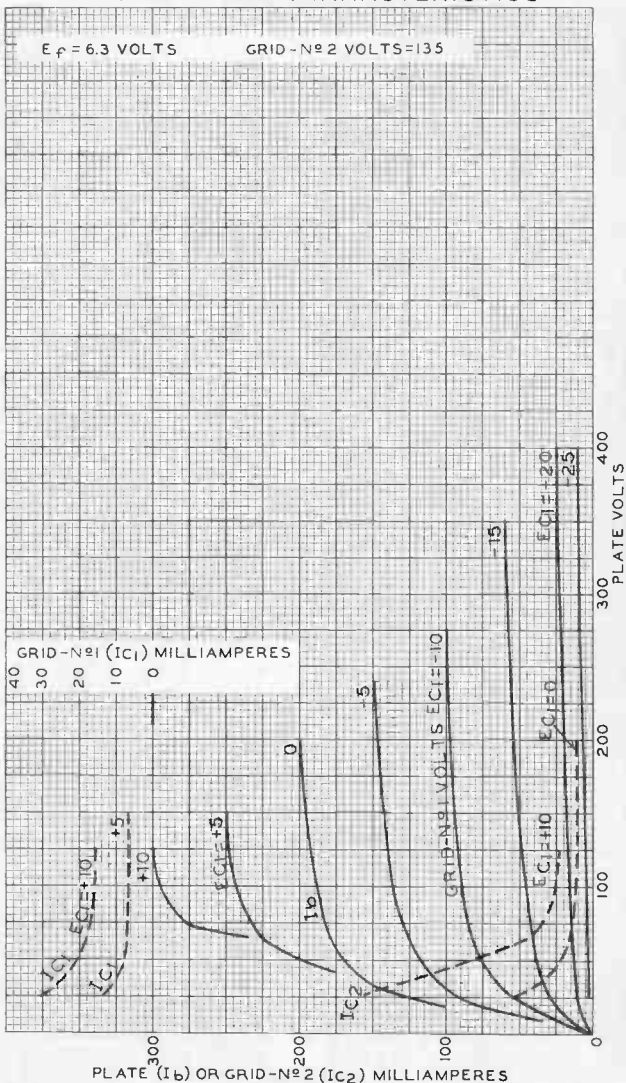
6Y6-G

6Y6-G

AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$ VOLTS

GRID-№2 VOLTS = -135



SEPT. 11, 1946

TUBE DEPARTMENT

92CM-6127RI

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

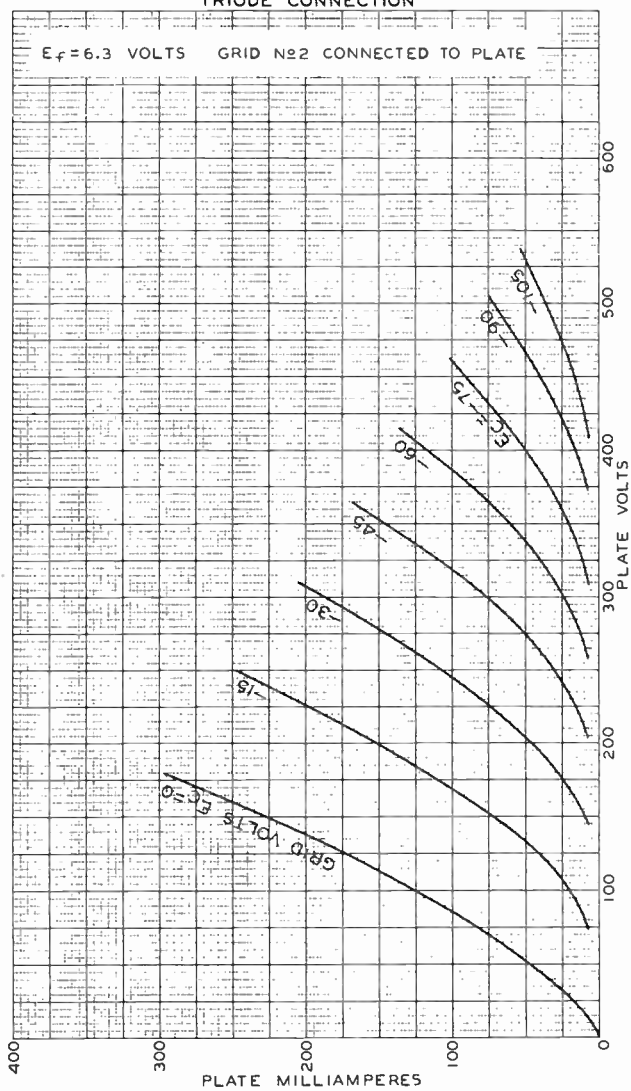
6Y6-G



6Y6-G

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION

$E_f = 6.3$ VOLTS GRID NO 2 CONNECTED TO PLATE



FEB. 8, 1944

PLATE MILLIAMPERES
TUBE DEPARTMENT

92CM-6538

RADIO CORPORATION OF AMERICA - HARRISON, NEW JERSEY
World Radio History



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 (5AC 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.

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 RADIONRON DIVISION
RCA MANUFACTURING COMPANY, INC.

World Radio History

TENTATIVE DATA



7A6

7A6 TWIN DIODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage 6.3^{\square} ac or dc volts

Current $0.15^{\square\square}$ amp

Direct Interelectrode Capacitances (Approx.):⁰

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

⁰ 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

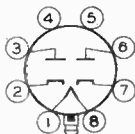
Basing Designation for ECTTOM VIEW 7AJ

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 volts

Current. 0.3^{□□} amp

Direct 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

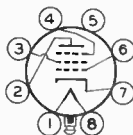
Pin 2 - Plate

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.



7A8

7A8



OCTODE CONVERTER

Heater	Coated Unipotential Cathode	
Voltage	6.3 \square	a-c or d-c volts
Current	0.15 $\square\square$	amp.
Direct Inter-electrode Capacitances: ^o		
Grid No. 4 to Plate	0.15 max.	μ uf
Grid No. 4 to Grid No. 2	0.15	μ uf
Grid No. 4 to Grid No. 1	0.15	μ uf
Grid No. 1 to Grid No. 2	0.60	μ uf
Grid No. 4 to All Other Electrodes = R-F Input	7.5	μ uf
Grid No. 2 to All Other Electrodes Except Grid No. 1 (Osc. Output)	3.4	μ uf
Grid No. 1 to All Other Electrodes Except Grid No. 2 (Osc. Input)	3.8	μ uf
Plate to All Other Electrodes	9	μ uf
Maximum Overall Length	2-25/32"	
Maximum Seated Height	2-1/4"	
Maximum Diameter	1-3/16"	
Bulb Base	T-9	
Pin 1 - Heater	Lock-in 8-Pin	
Pin 2 - Plate	Pin 6 - Grid #4	
Pin 3 - Grid #2	Pin 7 - Cathode	
Pin 4 - Grid #1	Pin 8 - Heater	
Pin 5 - Grids #3 & #5	Plug - Base Shell	
Mounting Position		Any



BOTTOM VIEW (8U)

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	-3 volts
Oscillator-Grid (Grid #1) Res.	50000	50000 ohms
Plate Resistance	0.65	0.7 approx. megohm
Conversion Transconductance	375	550 μ mos
Conversion Transconductance for Grid Bias of -30 volts	-	2 approx. μ mos
Plate Current	1.8	3.0 ma.
Screen Current	2.7	3.2 ma.
Anode-Grid Current	2.8	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 μ mos under the following conditions: plate volts, 250; screen volts, 100; anode-grid volts, 180; oscillator-grid volts, 0; and control-grid connected to cathode.

- Δ 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.
 - \square With close-fitting shield connected to cathode.
 - \square Nominal voltage 7.0 volts.
 - \square Nominal current 0.16 ampere.
 - Δ Applied through a properly by-passed 20000-ohm voltage-dropping resistor.
- \leftarrow Indicates a change.

May 1, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



7AF7
7AG7

7AF7

MEDIUM-MU TWIN TRIODE

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:[○]

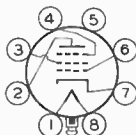
Grid No.1 to Plate	0.005 max.	μf
Input	7	μf
Output	6	μf

○ 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	. .	μmhos
Grid-No.1 Bias (Approx.) for plate current of 10 μa	-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 ⁰	ac or dc volts
Current	0.15 ⁰⁰	amp

Direct Interelectrode Capacitances:⁰

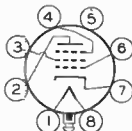
Grid No.1 to Plate	0.005 max.	μf
Input	7	μf
Output	6.5	μf

⁰With 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

World Radio History

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
World Radio History

DATA

Medium-Mu Twin Triode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 7AU7 is the same as the 12AU7A except for the following items:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage (AC or DC)	7 ± 10%	3.5	AC or DC volts
Current	0.3	0.6 ± 6%	amp
Warm-up time (Average)	-	11	sec







7B4

HIGH-MU TRIODE

7B4

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3 [□]	ac or dc volts
Current.	0.3 ^{□□}	amp

Mechanical:

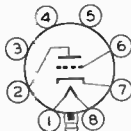
Mounting Position.	Any
Maximum Overall Length	2-25/32"
Maximum Seated Length.	2-1/4"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Lock-in 8-Pin
Basing Designation for BOTTOM VIEW	5AC

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 voltsCurrent. 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

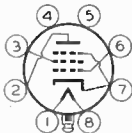
Pin 3 - Grid No.2

Pin 4 - No

Connection

Pin 5 - No

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 6X6-GT

□ Nominal voltage = 7.0 volts.

□□ Nominal current = 0.43 ampere.



7B6

7B6

TWIN DIODE—HIGH-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	1.6	μμf
Grid to Cathode	3.0	μμf
Plate to Cathode	2.4	μμf

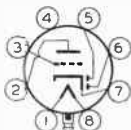
[○] With external shield connected to cathode

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
 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.

DIGDE 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. 6.3⁰ ac or dc voltsCurrent. 0.15^{0a} ampDirect Interelectrode Capacitances:⁰Grid No.1 to Plate 0.007 max. $\mu\mu\text{f}$ Input. 5.0 $\mu\mu\text{f}$ Output 6.0 $\mu\mu\text{f}$ 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

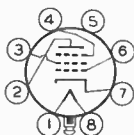
Basing Designation for BOTTOM VIEW 8V

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
ShellAMPLIFIER - 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.

⁰ Nominal voltage = 7.0 volts.^{0a} Nominal current = 0.160 ampere.

JUNE 20, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7B8

7B8

PENTAGRID CONVERTER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage. 6.3[□] ac or dc voltsCurrent. 0.3^{□□} ampDirect Interelectrode Capacitances:[○]

Grid No.4 to All Other Electrodes (RF Input) 10.0 . . μμf

Plate to All Other Electrodes (Mixer Output) 9.0 . . μμf

Grid No.1 to All Other Electrodes except
Grid No.2 (Dsc. Input) 5.0 . . μμfGrid No.2 to All Other Electrodes except
Grid No.1 (Dsc. Output) 3.4 . . μμf

Grid No.4 to Plate 0.2 max. μμf

Grid No.4 to Grid No.2 0.2 max. μμf

Grid No.4 to Grid No.1 0.2 max. μμf

Grid No.1 to Grid No.2 0.9 . . μμf

○ with external shield connected to cathode.

Mechanical:

Mounting Position. Any

Maximum Overall Length 2-25/32"

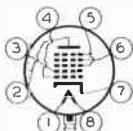
Maximum Seated Length. 2-1/4"

Maximum Diameter 1-3/16"

Bulb T-9

Base Lock-in 8-Pin

Basing Designation for BOTTOM VIEW 8X

Pin 1 - Heater
Pin 2 - Plate
Pin 3 - Grid No.2
Pin 4 - Grid No.1
Pin 5 - Grid No.3,
Grid No.5Pin 6 - Grid No.4
Pin 7 - Cathode
Pin 8 - HeaterPlug - 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 volts

Current 0.45^{□□} amp

Direct Interelectrode Capacitances (Approx.):[○]

Grid No.1 to Plate 0.4 $\mu\mu\text{f}$

Input 9.5 $\mu\mu\text{f}$

Output 9.0 $\mu\mu\text{f}$

[○] 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

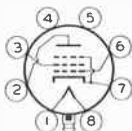
Pin 3 - Grid No.2

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.



7C6



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 (8V)	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		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 RADIONRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



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.	μμf
Input	4.6	. . . . .	μμf
Output	5.5	. . . . .	μμf
Diode-No.1 Plate to Grid No.1	0.013	max.	μμf
Diode-No.2 Plate to Grid No.1	0.003	max.	μμf

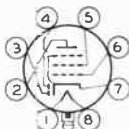
[○] with external shield connected to cathode.

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 8AE

Pin 1 - Heater	Pin 6 - Pentode
Pin 2 - Pentode Plate	Grid No.1
Pin 3 - Diode-No.2 Plate	Pin 7 - Cathode, Pentode Grid No.3
Pin 4 - Diode-No.1 Plate	Pin 8 - Heater
Pin 5 - Pentode Grid No.2	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	160	1300	. . .	μ mhos
Grid-No.1 Bias (Approx.) for transconductance of 2 μ mhos	-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

Beam Power Tube

With Heater Having Controlled Warm-Up Time

The 7EY6 is the same as the 6EY6 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC).	7.2	volts
Current	0.6 ± 6%	amp
Warm-up time (Average).	11	sec







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:

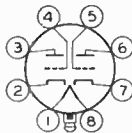
Grid to Plate	1.6	μf
Grid to Cathode	2.4	μf
Plate to Cathode	2.0	μf
Grid to Grid	0.2 max.	μf
Plate to Plate	1.0 max.	μf

* 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	8AC

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

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY.

World Radio History



7F8

7F8

MEDIUM-MU TWIN TRIODE

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*	μμf
Grid to Cathode	2.8*	μμf
Plate to Cathode	1.4*	μμf
Heater to Cathode	2.8**	μμf
Grid to Grid	0.1 max.*	μμf
Plate to Plate	0.5 max.*	μμf

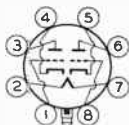
* With external shield connected to cathode.

** 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 mhos
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

7G7

SHARP-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc volts
 Current 0.45^{□□} amp

Direct Interelectrode Capacitances:[○]

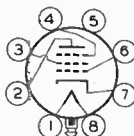
Grid No.1 to Plate 0.007 max. μmf
 Input 9 μmf
 Output 7 μmf

○ 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 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 ampere.

← indicates a change.

DEC. 30, 1947

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

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

7H7

REMOTE-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3 ^o	ac or dc volts
Current	0.3 ^{oo}	amp

Direct Interelectrode Capacitances:^o

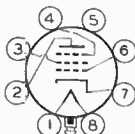
Grid No.1 to Plate	0.007 max.	$\mu\mu\text{f}$
Input	8	$\mu\mu\text{f}$
Output	7	$\mu\mu\text{f}$

^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
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)

^o Nominal voltage = 7.0 volts.

^{oo} 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 mhos
Grid-No.1 Bias (Approx.) for transconductance of 35 μ mhos . . .	-12	-19	volts
Plate Current.	8.2	10	ma
Grid-No.2 Current.	3.3	3.2	ma

DEC. 30, 1947

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



7J7

7J7

TRIODE-HEPTODE CONVERTER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3 [□]	ac or dc volts
Current.	0.3 ^{□□}	amp

Direct Interelectrode Capacitances:⁰

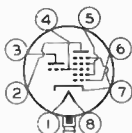
Heptode Grid No.1 to Heptode Plate . . .	0.03 max.	μf
Heptode Grid No.1 to Triode Plate. . .	0.1 max.	μf
Heptode Grid No.1 to Triode Grid & Heptode Grid No.3. . .	0.3 max.	μf
Triode Grid & Heptode Grid No.3 to Triode Plate	0.9 . .	μf
Heptode Grid No.1 to All Other Electrodes (RF Input).	4.6 . .	μf
Heptode 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

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	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.

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

DATA

RADIO CORPORATION OF AMERICA HARRISON, NEW JERSEY



7Q7

7Q7



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 mhos 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.



7V7

7V7

SHARP-CUTOFF PENTODE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 6.3[□] ac or dc volts
 Current 0.45^{□□} amp

Direct Interelectrode Capacitances:[○]

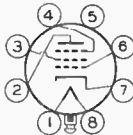
Grid No.1 to Plate . . . 0.004 max. μμf
 Input 9.5 μμf
 Output 6.5 μμf

[○] 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
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

[□] Nominal voltage = 7.0 volts.

^{□□} Nominal current = 0.48 ampere.

* **, #: See next page.

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	μ mhos
Grid-No.1 Bias (Approx.) for plate current of 10 μ a.	-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:[○]

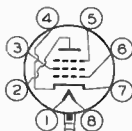
Grid No.1 to Plate . . .	0.0025 max.	μ f
Input	9.5	μ f
Output	7	μ f

[○] 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	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

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



7X7

7X7

DOUBLE DIODE-HIGH-MU TRIODE

GENERAL DATA

Electrical:

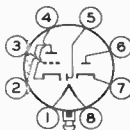
Heater, for Unipotential Cathodes:

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	..	μmhos
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

7Y4

FULL-WAVE VACUUM RECTIFIERGENERAL DATA**Electrical:**

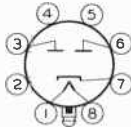
Heater, for Unipotential Cathode:

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
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA

World Radio History

7Z4



7Z4

FULL-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

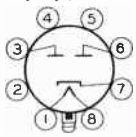
Heater, for Unipotential Cathode:
 Voltage. 6.3[□] ac or dc volts
 Current. 0.9^{□□} amp

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:

	<u>Capacitor- Input to Filter</u>	<u>Choke- Input to Filter</u>	
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 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.
 □ Nominal voltage = 7.0 volts.
 □□ Nominal current = 0.96 ampere.

8AU8

Medium-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8AU8 is the same as the 6AU8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8.4	volts
Current	0.45 ± 6%	amp

8AW8A

High-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8AW8A is the same as the 6AW8A except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8.4	volts
Current	0.45 ± 6%	amp

8BA8A

Medium-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8BA8A is the same as the 6BA8A except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8.4	volts
Current	0.45 ± 6%	amp



8BH8

Medium-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8BH8 is the same as the 6BH8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8.4	volts
Current	0.45 ± 6%	amp

8BN8

Twin Diode—High-Mu Triode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8BN8 is the same as the 6BN8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8.4	volts
Current	0.45 ± 6%	amp

8BQ5

Power Pentode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8BQ5 is the same as the 6BQ5 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	8	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec



Medium-Mu Twin Triode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8CG7 is the same as the 6CG7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8.4	volts
Current	0.45 ± 6%	amp

Medium-Mu Dual Triode

With Dissimilar Units

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8CM7 is the same as the 6CM7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8.4	volts
Current	0.45 ± 6%	amp

Twin Diode—High-Mu Triode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8CN7 is the same as the 6CN7 except for the following items:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage (AC or DC)	8.4 ± 10%	4.2	volts
Current	0.225	0.45 ± 6%	amp



8CX8

Medium-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8CX8 is the same as the 6CX8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

8EB8

High-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8EB8 is the same as the 6EB8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

8EM5

Beam Power Tube

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8EM5 is the same as the 6EM5 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	8.4	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec





8AW8-A
TO
8CM7

8AW8-A
HIGH-MU TRIODE —
SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

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

The 8AW8-A is the same as the 6AW8-A except for the following items:

Heater, for Unipotential Cathodes:

Voltage. 8.4 ac or dc volts
Current. 0.45 amp

8CG7
MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

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

The 8CG7 is the same as the 6CG7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage. 8.4 ac or dc volts
Current. 0.45 amp

8CM7
MEDIUM-MU DUAL TRIODE

With Dissimilar Units

9-PIN MINIATURE TYPE

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

The 8CM7 is the same as the 6CM7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage. 8.4 ac or dc volts
Current. 0.45 amp

8EM5



8EM5

BEAM POWER TUBE

9-PIN MINIATURE TYPE

*For vertical-deflection-amplifier service in 110⁰ systems
having series heater-string arrangement*

The 8EM5 is the same as the 6EM5 except for the following items:

Heater, for Unipotential Cathode:

Voltage.	8.4	. . . . .	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.*

8CM7

Medium-Mu Dual Triode With Dissimilar Units

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 8CM7 is the same as the 6CM7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8.4	volts
Current	0.45 ± 6%	amp

8CN7

Twin Diode—High-Mu Triode

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 8CN7 is the same as the 6CN7 except for the following items:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage (AC or DC)	8.4	4.2	volts
Current	0.225	0.45 ± 6%	amp

8CX8

Medium-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 8CX8 is the same as the 6CX8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec



8EB8

High-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 8EB8 is the same as the 6EB8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

8EM5

Beam Power Tube

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 8EM5 is the same as the 6EM5 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	8.4	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

8FQ7

Medium-Mu Twin Triode

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 8FQ7 is the same as the 6FQ7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8.4	volts
Current	0.45 ± 6%	amp



Twin Diode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances:^a

Diode Units:

Either plate to cathode & internal shield, pentode grid No.3 & pentode cathode & pentode internal shield, and heater.	1.5	μf
Cathode & internal shield to either plate, pentode grid No.3 & pentode cathode & pentode internal shield, and heater.	7.5	μf

Pentode Unit:

Grid No.1 to plate.	0.1 max.	μf
Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, diode-units cathode & diode-units internal shield, and heater	10	μf
Plate to cathode & grid No.3 & internal shield, grid No.2, diode-units cathode & diode-units internal shield, and heater	4.2	μf
Pentode grid No.1 to either diode plate	0.005 max.	μf
Pentode plate to either diode plate	0.02 max.	μf

Characteristics, Class A₁ Amplifier (Pentode Unit):

Plate Supply Voltage.	60	200	volts
Grid-No.2 Supply Voltage.	150	150	volts
Grid-No.1 Voltage	0	-	volts
Cathode Resistor.	-	100	ohms
Plate Resistance (Approx.)	-	60000	ohms
Transconductance.	-	11500	μmhos
Plate Current	55 ^b	25	ma
Grid-No.2 Current	18 ^b	5.5	ma
Grid-No.1 Voltage (Approx.) for plate μa = 100.	-	-10	volts

Mechanical:

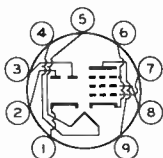
Operating Position.	Any
Maximum Overall Length.	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Bulb Top (Excluding tip).	2" ± 3/32"
Diameter.	0.750" to 0.875"



8E7

Dimensional Outline. See *General Section*
 Bulb T6-1/2
 Base Small-Button Noval 9-Pin (JEDEC No. E9-1)
 Basing Designation for BOTTOM VIEW 9LT

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



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

PENTODE — AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE. 330 max. volts
 GRID-No. 2 (SCREEN-GRID) SUPPLY VOLTAGE. 330 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
 GRID-No. 2 INPUT:
 For grid-No. 2 voltages up to 165 volts 1.1 max. watts
 For grid-No. 2 voltages between 165
 and 330 volts. See *Grid-No. 2 Input Rating*
 Chart at front of Receiving Tube Section
 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^c max. volts

Maximum Circuit Values:

Grid-No. 1-Circuit Resistance:
 For fixed-bias operation 0.1 max. megohm
 For cathode-bias operation 0.25 max. megohm

DIODE UNITS — Two

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

DC PLATE CURRENT 3 max. ma
 PEAK HEATER-CATHODE VOLTAGE:
 Heater negative with respect to cathode. 200 max. volts
 Heater positive with respect to cathode. 200^c max. volts

Characteristics, Instantaneous Test Condition:

Plate Current for plate volts = 10 1.5 ma

^a Without external shield.

^b 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.

^c The dc component must not exceed 100 volts.



8FQ7

Medium-Mu Twin Triode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8FQ7 is the same as the 6FQ7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8.4	volts
Current	0.45 ± 6%	amp

8GN8

High-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 8GN8 is the same as the 6GN8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec



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High-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 8GN8 is the same as the 6GN8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	8	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec





Medium-Mu Twin Triode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 9AU7 is the same as the 12AU7A except for the following items:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage (AC or DC).	9.4 ± 10%	4.7	volts
Current	0.225	0.45 ± 6%	amp
Warm-up time (Average).	-	11	sec





POWER AMPLIFIER, OSCILLATOR

Filament	Thoriated Tungsten		
Voltage	7.5		a-c or d-c volts
Current	1.25		amp.
Direct Interelectrode Capacitances (approx.):			
Grid to Plate	7		μf
Grid to Filament	4		μf
Plate to Filament	3		μf
Maximum Overall Length			5-5/8"
Maximum Diameter			2-3/16"
Bulb	②	③	S-17
Base			Medium 4-Pin Bayonet
Pin 1-Filament	①	④	Pin 3-Grid
Pin 2-Plate			Pin 4-Filament

BOTTOM VIEW

A-F POWER AMPLIFIER - Class A

D-C Plate Voltage	425 max.	volts
Plate Dissipation	12 max.	watts

Typical Operation and Characteristics:

Filament Voltage	7.5	7.5	7.5	a-c	volts
D-C Plate Voltage	250	350	425		volts
D-C Grid Voltage*	-23.5	-32	-40		volts
Peak Grid Swing	18.5	27	35		volts
D-C Plate Current	10	16	18		ma.
Plate Resistance	6000	5150	5000		ohms
Amplification Factor	8	8	8		
Mutual Conductance	1330	1550	1600		μmhos
Load Resistance	13000	11000	10200		ohms
U.P.O. (5% second harmonic)	0.4	0.9	1.6		watts

A-F POWER AMPLIFIER - Class B

D-C Plate Voltage	425 max.	volts
Max.-Sig.D-C Plate Cur. (per tube)**	60 max.	ma.
Max.-Sig.Plate Input (per tube)**	25 max.	watts
Plate Dissipation**	12 max.	watts

Typical Operation (2 tubes):

Filament Voltage	7.5	7.5	7.5	a-c	volts
D-C Plate Voltage	250	350	425		volts
D-C Grid Voltage*	-28	-40	-50		<u>approx.volts</u>
Peak A-F Grid Volt.	110	120	130		<u>approx.volts</u>
Zero-Sig.D-C Plate Cur. (per tube)	4	4	4		ma.
Max.-Sig.D-C Plate Cur. (per tube)	55	55	55		ma.
Load Resistance (per tube)	1000	1500	2000		ohms
Effective Load Res. (plate to plate)	4000	6000	8000		ohms
Max.-Sig.Driving Power	2.1	2.3	2.5		<u>approx.watts</u>
Max.-Sig.Power Output (2 tubes)	13	20	25		<u>approx.watts</u>

** Averaged over any audio-frequency cycle.

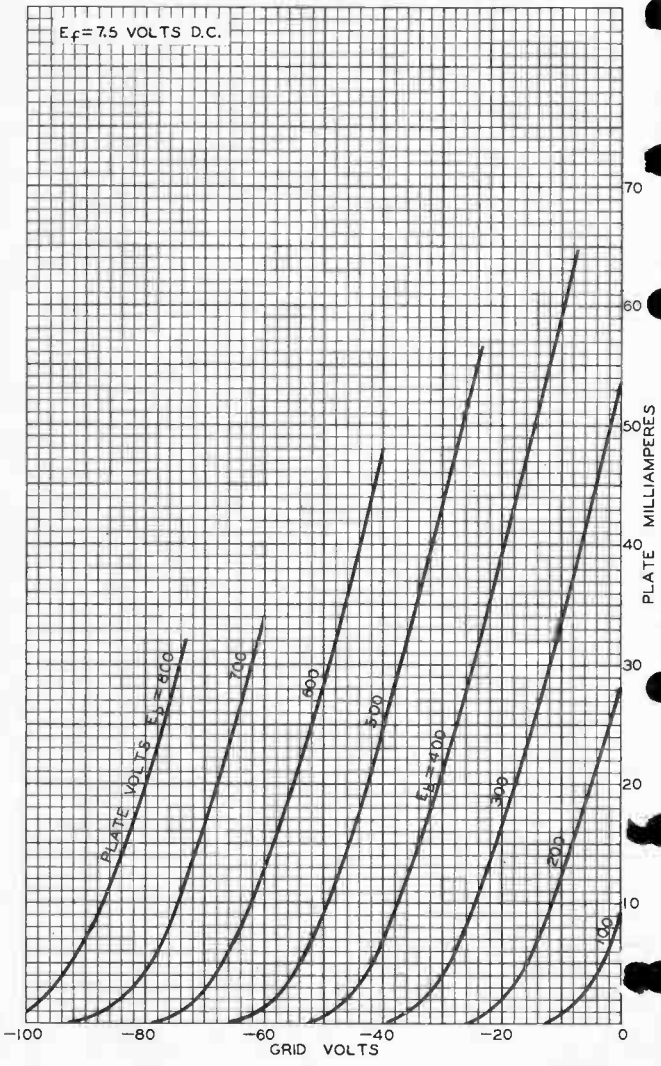
* Grid-voltage values are given with respect to the mid-point of filament operated on a.c. If d.c. is used, each stated value of grid voltage should be decreased by 5.0 volts and should be referred to the negative end of the filament.

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RCA-10

AVERAGE CHARACTERISTICS

$E_f = 7.5$ VOLTS D.C.



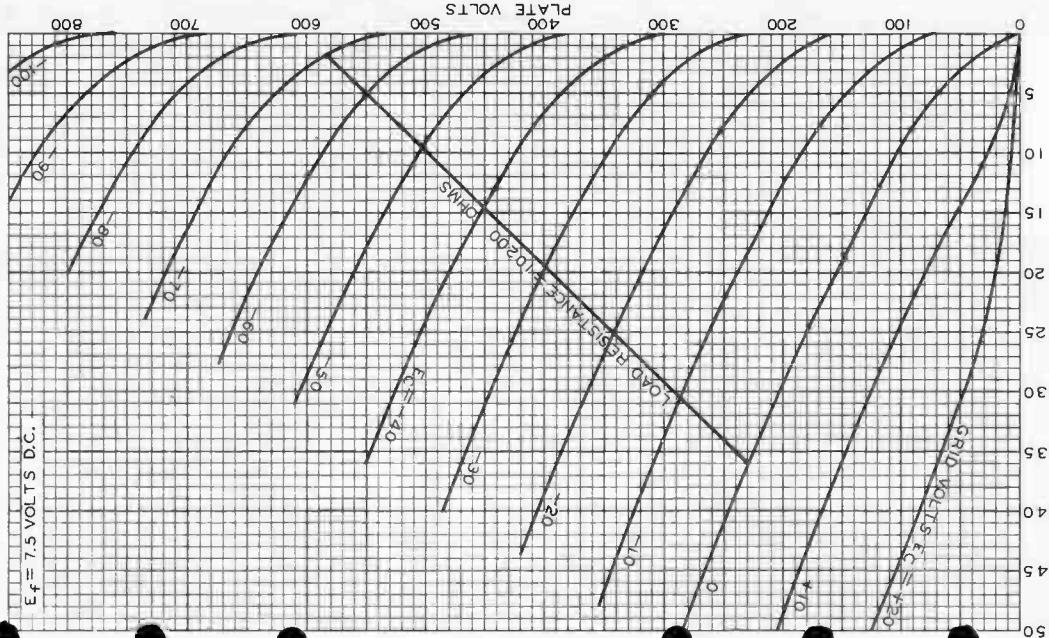


Cunningham
Radiotron

RCA-10

AVERAGE PLATE CHARACTERISTICS

$E_f = 7.5$ VOLTS D.C.



FEB. 10, 1933

PLATE MILLIAMPERES
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92S-509R2

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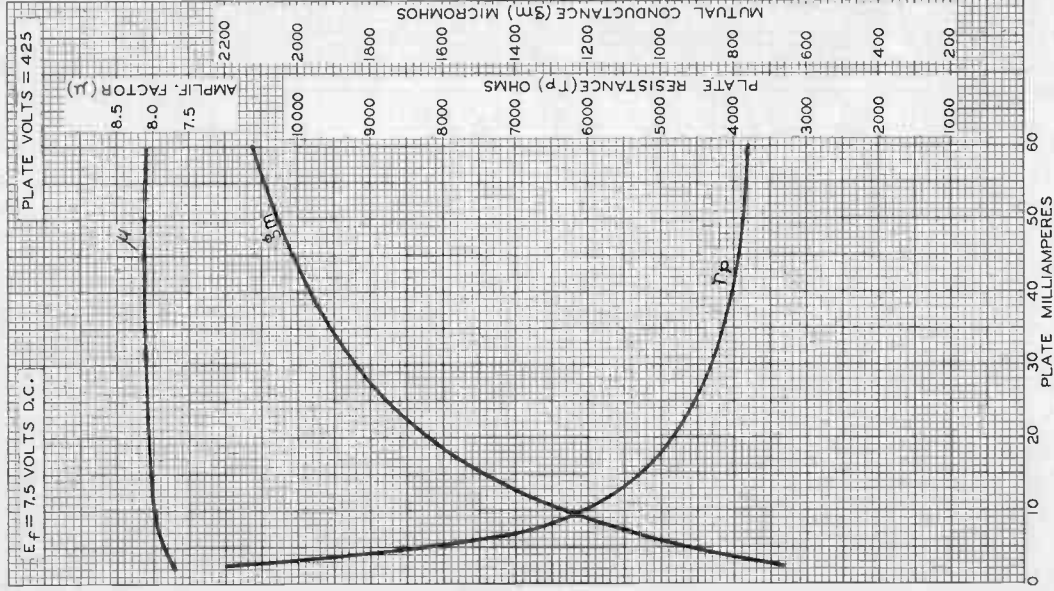


**Runningham
Radiotron**



RCA-10

AVERAGE CHARACTERISTICS



FEB. 13, 1933

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92S-549R2

10DE7

Dual Triode

With Medium-Mu Unit and Low-Mu Unit

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 10DE7 is the same as the 6DE7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	9.7	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

10DR7

Dual Triode

With High-Mu Unit and Low-Mu Unit

With Heater Having Controlled Warm-Up Time

The 10DR7 is the same as the 6DR7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	9.7	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec







10DE7

10DE7

DUAL TRIODE

With Medium-Mu Unit and Low-Mu Unit

9-PIN MINIATURE TYPE

Intended for use in equipment having series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage	10	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.):⁰

	Unit No. 1 Oscillator	Unit No. 2 Amplifier	
Grid to plate	4	8.5	$\mu\mu\text{f}$
Grid to cathode and heater	2.2	5.5	$\mu\mu\text{f}$
Plate to cathode and heater	0.52	1	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

	Unit No. 1 Oscillator	Unit No. 2 Amplifier	
Plate Voltage	250	60 150	volts
Grid-No. 1 (Control-Grid) Voltage	-11	0 -17.5	volts
Amplification Factor	17.5	- 6	
Plate Resistance (Approx.)	8750	- 925	ohms
Transconductance	2000	- 6500	μmhos
Plate Current	5.5	80* 35	ma
Plate Current for grid voltage of -24 volts	-	- 10	ma
Grid Voltage (Approx.) for plate current of 10 μa	-20	- -	volts
Grid Voltage (Approx.) for plate current of 50 μa	-	- -44	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" \pm 3/32"
Maximum Diameter	7/8"
Dimensional Outline	See General Section
Bulb	T6-1/2

⁰, * : See next page.



10DE7

DUAL TRIODE

With Medium-Mu Unit and Low-Mu Unit

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

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

VERTICAL DEFLECTION OSCILLATOR

Values are for Unit No.1

Maximum Ratings, Design-Center Values:

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

DC PLATE VOLTAGE.	330	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	350	max.	volts
CATHODE CURRENT:			
Peak.	60	max.	ma
DC.	15	max.	ma
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 ^A	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^D

DC PLATE VOLTAGE.	235	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE (Absolute maximum) [#]	850 ^B	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	225	max.	volts
CATHODE CURRENT:			
Peak.	130	max.	ma
DC.	35	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 ^A	max.	volts

○ * □ ▲ # : See next page.

Dual Triode

With Medium-Mu Unit and Low-Mu Unit

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 10DE7 is the same as the 6DE7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	9.7	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec





Dual Triode

With Medium-Mu Unit and Low-Mu Unit

For Equipment Having Series Heater-String Arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	9.7	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances (Approx.):[▲]

	Unit No. 1	Unit No. 2	
Grid to plate	4.4	9.5	μμf
Grid to cathode and heater . . .	2.2	7	μμf
Plate to cathode and heater . . .	0.6	1.6	μμf

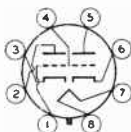
Characteristics, Class A₁ Amplifier:

	Unit No. 1	Unit No. 2	
Plate Voltage	250	150	volts
Grid Voltage	-11	-17.5	volts
Amplification Factor	17.5	6	
Plate Resistance (Approx.)	8750	800	ohms
Transconductance	2000	7500	μmhos
Plate Current	5.5	45	ma
Plate Current for grid volts = -25.	-	8	ma
Plate Current for plate volts = 60 and grid volts = 0	-	95•	ma
Grid Voltage (Approx.) for plate μa = 10	-20	-	volts
Grid Voltage (Approx.) for plate μa = 100	-	-40	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	3"
Maximum Seated Length	2-7/16"
Maximum Diameter	1-9/32"
Bulb	T9
Base	Short Intermediate-Shell Octal 8-Pin with External Barriers (JEDEC Group 1, No. 88-58)
Basing Designation for 80°TOM 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



10EG7

VERTICAL-DEFLECTION OSCILLATOR

Values are for Unit No. 1

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	400	max.	volts
CATHODE CURRENT:			
Peak.	77	max.	ma
Average	22	max.	ma
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

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation. 2.2 max. megohms

VERTICAL-DEFLECTION AMPLIFIER

Values are for Unit No. 2

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE [†]	1500	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	250	max.	volts
CATHODE CURRENT:			
Peak.	175	max.	ma
Average	50	max.	ma
PLATE DISSIPATION	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

Maximum Circuit Values:

Grid-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.

◆ The dc component must not exceed 100 volts.

♣ 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.

DIMENSIONAL OUTLINE

shown under Type 6EM7 also applies to the 10EG7



10EM7

Dual Triode

With High-Mu Unit and Low-Mu Unit

For Equipment Having Series Heater-String Arrangement

The 10EM7 is the same as the 6EM7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	9.7	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

10HF8

High-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 10HF8 is the same as the 6HF8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	10.5	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

11CY7

Dual Triode

With High-Mu Unit and Low-Mu Unit

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 11CY7 is the same as the 6CY7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	11	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec





High-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 10HF8 is the same as the 6HF8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC).	10.5	volts
Current	0.45 ± 6%	amp
Warm-up time (Average).	11	sec

11CY7

Dual Triode

With High-Mu Unit and Low-Mu Unit

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 11CY7 is the same as the 6CY7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC).	11	volts
Current	0.45 ± 6%	amp
Warm-up time (Average).	11	sec





RCA-11, RCA-12

DETECTOR, AMPLIFIER

Filament Voltage	Coated 1.1	
Filament Current	0.25	d-c volts amp.

Direct Interelectrode Capacitances:

Grid to Plate	3.3	μf
Grid to Filament	2.5	μf
Plate to Filament	2.5	μf

	<u>Type 11</u>	<u>Type 12</u>
Maximum Overall Length	4-1/8"	4-11/16"
Maximum Diameter	1-3/16"	1-7/16"
Bulb	T-8	T-10
Base	WD 4-Pin	Med. 4-Pin Bay.



BOTTOM VIEWS

AMPLIFIER (Class A)

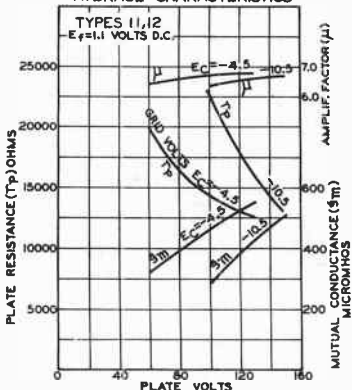
Operating Conditions and Characteristics:

Filament	1.1	1.1	d-c volts
Plate	90	135 max.	volts
Grid	-4.5	-10.5	volts
Amp. Fact.	6.6	6.6	
Plate Res.	15500	15000	ohms
Mut. Cond.	425	440	μmhos
Plate Cur.	2.5	3	ma.

DETECTOR

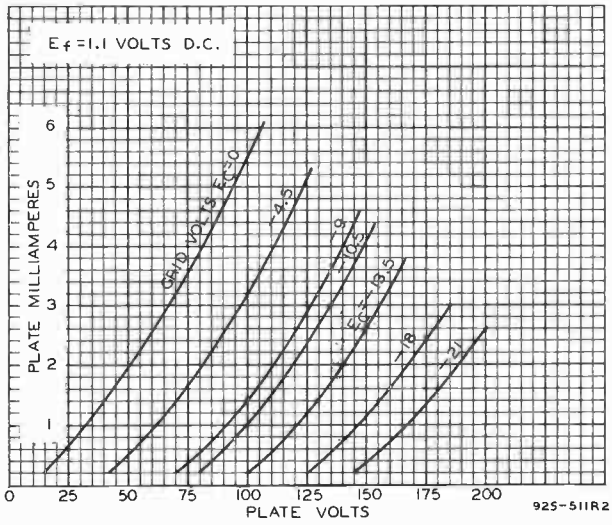
Typical Operation:	<u>Biased</u>	<u>Grid-Leak</u>	
Filament	1.1 1.1	1.1	d-c volts
Plate	90 135 max.	45	volts
Grid (approx)	-10.5 -18	Return to (+)Fil.	volts
Plate Cur.	Adjusted to 0.2 ma. with no input signal	-	
Grid Leak	-	0.25 to 5	megohms
Grid Condenser	-	0.00025	μf

AVERAGE CHARACTERISTICS

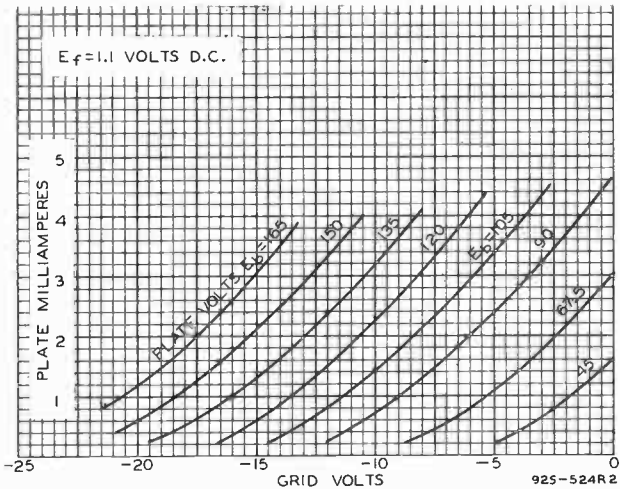


12

AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS





12A7

12A7
12A8-GT/G**RECTIFIER-PENTODE**

Heater [■]	Coated Unipotential Cathodes	
Voltage	12.6	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		4-17/32"
Maximum Seated Height		3-29/32"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Small
Base		Small 7-Pin
Pin 1-Heater		Pin 5-Rectifier Plate
Pin 2-Pentode Plate		Pin 6-Pentode Cathode
Pin 3-Pentode Screen		Pin 7-Heater
Pin 4-Rectifier Cathode		Cap -Pentode Grid
Mounting Position		Any

BOTTOM VIEW (7K)

*Maximum Ratings Are Absolute Values*PENTODE UNIT

Plate Voltage	135 max. volts
Screen Voltage	135 max. volts
<i>Typical Operation and Characteristics-Class A₁ Amplifier:</i>	
Plate	135 volts
Screen	135 volts
Grid	-13.5 volts
Cathode Res.	1175 ohms
Plate Res.	102000 ohms
Transcond.	975 μ mhos
Plate Cur.	9 ma.
Screen Cur.	2.5 ma.
Load Res.	13500 ohms
Power Output	0.55 watt

RECTIFIER UNIT*With Condenser-Input Filter:*

A-C Plate Voltage (RMS)	125 max. volts
D-C Output Current	30 max. ma.

**12A8-GT/G
PENTAGRID CONVERTER**

Heater [■]	Coated Unipotential Cathode	
Voltage	12.6	a-c or d-c volts
Current	0.15	amp.

The 12A8-GT/G is the same as the 6A8-GT except for heater rating.

[■] 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.

AUG. 2, 1943

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

DATA

World Radio History

12AH7-GT



12AH7-GT

TWIN TRIODE

Heater [■]	Coated Unipotential Cathode		
Voltage	12.6	a-c or d-c volts	
Current	0.15	amp.	
Direct Interelectrode Capacitances (Approx.): [○]			
	<u>Triode Unit P₁</u>	<u>Triode Unit P₂</u>	
Grid to Plate	3.0	2.2	μf
Grid to Cathode	2.8	3.2	μf
Plate to Cathode	2.6	3.0	μf
Plate to Plate	0.4		μf
Grid to Grid	0.06		μf
Maximum Overall Length			3-1/16"
Maximum Seated Height			2-1/2"
Maximum Diameter			1-5/16"
Bulb			T-9
Base			Intermed. Shell Octal 8-Pin
Pin 1 - Grid T ₂			Pin 5 - Grid T ₁
Pin 2 - Cathode T ₂			Pin 6 - Plate T ₁
Pin 3 - Plate T ₂			Pin 7 - Heater
Pin 4 - Cathode T ₁			Pin 8 - Heater
Mounting Position			Any



BOTTOM VIEW (8BE)

For convenience, one triode unit is identified as P₁; the other as P₂

Maximum Ratings Are Design-Center Values

AMPLIFIER - Each Unit

Plate Voltage	180 max. volts
Plate Supply Voltage	300 max. volts
Plate Dissipation	1.5 max. watts

Characteristics - Class A₁ Amplifier:

Plate	100	180	volts
Grid	-3.6	-6.5	volts
Amp. Fact.	16	16	
Plate Res.	10300	8400	ohms
Transcond.	1550	1900	μmhos
Plate Cur.	3.7	7.6	ma.
Grid Bias for Plate Cur. of 10 μamp.	-8.5	-16	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 external shield connected to cathode.

← Indicates a change.

AUG. 2, 1943

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WorldRadioHistory



12A8-GT

12A8-GT

PENTAGRIDS CONVERTER

The 12A8-GT is the same as the 6A8-GT except for the following items:

Heater, for Unipotential Cathode:

Vo'tage.	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*, 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"

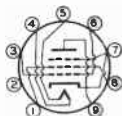
Dimensional Outline. See General Section

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

World Radio History



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:

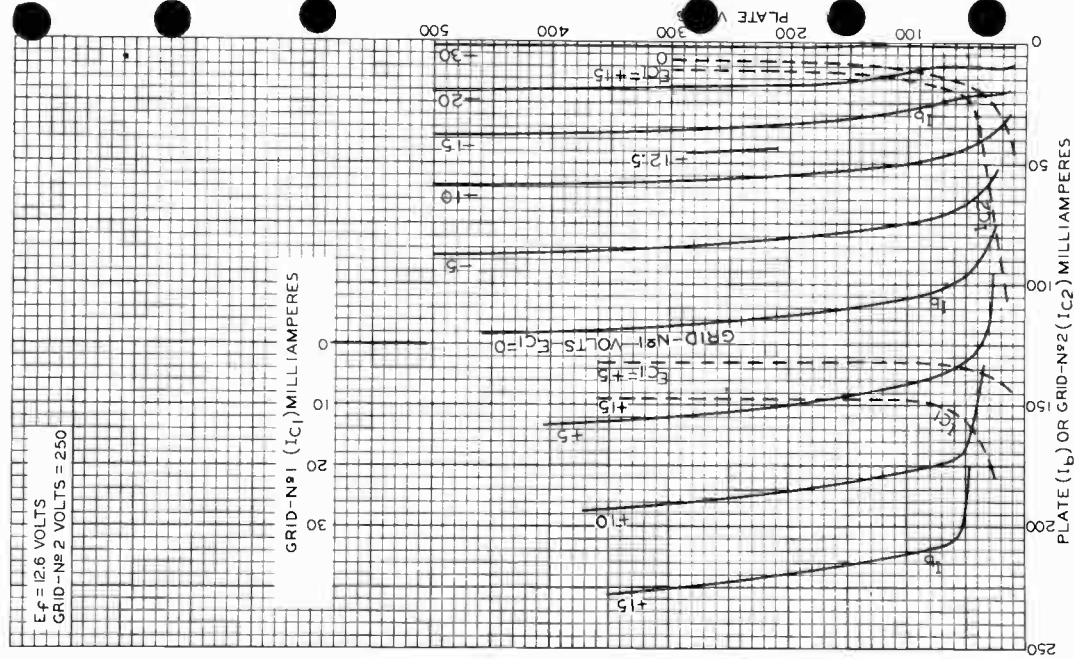
In the case of storage-battery-with-charger supply or similar supplies, the normal battery-voltage fluctuation may be as much as 35 per cent or more. This fluctuation imposes severe operating conditions on tubes. Under these conditions, the equipment should be designed so that 90 per cent of the design-center 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

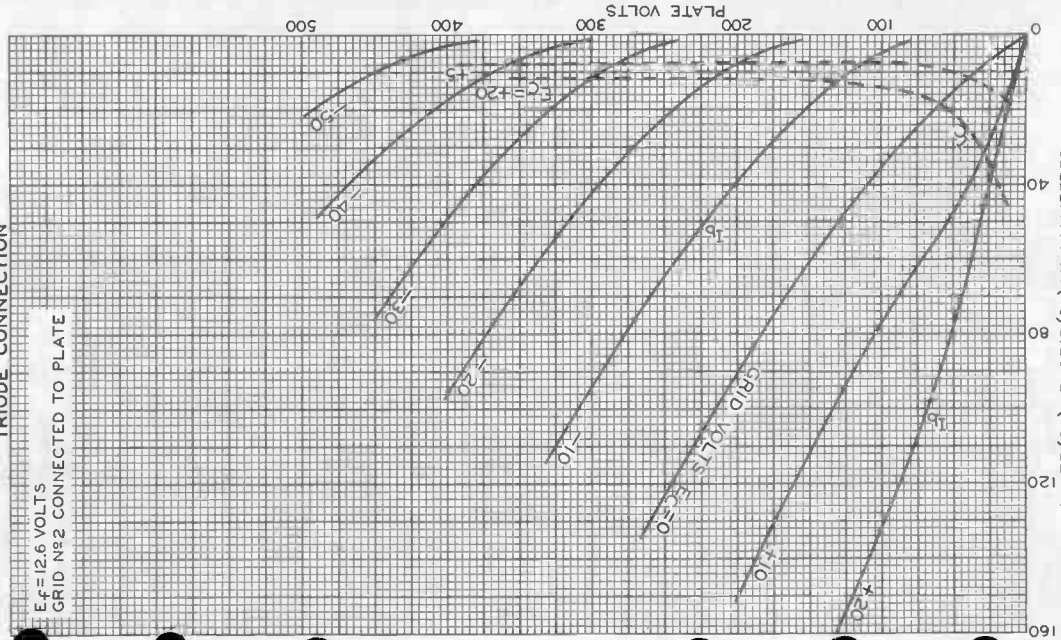
12AB5



12AB5

AVERAGE CHARACTERISTICS TRIODE CONNECTION

$E_f = 12.6$ VOLTS
GRID N°2 CONNECTED TO PLATE



AUG. 19, 1955

PLATE (I_b) OR GRID (I_c) MILLIAMPERES

TUBE DIVISION

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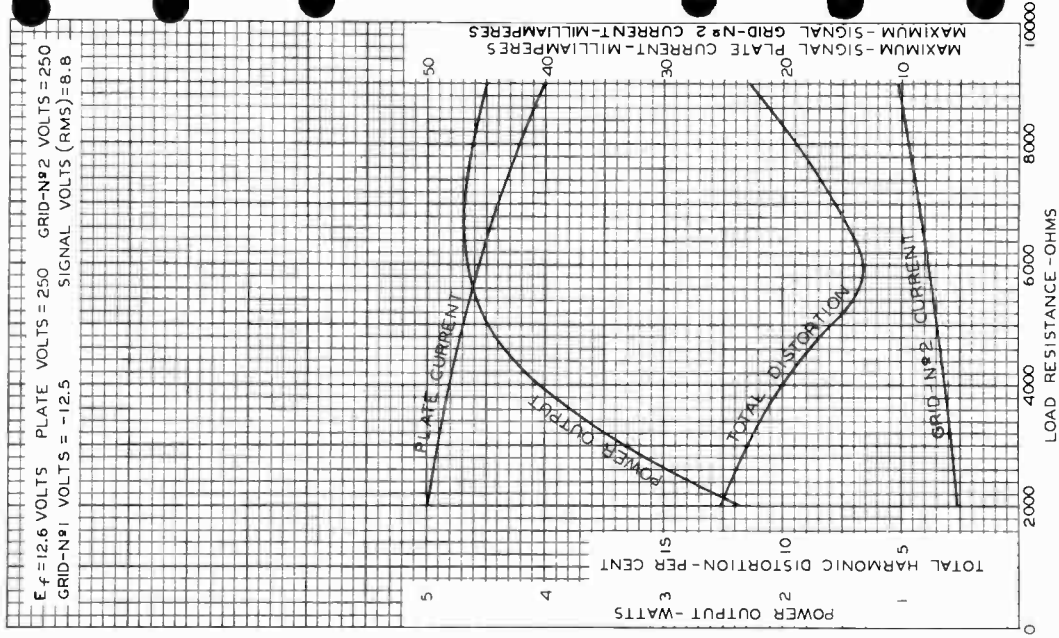
92CM-8756

12AB5



12AB5

OPERATION CHARACTERISTICS



World Precision

AUGUST 18, 1955

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8755

Pentagrid Converter

7-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage range (DC) 10 to 15.9 volts

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:

	Without External Shield	With External Shield ^a	
Grid No.3 to all other electrodes (RF input)	7	7	μf
Plate to all other electrodes (Mixer output) . .	7	12	μf
Grid No.1 to cathode & grid No.5, plate, grid No.3, and heater (Oscillator input) .	3.2	3.2	μf
Grid No.3 to plate	0.3 max.	0.26 max.	μf
Grid No.3 to grid No.1	0.15 max.	0.15 max.	μf
Grid No.1 to grid No.2 & grid No.4	2.2	2.2	μf
Grid No.2 & grid No.4 to all other electrodes except grid No.1 (Oscillator output) . . .	11	11	μf

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"

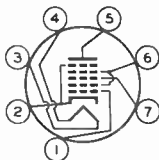
Dimensional Outline See *General Section*

Bulb T5-1/2

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

Basing Designation for BOTTOM VIEW 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

← Indicates a change.



