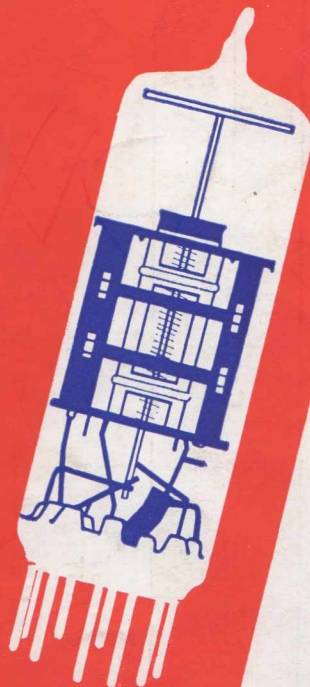
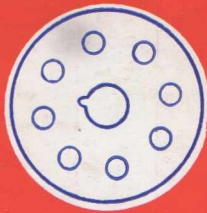


# RADIOTRON

# VALVE MANUAL



**3/-**

RVM-2

## VALVES FOR TV RECEIVERS\*\*

Tuner	AMPLIFIERS				Detector	RECTIFIER		Damper	Sync. Separator, Limiter	Deflection Oscillator
	I-F	Video	Audio	Deflection		High Voltage	Low Voltage			
6BQ7A* 6U8	6AU6 6CB6 6BZ6 6BA6	12BY7	6AV6† 6AQ5	6BQ6GTB/ 6CU6 6DQ6A 6CM7* 12BH7*	6AL5	1B3GT	5AS4	6AX4GT	12AU7A* 6SN7GTA*	6SN7GTA* 6CM7* 12BH7*

## VALVES FOR A-M RECEIVERS\*\*

Rectifiers	Converters	AMPLIFIERS			Power Amplifiers	
		Medium $\mu$ Triode	High $\mu$ Triode	Remote Cut-off Pentode		Sharp Cut-off Pentode
6X4, 12X4 5Y3GT 6X5GT 5V4G 5U4G 80, 5Y3G	1R5 6BE6, 12BE6 6AE8 6A8G 6SA7GT 6I8GA	6SN7GTA* 12AU7A*	6AV6†, 12AV6† 12AX7* 6B6G† 6SQ7GT†	1T4 6BA6, 12BA6 6AR7GT† 6SK7GT 6B8G† 6G8G† 6U7G	1U4 6AU6, 12AU6 1S5§, 1U5§ 6SJ7GT 6J7G 6BK8	6AQ5, 12AQ5 6V6GT 3S4, 3V4 6BJ5, 6BQ5 KT61, KT66 6F6G, 6BV7

\*Twin Triodes.

†With Diodes.

§With Single Diode.

\*\*Types in light face are not recommended for new equipment.

# EXPLANATORY NOTES

## 1. TABULATED DATA.

This edition of the Radiotron Valve Manual RVM-2 presents tabulated data in numerical and alphabetical order, on all Radiotron Valves. In addition there are included a number of the common types imported by A.W.V.

For ease of comparison certain categories have been grouped separately, i.e., **Photocells** (page 15), **Picture Tubes** (page 11), **Semiconductor Diodes** (page 16), **Transistors** (pages 17, 18, 19), and **Voltage Regulators** (page 14).

## 2. CLASS.

The valve class is indicated by a number in the second column of the tabulated data as follows:—

- 2 Diodes
- 2R Rectifier
- 3 Triode
- 4 Tetrode
- 4B Beam Power Valve
- 5 Pentode
- 6 Hexode
- 7 Heptode

The addition of "z" indicates a transmitting valve. Composite valves are shown:—  
2R, 2R full-wave rectifier.  
3, 5 Triode-pentode

## ABBREVIATIONS

A:	amps	Ik	cathode current
Abs.	absolute	IS	internal shield
A.C.	alternating current	J	jumper
A-F	audio frequency	K	kilo
A.W.V.	Amalgamated Wireless Valve Co.	Kc/s	kilocycles per second
C	centigrade	KS	kathode shield
CL	external conductive bold coating	M	mega (10 <sup>6</sup> )
CL	collector	m	milli (10 <sup>-3</sup> )
D	diode	max.	maximum
db	decibel	min.	minimum
D.C.	direct current	NC	no connection
Eb	plate voltage	P	pentode
Ec1	grid No. 1 voltage	P.I.V.	peak inverse voltage
Ec2	grid No. 2 voltage, etc.	PM	permanent magnet
Ef	filament voltage	R-F	radio-frequency
Eign	ignitor voltage	Rg <sup>1</sup>	grid No. 1 resistor
F	filament	Rk	cathode resistor
Fm	filament mid-tap	RL	load resistor
G1	grid No. 1	r <sub>p</sub>	a.c. plate resistance
G2	grid No. 2, etc.	S	shield
gc	conversion conductance	sync	synchronizing
gm	transconductance	T	triode
H	heater	TC	top cap
hie	input resistance, output short-circuited	ThC	thermocouple
h <sub>re</sub>	reverse voltage transfer ratio, input open-circuited	TV	television
h <sub>fe</sub>	forward current transfer ratio, output short-circuited	U.H.F.	ultra high frequency
hoe	output conductance, input open-circuited	V	volt
H <sub>m</sub>	heater mid-tap	V.H.F.	very high frequency
I <sub>b</sub>	plate current	W	watt
I <sub>c2</sub>	screen current	Wb	plate dissipation
IC	internal connection	W <sub>o</sub>	power output
I <sub>f</sub>	filament current	μ	mu or micro (10 <sup>-6</sup> )
I-F	intermediate frequency	Ω	ohm
I <sub>gn</sub>	ignitor		

## 3. FURTHER DATA.

**Photocells:**—Photosensitive Devices & Cathode-Ray Tubes (CRPD-105).

**Transistors:**—Radiotronics Special Transistor issues 1957.

**Receiving Valves:**—R.C.A. Receiving Tube Manual (RC-18).

**Power Valves:**—R.C.A. Transmitting Tube Manual (TT-4).

## 4. OTHER RADIOTRONICS PUBLICATIONS.

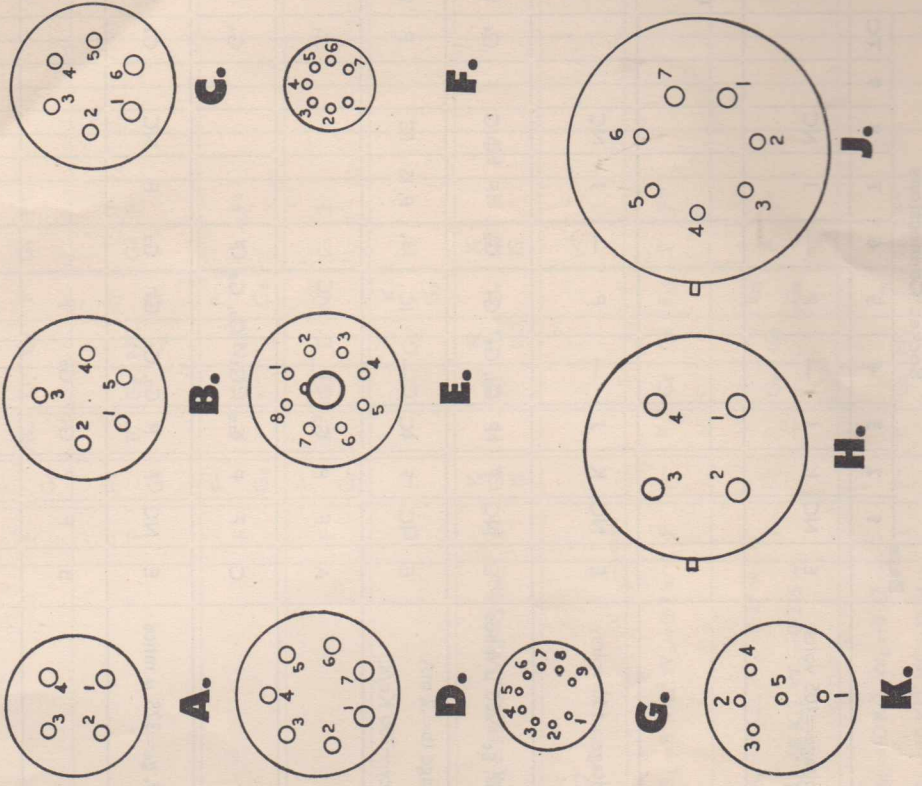
**Radiotronics:**—published monthly 10/- per annum.

