

Characteristics of

**sylvania
receiving
tubes**

SYLVANIA

SYLVANIA ELECTRIC PRODUCTS INC.
1740 BROADWAY, NEW YORK 19, N. Y.



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SYLVANIA RADIO AND TELEVISION TUBE CHARACTERISTICS CHART

HOW TO USE THIS CHART

The types are listed in numerical and alphabetical order. The second column now lists the Bulb size or style of construction, whichever is most helpful in describing the type. Lock-in is, of course, well known, but the letters "T" and "ST" may need explaining. "T" means tubular bulb and "ST" is the dome topped bulb as now used in Type 6D6, 24, etc. The following number gives the nominal maximum diameter in eighths of inches. Subminiature types are marked T3, T2 or T1 depending on the bulb diameter.

Columns are included to show the type of emitter, (cathode or filament), and for interelectrode capacitances on those types having capacitance ratings. On converters the capacitances shown are respectively, Signal Grid to Plate; R-F Input; and Mixer Output. The capacitance values shown are for a shielded tube when the data are available, since this is the latest standard method. Except in the case of obsolete (or newly announced) types, more complete technical data may be found in the SYLVANIA Technical Manual.

The "Basing Diagram" column indicates the internal and external shield connections. For example, this column now shows the basing for Type 7A7 to be 8V-L-5. This means that the active elements are connected as shown in the base diagram 8V, and that the external shielding (in this case the Lock-in base) is connected to the lug (L) and the internal shield to pin 5. This avoids having a separate base diagram for types with a minor difference in shielding. The figures 0-0 indicate no external and no internal shielding respectively.

When replacing tubes in series string television receivers, attention should be given to the complete type number including the suffix. Prototypes should not be substituted for series string types.

Heater voltage, heater current and heater-cathode voltage ratings of the new series string tubes may, due to the requirements of such operation, differ widely from those of their prototypes. All the new series string types have controlled heater warm-up time for series string operation. In addition, heater current production tolerances have been tightened on all series string tubes to insure proper steady state voltage distribution. Two examples are shown in the following table.

	Series String Type 5AQ5	Proto- Type 6AQ5	Series String Type 6SN7GTB	Proto- Type 6SN7GTA
Series String Controlled Heater				
Warm-up Time.....	YES	NO	YES	NO
Heater Voltage.....	4.7	6.3	6.3	6.3
Heater Current (ma).....	600	450	600	600
Tolerance (ma).....	±25	±40	±25	±50
Heater-Cathode Voltage.....	200	200	200	200

It should be noted that the 5AQ5 and 6AQ5 differ in all characteristics shown except for heater cathode voltage. The 6SN7GTB and 6SN7GTA are identical except for heater current tolerance and controlled series string heater warm-up time. However, substitution of a 6SN7GTA in a series string receiver may, due to the absence of the controlled series string heater warm-up characteristic and wider heater current production tolerance, cause premature failure.

Series string types differ from their prototypes only in those characteristics necessary to insure dependable operation in series string television receivers. All other characteristics and ratings are identical to those of the prototypes.

NOTICE

This chart contains the very latest radio and television tubes in addition to many out-of-date types. It is designed to be of maximum use to servicemen as a quick reference chart.

Please note that all types listed are not available from Sylvania. They are included for your reference in finding substitutes, etc. Consult our price list for types currently available.

The data published here have been compiled from various sources and while believed to be accurate, no responsibility can be assumed in case of error.

Mention or reference to patented circuits does not constitute permission for their use. The license agreement under which Sylvania tubes are sold is enclosed in the tube carton.

PENNSYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter			Note (1) (2) Capacitances in μf .			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transcon- ductance Micromhos	Ampli- fication Factor	Ohms Load for Rated Power Output	Power Output Milli- watts	Type	
	Bulb Size or Style	Class	Base Diag.	Type	Volts	Amps.	Cgp.	Cin.													Cout
00A	ST-14	Triode	4D-0-0	Filament	5.0	0.250	8.5	3.2	2.0	Detector	45	0	1.5	.....	30,000	666	20	.....	.....	00A
0A2	T-5½	Diode	5B0-0-0	Cold K	.....	.....	.....	.....	.....	Voltage Regulator with starting Voltage at 155, Operating Voltage 150, Operating Current 5 to 30 Ma.	.....	.....	.....	.....	.....	.....	.....	.....	.....	0A2
0A3/VR75	ST-12	Diode	4A1-0-0	Cold K	.....	.....	.....	.....	.....	Voltage Regulator with starting Voltage at 100, Operating Voltage 75, Operating Current 5 to 40 Ma.	.....	.....	.....	.....	.....	.....	.....	.....	.....	0A3/VR75
0A4G	ST-12	Gas Triode	4VJ-0-0	Cold K	.....	.....	.....	.....	.....	Relay Tube Peak Cathode Ma. = 100 D-C Cathode Ma. = 95 Max. Starter Anode Drop = 60V. Approx. Anode Drop = 70V. Approx.	.....	.....	.....	.....	.....	.....	.....	.....	.....	0A4G
0A5	T-5½	Gas Pentode	0A5	Cold K	.....	.....	.....	.....	.....	Switching	750	.....	.....	.....	.....	.....	.....	.....	.....	0A5
0B8	T-5½	Diode	5B0-0-0	Cold K	.....	.....	.....	.....	.....	Voltage Regulator with starting Voltage at 115, Operating Voltage 105, Operating Current 5 to 30 Ma.	.....	.....	.....	.....	.....	.....	.....	.....	.....	0B8
0B3	ST-12	Diode	4A1-0-0	Cold K	.....	.....	.....	.....	.....	Voltage Regulator with starting Voltage at 195, Operating Volts 90, Operating Current 10 Ma. Min. 30 Ma. Max.	.....	.....	.....	.....	.....	.....	.....	.....	.....	0B3
0C3	ST-12	Diode	4A1-0-0	Cold K	.....	.....	.....	.....	.....	Voltage Regulator with starting Voltage at 135, Operating Volts 105, Operating Current 5 Ma. Min. 40 Ma. Max.	.....	.....	.....	.....	.....	.....	.....	.....	.....	0C3
0D3	ST-12	Diode	4A1-0-0	Cold K	.....	.....	.....	.....	.....	Voltage Regulator with starting Voltage at 180, Operating Volts 150, Operating Current 5 Ma. Min. 40 Ma. Max.	.....	.....	.....	.....	.....	.....	.....	.....	.....	0D3
0Y4	Metal T-7	Gas Diode	4BU-1-0 4BU-0-0	Cathode Cathode	.....	.....	.....	.....	.....	H-W Rect. { 117 A.C. Volts Per Plate, RMS, 75 Ma. Max. 40 Ma. Min. Output Current. Starter Anode Connects to Anode thru 10 Megohms By-Passed with .002 μf}.	.....	.....	.....	.....	.....	.....	.....	.....	.....	0Y4
0Y4G	Metal T-7	Gas Diode	4R-1-0	Cathode	.....	.....	.....	.....	.....	F-W Rect. { 300 A.C. Volts Per Plate, RMS, 90 Ma. Max. 30 Ma. Min. Output Current.	.....	.....	.....	.....	.....	.....	.....	.....	.....	0Y4G
0Z4A	Metal T-7	Gas Diode	4R-1-0	Cathode	.....	.....	.....	.....	.....	F-W Rect. { 300 A.C. Volts Per Plate, RMS, 110 Ma. Max. 30 Ma. Min. Output Current.	.....	.....	.....	.....	.....	.....	.....	.....	.....	0Z4A
0Z4G	Metal T-7	Gas Diode	4R-0-0	Cathode	.....	.....	.....	.....	.....	F-W Rect. { 300 A.C. Volts Per Plate, RMS, 90 Ma. Max. 30 Ma. Min. Output Current.	.....	.....	.....	.....	.....	.....	.....	.....	.....	0Z4G
01A	ST-14	Triode	4D-0-0	Filament	5.0	0.250	8.1	3.1	2.2	Amplifier	90 135	4.5 9.0	3.5 3.0	11,000 10,000	795 800	8.0 8.0	01A
1A3	T-5½	Diode	5AP-0-5	Cathode	1.4	0.150	.....	.....	.....	Detector	.....	.....	.....	.....	.....	.....	.....	.....	.....	1A3
1A4P	ST-12	Pentode	4M-0-4	Filament	2.0	0.060	.007m	5.0	11.0	R-F Amp.	135 180	3.0 3.0	67.5 67.5	2.2 2.2	1 Meg. 1 Meg.	695 785	.....	.....	.....	1A4P
1A4T	ST-12	Tetrode	4K-0-3	Filament	2.0	0.060	.01m	5.0	11.0	R-F Amp.	135 180	3.0 3.0	67.5 67.5	2.2 2.2	350,000 600,000	695 650	.....	.....	.....	1A4T
1A5GT	T-9	Power Pent.	6X-0-0	Filament	1.4	0.050	.....	.....	.....	Power Amp.	85 90	4.5 4.0	85 90	3.5 4.0	300,000 300,000	800 850	.....	.....	.....	1A5GT
1A6	ST-12	Heptode	6L-0-0	Filament	2.0	0.060	0.25	10.5	9.0	Converter	135 180	3.0 3.0	67.5 67.5	1.8 1.5	400,000 500,000	975 300A	(Ga = 135V. □ Max. 2.0 Ma.) (Ga = 180V. □ Max. 2.5 Ma.)	1A6
1A7GT	T-9	Heptode	7Z-1-0	Filament	1.4	0.050	0.5m	7.0	10.0	Converter	90	0.0	45	0.55	600,000	950A	(Ga = 90V. Max. 1.2 Ma.)	.....	.....	1A7GT
1A85	Lock-in	Pentode	5BF-L-0	Filament	1.2	0.130	0.25m	2.8	4.2	R-F Amp.	90 150	0 1.5	90 150	3.5 2.0	975,000 180,000	1,100 1,350	.....	.....	.....	1A85
1AC5	T-3	Pentode	8CP-0-0	Filament	1.25	0.040	.....	.....	.....	Power Amp.	30 45	2.0 3.0	30 45	0.5 1.0	300,000 170,000	450 600	.....	.....	.....	1AC5
1AD5	T-3	Pentode	8CP-0-0	Filament	1.25	0.040	.009	1.9	3.0	R-F Amp.	30 45	0 0	30 45	0.45 0.9	700,000 700,000	430 380	.....	.....	.....	1AD5
1AE4	T-5½	Pentode	6AR-0-0	Filament	1.25	0.100	.008m	3.6	4.4	R-F Amp.	67.5	0	67.5	1.85	700,000	585	.....	.....	.....	1AE4
1AF4	T-5½	Pentode	6AR-0-1&5	Filament	1.4	0.095	.008m	3.8	7.6	R-F Amp.	90	0	90	3.5	500,000	1,550	.....	.....	.....	1AF4
1AF5	T-5½	Diode Pent.	6AU-0-0	Filament	1.4	0.095	0.2	2.5	4.3	Det. Amp.	67.5 90	0 0	67.5 90	0.7 1.65	2.3 Meg. 1.8 Meg.	600 950	.....	.....	.....	1AF5
1AG4	T-2X3	Pentode	1AG4-0-0	Filament	1.25	0.040	.....	.....	.....	Power Amp.	41.4	3.6	41.4	2.4	180,000	1,000	.....	.....	.....	1AG4
1AG5	T-2X3	Diode Pent.	1AG5	Filament	1.25	0.030	0.1	1.7	2.4	Amplifier	45	2.0	45	0.98	2.5 Meg.	950	.....	.....	.....	1AG5
1AJ5	T-2X3	Diode Pent.	1AJ5-4-0	Filament	1.25	0.040	0.1	1.7	2.4	Det. Amp.	45	0	45	1.0	300,000	425	.....	.....	.....	1AJ5
1AK4	T-2X3	Pentode	1AK4-3-0	Filament	1.25	0.050	.01m	3.5	4.5	Class A1 Amp.	67.5	0	67.5	0.75	1,500,000	750	(Screen Supply = 67.5 Volts Thru .11 Meg. Res.)	.....	.....	1AK4
1AK5	T-2X3	Diode Pent.	1AK5-4-0	Filament	1.25	0.050	0.1m	2.0	2.7	Det. Amp.	45	0	45	0.5	400,000	980	.....	.....	.....	1AK5
1AX2	T-6½	Diode	9Y	Filament	1.4	0.650	.....	.....	.....	H-W Rect.	.....	.....	.....	.....	.....	.....	.....	.....	.....	1AX2
1B3GT	T-9	Diode	3C	Filament	1.25	0.200	.....	.....	.....	Telev. Rect.	14,000 A.C. Volts Per Plate, RMS, 2 Ma. Output Current.	.....	.....	.....	.....	.....	.....	.....	.....	1B3GT
1B4P	ST-12	Pentode	4M-0-4	Filament	2.0	0.060	.007m	5.0*	11.0*	R-F Amp.	135 180	3.0 3.0	67.5 67.5	1.6 1.7	1.5 Meg. □ 1.5 Meg. □	560 650	.....	.....	.....	1B4P
1B5	ST-12	Duodiode Tri.	6M-0-5	Filament	2.0	0.060	3.6	1.6	1.9	Det. Amp.	135	3.0	.....	0.8	35,000	575	.....	.....	.....	1B5
1B7GT	T-9	Heptode	7Z-1-0	Filament	1.4	0.100	0.34	7.0	7.5	Converter	90	0.0	45	1.5	350,000	350A	(Ga = 90V., 1.6 Ma.)	1B7GT
1B8GT	T-9	Diode Triode Pentode	8AJ-0-7	Filament	1.4	0.100	.....	.....	.....	Det. Amp. Power Amp.	90 90	0 6.0	45 90	0.15 6.3	240,000 1,150	975 1,150	.....	.....	.....	1B8GT
1C3	T-5½	Triode	5CF-0-0	Filament	1.4	0.050	1.8	0.9	4.2	Amplifier	90	0	4.5	11,900 □ 19,000 □	1,300 760	14.5 14.5	1C3
1C5GT	T-9	Power Pent.	6X-0-0	Filament	1.4	0.100	Power Amp.	83 90	7.0 7.5	83 90	7.0 7.5	110,000 115,000	1,500 1,550	165 180	9,000 240	1C5GT
1C6	ST-12	Heptode	6L-0-0	Filament	2.0	0.120	0.3	10.0	10.0	Converter	135	3.0	67.5	1.3	600,000	300A	(Ga = 135V. □ Max. 3.1 Ma.) (Ga = 180V. □ Max. 4.0 Ma.)	1C6
1C7G	ST-12	Heptode	7Z-0-0	Filament	2.0	0.120	0.26	10.0	14.0	Converter	135	3.0	67.5	1.3	600,000	300A	(Ga = 135V. □ Max. 3.1 Ma.) (Ga = 180V. □ Max. 4.0 Ma.)	1C7G
1C8	T-3	Heptode	8CN-0-0	Filament	1.25	0.040	0.25m	6.5	4.0	Converter	30	0.0	30	0.32	700,000	100A	.....	.....	.....	1C8
1D3	T-3	Triode	8DN-0-0	Filament	1.25	0.300	2.6*	1.0*	1.0*	Amplifier	90	5.0	.....	12.5	.....	3,400	8.7	.....	.....	1D3

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate;
 RF Input, Mixer Output.
 (3) Has special mechanical and/or life characteristics.
 †† With Average Power Input of 300 Mw. Grid to Grid.
 ‡ For two tubes with 40 volts RMS applied to each grid.
 § Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater.)
 * Applied through 250,000 ohms.
 # Per tube or section.
 § Plate and Target Supply Voltage.
 □ Pentode Operation.
 † Plate to Plate.
 ‡ Approximate.
 § Cathode Resistor (ohms).