12AD6

CONVERTER

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE.	16 max.	volts
GRID-No.3 (CONTROL-GRID) VOLTAGE:		
Negative-bias value.	16 max.	volts
Positive-bias value.	0 max.	volts
GRIDS-No.2 & No.4 (SCREEN-GRID) SUPPLY VOLTAGE.	16 max.	volts
GRIDS-No.2 & No.4 VOLTAGE.	16 max.	volts
TOTAL CATHODE CURRENT.	20 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode. . .	16 max.	volts
Heater positive with respect to cathode. . .	16 max.	volts

Typical Operation and Characteristics:

With separate excitation^b and with heater voltage of 12.6 volts

Plate Voltage.	10.6	12.6	14.6	volts
Grids-No.2 & No.4 Voltage.	10.6	12.6	14.6	volts
Grid-No.3 Supply Voltage	0	0	0	volts
Grid-No.3 Resistor	2.2	2.2	2.2	megohms
Peak-to-Peak Grid-No.1 (Oscillator-Grid) Voltage.	4.5	4.5	4.5	volts
Grid-No.1 Resistor	33000	33000	33000	ohms
Plate Resistance (Approx.)	0.5	0.4	0.2	megohm
Conversion Transconductance.	-	320	-	μ mhos
Grid-No.3 Voltage (Approx.) for conversion transconductance (μ mhos) =				
5.	-	-3	-	volts
0.5.	-	-4	-	volts
Plate Current.	-	0.35	-	ma
Grid-No.1 Current.	-	0.06	-	ma
Total Cathode Current.	-	1.6	-	ma

Oscillator Characteristics (Not Oscillating):

With grids No.2 & No.4 connected to plate
and with heater voltage of 12.6 volts

Plate and Grids-No.2 & No.4 Voltage.	12.6	volts
Grid-No.3 Voltage.	0	volts
Grid-No.1 Voltage.	0	volts
Amplification Factor between grid No.1 and grids No.2 & No.4 connected to plate	9.4	
Transconductance between grid No.1 and grids No.2 & No.4 connected to plate	3600	μ mhos
Cathode Current.	4.5	ma
Grid-No.1 Voltage (Approx.) for plate μ a = 10 .	-3.7	volts

Maximum Circuit Values:

Grid-No.3-Circuit Resistance	10 max.	megohms
--	---------	---------

^a with external shield JEDEC No.316 connected to cathode & grid No.5.

^b 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.





12AD6

12AD6

PENTAGRID CONVERTER

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. . . . 10.0 to 15.9 dc volts

This voltage range is on an absolute basis. For long-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:

	Without External Shield	With External Shield ^o	
Grid No.3 to all other electrodes (RF input) . . .	8	8	μf
Plate to all other electrodes (Mixer input) . . .	8	13	μf
Grid No.1 to all other electrodes (Oscillator input) . . .	5.5	5.5	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 & grid No.5	3	3	μf
Cathode & grid No.5 to all other electrodes except grid No.1	15	20	μf

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"

Maximum Diameter 3/4"

Dimensional Outline See General Section

Bulb T5-1/2

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

^o: See next page.



PENTAGRID CONVERTER

CONVERTER SERVICE

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	30 max.	volts
GRID-No.3 (CONTROL-GRID) VOLTAGE:		
Negative bias value.	-30 max.	volts
Positive bias value.	0 max.	volts
GRIDS-No.2 & No.4 (SCREEN-GRIDS) VOLTAGE .	30 max.	volts
TOTAL CATHODE CURRENT.	20 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:

Separate Excitation*

Plate Voltage.	12.6	volts
Grids-No.2 & No.4 Voltage.	12.6	volts
Grid-No.3 Voltage.	0	volts
Grid-No.1 (Oscillator-Grid) Voltage (RMS). .	1.6	volts
Grid-No.3 Resistor	2.2	megohms
Grid-No.1 Resistor	33000	ohms
Plate Resistance (Approx.)	1	megohm
Conversion Transconductance.	260	μ hos
Grid-No.3 Voltage (Approx.) for conversion transconductance of:		
5 μ hos.	-2.2	volts
20 μ hos	-1.8	volts
Plate Current.	450	μ a
Grids-No.2 & No.4 Current.	1.5	ma
Grid-No.1 Current.	50	μ a
Total Cathode Current.	2	ma

Self Excitation

Plate Voltage.	12.6	volts
Grids-No.2 & No.4 Voltage.	12.6	volts
Grid-No.3 Voltage.	0	volts
Grid-No.1 Voltage.	0	volts
Transconductance, Grid-No.1 to Plate and Grids-No.2 & No.4.	3800	μ hos
Amplification Factor, Grid-No.1 to Plate and Grids-No.2 & No.4.	9	
Cathode Current.	5	ma
Grid-No.1 Voltage (Approx.) for plate current of 10 μ a	-4	volts

Maximum Circuit Values:

Grid-No.3-Circuit Resistance	10 max.	megohms
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* Operation of heater in series with other heaters is not recommended.

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

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



12AD6

12AD6

PENTAGRID CONVERTER

OPERATING CONSIDERATIONS

The maximum ratings in the tabulated data for the 12AD6 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 value of plate voltage and grid-No.2 voltage is never exceeded for a battery-terminal potential of 13.2 volts. Although the operating voltages of the 12AD6 in this service will, at times, exceed the design-center maximum values, satisfactory performance with probable sacrifice in life will be obtained.





12AE6

12AE6

TWIN DIODE--MEDIUM-MU TRIODE

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. 10.0 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. 0.15 amp

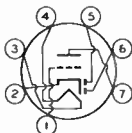
Direct Interelectrode Capacitances (Approx.):^o

Triode grid to triode plate. 2 μ f
Triode grid to cathode and heater. 1.8 μ f
Triode plate to cathode and heater 1.1 μ f
Plate of diode unit No.1 to plate of diode unit No.2. 0.9 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"
Maximum Diameter 3/4"
Dimensional Outline. See General Section
Bulb T5-1/2
Base Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW 7BT

Pin 1 - Grid of Triode Unit
Pin 2 - Cathode of Triode Unit and Diode Units No.1 and No.2
Pin 3 - Heater
Pin 4 - Heater



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

TRIODE UNIT — AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. 30 max. volts
CATHODE CURRENT. 20 max. ma
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode. . 30 max. volts
Heater positive with respect to cathode. . 30 max. volts

^o: See next page.



12AE6

TWIN DIODE—MEDIUM-MU TRIODE

Characteristics with 12.6 Volts on Heater:

Plate Voltage	12.6	volts
Grid Voltage	0	volts
Amplification Factor	15	
Plate Resistance (Approx.)	15000	ohms
Transconductance	1000	μ mhos
Plate Current	750	μ a

Typical Operation as Resistance-Coupled Amplifier
with 12.6 Volts on Heater:

Plate-Supply Voltage	14.4	volts
Grid Voltage	0	volts
Plate Load Resistor	0.47	megohm
Grid Resistor	2.2	megohms
Grid Resistor of Following Stage	2.2	megohms
Input Capacitor	0.01	μ f
Output Capacitor	0.01	μ f
Voltage Gain at 400 cps with RMS output volts = 1	10	
Max.-Signal Source Impedance	1000	ohms

Maximum Circuit Values:

Grid-Circuit Resistance	10 max.	megohms
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DIODE UNITS — Two

Maximum Ratings, Design-Center Values:

Values are for Each Unit

PLATE CURRENT	1 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:

Plate Current for plate volts = 10	2	ma
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- Operation of heater in series with other heaters is not recommended.
- Without external shield.

OPERATING CONSIDERATIONS

The *maximum ratings* in the tabulated data for the 12AE6 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



12AE6

12AE6

TWIN DIODE—MEDIUM-MU TRIODE

conditions, the equipment should be designed so that 90 per cent of the design-center maximum value of plate voltage is never exceeded for a battery-terminal potential of 13.2 volts. Although the operating voltages of the 12AE6 in this service will, at times, exceed the design-center maximum values, satisfactory performance with probable sacrifice in life will be obtained.



Dual Triode

With Medium-Mu Unit and Low-Mu Unit

9-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage range (DC) 10 to 15.9 volts

*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 Capacitances (Approx.):

	Unit No. 1	Unit No. 2	
Grid to plate	3.9	3.4	μmf
Grid to cathode and heater. . .	4.7	4.2	μmf
Plate to cathode and heater . .	0.75	0.85	μmf

Characteristics, Class A₁ Amplifier:

With heater voltage of 12.6 volts

	Unit No. 1	Unit No. 2	
Plate Voltage	12.6	12.6	volts
Grid Resistor	1.5	1	megohms
Amplification Factor.	13	6.4	
Plate Resistance (Approx.). . . .	3150	985	ohms
Transconductance.	4000	6500	μmhos
Plate Current	1.9	7.5	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" \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. 9A

Pin 1 - Plate of Unit No. 2
Pins 5 & 9 - Heater of Unit No. 1

Pin 2 - Grid of Unit No. 2
Pin 6 - Plate of Unit No. 1

Pin 3 - Cathode of Unit No. 2
Pin 7 - Grid of Unit No. 1

Pins 4 & 9 - Heater of Unit No. 2
Pin 8 - Cathode of Unit No. 1

Pin 9 - Heater Tap



12AE7

AUDIO DRIVER

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	16 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 .	16 max.	volts
Heater positive with respect to cathode .	16 max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance	1.5 max.	megohms
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Remote-Cutoff Pentode

7-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage range (DC) 10 to 15.9 volts

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:^aGrid No.1 to plate 0.006 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 4.8 $\mu\mu\text{f}$ Characteristics, Class A₁ Amplifier:

Heater Voltage 12.6 volts

Plate Voltage 12.6 volts

Grid No.3 Connected to cathode at socket

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.) 0.35 megohm

Transconductance 1500 μmhos

Plate Current 1.1 ma

Grid-No.2 Current 0.45 ma

Grid-No.1 Voltage (Approx.) for transconductance (μmhos) = 40 -2.7 voltsGrid-No.1 Voltage (Approx.) for transconductance (μmhos) = 10, grid-No.1 resistor = 0, and with grid No.1 connected to grid No.3 -3.5 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 See General Section

Bulb T5-1/2

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

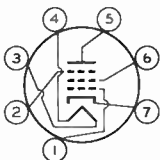
← Indicates a change.



12AF6

Basing Designation for BOTTOM VIEW. 78K

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	16 max.	volts
GRID No.3 (SUPPRESSOR GRID) . . . . .	.Connect to cathode at socket	
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

Maximum Circuit Values:

Grid-No.1-Circuit Resistance. 2.2 max. megohms

^a without external shield.





12AF6

12AF6

REMOTE-CUTOFF PENTODE

7-PIN MINIATURE TYPE

For use in automobile radio receivers
operating directly from 12-volt storage batteries

GENERAL DATA

Electrical:

Heater^c, 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. 0.15 amp

Direct Interelectrode Capacitances:^o

Grid No.1 to plate 0.006 max. μ f

Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater 5.5 μ f

Plate to cathode, grid No.3 & internal shield, grid No.2, and heater. 4.8 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"

Maximum Diameter 3/4"

Dimensional Outline. See General Section

Bulb T5-1/2

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

Basing Designation for BOTTOM VIEW 7BK

- 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. 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

^c: See next page.

12AF6



12AF6

REMOTE-CUTOFF PENTODE

Characteristics with 12.6 Volts on Heater:

Plate Voltage	12.6	volts
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.)	0.3	megohm
Transconductance.	1250	μ mhos
Plate Current	0.8	ma
Grid-No.2 Current	0.3	ma
Grid-No.1 Voltage (Approx.) for transconductance of 40 μ mhos.	-2.7	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance. 2.2 max. megohms

^o Without external shield.

[•] Operation of heater in series with other heaters is not recommended.

OPERATING CONSIDERATIONS

The *maximum ratings* in the tabulated data for the 12AF6 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 12AF6 in this service will, at times, exceed the design-center maximum values, satisfactory performance with probable sacrifice in life will be obtained.



12AH7-GT

12AH7-GT

MEDIUM-MU TWIN TRIODE

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	$\mu\mu\text{f}$
Grid to cathode and heater	2.8	3.2	$\mu\mu\text{f}$
Plate to cathode and heater	2.6	3	$\mu\mu\text{f}$
Plate of unit No.1 to plate of unit No.2	0.4		$\mu\mu\text{f}$
Grid of unit No.1 to grid of unit No.2	0.06		$\mu\mu\text{f}$

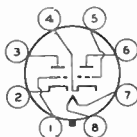
Characteristics, Class A₁ Amplifier (Each unit):

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. B8-6)
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

DATA

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12AJ6

12AJ6

TWIN DIODE—MEDIUM-MU TRIODE

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. 10.0 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. 0.15 amp

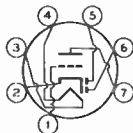
Direct Interelectrode Capacitances (Approx.):^o

Triode grid to triode plate.	2	μf
Triode grid to cathode and heater.	2.2	μf
Triode plate to cathode and heater	0.8	μf
Plate of diode unit No.1 to plate of diode unit No.2.	0.9	μf

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"
Maximum Diameter 3/4"
Dimensional Outline. See General Section
Bulb T5-1/2
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 - Plate of
Diode
Unit No.2



Pin 6 - Plate of
Diode
Unit No.1
Pin 7 - Triode Plate

TRIODE UNIT — AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	30 max.	volts
CATHODE CURRENT.	20 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:

Plate Voltage.	12.6	volts
Grid Voltage	0	volts
Amplification Factor	55	

*^o: See next page.

12AJ6



12AJ6

TWIN DIODE—MEDIUM-MU TRIODE

Plate Resistance (Approx.)	45000	ohms
Transconductance	1200	μ hos
Plate Current	750	μ a

**Typical Operation as Resistance-Coupled Amplifier
with 12.6 Volts on Heater:**

Plate-Supply Voltage	12.6	volts
Grid Voltage	0	volts
Plate Load Resistor	1	megohm
Grid Resistor	1	megohm
Grid Resistor of Following Stage	2	megohms
Input Capacitor	0.02	μ f
Output Capacitor	0.01	μ f
Voltage Gain at 400 cps with RMS output volts = 1	16	

Maximum Circuit Values:

Grid-Circuit Resistance	10 max.	megohms
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DIODE UNITS — Two**Maximum Ratings, Design-Center Values:***Values are for Each Unit*

PLATE CURRENT	1 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:

Plate Current for plate volts = 10	2	ma
--	---	----

- Operation of heater in series with other heaters is not recommended.
- Without external shield.

OPERATING CONSIDERATIONS

The *maximum ratings* in the tabulated data for the 12AJ6 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 value of plate voltage is never exceeded for a battery-terminal potential of 13.2 volts. Although the operating voltages of the 12AJ6 in this service will, at times, exceed the design-center maximum values, satisfactory performance with probable sacrifice in life will be obtained.



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.



12AQ5

12AQ5

BEAM POWER AMPLIFIER

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 12.6 ac or dc volts

Current 0.225 amp

Direct Interelectrode Capacitances

(Approx., without external shield):

Grid No.1 to Plate 0.35 $\mu\mu\text{f}$

Input 8.3 $\mu\mu\text{f}$

Output 8.2 $\mu\mu\text{f}$

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"

Bulb T-5-1/2

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

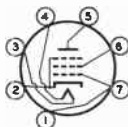
BOTTOM VIEW

Pin 1 - Grid No.1

Pin 2 - Grid No.3,

Cathode

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 (SCREEN) 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 on bulb surface)* 250 max. °C

Typical Operation and Characteristics:

Plate Voltage 180 250 volts

Grid-No.2 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

Zero-Signal Plate Current 29 45 ma

Max.-Signal Plate Current 30 47 ma

*; See next page.

12AQ5



12AQ5

BEAM POWER AMPLIFIER

Zero-Signal Grid-No.2 Current (Approx.)	3	4.5	ma
Max.-Signal Grid-No.2 Current (Approx.)	4	7	ma
Plate Resistance (Approx.) . . .	58000	52000	ohms
Transconductance	3700	4100	μ hos
Load Resistance	5500	5000	ohms
Total Harmonic Distortion	8	8	per cent
Max.-Signal Power Output	2.0	4.5	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

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

AF POWER AMPLIFIER - Class AB₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	250 max.	volts
GRID-No.2 (SCREEN) 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 on bulb surface)*	250 max.	$^{\circ}$ C

Typical Operation:

Unless otherwise indicated, 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
Zero-Signal Grid-No.2 Current (Approx.) . .	5	ma
Max.-Signal Grid-No.2 Current (Approx.) . .	13	ma
Plate Resistance (Approx. per tube)	60000	ohms
Transconductance (Per tube)	3750	μ hos
Effective Load Resistance (Plate to plate) .	10000	ohms
Total Harmonic Distortion	5	per cent
Max.-Signal Power Output	10	watts

* 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.

#: See next page.

AUG. 1, 1953

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



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

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.



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

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 mhos
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

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



12AT7

12AT7 AVERAGE PLATE CHARACTERISTICS EACH UNIT

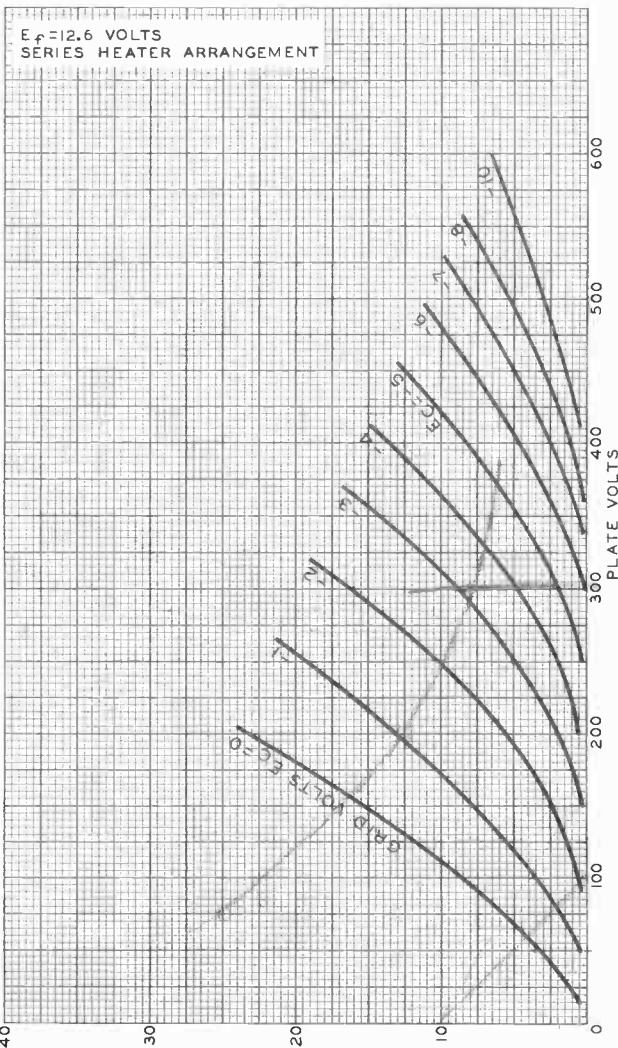


PLATE MILLIAMPERES

PLATE VOLTS

ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

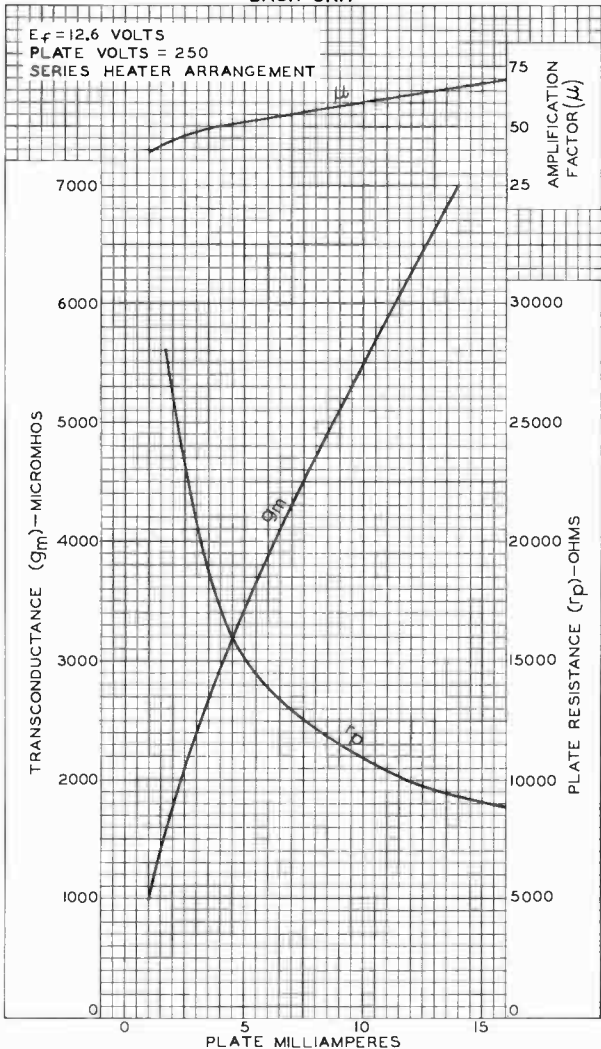
92CM-7056

12AT7



12AT7

AVERAGE CHARACTERISTICS EACH UNIT





12AU6

12AU6

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

The 12AU6 is the same as the 6AU6 except for the following items:

Heater, for Unipotential Cathode:

Voltage	12.6	. . . . .	ac or dc volts
Current	0.15	. . . . .	amp



Medium-Mu Twin Triode

9-PIN MINIATURE TYPE

For Applications Critical as to Microphonics

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage (AC or DC)	12.6	6.3 ± 10%	volts
Current	0.15 ± 6%	0.3	amp

Direct Interelectrode Capacitances (Approx.):^a

	Unit No. 1	Unit No. 2	
Grid to plate	1.5	1.5	μf
Grid to cathode and heater	1.6	1.6	μf
Plate to cathode and heater	0.5	0.35	μf

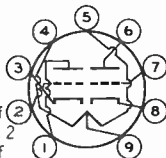
Characteristics, Class A₁ Amplifier (Each Unit):

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
Grid Voltage (Approx.) for plate $\mu a = 10$	-	-24	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" ± 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	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 Tap
Pins 5 & 9 - Heater of Unit No. 1	



← Indicates a change.



12AU7A

AMPLIFIER — Class A₁

Values are for Each Unit

→ Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	330	max.	volts
CATHODE CURRENT	22	max.	ma
PLATE DISSIPATION:			
Either plate.	2.75	max.	watts
Both plates (Both units operating). . .	5.5	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^b	max.	volts

Typical Operation as Resistance-Coupled Amplifier:

See *RESISTANCE-COUPLED AMPLIFIER CHART No. 10*
at front of this Section

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation. 1 max. megohm

HORIZONTAL-DEFLECTION OSCILLATOR

Values are for Each Unit

→ Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	660	max.	volts
CATHODE CURRENT:			
Peak.	330	max.	ma
Average	22	max.	ma
PLATE DISSIPATION:			
Either plate.	2.75	max.	watts
Both plates (Both units operating). . .	5.5	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^b	max.	volts

Maximum Circuit Values:

Grid-Circuit Resistance 2.2 max. megohms

VERTICAL-DEFLECTION OSCILLATOR

Values are for Each Unit

→ Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	330	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	440	max.	volts
CATHODE CURRENT:			
Peak.	66	max.	ma
Average	22	max.	ma

→ Indicates a change.



PLATE DISSIPATION:

Either plate.	2.75	max.	watts
Both plates (Both units operating). . .	5.5	max.	watts

PEAK HEATER-CATHODE VOLTAGE:

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

Maximum Circuit Values:

Grid-Circuit Resistance	2.2	max.	megohms
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VERTICAL-DEFLECTION AMPLIFIER

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	300	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	1200	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE.	275	max.	volts

CATHODE CURRENT:

Peak.	66	max.	ma
Average	22	max.	ma

PLATE DISSIPATION:

Either plate.	2.75	max.	watts
Both plates (Both units operating). . .	5.5	max.	watts

PEAK HEATER-CATHODE VOLTAGE:

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

Maximum Circuit Values:

Grid-Circuit Resistance:

For cathode-bias operation.	2.2	max.	megohms
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^a without external shield.

^b The dc component must not exceed 100 volts.

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

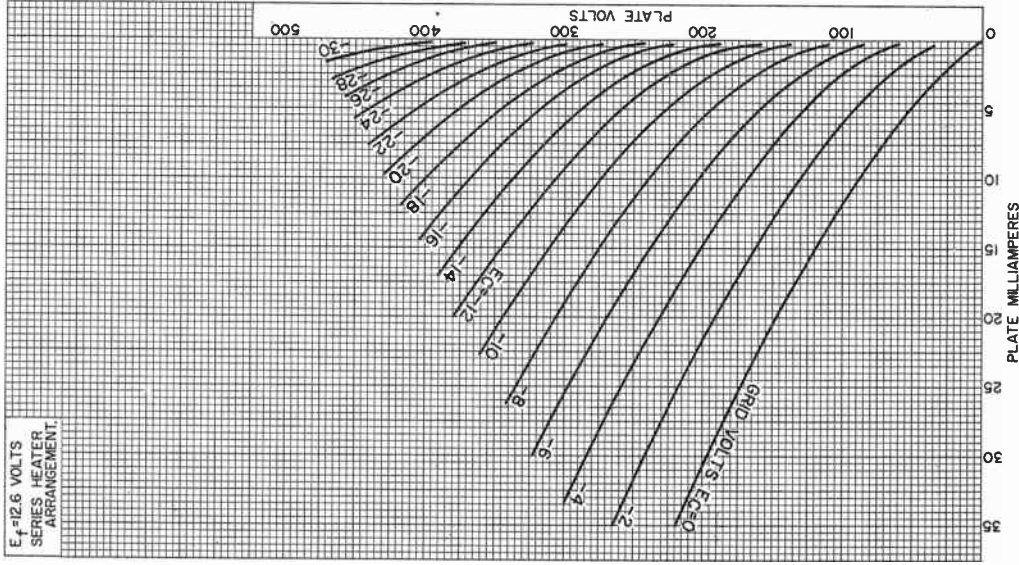
^d This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.

← Indicates a change.



12AU7A

AVERAGE PLATE CHARACTERISTICS Each Unit

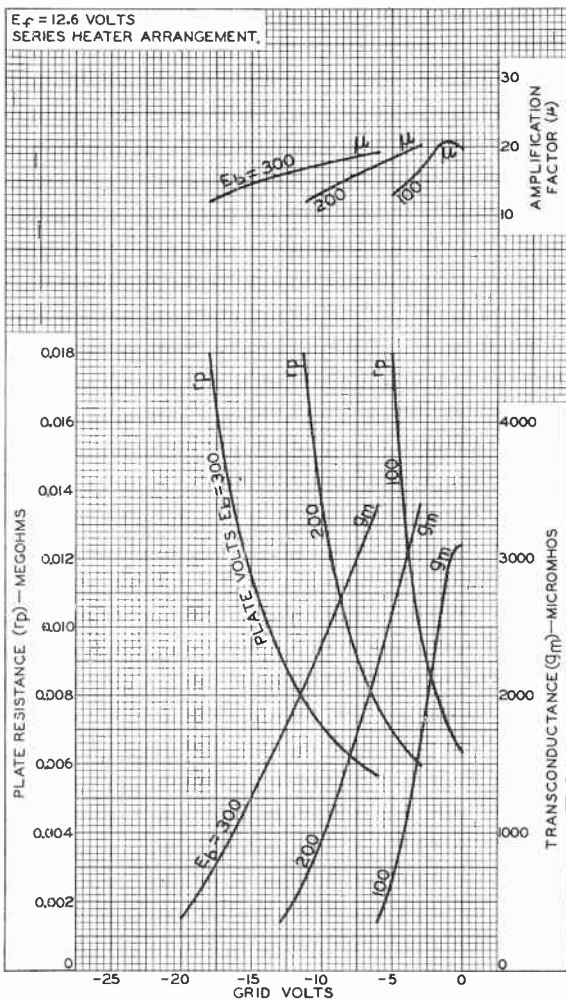


92CM-10548



RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

AVERAGE CHARACTERISTICS Each Unit



92CM-8564R2







12AU7-A

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

For applications critical as to microphonics

The 12AU7-A has the same *maximum ratings, characteristics, typical operation, mechanical data, and curves* as the 12AU7.

12AU7-A



6





12AU7

MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

12AU7

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	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 μamp	-	-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 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	



← Indicates a change.



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
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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
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[♣] 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

DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



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 neegative 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 milli-seconds.

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

The curves under Type 6C4 also apply to each unit of the 12AU7

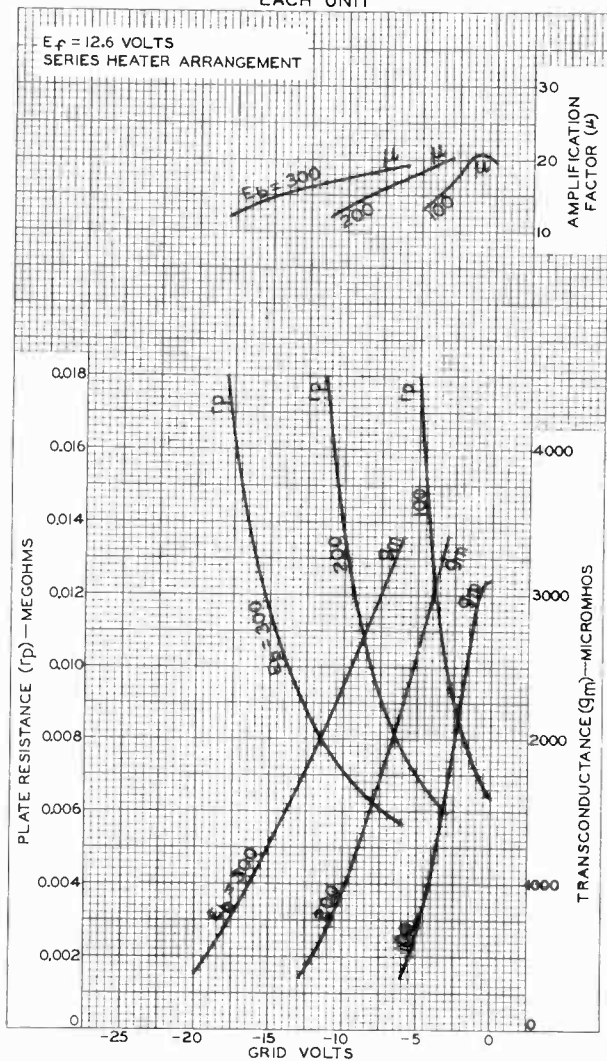
12AU7



12AU7

AVERAGE CHARACTERISTICS EACH UNIT

$E_f = 12.6$ VOLTS
SERIES HEATER ARRANGEMENT



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8564R1



12AV5-GA
12AV6

12AV5-GA BEAM POWER TUBE

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

The 12AV5-GA is the same as the 6AV5-GA 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.

12AV6

TWIN DIODE—HIGH-MU TRIODE

7-PIN MINIATURE TYPE

The 12AV6 is the same as the 6AV6 except for the following items:

Heater, for Unipotential Cathode:

Voltage	12.6	. . . . .	ac or dc volts
Current	0.15	. . . . .	amp





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	μmhos
Plate Current	9	18	ma
Grid Voltage (Approx.) for plate current of 10 μamp	-9	-12	volts

JUNE 14, 1954

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History



12AW6

12AW6

SHARP-CUTOFF PENTODE

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	12.6	ac or dc volts
Current	0.15	amp

Direct Interelectrode Capacitances (Approx.)^o:

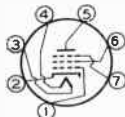
Grid to Plate	0.025 max.	μf
Input	6.5	μf
Output	1.5	μf

^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" ± 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 [□]	Connected to cathode at socket			
Grid-No. 2 Voltage	100	125	150	.. volts
Cathode-Bias Resistor	100	100	200	.. ohms

[□] 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 mhos
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 mhos
Plate Current.	7.0	5.5	ma.

□ Grid-No.3 is not suitable for use as a control or signal electrode.

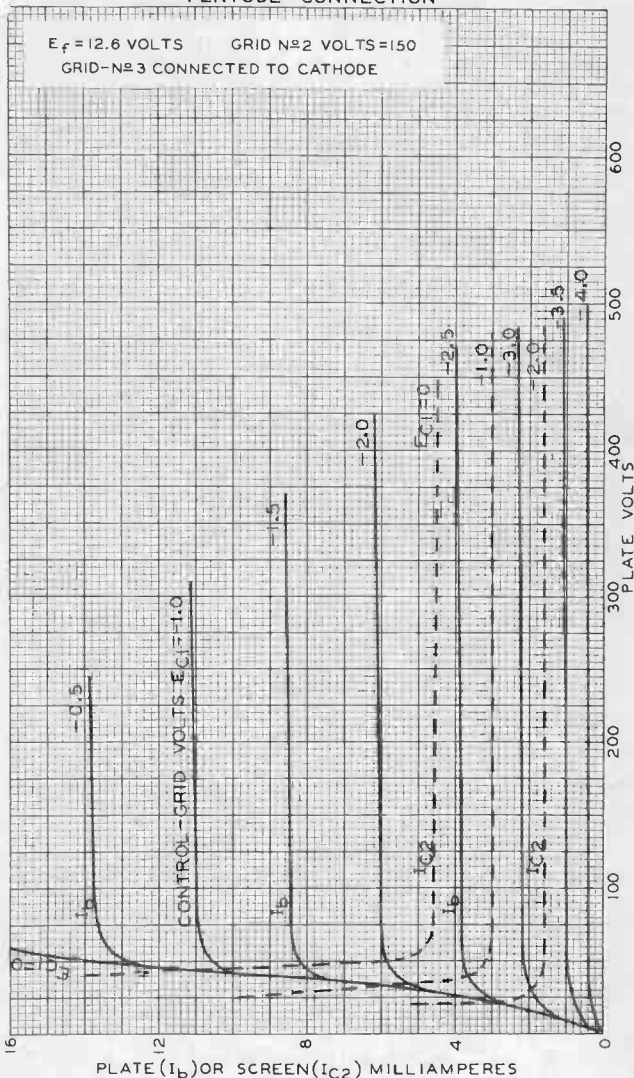
▲ Grid-No.2 tied to plate and grid-No.3 tied to cathode.



12AW6

12AW6 AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION

$E_f = 12.6$ VOLTS GRID No 2 VOLTS = 150
GRID-No 3 CONNECTED TO CATHODE



MARCH 26, 1947

TUBE DEPARTMENT

92CM-6855

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

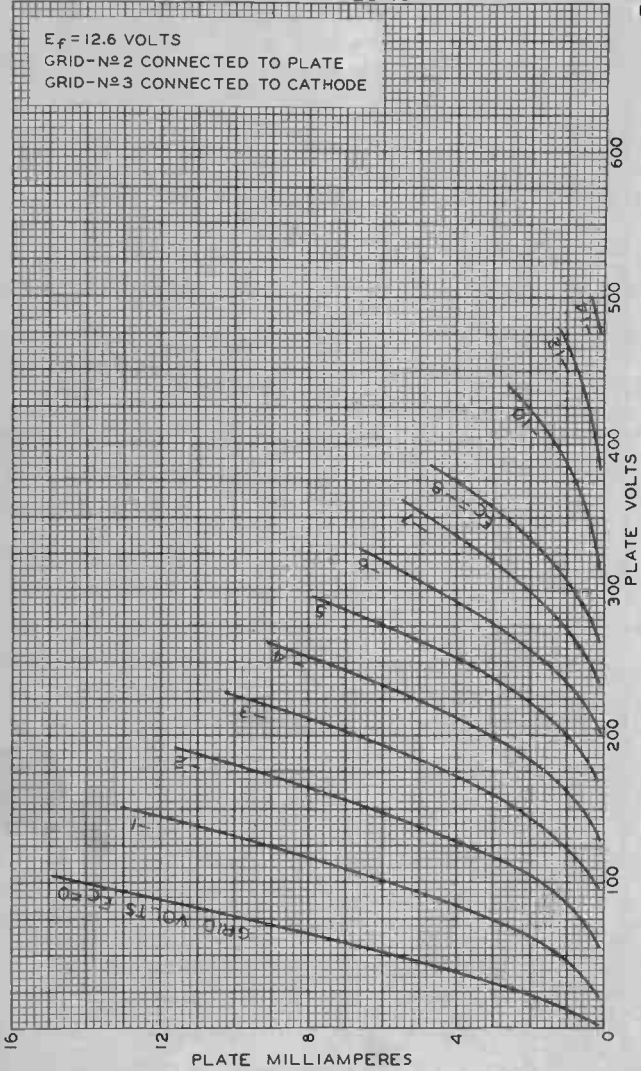
12AW6



12AW6

AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION

$E_f = 12.6$ VOLTS
GRID-№2 CONNECTED TO PLATE
GRID-№3 CONNECTED TO CATHODE



MARCH 26, 1947

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
World Radio History

92CM-6856

12AX4-GTA

Half-Wave Vacuum Rectifier

For Damper Service in TV 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 (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

12AX4-GTB

Half-Wave Vacuum Rectifier

For Damper Service in TV Equipment Having Series Heater-String Arrangement

The 12AX4-GTB is the same as the 6AX4-GTB except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec







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.

High-Mu Twin Triode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage (AC or DC)	12.6	6.3 ± 10%	volts
Current	0.15 ± 6%	0.3	amp

Direct Interelectrode Capacitances (Approx.):

	Without External Shield	With External Shield ^a	
Grid to plate (Each unit)	1.7	1.7	μf
Grid to cathode and heater (Each unit)	1.6	1.8	μf
Plate to cathode and heater:			
Unit No.1	0.46	1.9	μf
Unit No.2	0.34	1.9	μf

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

Basing Designation for BOTTOM VIEW.9A

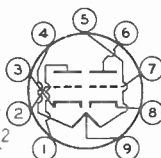
Pin 1 - Plate of Unit No.2

Pin 2 - Grid of Unit No.2

Pin 3 - Cathode of Unit No.2

Pins 4 & 9 - Heater of Unit No.2

Pins 5 & 8 - 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 Tap

← Indicates a change.



12AX7

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^b max. volts

Typical Operation as Resistance-Coupled Amplifier:

See *RESISTANCE-COUPLED-AMPLIFIER CHART No. 25*
at front of this Section

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

^b The dc component must not exceed 100 volts.

→ Indicates a change.





12AX7

12AX7

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:^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 ←

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 & 9 - 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.

NOV. 5, 1954

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

12AX7



12AX7

HIGH-MU TWIN TRIODE

Grid Voltage	-1	-2	. . . . .	volts
Amplification Factor . . .	100	100		
Plate Resistance	80000	62500	. . . . .	ohms
Transconductance	1250	1600	. . . . .	μ hos
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

DATA

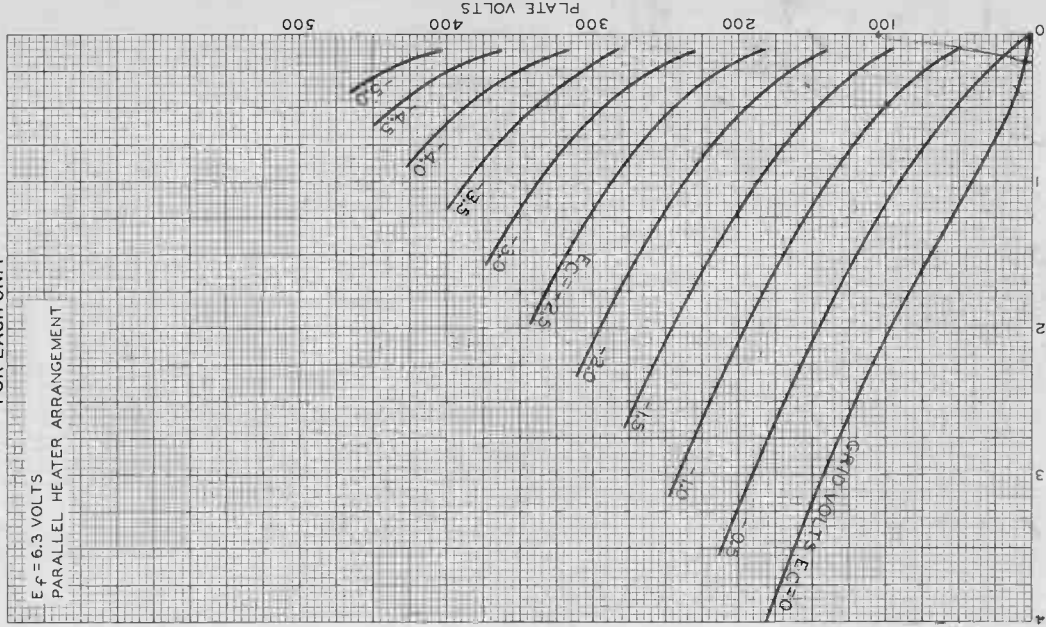


12AX7

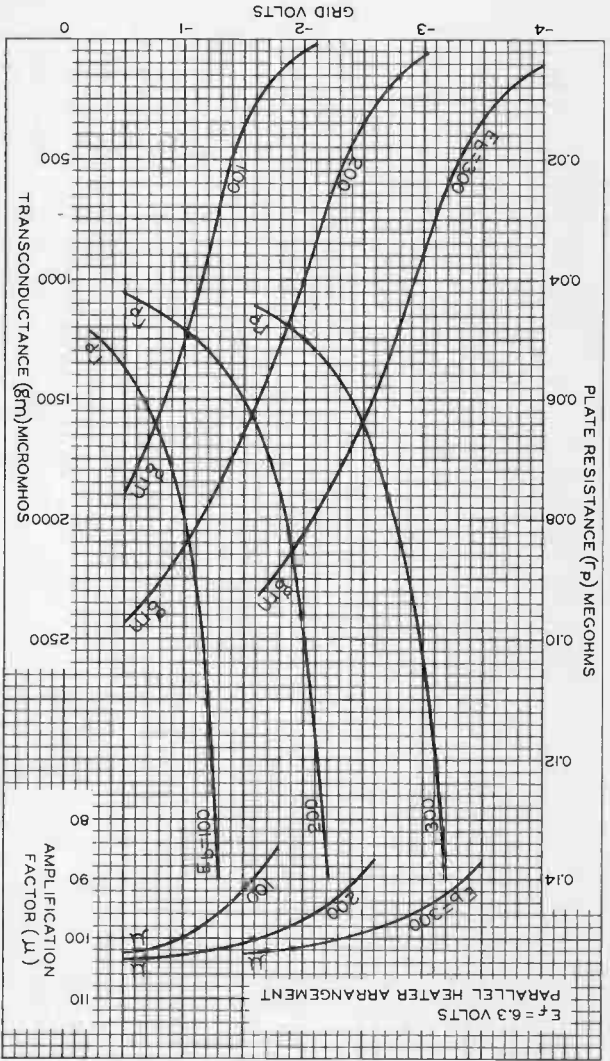
AVERAGE PLATE CHARACTERISTICS FOR EACH UNIT

$E_f = 6.3$ VOLTS

PARALLEL HEATER ARRANGEMENT



12AX7



AVERAGE CHARACTERISTICS FOR EACH UNIT

12AX7



12AX7

$E_f = 6.3$ VOLTS
PARALLEL HEATER ARRANGEMENT

High-Mu Twin Triode

9-PIN MINIATURE TYPE

For High-Fidelity Audio-Amplifier Applications Critical as to Noise and Hum

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

	Series	Parallel	
Heater arrangement			
Voltage (AC or DC)	12.6	6.3 ± 10%	volts
Current	0.15 ± 6%	0.3	amp

Direct Interelectrode Capacitances (Approx.):^Δ

	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, Each Unit):

Average Value (RMS) 1.8 μvolts
Measured in "true rms" units under the following conditions: Heater volts (AC) = 6.3; center-tap of heater transformer connected to ground; plate supply volts (DC) = 250; plate load resistor (megohms) = 0.1; cathode resistor (ohms) = 2700; cathode bypass capacitor (μf) = 100; grid resistor (ohms) = 0; amplifier frequency range 25 to 10000 cps.

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



12AX7-A

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 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:

See *RESISTANCE-COUPLED-AMPLIFIER CHART No. 25*
at front of this Section

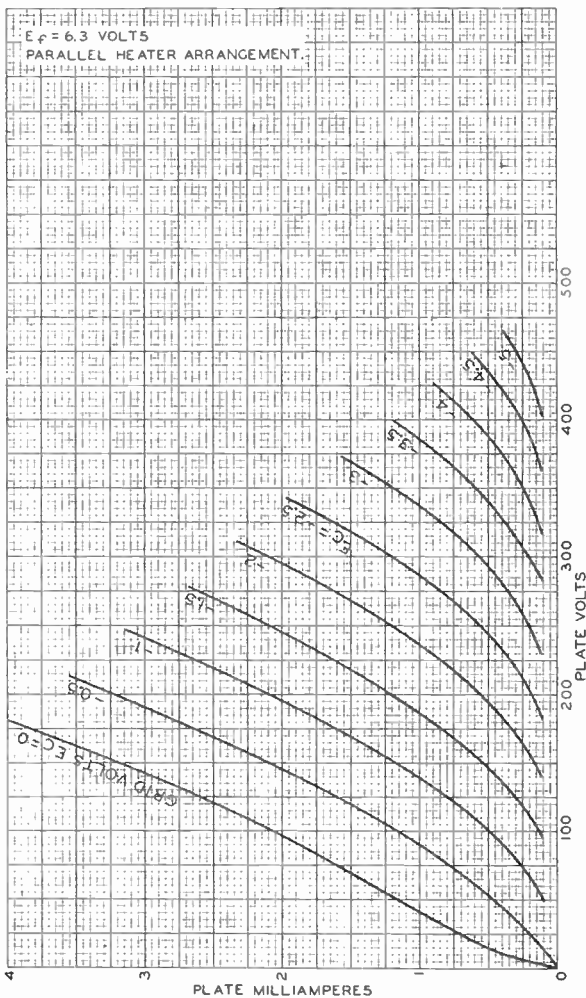
▲ Without external shield.

● The dc component must not exceed 100 volts.



12AX7-A

AVERAGE PLATE CHARACTERISTICS Each Unit

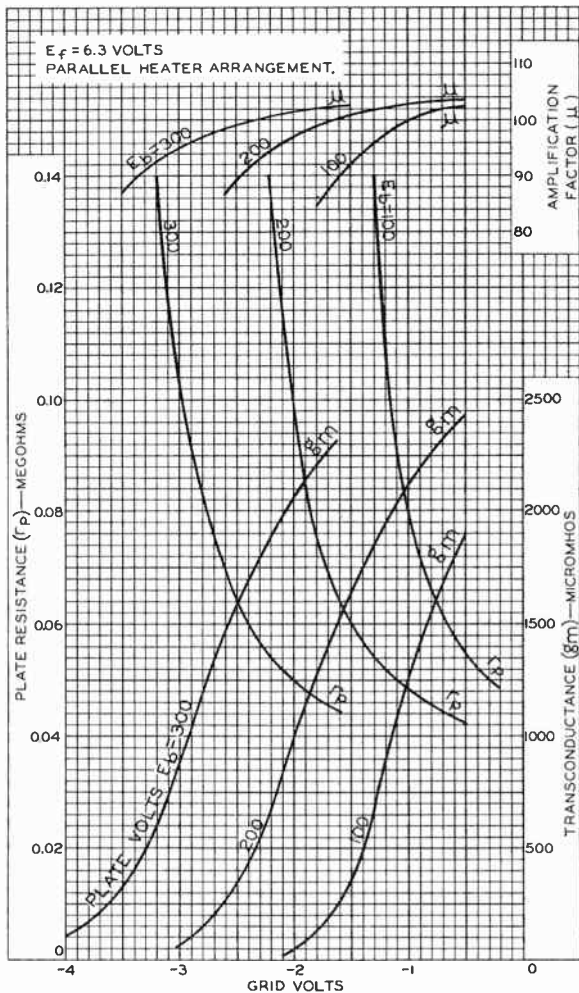


92CM-6879



12AX7-A

AVERAGE CHARACTERISTICS Each Unit



92CM-6880



Half-Wave Vacuum Rectifier

NOVAR TYPE

For TV Damper Service

With Heater Having Controlled Warm-Up Time

The 12AY3 is the same as the 6AY3 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec







12AY7

MEDIUM-MU TWIN TRIODE

MINIATURE TYPE

12AY7

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 (Without

External Shield)—Each Unit:

Grid to Plate	1.3		$\mu\mu\text{f}$
Input	1.3		$\mu\mu\text{f}$
Output	0.6		$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	250	volts
Grid Voltage	-4	volts
Amplification Factor	40	
Plate Resistance (Approx.)	22800	ohms
Transconductance	1750	μmhos
Plate Current	3	ma
Grid Voltage (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"
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
- 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 Mid-Tap

* Use of the 12.6-volt connection with an ac-heater supply is not recommended for applications involving low hum.