**TV and Receiving Valves & Components:**—TV-1 3/- (6d. post).

**Radiotron Designers Handbook:**—Fourth edition, 55/- (3/- post).

## 5. BASE DIAGRAMS.

The base socket connections are listed in the tabulated data. Reference should be made to the diagrams on this page for the pin numbers.



TYPE	Class	Use	Ef volts	If amps	Eb volts	Ec <sub>2</sub> volts	Ec <sub>1</sub> volts	Ib mA	Ic <sub>2</sub> mA	r <sub>p</sub> MΩ	g <sub>m</sub> μmhos	Base	Socket Connections										TYPE				
													1	2	3	4	5	6	7	8	9	TC					
0C3	—	Voltage Regulator	Cold Cathode		D.C. Starting Voltage=115 volts D.C. Operating Voltage=105 volts D.C. Operating Current=5 to 40 mA							E	NC	K	J	—	P	—	J	NC				0C3			
0C- and 0D-		Transistor Series			See Transistor Data — page 17																						0C- and 0D-
0D3	—	Voltage Regulator	Cold Cathode		D.C. Starting Voltage=160 volts D.C. Operating Voltage=150 volts D.C. Operating Current=5 to 40 mA							E	NC	K	J	—	P	—	J	NC				0D3			
1A7GT	7	Converter		1.4	0.05	90	45	0	0.6	0.7	0.6	E	NC	F	P	G <sub>3</sub> , G <sub>5</sub>	G <sub>1</sub>	G <sub>2</sub>	F	NC				1A7GT			
1B3GT	2R	E.H.T. Rectifier		1.25	0.2	Max. P.I.V.=30 Kv. Max. Peak Ib=17 mA						E	IC	F	IC	—	IC	—	F, IS	IC				1B3GT			
1C4	5	R-F Amplifier		2.0	0.12	See 1M5G Characteristics						A	F	P	G <sub>2</sub>	F								1C4			
1C6	7	Converter		2.0	0.12	See 1C7G Characteristics						C	F	P	G <sub>2</sub>	G <sub>1</sub>	G <sub>3</sub> , G <sub>5</sub>	F						1C6			
1C7G	7	Converter		2.0	0.12	180	67.5	-3	1.5	2.0	0.7	E	NC	F	P	G <sub>3</sub> , G <sub>5</sub>	G <sub>1</sub>	G <sub>2</sub>	F	NC				1C7G			
1D4	5	Power Amplifier		2.0	0.24	See 1L5G Characteristics						B	F	P	G <sub>1</sub>	G <sub>2</sub>	F							1D4			
1D8GT	2, 3, 5	Pentode Amplifier Triode Amplifier		1.4	0.1	90 90	90	-9 0	5.0 1.1	1.0	0.2 0.043	925 575	E	NC	F	P <sub>p</sub>	G <sub>2</sub>	G <sub>1P</sub>	P <sub>T</sub>	F, G <sub>3</sub>	D				1D8GT		
1H5GT	2, 3	Amplifier		1.4	0.05	90	—	0	0.15	—	0.24	275	E	NC	F	P	NC	D	—	F	NC				1H5GT		
1K6	2, 2, 5	R-F Amplifier		2.0	0.12	See 1K7G Characteristics						C	F	P	D <sub>2</sub>	D <sub>1</sub>	G <sub>2</sub>	F							1K6		
1K7G	2, 2, 5	R-F Amplifier		2.0	0.12	135	135	-4.5	1.5	0.5	1.4	700	E	NC	F	P	D <sub>2</sub>	D <sub>1</sub>	G <sub>2</sub>	F	NC				1K7G		
1L5G	5	Power Amplifier		2.0	0.24	180	180	-6.0	9.5	2.3	0.137	2400	E	NC	F	P	G <sub>2</sub>	G <sub>1</sub>	—	F	NC				1L5G		
1M5G	5	R-F Amplifier		2.0	0.12	135	67.5	0	2.5	0.9	0.8	1000	E	NC	F	P	G <sub>2</sub>	NC	—	F, G <sub>3</sub>	NC				1M5G		

TYPE	Class	Use	Ef volts	If amps	Eb volts	Ec2 volts	Ec1 volts	Ib mA	Ic2 mA	r <sub>p</sub> MΩ	g <sub>m</sub> μmhos	Base	Socket Connections										TYPE	
													1	2	3	4	5	6	7	8	9	TC		
1P-		Photocell Series											See Photocell Data: page 15										1P-	
1P5GT	5	R-F Amplifier	1.4	0.05	90	90	0	2.3	0.7	0.8	750	E	NC	F	P	G <sub>2</sub>	NC	—	F	NC	G <sub>1</sub>	G <sub>1</sub>	1P5GT	
1Q5GT	4B	Power Amplifier	1.4	0.1	90	90	-4.5	9.5	1.3	0.09	2200	E	NC	F	P	G <sub>2</sub>	G <sub>1</sub>	—	F	NC	G <sub>1</sub>	—	1Q5GT	
1R5	7	Converter	1.4	0.05	45	45	0	0.7	1.9	0.6	R <sub>g1</sub> = 100 KΩ, g <sub>c</sub> = 300 μmhos	F	F-	G <sub>5</sub>	P	G <sub>2</sub>	G <sub>1</sub>	G <sub>4</sub>	G <sub>3</sub>	F+	G <sub>3</sub>	F+	1R5	
					90	67.5	0	1.6	3.2	0.6	R <sub>g1</sub> = 100 KΩ, g <sub>c</sub> = 235 μmhos													
1S5	2, 5	A-F Amplifier	1.4	0.05	67.5	67.5	0	1.6	0.4	0.6	625	F	F-	NC	D	G <sub>2</sub>	P	G <sub>1</sub>	F+	G <sub>1</sub>	F+	1S5		
1T4	5	R-F Amplifier	1.4	0.05	45	45	0	1.7	0.7	0.35	700	F	F-	G <sub>3</sub>	P	G <sub>2</sub>	NC	G <sub>3</sub>	F-	G <sub>1</sub>	F+	G <sub>1</sub>	F+	1T4
					90	67.5	0	3.5	1.4	0.5	900													
1U4	5	R-F Amplifier	1.4	0.05	90	90	0	1.0	0.5	1.0	900	F	F-	P	G <sub>2</sub>	NC	NC	G <sub>3</sub>	F+	G <sub>1</sub>	F+	1U4		
1U5	2, 5	A-F Amplifier	1.4	0.05	67.5	67.5	0	1.6	0.4	0.6	625	F	F-	G <sub>3</sub>	P	G <sub>2</sub>	D	NC	G <sub>1</sub>	F+	G <sub>1</sub>	F+	1U5	
2A5	5	Power Amplifier	2.5	1.75								C	H	P	G <sub>2</sub>	G <sub>1</sub>	K	H	G <sub>3</sub>	K	H	ES	2A5	
2E26	4BZ	V.H.F. Beam Power Amplifier	6.3	0.8	250	160	-14	35	7	—	—	E	K	H	G <sub>2</sub>	G <sub>3</sub>	K	G <sub>3</sub>	G <sub>1</sub>	K	G <sub>3</sub>	H	ES	2E26
2N-		Transistor Series											See Transistor Data: page 17										2N-	
3A4	4B	Power Amplifier	1.4	0.200	150	90	-8.4	13.3	2.2	0.1	1900	F	F-	P	G <sub>2</sub>	G <sub>1</sub>	F <sub>m</sub>	P	F+	P	F+	P	F+	3A4
					90	90	-7	7.4	1.4	0.1	1575													
3S4	4B	Power Amplifier	1.4	0.10	90	90	-7	7.4	1.4	0.1	1575	F	F-	P	G <sub>1</sub>	G <sub>2</sub>	F <sub>m</sub>	P	F+	P	F+	P	F+	3S4
					90	90	-7	6.1	1.1	0.1	1425													
3V4	4B	Power Amplifier	1.4	0.10	90	90	-4.5	9.5	2.1	0.1	2150	F	F-	P	G <sub>2</sub>	NC	F <sub>m</sub>	NC	G <sub>3</sub>	F+	G <sub>1</sub>	F+	G <sub>1</sub>	3V4
					90	90	-4.5	7.7	1.7	0.12	2000													