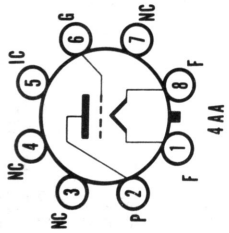
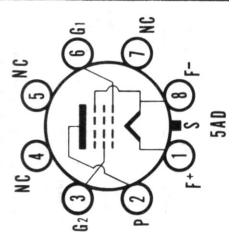
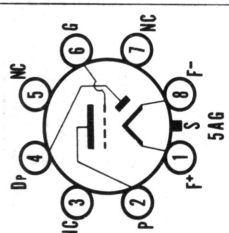
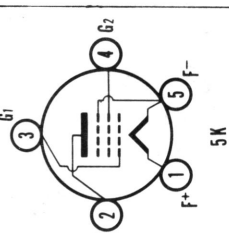
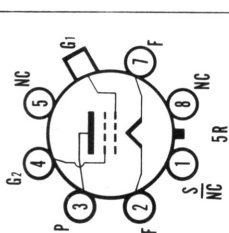
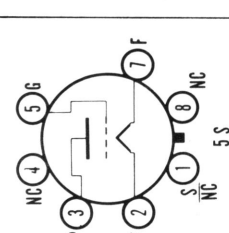
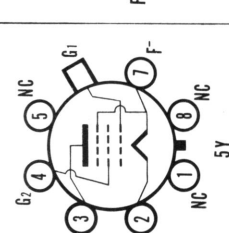
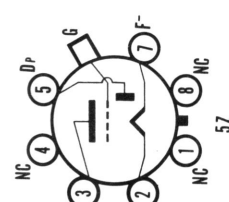
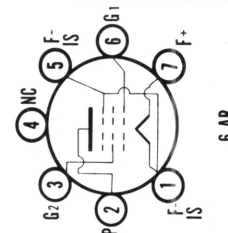
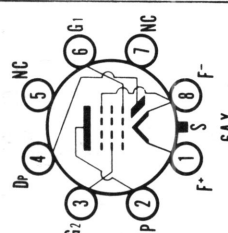
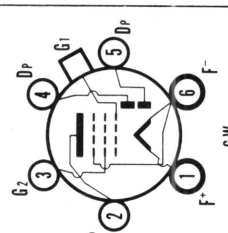
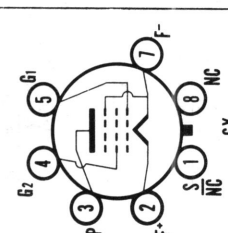
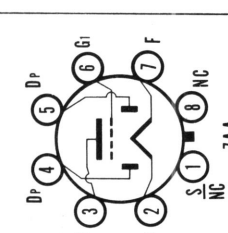
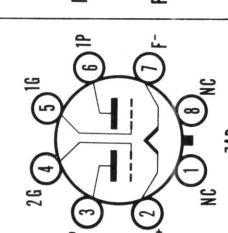
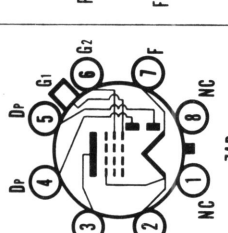
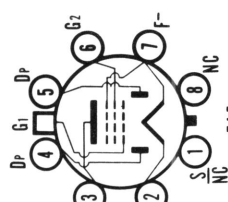
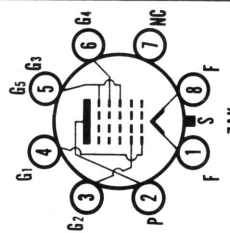
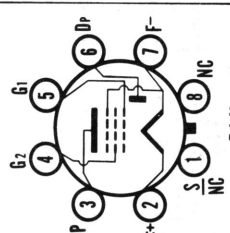
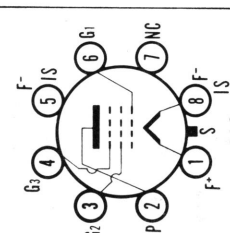
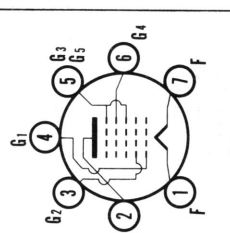
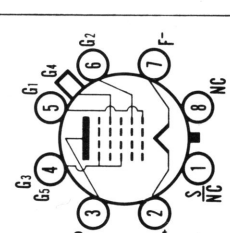
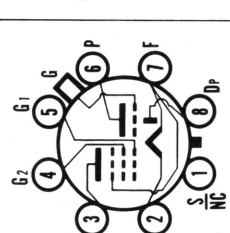
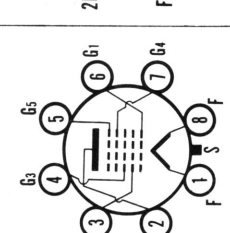
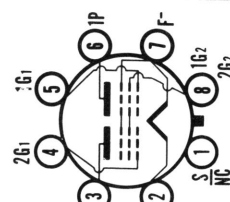
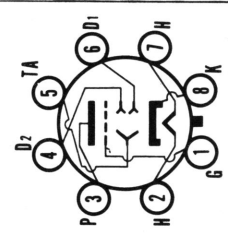
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SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; HI—Heater Tap; IC—Internal Connection; DO NOT USE; J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Targe; XS—External Shield; □—Top Cap; ■—Locating Key.

SYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter			Note (1) (2) Capacitances in $\mu\mu\text{f}$.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type	
	Bulb Size or Style	Class	Basing Diag.	Type			Cgp.	Cin.													Cout
				Volts	Amps.	Ampl.															
1D5GP	ST-12	Pentode	5Y-0-7	Filament	2.0	0.060	.007m	5.0*	12.0*	135	3.0	67.5	2.2	0.9	1 Meg.	625	.....	.....	.....	1D5GP
1D5GT	ST-12	Tetrode	5R-0-4	Filament	2.0	0.060	.01m	4.4	10.8	135	3.0	67.5	2.2	0.7	350,000	625	.....	.....	.....	1D5GT
1D7G	ST-12	Heptode	7Z-0-0	Filament	2.0	0.060	0.25	10.5	9.0	135	3.0	67.5	1.8	2.1	400,000	275A (Ga = 135V, Max. 2.0 Ma.) (Ga = 180V, Max. 2.5 Ma.)	.....	.....	.....	1D7G
1D8GT	T-9	Diode Triode Pentode	8A-L-0-2	Filament	1.4	0.100	.....	.....	.....	45	0	.....	0.3	.....	77,000	325	.....	.....	.....	1D8GT
1E4G	T-9	Triode	5S-0-0	Filament	1.4	0.050	2.4	2.4	6.0	90	0.0	.....	4.5	.....	11,325	1,325	.....	.....	.....	1E4G
1E5GP	ST-12	Pentode	5Y-0-7	Filament	2.0	0.060	.007m	5.5	12.0	135	3.0	67.5	1.6	0.7	1.5 Meg.†	560	.....	.....	.....	1E5GP
1E7G	ST-12	Dup. Power Pent.	8C-0-0	Filament	2.0	0.240	.....	.....	.....	135	7.5	135	2.0†	2.0†	220,000	1,600	.....	.....	.....	1E7G
1E8	T-3	Heptode	8CN-0-0	Filament	1.25	0.040	0.4	6.0	5.0	30	0	30	0.30	0.8	300,000	115A	.....	.....	.....	1E8
1F4	ST-12	Power Pent.	5K-0-0	Filament	2.0	0.120	.....	.....	.....	45	0	45	0.60	1.1	400,000	140A	.....	.....	.....	1F4
1F5G	ST-12	Power Pent.	6X-0-0	Filament	2.0	0.120	.....	.....	.....	135	4.5	135	8.0	2.4	300,000	1,700	.....	.....	.....	1F5G
1F6	ST-12	Duodi. Pent.	6W-0-6	Filament	2.0	0.060	.007m	4.0	9.0	180	1.5	67.5	2.2	0.7	1 Meg.	650	.....	.....	.....	1F6
1F7G	ST-12	Duodi. Pent.	7AD-0-7	Filament	2.0	0.060	.01m	3.8*	9.5*	180	1.5	67.5	2.2	0.7	1 Meg.	650	.....	.....	.....	1F7G
1F7GV	ST-12	Duodi. Pent.	7AF-0-7	Filament	2.0	0.600	.....	.....	.....	180	1.5	67.5	2.2	0.7	1 Meg.	650	.....	.....	.....	1F7GV
1G4GT	T-9	Triode	5S-0-0	Filament	1.4	0.050	.....	.....	.....	90	6.0	90	2.3	.....	10,700	825	.....	.....	.....	1G4GT
1G5G	ST-14	Pentode	6X-0-0	Filament	2.0	0.120	.....	.....	.....	90	0.0	90	1.0#	.....	133,000†	1,500	.....	.....	.....	1G5G
1G6GT	T-9	Duotriode	7AB-0-0	Filament	1.4	0.100	.....	.....	.....	90	0.0	.....	1.0#	.....	45,000	675	.....	.....	.....	1G6GT
1H4G	ST-12	Triode	5S-0-0	Filament	2.0	0.060	.....	.....	.....	90	4.5	.....	2.5	.....	11,000	850	.....	.....	.....	1H4G
1H5GT	T-9	Diode Triode	5Z-1-7	Filament	1.4	0.050	1.1	3.5	4.0	90	0.0	.....	0.15	.....	240,000	975	.....	.....	.....	1H5GT
1H6G	ST-12	Duodiode Tri.	7AA-0-6	Filament	2.0	0.060	3.6	1.6	1.9	135	3.0	.....	0.8	.....	35,000	575	.....	.....	.....	1H6G
1J5G	ST-14	Pentode	6X-0-0	Filament	2.0	0.120	.....	.....	.....	135	16.5	135	7.0	2.0	125,000	1,000	.....	.....	.....	1J5G
1J6G	ST-12	Duotriode	7AB-0-0	Filament	2.0	0.240	.....	.....	.....	135	16.5	135	7.0	2.0	125,000	1,000	.....	.....	.....	1J6G
1J6GT	T-9	Triode	5S-0-0	Filament	1.4	0.050	.....	.....	.....	90	0	.....	2.9	.....	600,000	995	.....	.....	.....	1J6GT
1L4	T-5½	Pentode	6AR-0-1&5	Filament	1.4	0.050	.008m	3.8	7.5	90	0	67.5	4.5	2.0	350,000	1,025	.....	.....	.....	1L4
1L6	T-5½	Heptode	7DC-0-0	Filament	1.4	0.050	0.36m	7.5	12.0	85	4.5	85	3.5	0.6	650,000†	300A	.....	.....	.....	1L6
1LA4	Lock-in	Power Pent.	5AD-L-0	Filament	1.4	0.050	.....	.....	.....	90	0.0	90	4.0	0.8	300,000	850	.....	.....	.....	1LA4
1LA6	Lock-in	Heptode	7AK-L-0	Filament	1.4	0.050	0.4	7.5	8.0	90	0.0	45	0.55	0.6	750,000	250A	.....	.....	.....	1LA6
1LB4	Lock-in	Power Pent.	5AD-L-0	Filament	1.4	0.050	.....	.....	.....	45	4.5	45	1.6	0.3	300,000	650	.....	.....	.....	1LB4
1LB6	Lock-in	Heptode	8AX-L-0	Filament	1.4	0.050	0.1	3.8	8.0	90	0.0	67.5	0.40	2.2	2 Meg.†	100A	.....	.....	.....	1LB6
1LC5	Lock-in	Pentode	7AO-L-8	Filament	1.4	0.050	.007m	3.2	7.0	45	0.0	45	1.1	0.25	700,000	750	.....	.....	.....	1LC5
1LC6	Lock-in	Heptode	7AK-L-0	Filament	1.4	0.050	0.28	9.0	5.5	45	0.0	35	0.75	0.7	300,000	250A	.....	.....	.....	1LC6
1LD5	Lock-in	Diode Pent.	6AX-L-8	Filament	1.4	0.050	0.18	3.2	6.0	45	0.0	45	0.55	0.12	750,000	550	.....	.....	.....	1LD5
1LE3	Lock-in	Triode	4AA-L-0	Filament	1.4	0.050	1.7	1.7	3.0	90	0.0	.....	4.5	.....	11,200	1,300	.....	.....	.....	1LE3
1LG5	Lock-in	Pentode	7AO-L-8	Filament	1.4	0.050	.007m	3.2	7.0	45	0	45	1.5	0.45	350,000†	800	.....	.....	.....	1LG5
1LH4	Lock-in	Diode Triode	5AG-L-1	Filament	1.4	0.050	.....	.....	.....	90	0.0	.....	0.15	.....	240,000	275	.....	.....	.....	1LH4
1LN5	Lock-in	Pentode	7AO-L-8	Filament	1.4	0.050	.007m	3.4	8.0	90	0.0	90	1.6	0.35	1.1 Meg.	800	.....	.....	.....	1LN5
1N5GT	T-9	Pentode	5Y-1-7	Filament	1.4	0.050	.007m	2.8	10.0	90	0.0	90	1.2	0.3	1.5 Meg.†	750	.....	.....	.....	1N5GT
1N6GT	T-9	Diode Pent.	7AM-0-0	Filament	1.4	0.050	.....	.....	.....	90	4.5	90	3.4	0.7	300,000†	800	.....	.....	.....	1N6GT