(continued on next page)

12AY7



12AY7

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
Positive bias value	0 max.	volts
PLATE DISSIPATION	1.5 max.	watts
CATHODE CURRENT	10 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 as Resistance-Coupled Amplifier:

*See RESISTANCE-COUPLED AMPLIFIER CHART No.28
at front of Receiving Tube Section*

APRIL 1, 1953

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

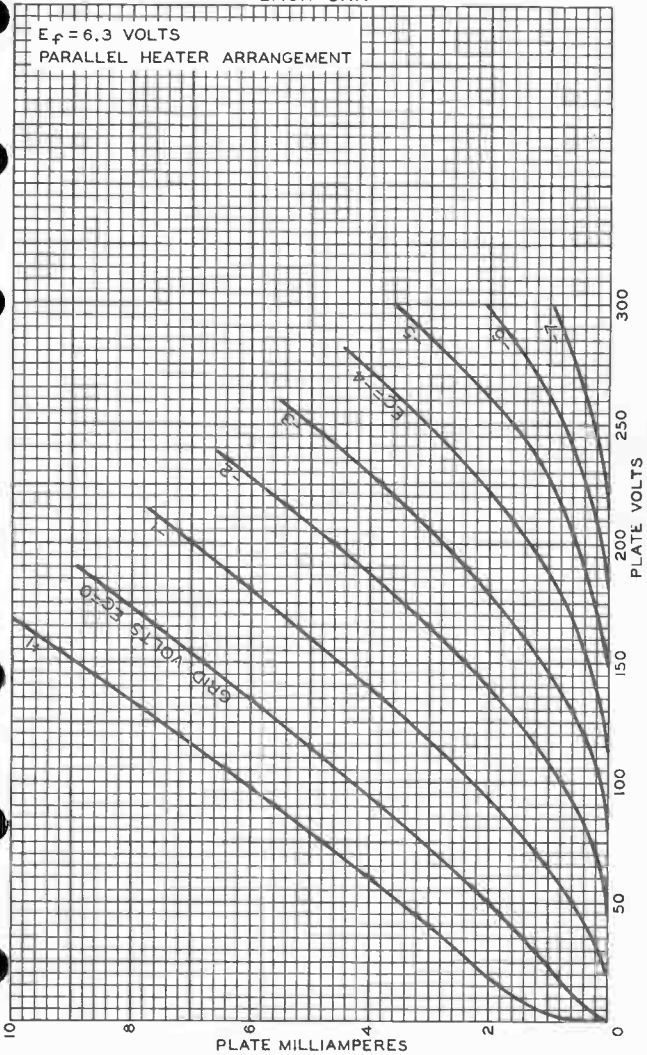


12AY7

AVERAGE PLATE CHARACTERISTICS EACH UNIT

12AY7

$E_f = 6.3$ VOLTS
PARALLEL HEATER ARRANGEMENT



NOV. 5, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7861

World Radio History

High-Mu Twin Triode

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

	Series	Parallel	
Heater arrangement			
Voltage (AC or DC)	12.6 ± 10%	6.3	volts
Current	0.225	0.45 ± 6%	amp
Warm-up time (Average)	-	11	sec

Direct Interelectrode Capacitances (Approx.):

	Without External Shield	With External Shield ^a	
<i>Unit No. 1:</i>			
Grid to plate	2	1.9	μμf
Grid to cathode and heater	2.6	2.8	μμf
Plate to cathode and heater	0.44	1.4	μμf
<i>Unit No. 2:</i>			
Grid to plate	2	1.9	μμf
Grid to cathode and heater	2.6	2.8	μμf
Plate to cathode and heater	0.36	1.6	μμf

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Supply Voltage	100	250	volts
Cathode 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 $\mu_a = 10$	-5	-12	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" ± 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)



12AZ7A

Basing Designation for BOTTOM VIEW. 9A

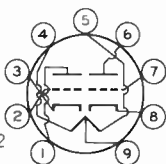
Pin 1 - Plate of
Unit No.2

Pin 2 - Grid of
Unit No.2

Pin 3 - Cathode of
Unit No.2

Pins 4 & 9 - Heater of
Unit No.2

Pins 5 & 8 - 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 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

PLATE DISSIPATION 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

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

Heater positive with respect to cathode. . 200^b max. volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For fixed-bias operation. 0.25 max. megohm

For cathode-bias operation. 1 max. megohm

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

^b The dc component must not exceed 100 volts.

CURVES

shown under Type 12AT7 also apply to the 12AZ7A





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	0.45	amp

Direct Interelectrode Capacitances (Approx.):

	Without External Shield	With External Shield ^o	
<i>Grid-Drive Operation:</i>			
Grid to plate (Each unit) . .	1.9	1.9	μf
Grid to heater and cathode (Each unit)	3.1	3.2	μf
Plate to heater and cathode (Unit No.1)	0.5	1.3	μf
Plate to heater and cathode (Unit No.2)	0.4	1.6	μf
Heater to cathode (Each unit)	3.8	4	μf
<i>Cathode-Drive Operation:</i>			
Plate to cathode (Each unit).	0.24	0.23 [•]	μf
Cathode to grid and heater (Each unit)	6.9	7 [•]	μf
Plate to grid and heater (Unit No.1)	2	2.8 [•]	μf
Plate to grid and heater (Unit No.2)	2	3.2 [•]	μf

Characteristics, Class A₁ Amplifier (Each Unit):

Plate-Supply Voltage.	100	250	volts
Cathode Resistor.	270	200	ohms
Amp'ification 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 μa	-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"
Dimensional Outline	See General Section
Bulb.	T6-1/2

^o with external shield JETEC No.315 connected to cathode of unit under test except as noted.

[•] with external shield JETEC No.315 connected to grid of unit under test.

← Indicates a change.

12AZ7

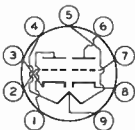


12AZ7

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.	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

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

Curves shown under Type 12AT7 also apply to the 12AZ7

→ Indicates a change.



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:

Heater arrangement	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.):^o

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	$\mu\mu\text{f}$

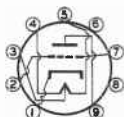
Characteristics, Class A₁ Amplifier:

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
Mid-Tap
- Pin 4 - Heater
- Pin 5 - Heater



- Pin 6 - No Connection
- Pin 7 - Grid
- Pin 8 - No Connection
- Pin 9 - Plate

^o with external shield JEDEC No. 315 connected to cathode.

MAY 1, 1955

TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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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
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[▲] 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.

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TUBE DIVISION

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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12B8-GT

TRIODE-PENTODE

12B8-GT

Heater	Coated Unipotential Cathodes	
Voltage	12.6	a-c or d-c volts
Current	0.3	amp.

Direct Interelectrode Capacitances:^o

Triode Unit:

Grid to Plate	2.3	μf
Grid to Cathode	5.0	μf
Plate to Cathode	6.3	μf

Pentode Unit:

Grid to Plate	0.015	μf
Input	5.2	μf
Output	9.6	μf
Pentode Grid to Triode Grid	0.002	μf
Pentode Plate to Triode Grid	0.078	μf
Pentode Grid to Triode Plate	0.003	μf

Maximum Overall Length	3-9/16"
Maximum Seated Height	3"
Maximum Diameter	1-5/16"
Bulb	T-9

Cap	Skirted Miniature
Base	Intermediate Shell Octal 8-Pin
Pin 1 - Pentode Cathode	Pin 6 - Triode Cathode
Pin 2 - Heater	Pin 7 - Heater
Pin 3 - Pentode Plate	Pin 8 - Triode Grid
Pin 4 - Pentode Screen	Cap - Pentode Grid
Pin 5 - Triode Plate	



BOTTOM VIEW (8T)
TRIODE UNIT

Typical Operation and Characteristics:

Plate	90	volts
Grid	0	volts
Amp. Fact.	90	
Plate Res.	37000	ohms
Transcond.	2400	μmhos
Grid Bias (approx.) for Plate-Cur. Cut-Off	-2.5	volts
Plate Current	2.8	ma.

PENTODE UNIT

Typical Operation and Characteristics:

Plate	90	volts
Screen	90	volts
Grid	-3	volts
Plate Res.	200000	ohms
Transcond.	1800	μmhos
Grid Bias for Transcond. of 2 μmhos	-42.5	volts
Plate Cur.	7.0	ma.
Screen Cur.	2.0	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 Values are approximate.

12BA6
TO
12BE6



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.

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.



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.





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	μ f
Grid to cathode and heater	3.2	3.2	μ f
Plate to cathode and heater	0.5	0.4	μ f
Plate of unit No.1 to plate of unit No.2	0.8		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 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

^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:

^D 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
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[▲] 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.

^{▲, D}: See next page.

MAR. 1, 1955

TUBE DIVISION

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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12BH7-A

12BH7-A

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	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.

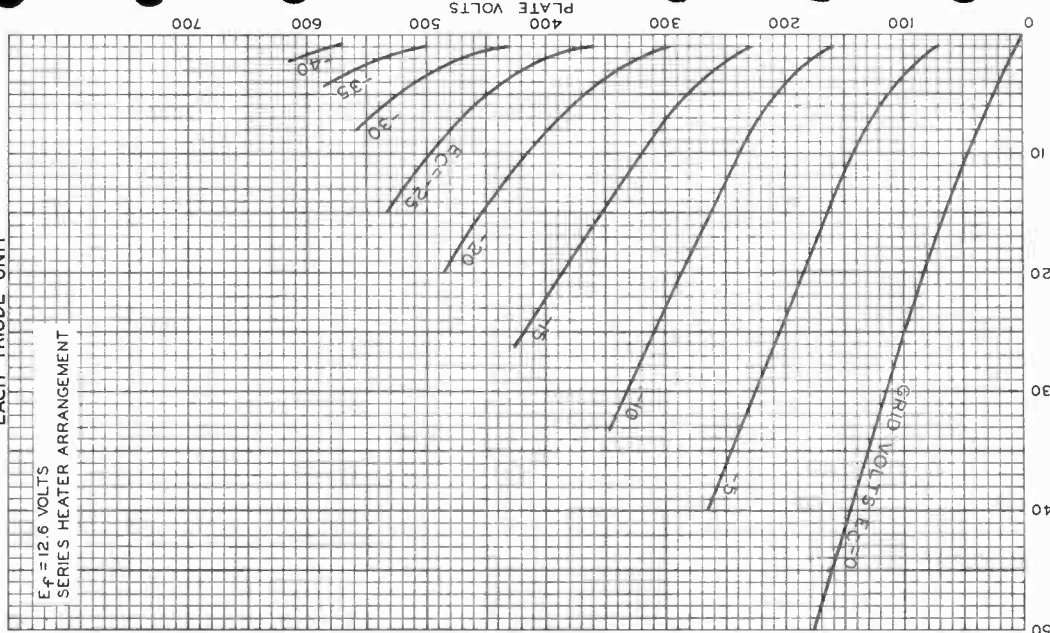
[■] Under no circumstances should this absolute value be exceeded.



12BH7-A

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT

$E_f = 12.6$ VOLTS
SERIES HEATER ARRANGEMENT



MAR. 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7742RI



12BK5

BEAM POWER TUBE

9-PIN MINIATURE TYPE

Intended for use in equipment having series heater-string arrangement

12BK5

The 12BK5 is the same as the 6BK5 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 WARN-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.





12BL6

12BL6

REMOTE-CUTOFF PENTODE

7-PIN MINIATURE TYPE

For use in automobile radio receivers operating directly 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. 0.15 amp

Direct Interelectrode Capacitances:^o

Grid No.1 to plate 0.006 max. μ f

Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater. 5.5 μ f

Plate to cathode, grid No.3 & internal shield, grid No.2, and heater. 4.8 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"

Maximum Diameter 3/4"

Dimensional Outline. See General Section

Bulb T5-1/2

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

Basing Designation for BOTTOM VIEW 7BK

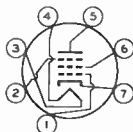
Pin 1 - Grid No.1

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. 30 max. volts

GRID-No.2 (SCREEN-GRID) VOLTAGE. 30 max. volts

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

Positive bias value. 0 max. volts

CATHODE CURRENT. 20 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:

Plate Voltage. 12.6 volts

Grid-No.3 (Suppressor-Grid) Voltage. 0 volts

^o, ^o: See next page.

12BL6



12BL6

REMOTE-CUTOFF PENTODE

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.)	0.5	megohm
Transconductance	1350	μ mhos
Plate Current.	1.35	ma
Grid-No.2 Current.	0.5	ma
Grid-No.1 Voltage (Approx.) for trans- conductance of 10 μ mhos.	-6	volts
Grid-No.1 and Grid-No.3 Voltage (Approx.) for transconductance of 10 μ mhos	-5	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance 10 max. megohms

• Operation of heater in series with other heaters is not recommended.

○ With external shield JETEC No.316 connected to cathode.

OPERATING CONSIDERATIONS

The *maximum ratings* in the tabulated data for the 12BL6 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 value of plate voltage and grid-No.2 voltage is never exceeded for a battery-terminal potential of 13.2 volts. Although the operating voltages of the 12BL6 in this service will, at times, exceed the design-center maximum values, satisfactory performance with probable sacrifice in life will be obtained.



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.*



12BR7

12BR7

TWIN DIODE—HIGH-MU 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	0.45	amp

Direct Interelectrode Capacitances (Approx.):^o

Triode Unit:		
Grid to plate	1.9	μft
Grid to cathode and heater	2.8	μft
Plate to cathode and heater	1	μft
Diode—No. 1 plate to cathode of diodes No. 1 and No. 2 & internal shield, and heater	2	μft
Diode—No. 2 plate to cathode of diodes No. 1 and No. 2 & internal shield, and heater	2	μft

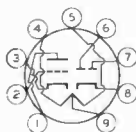
Characteristics, Class A₁ Amplifier (Triode Unit):

Plate-Supply Voltage	100	250	volts
Cathode Resistor	270	200	ohms
Amplification Factor	60	60	
Plate Resistance (Approx.)	15000	10900	ohms
Transconductance	4000	5500	μhos
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"
Dimensional Outline	See General Section
Bulb	T6-1/2
Base	Small-Button Novel 9-Pin (JETEC No. E9-1)
Base Designation for BOTTOM VIEW	9CF

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



- Pin 7—Diode-No. 1 Plate
- Pin 8—Cathode of Diodes No. 1 & No. 2, Internal Shield
- Pin 9—Heater Mid-Tap

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

12BR7



12BR7

TWIN DIODE—HIGH-MU TRIODE

TRIODE UNIT — Amplifier - Class A₁

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

DIODE UNITS - Two

Maximum Ratings, Design-Center Values:

Values are for Each Unit

PEAK INVERSE PLATE VOLTAGE.	300	max.	volts
PEAK PLATE CURRENT.	60	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.

Curve shown under Type 12AT7 also applies to the triode unit of the 12BR7



12BV7

SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

12BV7

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 (Approx.):^o

Grid No.1 to plate	0.055	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater	11	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater	3	μf

Characteristics, Class A₁ Amplifier:

Plate Voltage	250	250	volts
Grid No.3 (Suppressor Grid)	Connected to cathode at socket		
Grid-No.2 (Screen-Grid) Voltage	180	150	volts
Grid-No.1 (Control-Grid) Voltage	-8	-	volts
Cathode Resistor	-	68	ohms
Plate Resistance (Approx.)	-	85000	ohms
Transconductance	-	13000	μmhos
Plate Current	0.5 [†]	27	ma
Grid-No.2 Current	-	6	ma
Grid-No.1 Voltage (Approx.) for plate current of 20 μamp	-	-12	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	T6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)
Basing Designation for BOTTOM VIEW	98F

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

^o without external shield.

[†] Minimum value.

12BV7



12BV7

SHARP-CUTOFF PENTODE

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300	max.	volts
GRID-No.3 (SUPPRESSOR-GRID) VOLTAGE.	0	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE.	175	max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Negative bias value.	50	max.	volts
GRID-No.2 INPUT.	1	max.	watt
PLATE DISSIPATION.	6.25	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode .	2C7	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.

Full-Wave Vacuum Rectifier

9-PIN MINIATURE TYPE

The 12BW4 is the same as the 6BW4 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.45	amp





Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Heater arrangement	Series	Parallel	
Voltage (AC or DC)	12.6 ± 10%	6.3	volts
Current	0.3	0.6 ± 6%	amp
Warm-up time (Average)	-	11	sec

Direct Interelectrode Capacitances:^a

Grid No.1 to plate.	0.063	μf
Grid No.1 to cathode, grid No.3 & internal shield, grid No.2, and heater.	10.2	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater.	3.5	μf

Characteristics, Class A₁ Amplifier:

Plate Supply Voltage.	250	volts
Grid No.3	Connected to cathode at socket	
Grid-No.2 Supply Voltage.	180	volts
Cathode Resistor.	100	ohms
Plate Resistance (Approx.).	93000	ohms
Transconductance.	11000	μmhos
Plate Current	26	ma
Grid-No.2 Current	5.75	ma
Grid-No.1 Voltage (Approx.) for plate $\mu a = 20$	-11.6	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.	0.750" 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.	9BF

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



- Pin 6 - Heater Tap
- Pin 7 - Plate
- Pin 8 - Grid No.2
- Pin 9 - Grid No.3,
Internal
Shield

← Indicates a change.



12BY7-A

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	330	max.	volts
GRID No.3 (SUPPRESSOR GRID)	Connect to cathode at socket		
GRID-No.2 (SCREEN-GRID) VOLTAGE	190	max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Negative-bias value	55	max.	volts
Positive-bias value	0	max.	volts
GRID-No.2 INPUT	1.2	max.	watts
PLATE DISSIPATION	6.5	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^b	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

^a without external shield.

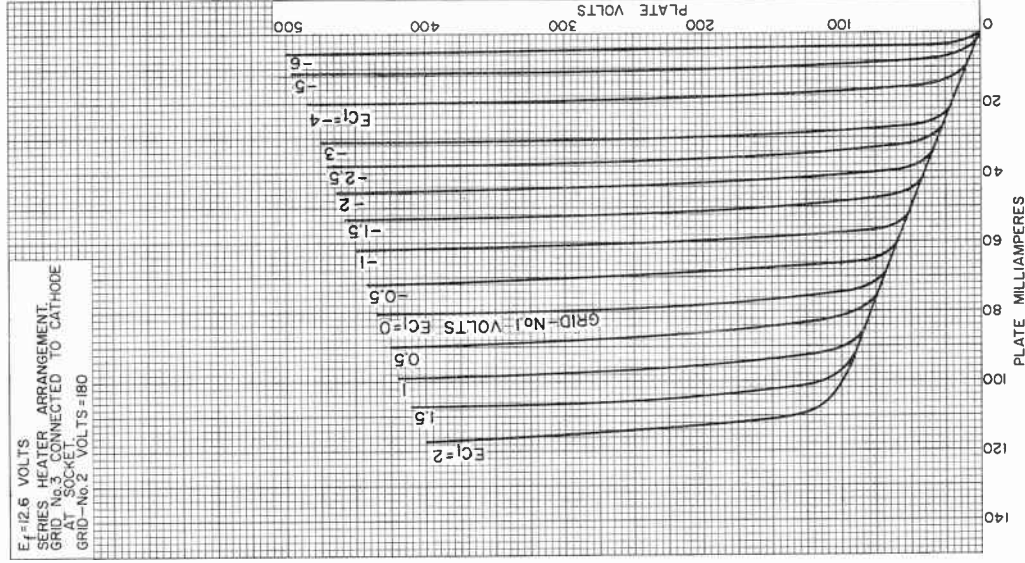
^b The dc component must not exceed 100 volts.

→ Indicates a change.



AVERAGE PLATE CHARACTERISTICS

$E_f = 12.6$ VOLTS
 SERIES HEATER ARRANGEMENT
 GRID No. 3 CONNECTED TO CATHODE
 AT SOCKET
 GRID-No. 2 VOLTS = 180

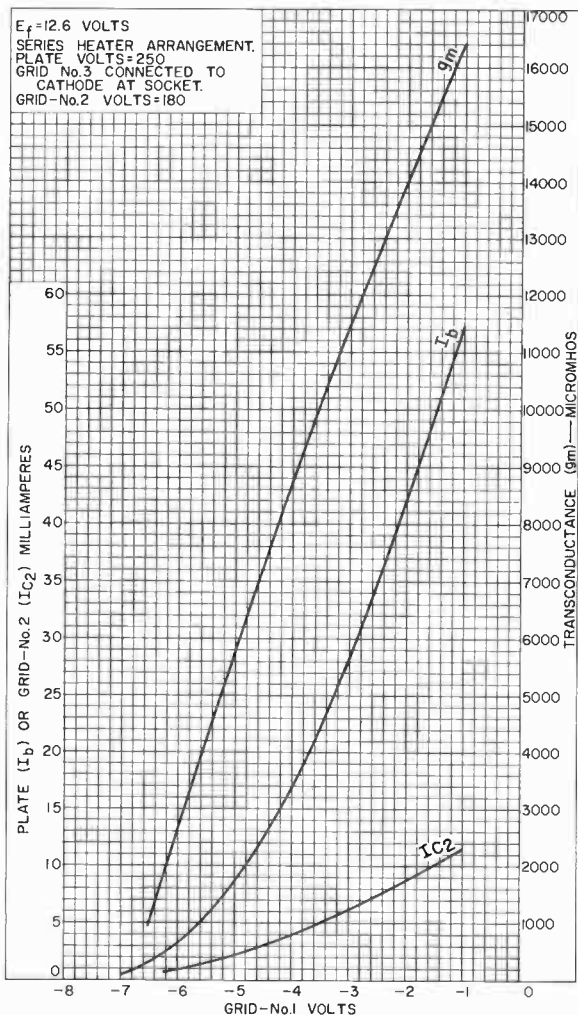


92CM-9234R2



12BY7-A

AVERAGE CHARACTERISTICS



92CM-11051

RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.





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	μf
Grid No.1 to cathode, heater, grid No.2, and grid No.3 & internal shield	11.1	μf
Plate to cathode, heater, grid No.2, and grid No.3 & internal shield	3	μf

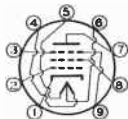
Characteristics, Class A₁ Amplifier:

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	μmhos
Plate Current	25	ma
Grid-No.2 Current	6	ma
Grid Voltage (Approx.) for plate current of 20 μamp	-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

Semiremote-Cutoff Pentode

7-PIN MINIATURE TYPE

The 12BZ6 is the same as the 6BZ6 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6 ± 10%	volts
Current	0.15	amp







12BZ7

12BZ7

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	0.3	0.6	. . . . . amp

Direct Interelectrode Capacitances (Approx.):^o

	Unit No. 1	Unit No. 2	
Grid to plate	2.5	2.5	μf
Grid to cathode and heater	6.5	6.5	μf
Plate to cathode and heater	0.7	0.55	μf
Plate of unit No.1 to plate of unit No.2	1.3		μf

Characteristics, Class A₁ Amplifier (Each Unit):

Plate Voltage	250	volts
Grid Voltage	-2	volts
Amplification Factor	100	
Plate Resistance (Approx.)	31800	ohms
Transconductance	3200	μmhos
Plate Current	2.5	ma

Mechanical:

Mounting Position . . . . .	. . . . . Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length, Base Seat to Sult Top (excluding tip)	2" ± 3/32"
Maximum Diameter	7/8"
Dimensional Outline	See General Section
Sult	T6-1/2
Base	Small-Button Noval 9-Pin (EETEC 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.

12BZ7



12BZ7

HIGH-MU TWIN TRIODE

GRID VOLTAGE:

Negative bias value. 50 max. volts
Positive bias value. 0 max. volts

PLATE DISSIPATION. 1.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . 180 max. volts
Heater positive with respect to cathode . 180 max. volts

Maximum Circuit Values:

Grid-Circuit Resistance:

For contact-potential-bias operation . . 5 max. megohms



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.

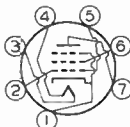
Direct Interelectrode Capacitances (Approx.):⁰

Grid No.1 to plate	0.5	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.	9	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"
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.	^o C

⁰ 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

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

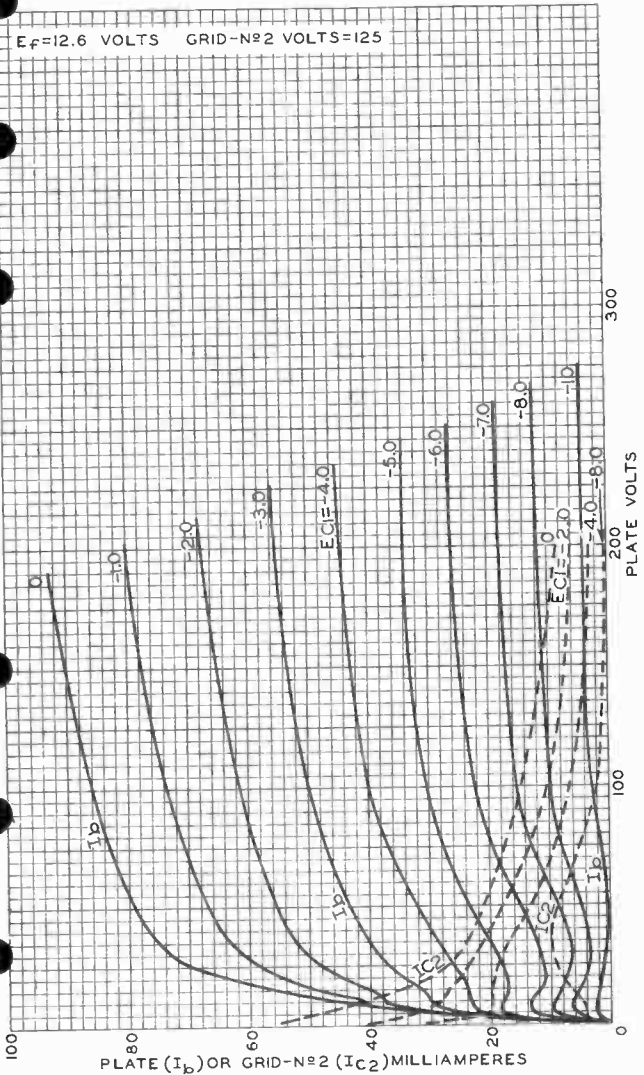


12CA5

12CA5

AVERAGE PLATE CHARACTERISTICS

$E_f = 12.6$ VOLTS GRID-N \circ 2 VOLTS = 125



JAN. 24, 1955

TUBE DIVISION

92CM-8507

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

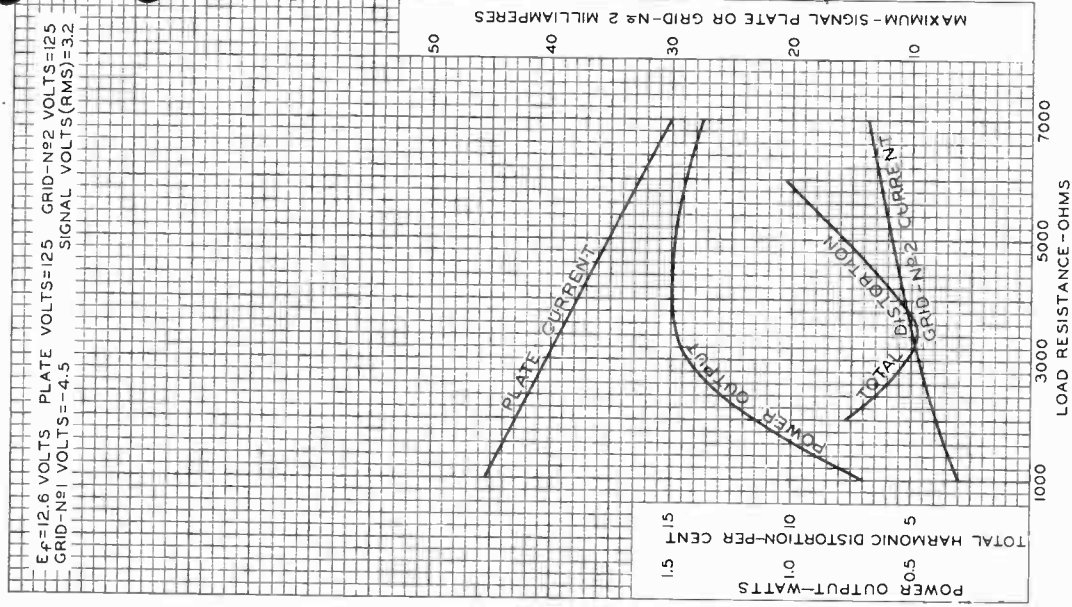
12CA5



12CA5

OPERATION CHARACTERISTICS

$E_f=12.6$ VOLTS PLATE VOLTS=125 GRID-N^o2 VOLTS=125
 GRID-N^o1 VOLTS=-4.5 SIGNAL VOLTS(RMS)=3.2



JAN. 20, 1955

LOAD RESISTANCE - OHMS

 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8506RI



12CR6

12CR6

DIODE-REMOTE-CUTOFF PENTODE

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	12.6	ac or dc volts
Current.	0.15	amp

Mechanical:

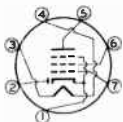
Mounting Position.	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length.	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip).	1-1/2" ± 3/32"
Maximum Diameter	3/4"
Dimensional Outline.	See General Section
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No. E7-1)
Basing Designation for BOTTOM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

Pin 1 - Cathode,
Pentode
Grid No. 3

Pin 2 - Diode
Plate

Pin 3 - Heater

Pin 4 - Heater



Pin 5 - Pentode
Plate

Pin 6 - Pentode
Grid No. 2

Pin 7 - Pentode
Grid No. 1

PENTODE UNIT - Class A₁ Amplifier

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	300 max. volts
GRID-No. 2 (SCREEN-GRID) 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. 2.5 max. watts

GRID-No. 2 INPUT:	
For grid-No. 2 voltages up to 150 volts.	0.3 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.	100 max. volts
Heater positive with respect to cathode.	100 max. volts

Characteristics:

Plate Voltage.	250 volts
Grid-No. 2 Voltage.	100 volts
Grid-No. 1 Voltage.	-2 volts
Plate Resistance (Approx.)	0.8 megohm
Transconductance	2200 μ mhos

12CR6



12CR6

DIODE-REMOTE-CUTOFF PENTODE

Plate Current.	9.6	ma
Grid-No.2 Current.	2.6	ma
Grid-No.1 Voltage (Approx.) for transconductance of 10 μ mhos	-32	volts

Maximum Circuit Values:

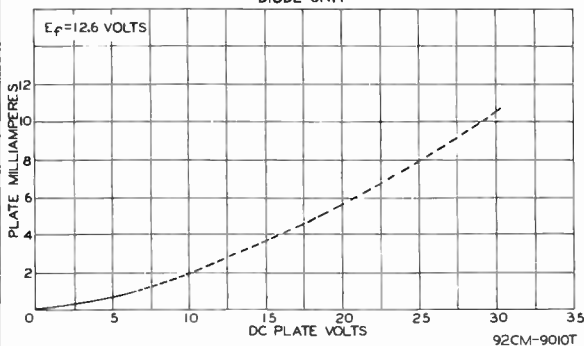
Grid-No.1-Circuit Resistance:

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

DIODE UNIT

Maximum Ratings, *Design-Center Values*:

PLATE CURRENT.	1.0 max.	ma
------------------------	----------	----

AVERAGE PLATE CHARACTERISTIC
DIODE UNIT



12CR6

12CR6

AVERAGE PLATE CHARACTERISTICS PENTODE UNIT

$E_f = 12.6$ VOLTS
GRID-№2 VOLTS = 100

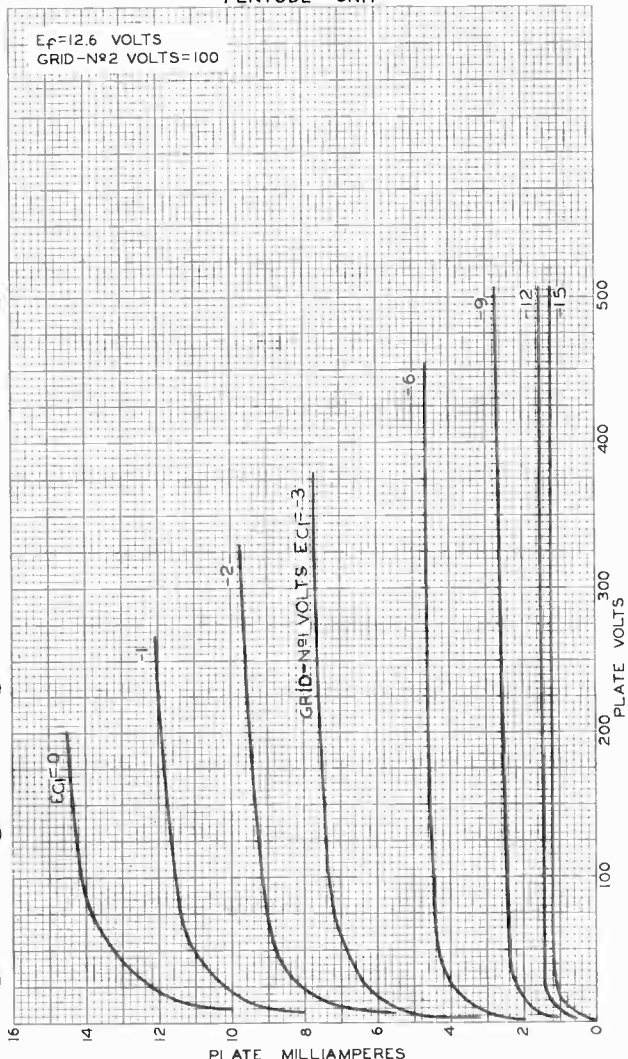


PLATE MILLIAMPERES

PLATE VOLTS

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9006

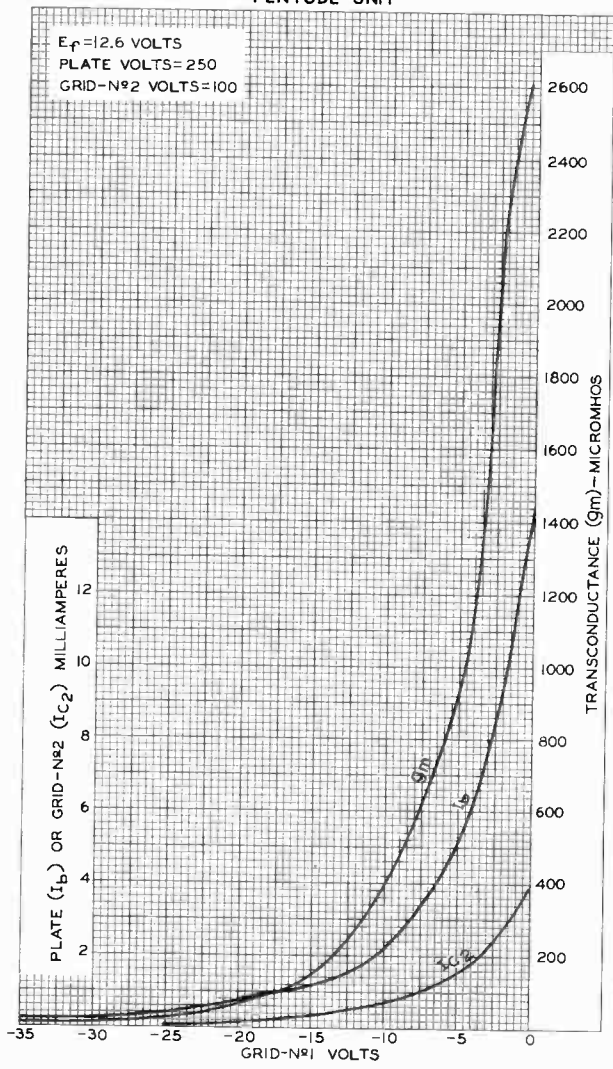
12CR6



12CR6

AVERAGE CHARACTERISTICS PENTODE UNIT

$E_p = 12.6$ VOLTS
PLATE VOLTS = 250
GRID-Nº2 VOLTS = 100



12CU5/12C5

Beam Power Tube

7-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 12CU5/12C5 is the same as the 6CU5 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6 ± 6%	volts
Current	0.6	amp
Warm-up time (Average)	11	sec







12CU5

12CU5/12C5

BEAM POWER TUBE

7-PIN MINIATURE TYPE

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

The 12CU5/12C5 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.



Beam Power Tube

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time*The 12DB5 is the same as the 6DB5 except for the following items:*

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec





Diode—Remote-Cutoff Pentode

9-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage range 10 to 15.9 volts

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:^A

Pentode Unit:

Grid No.1 to plate 0.006 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 5.7 $\mu\mu\text{f}$

Diode Unit:

Plate to cathode, pentode grid No.3
& internal shield, and heater 3.7 $\mu\mu\text{f}$

Cathode to plate and heater 5.7 $\mu\mu\text{f}$

Pentode grid No.1 to diode plate 0.018 max. $\mu\mu\text{f}$

Pentode plate to diode plate 0.012 max. $\mu\mu\text{f}$

Pentode grid No.1 to diode cathode 0.13 max. $\mu\mu\text{f}$

Pentode plate to diode cathode 0.0016 max. $\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier (Pentode Unit):

Heater Voltage 12.6 volts

Plate Voltage 12.6 volts

Grid No.3 Connected to cathode at socket

Grid-No.2 Voltage 12.6 volts

Grid-No.1 Voltage:

Developed across a 2.2-megohm
grid resistor -0.8 volt

Plate Resistance (Approx.) 0.3 megohm

Transconductance 1500 μmhos

Plate Current 1.3 ma

Grid-No.2 Current 0.5 ma

Grid-No.1 Voltage (Approx.) for
transconductance (μmhos) = 10 -6 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"

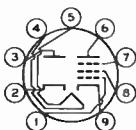
Dimensional Outline See General Section



12DE8

Bulb. T6-1/2
Base. Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW. 9HG

Pin 1 - Pentode
Grid No.1
Pin 2 - Diode Cathode
Pin 3 - Diode Plate
Pin 4 - Heater
Pin 5 - Heater
Pin 6 - Pentode Plate



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

PENTODE UNIT — AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	30 max.	volts
GRID No.3 (SUPPRESSOR GRID)	<i>Connect to cathode at socket</i>	
GRID-No.2 (SCREEN-GRID) VOLTAGE	30 max.	volts
CATHODE CURRENT	20 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	30 max.	volts
Heater positive with respect to cathode.	30 max.	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance.	10 max.	megohms
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DIODE UNIT

Maximum Ratings, Design-Center Values:

PLATE CURRENT	5 max.	ma
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Characteristics, Instantaneous Test Condition:

Plate Current for plate volts = 5	20	ma
---	----	----

▲ Without external shield.



Twin Diode—Power Tetrode

9-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

voltage range (DC)	10 to 15.9	volts
<i>For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts.</i>		
Current (Approx.) at 12.6 volts	0.5	amp

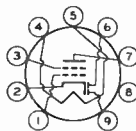
Characteristics, Class A₁ Amplifier (Tetrode Unit):

Heater Voltage	12.6	volts
Plate Voltage	12.6	volts
Grid-No.2 Voltage	12.6	volts
Grid-No.1 Resistor (Bypassed)	2.2	megohms
Plate Resistance (Approx.)	4000	ohms
Transconductance	5000	μmhos
Plate Current	6	ma
Grid-No.2 Current	1	ma

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	0.750" to 0.875"
Dimensional Outline	See <i>General Section</i>
Bulb	T6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW	9HZ

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



Pin 6 - Diode-No.2
Plate
Pin 7 - Tetrode Plate
Pin 8 - Internal Con-
nection—
Do Not Use
Pin 9 - Diode-No.1
Plate

TETRODE UNIT — AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	30 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	30 max.	volts
PLATE CURRENT	10 max.	ma
PLATE DISSIPATION	0.5 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	30 max.	volts
Heater positive with respect to cathode.	30 max.	volts



12DK7

Typical Operation:

Heater Voltage	12.6	volts
Plate Voltage	12.6	volts
Grid-No.2 Voltage	12.6	volts
Grid-No.1 Voltage	<i>Obtained by rectification through 15-megohm grid-No.1 resistor</i>	
Peak AF Grid-No.1 Voltage from 0.2-megohm signal source	1.4	volts
Zero-Signal Plate Current	6	ma
Max.-Signal Plate Current	2.5	ma
Load Resistance	3500	ohms
Total Harmonic Distortion	10	%
Max.-Signal Power Output	10	mw

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	15 max.	megohms
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DIODE UNITS — Two

Values are for Each Unit

Characteristics, Instantaneous Test Condition:

Heater Voltage	12.6	volts
Plate Current for plate volts = 10.	1	ma





12DL8

12DL8

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. 10.0 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 0.55 amp

Direct Interelectrode Capacitances:^o

Tetrode Unit:

Grid No.2 to plate 14 μf Grid No.2 to cathode, grid No.1,
and heater 12 μf Plate to cathode, grid No.1, and
heater 1.3 μf

Diode Units:

Diode plate No.1 to diode
cathode and heater 1.6 μf Diode plate No.2 to diode
cathode and heater 1.6 μf Diode plate No.1 to diode plate
No.2 0.03 μf Tetrode grid No.2 to diode plate No.1. 0.02 max. μf Tetrode grid No.2 to diode plate No.2. 0.006 max. μf

Characteristics, Class A₁ Amplifier with 12.6 Volts on Heater
(Tetrode Unit):

Plate Voltage. 12.6 volts

Grid-No.2 (Control-Grid) Voltage:

Developed across a 2.2-megohm
resistor -0.5 volt

Grid-No.1 (Space-Charge-Grid)

Voltage. 12.6 volts

Plate Resistance (Approx.) 480 ohms

Amplification Factor, Grid No.2

to Plate 7.2

Transconductance, Grid No.2 to Plate 15000 μhos

Plate Current. 40 ma

Grid-No.1 Current. 75 ma

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" $\pm 3/32$ "

Maximum Diameter 7/8"

Dimensional Outline. See General Section

Bulb T6-1/2

[•], ^o; see next page.

12DL8



12DL8

TWIN DIODE—POWER TETRODE

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

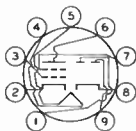
Pin 1 - Plate of Diode
 Unit No.2

Pin 2 - Cathode of
 Tetrode Unit

Pin 3 - Grid No.1 of
 Tetrode Unit

Pin 4 - Heater

Pin 5 - Heater



Pin 6 - Plate of
 Tetrode Unit

Pin 7 - Grid No.2 of
 Tetrode Unit

Pin 8 - Cathode of
 Diode Units
 No.1 & No.2

Pin 9 - Plate of Diode
 Unit No.1

TETRODE UNIT — AUDIO DRIVER

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

PLATE VOLTAGE	30 max.	volts
GRID-No.2 (CONTROL-GRID) VOLTAGE:		
Negative bias value	-20 max.	volts
GRID-No.1 (SPACE-CHARGE-GRID) VOLTAGE		
(Absolute maximum)	16 [■] max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	30 max.	volts
Heater positive with respect to cathode	30 max.	volts

Typical Operation with 12.6 Volts on Heater:

Plate Voltage	12.6	volts
Grid-No.2 Voltage:		
Obtained by rectification through 2.2-megohm resistor	-2	volts
Peak AF Grid-No.2 Voltage:		
Obtained from 100000-ohm source	2.5	volts
Grid-No.1 Voltage	12.6	volts
Zero-Signal Plate Current (Approx.)	40	ma
Max.-Signal Plate Current	8	ma
Grid-No.1 Current	75	ma
Load Resistance	800	ohms
Total Harmonic Distortion	10	%
Max.-Signal Power Output	40	mw

Maximum Circuit Values:

Grid-No.2-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
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•, ◦, ■: See next page.



12DL8

12DL8

TWIN DIODE—POWER TETRODE

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:

Plate Current for plate volts = 10.	3	ma
---	---	----

- Operation of heater in series with other heaters is not recommended.
- Without external shield.
- Under no circumstances should this absolute value be exceeded.

OPERATING CONSIDERATIONS

The *maximum ratings* in the tabulated data for the 12DL8, except the rating for grid-No. 1 (space-charge-grid) voltage, 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 value of plate voltage is never exceeded for a battery terminal potential of 13.2 volts. Although the operating voltages of the 12DL8 in this service will, at times, exceed the design-center maximum values, satisfactory performance with probable sacrifice in life will be obtained.

12DL8



12DL8

AVERAGE PLATE CHARACTERISTICS TETRODE UNIT

$E_f = 12.6$ VOLTS
GRID-N^o1 (SPACE-CHARGE-GRID) VOLTS = 12.6

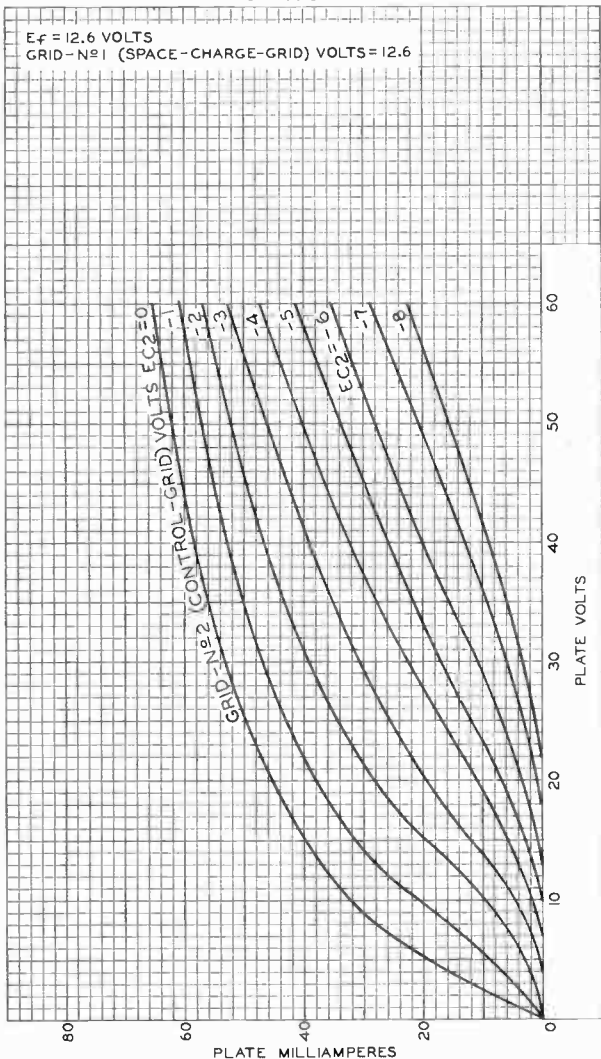


PLATE MILLIAMPERES

PLATE VOLTS

ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9422

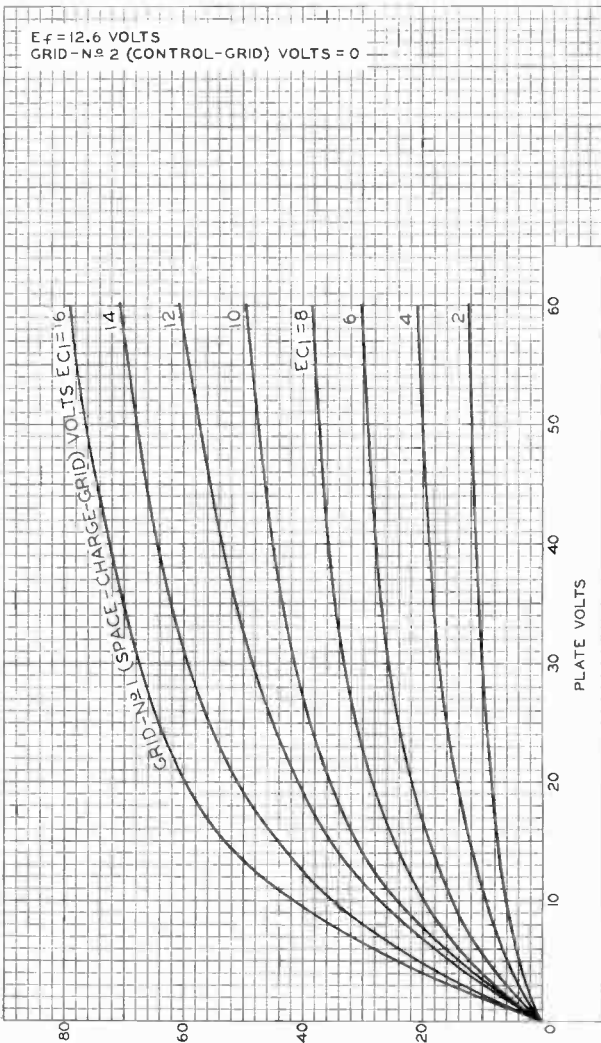
World Radio History



12DL8

AVERAGE PLATE CHARACTERISTICS TETRODE UNIT

12DL8



80

60

40

20

0

PLATE MILLIAMPERES

PLATE VOLTS

ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9423



12DM4

Half-Wave Vacuum Rectifier

For Damper Service in TV Equipment
Having Series Heater-String Arrangement

The 12DM4 is the same as the 6DM4 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

12DQ6A

Beam Power Tube

For Equipment Having Series Heater-String Arrangement

The 12DQ6A is the same as the 6DQ6A except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

12DQ6B

Beam Power Tube

For Equipment Having Series Heater-String Arrangement

The 12DQ6B is the same as the 6DQ6B except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec





12DQ6-A

Beam Power Tube

For Equipment Having Series Heater-String Arrangement

The 12DQ6-A is the same as the 6DQ6-A except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

12DQ6-B

Beam Power Tube

For Equipment Having Series Heater-String Arrangement

The 12DQ6-B is the same as the 6DQ6-B except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec







12DQ6-A
12DT8

12DQ6-A **BEAM POWER TUBE**

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

The 12DQ6-A is the same as the 6DQ6-A 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.

12DT8 **HIGH-MU TWIN TRIODE**

9-PIN MINIATURE TYPE

The 12DT8 is the same as the 6DT8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage	12.6	. . . . . ac or dc volts
Current	0.15	. . . . . amp





12DS7

12DS7

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 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 0.4 amp

Direct Interelectrode Capacitances:⁰

Tetrode Unit:

Grid No.2 to plate 12.5 μf

Grid No.2 to cathode, grid No.1,
and heater 13 μf

Plate to cathode, grid No.1, and heater. 2 μf

Diode Units:

Diode plate No.1 to cathode and
heater 0.5 μf

Diode plate No.2 to cathode and
heater 0.5 μf

Diode plate No.1 to diode plate No.2 0.1 μf

Tetrode grid No.2 to diode plate No.1. 0.15 max. μf

Tetrode grid No.2 to diode plate No.2. 0.15 max. μf

Characteristics, Class A₁ Amplifier (Tetrode Unit):

Heater Voltage 12.6 volts

Plate Voltage. 12.6 volts

Grid-No.2 (Control-Grid) Voltage:

Developed across a 2.2-megohm resistor -0.5 volt

Grid-No.1 (Space-Charge-Grid) Voltage. 12.6 volts

Plate Resistance (Approx.) 480 ohms

Amplification Factor, Grid No.2 to Plate 7.2

Transconductance, Grid No.2 to Plate 15000 μmhos

Plate Current. 40 ma

Grid-No.1 Current. 75 ma

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" \pm 3/32"

Diameter 0.750" to 0.875"

Dimensional Outline. See General Section

Bulb T6-1/2

⁰: See next page.

12DS7



12DS7

TWIN DIODE—POWER TETRODE

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

Pin 1—Plate of Diode
 Unit No.2

Pin 2—No Con-
 nection

Pin 3—Grid No.1 of
 Tetrode Unit

Pin 4—Heater

Pin 5—Heater



Pin 6—Plate of
 Tetrode Unit

Pin 7—Grid No.2 of
 Tetrode Unit

Pin 8—Cathode

Pin 9—Plate of Diode
 Unit No.1

TETRODE UNIT — AUDIO DRIVER

Maximum Ratings, Design-Center Values Except as Noted:

PLATE VOLTAGE 16 max. volts

GRID-No.2 (CONTROL-GRID) VOLTAGE:

Negative-bias value -16 max. volts

GRID-No.1 (SPACE-CHARGE-GRID) VOLTAGE

(Absolute maximum). 16[■] max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 16 max. volts

Heater positive with respect to cathode 16 max. volts

Typical Operation:

Cathode Bias

Heater Voltage. 12.6 volts

Plate-Supply Voltage. 12.6 volts

Plate Voltage Obtained from indicated plate supply
 through series 100-henry choke having
 dc resistance of 150 ohms

Grid-No.1 Supply Voltage. 12.6 volts

Grid-No.2 Supply Voltage. 0 volts

Grid-No.2 Resistor. 1.8 megohms

Cathode Resistor. 18 ohms

Peak AF Grid-No.2 Supply Voltage

(Approx.):

From 3.3-megohm signal source. 2.85 volts

Zero-Signal Plate Current (Approx.) 23 ma

Max.-Signal Plate Current 13 ma

Grid-No.1 Current 77 ma

Load Resistance 1250 ohms

Total Harmonic Distortion 8 %

Max.-Signal Power Output. 10 mw

Grid-No.2-Resistor Bias

Heater Voltage. 12.6 volts

Plate Voltage 12.6 volts

Grid-No.1 Voltage 12.6 volts

°, ■: See next page.



12DS7

12DS7

TWIN DIODE—POWER TETRODE

Grid-No.2 Voltage:		
Obtained by rectification through a 2.2-megohm resistor.	-2	volts
Peak AF Grid-No.2 Voltage (Approx.):		
From 0.1-megohm signal source.	2.5	volts
Zero-Signal Plate Current (Approx.).	40	ma
Max.-Signal Plate Current.	8	ma
Grid-No.1 Current.	75	ma
Load Resistance.	800	ohms
Total Harmonic Distortion.	10	%
Max.-Signal Power Output	40	mw

Maximum Circuit Values:

Grid-No.2-Circuit Resistance	10 max.	megohms
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DIODE UNITS — Two

Values are for Each Unit

Maximum Ratings, Design-Center Values:

PLATE CURRENT.	5 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	16 max.	volts
Heater positive with respect to cathode.	16 max.	volts

Characteristics:

Heater Voltage	12.6	volts
Plate Current for plate volts = 10	3	ma

- ◊ without external shield.
- Under no circumstances should this absolute value be exceeded.