TYPE	Class	Use	Ef volts	If amps	Eb volts	Ec <sub>1</sub> volts	Ib mA	Ic <sub>2</sub> mA	I <sub>p</sub> mA	g <sub>m</sub> μmhos	Base	Socket Connections										TYPE		
												1	2	3	4	5	6	7	8	9	TC			
5AS4	2R, 2R	Full-wave Rectifier (Capacitive Filter Input)	5.0	3.0	Max. A.C. Volts/Plate = 550 volts Max. P.I.V. = 1550 volts.						E	NC	F	NC	P <sub>2</sub>	NC	P <sub>1</sub>	NC	F				5AS4	
5U4G	2R, 2R	Full-wave Rectifier (Capacitive Filter Input)	5.0	3.0	Max. A.C. Volts/Plate = 450 volts Max. P.I.V. = 1550 volts.						E	NC	F	—	P <sub>2</sub>	—	P <sub>1</sub>	—	F				5U4G	
5V4G	2R, 2R	Full-wave Rectifier (Capacitive Filter Input)	5.0	2.0	Max. A.C. Volts/Plate = 375 volts Max. P.I.V. = 1400 volts.						E	NC	H	—	P <sub>2</sub>	—	P <sub>1</sub>	—	H				5V4G	
5Y3GT	2R, 2R	Full-wave Rectifier (Capacitive Filter Input)	5.0	2.0	Max. A.C. Volts/Plate = 350 volts Max. P.I.V. = 1400 volts.						E	NC	F	—	P <sub>2</sub>	—	P <sub>1</sub>	—	F				5Y3GT	
6A7	7	Converter	6.3	0.3							D	H	P	G <sub>3</sub> G <sub>5</sub>	G <sub>2</sub>	G <sub>1</sub>	K	H				G <sub>4</sub>	6A7	
6A8G	7	Converter	6.3	0.3	250	100	—3	3.5	2.7	0.36		E	NC	H	P	G <sub>3</sub> G <sub>5</sub>	G <sub>2</sub>	G <sub>1</sub>	H	K			G <sub>4</sub>	6A8G
6AE8	3, 6	Converter	6.3	0.3	250	85	—2	3.5	3.2	1.5		G	G <sub>2</sub> G <sub>4</sub>	G <sub>1</sub>	K	H	PH	G <sub>3</sub> GT	PT			IC	6AE8	
6AL5	2, 2	Detector	6.3	0.3							F	K <sub>1</sub>	P <sub>2</sub>	H	H	K <sub>2</sub>	IS	P <sub>1</sub>					6AL5	
6AM8	2, 5	Amplifier	6.3	0.45	200	150	*	11.5	2.7	—		G	K <sub>p</sub>	G <sub>1</sub>	G <sub>2</sub>	H	P	K <sub>p</sub>	D			G <sub>3</sub> IS	6AM8	
6AN8	3, 5	Triode Amplifier Pentode Amplifier	6.3	0.45	200	—	—6	13.0	—	0.057		G	PT	GT	K <sub>T</sub>	H	H	P <sub>p</sub>	G <sub>2</sub>	G <sub>1</sub>			G <sub>3</sub> K <sub>p</sub>	6AN8
6AQ5	4B	Power Amplifier	6.3	0.45	250	250	—12.5	45	4.5	0.052		F	G <sub>1</sub>	K	H	H	P	G <sub>2</sub>	G <sub>1</sub>					6AQ5
6AR7GT	2, 2, 5	I-F Amplifier	6.3	0.3	250	250	—2	7.0	1.8	1.0		E	H	ES	P	G <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	K	H			G <sub>1</sub>	6AR7GT
6AU6	5	A-F Amplifier	6.3	0.3	250	150	*	10.6	4.3	1.0		F	G <sub>1</sub>	G <sub>3</sub> IS	H	H	P	G <sub>2</sub>	K					6AU6
6AU8	3, 5	Triode Amplifier Pentode Amplifier	6.3	0.6	—	—	*	9	—	0.008		G	K <sub>T</sub>	GT	PT	H	H	K <sub>p</sub>	G <sub>3</sub>	G <sub>1</sub>	G <sub>2</sub>	P <sub>p</sub>		6AU8
6AV6	2, 2, 3	A-F Amplifier	6.3	0.3	250	—	—2	1.2	—	0.0625		F	G <sub>1</sub>	K	H	H	D <sub>2</sub>	D <sub>1</sub>	P					6AV6

See 6A8G Characteristics

Anode G<sub>2</sub> = 250 volts, 4 mA.R<sub>g1</sub> = 50 KΩ, g<sub>c</sub> = 550 μmhos

Triode Plate 115 volts, 4.5 mA.

R<sub>g1</sub> = 30 KΩ, g<sub>c</sub> = 750 μmhos

Max. P.I.V. = 330 volts

Max. D.C. Output/Plate = 9 mA.

Max. Peak I<sub>b</sub>/Plate = 54 mAR<sub>k</sub> = 120 ΩR<sub>k</sub> = 180 ΩR<sub>L</sub> = 5000Ω, W<sub>o</sub> = 4.5 wR<sub>k</sub> = 68Ωμ = 40, R<sub>k</sub> = 150ΩR<sub>k</sub> = 82Ω

μ = 100

TYPE	Class	Use	Ef volts	If amps	Eb volts	Ec2 volts	Ec1 volts	Ib mA	Ic2 mA	rp MΩ	gm μmhos	Socket Connections										TYPE		
												1	2	3	4	5	6	7	8	9	TC			
6AW8	3, 5	Triode Amplifier	6-3	0-6	200	—	-2	4	—	0.017	4000	μ = 70 Rk = 180Ω	G	KT	GT	PT	H	H	G3	G1	G2	Pp		6AW8
		Pentode Amplifier			200	150	*	13	3-5	0-4	9000		Kp	—	—	—	—	—	—	—	—	—	—	—
6AX4GT	2	TV Damper Diode	6-3	1-2	Max. P.I.V. = 4400 volts Max. Peak Ib = 750 mA		Max. D.C. Ib = 125 mA												6AX4GT					
6B6G	2, 2, 3	A-F Amplifier	6-3	0-3	250	—	-2	0-9	—	0-091	1100	μ = 100	E	NC	H	P	D2	D1	—	—	H	K	G1	6B6G
6B7	2, 2, 5	R-F Amplifier	6-3	0-3	See 6B8G Characteristics										6B7									
6B7S	2, 2, 5	R-F Amplifier	6-3	0-3	See 6G8G Characteristics										6B7S									
6B8G	2, 2, 5	R-F Amplifier	6-3	0-3	250	125	-3	9-0	2-3	0-6	1125		E	NC	H	P	D2	D1	G2	H	K	G1	6B8G	
6BA6	5	R-F Amplifier	6-3	0-3	250	100	*	11-0	4-2	1-0	4400	Rk = 68Ω	F	G1	IS	H	H	P	G2	G2	K	G1	6BA6	
6BC8	3, 3	Cascade Amplifier for TV Tuner	6-3	0-4	150	—	*	10	—	—	6200	μ = 35, Rk = 220Ω	G	PT2	GT2	KT2	H	H	PT1	GT1	KT1	IS	6BC8	
6BE6	7	Converter	6-3	0-3	250	100	-1.5	2-9	6-8	1-0	Rg1 = 20KΩ, gc = 475 μmhos		F	G1	G5	H	H	P	G2	G2	G3	G4	6BE6	
6BF5	5	Vertical Deflection Amplifier	6-3	1-2	Max. D.C. Plate Volts = 250 volts Max. D.C. Cathode Current = 40 mA		Abs. Max. Peak Positive Pulse = 6000 volts Max. Plate Dissipation = 5 watts												6BF5					
6BH8	3, 5	Triode Amplifier	6-3	0-6	150	—	-5	9-5	—	0-0051	3300	μ = 17	G	KT	GT	PT	H	H	Kp	G1	G2	Pp		6BH8
		Pentode Amplifier			200	125	*	15	3-4	0-15	7000	Rk = 82Ω	G3	—	—	—	—	—	—	—	—	—	—	—
6BK8	5	Low Noise A-F Amplifier	6-3	0-3	250	140	-2	3-0	0-05	2	1850		G	G2	IS	K	H	H	P	IS	G3	G1	6BK8	
6BJ5	5	Power Amplifier	6-3	0-64	250	250	-5	35	5-5	0-04	10,500	RL = 7 KΩ, Wc = 4w	F	G1	G3	H	H	P	IC	G2			6BJ5	
6BQ6GTB/ 6CU6	4B	Horizontal Deflection Amplifier	6-3	1-2	Max. Plate D.C. Voltage = 600 volts Max. D.C. Cathode Current = 112.5 mA		Max. Peak Positive Plate Voltage = 6000 volts Max. Plate Dissipation = 11 w												6BQ6GTB/ 6CU6					
		Power Amplifier			250	250	-7.5	48	5-5	0-038	11,300	RL = 5000Ω, Wc = 6-0w	E	NC	H	NC	G2	G1	—	—	H	G3	K	G3
6BQ5	5	Power Amplifier	6-3	0-76	250	—	*	9-0	—	0-006	6400	Rk = 220Ω	G	IC	G1	K	H	H	IC	P	IC	G2	6BQ5	
6BQ7A	3, 3	Cascade Amplifier in TV tuner	6-3	0-4	150	—	*	9-0	—	0-006	6400	Rk = 220Ω	G	PT2	GT2	KT2	H	H	PT1	GT1	KT1	IS	6BQ7A	