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate;
 RF Input, Mixer Output.
 (3) Has special mechanical and/or life characteristics.
 (4) With Average Power Input of 320 Mw. Grid to grid.
 (5) For two tubes with 40 volts RMS applied to each grid.
 (6) Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater.)
 * Applied through 20,000 ohms.
 † Pentode Operation.
 ‡ Plate to Plate.
 § Triode Operation.
 m maximum Cathode Resistor (ohms).
 # Approximate.

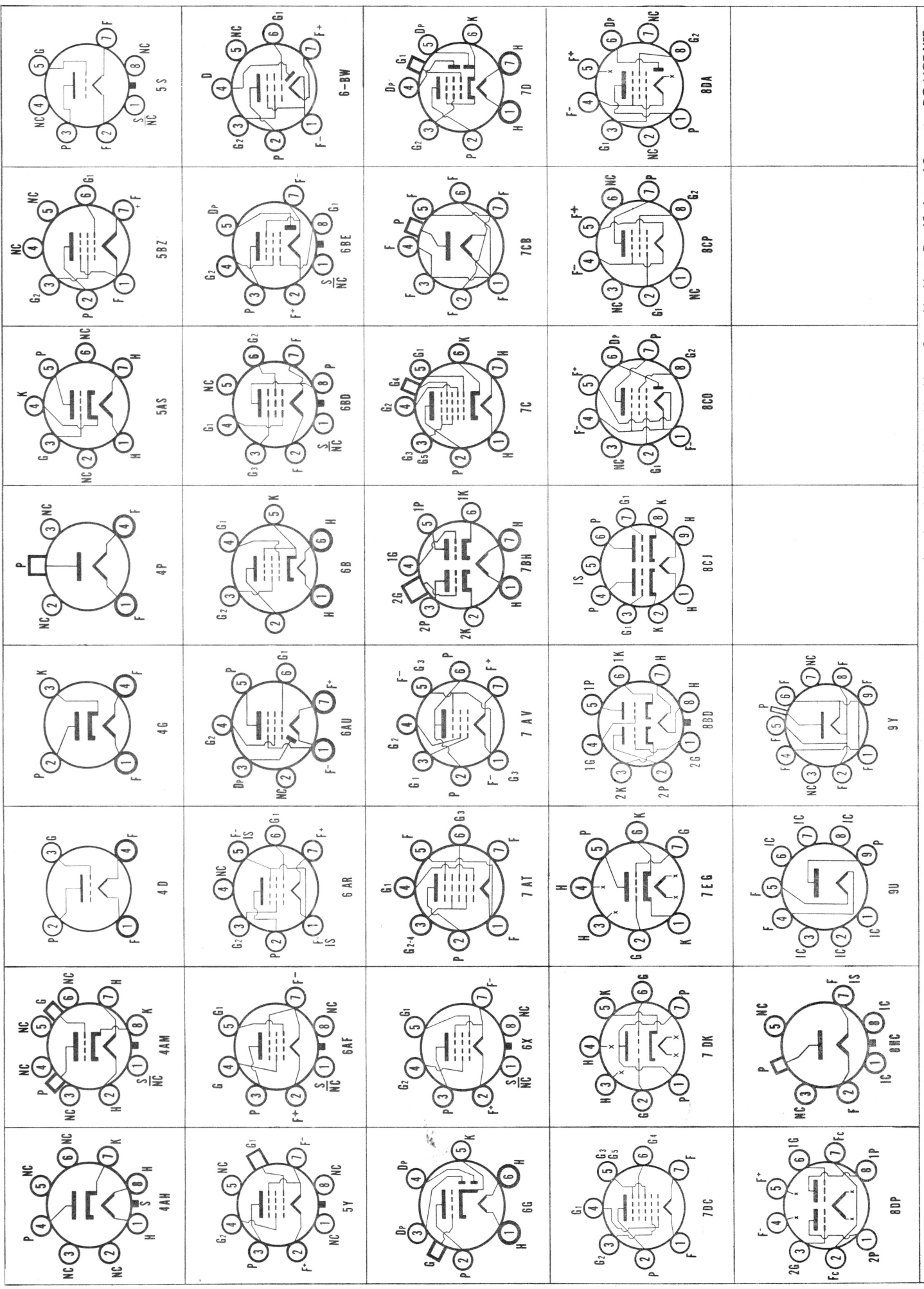
							
							
							
							

SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Ht—Heater Tap; IC—Internal Connection, DO NOT USE; J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

PENNSYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction			Emitter			Note (1) (2) Capacitances in μf .			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type	
	Bulb Size or Style	Class	Base Diag.	Type	Volts	Amps.	Cgp.	Cin.	Cout													
1P5GT	Pentode	5Y-1-7	Filament	1.4	0.050	.007m	3.0	10.0	R-F Amp.	90	0.0	90	2.3	0.7	800,000	750	.....	.....	.....	1P5GT	
1O5GT	Beam Pent.	6AF-0-0	Filament	1.4	0.100	.....	.....	.....	Power Amp.	90	4.5	90	9.5	1.3	.....	2,200	.....	8,000	.....	270	1O5GT
1O6	Diode Pent.	8C0-0-0	Filament	1.25	0.040	.085	1.8	4.2	Det. Amp.	30	0.0	30	0.33	0.09	500,000	330	.....	.....	.....	.....	1O6
1R4	Lock-in	4AH-L-2	Cathode	1.4	0.150	.....	.....	.....	Detector	45	0.0	45	1.60	0.40	400,000	600	.....	.....	.....	.....	1R4
1R5	T-5½	7AT-0-0	Filament	1.4	0.050	0.4m	7.0	12.0	Converter	90	0.0	45	0.7	1.9	600,000	235A	.....	.....	.....	.....	1R5
1S4	T-5½	7AV-0-0	Filament	1.4	0.100	.....	.....	.....	Power Amp.	45	4.5	45	3.8#	0.8#	100,000	1,950	.....	8,000	.....	65	1S4
1S5	T-5½	6AU-0-0	Filament	1.4	0.050	0.2	2.0	4.0	Det. Amp.	90	7.0	67.5	7.4#	1.4#	100,000	1,575	.....	.....	.....	.....	1S5
1S6	T-3	8DA-0-0	Filament	1.25	0.040	.....	.....	.....	Det. Amp.	45	0	30	0.33	0.1	500,000	330	.....	.....	.....	.....	1S6
1SA6GT	Pentode	6BD-0-0	Filament	1.4	0.050	.01m	5.2	8.6	R-F Amp.	45	0	45	1.1	0.3	700,000	750	.....	.....	.....	.....	1SA6GT
1SB6GT	Diode Pent.	6BE-0-0	Filament	1.4	0.050	0.25	3.2	3.0	Det. Amp.	90	0	67.5	2.4	0.7	600,000	950	.....	.....	.....	.....	1SB6GT
1T4	T-5½	6AR-0-1&5	Filament	1.4	0.050	.008m	3.8	7.5	R-F Amp.	45	0.0	45	1.9	0.7	350,000	700	.....	.....	.....	.....	1T4
1T5GT	Power Pent.	6X-0-0	Filament	1.4	0.050	0.5	4.8	8.0	Power Amp.	90	6.0	90	6.5	1.4	.....	1,150	.....	.....	.....	.....	1T5GT
1T6	Diode Pent.	8DA-0-0	Filament	1.25	0.040	.....	.....	.....	Det. Amp.	30	0	30	0.33	0.1	500,000	330	.....	.....	.....	.....	1T6
1U4	T-5½	6AR-0-1&5	Filament	1.4	0.050	.008m	3.6	7.5	R-F Amp.	90	0	67.5	1.6	0.4	400,000	900	.....	.....	.....	.....	1U4
1U5	T-5½	6BW-0-0	Filament	1.4	0.050	0.2	2.2	2.4	Det. Amp.	45	0	45	0.75	0.4	400,000	600	.....	.....	.....	.....	1U5
1U6	T-5½	7DC-0-0	Filament	1.4	0.025	0.4	8.0	12.0	Converter	90	0	90	1.6	0.45	1.5 Mes. \downarrow	900	.....	.....	.....	.....	1U6
1V	ST-12	Diode	Cathode	6.3	0.300	.....	.....	.....	H-W Rect.	325 A.C. Volts Per Plate, RMS, 45 Ma. Output Current. Condenser Input to Filter.	67.5	0	45	0.5	550,000	260A	.....	.....	.....	.....	1V
1V2	T-6½	Diode	Filament	0.695	0.300	.....	.....	.....	H-W Rect.	Television Service. RF or Flyback Supply. Peak Inverse Volts = 7,500, Output = 0.5 Ma.	325 A.C. Volts Per Plate, RMS, 45 Ma. Output Current. Condenser Input to Filter.	0	0.55	0.6	600,000	275A	.....	.....	.....	.....	1V2
1V5	T-3	Pentode	Filament	1.25	0.040	.....	.....	.....	Power Amp.	Television Service. RF or Flyback Supply. Peak Inverse Volts = 7,500, Output = 0.5 Ma.	45	0	45	0.4	400,000	600	.....	.....	.....	.....	1V5
1W4	T-5½	Power Pent.	Filament	1.4	0.050	.....	.....	.....	Power Amp.	Characteristics Same as Type 1AC5.	45	4.5	1.6	0.3	400,000	650	.....	.....	.....	.....	1W4
1W5	T-3	Pentode	Filament	1.25	0.040	.01m	2.3	3.5	R-F Amp.	90	0.0	30	0.42	0.16	700,000	430	.....	.....	.....	.....	1W5
1X2	T-6½	Diode	Filament	1.25	0.200	.....	.....	.....	H-W Rect.	Television Service. RF or Flyback Supply. Peak Inverse Volts = 15 KV, Output = 1 Ma.	67.5	0.0	67.5	1.85	700,000	735	.....	.....	.....	.....	1X2
1X2A	T-6½	Diode	Filament	1.25	0.200	.....	.....	.....	H-W Rect.	Television Service. RF or Flyback Supply. Peak Inverse Volts = 17.5 KV, Output = 1 Ma.	62.5	5.0	62.5	3.8	300,000	875	.....	.....	.....	.....	1X2A
1X2B	T-6½	Diode	Filament	1.25	0.200	.....	.....	.....	H-W Rect.	Television Service. RF or Flyback Supply. Peak Inverse Volts = 22 KV, Output = 1.1 Ma.	67.5	6.0	67.5	5.0	250,000	925	.....	.....	.....	.....	1X2B
1Y2	ST-12	Diode	Filament	1.5	0.290	.....	.....	.....	H-W Rect.	15,000 A.C. Volts Per Plate, RMS, 2.0 Ma. Output Current.	45	4.5	45	1.6	400,000	650	.....	.....	.....	.....	1Y2
1Z2	T-5½	Diode	Filament	1.5	0.300	.....	.....	.....	H-W Rect.	7,800 Volts RMS Per Plate, 2.0 Ma. D.C. Output Current.	60	60.0	60.0	40.0	800	5,250	.....	.....	.....	.....	1Z2
2A3	ST-16	Triode	Filament	2.5	2.500	16.0	7.0	5.0	Power Amp.	950	45.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	2A3
2A4G	ST-12	Gas Triode	Filament	2.5	2.500	Relay Tube	Instantaneous Forward or Inverse Anode Volts = 900. Peak Anode Amps. = 1.25 Average Anode. Current = 0.1 Amp. Max. Averaging Time = 45 Seconds. Cold Starting Time = 2 Seconds.	300	62.0	2A4G
2A5	ST-14	Beam Pent.	Cathode	2.5	1.750	.....	.....	.....	Power Amp.	Characteristics Same as Type 6F6G.	950	9.0	.....	0.9	91,000	1,100	.....	.....	.....	.....	2A5
2A6	ST-12	Duodiode Tri.	Cathode	2.5	0.800	1.7	1.7	3.8	Det. Amp.	Characteristics Same as Type 6A7.	950	9.0	.....	.....	.....	.....	.....	.....	.....	.....	2A6
2A7S	ST-12	Heptode	Cathode	2.5	0.800	0.3m	8.5	9.0	Converter	Characteristics Same as Type 6A7.	950	9.0	.....	.....	.....	.....	.....	.....	.....	.....	2A7S
2AF4, 2AF4A	T-5½	Triode	Cathode	2.35	0.600	1.9*	2.2*	0.45*	UHF/VHF Oscillator	Characteristics Same as Type 6AF4. (2AF4, 2AF4A Designed for Series Siting TV Receivers.)	90	1.0	2.6	18,700	2AF4, 2AF4A
2B3	T-9	Diode	Filament	1.75	0.250	.....	.....	.....	H-W Rect.	Television Service. Flyback Supplies. Peak Inverse Volts = 95 KV. Output = 0.5 Ma.	90	1.0	.....	2.6	.....	18,700	.....	.....	.....	.....	2B3
2B5	T-3	Duotriode	Filament	1.2	0.260	1.2*	0.9*	2.2*	Amplifier #	Characteristics Same as Type 6B7.	90	1.0	.....	2.6	.....	18,700	.....	.....	.....	.....	2B5
2B7	ST-12	Duodi. Pent.	Cathode	2.5	0.800	.....	.....	.....	Det. Amp.	Characteristics Same as Type 6B7.	90	1.0	.....	2.6	.....	18,700	.....	.....	.....	.....	2B7
2B7S	ST-12	Triode	Cathode	2.5	0.800	.....	.....	.....	VHF Amp.	Characteristics Same as Type 6B7.	90	1.0	.....	2.6	.....	18,700	.....	.....	.....	.....	2B7S
2BN4	T-5½	Gas Triode	Cathode	2.5	0.650	.....	.....	.....	Relay Tube	Characteristics Same as Type 6B8N4. (5BN4 Designed for Series Siting TV Receivers.)	350	50	.....	.....	.....	.....	.....	.....	.....	.....	2BN4
2C4	ST-12	Duotriode	Cathode	2.5	0.600	2.4	2.6	1.4	Power Amp.	Characteristics Same as Type 6B8N4. (5BN4 Designed for Series Siting TV Receivers.)	350	16.5	8.3	7,600	2C4
2C31	ST-12	Duotriode	Cathode	6.3	0.600	1.6	1.6	2.0	Amplifier	Characteristics Same as Type 6B8N4. (5BN4 Designed for Series Siting TV Receivers.)	350	60.0	20.0	1,375	2C31
2C32	T-9	Triode	Cathode	6.3	0.300	3.6	2.2	0.7	Amplifier	Characteristics Same as Type 6B8N4. (5BN4 Designed for Series Siting TV Receivers.)	300	10.5	11.0	6,600	2C32
2C50	T-9	Duotriode	Cathode	12.6	0.300	Amplifier #	Characteristics Same as Type 6B8N4. (5BN4 Designed for Series Siting TV Receivers.)	900	11	18	3,450	2C50
2C51	T-6½	Duotriode	Cathode	6.3	0.300	1.3	2.2	1.0	Amplifier	Characteristics Same as Type 6B8N4. (5BN4 Designed for Series Siting TV Receivers.)	150	2.0	8.2	5,500	2C51

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate;
 RF Input, Mixer Output.
 I Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater.)
 (3) Has special mechanical and/or life characteristics.
 (4) With Average Power Input of 350 Mw. Grid to Grid.
 (5) For two tubes with 40 volts RMS applied to each grid.
 (6) Pentode Operation.
 (7) Plate to Plate.
 (8) Triode Operation.
 (9) Applied through 20,000 ohms.
 (10) Per Tube or Section.
 (11) Conversion Transconductance.
 (12) Approximate.
 (13) Maximum Cathode Resistor (ohms).