12DS7



12DS7

AVERAGE PLATE CHARACTERISTICS TETRODE UNIT

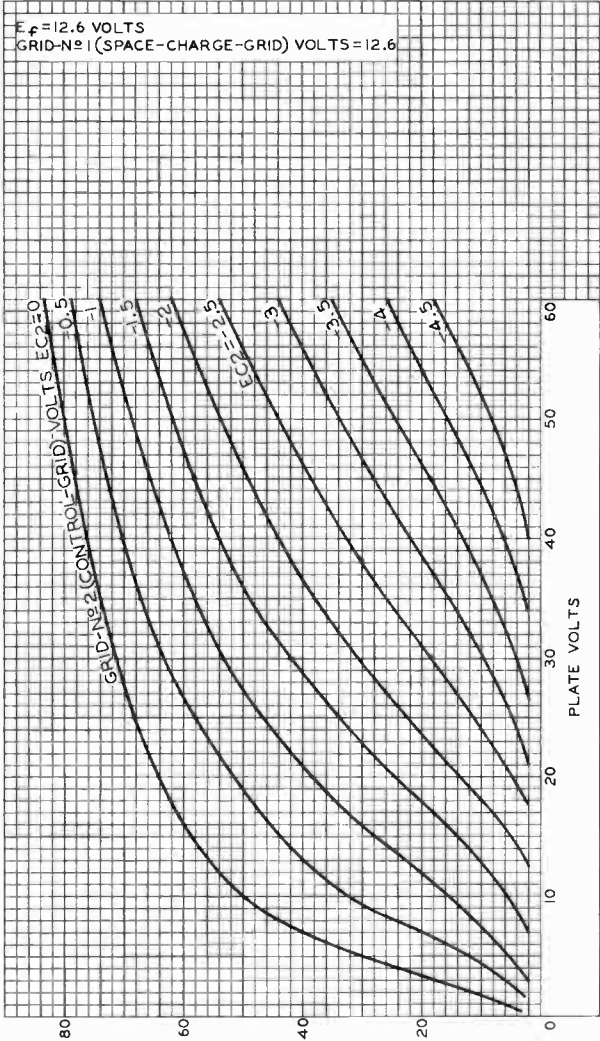


PLATE MILLIAMPERES

PLATE VOLTS

ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9670

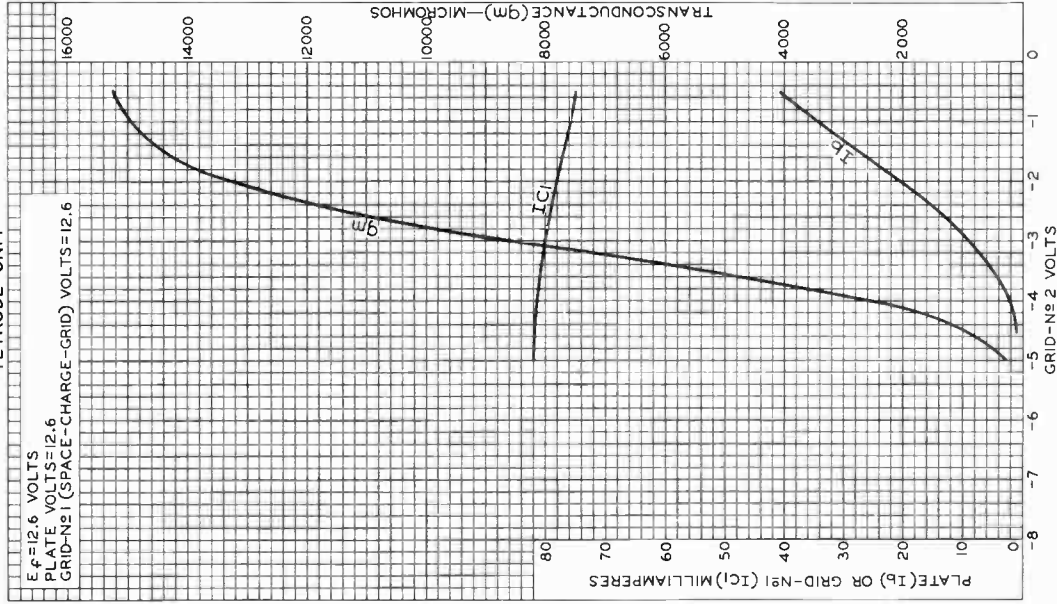


12DS7

12DS7

AVERAGE CHARACTERISTICS TETRODE UNIT

$E_f=12.6$ VOLTS
PLATE VOLTS=12.6
GRID-№1 (SPACE-CHARGE-GRID) VOLTS=12.6







12DT8

HIGH-MU TWIN TRIODE

9-PIN MINIATURE TYPE

12DT8

The 12DT8 is the same as the 6DT8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage.	12.6	. . . . .	ac or dc volts
Current.	0.15	. . . . .	amp



Twin Diode—Power Tetrode

9-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage range (DC) 10 to 15.9 volts

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 0.25 amp

Direct Interelectrode Capacitances:^A

Tetrode Unit:

Grid No.1 to plate 0.6 μf

Grid No.1 to cathode, grid No.2,
and heater 11 μf

Plate to cathode, grid No.2,
and heater 3.6 μf

Tetrode grid No.1 to diode-No.1
plate 0.22 max. μf

Tetrode grid No.1 to diode-No.2
plate 0.12 max. μf

Characteristics, Class A₁ Amplifier (Tetrode Unit):

Heater Voltage 12.6 volts

Plate Voltage 12.6 volts

Grid-No.2 Voltage 12.6 volts

Grid-No.1 Resistor (Bypassed) 2.2 megohms

Plate Resistance (Approx.) 6000 ohms

Transconductance 6200 μmhos

Plate Current 12 ma

Grid-No.2 Current 1.5 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" \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 9JX

Pin 1—Tetrode
Grid No.1

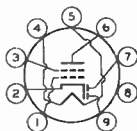
Pin 2—Cathode

Pin 3—Tetrode
Grid No.2

Pin 4—Heater

Pin 5—Heater

Pin 6—Tetrode Plate



Pin 7—Diode-No.2
Plate

Pin 8—Internal Con-
nection—
Do Not Use

Pin 9—Diode-No.1
Plate



12DU7

TETRODE UNIT — AUDIO DRIVER

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE	16 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	16 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	16 max.	volts
Heater positive with respect to cathode.	16 max.	volts

Typical Operation:

Heater Voltage.	12.6	volts
Plate Voltage	12.6	volts
Grid-No.2 Voltage	12.6	volts
Grid-No.1 Voltage	<i>Obtained by rectification through 2.2-megohm grid-No.1 resistor</i>	
Peak AF Grid-No.1 Voltage	2.2	volts
Load Resistance	2700	ohms
Total Harmonic Distortion	10	%
Max.-Signal Power Output.	25	mw

Maximum Circuit Values:

Grid-No.1-Circuit Resistance.	10 max.	megohms
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DIODE UNITS — Two

Values are for Each Unit

Maximum Ratings, *Design-Maximum Values:*

PLATE CURRENT	1 max.	ma
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Characteristics, Instantaneous Test Condition:

Heater Voltage.	12.6	volts
Plate Current for plate volts = 10.	1.3	ma

▲ Without external shield.



Dual Triode

With High-Mu Unit and Medium-Mu Unit

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

	Series	Parallel	
Heater arrangement			
Voltage (AC or DC)	12.6	$6.3 \pm 10\%$	volts
Current	$0.15 \pm 6\%$	0.3	amp

Direct Interelectrode Capacitances (Approx.):

	Without External Shield	With External Shield ^a	
<i>Unit No. 1:</i>			
Grid to plate	1.7	1.7	$\mu\mu^2$
Grid to cathode and heater. . . .	1.6	1.8	$\mu\mu^2$
Plate to cathode and heater . . .	0.44	2	$\mu\mu^2$
<i>Unit No. 2:</i>			
Grid to plate	1.5	1.5	$\mu\mu^2$
Grid to cathode and heater. . . .	1.7	1.8	$\mu\mu^2$
Plate to cathode and heater . . .	0.4	2.4	$\mu\mu^2$

Characteristics, Class A₁ Amplifier:

	<i>Unit No. 1</i>		<i>Unit No. 2</i>		
Plate Voltage	100	250	100	250	volts
Grid Voltage.	-1	-2	0	-8.5	volts
Amplification Factor	100	100	20	17	
Plate Resistance (Approx.) . . .	80000	62500	6500	7700	ohms
Transconductance.	1250	1600	3100	2200	μmhos
Plate Current	0.5	1.2	11.8	10.5	ma
Grid Voltage (Approx.) for plate $\mu\text{a} = 10$	-	-	-	-24	volts

Mechanical:

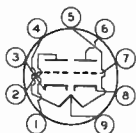
Operating Position.	Any
Maximum Overall Length.	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" \pm 3/32"
Diameter. . . . .	.0750" to 0.875"
Dimensional Outline	See General Section
Bulb.	T6-1/2
Base.	Small-Button Noval 9-Pin (JEDEC No. E9-1)



12DW7

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 Tap

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

	<i>Unit No.1</i>	<i>Unit No.2</i>	
PLATE VOLTAGE.	330 max.	330 max.	volts
GRID VOLTAGE:			
Negative-bias value.	55 max.	-	volts
Positive-bias value.	0 max.	-	volts
CATHODE CURRENT.	-	22 max.	ma
PLATE DISSIPATION.	1.2 max.	3.3 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 ^b max.	200 ^b max.	volts

Maximum Circuit Values:

	<i>Unit No.1</i>	<i>Unit No.2</i>	
Grid-Circuit Resistance:			
For fixed-bias operation	0.25 max.	0.25 max.	megohm
For cathode-bias operation	1 max.	1 max.	megohm

^a with external shield JEDEC No.315 connected to cathode of unit under test.

^b The dc component must not exceed 100 volts.



Medium-Mu Triode— Remote-Cutoff Tetrode

9-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage range (DC). 10 to 15.9 volts

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 0.35 amp

Direct Interelectrode Capacitances (Approx.):^a

Triode Unit:

Grid to plate 1.5 μf

Grid to cathode & internal shield,
and heater. 2 μf

Plate to cathode & internal shield,
and heater. 2 μf

Tetrode Unit:

Grid No.1 to plate. 0.74 μf

Grid No.1 to cathode, grid No.2,
and heater. 11 μf

Plate to cathode, grid No.2,
and heater. 3 μf

Characteristics, Class A₁ Amplifier:

With heater voltage of 12.6 volts

	Triode Unit	Tetrode Unit	
Plate Voltage	12.6	12.6	volts
Grid-No.2 Voltage	—	12.6	volts
Grid-No.1 Voltage	0	—	volts
Grid-No.1 Resistor.	—	2.2	megohms
Amplification Factor.	20	—	
Plate Resistance (Approx.).	10000	5000	ohms
Transconductance.	2000	6000	μmhos
Plate Current	1.2	14	ma
Grid-No.2 Current	—	2	ma
Grid Voltage (Approx.) for plate $\mu\text{a} = 10$	-2	—	volts
Grid-No.1 Voltage (Approx.) for plate $\mu\text{a} = 20$	—	-9	volts

Mechanical:

Operating Position. Any

Maximum Overall Length. 2-3/16"

Maximum Seated Length 1-15/16"

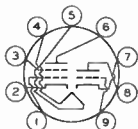
Length, Base Seat to Bulb Top (Excluding tip) . 1-9/16" \pm 3/32"



12DY8

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. 9JD

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



Pin 6 - Tetrode
 Plate
 Pin 7 - Triode
 Cathode,
 Internal
 Shield
 Pin 8 - Triode
 Plate
 Pin 9 - Triode
 Grid No.1

TETRODE UNIT — RELAY-CONTROL SERVICE

Maximum Ratings, *Design-Maximum Values*:

PLATE VOLTAGE 16 max. volts
 GRID-No.2 (SCREEN-GRID) VOLTAGE 16 max. volts
 PEAK HEATER-CATHODE VOLTAGE:
 Heater negative with respect to cathode . . 16 max. volts
 Heater positive with respect to cathode . . 16 max. volts

Typical Operation:

Heater Voltage.	10	15	volts
Plate Supply Voltage.	10	15	volts
Grid-No.2 Voltage	10	15	volts
Grid-No.1 Voltage	-	-6	volts
Grid-No.1 Resistor.	10	-	megohms
Plate Load Resistor	700	700	ohms
Plate Current	5 min.	3 max.	ma

Maximum Circuit Values:

Grid-No.1-Circuit Resistance. 10 max. megohms

TRIODE UNIT — AMPLIFIER — Class A₁

Maximum Ratings, *Design-Maximum Values*:

PLATE VOLTAGE 16 max. volts
 PEAK HEATER-CATHODE VOLTAGE:
 Heater negative with respect to cathode . . 16 max. volts
 Heater positive with respect to cathode . . 16 max. volts

Maximum Circuit Values:

Grid-Circuit Resistance 10 max. megohms

^a without external shield.



Medium-Mu Triode— Semiremote-Cutoff Pentode

9-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage range (DC) 10 to 15.9 volts

*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 0.225 amp

Direct Interelectrode Capacitances:^a

Triode Unit:

Grid to plate 1.7 $\mu\mu\text{f}$

Grid to cathode and heater 2.6 $\mu\mu\text{f}$

Plate to cathode and heater 0.4 $\mu\mu\text{f}$

Pentode Unit:

Grid No.1 to plate 0.02 max. $\mu\mu\text{f}$

Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, and heater. 4.6 $\mu\mu\text{f}$

Plate to cathode & grid No.3 & internal shield, grid No.2, and heater 2.6 $\mu\mu\text{f}$

Heater to cathode (Each unit) 2.6 $\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

With heater voltage of 12.6 volts

	Triode Unit	Pentode Unit	
Plate Supply Voltage	12.6	12.6	volts
Grid-No.2 Voltage	-	12.6	volts
Grid-No.1 Supply Voltage	0	0	volts
Grid-No.1 Resistor	4700	33000	ohms
Amplification Factor	25	-	
Plate Resistance (Approx.)	6000	750000	ohms
Transconductance	4700	2000	μmhos
Plate Current	2.4	0.66	ma
Grid-No.2 Current	-	0.28	ma
Grid-No.1 Voltage (Approx.) for plate $\mu\text{a} = 10$	-2.2	-1.6	volts

Mechanical:

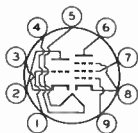
Operating Position	Any
Maximum Overall Length	2-3/16"
Maximum Seated Length	1-15/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-9/16" \pm 3/32"
Diameter	0.750" to 0.875"
Dimensional Outline	See General Section
Bulb	T6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)



12EC8

Basing Designation for BOTTOM VIEW. 9FA

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



- Pin 8 - Pentode Cathode, Grid No.3, Internal Shield
- Pin 9 - Pentode Grid No.1

AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
PLATE VOLTAGE.	16 max.	16 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE.	—	16 max.	volts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	16 max.	16 max.	volts
Heater positive with respect to cathode	16 max.	16 max.	volts

Maximum Circuit Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Grid-No.1-Circuit Resistance	1 max.	1 max.	megohm

^a Without external shield.





12EG6

12EG6

PENTAGRID AMPLIFIER

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. 0.15 amp

Direct Interelectrode Capacitances:^o

Grid No.3 to all other electrodes except plate	6.5	$\mu\mu\text{f}$
Plate to all other electrodes.	12	$\mu\mu\text{f}$
Grid No.1 to all other electrodes except plate	5.7	$\mu\mu\text{f}$
Grid No.3 to plate	0.25 max.	$\mu\mu\text{f}$
Grid No.3 to grid No.1	0.15 max.	$\mu\mu\text{f}$
Grid No.1 to plate	0.04 max.	$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.5	3.2	$\mu\mu\text{f}$
Cathode & grid No.5 to all other electrodes except grid No.1.	23	$\mu\mu\text{f}$

Characteristics, Class A₁ Amplifier:

With grid No.3 connected to grid No.1 through 100,000-ohm resistor

Heater Voltage	12.6	volts
Plate Voltage.	12.6	volts
Grids No.2 & 4 (Screen-Grids) Voltage.	12.6	volts
Grid-No.1 (Control-Grid) Voltage:		
Developed across 2.2-megohm resistor	-0.6	volt
Plate Resistance (Approx.)	0.15	megohm
Transconductance, Grid No.3 to Plate	800	μmhos
Plate Current.	0.55	ma
Grids-No.2 & 4 Current	2.8	ma
Grid-No.1 Voltage (Approx.) for grid-No.3-to-plate transconductance of 20 μmhos	-3	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.	See General Section
Bulb	T5-1/2

^o: See next page.

12EG6

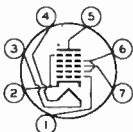


12EG6

PENTAGRID AMPLIFIER

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

AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	16 max.	volts
GRID-No.3 (CONTROL-GRID) VOLTAGE:		
Negative-bias value	16 max.	volts
Positive-bias value	0 max.	volts
GRIDS-No.2 & 4 (SCREEN-GRIDS)		
SUPPLY VOLTAGE.	16 max.	volts
GRIDS-No.2 & 4 VOLTAGE.	16 max.	volts
CATHODE CURRENT	20 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode .	16 max.	volts
Heater positive with respect to cathode .	16 max.	volts

Maximum Circuit Values:

Grid-No.3-Circuit Resistance.	10 max.	megohms
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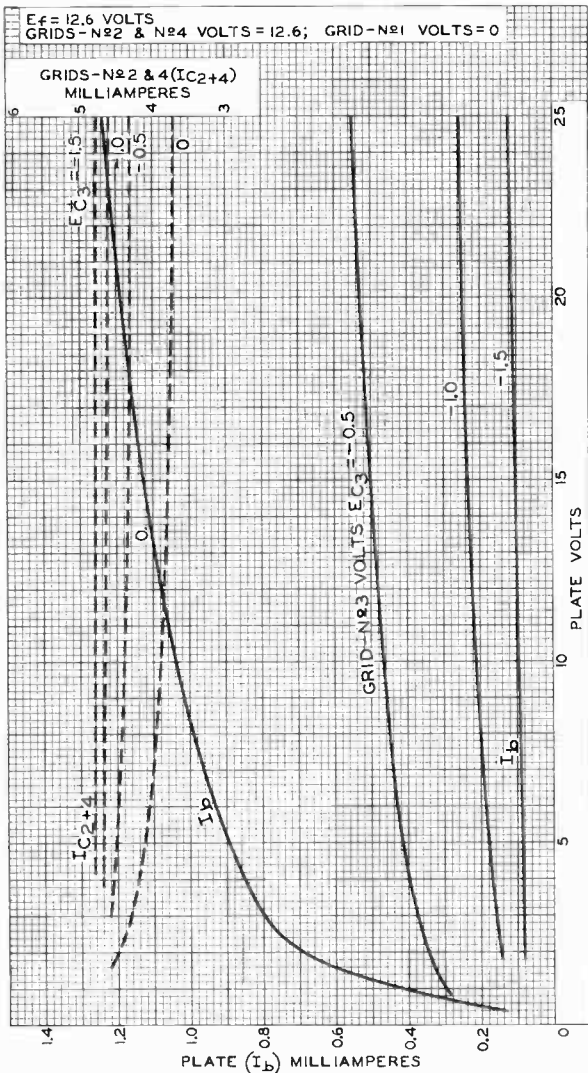
° With external shield JETEC No.316 connected to cathode.



12EG6

12EG6

AVERAGE CHARACTERISTICS



ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9643

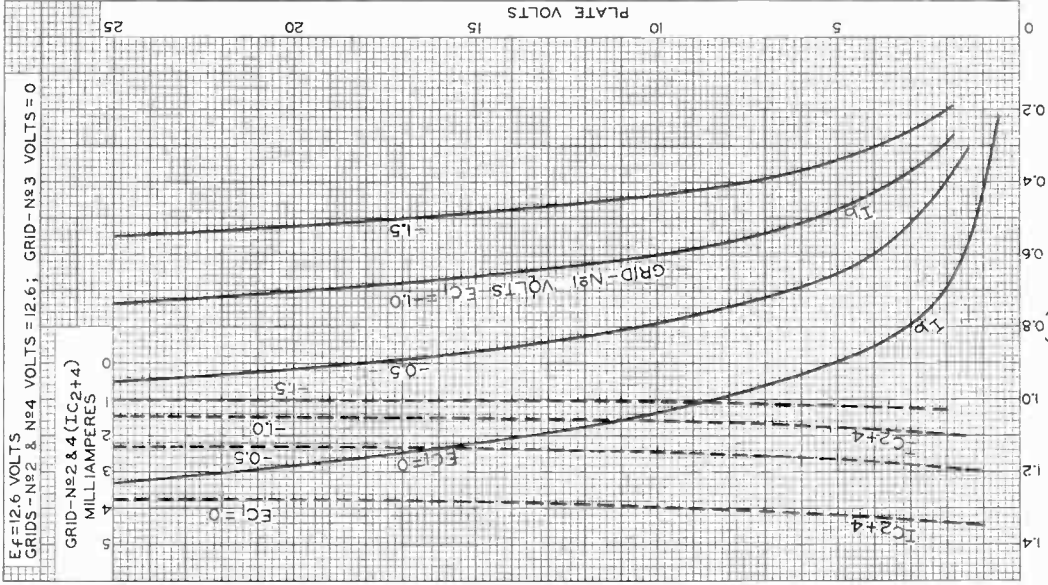


12EG6

AVERAGE CHARACTERISTICS

$E_f = 12.6$ VOLTS
GRIDS - No 2 & No 4 VOLTS = 12.6; GRID - No 3 VOLTS = 0

GRID - No 2 & 4 (IC2+4)
MILLIAMPERES



12EG6

92CM - 9642

ELECTRON TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



12EG6

12EG6

AVERAGE CHARACTERISTICS

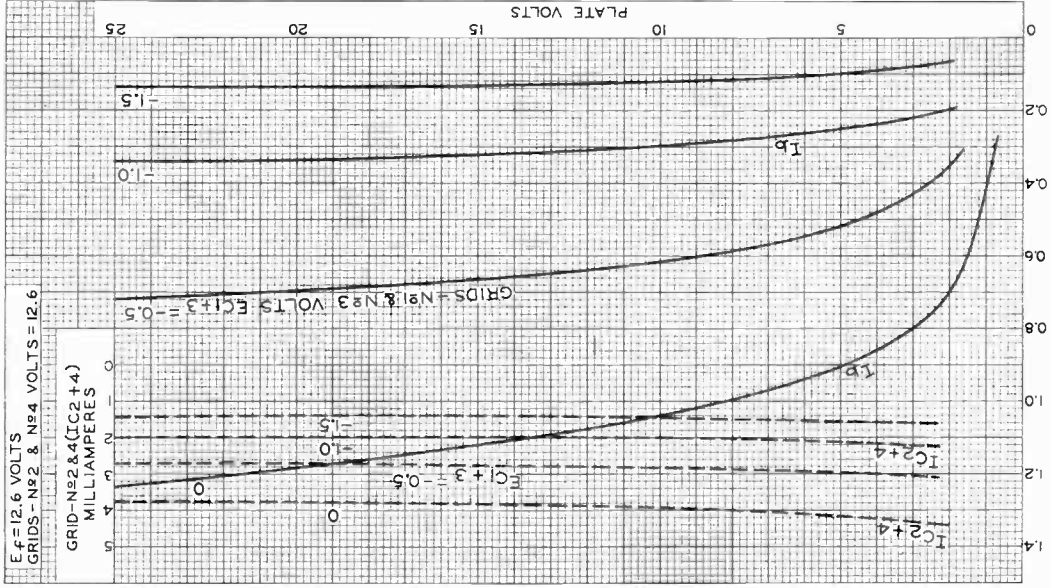


PLATE (I_p) MILLIAMPERES

ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92 CM - 9641





12EH5

12EH5

POWER PENTODE

7-PIN MINIATURE TYPE

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

The 12EH5 is the same as the 6EH5 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.



Diode—Remote-Cutoff Pentode

9-PIN MINIATURE TYPE

The 12EQ7 is the same as the 6EQ7 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6 ± 10%	volts
Current at 12.6 volts	0.15	amp







12F8

12F8

TWIN DIODE--REMOTE-CUTOFF PENTODE

9-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. 10.0 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 12 volts.

Current (Approx.)

at 12.6 volts. 0.15 amp

Direct Interelectrode Capacitances (Approx.):^o

Grid No.1 to plate 0.06 μ f

Grid No.1 to cathode, grid No.3, grid No.2, and heater. 4.5 μ f

Plate to cathode, grid No.3, grid No.2, and heater. 3 μ f

Plate of diode unit No.1 to plate of diode unit No.2 0.3 μ 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"

Maximum Diameter 7/8"

Dimensional Outline. See General Section

Bulb T6-1/2

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

Basing Designation for BOTTOM VIEW 9F1

Pin 1 - Plate of Diode Unit No.2

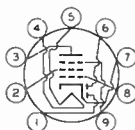
Pin 2 - Pentode Grid No.2

Pin 3 - Pentode Plate

Pin 4 - Heater

Pin 5 - Heater

Pin 6 - Plate of Diode Unit No.1



Pin 7 - Cathode of Pentode Unit and Diode Units

No.1 and 2

Pin 8 - Pentode Grid No.1

Pin 9 - Pentode Grid No.3

PENTODE UNIT -- AMPLIFIER -- Class A₁

Maximum Ratings, Design Center Values:

PLATE VOLTAGE. 30 max. volts

GRID-No.2 (SCREEN-GRID) VOLTAGE. 30 max. volts

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

Positive bias value. 0 max. volts

*^o, : See next page.

12F8



12F8

TWIN DIODE-REMOTE-CUTOFF PENTODE

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:

Plate Voltage.	12.6	volts
Grid-No.3 (Suppressor-Grid) Voltage.	0	volts
Grid No.2 Voltage.	12.6	volts
Grid-No.1 Voltage.	0	volts
Plate Resistance (Approx.)	0.33	megohm
Transconductance	1000	μ mhos
Plate Current.	1	ma
Grid-No.2 Current.	0.38	ma
Grid-No.1 Voltage (Approx.) for trans- conductance of 10 μ mhos.	-5	volts

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.	1 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:

Plate Current for plate volts = 10	2	ma
--	---	----

* operation of heater in series with other heaters is not recommended.

o without external shield.

OPERATING CONSIDERATIONS

The *maximum ratings* in the tabulated data for the 12F8 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 value of plate voltage and grid-No.2 voltage is never exceeded for a battery-terminal potential of 13.2 volts. Although the operating voltages of the 12F8 in this service will, at times, exceed the design-center maximum values, satisfactory performance with probable sacrifice in life will be obtained.

High-Mu Twin Double-Plate Triode

9-PIN MINIATURE TYPE

For Frequency-Divider and Complex-Wave-Generator
Circuits of Electronic Musical Instruments

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6 ± 10%	volts
Current at 12.6 volts	0.15	amp

Direct Interelectrode Capacitances (Approx.):^A

Grid to either plate (Each unit)	0.9	μμf
Grid to cathode and heater (Each Unit)	1.8	μμf
Plate A of unit No.1 to cathode and heater	0.34	μμf
Plate B of unit No.1 to cathode and heater	0.24	μμf
Plate A of unit No.2 to cathode and heater	0.3	μμf
Plate B of unit No.2 to cathode and heater	0.18	μμf
Plate A to plate B (Each unit)	0.7	μμf
Plate A of unit No.1 to plate A of unit No.2	0.4	μμf

Characteristics, Class A₁ Amplifier (Each Unit):

*Using either plate A or plate B, with
plate not in use connected to ground*

Plate Voltage	250	volts
Grid Voltage	-1.5	volts
Amplification Factor	95	
Plate Resistance (Approx.)	76000	ohms
Transconductance	1250	μmhos
Plate Current	1.5	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
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW	9KT

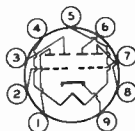
Pin 1 - Plate B of Unit No.2

Pin 2 - Grid of Unit No.2

Pin 3 - Plate A of Unit No.2

Pin 4 - Heater

Pin 5 - Heater



Pin 6 - Plate B of Unit No.1

Pin 7 - Grid of Unit No.1

Pin 8 - Plate A of Unit No.1

Pin 9 - Cathode



12FQ8

FREQUENCY-DIVIDER & COMPLEX-WAVE-GENERATOR SERVICE

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

PLATE A VOLTAGE.	330	max.	volts
PLATE B VOLTAGE.	330	max.	volts
GRID VOLTAGE:			
Positive-bias value.	0	max.	volts
PLATE A DISSIPATION.	0.5	max.	watt
PLATE B DISSIPATION.	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

[▲] Without external shield.

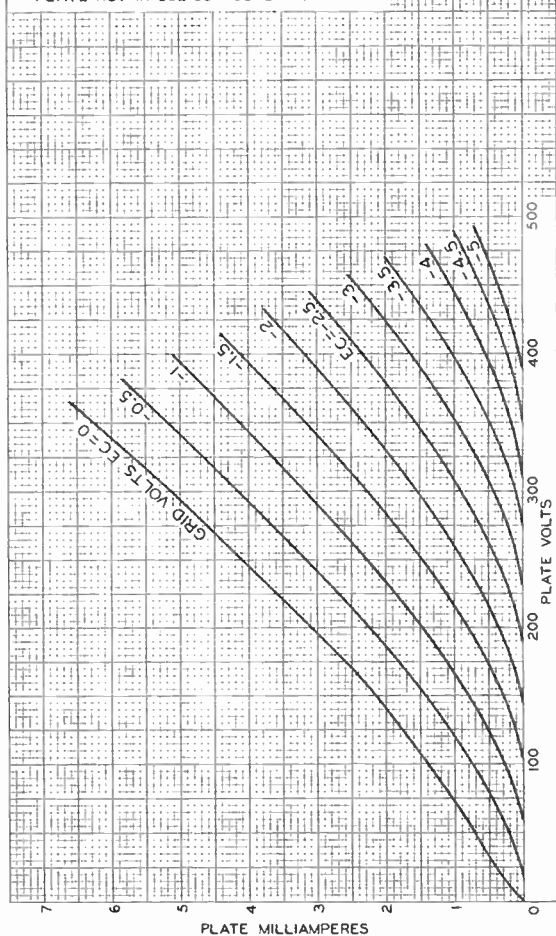
[•] The dc component must not exceed 100 volts.



AVERAGE PLATE CHARACTERISTICS Each Unit

$E_f = 12.6$ VOLTS

USING EITHER PLATE A OR PLATE B, WITH
PLATE NOT IN USE CONNECTED TO GROUND.



92CM-10755RI

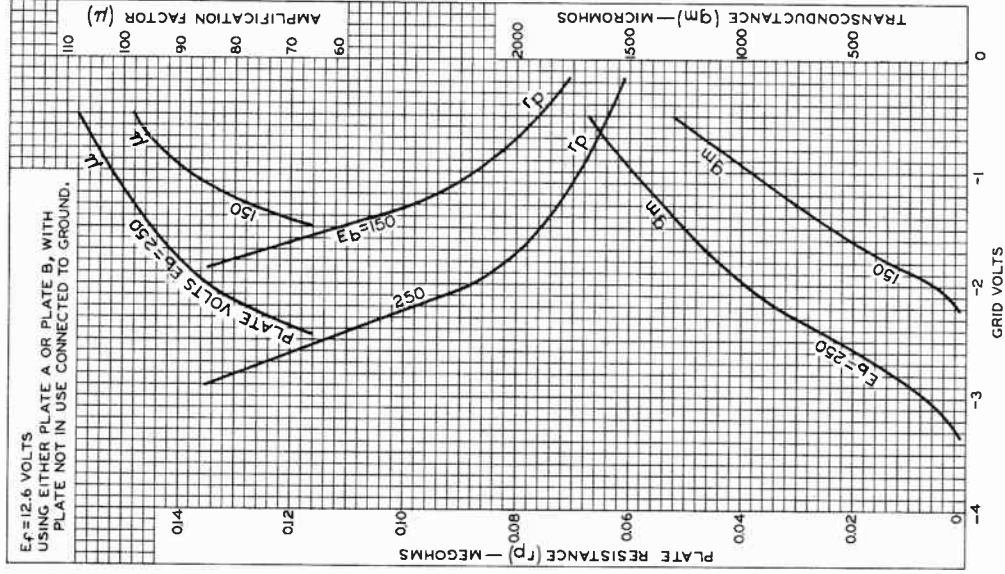


12FQ8

AVERAGE CHARACTERISTICS Each Unit

$E_f = 12.6$ VOLTS

USING EITHER PLATE A OR PLATE B, WITH
PLATE NOT IN USE CONNECTED TO GROUND.



92CM-10754RI

RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



Diode— Medium-Mu Triode— Remote-Cutoff Pentode

9-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage range (DC) 10 to 15.9 volts

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 0.32 amp

Direct Interelectrode Capacitances:^a

Triode Unit:

Grid to plate 1.7 μf

Grid to cathode and heater 2.6 μf

Plate to cathode and heater 2 μf

Pentode Unit:

Grid No.1 to plate 0.015 max. μf

Grid No.1 to cathode & grid No.3 &
internal shield, grid No.2,
and heater 8.5 μf

Plate to cathode & grid No.3 &
internal shield, grid No.2,
and heater 5.5 μf

Pentode grid No.1 to triode grid 0.012 max. μf

Pentode grid No.1 to diode plate 0.004 max. μf

Triode grid to diode plate 0.17 max. μf

Triode plate to diode plate 0.8 μf

Characteristics, Class A₁ Amplifier:

With heater voltage of 12.6 volts

	Triode Unit	Pentode Unit	
Plate Voltage	12.6	12.6	volts
Grid-No.2 Voltage	-	12.6	volts
Grid-No.1 Voltage developed across a 2.2-megohm grid-No.1 resistor . .	-0.6	-0.8	volt
Amplification Factor	10	-	
Plate Resistance (Approx.)	-	0.4	megohm
Transconductance	1200	2700	μmhos
Plate Current	1	1.9	ma
Grid-No.2 Current	-	0.7	ma
Grid-No.1 Voltage (Approx.) for transconductance (μmhos) = 30 . . .	-	-2.8	volts
Grid Voltage (Approx.) for plate μa = 10	-3.5	-	volts



12FR8

Mechanical:

Operating Position. Any
 Maximum Overall Length. 2-7/16"
 Maximum Seated Length. 2-3/16"
 Length, Base Seat to Bulb Top (Excluding tip) 1-13/16" \pm 3/32"
 Diameter. 0.750" to 0.875"
 Bulb. T6-1/2
 Base. Small-Button Noval 9-Pin (JEDEC No. E9-1)
 Basing Designation for BOTTOM VIEW. 9KU

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



AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

	Triode Unit	Pentode Unit	
PLATE VOLTAGE	16 max.	16 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE.	-	16 max.	volts
GRID-No.2 VOLTAGE	-	16 max.	volts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	16 max.	-	volts
Heater positive with respect to cathode.	16 max.	-	volts

Maximum Circuit Values:

	Triode Unit	Pentode Unit	
Grid-No.1-Circuit Resistance. . .	10 max.	10 max.	megohms

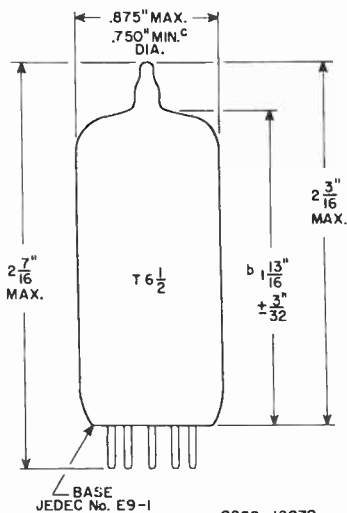
DIODE UNIT

Maximum Ratings, Design-Center Values:

PLATE CURRENT	5 max.	ma
Characteristics, Instantaneous Test Condition:		
Plate Current for plate volts = 10.	2	ma

^a without external shield.





b MEASURED FROM BASE SEAT TO BULB-TOP LINE AS DETERMINED BY RING GAUGE OF $7/16''$ INSIDE DIAMETER.

c APPLIES IN ZONE STARTING $0.375''$ FROM SEAT.





Medium-Mu Triode— Pentagrid Converter

9-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage range (DC) 10 to 15.9 volts

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 0.27 volts

Direct Interelectrode Capacitances:^a

Triode Unit:

Grid to plate 1.3 μf

Grid to cathode & heater 2.2 μf

Plate to cathode & heater 0.25 μf

Heptode Unit:

Grid No.3 to plate 0.28 max. μf

Grid No.3 to grid No.1 0.12 max. μf

Grid No.3 to cathode & grid No.5 & internal shield, plate, grids No.2 & No.4, grid No.1, and heater (RF input). 6 μf

Plate to cathode & grid No.5 & internal shield, grids No.2 & No.4, grid No.1, and heater (Mixer output) 5 μf

Grid No.1 to cathode & grid No.5 & internal shield, grid No.3, grids No.2 & No.4, and heater (Oscillator input). 5 μf

Grid No.1 to cathode & grid No.5 & internal shield 3 μf

Cathode & grid No.5 & internal shield to plate, grids No.2 & No.4, grid No.3, and heater (Oscillator output) 17 μf

Grid No.1 to plate 0.16 max. μf

Triode grid to heptode grid No.3 0.01 max. μf

Triode plate to heptode grid No.3 0.18 max. μf

Triode plate to heptode plate 0.2 max. μf

Characteristics, Class A₁ Amplifier (Triode Unit):

With heater voltage of 12.6 volts

Plate Voltage 12.6 volts

Grid Voltage developed across a 2.2-megohm grid resistor -0.8 volt

Amplification Factor 10

Plate Resistance (Approx.) 7150 ohms

Transconductance 1400 μmhos

Plate Current 1.3 ma

Grid Voltage (Approx.) for plate $\mu\text{a} = 10$ -3.2 volts

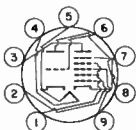


12FX8

Mechanical:

Operating Position	Any
Maximum Overall Length	2-7/16"
Maximum Seated Length	2-3/16"
Length, Base Seat to Bulb Top (Excluding tip)	1-13/16" \pm 3/32"
Diameter	0.750" to 0.875"
Bulb	T6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No.E9-1)
Basing Designation for BOTTOM VIEW	9KV

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



- Pin 6 - Triode Grid
- Pin 7 - Heptode
Grid No.5,
Cathode,
Internal
Shield
- Pin 8 - Triode Plate
- Pin 9 - Heptode
Grid No.3

HEPTODE UNIT — CONVERTER

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	16 max.	volts
GRID-No.3 (CONTROL-GRID) VOLTAGE:		
Negative-bias value	16 max.	volts
Positive-bias value	0 max.	volts
GRIDS-No.2 & No.4 (SCREEN-GRID) VOLTAGE	16 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	16 max.	volts
Heater positive with respect to cathode.	16 max.	volts

Typical Operation and Characteristics:

With self-excitation and heater voltage of 12.6 volts

Plate Voltage	12.6	volts
Grid-No.3 Voltage developed across a 2.2-megohm grid-No.3 resistor	-0.5	volt
Grids-No.2 & No.4 Voltage	12.6	volts
RMS Grid-No.1 (Oscillator-Grid) Voltage	1.6	volts
Grid-No.1 Resistor	33000	ohms
Plate Resistance (Approx.)	0.5	megohm
Conversion Transconductance	300	μ mhos
Grid-No.3 Voltage (Approx.) for conversion transconductance (μ mhos) = 10	-3	volts
Plate Current	290	μ a
Grids-No.2 & No.4 Current	1.25	ma

Oscillator Characteristics (Not Oscillating):

With grids No.2 & No.4 connected to plate and with heater voltage of 12.6 volts

Plate and Grids-No.2 & No.4 Voltage	12.6	volts
Grid-No.3 Voltage	0	volts
Grid-No.1 Voltage	0	volts



Amplification Factor between grid No.1 and grids No.2 & No.4 connected to plate.	9	
Transconductance between grid No.1 and grids No.2 & No.4 connected to plate . . .	3600	μmhos
Cathode Current.	4.4	ma
Grid-No.1 Voltage (Approx.) for plate $\mu\text{a} = 10$	-4.5	volts

Maximum Circuit Values:

Grid-No.3-Circuit Resistance	10 max.	megohms
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TRIODE UNIT — AMPLIFIER — Class A₁

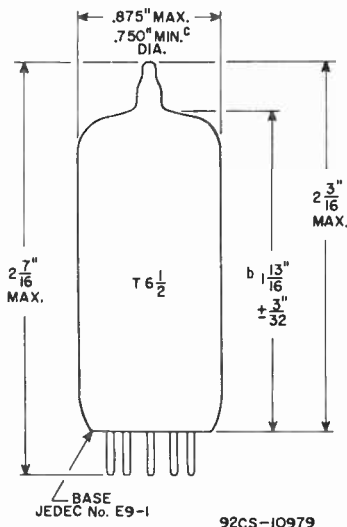
Maximum Ratings, Design-Center Values:

PLATE VOLTAGE.	16 max.	volts
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Maximum Circuit Values:

Grid-Circuit Resistance.	10 max.	megohms
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^a without external shield.



b Measured from base seat to bulb-top line as determined by ring gauge of $7/16''$ inside diameter.
 c Applies in zone starting $0.375''$ from seat.





Pentagrid Converter

7-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage range (DC) 10 to 15.9 volts

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:

	Without External Shield	With External Shield ^a	
Grid No.3 to all other electrodes (RF input)	8	8	μf
Plate to all other electrodes (Mixer output) . . .	8	13	μf
Grid No.1 to all other electrodes (Oscillator input) .	5	5	μf
Grid No.3 to plate.	0.3 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 & grid No.5. .	2.5	2.5	μf
Cathode & grid No.5 to all other electrodes except grid No.1 . .	15	20	μf

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. 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-Maximum Values:

PLATE VOLTAGE 16 max. volts



12GA6

GRID-NO.3 (CONTROL-GRID) VOLTAGE:

Negative-bias value	16 max.	volts
Positive-bias value	0 max.	volts
GRIDS-NO.2 & NO.4 (SCREEN-GRID) VOLTAGE . . .	16 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode . .	16 max.	volts
Heater positive with respect to cathode . .	16 max.	volts

Typical Operation and Characteristics:

With separate excitation^b and with heater voltage of 12.6 volts

Plate Voltage	12.6	volts
Grids-NO.2 & NO.4 Voltage	12.6	volts
Grid-NO.3 Supply Voltage	0	volts
Grid-NO.3 Resistor (Bypassed)	2.2	megohms
RMS Grid-NO.1 (Oscillator-Grid) Voltage . . .	1.6	volts
Grid-NO.1 Resistor	33000	ohms
Plate Resistance (Approx.)	1	megohm
Conversion Transconductance	140	μ mhos
Grid-NO.3 Voltage (Approx.) for conversion transconductance (μ mhos) =		
5	-3	volts
20	-2.5	volts
Plate Current	0.3	ma
Grids-NO.2 & NO.4 Current	0.8	ma
Grid-NO.1 Current	0.06	ma

Oscillator Characteristics (Not Oscillating):

*With grids No.2 & No.4 connected to plate
and with heater voltage of 12.6 volts*

Plate and Grids-NO.2 & NO.4 Voltage	12.6	volts
Grid-NO.3 Voltage	0	volts
Grid-NO.1 Voltage	0	volts
Amplification Factor between grid No.1 and grids No.2 & No.4 connected to plate. . . .	9	
Transconductance between grid No.1 and grids No.2 & No.4 connected to plate. . . .	2400	μ mhos
Cathode Current	3.6	ma
Grid-NO.1 Voltage (Approx.) for plate μ a = 10	-3.3	volts

Maximum Circuit Values:

Grid-NO.3-Circuit Resistance	10 max.	megohms
--	---------	---------

^a with external shield JEDEC No.316 connected to cathode & grid No.5.

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



Beam Power Tube

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances:^a

Grid No.1 to plate	0.55	μf
Grid No.1 to cathode, grid No.3, grid No.2, and heater	15	μi
Plate to cathode, grid No.3, grid No.2, and heater	7	μf

Characteristics, Class A₁ Amplifier:

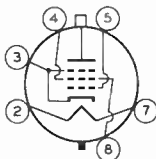
Plate Voltage	60	250	volts
Grid-No.2 Voltage	150	150	volts
Grid-No.1 Voltage	0	-22.5	volts
Triode Amplification Factor for plate volts = grid-No.2 volts = 150	-	4.1	
Plate Resistance (Approx.)	-	2000c	ohms
Transconductance	-	6600	μmhos
Plate Current	345 ^b	75	ma
Grid-No.2 Current	30 ^b	2.4	ma
Grid-No.1 Voltage (Approx.) for plate ma. = 1	-	-46	volts
Grid-No.1 Voltage (Approx.) for peak positive-pulse plate volts = 5000, grid- No.2 volts = 150, and plate ma. = 1	-	-100	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	4-1/4"
Seated Length	3-1/2" ± 3/16"
Maximum Diameter	1-9/16"
Bulb	T12
Cap	Skirted Miniature (JEDEC No.C1-3)
Base	Short Medium-Shell Octal 6-Pin with External Barriers, Arrangement 2, Style B, (JEDEC Group 1, No.B6-122)

Basing Designation for BOTTOM VIEW 8JX

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



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



12GC6

HORIZONTAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Maximum Values:

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

DC PLATE VOLTAGE.	770	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	6500	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No. 2 (SCREEN-GRID) VOLTAGE.	220	max.	volts
PEAK NEGATIVE-PULSE GRID-No. 1 VOLTAGE	330	max.	volts
CATHODE CURRENT:			
Peak.	550	max.	ma
Average	175	max.	ma
GRID-No. 2 INPUT	4.5	max.	watts
PLATE DISSIPATION ^e	17.5	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^f	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface).	220	max.	°C

Maximum Circuit Values:

Grid-No. 1-Circuit Resistance.	1	max.	megohm
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^a without external shield.

^b 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.

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

^d 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.

^e An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

^f The dc component must not exceed 100 volts.



Beam Power Tube

For Equipment Having Series Heater-String Arrangement

The 12GW6 is the same as the 5GW6 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec





12GJ5

Beam Power Tube

NOVAR TYPE

With Heater Having Controlled Warm-Up Time

The 12GJ5 is the same as the 6GJ5 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

12GT5

Beam Power Tube

NOVAR TYPE

With Heater Having Controlled Warm-Up Time

The 12GT5 is the same as the 6GT5 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

12GW6

Beam Power Tube

With Heater Having Controlled Warm-Up Time

The 12GW6 is the same as the 6GW6 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec







12H6
TO
12J7-GT

12H6

TWIN DIODE

Heater, for Unipotential Cathodes:

Voltage	12.6	. . . . .	ac or dc volts
Current	0.15	. . . . .	amp

The 12H6 is the same as the 6H6 except for heater rating.

12J5-GT

MEDIUM-MU TRIODE

Heater, for Unipotential Cathode:

Voltage	12.6	. . . . .	ac or dc volts
Current	0.15	. . . . .	amp

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.

12J7-GT

SHARP-CUTOFF PENTODE

Heater, for Unipotential Cathode:

Voltage	12.6	. . . . .	ac or dc volts
Current	0.15	. . . . .	amp

The 12J7-GT is the same as the 6J7-GT except for heater rating.





12K5

12K5

POWER TETRODE

7-PIN MINIATURE, SPACE-CHARGE-GRID TYPE

*For use in automobile radio receivers operating directly from 12-volt storage batteries***GENERAL DATA****Electrical:**Heater[•], 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. 0.4 amp

Characteristics, Class A₁ Amplifier with 12.6 Volts on Heater:

Plate Voltage. 12.6 volts

Grid-No.2 (Control-Grid) Voltage -0.5 volt

Grid-No.1 (Space-Charge-Grid) Voltage. 12.6 volts

Plate Resistance (Approx.) 480 ohms

Amplification Factor, Grid No.2 to Plate. 7.2

Transconductance, Grid No.2 to Plate 15000 μ mhos

Plate Current. 40 ma

Grid-No.1 Current. 75 ma

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" \pm 3/32"

Maximum Diameter 3/4"

Dimensional Outline. See General Section

Bulb T5-1/2

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

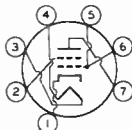
Basing Designation for BOTTOM VIEW 7FD

Pin 1 - Cathode

Pin 2 - Grid No.2

Pin 3 - Heater

Pin 4 - Heater



Pin 5 - Grid No.1

Pin 6 - Grid No.1

Pin 7 - Plate

AUDIO-DRIVER SERVICE**Maximum Ratings, Design-Center Values Except as Noted:**

PLATE VOLTAGE. 30 max. volts

GRID-No.2 (CONTROL-GRID) VOLTAGE:

Negative bias value. -20 max. volts

GRID-No.1 (SPACE-CHARGE-GRID) VOLTAGE

(Absolute maximum) 16[■] max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode. 30 max. volts

Heater positive with respect to cathode. 30 max. volts

[•], [■]: See next page.

12K5



12K5

POWER TETRODE

Typical Operation with 12.6 Volts on Heater:

Plate Voltage.	12.6	volts
Grid-No.2 Voltage:		
Obtained by rectification through 2.2- megohm resistor.	-2	volts
Peak AF Grid-No.2 Voltage:		
Obtained from 100000-ohm source.	2.5	volts
Grid-No.1 Voltage.	12.6	volts
Zero-Signal Plate Current.	40	ma
Max.-Signal Plate Current.	8	ma
Grid-No.1 Current.	75	ma
Load Resistance.	800	ohms
Total Harmonic Distortion.	10	%
Max.-Signal Power Outout	40	mw

Maximum Circuit Values:

Grid-No.2-Circuit Resistance	10 max.	megohms
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- Operation of heater in series with other heaters is not recommended.
- Under no circumstances should this absolute value be exceeded.

OPERATING CONSIDERATIONS

The *maximum ratings* in the tabulated data for the 12K5, except the rating for grid-No.1 (space-charge-grid) voltage, 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 12K5 in this service will, at times, exceed the design-center maximum values, satisfactory performance with probable sacrifice in life will be obtained.



12K7-GT

REMOTE-CUTOFF PENTODE

12K7-GT
TO
12Q7-GT

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.



12SK7

Remote-Cutoff Pentode

The 12SK7 is the same as the 6SK7 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.15	amp

12SK7GT

Remote-Cutoff Pentode

The 12SK7GT is the same as the 6SK7GT except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.15	amp

12SL7GT

High-Mu Twin Triode

The 12SL7GT is the same as the 6SL7GT except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	12.6	volts
Current	0.15	amp

12SN7GT

Medium-Mu Twin Triode

The 12SN7GT is the same as the 6SN7GT except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	12.6	volts
Current	0.3	amp



12SN7GTA

Medium-Mu Twin Triode

The 12SN7GTA is the same as the 6SN7GTA except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	12.6	volts
Current	0.3	amp

12SQ7

Twin Diode—High-Mu Triode

The 12SQ7 is the same as the 6SQ7 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.15	amp

12SQ7GT

Twin Diode—High-Mu Triode

The 12SQ7GT is the same as the 6SQ7GT except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.15	amp

12SR7

Twin Diode—Medium-Mu Triode

The 12SR7 is the same as the 6SR7 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	12.6	volts
Current	0.15	amp





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 12.6ac 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 12.6ac 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 12.6ac or dc volts
 Current 0.3 amp
The 12X4 is the same as the 6X4 except for heater rating.

13DE7

Dual Triode

With Medium-Mu Unit and Low-Mu Unit

9-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

The 13DE7 is the same as the 6DE7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	13	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

13DR7

Dual Triode

With High-Mu Unit and Low-Mu Unit

With Heater Having Controlled Warm-Up Time

The 13DR7 is the same as the 6DR7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	13	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

13EM7

Dual Triode

With High-Mu Unit and Low-Mu Unit

With Heater Having Controlled Warm-Up Time

The 13EM7 is the same as the 6EM7 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	13	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec







14A4

MEDIUM-MU TRIODE

14A4
14A5

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.):[○]

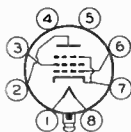
Grid No.1 to Plate 0.4 μμf
Input. 6.8 μμf
Output 7.0 μμf

○ 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 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. 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	. . .	μmhos
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 μμf

Grid to Cathode 2.2 μμf

Plate to Cathode 1.6 μμf

Grid of Unit No.1 to Grid of Unit No.2 0.20 max. μμf

Plate of Unit No.1 to Plate of Unit No.2 0.60 max. μμf

Grid of Unit No.1 to Plate of Unit No.2 0.06 max. μμf

Grid of Unit No.2 to Plate of Unit No.1 0.10 max. μμf

[○] 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

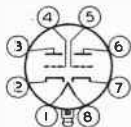
Basing Designation for BOTTOM VIEW 8AC

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

World Radio History

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

The 14B6 is the same as the 7B6 except for heater rating.

[□] Nominal voltage = 14.0 volts.

^{□□} Nominal current = 0.16 ampere.



14J7

14J7
TO
14R7

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 0.15^{□□} amp

The 14N7 is the same as the 7N7 except for heater rating.

□ Nominal voltage = 14.0 volts. □□ Nominal current = 0.16 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.