TYPE	Class	Use	Ef volts	If amps	Eb volts	Ec2 volts	Ec1 volts	Ib mA	Ic2 mA	rp MΩ	gm μmhos	Base	Socket Connections										TYPE					
													1	2	3	4	5	6	7	8	9	TC						
6BV7	2, 2, 5	Power Amplifier	6-3	0-8	180	180	-4	20	3-5	0-13	8000	G	D1	P	G2	H	H	D2	K	G1	K	G3			6BV7			
					250	250	-5	38	6-0	10,000																		
6BZ6	5	I-F Amplifier	6-3	0-3	200	150	*	11	2-6	0-6	6100	F	G1	K	H	H	P	G2	G3	IS						6BZ6		
6C6	5	A-F Amplifier	6-3	0-3	200	150	*	9-5	2-8	0-6	6200	C	H	P	G2	G3	K	IS	H					G1		6C6		
6CB6	5	I-F Amplifier	6-3	0-3	200	150	*	9-5	2-8	0-6	6200	F	G1	K	H	H	P	G2	G3	IS						6CB6		
6CG7	3, 3	Horizontal Deflection Oscillator	6-3	0-6	Max. D.C. Plate Voltage=300 volts Max. Plate Negative Pulse=Grid Volts=600 volts	Max. D.C. Plate Voltage=300 volts Max. Peak Cathode Curr.=300 mA Max. D.C. Cathode Curr.=20 mA																					6CG7	
		Vertical Deflection Oscillator			Max. D.C. Plate Voltage=300 volts Max. Peak Cathode Curr.=70 mA Max. D.C. Cathode Curr.=20 mA																							
6CH8	3, 5	Triode Amplifier	6-3	0-45	200	—	-6	13	—	0-058	3300	G	KT	Pp	G2	H	H	Kp	G1p	G1T	PT					6CH8		
		Pentode Amplifier			200	150	*	9-5	2-8	0-3	6200																	
6CM7	3, 3	Vertical Deflection Oscillator	6-3	0-6	Unit 1 Max. D.C. Plate Voltage=500 volts Max. Peak Neg. Pulse Grid Voltage = 200 volts	Max. D.C. Plate Voltage=500 volts Max. Peak Cathode Curr.=70 mA Max. D.C. Cathode Curr.=15 mA																					6CM7	
		Vertical Deflection Amplifier			Unit 2 Max. D.C. Plate Voltage=500 volts Max. Peak Positive Pulse Plate Voltage=2200 volts	Max. Peak Neg. Pulse Grid Voltage = 200 volts																						
6CQ8	3, 4	Converter in TV Tuner	6-3	0-45	125	125	-1	12	1-2	1-4	5800	G	PT	G1B	G2	H	H	PB	IS	KB	KT	G1T				6CQ8		
					Rk=56Ω	15	—	—	8000																			
6CS6	7	Sync. Separator and Clipper	6-3	0-3	10	30	0	1-2	4-1			F	G1	K	H	H	P	G2	G4	G3						6CS6		
6CZ5	4B	Vertical Deflection Amplifier	6-3	0-45	Max. D.C. Plate Voltage=315 volts Max. Peak Positive Pulse Plate Voltage=2200 volts	Max. Peak Neg. Pulse Grid Voltage = 250 volts Max. Peak Cathode Curr.=140 mA																						6CZ5
6D6	5	R-F Amplifier	6-3	0-3	250	100	*	0-22	5-5			C	H	P	G2	G3	K, IS	H								6D6		
6DQ6A	4B	Horizontal Deflection Amplifier	6-3	1-2	Max. D.C. Plate Voltage=700 volts Max. Peak Positive Pulse Plate Voltage=6000 volts	Max. Peak Cathode Curr.=440 mA Max. Plate Dissipation=15 watts																						6DQ6A
6DT6	5	F-M Detector	6-3	0-3	250	100	*	0-22	5-5			F	G1	K	H	H	P	G2	G3	IS						6DT6		
6F6G	5	Power Amplifier	6-3	0-7	250	250	-16-5	34	6-5	0-08	2500	E	NC	H	P	G2	G1	—	—	H	H	K	G3				6F6G	
6G8G	2, 2, 5	R-F Amplifier	6-3	0-3	250	125	-3	9-5	2-2	0-5	1210	E	NC	H	P	D2	D1	G2	H	H	K	G1				6G8G		

See 6J7G Characteristics

See 6U7G Characteristics



TYPE	Class	Use	Ef volts	If amps	Eb volts	Ec2 volts	Ec1 volts	Ib mA	Ic2 mA	rp MΩ	gm μmhos	Socket Connections										TYPE				
												1	2	3	4	5	6	7	8	9	TC					
6H6GT	2, 2	Detector	6.3	0.3	Max. A.C. Supply/Plate=150 v. r.m.s. Max. D.C. Output Curr.=8 mA Min. Effective Supply Impedance/Plate = 30Ω (halfwave)								E	IS	H	D2	K2	D1	—	H	K1				6H6GT	
6J5GT	3	Amplifier	6.3	0.3	250	—	-8	9.0	—	-0.077	2600	E	NC	H	P	—	G1	—	H	K					6J5GT	
6J6	3, 3	Amplifier	6.3	0.45	100	—	*	8.5	—	-0.07	5300	F	PT2	PT1	H	H	GT1	GT2	K							6J6
6J7G	5	A-F Amplifier	6.3	0.3	100 250	100 100	-3 -3	2.0 2.0	0.5 0.5	1.0 1.0	1185 1225	E	IS	H	P	G2	G3	—	—	H	K		G1			6J7G
6J8GA	3, 6	Converter	6.3	0.45	250	100	-3	1.3	2.9	4.0	Triode Eb=100 v., Ib=5.0 mA Rg1=50 KΩ, gc=290 μmhos	E	NC	H	PH	G2 G4	G1T G3	PT	H	K		G1H			6J8GA	
6K8G	3, 6	Converter	6.3	0.3	250	100	-3	2.5	6.0	0.6	Triode Eb=100 v., Ib=3.8 mA Rg1=50 KΩ, gc=350 μmhos	E	NC	H	PH	G2 G4	G3	PT	H	K		G1H			6K8G	
6S4	3	Vertical Deflection Amplifier	6.3	0.6	Max. D.C. Plate Voltage=500 volts Max. D.C. Plate Current=30 mA						Max. Peak Positive Pulse Plate Voltage=2000 Max. Plate Dissipation=7.5 watts	G	IC	K	G	H	IC	H	IC	P					6S4	
6SA7GT	7	Converter	6.3	0.3	250	100	—	3.5	8.5	1.0	Rg1 = 20 KΩ gc = 450 μmhos	E	NC	H	P	G2 G4	G1	K	H	G3						6SA7GT
6SJ7GT	5	A-F Amplifier	6.3	0.3	250	100	-3	3.0	0.8	1.0	1650	E	IS	H	G3	G1	K	G2	H	P						6SJ7GT
6SK7GT	5	R-F Amplifier	6.3	0.3	250	100	-3	9.2	2.6	0.8	2000	E	IS	H	G3	G1	K	G2	H	P						6SK7GT
6SN7GTA	3, 3	A-F Amplifier Vertical Deflection Amplifier	6.3	0.6	250	—	-8	9.0	—	-0.077	2600	E	GT2	PT2	KT2	GT1	PT1	KT1	H	H						6SN7GTA
6SQ7GT	2, 2, 3	A-F Amplifier	6.3	0.3	250	—	-2	1.1	—	-0.085	1175	E	NC	G	K	D2	D1	P	H	H						6SQ7GT
6U7G	5	R-F Amplifier	6.3	0.3	250	100	-3	8.2	2.0	0.8	1600	E	NC	H	P	G2	G3	—	H	K	IS		G1			6U7G
6U8	3, 5	Converter in TV Tuner	6.3	0.45	150 250	— 110	* *	18 10	— 3.5	-0.05 0.4	8500 5200	G	PT	Gp	G2	H	H	Pp	Kp	GT						6U8
6V6GT	4B	Power Amplifier	6.3	0.45	250	250	-12.5	45	4.5	-0.05	4100	E	NC	H	P	G1	G2	—	H	K	G3					6V6GT



Type	Maximum Overall Length	Maximum Diagonal	Minimum Screen Size	Diagonal Deflection Angle	External Conductive Coating $\mu\mu\text{F}$	MAXIMUM RATINGS						TYPICAL GRID-DRIVE SERVICE				Minimum PM Ion-trap Magnet Oersted	Type
						Ultror* volts	Focus Electrode volts	Grid No. 2 volts	Grid No. 1§ volts	Peak H-K volts		Ultror* volts	Grid No. 2 volts	Grid No. 1 volts	Focus Electrode volts		
17AVP4A	16"	16 $\frac{3}{8}$ "	14 $\frac{1}{4}$ " $\times$ 10 $\frac{3}{8}$ "	90°	1200 to 1500	16000	+1000 to -500†	500	-125	410	180	14000	300	-55 to +310	-28 to -72	31	17AVP4A
17HP4B	19 $\frac{1}{16}$ "	16 $\frac{3}{8}$ "	14 $\frac{1}{4}$ " $\times$ 10 $\frac{3}{8}$ "	70°	750 to 1500	16000	+1000 to -500†	500	-125	410	180	14000	300	-55 to +300	-28 to -72	31	17HP4B
21ALP4A	20 $\frac{3}{8}$ "	21 $\frac{1}{2}$ "	19 $\frac{3}{8}$ " $\times$ 15"	90°	500 to 750	18000	+1000 to -500†	500	-125	410	180	16000	300	-65 to +350	-28 to -72	33	21ALP4A

**Notes:**

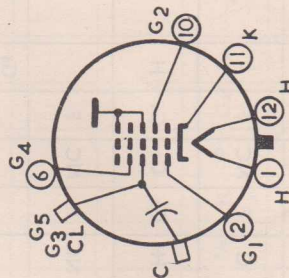
Each of the above Radiotron picture tubes feature:—  
 Electrostatic focusing, Magnetic deflection.  
 Aluminized Screen.  
 Filterglass Face-plate.

\*The **Ultror** is the electrode to which is applied the highest d.c. voltage for accelerating the electrons in the beam prior to its deflection. (G<sub>3</sub>, G<sub>s</sub> and CL)

†This value has been specified to take care of the condition where an a.c. voltage is provided for dynamic focusing.

§Positive bias value = 0 volts; peak positive value = 2 volts.

●During equipment warm-up not exceeding 15 secs.



TYPE	Class	Use	Ef	If	Maximum Frequency for full input Mc/s	TYPICAL OPERATION					Base	SOCKET CONNECTIONS									TYPE							
						Eb volts	Ec <sub>2</sub> volts	Ec <sub>1</sub> volts	Ib mA	W <sub>in</sub> watts		W <sub>o</sub> watts	1	2	3	4	5	6	7	8		9	TC					
42	5	Power Amplifier	6.3	0.7		See 6F6G Characteristics					C	H	P	G <sub>2</sub>	G <sub>1</sub>	K	H							42				
80	2R, 2R	Full-wave Rectifier	5.0	2.0		See 5Y3GT Characteristics					A	F	P <sub>2</sub>	P <sub>1</sub>	F										80			
83V	2R, 2R	Full-wave Rectifier	5.0	3.0		See 5V4G Characteristics					A	H	P <sub>2</sub>	P <sub>1</sub>	H, K										83V			
805	3Z	R-F Power Amplifier, Oscillator & Class B Modulator	10.0	3.25	30	1250	—	-160	160	16	140	H	G	F	NC	F								P	805			
807	4BZ	Beam Power Amplifier	6.3	0.9	60	600	300	-85	100	0.4	44	B	H	G <sub>2</sub>	G <sub>1</sub>	G <sub>3</sub>	H							P	807			
810	3Z	Transmitting Triode	10.0	4.5	30	2000	—	-350	250	35	380	H	NC	F	NC	F						Side Cap G		P	810			
813	4BZ	Beam Power Amplifier	10.0	5.0	30	2000	350	-175	200	4.3	300	J	F	NC	G <sub>2</sub>	G <sub>1</sub>	G <sub>3</sub>	NC	F						813			
833A	3Z	Transmitting Triode	10.0	10.0	30	3000	—	-240	335	26	800														833A			
866A	2R	Half-wave Rectifier	2.5	5.0	Temp. Range 20-60°C. Max. peak current = 1.0 A. Max. P.I.V. = 10 Kv. Max. average current = 0.25 A.								H	F	NC	NC	F									P	866A	
868-934		Photocells			See Photocell data: page 15.																							868-934
872A	2R	Half-wave Rectifier	5.0	10.0	Temp. Range 20-60°C. Max. peak current = 5.0 A. Max. P.I.V. = 10 Kv. Max. average current = 1.25 A.								H	NC	NC	KS	F	NC	F								P	872A
884	3	Gas Triode	6.3	0.6	Relaxation Oscillator Service:— Peak Anode Volts = 300 Peak Cathode Current = 0.3 A								E	NC	H	P	—	G	—	H	K						884	
892R	3Z	Power Triode	11.0	60.0	1.6	8000	—	-1300	820	430	5000														892R			
1620	5	Low Microphony A-F Amplifier	6.3	0.3	See 6I7G Characteristics								E	IS	H	P	G <sub>2</sub>	G <sub>3</sub>	—	H	K				G <sub>1</sub>	1620		
5762	3Z	Power Triode	12.6	29	30	4700	—	-400	960	720	4200															5762		
5786	3Z	Power Triode	11.0	12.5	160	2500	—	-350	400	75	810															5786		
6146	4BZ	V.H.F. Power Valve	6.3	1.25	60	600	150	-47	112	0.4	52	E	K	G <sub>3</sub>	H	G <sub>2</sub>	G <sub>1</sub>	K	G <sub>3</sub>	IS					P	6146		