17AX4GT

Half-Wave Vacuum Rectifier

For TV Damper Service
With Heater Having Controlled Warm-Up Time

The 17AX4GT is the same as the 6AX4GT except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

17AX4GTA

Half-Wave Vacuum Rectifier

For TV Damper Service
With Heater Having Controlled Warm-Up Time

The 17AX4GTA is the same as the 6AX4GTB except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

17AY3

Half-Wave Vacuum Rectifier

NOVAR TYPE

For TV Damper Service
With Heater Having Controlled Warm-Up Time

The 17AY3 is the same as the 6AY3 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec



17BH3

Half-Wave Vacuum Rectifier

NOVAR TYPE

For TV Damper Service

With Heater Having Controlled Warm-Up Time

The 17BH3 is the same as the 6BH3 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	17	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

17BQ6GTB

Beam Power Tube

With Heater Having Controlled Warm-Up Time

The 17BQ6GTB is the same as the 6BQ6GTB/6CU6 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45	amp
Warm-up time (Average)	11	sec

17D4

Half-Wave Vacuum Rectifier

For TV Damper Service

With Heater Having Controlled Warm-Up Time

The 17D4 is the same as the 6DA4 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec



17DE4

Half-Wave Vacuum Rectifier

For TV Damper Service
With Heater Having Controlled Warm-Up Time

The 17DE4 is the same as the 5DE4 except for the following items:
Heater, for Unipotential Cathode:

Voltage (AC or DC).	17	volts
Current	0.6 ± 6%	amp
Warm-up time (Average).	11	sec

17DM4

Half-Wave Vacuum Rectifier

For TV Damper Service
With Heater Having Controlled Warm-Up Time

The 17DM4 is the same as the 6DM4 except for the following items:
Heater, for Unipotential Cathode:

Voltage (AC or DC).	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average).	11	sec

17DQ6A

Beam Power Tube

With Heater Having Controlled Warm-Up Time

The 17DQ6A is the same as the 6DQ6A except for the following items:
Heater, for Unipotential Cathode:

Voltage (AC or DC).	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average).	11	sec



17DQ6B

Beam Power Tube

With Heater Having Controlled Warm-Up Time

The 17DQ6B is the same as the 6DQ6B except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec



17AX4GT

Half-Wave Vacuum Rectifier

For Damper Service in TV Equipment
Having Series Heater-String Arrangement

The 17AX4GT is the same as the 6AX4GT except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average).	11	sec

17AX4GTA

Half-Wave Vacuum Rectifier

For Damper Service in TV Equipment
Having Series Heater-String Arrangement

The 17AX4GTA is the same as the 6AX4GTB except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average).	11	sec

17BQ6GTB

Beam Power Tube

For Equipment Having Series Heater-String Arrangement

The 17BQ6GTB is the same as the 6BQ6GTB/6CU6 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45	amp
Warm-up time (Average).	11	sec



17D4

Half-Wave Vacuum Rectifier

For Damper Service in TV Equipment
Having Series Heater-String Arrangement

The 17D4 is the same as the 6DA4 except for the following items:
Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

17DE4

Half-Wave Vacuum Rectifier

For Damper Service in TV Equipment
Having Series Heater-String Arrangement

The 17DE4 is the same as the 6DE4 except for the following items:
Heater, for Unipotential Cathode:

Voltage (AC or DC)	17	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

17DM4

Half-Wave Vacuum Rectifier

For Damper Service in TV Equipment
Having Series Heater-String Arrangement

The 17DM4 is the same as the 6DM4 except for the following items:
Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec



17AX4-GT

Half-Wave Vacuum Rectifier

For Damper Service in TV 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 (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

17AX4-GTA

Half-Wave Vacuum Rectifier

For Damper Service in TV Equipment
Having Series Heater-String Arrangement

The 17AX4-GTA is the same as the 6AX4-GTB except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

17BQ6-GTB

Beam Power Tube

For 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 (AC or DC)	16.8	volts
Current	0.45	amp
Warm-up time (Average)	11	sec



17D4

Half-Wave Vacuum Rectifier

For Damper Service in TV Equipment
Having Series Heater-String Arrangement

The 17D4 is the same as the 6DA4 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC).	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average).	11	sec

17DE4

Half-Wave Vacuum Rectifier

For Damper Service in TV Equipment
Having Series Heater-String Arrangement

The 17DE4 is the same as the 6DE4 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC).	17	volts
Current	0.6 ± 6%	amp
Warm-up time (Average).	11	sec

17DQ6-A

Beam Power Tube

For 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 (AC or DC).	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average).	11	sec



17DQ6A

Beam Power Tube

For Equipment Having Series Heater-String Arrangement

The 17DQ6A is the same as the 6DQ6A except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

17DQ6B

Beam Power Tube

For Equipment Having Series Heater-String Arrangement

The 17DQ6B is the same as the 6DQ6B except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec





Beam Power Tube

For Equipment Having Series Heater-String Arrangement

The 17DQ6-B is the same as the 6DQ6-B except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec





17GJ5

Beam Power Tube

NOVAR TYPE

With Heater Having Controlled Warm-Up Time

The 17GJ5 is the same as the 6GJ5 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

17GT5

Beam Power Tube

NOVAR TYPE

With Heater Having Controlled Warm-Up Time

The 17GT5 is the same as the 6GT5 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

17GW6

Beam Power Tube

With Heater Having Controlled Warm-Up Time

The 17GW6 is the same as the 6GW6 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec





Beam Power Tube

For Equipment Having Series Heater-String Arrangement

The 17GW6 is the same as the 6GW6 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	16.8	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec





Remote-Cutoff Pentode

7-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	18	volts
Current	0.1 ± 6%	amp
Warm-up time (Average)	20	sec

Direct Interelectrode Capacitances:^a

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

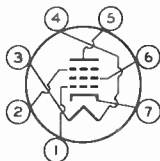
Characteristics, Class A₁ Amplifier:

Plate Supply Voltage	100	volts
Grid No.3	<i>Connected to cathode at socket</i>	
Grid-No.2 Supply Voltage	100	volts
Cathode Resistor	68	ohms
Plate Resistance (Approx.)	0.25	megohm
Transconductance	4400	μhos
Plate Current	11	ma
Grid-No.2 Current	4.4	ma
Grid-No.1 Voltage (Approx.) for transconductance (μhos) = 25	-20	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)
Basing Designation for BOTTOM VIEW	7CC

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



18FW6A

AMPLIFIER — Class A₁

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE 150 max. volts

GRID No.3 (SUPPRESSOR GRID) *Connected to cathode at socket*

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

GRID-No.2 VOLTAGE *See Grid-No.2 Input Rating Chart*
at front of Receiving Tube Section

GRID-No.2 INPUT:

For grid-No.2 voltages up to 75 volts 0.6 max. watt

For grid-No.2 voltages between 75

and 150 volts *See Grid-No.2 Input Rating Chart*
at front of Receiving Tube Section

PLATE DISSIPATION 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 100 max. volts

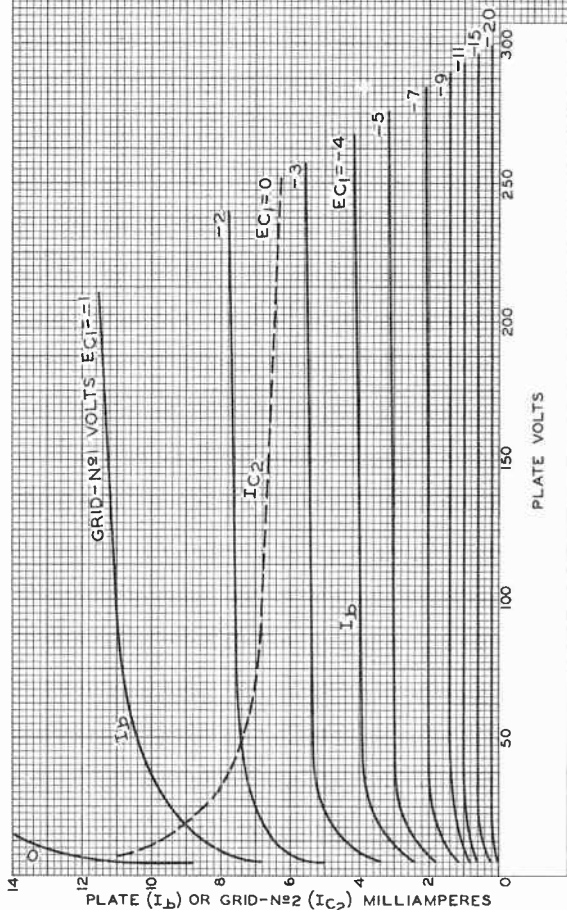
Heater positive with respect to cathode 100 max. volts

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



AVERAGE CHARACTERISTICS

$E_f = 18$ VOLTS
 PLATE VOLTS = 100
 GRID N^o 3 CONNECTED TO
 CATHODE AT SOCKET.
 GRID - N^o 2 VOLTS = 100

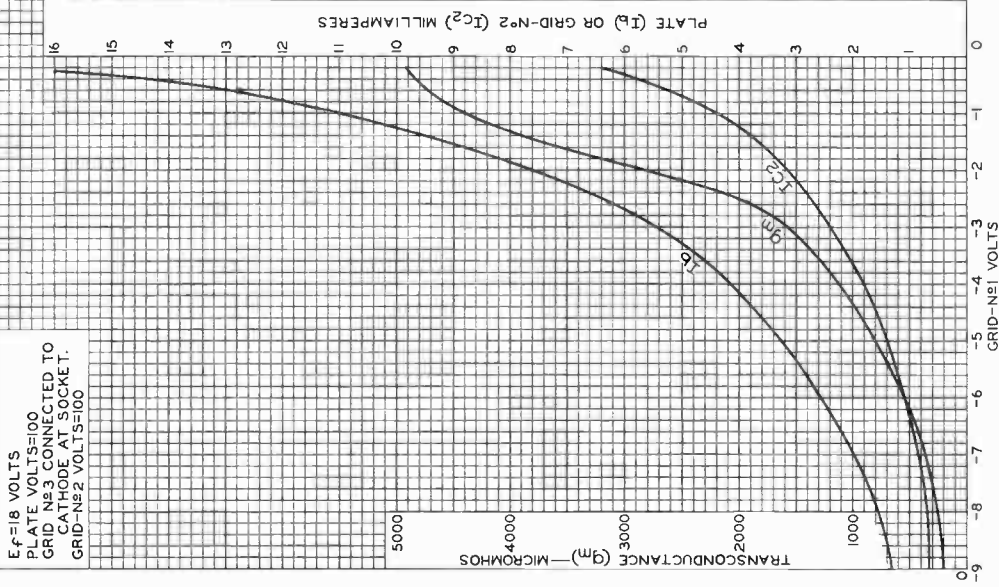


92CM-10778



18FW6A

AVERAGE CHARACTERISTICS



92CM-10776

RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.



Pentagrid Converter

7-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	18	volts
Current	0.1 ± 6%	amp
Warm-up time (Average)	20	sec

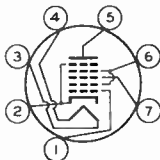
Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^a	
Grid No.3 to all other elec- trodes (RF input)	7	7	μf
Plate to all other electrodes (Mixer input)	8	13	μf
Grid No.1 to all other elec- trodes (Oscillator input)	5.5	5.5	μf
Grid No.3 to plate	0.3 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	0.05	μf
Grid No.1 to cathode & grid No.5	3	3	μf
Cathode & grid No.5 to all other electrodes except grid No.1	15	20	μf

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 <i>General Section</i>
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC 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-Maximum Values:*

PLATE VOLTAGE	150 max.	volts
GRIDS-No.2 & No.4 (SCREEN-GRIDS) SUPPLY VOLTAGE	150 max.	volts



18FX6A

GRIDS-No.2 & No.4 VOLTAGE.	110 max.	volts
GRIDS-No.2 & No.4 INPUT.	1.2 max.	watts
PLATE DISSIPATION.	1 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	100 max.	volts
Heater positive with respect to cathode.	100 max.	volts

Characteristics:

With Separate Excitation^b

Plate Voltage.	100	volts
Grids-No.2 & No.4 Voltage.	100	volts
Grid-No.3 Voltage.	-1.5	volts
Grid-No.1 Resistor	20000	ohms
Plate Resistance (Approx.)	0.4	megohm
Conversion Transconductance.	480	μ mhos
Plate Current.	2.3	ma
Grids-No.2 & No.4 Current.	6.2	ma
Grid-No.1 Current.	0.5	ma
Total Cathode Current.	9	ma
Grid-No.3 Voltage (Approx.) for conversion transconductance (μ mhos) = 10	-21	volts

Oscillator Characteristics (Not Oscillating):^c

Plate & Grids-No.2 & No.4 Voltage.	100	volts
Grid-No.3 Voltage.	0	volts
Grid-No.1 Voltage.	0	volts
Amplification Factor ^d	22	
Oscillator Transconductance ^d	7000	μ mhos
Cathode Current.	24	ma
Grid-No.1 Voltage (Approx.) for plate $\mu a = 20$	-9.2	volts

^a with external shield JEDEC No.316 connected to cathode.

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

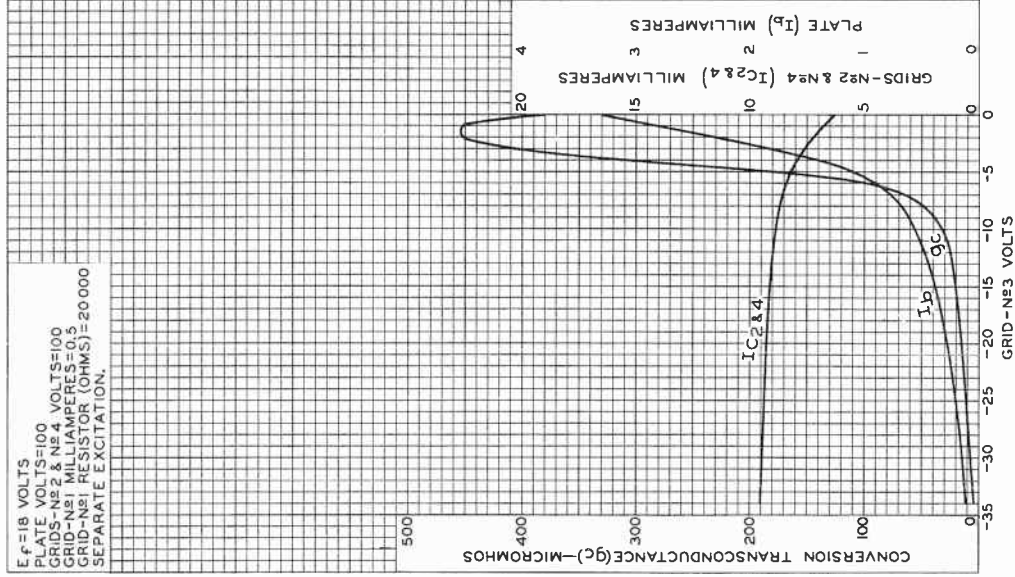
^c with grids No.2 & No.4 connected to plate.

^d Between grid No.1 and grids No.2 & No.4 connected to plate.



AVERAGE CHARACTERISTICS

$E_f = 18$ VOLTS
 PLATE VOLTS=100
 GRIDS - No 2 & No 4 - VOLTS=100
 GRID - No 1 MILLIAMPERES=0.5
 GRID - No 1 RESISTOR (OHMS)=20,000
 SEPARATE EXCITATION.



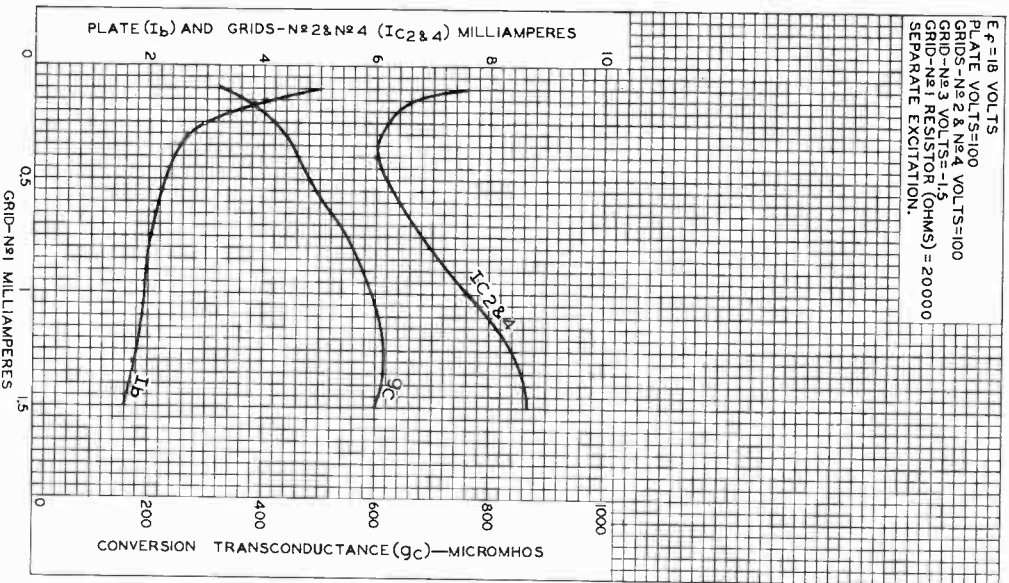
92CM-10777



18FX6A

AVERAGE CHARACTERISTICS

$E_p = 18$ VOLTS
PLATE VOLTS=100
GRIDS-No 2 & No 4 VOLTS=100
GRID-No 3 VOLTS=-1.5
GRID-No 1 RESISTOR (OHMS) = 20000
SEPARATE EXCITATION.



92CM-10782

RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



Twin Diode—High-Mu Triode

7-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	18	volts
Current	0.1 ± 6%	amp
Warm-up time (Average)	20	sec

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^a</i>	
Triode grid to triode plate . .	1.8	1.8	μf
Triode grid to cathode and heater.	2.4	2.4	μf
Triode plate to cathode and heater.	0.22	2	μf
Plate of diode unit No.2 to triode grid.	0.2 max.	0.2 max.	μf

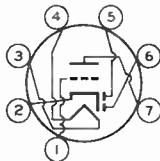
Characteristics. Class A₁ Amplifier (Triode Unit):

Plate Voltage	100	volts
Grid Voltage.	-1	volt
Amplification Factor.	100	
Plate Resistance (Approx.)	77000	ohms
Transconductance.	1300	μmhos
Plate Current	0.6	ma

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 <i>General Section</i>
Bulb.	T5-1/2
Base.	Small-Button Miniature 7-Pin (JEDEC No. E7-1)
Basing Designation for BOTTOM VIEW. 7BT	

- Pin 1—Grid of Triode Unit
- Pin 2—Cathode of Triode Unit and Diode Units No. 1 and No. 2
- Pin 3—Heater
- Pin 4—Heater



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



18FY6A

TRIODE UNIT — AMPLIFIER — Class A₁

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE	150 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.	100 ^o max.	volts
Heater positive with respect to cathode.	100 max.	volts

DIODE UNITS — Two

Maximum Ratings, *Design-Maximum Values:*

Values are for Each Unit

PLATE CURRENT	1 max.	ma
-------------------------	--------	----

Characteristics, *Instantaneous Test Condition:*

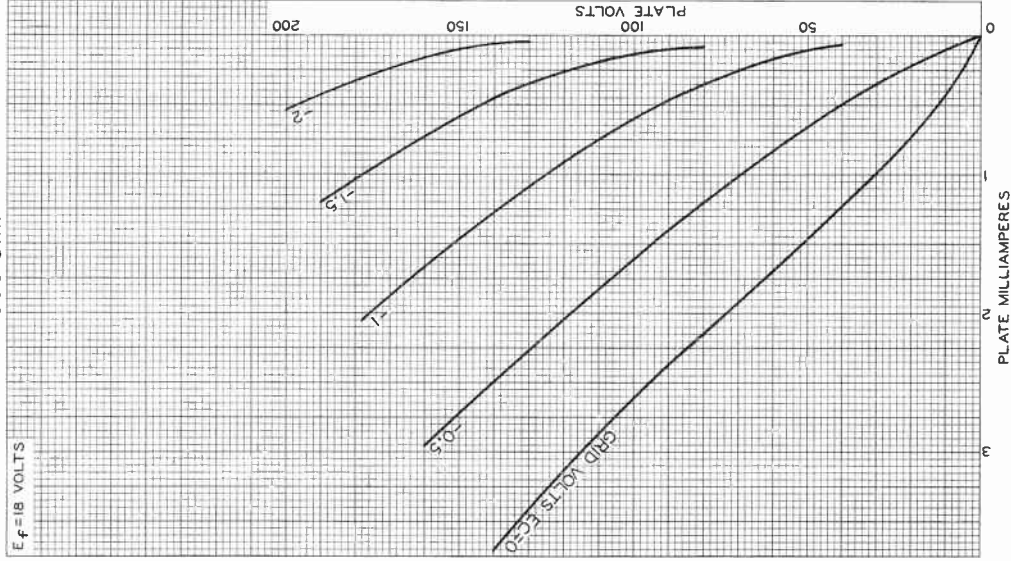
Plate Current for plate volts = 10.	2	ma
---	---	----

^a with external shield JEDEC No.316 connected to cathode.



18FY6A

AVERAGE PLATE CHARACTERISTICS Triode Unit



92CM-10775



RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 2
7-61



Sharp-Cutoff Pentode

7-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	18	volts
Current	0.1 ± 6%	amp
Warm-up time (Average)	20	sec

Direct Interelectrode Capacitances:

	<i>Without External Shield</i>	<i>With External Shield^a</i>	
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	6	6	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater	5	5	μf

Characteristics, Class A₁ Amplifier:

Plate Supply Voltage	100	volts
Grid No.3	Connected to cathode at socket	
Grid-No.2 Supply Voltage	100	volts
Cathode Resistor	150	ohms
Plate Resistance (Approx.)	0.5	megohm
Transconductance	4300	μmhos
Plate Current	5	ma
Grid-No.2 Current	2	ma
Grid-No.1 Voltage (Approx.) for plate μ a = 10	-4.7	volts

Mechanical:

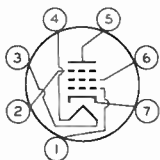
Operating Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Length	1-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/2" ± 3/32"
Diameter	0.650" to 0.750"
Dimensional Outline	See <i>General Section</i>
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No.E7-1)



18GD6A

Basing Designation for BOTTOM VIEW. 7BK

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

RF AMPLIFIER and AUTODYNE CONVERTER

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE 150 max. volts
GRID No.3 (SUPPRESSOR GRID) . . .Connect to cathode at socket
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE. . . . 150 max. volts
GRID-No.2 VOLTAGESee Grid-No.2 Input Rating
Chart at front of Receiving Tube Section

GRID-No.2 INPUT:

For grid-No.2 voltages up to 75 volts . . . 0.6 max. watt
For grid-No.2 voltages between
75 and 150 volts.See Grid-No.2 Input Rating
Chart at front of Receiving Tube Section

PLATE DISSIPATION 2.5 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . 100 max. volts
Heater positive with respect to cathode . . 100 max. volts

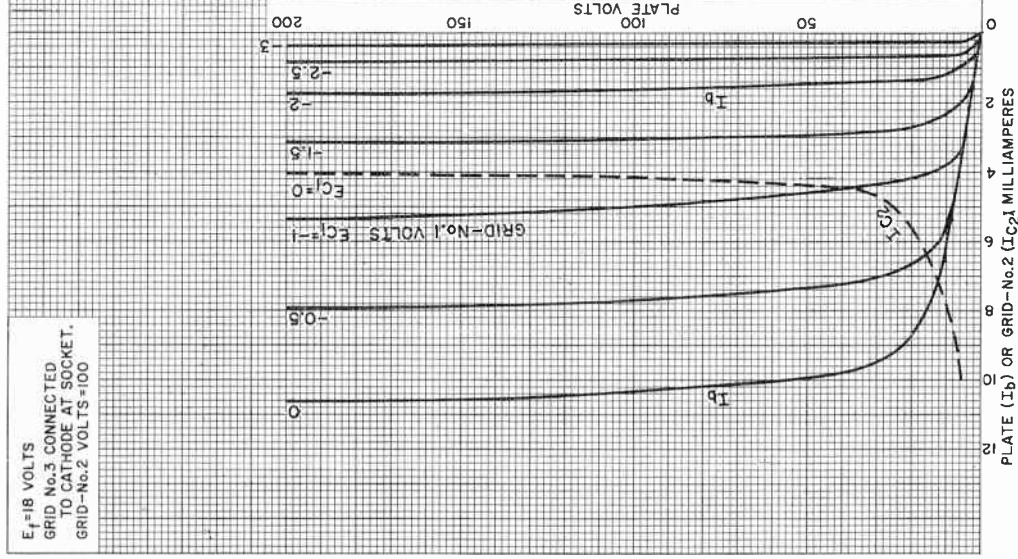
^a With external shield JEDEC No.316 connected to cathode.



18GD6A

AVERAGE CHARACTERISTICS

$E_f = 18$ VOLTS
GRID No.3 CONNECTED
TO CATHODE AT SOCKET.
GRID-No.2 VOLTS = 100



92CM-11138RI



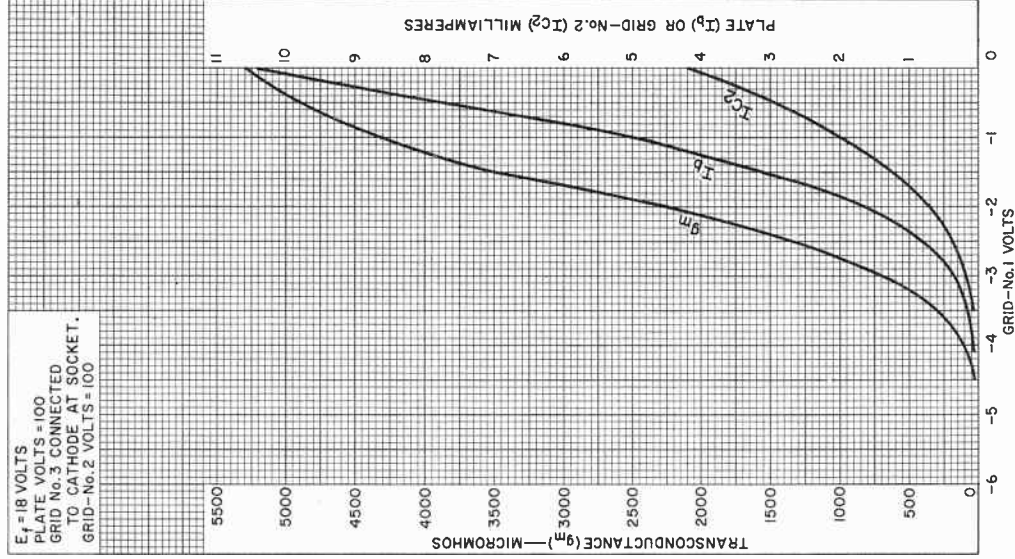
RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 2
1-62

18GD6A

AVERAGE CHARACTERISTICS

$E_f = 18$ VOLTS
PLATE VOLTS = 100
GRID No. 3 CONNECTED
TO CATHODE AT SOCKET.
GRID-No. 2 VOLTS = 100



92CM-11136RI

RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.



19AU4GTA

Half-Wave Vacuum Rectifier

For Television Damper Service
With Heater Having Controlled Warm-Up Time

The 19AU4GTA is the same as the 6AU4GTA except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	18.9	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec







19AU4

19AU4

HALF-WAVE VACUUM RECTIFIER

Intended for TV damper service in equipment having series heater-string arrangement

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	18.9	ac or dc volts
Current.	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 (Approx.):^o

Plate to heater and cathode.	8.5	$\mu\mu\text{f}$
Cathode to heater and plate.	11.5	$\mu\mu\text{f}$
Heater to cathode.	4	$\mu\mu\text{f}$

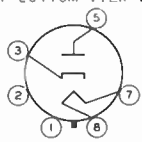
Mechanical:

Mounting Position.	Any
Maximum Overall Length	3-13/16"
Maximum Seated Length.	3-1/4"
Maximum Diameter	1-9/32"
Dimensional Outline.	See General Section
Bulb	T-9

Base Short Intermediate-Shell Octal 5-Pin with External Barriers (JETEC No. B5-85), or Short Intermediate-Shell Octal 6-Pin with External Barriers (JETEC No. B6-60)

Basing Designation for BOTTOM VIEW 4CG

Pin 1 \blacklozenge - Same as Pin 2
 Pin 2 - No Connection - Do Not Use^{*}



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	1050	max.	ma
DC PLATE CURRENT	175	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

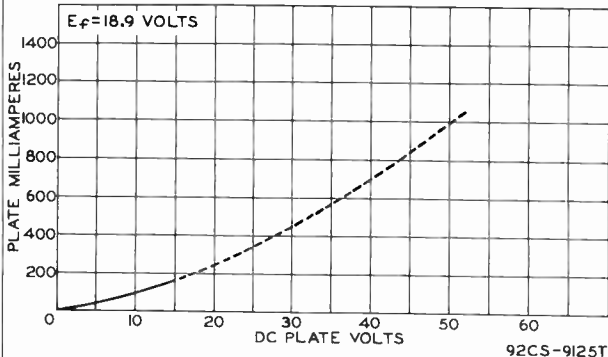
^o without external shield.
 \blacklozenge on the 5-pin base, pin 1 as well as pins 4 and 6 is omitted.
 $\square, \blacklozenge, \blacksquare, \blacktriangle, \#$: See next page.



HALF-WAVE VACUUM RECTIFIER

- 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.
- 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.

AVERAGE PLATE CHARACTERISTIC





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 μ hos

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. μ mf

Input 11 μ mf

Output 6.5 μ mf

^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" \pm 5/32"

Maximum Diameter 2-1/16"

Bulb ST-16

Cap Small

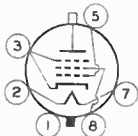
Base Medium-Shell Octal 6-Pin

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
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

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		$\mu\mu\text{f}$
Grid No.1 to cathode & grid No.3, grid No.2, and heater.	11		$\mu\mu\text{f}$
Plate to cathode & grid No.3, grid No.2, and heater.	6		$\mu\mu\text{f}$

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 (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 5 - Grid No.1 |
| Pin 2 - Heater | | Pin 6 - Same as Pin 1 |
| Pin 3 - Cathode, Grid No.3 | | Pin 7 - Heater |
| Pin 4 - Same as Pin 1 | | 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

19CL8-A

Medium-Mu Triode— Sharp-Cutoff Tetrode

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 19CL8-A is the same as the 6CL8-A except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	18.9	volts
Current	0.15 ± 6%	amp

19EA8

Medium-Mu Triode— Sharp-Cutoff Pentode

9-PIN MINIATURE TYPE

For Equipment Having Series Heater-String Arrangement

The 19EA8 is the same as the 6EA8 except for the following items:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	18.9	volts
Current	0.15 ± 6%	amp







19T8

19T8

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.

Diode--Remote-Cutoff Pentode

9-PIN MINIATURE TYPE

The 20EQ7 is the same as the 6EQ7 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	20 ± 10%	volts
Current at 20 volts	0.1	amp





High-Mu Twin Triode

9-PIN MINIATURE TYPE

For High-Gain, Resistance-Coupled, Low-Level Audio-Amplifiers Operating at Low-Signal Levels, such as Preamplifiers for Low-Cost Stereophonic Phonographs

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage (AC or DC)	20	volts
Current	0.1 ± 6%	amp

Direct Interelectrode Capacitances (Approx.):^a

	Unit No. 1	Unit No. 2	
Grid to plate	1.5	1.5	μf
Grid to cathode and heater. . .	1.6	1.6	μf
Plate to cathode and heater . .	0.2	0.3	μf

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

Basing Designation for BOTTOM VIEW. 9PG ←

Pin 1 - Heater

Pin 2 - Heater

Pin 3 - Internal Connection—Do Not Use

Pin 4 - Cathode of Unit No. 2

Pin 5 - Grid of Unit No. 2



Pin 6 - Plate of Unit No. 2

Pin 7 - Plate of Unit No. 1

Pin 8 - Grid of Unit No. 1

Pin 9 - Cathode of Unit No. 1

AMPLIFIER — Class A₁

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE.	330 max.	volts
------------------------	----------	-------

← Indicates a change.



20EZ7

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^b max. volts

Typical Operation as Resistance-Coupled Amplifier:

See *RESISTANCE-COUPLED-AMPLIFIER CHART No. 25*
at front of this Section

^a Without external shield.

^b The dc component must not exceed 100 volts.



High-Mu Twin Triode

9-PIN MINIATURE TYPE

For High-Gain, Resistance-Coupled, Low-Level Audio-Amplifiers Operating at Low-Signal Levels, such as Preamplifiers for Low-Cost Stereophonic Phonographs

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

	Series	Parallel	
Heater arrangement	20	10 ± 10%	volts
Voltage (AC or DC)	0.1 ± 6%	0.2	amp
Current			

Direct Interelectrode Capacitances (Approx.):[▲]

	Unit No.1	Unit No.2	
Grid to plate	1.5	1.5	μf
Grid to cathode and heater	1.6	1.6	μf
Plate to cathode and heater	0.2	0.3	μf

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

Pins 1 & 3-Heater of
Unit No.1

Pins 2 & 3-Heater of
Unit No.2

Pin 3-Heater Tap

Pin 4-Cathode of
Unit No.2

Pin 5-Grid of
Unit No.2



Pin 6-Plate of
Unit No.2

Pin 7-Plate of
Unit No.1

Pin 8-Grid of
Unit No.1

Pin 9-Cathode of
Unit No.1

AMPLIFIER — Class A₁

Values are for Each Unit

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE 330 max. volts



20EZ7

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:

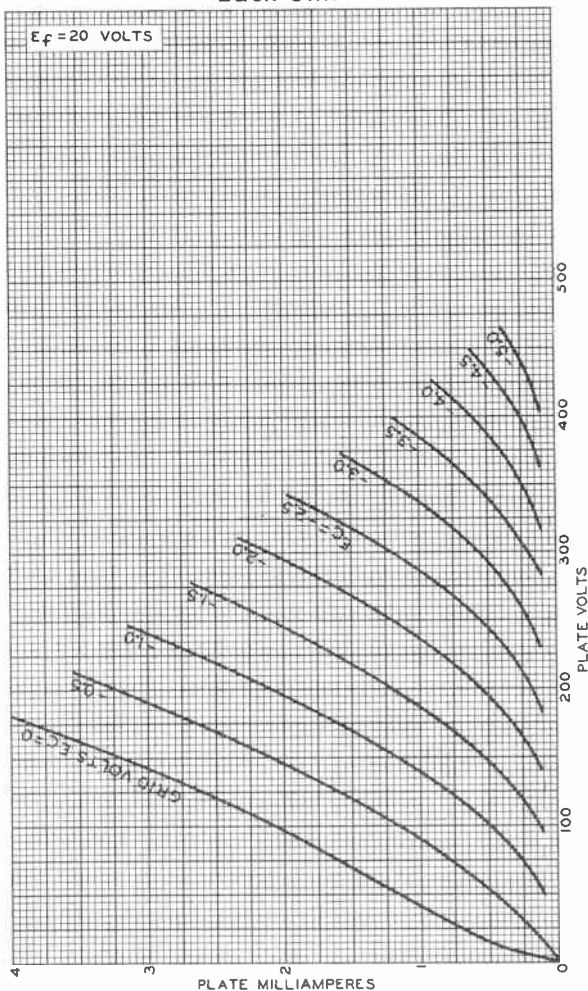
See *RESISTANCE-COUPLED-AMPLIFIER CHART No. 25*
at front of this Section

- ▲ Without external shield.
- The dc component must not exceed 100 volts.



AVERAGE PLATE CHARACTERISTICS

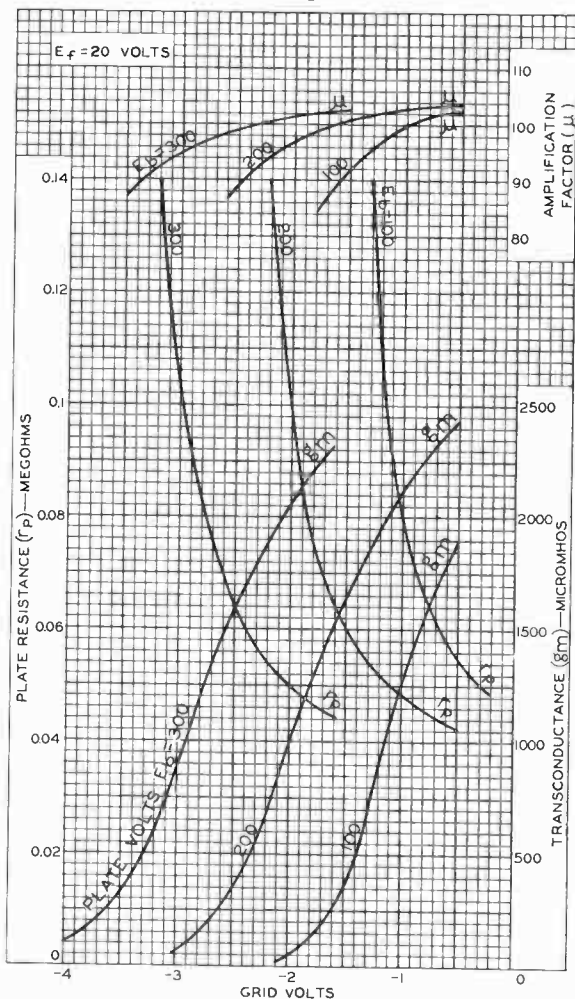
Each Unit



92CM-10804



AVERAGE CHARACTERISTICS Each Unit



92CM-10805



Beam Power Tube

With Heater Having Controlled Warm-Up Time

The 21EX6 is the same as the 6EX6 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	21.5	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec





22BH3

Half-Wave Vacuum Rectifier

NOVAR TYPE

For TV Damper Service

With Heater Having Controlled Warm-Up Time

The 22BH3 is the same as the 6BH3 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	22.4	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec

22DE4

Half-Wave Vacuum Rectifier

For TV Damper Service

With Heater Having Controlled Warm-Up Time

The 22DE4 is the same as the 6DE4 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	22.4	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec





Half-Wave Vacuum Rectifier

For TV Damper Service in Equipment
Having Series Heater-String Arrangement

The 22DE4 is the same as the 6DE4 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	22.4	volts
Current	0.45 ± 6%	amp
Warm-up time (Average)	11	sec







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.	μf
Input	5.3	μf
Output	10.5	μf
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 [□]	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.

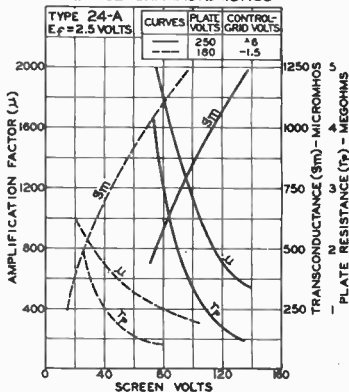
DETECTOR

Typical Operation:

	Biased	Grid-Leak	
Heater *	2.5	2.5	volts
Plate	250 [□]	180 max.	volts
Screen	20 to 45	20 to 45	volts
Grid	-5 approx.	Return to Cathode [▽]	volts
Plate Load	0.25 [△]	0.25 [△]	megohm
Plate Cur.	Adjusted to 0.1 ma. with no input signal [■]		

- [□] Max. plate volts = 275.
[▽] Conventional grid leak and condenser.
[△] 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.
[■] 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.
 ← indicates a change.

AVERAGE CHARACTERISTICS



APRIL 3, 1939

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

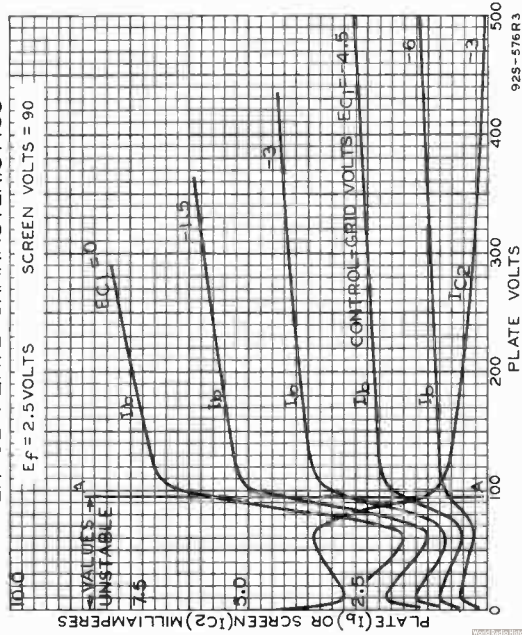
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24-A

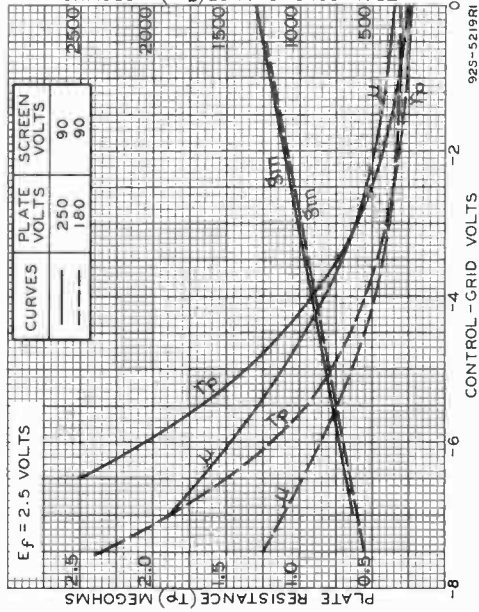


24-A

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.
	25A6	25A6-GT/G
Direct Interelectrode Cap.	▲	
Grid to Plate	0.2	-
Input	8.5	-
Output	12.5	-
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	7S	G-7S
Pin 1	{ 25A6, Shell { 25A6-GT/G, No Con.	Pin 5-Grid
Pin 2-Heater		Pin 7-Heater
Pin 3-Plate		Pin 8-Cathode, 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

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

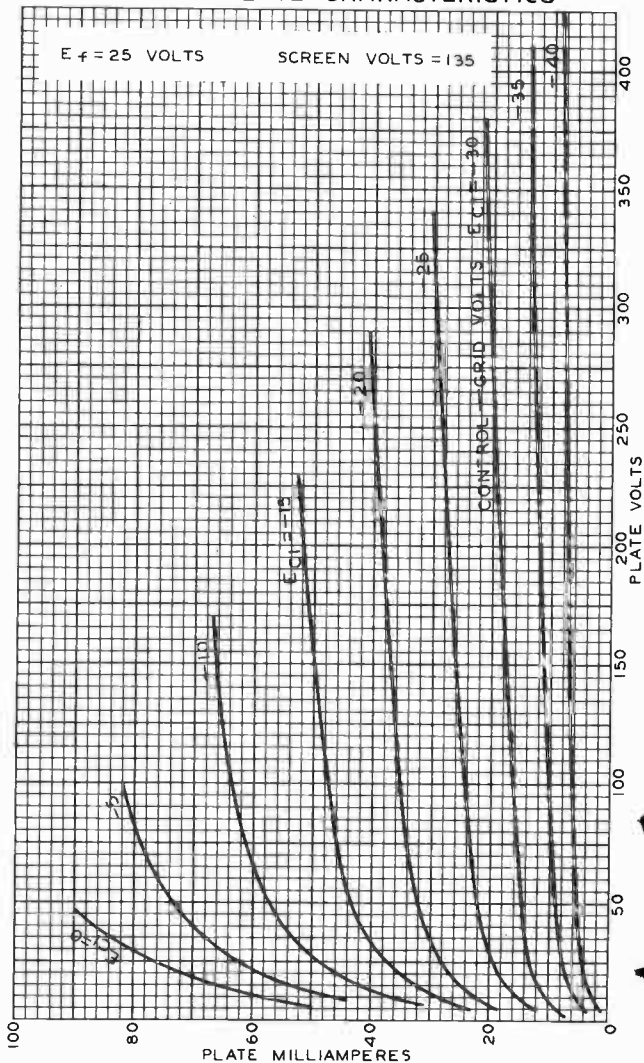
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25A6



25A6

AVERAGE PLATE CHARACTERISTICS



JAN. 8, 1940

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

92C-4559RI



25A7-GT/G

25A7-GT/G

RECTIFIER-PENTODE

Heater	Coated Unipotential Cathodes	
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	8-Pin
Pin 1 - Rectifier Cathode	(4)	Pin 6 - Rectifier Plate
Pin 2 - Heater	(5)	Pin 7 - Heater
Pin 3 - Pentode Plate	(3)	Pin 8 - Pentode Cathode, Grid #3
Pin 4 - Pentode Screen	(2)	
Pin 5 - Pentode Grid	(1)	
Mounting Position		Any



BOTTOM VIEW (8F)

Maximum Ratings Are Design-Center Values

PENTODE UNIT

Plate Voltage	117 max. volts
Screen Voltage	117 max. volts
Plate Dissipation	2.25 max. watts
Screen Dissipation	0.8 max. watt
<i>Typical Operation and Characteristics - Class A₁ Amplifier:</i>	
Plate Voltage	100 volts
Screen Voltage	100 volts
Grid Voltage*	-15 volts
Zero-Sig. Plate Current	20.5 ma.
Zero-Sig. Screen Current	4 ma.
Plate Resistance	50000 ohms
Transconductance	1800 μmhos
Load Resistance	4500 ohms
Total Harmonic Distortion	9 %
Power Output	0.77 watt

RECTIFIER UNIT (Half-Wave)

Peak Inverse Plate Voltage	350 max. volts
Peak Plate Current	450 max. ma.
D-C Output Current	75 max. ma.
D-C Heater-Cathode Potential	175 max. volts

Typical Operation With Condenser-Input Filter:

A-C Plate Supply Voltage (RMS)	117	volts
Filter Input Condenser	16	μf
Min. Total Effect. Plate-Supply Impedance	15	ohms
D-C Output Current	75	ma.
D-C Voltage (At input to filter): ^o		
At half-load current (7.5 ma.)	130	volts
At full-load current (75 ma.)	110	volts
Difference (Voltage Regulation)	20	volts
Percentage Regulation	15	%

^o 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.

^o Approximate values.

←Indicates a change.

Mar. 20, 1943

RCA VICTOR DIVISION

DATA

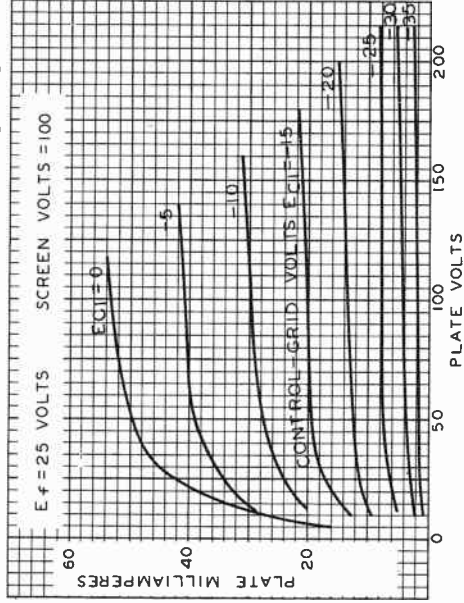
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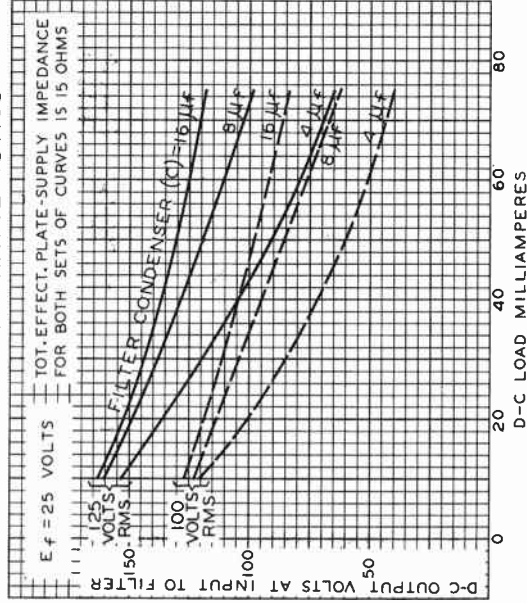


25A7-GT/G

AVERAGE PLATE CHARACTERISTICS



OPERATION CHARACTERISTICS





25AX4-GT

25AX4-GT HALF-WAVE VACUUM RECTIFIER

For Television Damper Service

The 25AX4-GT is the same as the 6AX4-GT except for the following items:

Heater, for Unipotential Cathode:

Voltage	25	. . . . .	ac or dc volts
Current	0.3	. . . . .	amp





25B6-G

25B6-G



POWER AMPLIFIER PENTODE

Heater [□]	Coated Unipotential 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-7S)

AMPLIFIER

Plate Voltage	200 max.	volts
Screen Voltage	135 max.	volts
Plate Dissipation	12.5 max.	watts
Screen Dissipation	2 max.	watts

Typical Operation and Characteristics—Class A₁ Amplifier:

Plate Voltage	105	135	200	volts
Screen Voltage	105	135	135	volts
Grid Voltage [▲]	-16	-22	-23	volts
Peak A-F Grid Volt.	16	22	23	volts
Zero-Sig. Plate Cur.	48	61	62	ma.
Max.-Sig. Plate Cur.	55	69	71	ma.
Zero-Sig. Screen Cur.	2	2.5	1.8	ma.
Max.-Sig. Screen Cur.	10	14.5	13	ma.
Plate Resistance	15500	15000	18000	ohms
Transconductance	4800	5000	5000	umhos
Load Resistance	1700	1700	*2500	ohms
Total Harmonic Dist.	12.5	14	15	%
Second Harmonic Dist.	7	8	8.5	%
Third Harmonic Dist.	10	11	11	%
Max.-Sig. Power Output	2.4	4.3	7.1	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.

← Indicates a change.

May 1, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

25B8-GT



25B8-GT

TRIODE-PENTODE

Heater [□]	Coated Unipotential Cathodes	
Voltage	25	a-c or d-c volts
Current	0.15	amp.
Direct Interelectrode Capacitances: [○]		
<i>Triode Unit:</i>		
Grid to Plate	2.2	μf
Grid to Cathode	5.0	μf
Plate to Cathode	4.6	μf
<i>Pentode Unit:</i>		
Grid to Plate	0.02	μf
Input	5.5	μf
Output	10.0	μf
Pentode Grid to Triode Grid	0.02	μf
Pentode Plate to Triode Grid	0.075	μf
Pentode Grid to Triode Plate	0.009	μf
Maximum Overall Length	3-5/16"	
Maximum Seated Height	2-3/4"	
Maximum Diameter	1-5/16"	
Bulb	T-9	
Cap	Skirted Miniature	
Base	Intermediate Shell Octal 8-Pin	
Pin 1 - Pentode Cathode	Pin 6 - Triode Cathode	
Pin 2 - Heater	Pin 7 - Heater	
Pin 3 - Pentode Plate	Pin 8 - Triode Grid	
Pin 4 - Pentode Screen	Cap - Pentode Grid	
Pin 5 - Triode Plate		



BOTTOM VIEW (8T)

TRIODE UNIT*Typical Operation and Characteristics:*

Plate	100	volts
Grid	-1	volt
Amp. Fact.	112	
Plate Res.	75000	ohms
Transcond.	1500	μhos
Grid Bias for Plate Cur. Cut-Off (approx.)	-2.5	volts
Plate Current	0.6	ma.

PENTODE UNIT*Typical Operation and Characteristics:*

Plate	100	volts
Screen	100	volts
Grid	-3	volts
Plate Res.	185000	ohms
Transcond.	2000	μhos
Grid Bias for Transcond. of 2 μhos	-41	volts
Plate Cur.	7.6	ma.
Screen Cur.	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.

[○] Values are approximate.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



25C5

25C5

BEAM POWER TUBE

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 25 ac or dc volts

Current 0.3 amp

Direct Interelectrode Capacitances (Approx.)⁰:

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. 8.5 μ f

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" \pm 3/32"

Maximum Diameter. 3/4"

Dimensional Outline See General Section

Bulb. T5-1/2

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-GRID) VOLTAGE 117 max. volts

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

Positive bias value 0 max. volts

GRID-No.2 INPUT 1.25 max. watts

PLATE DISSIPATION 6 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

⁰, * : See next page.

25C5



25C5

BEAM POWER TUBE

Peak AF Grid-No.1 Voltage.	8	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.)	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

^o without external shield.