TYPE	Class	Use	Ef volts	If amps	Eb volts	Ec2 volts	Ec1 volts	Ib mA	Ic2 mA	r <sub>p</sub> MΩ	g <sub>m</sub> μmhos	Socket Connections										TYPE								
												Base	1	2	3	4	5	6	7	8	9		TC							
A2087	2	Noise Generator to 500 Mc/s	3-7	0.5	100	—	—	5	Max. Eb = 100 volts, Max. W <sub>b</sub> = 2w Max. Ib = 20 mA, Max. Ef = 4.4 v.				F	P	IC	F	F	P	NC	IC										A2087
AV11	2	Half-wave Rectifier	2.5	1.75	Max. P.I.V. = 12,500 volts, Max. aver. Ib = 20 mA Max. peak Ib = 200 mA							A	F	NC	NC	F													AV11	
AV25	3	Demonstration Triode	6.0	1.6	250	—	-110 to +140	0 to 110	—	—	—	See Application Note: Radiotronics, October, 1956	H	G	F	P	F												AV25	
AV26	3	Ionization Vacuum Gauge	3.1	4.7	—40	—	+150	Grid Current = 20 mA Sensitivity = 50 μA/mA/micron				See Applications Note: Radiotronics, July, 1956	F	F <sub>m</sub>	NC	G	F	G	NC	F+					Side Electrodes Ion Collector				AV26	
AV33A	2	Control Diode	3.7	0.96	100	—	—	3	Superseded by AV36A		See Applications Note: Radiotronics, July, 1953	E	F	F	—	F	P	F	F	F									AV33A	
AV34	2	Thermocouple Gauge	Set	0.140 0.250	Thermocouple output at zero pressure = 10 mV Thermocouple output at zero pressure = 22 mV						See Applications Note: Radiotronics, October, 1954	F	ThC	H	H	NC	ThC	H	H										AV34	
AV36A	2	Control Diode	3.0	0.9	100	—	—	1			See Applications Note: Radiotronics, June, 1957	E	F	F	—	F	P	F	F	F									AV36A	
AV36B, C	2	Control Diode			For data on control diodes with heavier filament wire refer Power Valve division, A.W.V.							See Semi-conductor Data, page 16										AV36B, C								
GEX34 to GEX66		Semi-Conductor Diodes																				GEX34 to GEX66								
KT61	4B	Power Amplifier	6.3	0.95	250	250	—4.4	40	4.3	0.07	9800	E	NC	H	P	G <sub>2</sub>	G <sub>1</sub>	—	H	K				K	G <sub>3</sub>				KT61	
KT66	4B	Power Amplifier	6.3	1.27	250	250	—15	85	6.3	0.022	6300	E	NC	H	P	G <sub>2</sub>	G <sub>1</sub>	—	H	K				K	G <sub>3</sub>				KT66	
KT88	4B	Power Amplifier	6.3	1.8	250	250	Set	140		0.012	11,000	E	ES	H	P	G <sub>2</sub>	G <sub>1</sub>	—	H	K				K	G <sub>3</sub>				KT88	
N78	5	Power Amplifier	6.3	0.64								F	G <sub>1</sub>	K	H	H	P	K	G <sub>2</sub>										N78	
N709	5	Power Amplifier	6.3	0.76								G	IC	G <sub>1</sub>	K	H	H	IC	P	IC									N709	

See 6BJ5 Characteristics

See 6BQ5 Characteristics

TYPE	Application	E <sub>ign</sub> (p-k) volts	E <sub>stab.</sub> volts	E <sub>ign</sub> (ign-k) volts	I min.-max. mA	Regulation V	Base	Socket Connections									TYPE	
								1	2	3	4	5	6	7	8	9		
QS75/20	Voltage Stabilizer	110	75 ± 5	—	2 — 20	6	F	K	K	K	P	P	P	P	P			QS75/20
QS75/40	Voltage Stabilizer	105 max.	75 ± 5	—	5 — 40	6.5	E	NC	K	J	NC	P	NC	J	NC			QS75/40
QS83/3	Voltage Stabilizer	125 max.	83 ± 2	—	1 — 5	0.3	F	P	K	IC	K	P	IC	K				QS83/3
QS95/10	Voltage Stabilizer	110	95 ± 5	150	2 — 10	5	E	K	K	K	ign	P	P	P				QS95/10
QS108/45	Voltage Stabilizer	120	108 ± 5	150	5 — 45	5	E	P	P	ign	K	K	K	K	K	K		QS108/45
QS150/15	Voltage Stabilizer	177	150 ± 5	240	2 — 15	5	F	K	K	K	ign	P	P	P				QS150/15
QS150/40	Voltage Stabilizer	180	150 + 10 — 5	—	5 — 40	5.5	E	NC	K	J	NC	P	NC	J	NC			QS150/40
QS150/45	Voltage Stabilizer	170	150 ± 5	200	5 — 45	5	E	P	P	ign	K	K	K	K	K			QS150/45
STV280/40	Voltage Stabilizer Four Gap	420	280	—	5 — 35	—	K	P <sub>4</sub>	K	P <sub>2</sub>	P <sub>3</sub>	P <sub>1</sub>						STV280/40
STV280/80	Voltage Stabilizer Four Gap	420	280	—	5 — 70	—	K	P <sub>4</sub>	K	P <sub>2</sub>	P <sub>3</sub>	P <sub>1</sub>						STV280/80
X79	Triode-Hexode Converter	See 6AE8 Characteristics						G	G <sub>2</sub> , G <sub>4</sub>	G <sub>1</sub>	K	H	H	P <sub>H</sub>	G <sub>3</sub> , G <sub>T</sub>	PT	IC	X79
Z729	Low Noise A-F Amplifier	See 6BK8 Characteristics						G	G <sub>2</sub>	IS	K	H	H	P	IS	G <sub>3</sub>	G <sub>1</sub>	Z729

# PHOTOCELL DATA

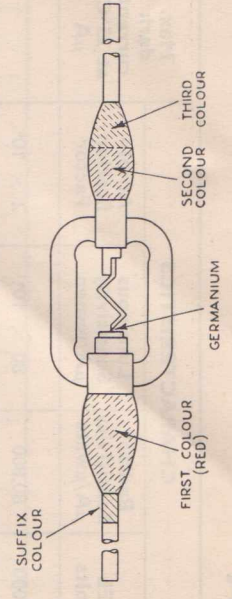
TYPE	Application	Type	Wave-length of Max. response angstroms	MAXIMUM RATINGS				CHARACTERISTICS				Max. dark current at 25°C. $\mu\text{A}$	TYPE
				Eb volts	Aver. 1k density $\mu\text{A}/\text{sq. in.}$	Aver. 1k $\mu\text{A}$	Ambient Temp. °C.	Eb volts	Radiant Sensitivity $\mu\text{A}/\mu\text{watt}$	Luminous Sensitivity $\mu\text{A}/\text{lumen}$	Amplification Factor		
IP21	For specialized scientific applications involving extremely low light levels.	9 Stage Multiplier	4000	1250	—	100	—	1000	80,800	$80 \times 10^6$	$2 \times 10^6$	2 $\times 10^6$	IP21
IP22	Response similar to the eye—especially useful in colorimetry.	9 Stage Multiplier	4200	1250	—	1000	—	1000	430	$.06 \times 10^6$	$2 \times 10^5$	$2 \times 10^5$	IP22
IP28	For applications involving very low ultraviolet radiation levels.	9 Stage Multiplier	3400	1250	—	500	—	1000	61,800	$50 \times 10^6$	$1.25 \times 10^6$	$1.25 \times 10^6$	IP28
IP39	Similar to 929, but has a non-hygroscopic base.	Vacuum Single Unit	4000	250	25	5	75	250	0.045	45	—	—	IP39
IP40	Similar to 930, but has a non-hygroscopic base.	Gas Single Unit	8000	100	25	5	100	90	0.011	35	5.5	0.1	IP40
IP42	Small, head-on type. For use where space is limited.	Vacuum Single Unit	4800	180	25	0.4	75	180	0.025	37	—	0.005	IP42
868	For sound reproduction.	Gas Single Unit	8000	100	25	5	100	90	0.008	77	8.0	0.1	868
917	Low-leakage type for light measuring and relay applications.	Vacuum Single Type	8000	500	30	10	100	250	0.0018	20	—	0.005	917
920	For push-pull sound reproduction from a double sound-track.	Gas Twin Type	8000	90	15	2	100	90	0.009	85	9.0	0.1	920
921	Cartridge type—for relay applications.	Gas Single Type	8000	90	30	3	100	90	0.012	119	10.0	0.01	921
922	Cartridge type—for relay applications.	Vacuum Single Type	8000	500	30	5	100	250	0.0018	20	—	0.005	922
929	For light-measuring and relay applications.	Vacuum Single Type	4000	250	25	5	75	250	0.045	45	—	0.0125	929
930	For sound reproduction and relay applications.	Gas Single Type	8000	90	30	3	100	90	0.012	111	10.0	0.1	930
931A	For light operated relays, X-ray exposure control and facsimile transmission.	9 Stage Multiplier	4000	1250	—	1000	—	1000	24,000	$24 \times 10^6$	$8 \times 10^5$	$8 \times 10^5$	931A
934	For sound and facsimile equipment.	Vacuum Single Stage	4000	250	30	4	75	250	0.030	30	—	0.005	934