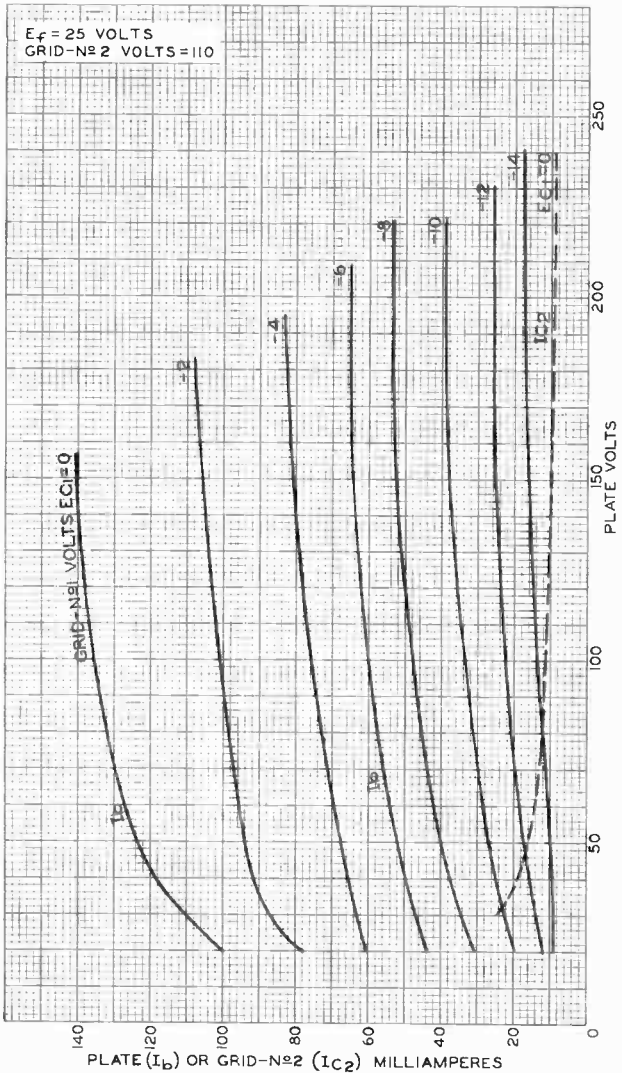
* The dc component must not exceed 100 volts.



25C5

25C5

AVERAGE CHARACTERISTICS



ELECTRON TUBE DIVISION

92CM-8908R2

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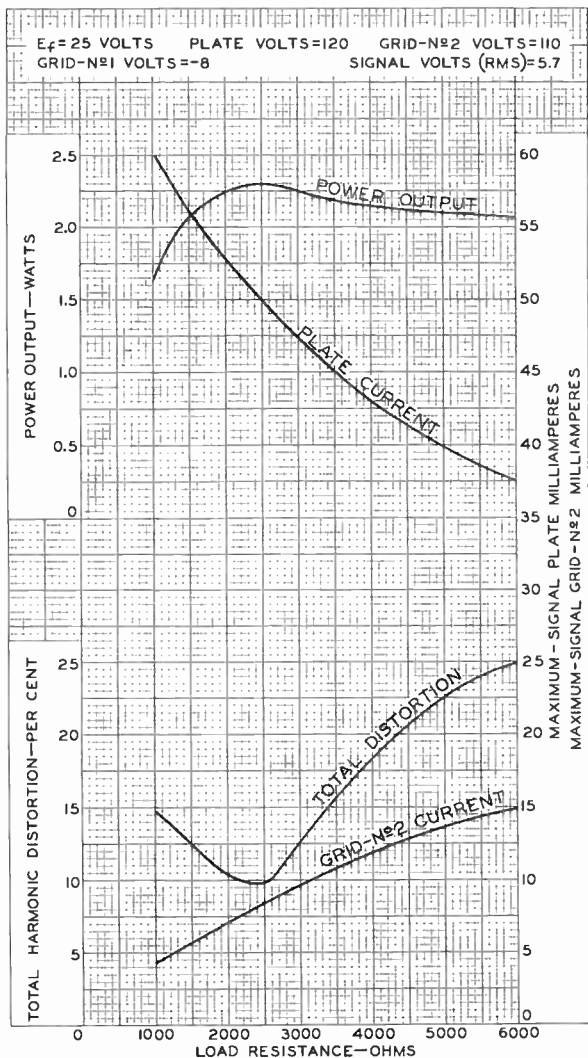
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25C5



25C5

OPERATION CHARACTERISTICS



ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

92CM-8918R1



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





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.



25CD6-GB

25CD6-GB BEAM POWER TUBE

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

The 25CD6-GB is the same as the 6CD6-GA 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.





25DN6

25DN6

BEAM POWER TUBE

Intended for use in equipment having series heater-string arrangement

GENERAL DATA

Electrical:

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.

Direct Interelectrode Capacitances (Approx.):⁰

Grid No.1 to plate	0.8	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater.	22	μf
Plate to cathode & grid No.3, grid No.2, and heater	11.5	μf

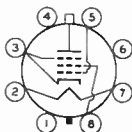
Characteristics. Class A₁ Amplifier:

Plate Voltage	50	125	volts
Grid-No.2 (Screen-Grid) Voltage	100	125	volts
Grid-No.1 (Control-Grid) Voltage	0	-18	volts
Mu Factor, Grid No.2 to Grid No.1.	-	4.35	
Plate Resistance (Approx.)	-	4000	ohms
Transconductance	-	9000	μmhos
Plate Current	240*	70	ma
Grid-No.2 Current	30*	6.3	ma
Grid-No.1 Voltage (Approx.) for plate current of 0.5 ma.	-	-36	volts

Mechanical:

- Operating Position Vertical, base up or down, or Horizontal with pins 1 and 3 in vertical plane
- Maximum Overall Length 5"
- Seated Length 4-1/4" \pm 3/16"
- Maximum Diameter 1-9/16"
- Bulb T12
- Cap. Small (JETEC No.C1-1)
- Base Short Medium-Shell Octal 8-Pin with External Barriers, Style B (JETEC No.B8-118)
- Basing Designation for BOTTOM VIEW 5B7

- 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

⁰, *: See next page.



25DN6

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-GRID) VOLTAGE	175	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)	225	max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

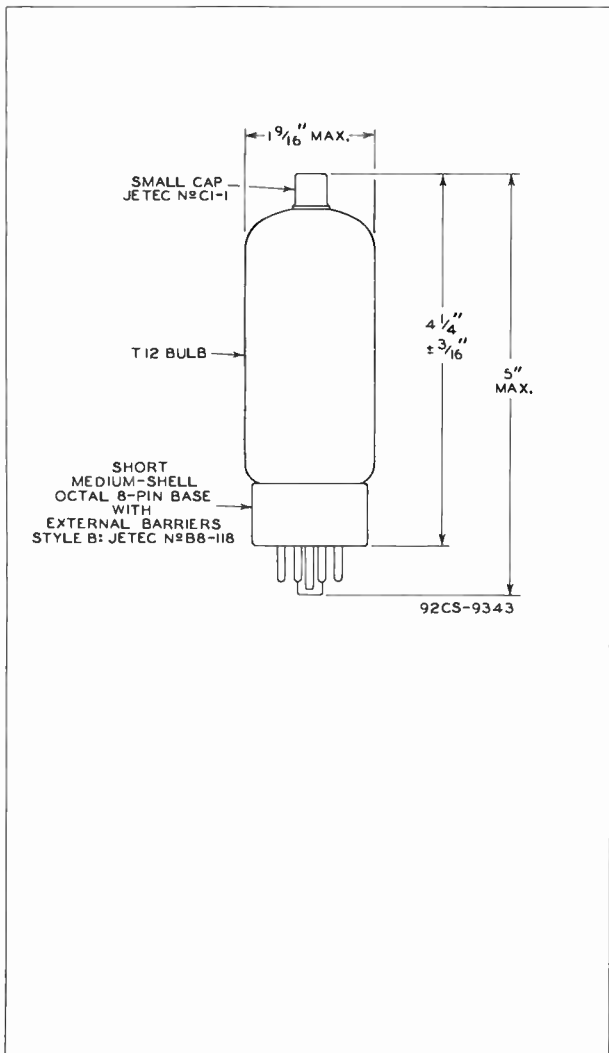
For grid-resistor-bias operation[†] 0.47 max. megohm[Ⓞ] Without external shield.[■] These values can be measured by a method involving a recurrent wave form such that the maximum ratings of the tube will not be exceeded.[□] As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.[Ⓞ] This rating is applicable when 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.[■] Under no circumstances should this absolute value be exceeded.[†] It is essential that the plate dissipation be limited in the event of loss of grid-No.1 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.



25DN6

BEAM POWER TUBE

25DN6





Beam Power Tube

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	25	volts
Current	0.6 ± 6%	amp
Warm-up time (Average)	11	sec

Direct Interelectrode Capacitances

(Approx.):^a

Grid No.1 to plate	0.6	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	10	μf

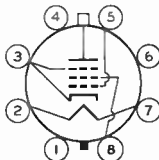
Characteristics, Class A₁ Amplifier:

Plate Voltage	60	135	volts
Grid-No.2 Voltage	135	135	volts
Grid-No.1 Voltage	0	-22.5	volts
Triode Amplification Factor	-	3.8	
Plate Resistance (Approx.)	-	4700	ohms
Transconductance	-	7500	μmhos
Plate Current	350 ^b	70	ma
Grid-No.2 Current	40 ^b	4.5	ma
Grid-No.1 Voltage (Approx.) for plate ma. = 1	-	-42	volts

Mechanical:

Operating Position	Any
Maximum Overall Length	4-3/4"
Seated Length	4" ± 3/16"
Diameter	1.438" to 1.562"
Bulb	T12
Cap	Small (JEDEC No. C1-1)
Base	Short Medium-Shell Octal 8-Pin with External Barriers, Style A (JEDEC Group 1, No. 88-110)
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



25EC6

HORIZONTAL-DEFLECTION AMPLIFIER

Maximum Ratings, Design-Maximum Values:

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

DC PLATE SUPPLY VOLTAGE	700	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE ^d	7000	max.	volts
PEAK NEGATIVE-PULSE PLATE VOLTAGE	1500	max.	volts
DC GRID-No. 2 (SCREEN-GRID) VOLTAGE.	175	max.	volts
PEAK NEGATIVE-PULSE GRID-No. 1 (CONTROL-GRID) VOLTAGE.	300	max.	volts
CATHODE CURRENT:			
Peak.	700	max.	ma
Average	200	max.	ma
GRID-No. 2 INPUT	4	max.	watts
PLATE DISSIPATION ^e	10	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200 ^f	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. 1.5 max. megohms

^a without external shield.

^b 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.

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

^d 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.

^e An adequate bias resistor or other means is required to protect the tube in the absence of excitation.

^f The dc component must not exceed 100 volts.





25EH5

25EH5 POWER PENTODE

7-PIN MINIATURE TYPE

The 25EH5 is the same as the 6EH5 except for the following items:

Heater, for Unipotential Cathode:

Voltage.	25	. . . . .	ac or dc volts
Current.	0.3	. . . . .	amp





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:⁰

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

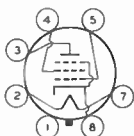
Mechanical:

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

⁰ 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 mhos
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



25N6-G

25N6-G



DIRECT-COUPLED POWER AMPLIFIER

Heater [■]	Coated Unipotential Cathode	
Voltage	25	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		4-17/32"
Maximum Seated Height		3-31/32"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small 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 - Output-Triode Cathode
Pin 4 - Input-Triode Plate		



Mounting Position BOTTOM VIEW (G-7W) Any

AMPLIFIER

Output-Triode Plate Voltage	180 max.	volts
Input-Triode Plate Voltage	180 max.	volts
Output-Triode Plate Dissipation	8.5 max.	watts
Input-Triode Plate Dissipation	1.1 max.	watts
<i>Typical Operation and Characteristics - Class A₂ Amplifier:</i>		
Output-Triode Plate	110	180 volts
Input-Triode Plate	110	100 volts
Input-Triode Grid [*]	0	0 volts
Peak A-F Grid Voltage	29.7	29.7 volts
Plate Res.	11500	15000 approx. ohms
Transcond. #	2200	2300 μmhos
Output-Triode Plate Cur.	45	46 ma.
Input-Triode Plate Cur.	7	5.8 ma.
Load Res.	2000	4000 ohms
Total Harmonic Dist.	9	9 %
Power Output	2.0	3.8 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 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.

Input-triode grid to output-triode plate.

July 1, 1941

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



25W4-GT

25W4-GT

HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

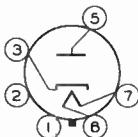
Voltage	25	ac volts
Current	0.3	amp

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



25Y5

25Y5

**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		Any



BOTTOM VIEW (6E)

RECTIFIER

Peak Inverse Voltage		700 max. volts
Peak Plate Current per Plate		450 max. ma.
D-C Heater-Cathode Potential		350 max. volts
<i>Operation as Half-Wave Rectifier with Condenser-Input Filter:*</i>		
A-C Plate Volt. per Plate (RMS)	150	235 max. volts
Total Effective Plate-Supply Impedance per Plate [▲]	0	0 ohms
D-C Output Current per Plate	75 max.	75 max. ma.

* In half-wave rectifier service, the two units may be used separately or in parallel.

▲ 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.

The curve under type 25Z8 also applies to the 25Y5.

May 1, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

TENTATIVE DATA



25Z5

25Z5



HIGH-VACUUM RECTIFIER-DOUBLER

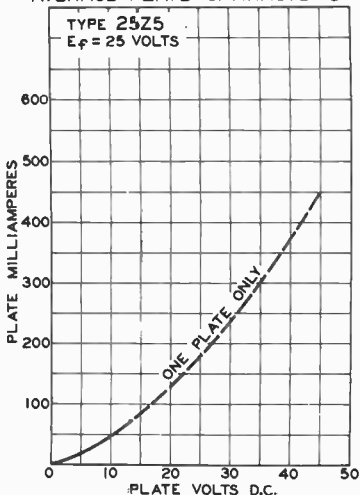
Heater	Coated Unipotential Cathodes	
Voltage	25	a-c or d-c volts
Current	0.3	amp.
Maximum Overall Length		4-3/16"
Maximum Seated Height		3-9/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small 6-Pin
Pin 1-Heater		Pin 4-Cathode #1
Pin 2-Plate #2		Pin 5-Plate #1
Pin 3-Cathode #2		Pin 6-Heater
Mounting Position	BOTTOM VIEW (6E)	Any



Maximum Ratings, Typical Operating Conditions, and Curves are the same as those for Type 2586.

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



92C-4458R1

← Indicates a change.

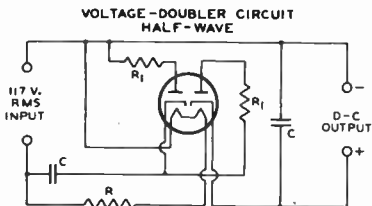
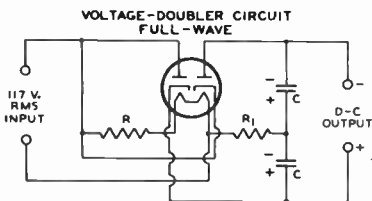
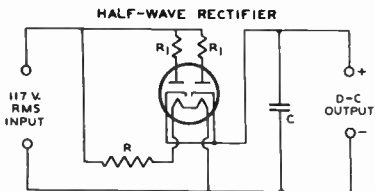
Sept. 2, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



TYPICAL RECTIFIER-DOUBLER CIRCUITS



R = HEATERS OF OTHER TUBES IN SERIES
WITH VOLTAGE-DROPPING RESISTOR
R₁ = PROTECTIVE RESISTOR
C = CONDENSERS

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

25Z6
25Z6-GT/G

25Z6, 25Z6-GT/G

HIGH-VACUUM RECTIFIER-DOUBLER

Heater Voltage	Coated Unipotential Cathodes	
Current	25 0.3	a-c or d-c volts 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	7Q	G-7Q
Pin 1 { 25Z6, Shell		Pin 4 - Cathode #2
Pin 2 { 25Z6-GT/G, No Con.		Pin 5 - Plate #1
Pin 3 - Heater		Pin 7 - Heater
Pin 3 - Plate #2		Pin 8 - Cathode #1
Mounting Position		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	Full-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
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

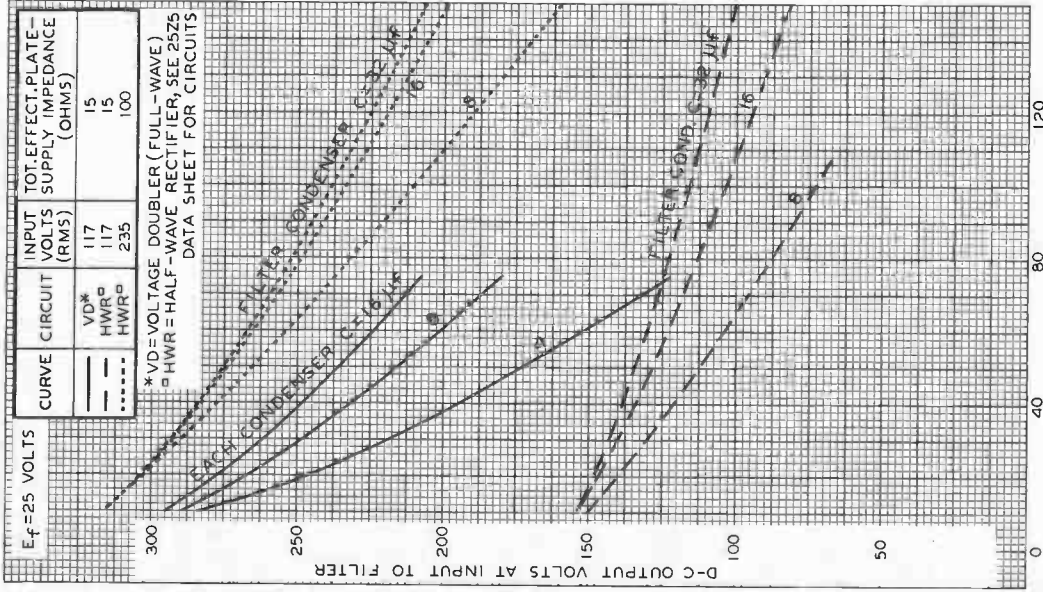
DATA

25Z6



25Z6

OPERATION CHARACTERISTICS



NOV. 27, 1939

D-C LOAD MILLIAMPERES

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

92C-4603R2

RCA-27 DETECTOR, AMPLIFIER

Heater		Coated Uni-potential Cathode	
Voltage	2.5	a-c or d-c volts	
Current	1.75	amp.	
Direct Interelectrode Capacitances:			
Grid to Plate	3.3	μf	
Grid to Cathode	3.1	μf	
Plate to Cathode	2.3	μf	
Maximum Overall Length	(3)	4-1/4"	
Maximum Diameter		1-9/16"	
Bulb		ST-12	
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	μmhos
Plate Cur.	2.7	4.5	5.0	5.2	ma.

Grid-coupling resistor, if used, should not exceed 1.0 megohm.

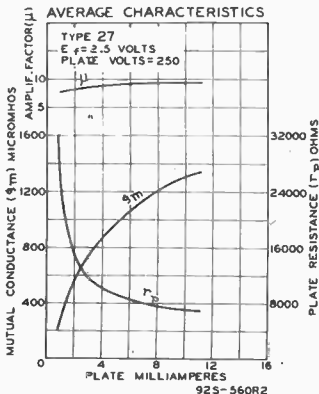
DETECTOR

Typical Operation:	<u>Biased</u>	<u>Grid-Leak</u>	
Heater *	2.5	2.5	volts
Plate	250	275 max.	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 μf

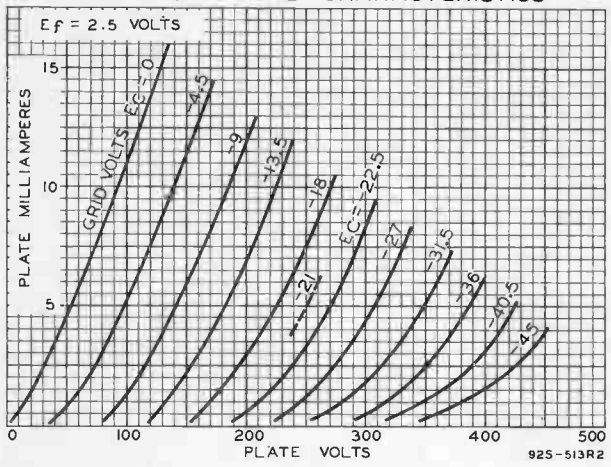
^c Max-Signal d-c plate current should be limited to 5.0 ma.

* 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.

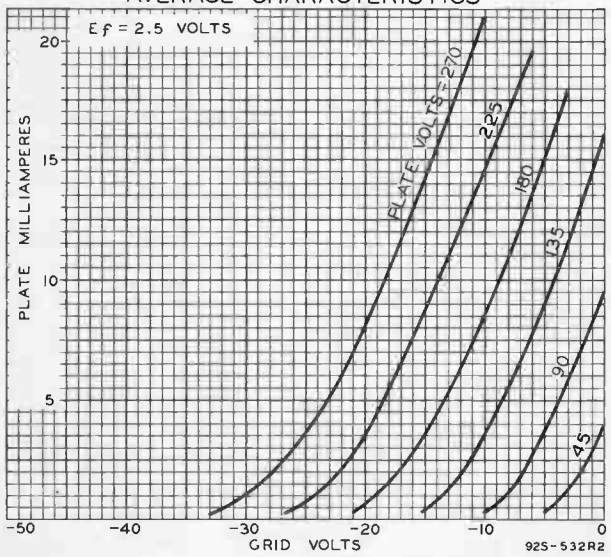
Approximate.



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



Beam Power Tube

7-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	34	volts
Current	0.1 ± 6%	amp
Warm-up time (Average)	20	sec

Direct Interelectrode Capacitances

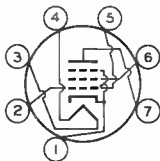
(Approx.):^a

Grid No.1 to plate	0.6	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	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 <i>General Section</i>
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-Maximum Values:*

PLATE VOLTAGE	150	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	130	max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Negative-bias value	50	max.	volts
Positive-bias value	0	max.	volts
GRID-No.2 INPUT	1.1	max.	watts
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 ^b	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	250	max.	°C



34GD5A

Typical Operation and Characteristics:

Plate Voltage	110	volts
Grid-No.2 Voltage	110	volts
Grid-No.1 Voltage	-7.5	volts
Peak AF Grid-No.1 Voltage	7.5	volts
Zero-Signal Plate Current	35	ma
Zero-Signal Grid-No.2 Current	3	ma
Plate Resistance (Approx.)	13000	ohms
Transconductance	5700	μ mhos
Load Resistance	2500	ohms
Total Harmonic Distortion	10	%
Max.-Signal Power Output	1.4	watts

Maximum Circuit Values:

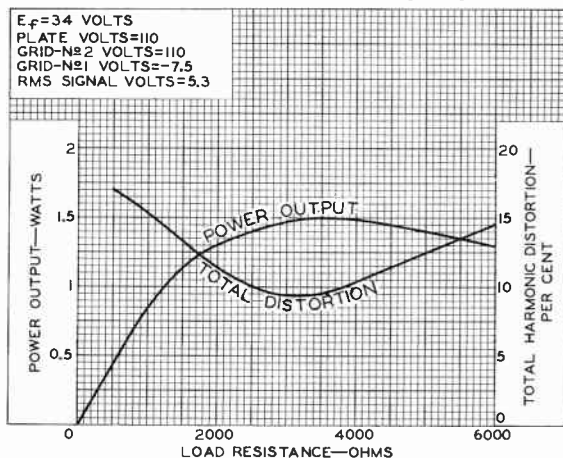
Grid-No.1-Circuit Resistance:

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

^a without external shield.

^b The dc component must not exceed 100 volts.

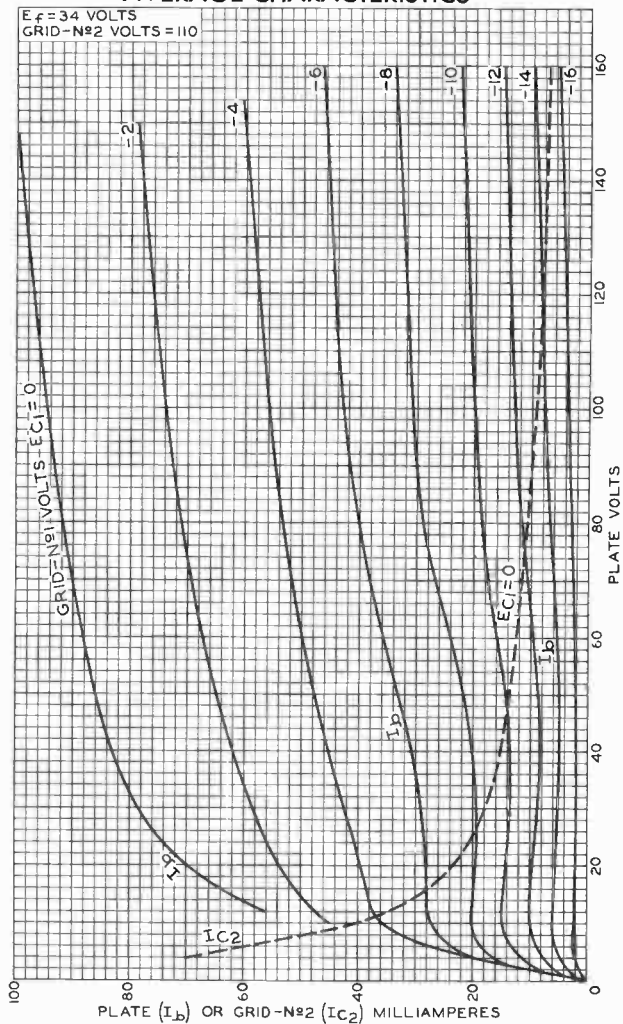
OPERATION CHARACTERISTICS



92CS-10780



AVERAGE CHARACTERISTICS



92CM-10779







35A5

35A5

BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

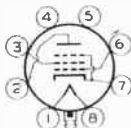
Heater, for Unipotential Cathode:

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 6 - Grid No. 1
Pin 2 - Plate	Pin 7 - Cathode, Grid No. 3
Pin 3 - Grid No. 2	Pin 8 - Heater
Pin 4 - No Connection	Plug - Base Shell
Pin 5 - No Connection	



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

35B5

BEAM POWER AMPLIFIER

MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Uniopotential Cathode:

Voltage 35 ac or dc volts

Current 0.15 amp

Direct Interelectrode Capacitances (Approx.):⁰

Grid No.1 to Plate 0.4 $\mu\mu\text{f}$

Input 11 $\mu\mu\text{f}$

Output 6.5 $\mu\mu\text{f}$

⁰ 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"

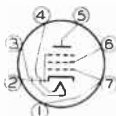
Maximum Diameter 3/4"

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 A⁻ 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 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 Res. {	fixed bias . .	0.1	. .	megohm
	cathode bias . .	0.5	. .	megohm



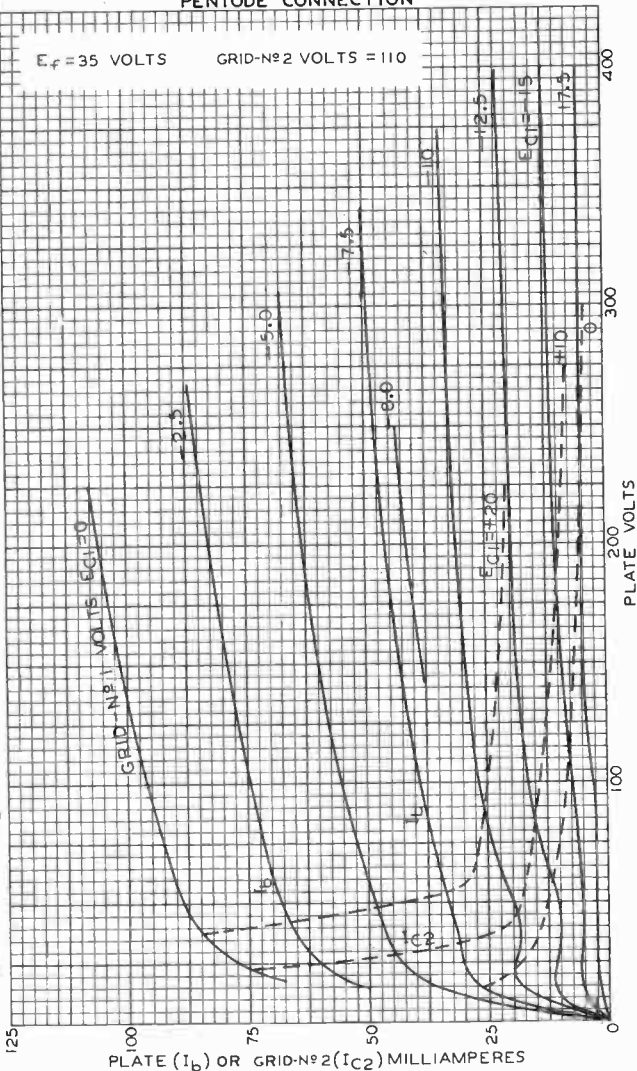
35B5

35B5

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION

$E_f = 35$ VOLTS

GRID-NO 2 VOLTS = 110



AUG. 15, 1941

TUBE DEPARTMENT

92CM-6312R1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

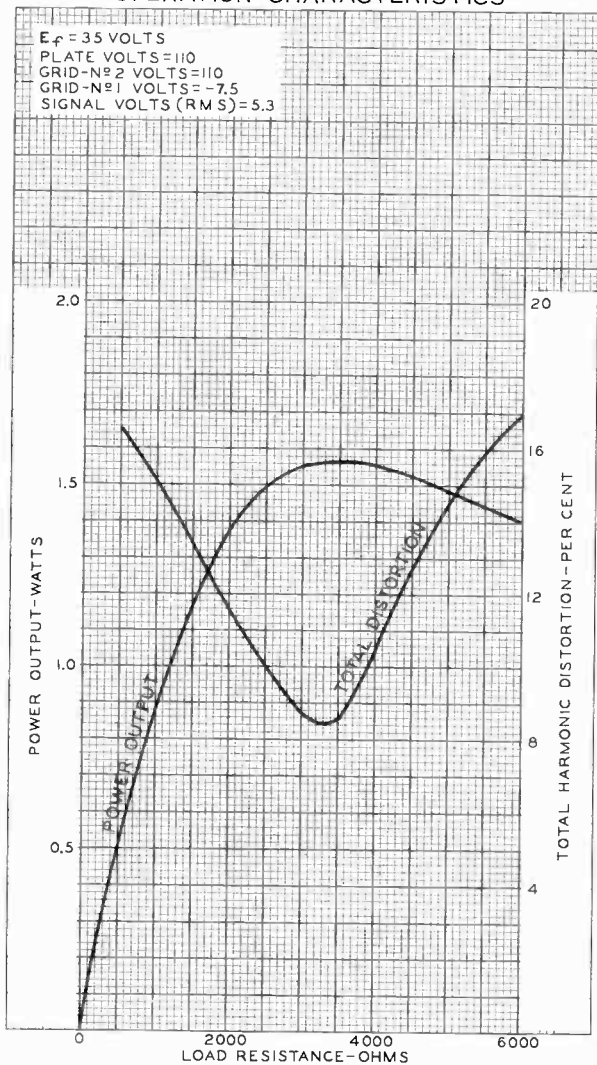
World Radio History

35B5



35B5

OPERATION CHARACTERISTICS



SEPT. 20, 1946

 TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-6794

World Radio History

Beam Power Tube

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC) $35 \pm 10\%$ volts ←

Current at 35 volts 0.15 amp

Direct Interelectrode Capacitances (Approx.):^aGrid No.1 to plate 0.6 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:

Operating Position Any

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

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 - HeaterPin 4 - Heater
Pin 5 - Grid No.1
Pin 6 - Grid No.2
Pin 7 - PlateAF POWER AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values: ←

PLATE VOLTAGE 150 max. volts

GRID-NO.2 (SCREEN-GRID) VOLTAGE 130 max. volts

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

Positive-bias value 0 max. volts

GRID-NO.2 INPUT 1.1 max. watts

PLATE DISSIPATION 5.2 max. watts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with
respect to cathode 200 max. voltsHeater positive with
respect to cathode 200^b max. voltsBULB TEMPERATURE (At hottest point
on bulb surface) 250 max. °C

← Indicates a change.



35C5

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
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:

Grid-No.1-Circuit Resistance:

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

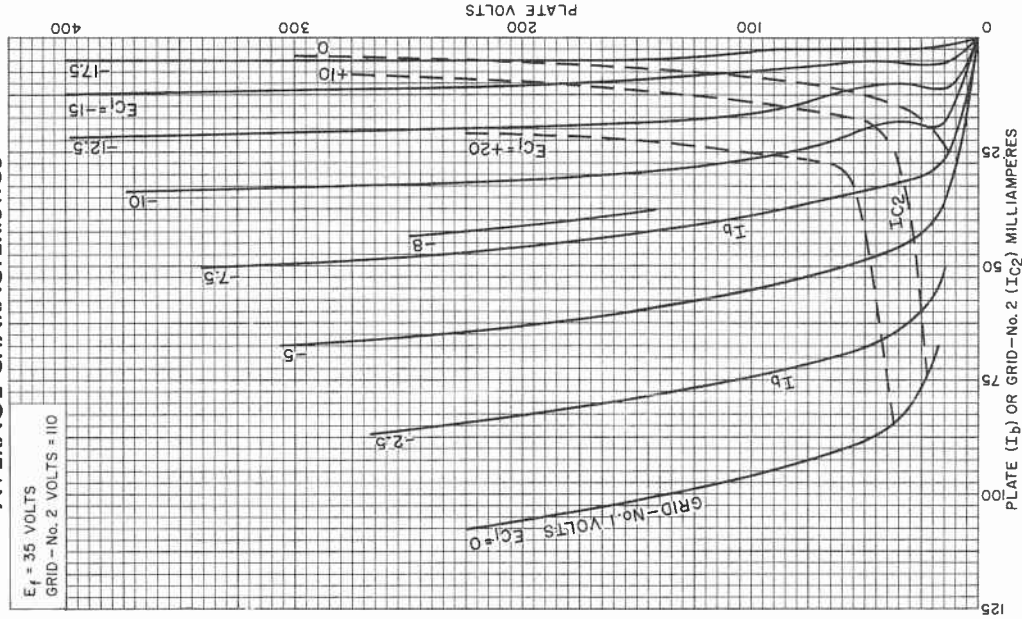
^a without external shield.

^b The dc component must not exceed 100 volts.



AVERAGE CHARACTERISTICS

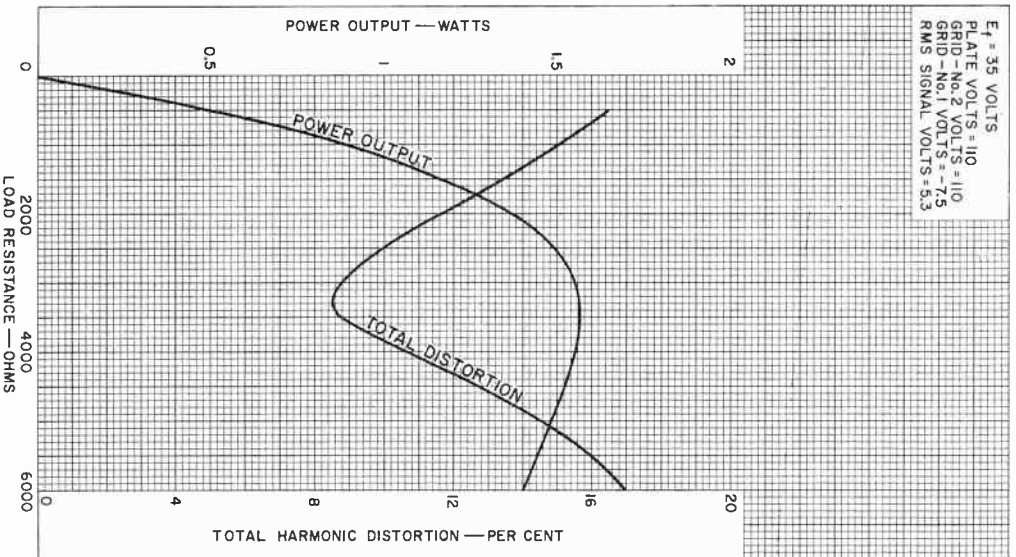
$E_f = 35$ VOLTS
GRID - No. 2 VOLTS = 110



35C5

OPERATION CHARACTERISTICS

$E_f = 35$ VOLTS
PLATE VOLTS = 110
GRID - No. 2 VOLTS = 110
GRID - No. 1 VOLTS = -7.5
RMS SIGNAL VOLTS = 5.3



92CM-6794

RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.





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" ± 3/32"

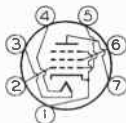
Maximum Diameter 3/4"

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. 4.5 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

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

^o without external shield.

♦ 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

DATA

RADIO CORPORATION OF AMERICA, HARTSON, NEW JERSEY

High-Mu Triode—Power Pentode

9-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

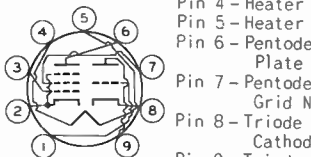
Heater, for Unipotential Cathodes:

Voltage (AC or DC)	35	volts
Current	0.15	amp

Mechanical:

Operating Position	Any
Maximum Overall Length	3-1/8"
Maximum Seated Length	2-7/8"
Length, Base Seat to Bulb Top (Excluding tip)	2-1/2" ± 3/32"
Diameter	0.750" to 0.875"
Bulb	T6-1/2
Base	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW	9JE

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



Pin 4 - Heater
 Pin 5 - Heater
 Pin 6 - Pentode
 Plate
 Pin 7 - Pentode
 Grid No. 2
 Pin 8 - Triode
 Cathode
 Pin 9 - Triode Plate

AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

	Triode Unit	Pentode Unit	
PLATE VOLTAGE	150 max.	150 max.	volts
GRID-No. 2 (SCREEN-GRID) VOLTAGE	-	135 max.	volts
CATHODE CURRENT	5 max.	60 max.	ma
GRID-No. 2 INPUT	-	1.5 max.	watts
PLATE DISSIPATION	0.75 max.	6.5 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	200 max.	200 max.	volts
Heater positive with respect to cathode	200 ^a max.	200 ^a max.	volts

Typical Operation and Characteristics:

	Triode Unit	Pentode Unit	
Plate Supply Voltage	120	145	volts
Grid-No. 2 Supply Voltage	-	120	volts
Cathode Resistor	1500	180	ohms
Amplification Factor	100	-	
Plate Current	0.8	45	ma



35DZ8

Grid-No.2 Current	-	6	ma
Transconductance	1400	7500	μ nhos
Load Resistance	-	2500	ohms
Power Output	-	2	watts
Grid Voltage (Approx.) for plate $\mu a = 20$	-2.5	-	volts

Maximum Circuit Values:

	<i>Triode Unit</i>	<i>Pentode Unit</i>	
Grid-No.1-Circuit Resistance .	5 max.	0.5 max.	megohms

^a The dc component must not exceed 100 volts.



Power Pentode

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	35 ± 10%	volts
Current at 35 volts	0.15	amp

Direct Interelectrode Capacitances
(Approx.):[▲]

Grid No.1 to plate	0.65	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	17	μf
Plate to cathode & grid No.3, grid No.2, and heater	9	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

AF POWER AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	150	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	130	max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE: Positive-bias value	0	max.	volts
GRID-No.2 INPUT	1.75	max.	watts
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
BULB TEMPERATURE (At hottest point on bulb surface)	225	max.	°C



35EH5

Typical Operation and Characteristics:

Plate Supply Voltage.	110	volts
Grid-No.2 Supply Voltage.	115	volts
Cathode Resistor.	62	ohms
Peak AF Grid-No.1 Voltage	3	volts
Zero-Signal Plate Current	32	ma
Max.-Signal Plate Current	32	ma
Zero-Signal Grid-No.2 Current	7.2	ma
Max.-Signal Grid-No.2 Current	12	ma
Plate Resistance (Approx.).	14000	ohms
Transconductance.	12000	μ hos
Load Resistance	3000	ohms
Total Harmonic Distortion	8	%
Max.-Signal Power Output.	1.2	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

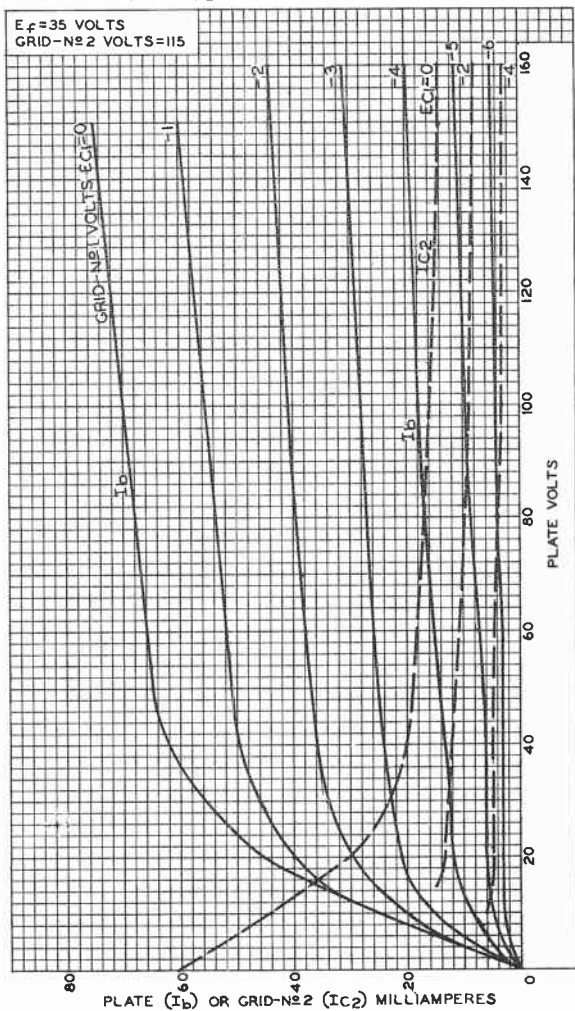
For fixed-bias operation.	0.1 max.	megohm
For cathode-bias operation.	0.5 max.	megohm

[▲] without external shield.

● The dc component must not exceed 100 volts.



AVERAGE CHARACTERISTICS



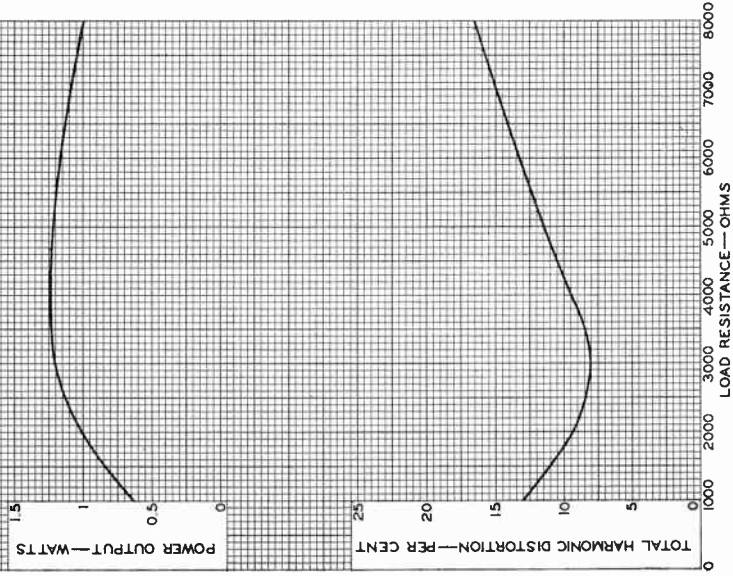
92CM-10551



35EH5

OPERATION CHARACTERISTICS

$E_f = 35$ VOLTS
PLATE SUPPLY VOLTS = 110
GRID-No2 SUPPLY VOLTS = 115
CATHODE RESISTOR (OHMS) = 62
CATHODE-BYPASS CAPACITOR (μF) = 100
SIGNAL VOLTS (RMS) = 2.1



92CM-10547

RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



Beam Power Tube

7-PIN MINIATURE TYPE

GENERAL DATA

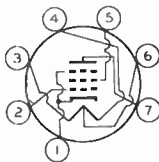
Electrical:

	<i>Without Panel Lamp</i>	<i>With No. 40 or No. 47 Panel Lamp</i>	
Heater, for Unipotential Cathode:			
Voltage (AC or DC):			
Entire heater (Pins 3 and 4)	35	32	volts
Panel-lamp section (Pins 4 and 6)	7	5.5	volts
Current:			
Between pins 3 and 4	$0.15 \pm 6\%$	-	amp
Between pins 3 and 6	-	$0.15 \pm 6\%$	amp
Direct Interelectrode Capacitances (Approx.):^a			
Grid No. 1 to plate	0.5		μf
Grid No. 1 to cathode & grid No. 3, grid No. 2, and heater	14		μf
Plate to cathode & grid No. 3, grid No. 2, and heater	9.5		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)	$2" \pm 3/32"$
Diameter	0.650" to 0.750"
Dimensional Outline	See <i>General Section</i>
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No. E7-1)
Basing Designation for BOTTOM VIEW	7FZ

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



Pin 6 - Heater Tap
Pin 7 - Plate
Panel-lamp heater section is between pins 4 and 6.

AMPLIFIER — Class A₁

Maximum Ratings, *Design-Maximum Values:*

RMS HEATER-TAP VOLTAGE			
when panel lamp fails	14 max.		volts
PLATE VOLTAGE	150 max.		volts
GRID-No. 2 (SCREEN-GRID) VOLTAGE	130 max.		volts
GRID-No. 2 INPUT	1.1 max.		watts
PLATE DISSIPATION	5.5 max.		watts



35GL6

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
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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	45	ma
Max.-Signal Plate Current	47	ma
Zero-Signal Grid-No.2 Current	3	ma
Max.-Signal Grid-No.2 Current.	9	ma
Plate Resistance (Approx.).	12000	ohms
Transconductance.	7500	μmhos
Load Resistance	2500	ohms
Total Harmonic Distortion	8	%
Max.-Signal Power Output.	1.8	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

OPERATING CONSIDERATIONS

The 35GL6 has a heater tap which may be used for operating a 6.3-volt/150-milliampere panel lamp in equipment employing semiconductor rectifiers (See accompanying *Typical Circuit*). The table below gives the required values of panel-lamp shunting resistor for various dc output currents with panel lamp No.40 or No.47.

Heater Voltage:

Entire heater (Pins 3 and 4).	32	32	32	32	32	32	32	volts
Panel-lamp sec- tion (Pins 4 and 6).	5	5.4	5.5	5.5	5.5	5.5	5.5	volts

Heater Current:

Between pins 3 and 6	0.15	0.15	0.15	0.15	0.15	0.15	0.15	amp
-----------------------------------	------	------	------	------	------	------	------	-----

Panel-Lamp Shunt- ing Resistor

(R_S).	-	-	370	175	120	88	73	ohms
--------------------	---	---	-----	-----	-----	----	----	------

DC Output Current ^b	60	70	80	90	100	110	120	ma
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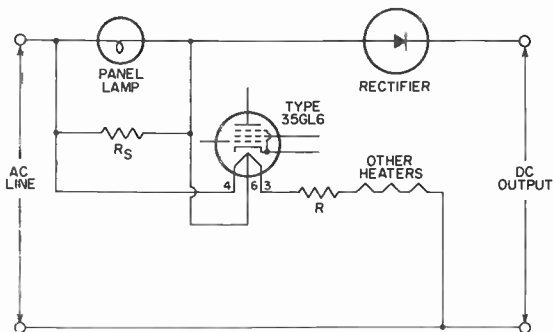
^a Without external shield.

^b Higher dc output currents will require smaller values of panel-lamp shunting resistor. For maximum panel-lamp life, the shunting resistor should be selected to allow a panel-lamp voltage of 5.5 volts with full dc output current.



TYPICAL CIRCUIT

With panel Lamp No.40 or No.47



92CS-II230

DROP ACROSS R AT 0.15 AMPERE SHOULD EQUAL DIFFERENCE BETWEEN LINE VOLTAGE AND TOTAL OF ALL RATED HEATER VOLTAGES. R_S = PANEL-LAMP SHUNTING RESISTOR REQUIRED WHEN DC OUTPUT CURRENT EXCEEDS 70 MILLIAMPERES.

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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

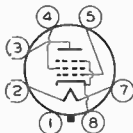
Grid No.1 to Plate	0.8	$\mu\mu\text{f}$
Input	13	$\mu\mu\text{f}$
Output	9.5	$\mu\mu\text{f}$

^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 (Apprx.)	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

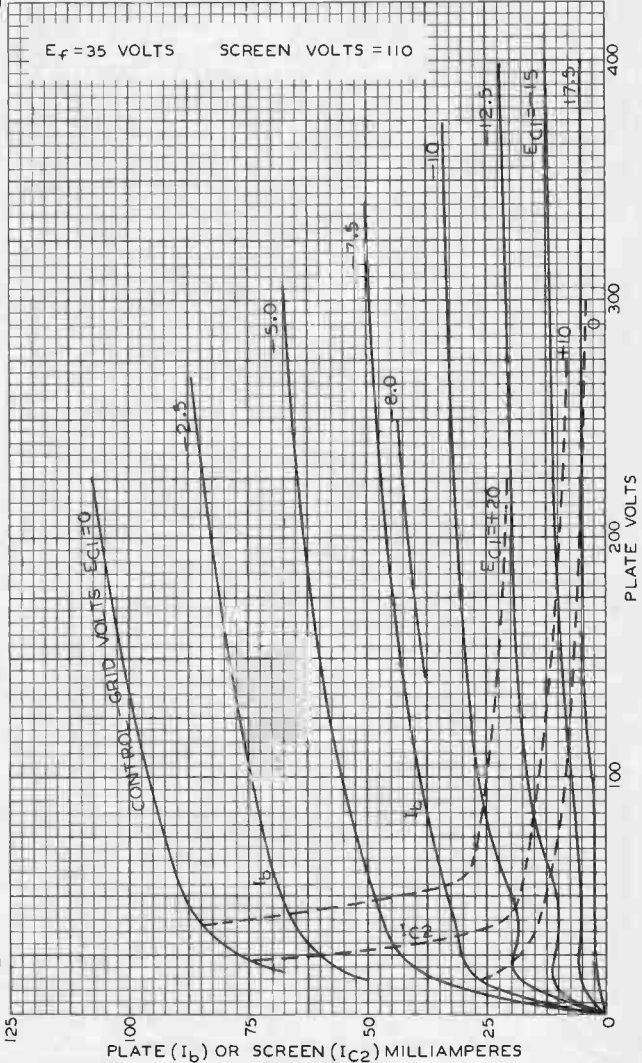
Curves shown under Type 35B5 are also applicable to the 35L6-GT.



35L6-GT

35L6-GT

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



AUG. 15, 1941

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

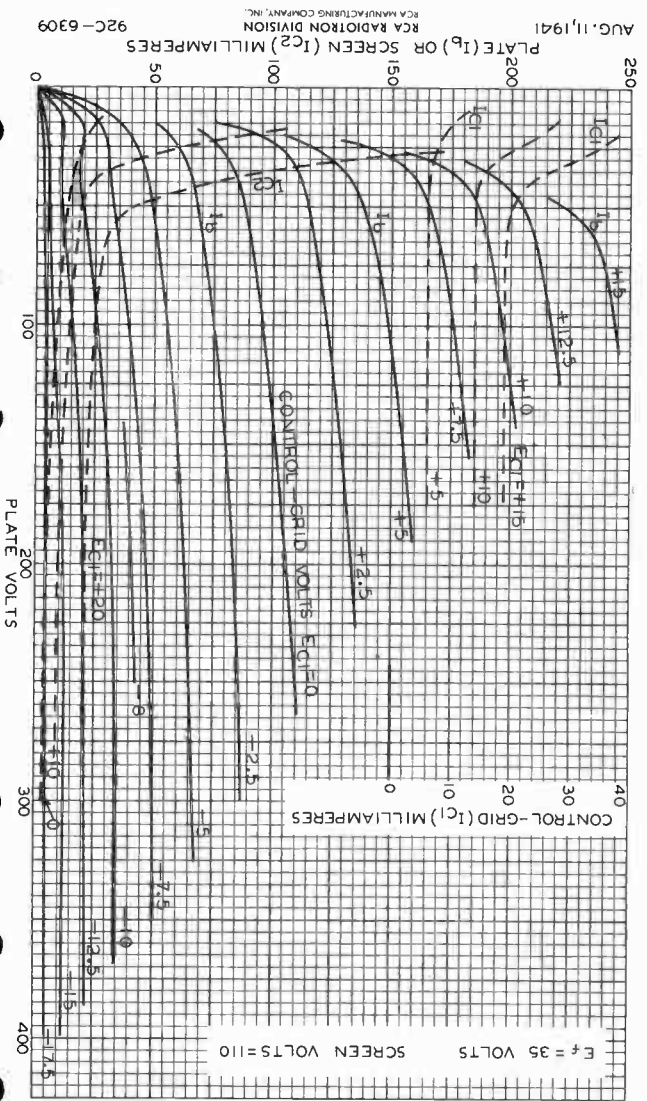
92C-6312

35L6-GT



35L6-GT

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION

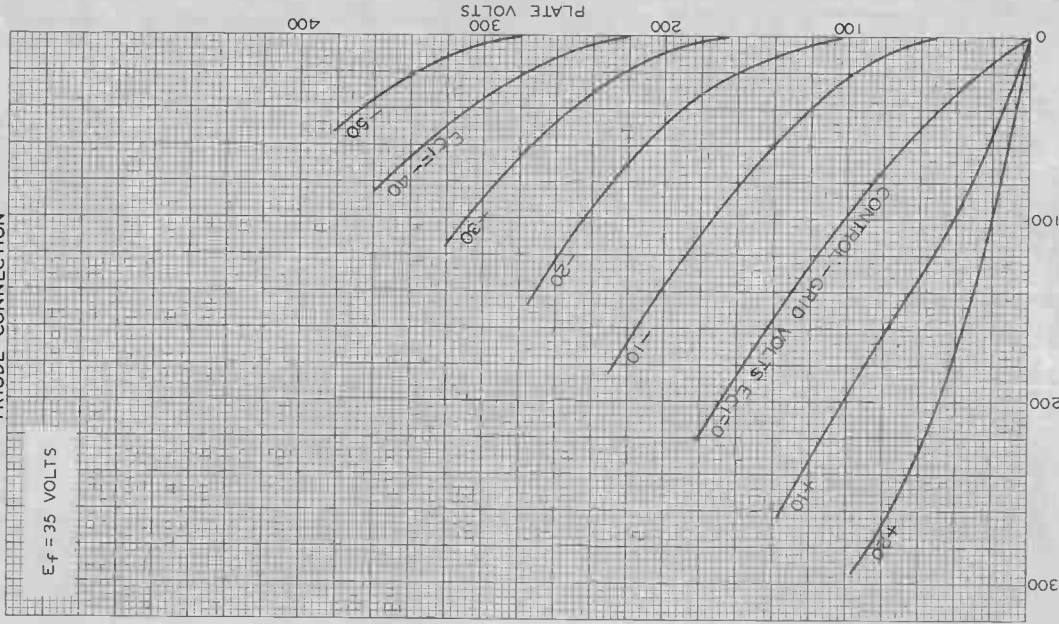




35L6-GT

AVERAGE PLATE CHARACTERISTICS
TRIODE CONNECTION

$E_f = 35$ VOLTS

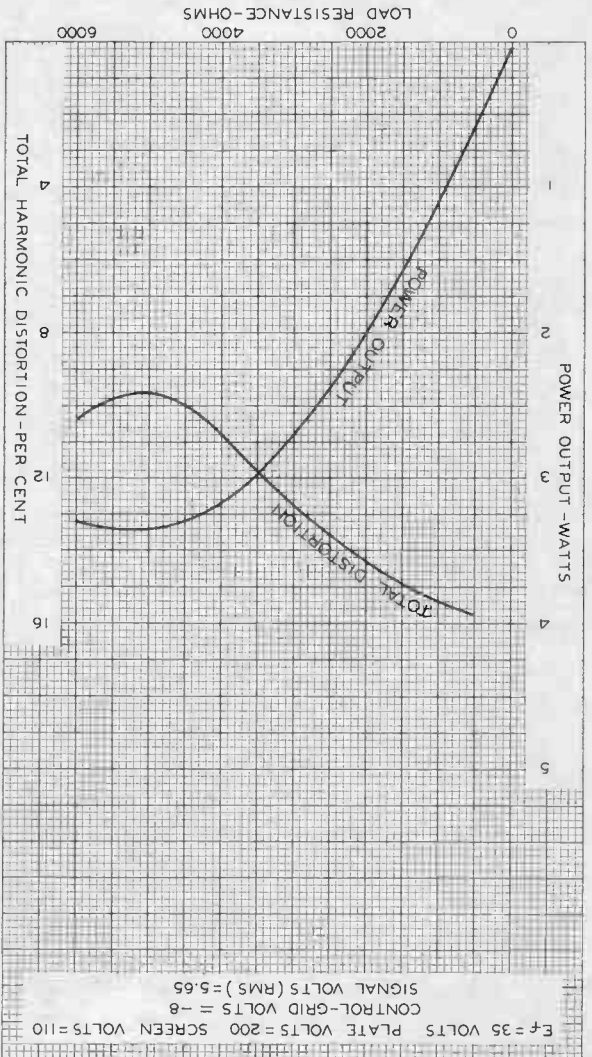


35L6-GT

AUG. 6, 1941

PLATE MILLIAMPERES
RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6307



35L6-GT

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

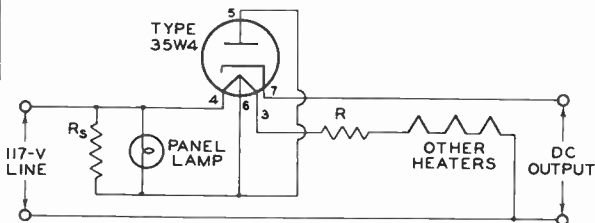
Maximum Circuit Values:

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.40 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

92CS-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

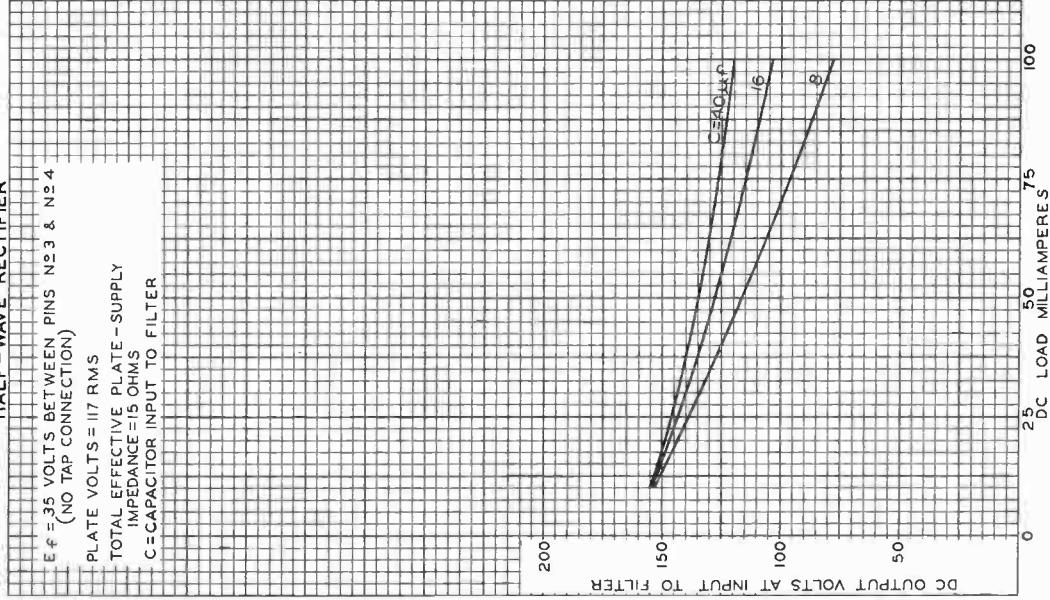
35W4 OPERATION CHARACTERISTICS HALF-WAVE RECTIFIER

$E_f = 35$ VOLTS BETWEEN PINS N^o3 & N^o4
(NO TAP CONNECTION)

PLATE VOLTS = 117 RMS

TOTAL EFFECTIVE PLATE - SUPPLY
IMPEDANCE = 15 OHMS

C = CAPACITOR INPUT TO FILTER



MAY 19, 1950

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

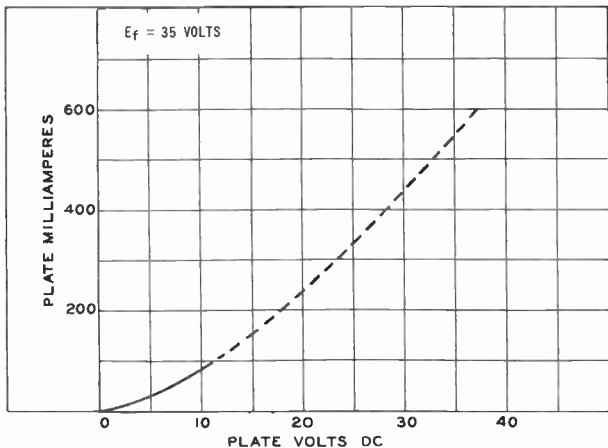
92CM-6615RI

35W4



35W4

AVERAGE PLATE CHARACTERISTIC



92CM-6305TV

35Y4



35Y4

HALF-WAVE VACUUM RECTIFIER

Typical Operation Without Panel Lamp in Conventional Half-Wave Circuit with Capacitor-Input Filter:

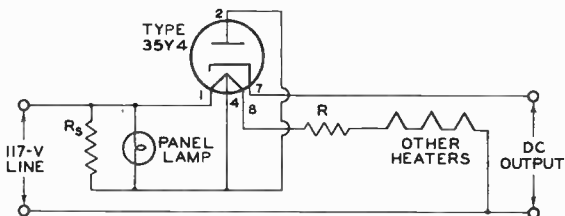
AC Plate-Supply Voltage (RMS)	117	235	volts
Filter-Input Capacitor	40	40	μ f
Min. Total Effective Plate-Supply Imped.	15	100	ohms
DC Output Current	100	100	ma
DC Output Voltage at Input to Filter (Approx.):			
At half-load current (50 ma.)	140	280	volts
At full-load current (100 ma.)	120	235	volts
Voltage 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.



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

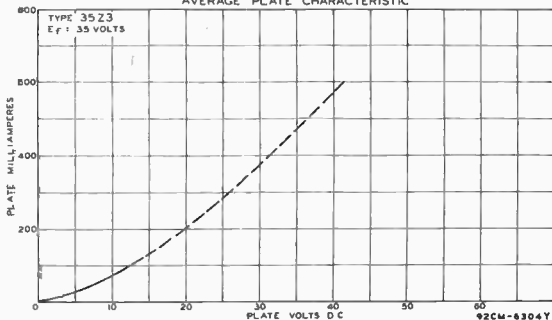


Pin 6 - No
 Connection
 Pin 7 - Cathode
 Pin 8 - Heater

 Plug - Base
 Shell

Maximum Ratings and Typical Operating Conditions for the 35Z3 are the same as for Type 35Z4-GT.

AVERAGE PLATE CHARACTERISTIC



35Z4-GT



35Z4-GT HALF-WAVE VACUUM RECTIFIER

GENERAL DATA

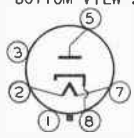
Electrical:

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

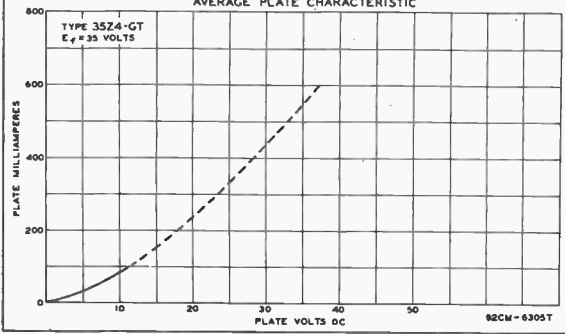
Typical Operation with Capacitor-Input Filter:

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



JUNE 20, 1947

TUBE DEPARTMENT
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA



35Z5-GT/G

35Z5-GT/G

HALF-WAVE HIGH-VACUUM RECTIFIER

Heater	Coated Unipotential Cathode	
Voltage	Entire Heater (pins 2 & 7)	35 a-c or d-c volts
	Panel Lamp Section (pins 2 & 3) with 0.15 amp. between pins 2 & 7	7.5 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 6-Pin
Pin 1 - No Connection		Pin 5 - Plate
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Heater Tap		Pin 8 - Cathode
Mounting Position		Any



BOTTOM VIEW (G-6AD)

Maximum Ratings Are Design-Center Values

HALF-WAVE RECTIFIER

Peak Inverse Plate Voltage	700 max.	volts
Peak Plate Current	600 max.	ma.
D-C Output Current:		
With Panel Lamp and	{ No Shunting Resistor Shunting Resistor *	60 max. ma.
Without Panel Lamp		90 max. ma.
D-C Heater-Cathode Potential		100 max. ma.
Panel-Lamp-Sect. Volt. (RMS) when panel lamp fails		350 max. volts
		15 max. volts

Typical Operation with #40 or #47 Panel Lamp in Circuit
on Next Page with Condenser-Input Filter:

Heater Cur. between Pins 3 & 7	0.15	0.15	0.15	0.15	0.15	amp.
Heater Volt. between Pins 2 & 7	32	32	32	32	32	volts
Section Volt. between Pins 2 & 3	5.5	5.5	5.5	5.5	5.5	volts
A-C Plate-Supply Voltage (RMS)	117	117	117	117	235	volts
Filter Input Capacitor	40	40	40	40	40	μf
Min. Total Effec. Plate-Supply Imped.	15	15	15	15	100	ohms
D-C Output Current	60	70	80	90	60	ma.
Shunting Resistance	-	300	150	100	-	ohms

Typical Operation Without Panel Lamp in Conventional
Half-Wave Circuit with Condenser-Input Filter:

Heater Cur. between Pins 3 & 7	0.15	0.15	amp.
Heater Volt. between Pins 2 & 7	35	35	volts
Section Volt. between Pins 2 & 3	7.5	7.5	volts
A-C Plate-Supply Voltage (RMS)	117	235	volts
Filter Input Capacitor	40	40	μf
Min. Total Effec. Plate-Supply Imped.	15	100	ohms
D-C Output Current	100	100	ma.
D-C Voltage (At input to filter):**			
At half-load current (50 ma.)	140	280	volts
At full-load current (100 ma.)	120	235	volts
Difference (Voltage Regulation)	20	45	volts
Percentage Regulation	14	16	%

* A pilot lamp shunting resistor is required for a d-c output current greater than 60 ma. See Typical Operation for representative values. Maximum values are as follows: for 70 ma., 800 ohms; for 80 ma., 400 ohms; for 90 ma., 250 ohms.

** Values are approximate.

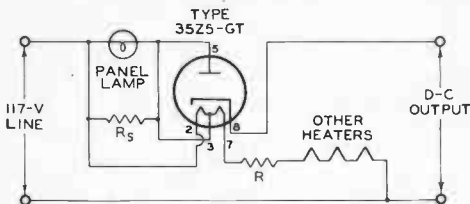
The Curve under Type 35Z4-GT also applies to the 35Z5-GT/G.

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.

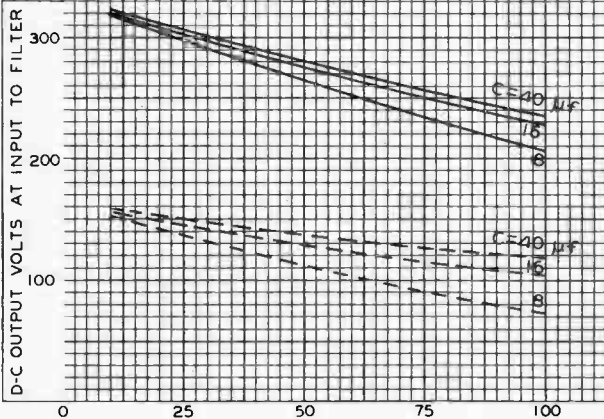
OPERATION CHARACTERISTICS HALF-WAVE RECTIFIER

E_f = 35 VOLTS BETWEEN PINS No 2 & No 7
(NO TAP CONNECTOR)

C = CONDENSER INPUT TO FILTER

— { PLATE VOLTS = 235 RMS
TOTAL EFFECTIVE PLATE-SUPPLY IMPEDANCE = 100 OHMS

- - - { PLATE VOLTS = 117 RMS
TOTAL EFFECTIVE PLATE-SUPPLY IMPEDANCE = 15 OHMS



June 1, 1943

D-C LOAD MILLIAMPERES

CE-6361

RCA VICTOR DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

RCA-36 SCREEN GRID R-F AMPLIFIER

Heater Voltage Coated Uni-potential Cathode 6.3 a-c or d-c volts
 Current 0.3 amp.

Direct Interelectrode Capacitances:
 Grid to Plate (with shield-can) 0.007 max. μ f
 Input 3.7 μ f
 Output 9.2 μ f

Overall Length ③ 4-9/32" to 4-17/32"
 Maximum Diameter 1-9/16"
 Bulb ② ST-12
 Cap ④ Small Metal
 Base ① ⑤ Small 5-Pin
 Pin 1-Heater 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	1080	μ mhos
Plate Cur.	1.8	2.8	3.1	3.2	ma.
Screen Cur.	-	-	-	1.7	max. ma.

DETECTOR

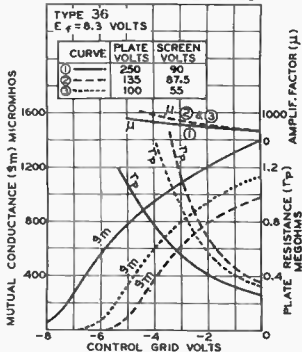
Typical Operation:

	<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	μ f

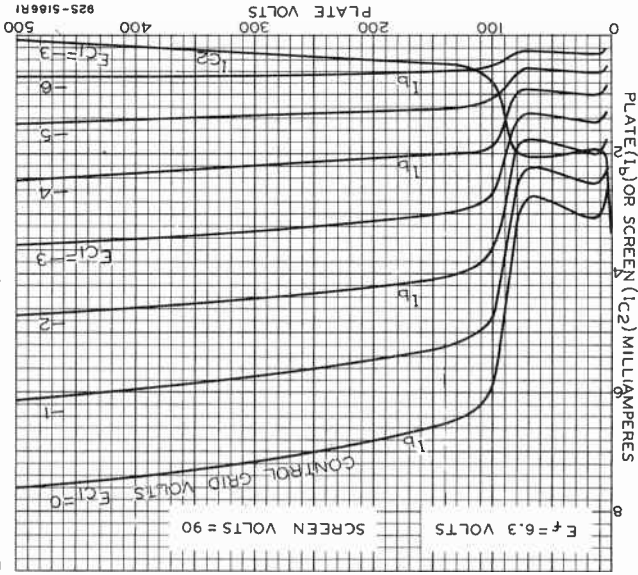
* Or equivalent impedance. In designing circuits to use the 36 as a detector, it is desirable to work from the detector stage directly into the power output stage. * Approximate.

* 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.

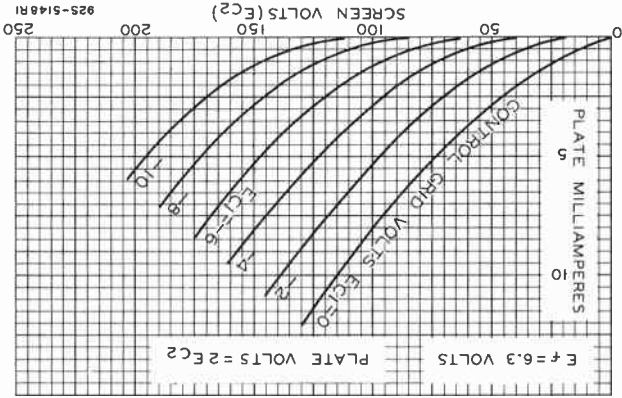
AVERAGE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS





41

41

POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.4	amp.
Maximum Overall Length		4-3/16" ←
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small 6-Pin
Pin 1-Heater		Pin 4-Grid
Pin 2-Plate		Pin 5-Cathode
Pin 3-Screen		Pin 6-Heater

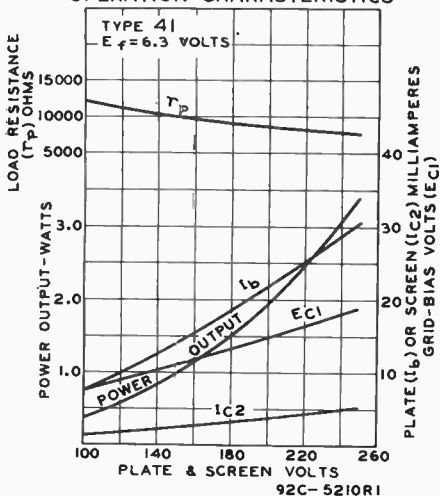


BOTTOM VIEW

For data and additional curve, refer to Type 6K6-G. The 41 ← and the 6K6-G are identical electrically.

← Indicates a change.

OPERATION CHARACTERISTICS



APRIL 20, 1938

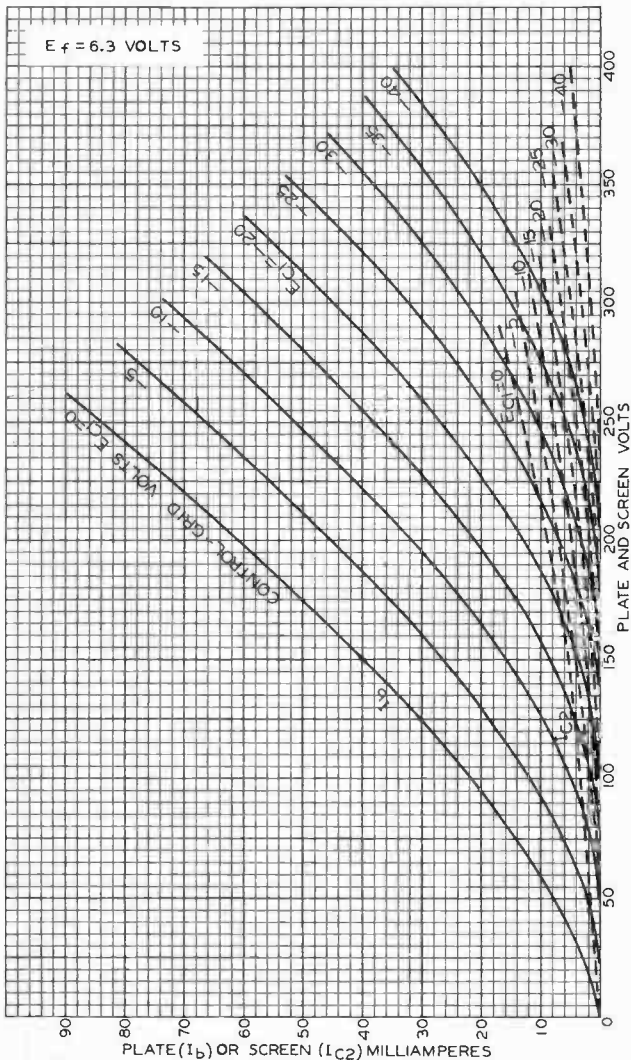
RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

World Radio History

DATA



AVERAGE CHARACTERISTICS





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_p)

SHOWN IN TABLE

ZERO-SIGNAL BIAS VOLTS = VALUE FROM

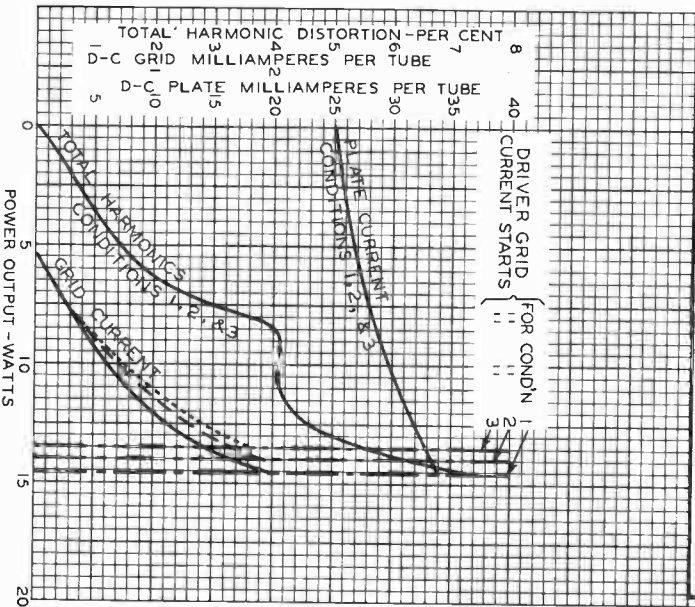
GRID-BIAS RESISTOR (R_c) OF

730 OHMS

OUTPUT LOAD, PLATE TO PLATE = 10000 OHMS

CONDI- TION	CURVE	R_p 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

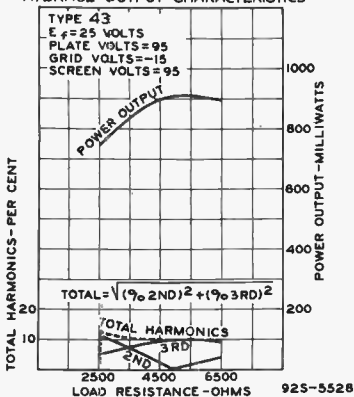
POWER AMPLIFIER PENTODE

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

BOTTOM VIEW

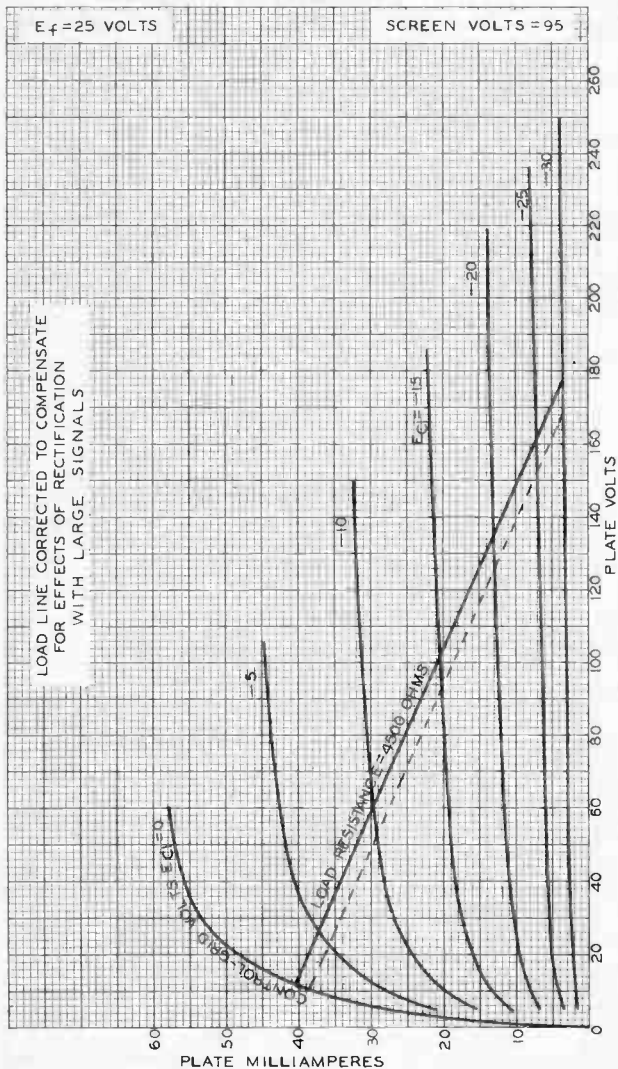
For data and additional curve, refer to Type 25A6. The 43 and 25A6 are identical electrically.

AVERAGE OUTPUT CHARACTERISTICS



RCA-43

AVERAGE PLATE CHARACTERISTICS



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	$\mu\mu\text{f}$
Input	8.6	$\mu\mu\text{f}$
Output	13.0	$\mu\mu\text{f}$
Maximum Overall Length	③	5-3/8"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base	② ④	Medium 5-Pin
Pin 1-Filament	① ⑤	Pin 4-Screen
Pin 2-Plate		Pin 5-Filament
Pin 3-Grid		

BOTTOM VIEW

AMPLIFIER - Class A

Operating Conditions and Characteristics:

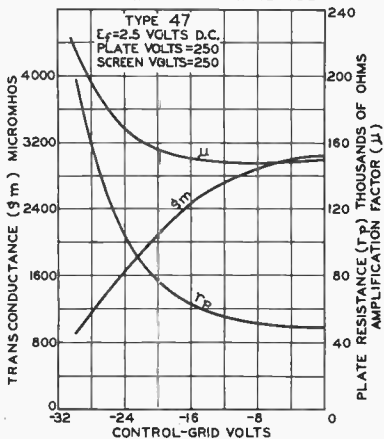
Filament	2.5	a-c volts
Plate	250 maximum	volts
Screen	250 maximum	volts
Grid *	-16.5	volts
Amp. Fact.	150	
Plate Res.	50000	ohms
Transcond.	2500	μmhos
Plate Cur.	31	ma.
Screen Cur.	6	ma.
Load Res.	7000 ^o	ohms
Power Output	2.7 ^o	watts

^o 6% total harmonic distortion.

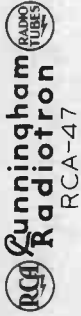
* Grid volts measured from mid-point of a-c operated filament. If a single 47 is self-biased, the self-biasing resistor (450 ohms) should be shunted by a suitable filter network to avoid degenerative effects at low audio frequencies. With two 47's in push-pull, the filter network may be omitted across 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.

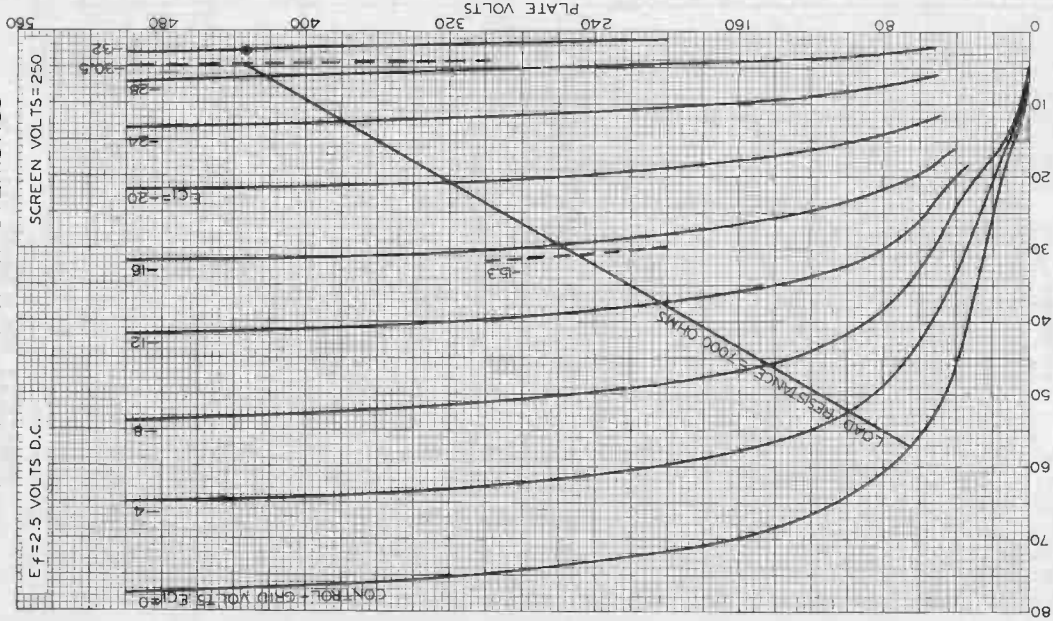
AVERAGE CHARACTERISTICS



92C-5136



AVERAGE PLATE CHARACTERISTICS



JAN. 29, 1934

RCA RADIO TUBE DIVISION
RCA MANUFACTURING COMPANY, INC.

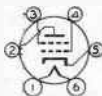
PLATE MILLIAMPERES

925-5137R2



POWER AMPLIFIER TETRODE

Heater	Coated Unipotential Cathode	
Voltage	30	d-c volts
Current	0.4	amp.
Maximum Overall Length		5-3/8"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base		Medium 6-Pin
Pin 1-Heater		Pin 4-Grid
Pin 2-Plate		Pin 5-Cathode
Pin 3-Screen		Pin 6-Heater
Mounting Position	BOTTOM VIEW	Vertical, Base Down ◊ ←

SINGLE-TUBE AMPLIFIER - Class A₁

Operating Conditions and Characteristics:

	Tetrode Connection		Triode Connection**		
Heater ◻	30	30	30	30	volts
Plate	96	125 max.	80	125 max.	volts
Screen	96	100 max.	**	**	volts
Grid †	-19	-20*	-20	-32.5	volts
Cathode Resistor	310	310	650	625	ohms
Amp. Fact. }	Subject to		2.5	2.5	
Plate Res. }	considerable variation		760	675	ohms
Transcond.	3800	3900	3300	3700	μmhos
Plate Cur.	52	56	31	52	ma.
Screen Cur.	9	9.5	-	-	ma.
Load Res.	1500	1500	-	-	ohms
Power Output ◊	2	2.5	-	-	watts

◊ 9% total harmonic distortion.

† The d-c resistance in the grid circuit should not exceed 10000 ohms.

** Screen tied to plate. Operation of the 48 as a single triode is recommended only in applications where a large plate-current change for a small grid-voltage change is essential, and where distortion is not a factor. Under such conditions, the recommended maximum plate dissipation is 8 watts.

PUSH-PULL AMPLIFIER - Class A₁

Unless otherwise specified, values are for 2 tubes

Operating Conditions:	As Tetrodes	As Triodes**	
Heater ⁽¹⁾	30	30	volts
Plate	125 max.	125 max.	volts
Screen	100 max.	**	volts
Grid	-20*	-32.5*	volts
Cathode Resistor	155	325	ohms
Zero-Sig. Plate Cur.	100	100	ma.
Load Res. (plate to plate)	3000	1250	ohms
Total Harmonic Distortion	9	2	%
Power Output	5	3	watts

* Bias from auxiliary C-battery.

◻ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be limited to 90 volts.

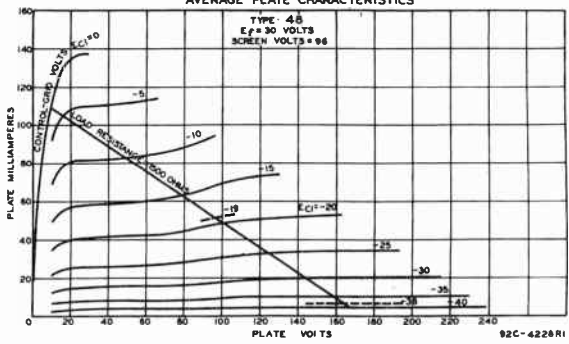
◊ Horizontal operation permitted if pins No.2 and No.5 are in vertical plane.

← Indicates a change.

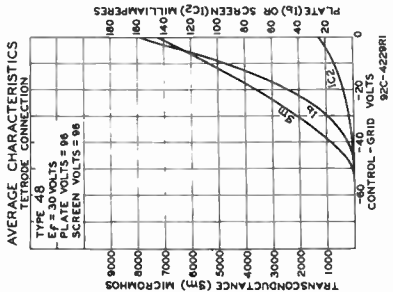
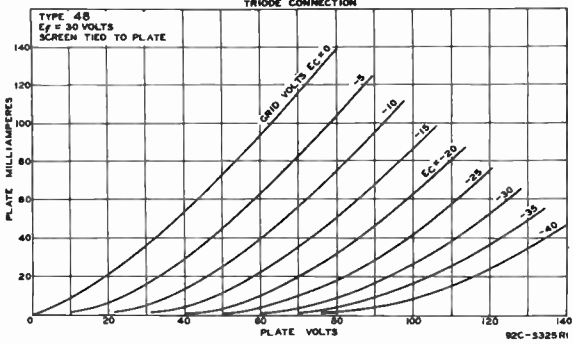


CHARACTERISTICS CURVES

AVERAGE PLATE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS
TRIODE CONNECTION



APRIL 20, 1938

RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-4228R1, 4229R1,
 5325R1

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	μf
Grid to Filament	3.2	μf
Plate to Filament	2.9	μf
Maximum Overall Length		4-11/16"
Maximum Diameter	(2) (3)	4-13/16"
Bulb		ST-14
Base		Medium 4-Pin Bay.
Pin 1-Filament+	(1) (4)	Pin 3-Grid
Pin 2-Plate		Pin 4-Filament-

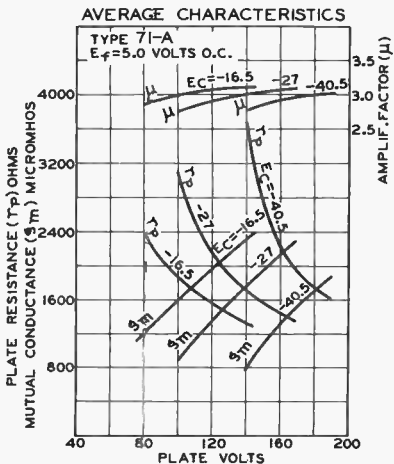
BOTTOM VIEW

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.

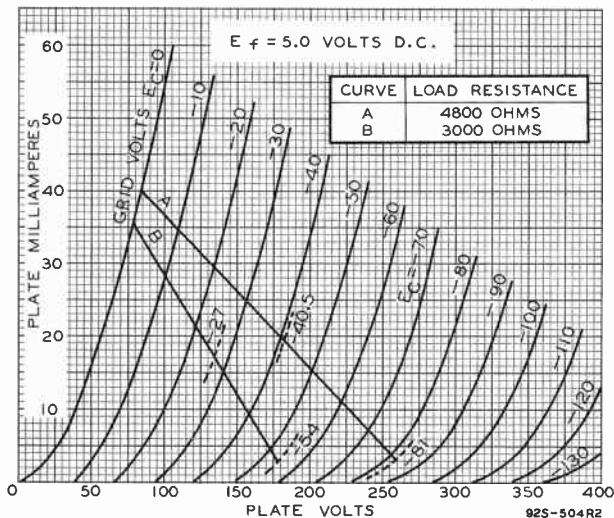


71-A

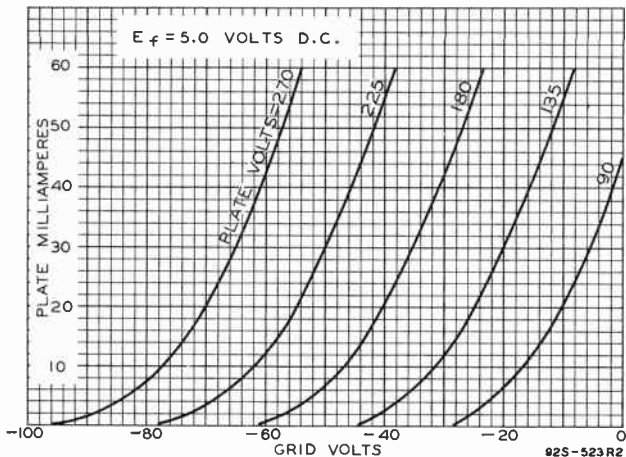

Cunningham
Radiotron


RCA-71-A

AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



SEPT. 13, 1935

 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.
 World Radio History

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 $\mu\mu\text{f}$
 Grid to Cathode 1.7 $\mu\mu\text{f}$
 Plate to Cathode 3.8 $\mu\mu\text{f}$

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

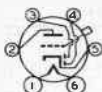
Base Small 6-Pin

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 Any

BOTTOM VIEW (6G)

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 RADIODRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

DATA

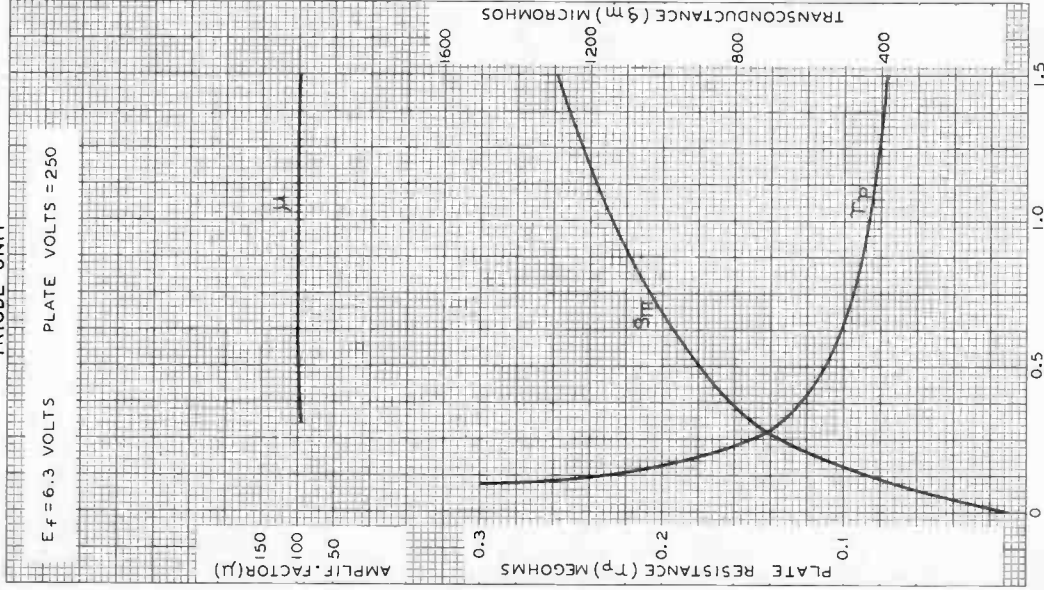
75



75

AVERAGE CHARACTERISTICS TRIODE UNIT

$E_f = 6.3$ VOLTS PLATE VOLTS = 250



JULY 31, 1941

PLATE MILLIAMPERES

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY INC.

92C-5284R1



77

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. ^o	μf
Input	4.7	μf
Output	11	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 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

**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
Typical Operation and Characteristics - Class A₁ Amplifier:		
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 μmhos
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

Typical Operation as Biased Detector:			
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 μf
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.

^o 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.

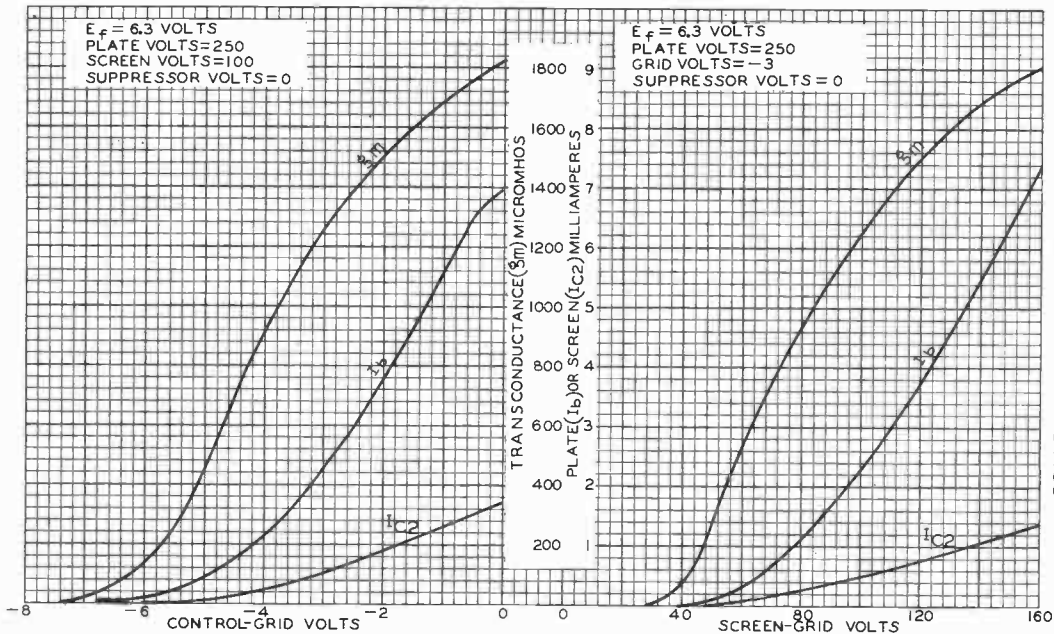
Greater than 1.0 megohm.

← Indicates a change.

JULY 31, 1941

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RCA MANUFACTURING COMPANY, INC.

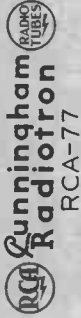
CE-5280R1
CE-5281R1



AVERAGE CHARACTERISTICS



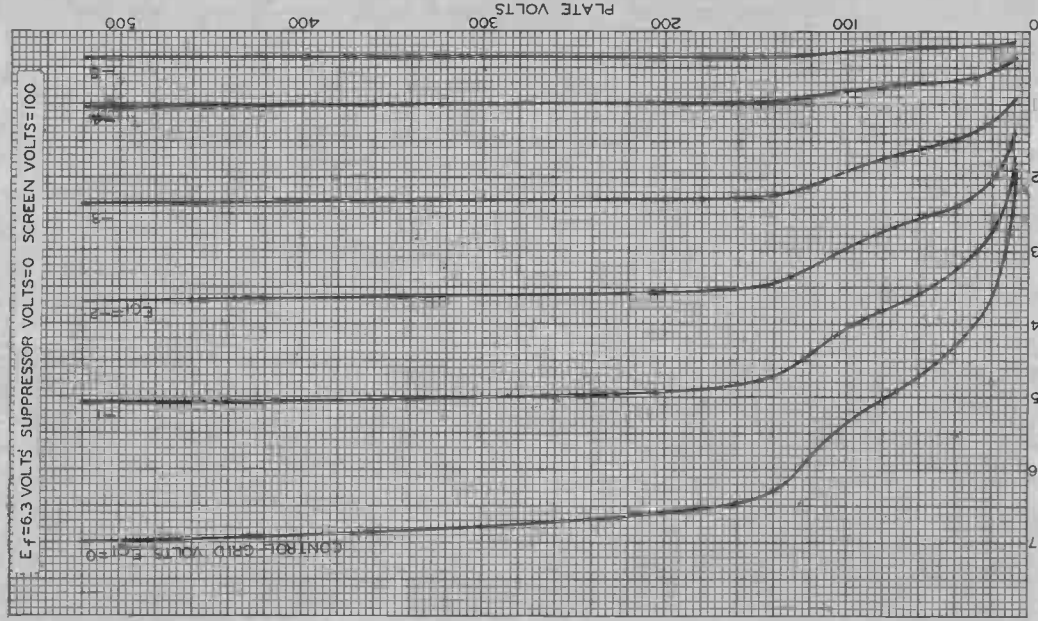
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AVERAGE PLATE CHARACTERISTICS

E_f = 6.3 VOLTS SUPPRESSOR VOLTS = 0 SCREEN VOLTS = 100

CONTROL GRID VOLTS E_{g1} = 0



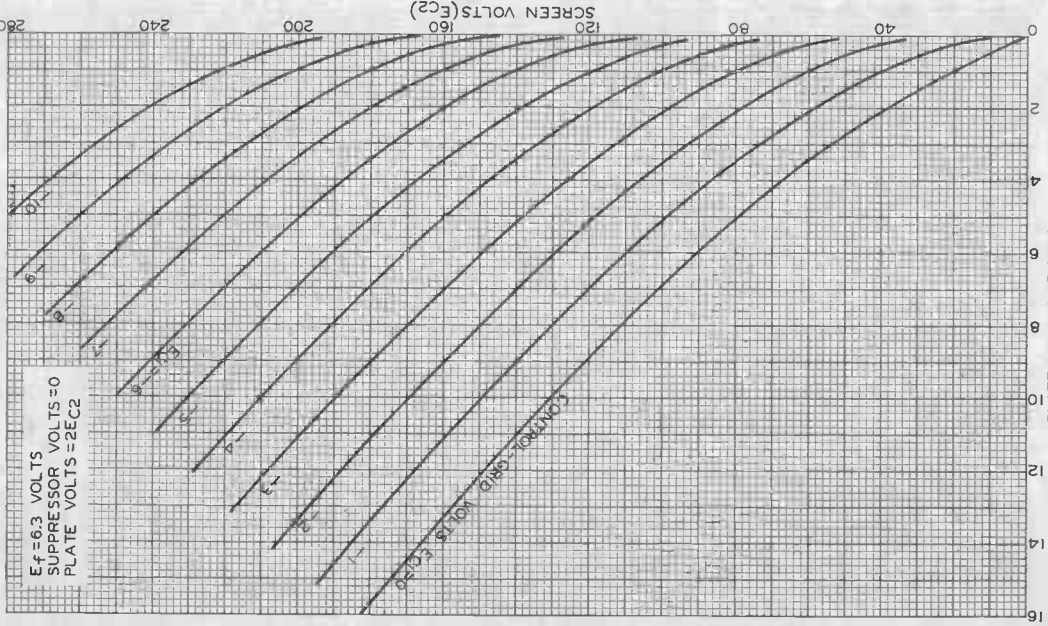
77

JUNE 1, 1933

RCA RADIODIODE DIVISION
RCA MANUFACTURING COMPANY, INC.

92S-5279

AVERAGE CHARACTERISTICS



RCA-78

TRIPLE-GRID SUPER-CONTROL AMPLIFIER

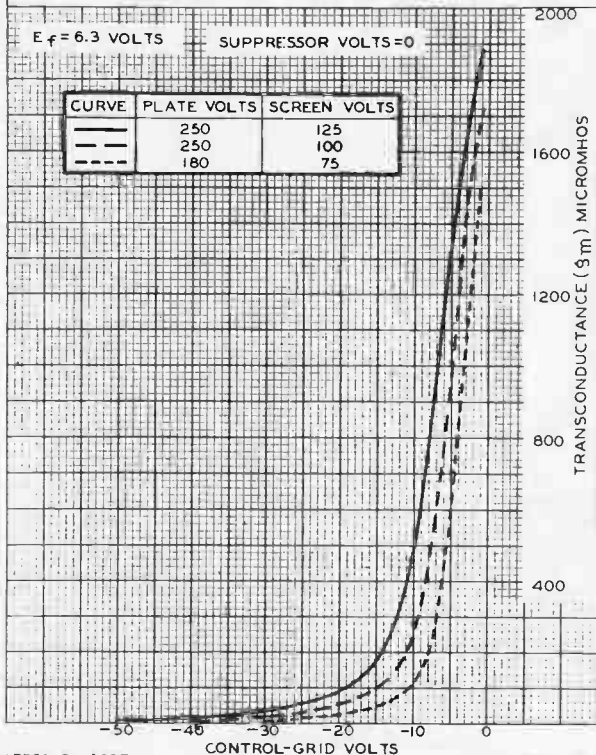
For additional data and curve, see Type 6K7. Except for capacitances, the characteristics of the 78 and 6K7 are identical.

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances: \ominus		
Grid to Plate	0.007 max.	μf
Input	4.5	μf
Output	11.0	μf
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	(1) (6)	Pin 5-Cathode
Pin 2-Plate		Pin 6-Heater
Pin 3-Screen		Cap -Grid
Pin 4-Suppressor		

BOTTOM VIEW

\ominus With shield can.
 \leftarrow Indicates a change

AVERAGE CHARACTERISTICS



APRIL 5, 1937

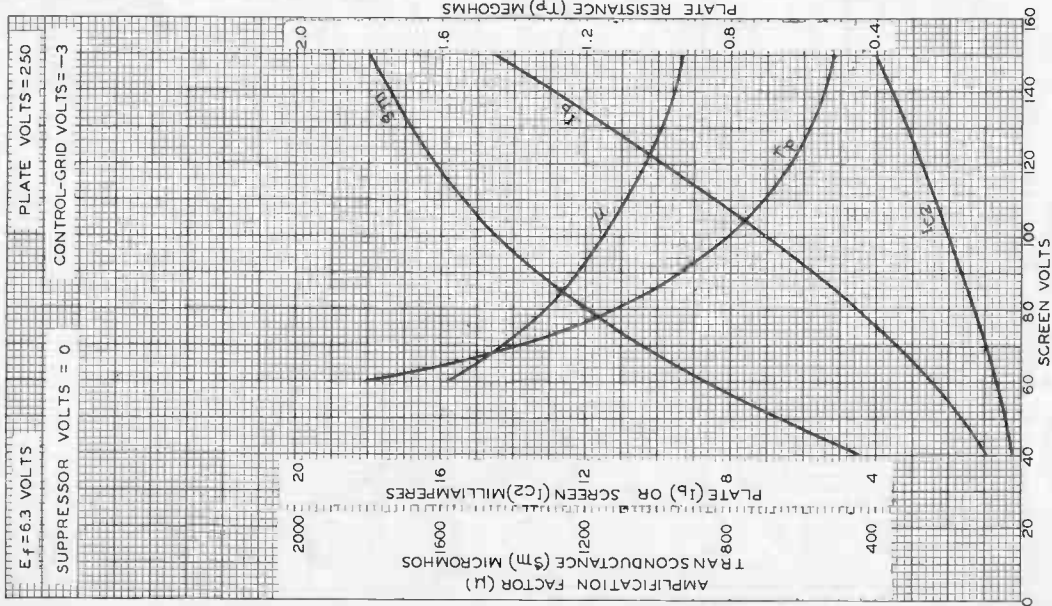
CONTROL-GRID VOLTS

9 2S-5 24 8

RCA RADIORON DIVISION
 RCA MANUFACTURING COMPANY, INC.