# SEMI-CONDUCTOR DIODE DATA

TYPE	Application	Turnover Voltage volts	CURRENT AT GIVEN VOLTAGE				TYPE
			-100 volts	-50 volts	-10 volts	+1 volt	
<b>GEX34</b>	TV sound detector; sound noise limiter; high level vision detector. Replaces GEX44 and GEX44/1.	>60	—	80 $\mu$ A	5 $\mu$ A	3.5 mA	<b>GEX34</b>
<b>GEX35</b>	Low level vision detector.	>30	Functionally tested at 35 Mc/s. to give 400 $\mu$ A rectified current in 6,800 ohms load.				<b>GEX35</b>
<b>GEX36</b>	Mixer diode—for use as telephony modulator at higher voltage levels than GEX64.	—	Available in groups matched for forward voltage at 5 mA in the range 0.625 to 0.875 volts.				<b>GEX36</b>
<b>GEX39</b>	High efficiency diode with good R-F performance and low forward impedance.	—	—	—	<100 $\mu$ A	>15 mA	<b>GEX39</b>
<b>GEX45/1</b>	Medium back-resistance diode for all purposes.	>75	—	200 $\mu$ A	<100 $\mu$ A	6 mA >4 mA	<b>GEX45/1</b>
<b>GEX54</b>	High back-resistance diode.	>100	—	45 $\mu$ A	3 $\mu$ A	6 mA >3 mA	<b>GEX54</b>
<b>GEX54/3</b>	High back-resistance diode.	>120	—	—	—	>3 mA	<b>GEX54/3</b>
<b>GEX54/4</b>	High back-resistance diode. Obsolete.	>170	—	—	—	>3 mA	<b>GEX54/4</b>
<b>GEX56</b>	Very high back-resistance — for computer use.	—	—	—	<2 $\mu$ A	>1mA	<b>GEX56</b>
<b>GEX64</b>	Mixer diode with very low forward resistance. Used as telephony modulator in multichannel systems and meter rectifier.	—	Available in groups matched for forward voltage at 5 mA in the range 0.2 to 0.3 volts.				<b>GEX64</b>
<b>GEX66</b>	V.H.F. mixer for use to 1,000 Mc/s. In the TV range up to 100 Mc/s. the noise as a mixer is no greater than that from the silicon mixer. Efficiency is good and noise fairly low up to 1000 Mc/s. (considerable response at 10,000 Mc/s.).	—	Current at 0.5 volt is >5 mA. Current at -1 volt is <50 $\mu$ A.				<b>GEX66</b>

**Notes:**

- (1) In the colour coding system, red indicates the end which becomes positive when used in a rectifier circuit. (This is equivalent to the cathode of a thermionic diode.)
- (2) Operating temperature -40°C. to +70°C. Storage temperature -40°C. to +85°C.
- (3) Shelf life is expected to be greater than 10 years. Operating life is greater than 10,000 hours.





# RADIOTRON TRANSISTORS

TYPE	MAXIMUM RATINGS (Absolute)					TYPICAL OPERATION AND CHARACTERISTICS—COMMON EMITTER CIRCUIT (Ambient temp. 25°C.)										Alpha cut-off frequency Kc/s	TYPE
	D.C. Collector to Base volts	D.C. Collector Current mA	Collector Dissipation mW	Ambient Temperature °C.	I <sub>co</sub> * μA	D.C. Collector to Emitter volts	D.C. Collector Current mA	Power Gain			Noise Factor db	Small Signal H Parameters					
Class of Service								Input Resistance ohms	Load Resistance ohms	Power Gain db		h <sub>ie</sub> ohms	h <sub>re</sub>	h <sub>fe</sub>	h <sub>oe</sub> μmhos		
OC602	Class A A-F Amplifier	-20	-50	50 at T <sub>a</sub> = 45°C.	45	10 at V <sub>CE</sub> = -6v	-1	474	30,000	40	4 < 10	700	8 × 10 <sup>-4</sup>	35	85	500	OC602
OC603	Class A High gain A-F Amplifier	-20	-50	50 at T <sub>a</sub> = 45°C.	45	10 at V <sub>CE</sub> = -6v	-1	563	30,000	43	3 < 5	900	8 × 10 <sup>-4</sup>	50	86	600	OC603
OC604 Spec.	Low-power Audio Output Amplifier	-30	-500	175 at T <sub>a</sub> = 45°C.	45	15 at V <sub>CE</sub> = -6v											OC604 spec.
OC612	Class A R-F Amplifier	-15	-500	30 at T <sub>a</sub> = 45°C.	45	10 at V <sub>CE</sub> = -6v	-6	1400	60,000†	37						> 3000	OC612
OD604	High-power Audio Output Amplifier	-27	-2000	1.3 at T <sub>a</sub> = 45°C.	45	20 at V <sub>CE</sub> = -6v											OD604
2N77	Class A A-F Amplifier	-25	-15	35	50	-10 at V <sub>CB</sub> = -12v	-4	1980	100,000	44.1	6.5	2720	3.23 × 10 <sup>-4</sup>	55	14	700	2N77
2N104	Class A A-F Amplifier	-30	-50	35 at T <sub>a</sub> = 70°C.	70	-10 at V <sub>CB</sub> = -12v	-6	1400	20,000	41	12 max.	1667	4.95 × 10 <sup>-4</sup>	44	22.8	700	2N104
2N105	Class A A-F Amplifier	-25	-15	35 at T <sub>a</sub> = 50°C.	50	-5 at V <sub>CB</sub> = -12v	-1.3	4700	4,700	32.5	16.5 max.	4800	9.1 × 10 <sup>-4</sup>	45	12.4	750	2N105
2N109	Large Signal A-F Amplifier	-25 peak -12†	-70 peak -35 aver.	50 at T <sub>a</sub> = 55°C. 20 at T <sub>a</sub> = 71°C.	71	-10 at V <sub>CB</sub> = -25v.											2N109
2N139	Class A 455 Kc/s. Amplifier	-16	-15	35 at T <sub>a</sub> = 55°C.	71	-6 at V <sub>CB</sub> = -12v.	-9	500	30,000†	31.2●	4.5			48		6700	2N139
2N140	540-1640 Kc/s. Converter	-16	-15	35 at T <sub>a</sub> = 55°C.	71	-6 at V <sub>CB</sub> = -12v.	-9	700	75,000†	32				75		10,000	2N140
2N175	Class A Low Noise A-F Amplifier	-10	-2	20 at T <sub>a</sub> = 50°C.	50	-12 at V <sub>CB</sub> = -25v.	-4	2000	70,000†	43	6 max.	3750	9.44 × 10 <sup>-4</sup>	65	25	850	2N175

**TYPICAL OPERATION IN CLASS B PUSH-PULL**

D.C. Supply Voltage = -9 volts  
 Signal Source Impedance = 1500 Ω (base to base)  
 Load Impedance = 800 Ω (collector to collector)  
 Power Gain = 33 db  
 Max. Signal Power Output = 160 mW

\*D.C. Collector Current for stated D.C. Collector to Base Voltage.