RCA-78

AVERAGE CHARACTERISTICS






80

80, 81

**FULL-WAVE HIGH-VACUUM RECTIFIER**


Filament	Coated	
Voltage	5.0	a-c volts
Current	2.0	amp.
Maximum Overall Length		4-11/16"
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	BOTTOM VIEW (4C)	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.

81

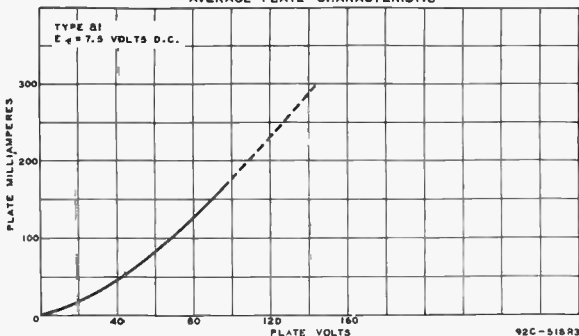
HALF-WAVE HIGH-VACUUM RECTIFIER

Filament	Coated	
Voltage	7.5	a-c volts
Current	1.25	amp.
Maximum Overall Length		6-1/4"
Maximum Diameter		2-7/16"
Bulb		ST-19
Base		Medium 4-Pin, Bay.
Pin 1 - Filament		Pin 3 - No Connection
Pin 2 - Plate		Pin 4 - Filament
Mounting Position	BOTTOM VIEW (4B)	Vertical ◊

HALF-WAVE RECTIFIER

Peak Inverse Voltage	2000 max. volts
Peak Plate Current	500 max. ma.
<i>Typical Operation with Condenser- or Choke-Input Filter:</i>	
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

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA



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 RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

DATA

83
83-v

83

FULL-WAVE MERCURY VAPOR RECTIFIER

Filament	Coated	
Voltage	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		ST-16
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	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 [▲]	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.

[▲] 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.

83-v

FULL-WAVE HIGH-VACUUM RECTIFIER

Heater	Coated Unipotential Cathode*	
Voltage	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		ST-14
Base		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-G.

* The cathode of the 83-v is connected to the heater within the tube.

← Indicates a change.



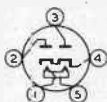
84/6Z4



84

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	BOTTOM VIEW (5D)	Any

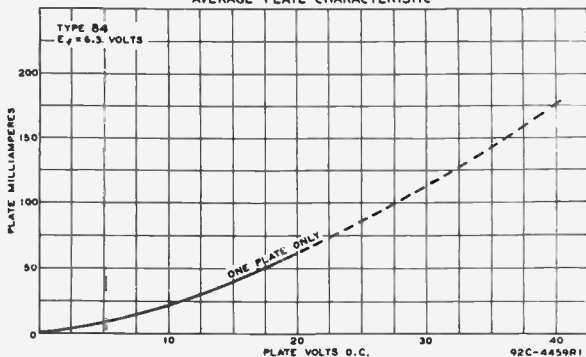
**FULL-WAVE RECTIFIER**

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 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.

AVERAGE PLATE CHARACTERISTIC



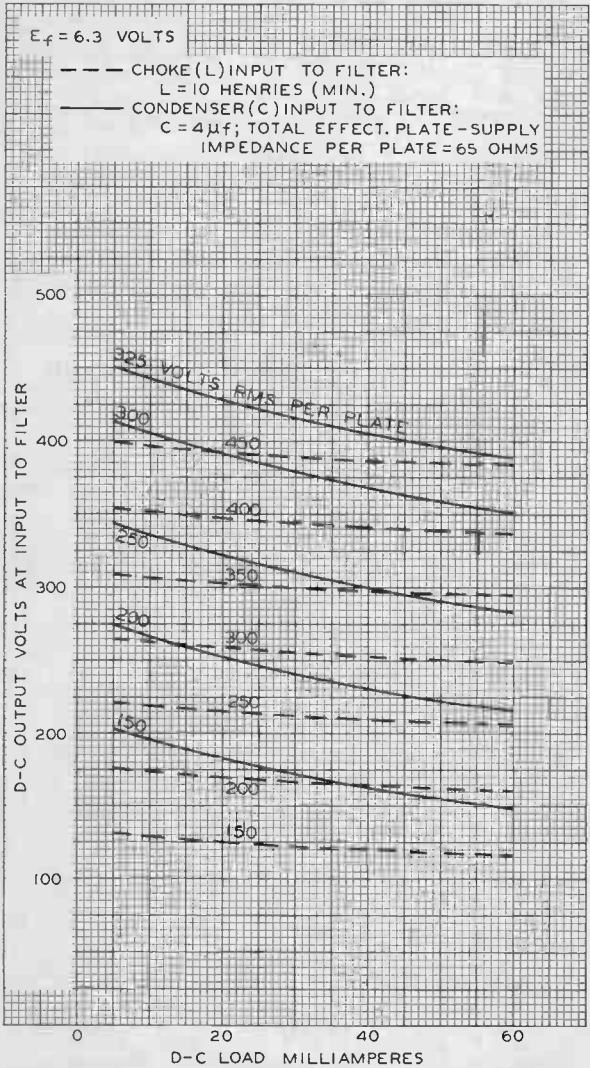
FEB. 2, 1940

RCA RADIODRON DIVISION
RCA MANUFACTURING COMPANY INC
World Radio History

DATA



OPERATION CHARACTERISTICS



RCA-V99, RCA-X99

DETECTOR, AMPLIFIER

Filament Voltage	V99-Thoriated Tungsten 3.0 - 3.3	X99-Coated d-c volts
Filament Current	0.060 - 0.063	amp.

Direct Interelectrode Capacitances:		
Grid to Plate	3.3	μpf
Grid to Filament	2.5	μpf
Plate to Filament	2.5	μpf

	<u>Type V99</u>	<u>Type X99</u>
Maximum Overall Length	3-1/2"	4"
Maximum Diameter	1-1/16"	1-3/16"
Bulb	T-8	T-8
Base	Small 4-Nub	Small 4-Pin



BOTTOM VIEWS

AMPLIFIER (Class A)

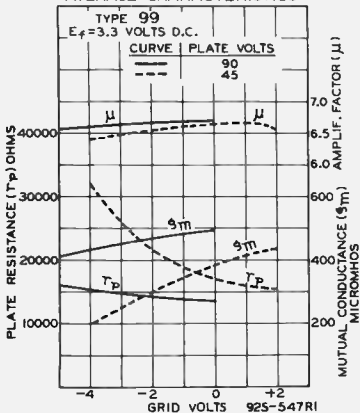
Operating Conditions and Characteristics:

Filament	3.3	d-c volts
Plate	90 maximum	volts
Grid	-4.5	volts
Amp. Fact.	6.6	
Plate Res.	15500	ohms
Mut. Cond.	425	μmhos
Plate Cur.	2.5	ma.

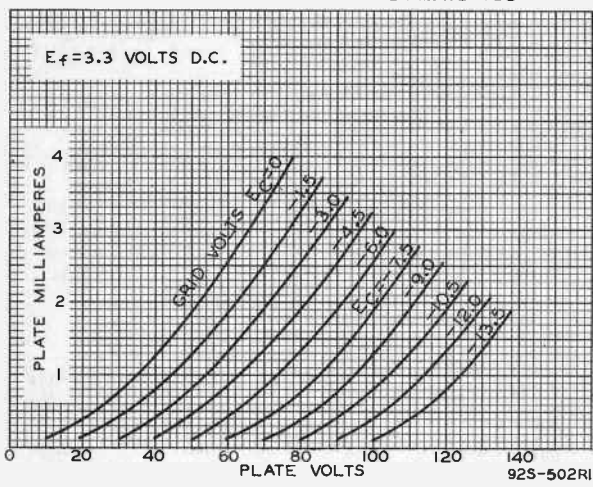
DETECTOR

Typical Operation:	<u>Biased</u>	<u>Grid-Leak</u>
Filament	3.3	3.3
Plate	90 max.	45
Grid	-10.5 approx.	Return to (+) Fil.
Plate Cur.	Adjusted to 0.2 ma. with no input signal	-
Grid Leak	-	0.25 to 5
Grid Condenser	-	0.00025
		megohms μf

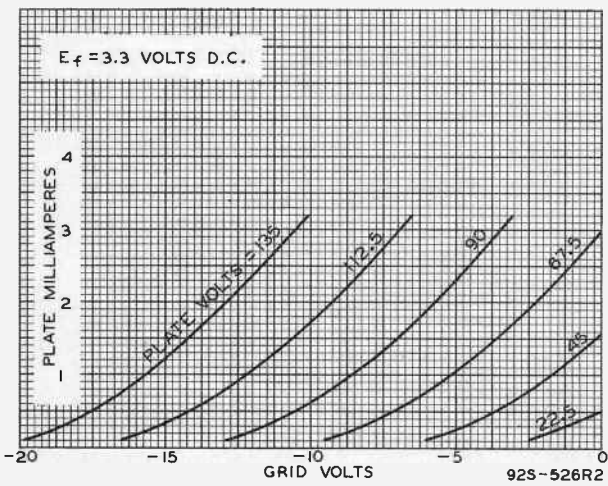
AVERAGE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS



Half-Wave Vacuum Rectifier

7-PIN MINIATURE TYPE

With Heater Having Controlled Warm-Up Time

GENERAL DATA

Electrical:

Heater^a, for Unipotential Cathode:

Voltage (AC or DC):

Entire heater (Pins 3 and 4)	36	volts
Tap-section (Pins 3 and 6)	32	volts

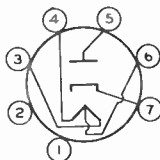
Current:

Tap-section (Pins 3 and 6)	0.1 ± 6%	amp
Warm-up time (Average)	20	sec

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 <i>General Section</i>
Bulb	T5-1/2
Base	Small-Button Miniature 7-Pin (JEDEC No. E7-1)
Basing Designation for BOTTOM VIEW	5BQ

- Pin 1 - No Connection
- Pin 2 - No Connection
- Pin 3 - Heater



- Pin 4 - Heater
- Pin 5 - Plate
- Pin 6 - Heater Tap
- Pin 7 - Cathode

HALF-WAVE RECTIFIER

Maximum Ratings, *Design-Maximum Values:*

PEAK INVERSE PLATE VOLTAGE	365	max.	volts
PEAK PLATE CURRENT	530	max.	ma
DC OUTPUT CURRENT	82	max.	ma
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	350 ^b	max.	volts
Heater positive with respect to cathode	200 ^c	max.	volts

Typical Operation:

In accompanying typical half-wave circuit with capacitor-input filter

AC Plate Supply Voltage (RMS)	120	volts
Filter-Input Capacitor	40	μf
Total Effective Plate Supply Resistance	a	
DC Output Current	75	ma
DC Output Voltage at Input to Filter (Approx.)	118	volts



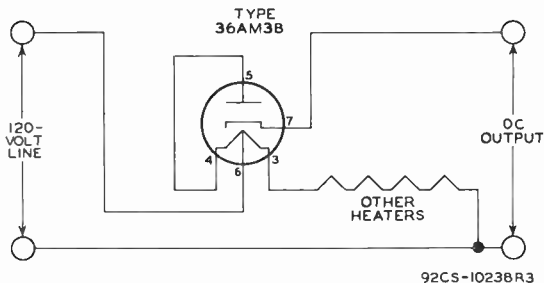
36AM3B

Characteristics:

Tube-Voltage Drop for plate ma. = 150 16 volts

- a The heater of the 36AM3B is designed so that the heater section between pins 4 and 6 is used as a limiting resistance in the rectifier plate circuit (See accompanying *Typical Half-Wave Circuit*). This type is not designed for use with a panel lamp where the heater section between pins 4 and 6 is used as a panel-lamp shunt.
- b The DC component must not exceed 350 volts.
- c The DC component must not exceed 100 volts.

TYPICAL HALF-WAVE CIRCUIT





50A5

50A5 BEAM POWER AMPLIFIER

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage 50 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

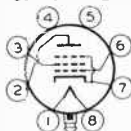
Pin 2 - Plate

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

AMPLIFIER - Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE 200 max. volts
GRID-No.2 (SCREEN) VOLTAGE 117 max. volts
PLATE DISSIPATION 10 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	200	volts
Grid-No.2 Voltage	110	110	volts
Grid-No.1 Voltage	-7.5	-8	volts
Peak A-F Grid No.1 Voltage	7.5	8	volts
Zero-Signal Plate Current	49	50	ma
Max.-Signal Plate Current	50	55	ma
Zero-Signal Grid-No.2 Current	4	1.5	ma
Max.-Signal Grid-No.2 Current	8.5	6.0	ma
Plate Resistance (Approx.)	13000	35000	ohms
Transconductance	8000	8250	μmhos
Load Resistance	2000	3000	ohms
Total Harmonic Distortion	10	10	%
Max.-Sig. Power Output	2.1	4.3	watts

Maximum Circuit Values (For maximum rated conditions):

Grid-No.1-Circuit Res.	{	fixed bias	0.1	. . . megohm
		cathode bias	0.5	. . . megohm



50B5

50B5

BEAM POWER AMPLIFIER

MINIATURE TYPE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 50 ac or dc volts

Current. 0.15 amp.

Direct Interelectrode Capacitances (Approx.):^oGrid-No.1 to Plate 0.5 $\mu\mu\text{f}$ Input. 13 $\mu\mu\text{f}$ Output 6.5 $\mu\mu\text{f}$ **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

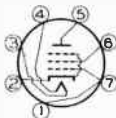
Base Miniature Button 7-Pin

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

CLASS A₁ AMPLIFIERMaximum 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	. . . .	μmhos
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



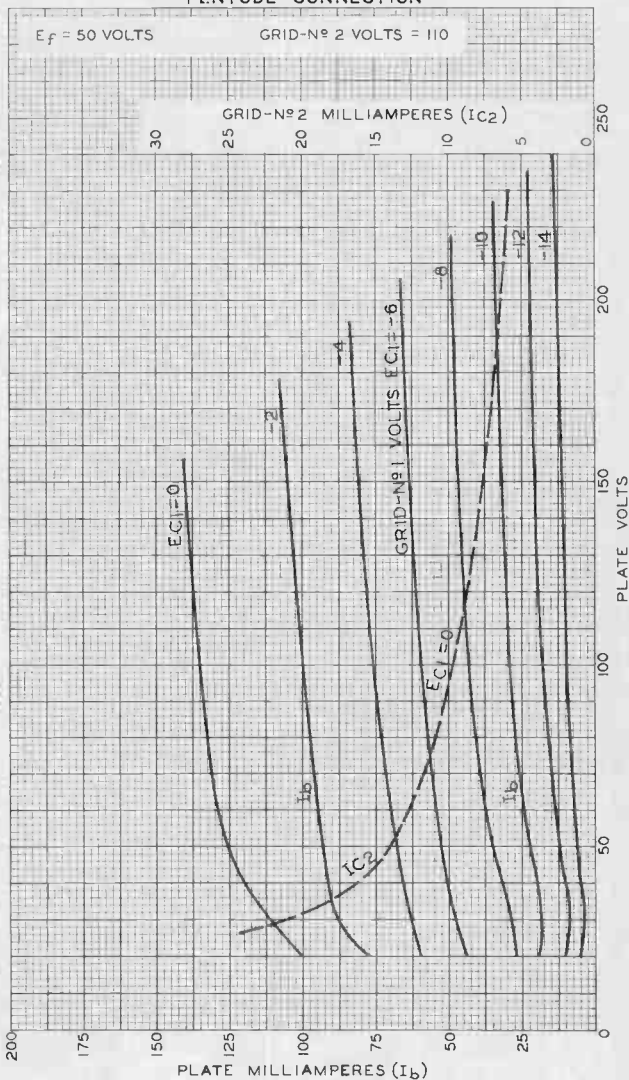
50B5

50B5

AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION

$E_f = 50$ VOLTS

GRID-No 2 VOLTS = 110



OCT. 8, 1945

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

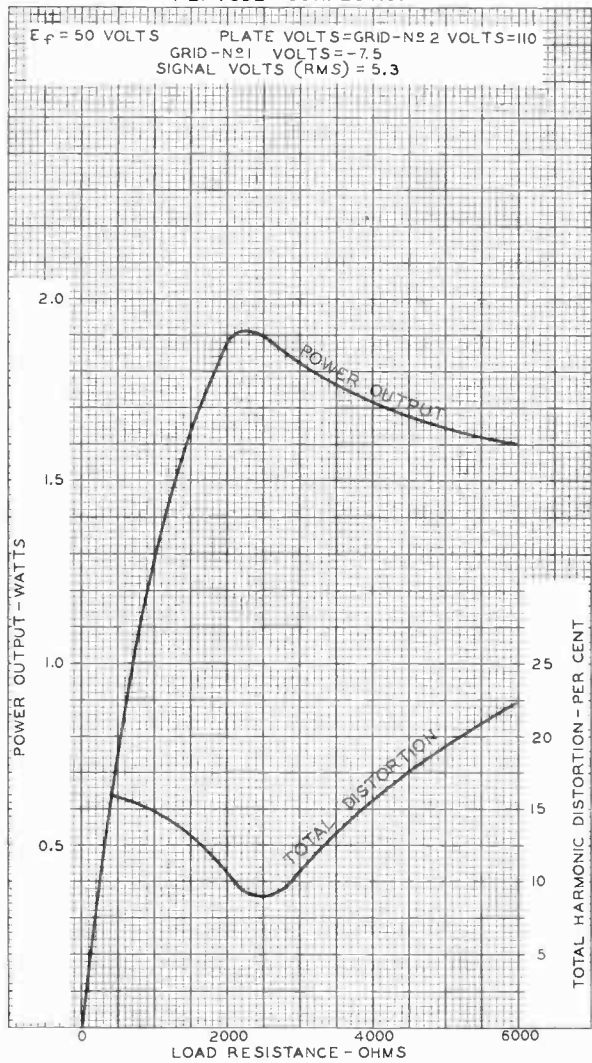
92CM-6603

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" ± 3/32"

Maximum Diameter 3/4"

Bulb T-5-1/2

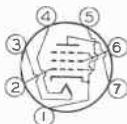
Base Small Button Miniature 7-Pin (JETEC No.E7-1) ←

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)♦ 250 max. °C ←

^o without external shield.

♦ 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.

JAN. 3, 1955

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TUBE DIVISION

DATA

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

JAN. 3, 1955

TUBE DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

World Radio History

50EH5

Power Pentode

7-PIN MINIATURE TYPE

The 50EH5 is the same as the 6EH5 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	50	volts
Current	0.15	amp

50FE5

Beam Power Tube

For Audio-Output Stages of Low-Cost,
Compact Stereophonic Equipment

The 50FE5 is the same as the 6FE5 except for the following items:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	50 ± 10%	volts
Current at 50 volts	0.15	amp

Peak Heater-Cathode Voltage:

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

* The ac component must not exceed 100 volts.





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Power Pentode

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	50	volts
Current	0.1 ± 6%	amp

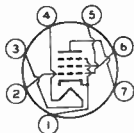
Direct Interelectrode Capacitances (Approx.):[▲]

Grid No.1 to plate	0.65	μf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	17	μf
Plate to cathode & grid No.3, grid No.2, and heater	9	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 <i>General Section</i>
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

AF POWER AMPLIFIER — Class A₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	150	max.	volts
GRID-NO.2 (SCREEN-GRID) VOLTAGE	130	max.	volts
GRID-NO.1 (CONTROL-GRID) VOLTAGE:			
Positive-bias value	0	max.	volts
GRID-NO.2 INPUT	1.75	max.	watts
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
BULB TEMPERATURE (At hottest point on bulb surface)	225	max.	°C

Typical Operation and Characteristics:

Plate Supply Voltage	110	volts
Grid-No.2-Supply Voltage	115	volts
Cathode Resistor	62	ohms



50FK5

Peak AF Grid-No.1 Voltage.	3	volts
Zero-Signal Plate Current.	32	ma
Max.-Signal Plate Current.	32	ma
Zero-Signal Grid-No.2 Current.	8.5	ma
Max.-Signal Grid-No.2 Current.	12	ma
Plate Resistance (Approx.)	14000	ohms
Transconductance	12800	μ hos
Load Resistance.	3000	ohms
Total Harmonic Distortion.	8	%
Max.-Signal Power Output	1.2	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:

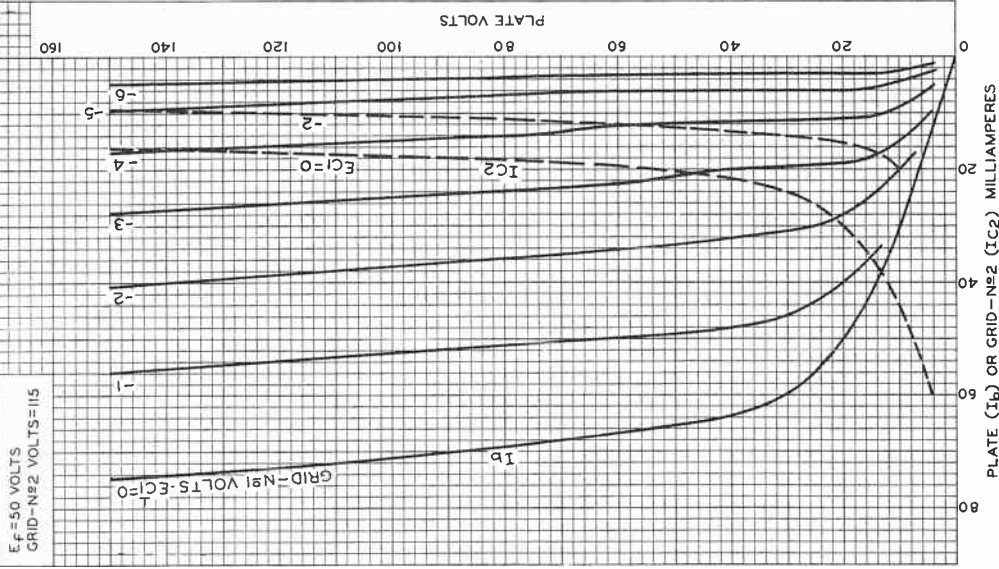
For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

[▲] Without external shield.

● The dc component must not exceed 100 volts.



AVERAGE CHARACTERISTICS



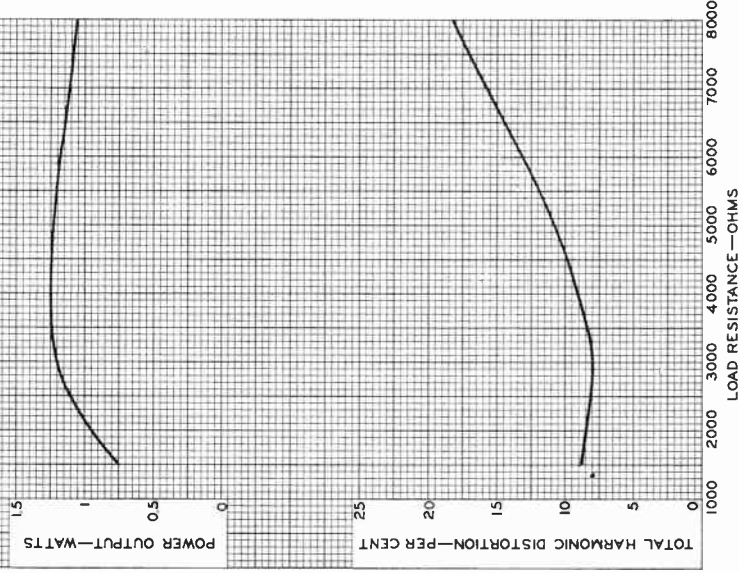
92CM-10786



50FK5

OPERATION CHARACTERISTICS

$E_f = 50$ VOLTS
PLATE SUPPLY VOLTS = 110
GRID-N82 SUPPLY VOLTS = 115
CATHODE RESISTOR (OHMS) = 62
CATHODE BYPASS CAPACITOR (μF) = 1000
SIGNAL VOLTS (RMS) = 2.1



92CM-10784

RADIO CORPORATION OF AMERICA
Electron Tube Division



Harrison, N. J.



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

Typical Operation and Characteristics - Class A₁ Amplifier:

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	μmhos
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

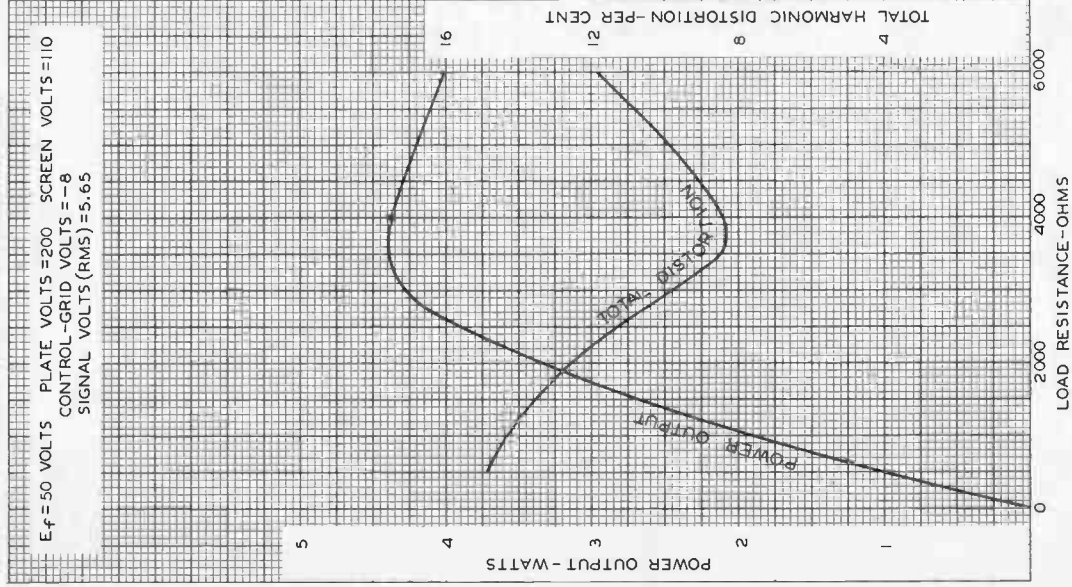
50L6-GT



50L6-GT

OPERATION CHARACTERISTICS

$E_f = 50$ VOLTS PLATE VOLTS = 200 SCREEN VOLTS = 110
 CONTROL-GRID VOLTS = -8
 SIGNAL VOLTS (RMS) = 5.65



AUG. 7, 1941

LOAD RESISTANCE--OHMS

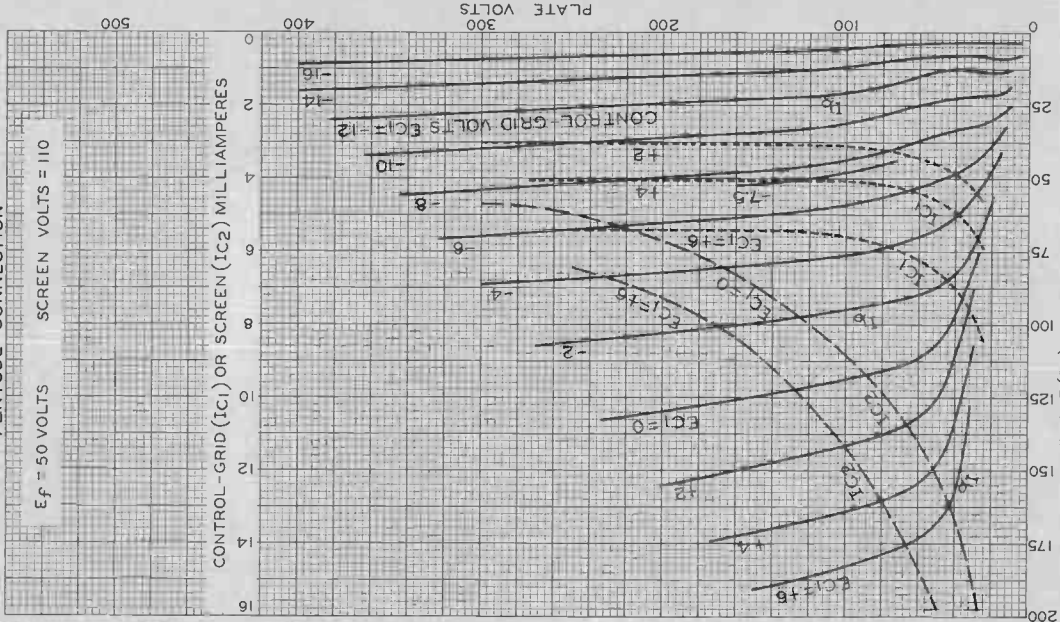
 RCA RADIOTRON DIVISION
 RCA MANUFACTURING COMPANY, INC.

92C-6308



50L6-GT

50L6-GT AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



AUG. 21, 1941

RCA RADIIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6314



50X6

50X6

VACUUM RECTIFIER-DOUBLER

GENERAL DATA

Electrical:

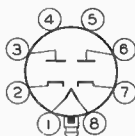
Heater, for Unipotential Cathodes:

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

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:⁰

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:

	<u>Half-Wave</u>	<u>Full-Wave</u>	
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

⁰ in half-wave rectifier service, the two units may be used separately or in parallel.

JUNE 15, 1948

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

RCA-53

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 con-
 ditions 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

RCA-53

OPERATION CHARACTERISTICS

 $E_f = 2.5$ VOLTS

INPUT-CLASS A-ONE TYPE 56

PLATE VOLTS=250 GRID VOLTS=-13.5

OUTPUT-CLASS B-ONE TYPE 53

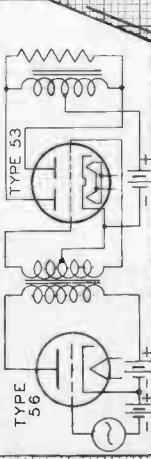
PLATE VOLTS=300 GRID VOLTS=0

INPUT TRANSFORMER-OUR DESIGN No S-99

- VOLTAGE RATIO $\frac{PRIM}{SEC} = 5.0$

- PEAK PLATE EFF = 70%

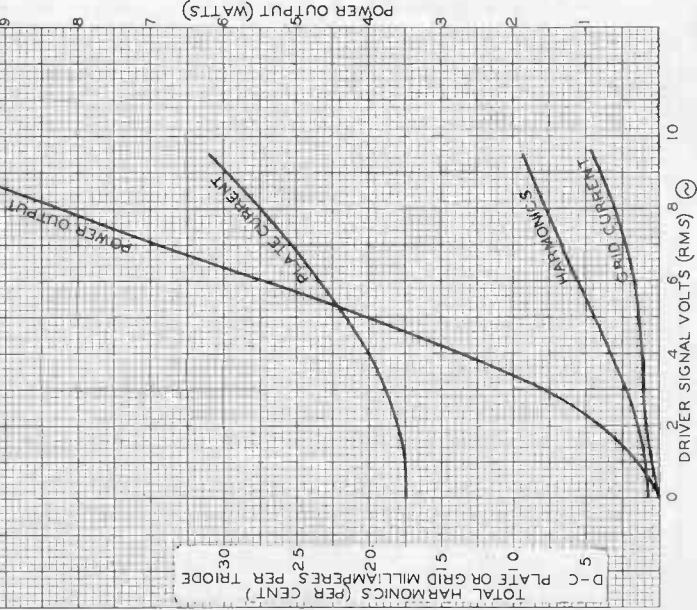
OUTPUT LOAD; PLATE TO PLATE=10000 OHMS



D-C PLATE OR GRID MILLIAMPERES PER TRIODE

TOTAL HARMONICS (PER CENT)

0 5 10 15 20 25 30



Power Pentode

7-PIN MINIATURE TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	60 ± 10%	volts
Current at 60 volts	0.1	amp

Direct Interelectrode Capacitances (Approx.):[▲]

Grid No.1 to plate	0.65	μmf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	17	μmf
Plate to cathode & grid No.3, grid No.2, and heater	9	μmf

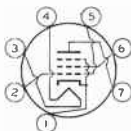
Characteristics, Class A₁ Amplifier:

Plate Supply Voltage	110	volts
Grid-No.2 Supply Voltage	115	volts
Cathode Resistor	62	ohms
Plate Resistance (Approx.)	17500	ohms
Transconductance	13500	μmhos
Plate Current	36	ma
Grid-No.2 Current	10	ma

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 <i>General Section</i>
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

AF POWER AMPLIFIER — Class A₁

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE	150	max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	130	max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:			
Positive-bias value	0	max.	volts
GRID-No.2 INPUT	2	max.	watts
PLATE DISSIPATION	5.5	max.	watts



60FX5

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

Typical Operation:

Plate Supply Voltage.	110		volts
Grid-No.2 Supply Voltage.	115		volts
Cathode Resistor.	62		ohms
Peak AF Grid-No.1 Voltage	3		volts
Zero-Signal Plate Current	36		ma
Max.-Signal Plate Current	35		ma
Zero-Signal Grid-No.2 Current	10		ma
Max.-Signal Grid-No.2 Current	12		ma
Load Resistance	3000		ohms
Total Harmonic Distortion	B		%
Max.-Signal Power Output.	1.3		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

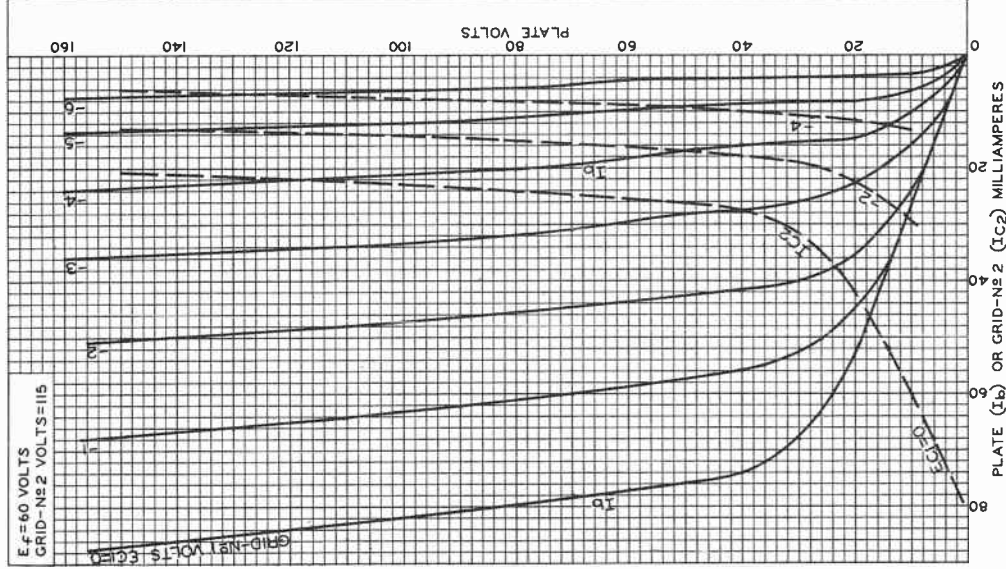
▲ Without external shield.

● The dc component must not exceed 100 volts.



60FX5

AVERAGE CHARACTERISTICS



92CM-10546



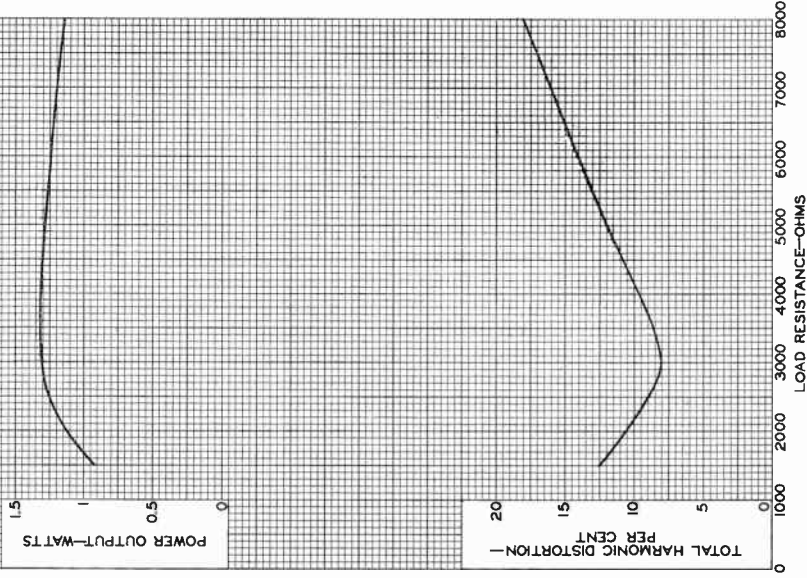
RADIO CORPORATION OF AMERICA
Electron Tube Division

DATA 2
8-60

60FX5

OPERATION CHARACTERISTICS

$E_f = 60$ VOLTS
PLATE SUPPLY VOLTS = 110
GRID-N₂ SUPPLY VOLTS = 115
CATHODE RESISTOR (OHMS) = 62
CATHODE-BYPASS CAPACITOR (μF) = 100
SIGNAL VOLTS (RMS) = 2.1



92CM-10545

RADIO CORPORATION OF AMERICA
Electron Tube Division

Harrison, N. J.



Beam Power Tube

9-PIN MINIATURE TYPE
 For High-Fidelity Audio-
 Amplifier Applications

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:		
Voltage (AC or DC)	6.3 ± 10%	volts ←
Current at 6.3 volts.	0.45	amp
Direct Interelectrode Capacitances: ⁰		
Grid No.1 to plate.	0.4 max.	μf ←
Grid No.1 to cathode & grid No.3, grid No.2, and heater	9	μf
Plate to cathode & grid No.3, grid No.2, and heater	6	μf

Characteristics, Class A₁ Amplifier:

Plate Voltage	250	volts
Grid-No.2 Voltage	250	volts
Grid-No.1 Voltage	-15	volts
Plate Resistance (Approx.)	73000	ohms
Transconductance.	4800	μmhos
Plate Current	46	ma
Grid-No.2 Current	3.5	ma
Grid-No.1 Voltage (Approx.) for plate μ a = 100.	-40	volts

Mechanical:

Operating Position.	Any
Maximum Overall Length.	3-1/16"
Maximum Seated Length	2-13/16"
Length, Base Seat to Bulb Top (Excluding tip)	2-7/16" ± 3/32"
Maximum Diameter. . . . .	.0.750" to 0.875"
Dimensional Outline	See <i>General Section</i>
Bulb.	T6-1/2
Base.	Small-Button Noval 9-Pin (JEDEC 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 - Grid No.3,
 Cathode
 Pin 8 - Grid No.2
 Pin 9 - Plate

PUSH-PULL AF POWER AMPLIFIER ← Class AB₁

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE	440 max.	volts
GRID-NO.2 (SCREEN-GRID) VOLTAGE	330 max.	volts

← indicates a change.



GRID-No.2 INPUT.	2	max.	watts
PLATE DISSIPATION.	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
BULB TEMPERATURE (At hottest point on bulb surface)	250	max.	°C

Typical Operation with Fixed Bias:

Values are for 2 tubes

Plate Voltage.	250	350	400	volts
Grid-No.2 Voltage.	250	280	290	volts
Grid-No.1 (Control-Grid) Voltage [•]	-15	-22	-25	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage.	30	44	50	volts
Zero-Signal Plate Current.	92	58	50	ma
Max.-Signal Plate Current.	105	106	107	ma
Zero-Signal Grid-No.2 Current.	7	3.5	2.5	ma
Max.-Signal Grid-No.2 Current.	16	14	13.7	ma
Effective Load Resistance (Plate to plate).	8000	7500	8000	ohms
Total Harmonic Distortion.	2	1.5	2	%
Max.-Signal Power Output	12.5	20	24	watts

Typical Operation with Cathode Bias:

Values are for 2 tubes

Plate Supply Voltage	300	310	volts
Grid-No.2 Supply Voltage	300	310	volts
Cathode Resistor	230	270	ohms
Peak AF Grid-No.1-to-Grid-No.1 Voltage	48	55	volts
Zero-Signal Plate Current.	80	77	ma
Max.-Signal Plate Current.	96	92	ma
Zero-Signal Grid-No.2 Current.	6	5	ma
Max.-Signal Grid-No.2 Current.	14	14	ma
Effective Load Resistance (Plate to plate).	5500	6000	ohms
Total Harmonic Distortion.	2	4	%
Max.-Signal Power Output	15	17	watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance: [•]			
For fixed-bias operation	0.5	max.	megohm
For cathode-bias operation	1	max.	megohm

PUSH-PULL AF POWER AMPLIFIER — Class AB₁

*Grid No.2 of each tube connected to tap
on plate winding of output transformer*

→ Maximum Ratings, Design-Maximum Values:

PLATE AND GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE	410	max.	volts
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→ Indicates a change.



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 (8AA)	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	←

Typical Operation and Characteristics - Class A₁ Amplifier:

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

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

World Radio History

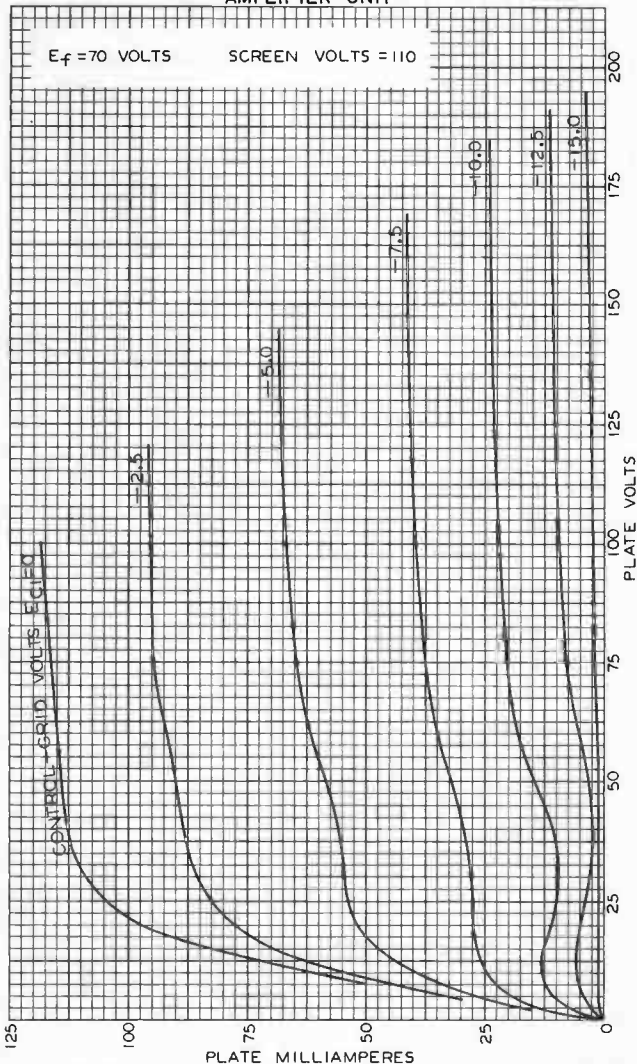
DATA

70L7-GT



70L7-GT

AVERAGE PLATE CHARACTERISTICS AMPLIFIER UNIT



SEPT. 26, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-6323

Sharp-Cutoff Pentode

7-PIN MINIATURE TYPE

For High-Gain, Resistance-Coupled-Amplifier Applications Critical as to Hum and Microphonism

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3	volts
Current	0.3	amp

Direct Interelectrode Capacitances:

	Without External Shield	With External Shield ^A	
<i>Pentode Connection:</i>			
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 . .	5.5	5.5	μf
Plate to cathode, grid No.3 & internal shield, grid No.2, and heater . .	5	5	μf
<i>Triode Connection:</i> ^B			
Grid No.1 to plate, grid No.3 & internal shield, and grid No.2	2.6	2.6	μf
Grid No.1 to cathode and heater.	3.2	3.2	μf
Plate, grid No.3 & internal shield, and grid No.2 to cathode and heater.	1.2	8.5	μf

Hum Output Voltage:

Average Value (RMS, Cathode Bypassed) 1.2 millivolts
Measured in "true rms" units under the following conditions:
heater volts = 6.3; center-tap of heater transformer connected to ground; plate and grid-No.2 supply volts = 250; plate load resistor (megohms) = 0.27; grid No.3 and internal shield connected to cathode at socket; grid-No.2 resistor (megohms) = 0.68; grid-No.1 resistor (megohms) = 0.1; cathode resistor (ohms) = 1000; grid resistor of following stage (megohms) = 10; and stage gain of 340.

Average Value (RMS, Cathode Unbypassed) . . . 0.9 millivolt
Measured in "true rms" units under the same conditions as for "Average Value" except that the cathode resistor is unbypassed, and the stage gain is 110.

Characteristics, Class A₁ Amplifier:*Pentode Connection*

Plate Supply Voltage.	100	250	250	volts
Grid No.3 & Internal Shield . .	.Connected to cathode at socket			



7543

Grid-No.2 Supply Voltage.	100	125	150	volts
Cathode Resistor.	150	100	68	ohms
Plate Resistance (Approx.).	0.5	1.5	1	megohms
Transconductance.	3900	4500	5200	μ mhos
Plate Current	5	7.6	10.6	ma
Grid-No.2 Current	2.1	3	4.3	ma
Grid-No.1 Voltage (Approx.) for plate μ a = 10	-4.2	-5.5	-6.5	volts

Triode Connection*

Plate Supply Voltage.	250	volts
Cathode Resistor.	330	ohms
Amplification Factor.	36	
Plate Resistance (Approx.).	7500	ohms
Transconductance.	4800	μ mhos
Plate Current	12.2	ma

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,
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:

	Triode Connection*	Pentode Connection
PLATE VOLTAGE	250 max.	300 max. volts
GRID No.3 (SUPPRESSOR GRID)	-	Connect to cathode at socket
GRID-No.2 (SCREEN-GRID) 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
GRID-No.2 INPUT:		
For grid-No.2 voltages up to 150 volts	-	0.65 max. watt
For grid-No.2 voltages be- tween 150 and 300 volts	-	See Grid-No.2 Input Rating Chart at front of Receiving Tube Section



PLATE DISSIPATION.	3.2 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

Typical Operation as Resistance-Coupled Amplifier:

*See RESISTANCE-COUPLED-AMPLIFIER CHART No. 8
at front of this Section*

- ▲ With external shield JEDEC No. 316 connected to cathode.
- Grid No. 3 & internal shield and grid No. 2 connected to plate.
- * The dc component must not exceed 100 volts.

CURVES

For the 7543, within its ratings, are the same
as those shown for Type 6AU6








117L7-GT



117L7-GT/117M7-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

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 (8AV)

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 A₁ 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.



117P7-GT

117P7-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 Outout	0.85	watt

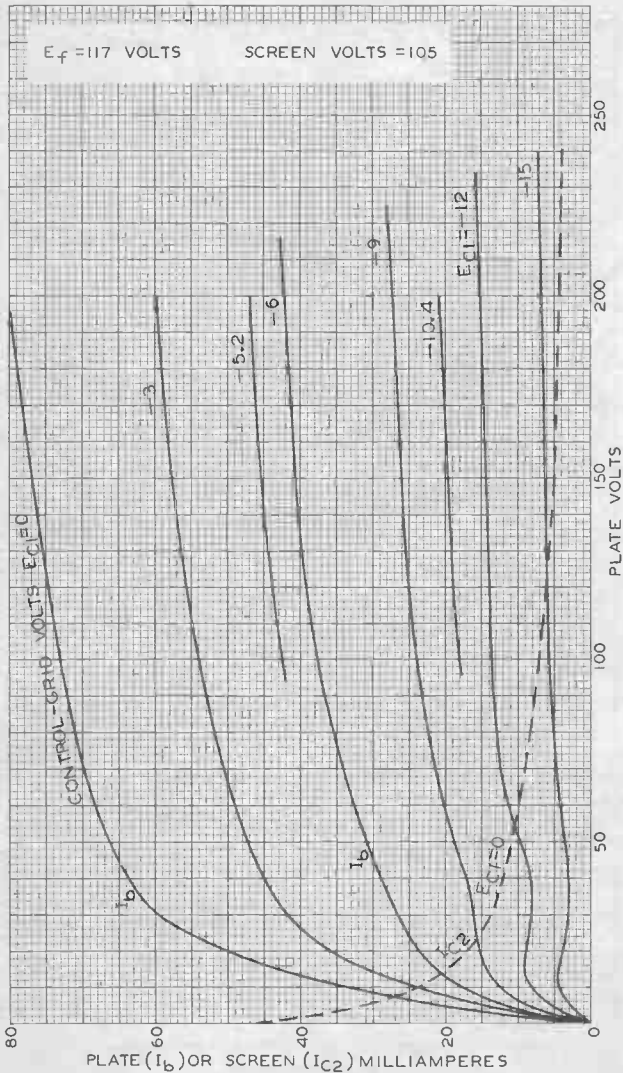
The type of input coupling used should not introduce too much resistance in the grid circuit. With fixed bias, the resistance should not exceed 0.25 megohm; with cathode bias, 0.5 megohm.

117P7-GT



117P7-GT

AVERAGE PLATE CHARACTERISTICS



SEPT. 12, 1941

RCA RADOTRON DIVISION
RCA MANUFACTURING DIVISION

92C-6321



117Z3

117Z3

HALF-WAVE VACUUM RECTIFIER

MINIATURE TYPE

GENERAL DATA

Electrical:

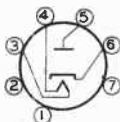
Heater, for Unipotential Cathode:

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

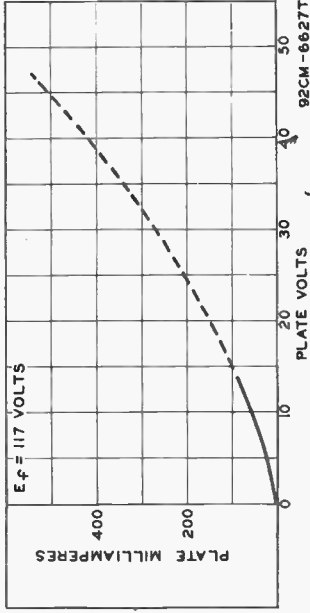
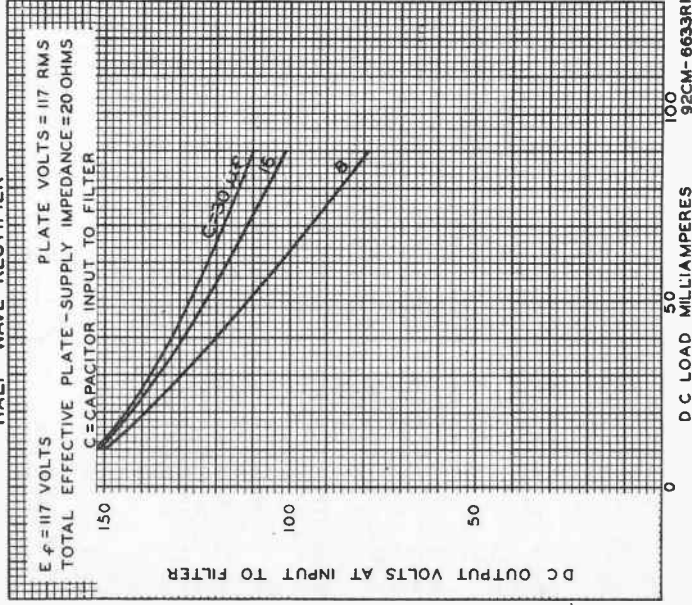
← Indicates a change.

117Z3



117Z3

AVERAGE PLATE CHARACTERISTIC

OPERATION CHARACTERISTICS
HALF-WAVE RECTIFIER

World Precision

JULY 3, 1950

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6627T-6633R1

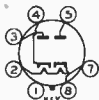


117Z6-GT/G

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 5 - Plate #1
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate #2		Pin 8 - Cathode #1
Pin 4 - Cathode #2		
Mounting Position		Any



BOTTOM VIEW (G-Q)

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.

AUG. 2, 1943

RCA VICTOR DIVISION

DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

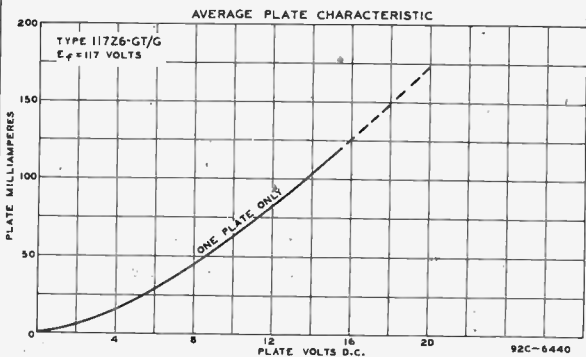
World Radio History

117Z6-GT/G



117Z6-GT/G

HIGH-VACUUM RECTIFIER-DOUBLER



AUG. 2, 1943

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-6440

World Radio History