†For inductive load.

‡Output Resistance with base short-circuited (R<sub>is</sub>).

●Includes transformer insertion loss of 6.6 db.

TYPE	MAXIMUM RATINGS (Absolute)						TYPICAL OPERATION AND CHARACTERISTICS—COMMON EMITTER CIRCUIT (Ambient temp. 25°C.)						Alpha cut-off fre- quency Kc/s				
	Class of Service	D.C. Collector to Base volts	D.C. Collector Current mA	Collector Dissipa- tion mW	Ambient Temp- erature °C.	Ico* μA	D.C. Collector to Emitter volts	D.C. Collector Current mA	Power Gain		Noise Factor			Small Signal H Parameters			
									Input Resist- ance ohms	Load Resist- ance ohms	Power Gain db	Factor db		hie ohms	hre	hfe	hoe μmhos
2N206	Class A A-F Amplifier	-30	-50	75 at Ta=25°C.		-10 at VCB=-30v.	-5	-1.0	1200	20,000	46	9	1650	6.0 × 10 <sup>-4</sup>	49	27.5	780
2N215						Like Radiotron 2N104	but has flexible leads.										
2N217						Like Radiotron 2N109	but has flexible leads.										
2N218						Like Radiotron 2N139	but has flexible leads.										
2N219						Like Radiotron 2N140	but has flexible leads.										
2N220						Like Radiotron 2N175	but has flexible leads.										
2N247	Class R-F Amplifier	-35	-10	35 at Ta=71°C.	71	-16 at VCB=-12v.	-9	-1	1350	70,000†	45						
2N247									170	4,500†	(10.7 Mc/s.)						Interlead capacitance between base and collector = 0.003 μF with leads cut to 1/16" and interlead shield grounded.
2N267	Class R-F Amplifier					Has same electrical characteristics as Radiotron 2N247 except that it has a slightly larger feedback capacitance in common emitter circuit. Radiotron 2N267 has only 3 flexible leads and is constructed in a smaller metal case than the 2N247.											
2N269	Low-level Switch	-20 -25 peak	-100	120 at Ta=25°C. 10 at Ta=71°C.	71	-2.5 at VCB=-2.5v.											4000
2N270	Large Signal A-F Amplifier	-12† -25 peak	-75 -150 peak	150 at Ta=50°C.	50	-16 at VCB=-25v.											
2N270																	
2N274	Class A R-F Amplifier	-35	-10	35 at Ta=71°C.	71												
2N274						Like Radiotron 2N267 in size but has interlead shielding and electrical characteristics of the 2N247.											
2N301	Large Signal A-F Amplifiers	-20† -40 peak	-1000 -2000 peak	5500 at Ta=71°C.	85§	-220 at VCB=-12v. Tm=25°C.											
2N301A		-30† -60 peak															
2N370	Class A R-F Amplifier	-20	-10	80 at Ta=25°C. 10 at Ta=71°C.	71	-20 at VCB=-12v. Ta=25°C.	-12	-1	80 at 20 Mc/s.	11,000† at 20 Mc/s.	gm = 20,700 μmhos				90		

\*D.C. Collector Current for stated D.C. Collector to Base Voltage.

†For inductive load.

‡Unless otherwise specified, values are for two transistors.

§Mounting Flange Temperature.

¶Output Resistance.

TYPE	MAXIMUM RATINGS (Absolute)					TYPICAL OPERATION AND CHARACTERISTICS—COMMON EMITTER CIRCUIT (Ambient temp 25°C.)							Alpha cut-off frequency Kc/s		
	D.C. Collector to Base volts	D.C. Collector Current mA	Collector Dissipation mW	Ambient Temperature °C.	Ico* $\mu$ A	D.C. Collector to Emitter volts	D.C. Collector Current mA	Power Gain			Small Signal H Parameters				
Class of Service							Input Resistance ohms	Load Resistance ohms	Power Gain db	Noise Factor db	h <sub>ie</sub> ohms	h <sub>re</sub>	h <sub>fe</sub>	h <sub>oe</sub> $\mu$ mhos	
2N371	Oscillator	-20	80 at T <sub>a</sub> =25°C. 10 at T <sub>a</sub> =71°C.	71	-20 at V <sub>CB</sub> =-12v. T <sub>a</sub> =25°C.	-12	-1					36		2N371	
2N372	Mixer	-20	80 at T <sub>a</sub> =25°C. 10 at T <sub>a</sub> =71°C.	71	-20 at V <sub>CB</sub> =-12v. T <sub>a</sub> =25°C.	-12	-1	80 at 250,000 <sup>†</sup> Kc/s. 20 Mc/s.	gm = 20,700 $\mu$ mhos			61.5		2N372	
2N384	Oscillator and R-F Amplifier	-30	120 at T <sub>a</sub> =25°C. 35 at T <sub>a</sub> =71°C.	71	-16 at V <sub>CB</sub> =-12v.	-12	-1.5	350 at 10.7 Mc/s. 30 at 50 Mc/s.	30 15					2N384	
2N398	High-Voltage On-Off Control	-100	50● at T <sub>a</sub> =25°C. 10● at T <sub>a</sub> =55°C.	55	-14 at V <sub>CB</sub> =-2.5v. T <sub>a</sub> =25°C.	D.C. Collector-Emitter Saturation Voltage ... .. -0.35 volt (max.) D.C. Base-Emitter Saturation Voltage ... .. -0.4 volt (max.) (above readings taken when d.c. collector current I <sub>C</sub> = -5 mA, d.c. base current I <sub>B</sub> = 0.25 mA)									2N398
2N404	Medium Speed Switch	-20 -25 peak	120 at T <sub>a</sub> =25°C. 10 at T <sub>a</sub> =71°C.	71	-2.5 at V <sub>CB</sub> =-2.5v.	Maximum Collector-Emitter Saturation (bottoming) voltage ... .. -150 mV Current Gain ... .. 30									2N404
2N405	Class A A-F Amplifier	-12	150 at T <sub>a</sub> =25°C. 20 at T <sub>a</sub> =71°C.	71		-6	-1	750	85,000 <sup>†</sup>	43			35	2N405	
2N406						Like Radiotron 2N405 but has flexible leads.									2N406
2N407	Class A and Class B A-F Amp.	This transistor is like the Radiotron 2N109 but has:— Maximum d.c. collector current cut-off = -14 $\mu$ A. Maximum d.c. emitter current cut-off = -14 $\mu$ A.				In Class A and Class B audio service it has:— D.C. collector-emitter voltage maximum = -18 volts. D.C. collector-base voltage maximum = -20 volts. Current transfer ratio = 65.									2N407
2N408						Like Radiotron 2N407 but has flexible leads.									2N408
2N409	455 Kc/s. I-F Amplifier (Class A)	This transistor is like the Radiotron 2N139 but has:— Minimum d.c. collector voltage of -12 volts (for a d.c. collector current = -10 $\mu$ A with emitter open and at an ambient temperature = 25°C.).				As an I-F Amplifier (Class A) it has:— D.C. collector-base voltage maximum = -12 volts.									2N409
2N410						Like Radiotron 2N409 but has flexible leads.									2N410
2N411	Converter 540-1640 Kc/s.	This transistor is like the Radiotron 2N140 but has:— Minimum d.c. collector voltage of -12 volts (for a d.c. collector current = -10 $\mu$ A with emitter open and at an ambient temperature = 25°C.).				As a 540-1640 Kc. converter it has: D.C. collector-base voltage maximum = -12 volts.									2N411
2N412						Like Radiotron 2N411 but has flexible leads.									2N412

\*D.C. Collector Current for stated D.C. Collector to Base Voltage. ●Combined Collector and Emitter Dissipation. †Output Resistance.