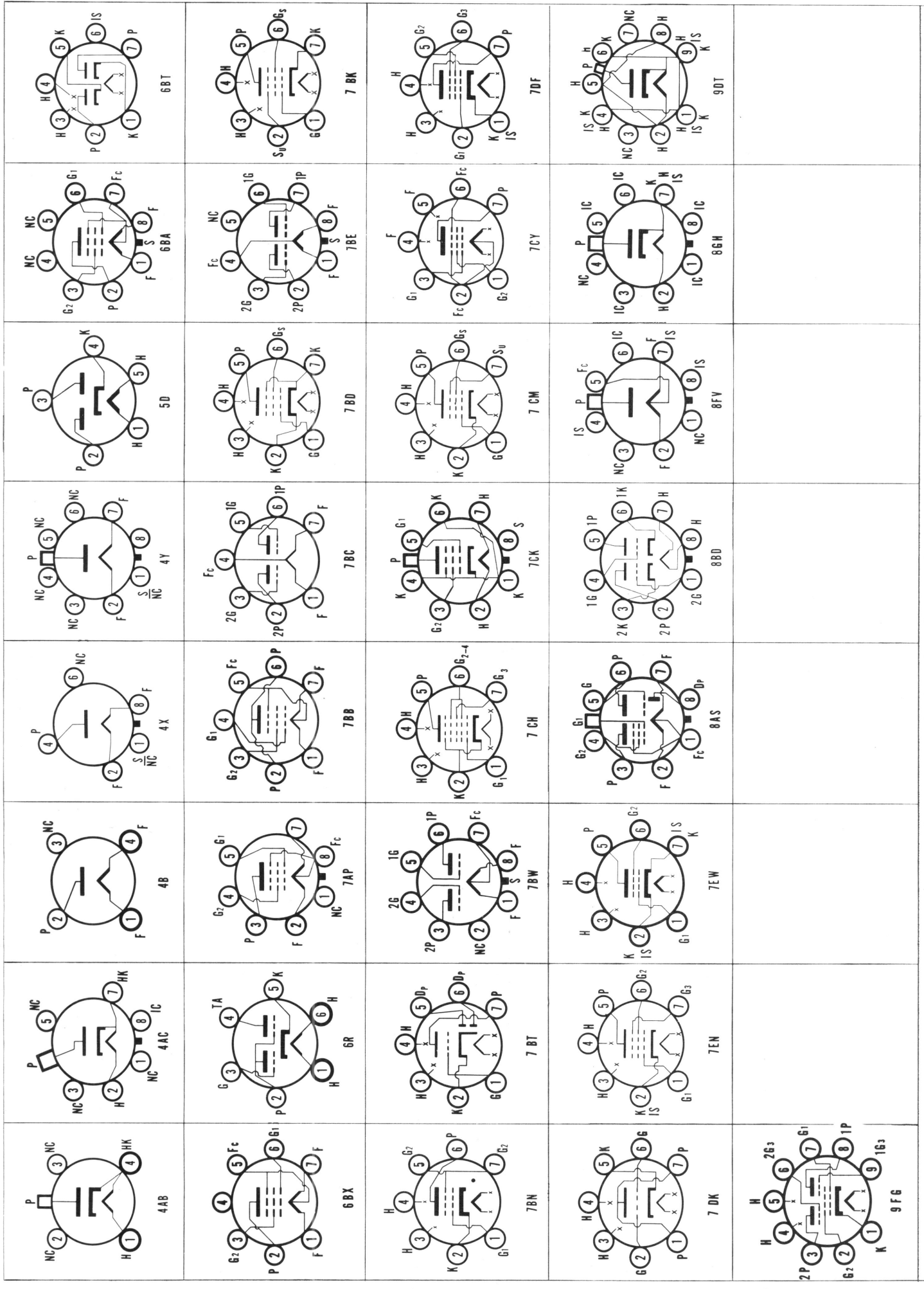


SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Ht—Heater Tap; IC—Internal Connection; DO NOT USE, J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

SYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (*) Capacitances in μf .			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Cgp.													Cin.	Couf.
9C52	T-9	Duotriode	8BD-0-0	Cathode	12.6	0.300	2.7*	2.3*	0.75*	250	2.0	.....	.....	.....	.....	.....	.....	9C52
2CY5	T-5½	Tetrode	7EW-0-2.7	Cathode	2.41	0.600	.03	4.5	3.0	Characteristics Same as Type 6CY5.	.....	.....	.....	.....	.....	.....	.....	2CY5
2D91	T-5½	Gas Tetrode	7BN-0-0	Cathode	6.3	0.600	.02*	2.4*	1.6*	400	5	Average Cathode Current = 100 Max. Ma., Averaged over any 30 Sec. Interval.					2D91		
9E5	T-9	Electron Ray	6R-0-0	Cathode	2.5	0.800	.....	.....	.....	Characteristics Same as Type 6E5.	.....	.....	.....	.....	.....	.....	.....	9E5
2E26	T-9	Beam Pent.	7CK-8-1,4,6	Cathode	6.3	0.800	.02*	12.5*	7.0*	Class C	500	40.0	11.0	Driving Power = 0.12 Watts, D.C. Grid No. 1 Current = 3.0 Ma.					2E26
9S/4S	ST-12	Duotriode	5D-4-0	Cathode	2.5	1.350	.....	.....	.....	The Two Diode Plates each Draw Approximately 40.0 Ma. with 50 Volts D.C. on the Plates.	.....	.....	.....	.....	.....	.....	.....	9S/4S
9T4	T-5½	Triode	7DK-0-0	Cathode	2.351	0.600	1.7*	2.6*	0.4*	Characteristics Same as Type 6T4. (9T4 Designed for Series String TV Receivers).	.....	.....	.....	.....	.....	.....	.....	9T4
2V3G	ST-12	Diode	4Y-0-0	Filament	2.5	5.000	.....	.....	.....	6000 A.C. Volts Per Plate, RMS, 2 Ma. Output Current. Condenser Input to Filter.	.....	.....	.....	.....	.....	.....	.....	2V3G
2V3GT	T-9	Diode	4X-0-0	Filament	2.5	1.500	.....	.....	.....	350 A.C. Volts Per Plate, RMS, 55 Ma. Output Current. Condenser Input to Filter.	.....	.....	.....	.....	.....	.....	.....	2V3GT
2X2A (3)	ST-12	Diode	4AB-0-0	Cathode	2.5	1.750	.....	.....	.....	Characteristics Same as Type 9X2	.....	.....	.....	.....	.....	.....	.....	2X2A (3)
2X2/879	ST-12	Diode	4B-0-0	Filament	2.5	1.500	.....	.....	.....	4500 A.C. Volts Per Plate, RMS, 7.5 Ma. Output Current. Condenser Input to Filter.	.....	.....	.....	.....	.....	.....	.....	2X2/879
2Z2/G84	ST-12	Diode	4B-0-0	Filament	2.5	1.500	.....	.....	.....	350 A.C. Volts Per Plate, RMS, 50 Ma. Output Current.	.....	.....	.....	.....	.....	.....	.....	2Z2/G84
3A2	T-6½	Diode	9DT-0-1	Cathode	3.15	0.920	.....	.....	.....	Television Service. Peak Inverse Volts = 18 KV. Peak Current = 80 Ma. Average Current = 1.5 Ma.	.....	.....	.....	.....	.....	.....	.....	3A2
3A3	T-9	Diode	4AC-0-7	Cathode	3.15	0.920	.....	.....	.....	Television Service. Peak Inverse Volts = 30 KV. Peak Current = 80 Ma. Average Current = 1.5 Ma.	.....	.....	.....	.....	.....	.....	.....	3A3
3A4	T-5½	Pentode	7BB-0-0	Filament	1.4	0.200	0.35m	4.8	7.0	Power Amp.	135	7.5	9.0	14.8	1.900	.....	.....	3A4
3A5	T-5½	Duotriode	7BC-0-0	Filament	2.8	0.100	.....	.....	.....	Power Amp.	90	2.5	.....	.....	.....	.....	.....	3A5
3A8GT	T-9	Diode Triode Pentode	8AS-0-1	Filament	1.4	0.100	0.10m	2.6	4.2	Tri. Amp. Pent. Amp.	90	0.0	.....	.....	.....	.....	.....	3A8GT
3AF4A	T-5½	Triode	7DK-0-0	Cathode	3.21	0.450	1.9*	2.2*	0.45*	UHF Osc.	90	0.0	.....	.....	.....	.....	.....	3AF4A
3AL5	T-5½	Duotriode	6BT-0-2	Cathode	3.151	0.600	.....	.....	.....	Characteristics Same as Type 6AL5. (3AL5 Designed for Series String TV Receivers).	.....	.....	.....	.....	.....	.....	.....	3AL5
3AU6	T-5½	Pentode	7BK-0-6	Cathode	3.151	0.600	.0035m	5.5*	5.0*	R-F Amp.	.....	.....	.....	.....	.....	.....	.....	3AU6
3AV6	T-5½	Duotriode Tri.	7BT-2-0	Cathode	3.151	0.600	2.1	2.3	0.9	Det. Amp.	.....	.....	.....	.....	.....	.....	.....	3AV6
3B2	T-12	Diode	8GH-0-7	Cathode	3.15	0.920	.....	.....	.....	Television Service. Pulsed Rectifier Service. Max. Peak Inverse Volts = 35 Kv, Output = 1.1 Ma.	.....	.....	.....	.....	.....	.....	.....	3B2
3B4	T-5½	Beam Amp.	7CY	Filament	2.50	0.165	0.16	4.6	7.6	VHF Power Amp.	150	75	135	.....	.....	.....	.....	3B4
3B5GT	T-9	Beam Amp.	7AP-0-0	Filament	1.4	0.100	.....	.....	.....	Power Amp.	45	4.5	4.4	0.3	100,000	.....	.....	3B5GT
3B7	Lock-in	Duotriode	7BE-L-0	Filament	2.8	0.050	.....	.....	.....	Power Amp.	67.5	7.0	6.7	0.5	100,000	.....	.....	3B7
3BA6	T-5½	Pentode	7BK-0-2	Cathode	3.151	0.600	.0035m*	5.5*	5.0*	Power Amp. Oscillator	135	0	.....	.....	.....	.....	.....	3BA6
3BC5	T-5½	Pentode	7GD-0-2&7	Cathode	3.151	0.600	.02	6.6	2.6	VHF Amp.	.....	.....	.....	.....	.....	.....	.....	3BC5
3BE6	T-5½	Heptode	7CH-0-0	Cathode	3.151	0.600	0.1m*	5.5*	8.0*	Converter	.....	.....	.....	.....	.....	.....	.....	3BE6
3BN6	T-5½	Gated Beam	7DF-0-1	Cathode	3.151	0.600	.....	.....	.....	Quad. Det.	.....	.....	.....	.....	.....	.....	.....	3BN6
3BU8	T-6½	Duo Pentode	9FG-0-2	Cathode	3.151	0.600	G3 to P 1.9	6.0	3.0	Sync. Sep.	.....	.....	.....	.....	.....	.....	.....	3BU8
3BY6	T-5½	Heptode	7CH-0-0	Cathode	3.151	0.600	.08m*	5.4*	7.6*	Sync. Sep.	.....	.....	.....	.....	.....	.....	.....	3BY6
3BZ6	T-5½	Pentode	7CM-0-7	Cathode	3.151	0.600	.015m	7.5	2.8	VHF Amp.	.....	.....	.....	.....	.....	.....	.....	3BZ6
3C2	T-12	Diode	8FV-0-4,7,8	Filament	1.58	0.210/0.420	.....	.....	.....	Television Service. Flyback Supplies. Peak Inverse Volts = 28 KV. Output = 1.1 Ma.	.....	.....	.....	.....	.....	.....	.....	3C2
3C5GT	T-9	Pentode	7AP-0-0	Filament	1.4	0.100	.....	.....	.....	Power Amp.	90	9.0	9.0	6.0	.....	.....	.....	3C5GT
3C6/XXB	Lock-in	Duotriode	7BW-0-0	Filament	2.8	0.050	.....	.....	.....	Power Amp.	90	9.0	9.0	6.0	.....	.....	.....	3C6/XXB
3CB6	T-5½	Pentode	7CM-0-7	Cathode	3.151	0.600	.02m*	6.5*	2.0*	Det. Amp.	.....	.....	.....	.....	.....	.....	.....	3CB6
3CE5	T-5½	Pentode	7BD	Cathode	3.151	0.600	.03*	6.5*	1.9*	R-F Amp.	.....	.....	.....	.....	.....	.....	.....	3CE5
3CF6	T-5½	Pentode	7CM	Cathode	3.151	0.600	.09*	6.3*	1.9*	VHF Amp.	.....	.....	.....	.....	.....	.....	.....	3CF6
3CS6	T-5½	Heptode	7CH-0-0	Cathode	3.151	0.600	.03*	5.4*	7.5*	Sync. Separator	.....	.....	.....	.....	.....	.....	.....	3CS6
3CY5	T-5½	Tetrode	7EW-0-2.7	Cathode	2.91	0.450	.03	4.5	3.0	VHF Amp.	.....	.....	.....	.....	.....	.....	.....	3CY5
3D6	Lock-in	Beam Pent.	6BA-L-0	Filament	2.8	0.110	0.3	7.5	6.5	Power Amp.	150	4.5	9.0	10.2	.....	.....	.....	3D6
3DK6	T-5½	Pentode	7CM-0-7	Cathode	3.151	0.600	.02*	6.3*	1.9*	VHF Amp.	.....	.....	.....	.....	.....	.....	.....	3DK6
3DT6	T-5½	Gated Beam	7EN-0-0	Cathode	3.151	0.600	.02	.....	.....	Quad. F. M. Det.	.....	.....	.....	.....	.....	.....	.....	3DT6
3E5	T-5½	Power Pent.	6BX-0-0	Filament	1.4	0.050	.....	.....	.....	Power Amp.	67.5	5.0	67.5	5.0	130,000	.....	.....	3E5

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate; RF Input, Mixer Output.
 (3) Has special mechanical and/or life characteristics.
 (4) With Average Power Input of 350 Mw. Grid to Grid.
 (5) For two tubes with 40 volts RMS applied to each grid.
 (6) Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater).
 (7) Pentode Operation.
 (8) Plate to Plate.
 (9) Triode Operation.
 (10) Applied through 20,000 ohms.
 (11) Conversion Transconductance.
 (12) Approximate.
 (13) Maximum Cathode Resistor (ohms).



SYMBOLS FOR BASE DIAGRAMS: F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Ht—Heater Tap; IC—Internal Connection; DO NOT USE; J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

SYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (2) Capacitances in $\mu\text{f.}$			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Csp.													Cin.	Coult.
3E6	Lock-in	Pentode	7CL-L-5	Filament	1.4	0.100	.007m	5.5	7.5	0	90	3.8	1.3	300,000	2,100	.....	.....	3E6	
3LE4	Lock-in	Power Pent.	6BA-L-0	Filament	2.8	0.050	.....	.....	.....	90	9.0	1.8	110,000	1,600	.....	6,000	300	3LE4	
3LF4	Lock-in	Beam Pent.	6BA-L-0	Filament	1.4	0.100	.....	.....	.....	90	9.0	2.0	100,000	1,750	.....	6,000	385	3LF4	
3Q4	T-5½	Power Pent.	7BA-0-0	Filament	2.8	0.050	.....	.....	.....	85	5.0	7.0	8.8	70,000*	1,950	.....	9,000	250	3Q4
3Q5GT	T-9	Beam Pent.	7AP-0-0	Filament	1.4	0.100	.....	.....	.....	90	4.5	9.5	1.3	90,000*	2,000	.....	10,000	270	3Q5GT
3S4	T-5½	Power Pent.	7BA-0-0	Filament	2.8	0.050	0.3	5.0	7.0	90	4.5	9.5	1.0	100,000*	2,000	.....	8,000	400	3S4
3V4	T-5½	Power Pent.	6BX-0-0	Filament	1.4	0.100	.....	.....	.....	90	7.0	7.4	1.4	100,000	1,575	.....	8,000	970	3V4
4A6G	ST-12	Duodiode	8L-0-0	Filament	2.8	0.050	.....	.....	.....	90	1.5	.....	.....	36,600	750	.....	8,000	1,000	4A6G
4AU6	T-5½	Pentode	7BK-0-2	Cathode	4.21	0.450	.0035*	5.5*	5.0*	90	10.8	.....	.....	.....	.....	.....	.....	1,000	4AU6
4BC5	T-5½	Pentode	7BD-0-2&7	Cathode	4.21	0.450	.02	6.6	2.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	4BC5
4BC8	T-6½	Duodiode	9AJ-0-9	Cathode	4.21	0.600	1.4	2.5	1.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	4BC8
4BN6	T-5½	Gated Beam	7DF-0-1	Cathode	4.21	0.450	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4BN6
4BQ7A	T-6½	Duodiode	9AJ-0-9	Cathode	4.21	0.600	1.15	2.85	1.35	.....	.....	.....	.....	.....	.....	.....	.....	.....	4BQ7A
4BS8	T-6½	Duodiode	9AJ	Cathode	4.51	0.600	1.15	2.6	1.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	4BS8
4BX8	T-6½	Duodiode	9AJ	Cathode	4.51	0.600	1.4	4.9	2.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	4BX8
4BZ7	T-6½	Duodiode	9AJ-0-9	Cathode	4.21	0.600	1.15	2.5	1.35	.....	.....	.....	.....	.....	.....	.....	.....	.....	4BZ7
4CB6	T-5½	Pentode	7CM-0-7	Cathode	4.21	0.450	.015	6.4	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	4CB6
4CX7	T-6½	Duodiode	9FC-0-2	Cathode	4.21	0.600	1.2	2.4	1.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	4CX7
4CY5	T-5½	Tetrad	7EW-0-2,7	Cathode	4.51	0.300	.03	4.5	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	4CY5
4DK6	T-5½	Pentode	7CM-0-7	Cathode	4.21	0.450	.02*	6.3*	1.9*	.....	.....	.....	.....	.....	.....	.....	.....	.....	4DK6
4DT6	T-5½	Gated Beam	7EN-0-0	Cathode	4.21	0.450	.02	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4DT6
5A6	T-6½	Power Pent.	9L-0-0	Filament	5.0	0.230	0.1	8.5	9.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	5A6
5AM8	T-6½	Diode Pent.	9CY-0-0	Cathode	4.71	0.600	.015	6.0	3.0*	.....	.....	.....	.....	.....	.....	.....	.....	.....	5AM8
5AN8	T-6½	Tri. Pentode	9DA-0-9	Cathode	4.71	0.600	1.5*	9.0*	0.97*	.....	.....	.....	.....	.....	.....	.....	.....	.....	5AN8
5AQ5	T-5½	Beam Pent.	7BZ-0-0	Cathode	4.71	0.600	.04m*	7.0*	2.3*	.....	.....	.....	.....	.....	.....	.....	.....	.....	5AQ5
5A18	T-6½	Tri. Pentode	9DW-0-0	Cathode	4.71	0.600	1.5	2.4	1.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	5A18
5AV8	T-6½	Tri. Pentode	9DZ-0-7	Cathode	4.71	0.600	.016m	4.7	1.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	5AV8
5AW4	T-12	Duodiode	5T-0-0	Filament	5.0	0.400	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5AW4
5AX4GT	T-9	Duodiode	5T-0-0	Filament	5.0	0.250	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5AX4GT
5AZ4	Lock-in	Duodiode	5T-L-0	Filament	5.0	0.200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5AZ4
5B8	T-6½	Tri. Pentode	9EC-0-1	Cathode	4.71	0.600	1.7*	1.9*	2.6*	.....	.....	.....	.....	.....	.....	.....	.....	.....	5B8
5BE8	T-6½	Tri. Pentode	9EG-0-3	Cathode	4.71	0.600	.04m*	2.8*	4.4*	.....	.....	.....	.....	.....	.....	.....	.....	.....	5BE8
5BK7A	T-6½	Duodiode	9AJ-0-9	Cathode	4.71	0.600	1.8	3.0	1.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	5BK7A
5BQ7A	T-6½	Duodiode	9AJ-0-9	Cathode	5.61	0.450	1.2	2.6	1.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	5BQ7A
5BR8	T-6½	Triode Pentode	9FA	Cathode	4.71	0.600	.008	5.0	3.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	5BR8
5BT8	T-6½	Duodi. Pent.	9FE	Cathode	4.71	0.600	.04m*	7.0*	2.3*	.....	.....	.....	.....	.....	.....	.....	.....	.....	5BT8
5BZ7	T-6½	Duodiode	9AJ-0-9	Cathode	5.61	0.450	1.2	2.5	1.35	.....	.....	.....	.....	.....	.....	.....	.....	.....	5BZ7

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate, RF Input, Mixer Output.
 † Pentode Operation. ‡ Plate to Plate. § Triode Operation. ¶ Approximate.
 * Applied through 90,000 ohms. † Per Tube or Section. ‡ Conversion Transconductance. § Plate and Target Supply Voltage. ¶ Triode Operation.
 †† For two tubes with 40 volts RMS applied to each grid.
 ††† Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater).

SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Ht—Heater Tap; IC—Internal Connection; DO NOT USE, J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

SYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (*) Capacitances in $\mu\mu\text{f}$.			Use	Plate Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Cgp.												Cin.	Couf.
5CG8	T-6½	Tri. Pentode	9GF	Cathode	4.7I	0.600	1.5 .016m	3.0 5.0	1.0 1.6	Characteristics Same as 6CG8 (5CG8 Designed for Series String TV Receivers.)								5CG8
5CL8	T-6½	Tri. Tetrode	9FX	Cathode	4.7I	0.600	1.8 .016m	9.7 5.0	1.9 3.0	Characteristics Same as Type 6CL8. (5CL8 D. signed for Series String TV Receivers.)								5CL8
5CM8	T-6½	Tri. Pentode	9FZ	Cathode	4.7I	0.600	1.9 .09m	1.6 6.0	0.22 2.6	Characteristics Same as 6CM8. (5CM8 Designed for Series String TV Receivers.)								5CM8
5J6	T-5½	Duotriode	7BF-0-0	Cathode	4.7I	0.600	1.5 1.5	2.6 2.6	1.6 1.0	Characteristics Same as Type 6J6. (5J6 Designed for Series String TV Receivers.)								5J6
5R4GY 5R4GYA	ST-16 T-12	Duodiode	5T-0-0	Filament	5.0	2.000	.....	.....	.....	900 Volts RMS Per Plate, 150 Ma. D-C Output, Condenser Input to Filter. 1950 Volts RMS Per Plate, 175 Ma. D-C Output, Choke Input to Filter.								5R4GY 5R4GYA
5T4	Metal	Duodiode	5T-0-0	Filament	5.0	2.000	.....	.....	.....	450 A.C. Volts Per Plate, RMS, 225 Ma. Output Current. Condenser Input to Filter. 350 A.C. Volts Per Plate, RMS, 225 Ma. Output Current. Choke Input to Filter.								5T4
5T8	T-6½	Triple Dio. Tri.	9E-0-3&7	Cathode	4.7I	0.600	2.2*	1.6*	1.0*	Characteristics Same as Type 6T8. (5T8 Designed for Series String TV Receivers.)								5T8
5U4G	ST-16	Duodiode	5T-0-0	Filament	5.0	3.000	.....	.....	.....	450 A.C. Volts Per Plate, RMS, 225 Ma. Output Current. Condenser Input to Filter.								5U4G
5U4GA	T-11	Duodiode	5T-0-0	Filament	5.0	3.000	.....	.....	.....	450 A.C. Volts Per Plate, RMS, 250 Ma. Output Current with Cap. Input to Filter. Peak Current = 900 Ma. Per Plate. 5U4GA								5U4GA
5U4GB	T-12	Duodiode	5T-0-0	Filament	5.0	3.000	.....	.....	.....	450 A.C. Volts Per Plate, RMS, 275 Ma. Output Current with Cap. Input to Filter. Peak Current = 1 Amp. Per Plate. 5U4GB								5U4GB
5U4WG (3)	T-12	Duodiode	5T-0-0	Filament	5.0	3.000	.....	.....	.....	Characteristics Same as Type 5U4G.								5U4WG (3)
5U8	T-6½	Tri. Pentode	9AE-0-7	Cathode	4.7I	0.600	1.8 .006m	2.5 5.0	1.0 3.5	Characteristics Same as Type 6U8. (5U8 Designed for Series String TV Receivers.)								5U8
5V3	T-12	Duodiode	5T-0-0	Filament	5.0	3.800	.....	.....	.....	425 A.C. Volts Per Plate, RMS, 350 Ma. Output Current. Capacitor Input to Filter. 500 A.C. Volts Per Plate, RMS, 350 Ma. Output Current. Choke Input to Filter.								5V3
5V4G	ST-14	Duodiode	5L-0-0	Cathode	5.0	2.000	.....	.....	.....	375 A.C. Volts Per Plate, RMS, 175 Ma. Output Current. Condenser Input to Filter.								5V4G
5V4GA	T-12	Duodiode	5L-0-0	Cathode	5.0	2.000	.....	.....	.....	375 A.C. Volts Per Plate, RMS, 175 Ma. Output Current. Condenser Input to Filter.								5V4GA
5V4GT	T-9	Beam Pent.	7S-0-0	Cathode	4.7I	0.600	0.7*	9.0*	7.5*	Power Amp. (5V4GT Designed for Series String TV Receivers.)								5V4GT
5W4	Metal	Duodiode	5T-1-0	Filament	5.0	1.500	.....	.....	.....	350 A.C. Volts Per Plate, RMS, 110 Ma. Output Current. Condenser Input to Filter.								5W4
5W4GT	T-9	Duodiode	4C-0-0	Filament	5.0	2.000	.....	.....	.....	400 A.C. Volts Per Plate, RMS, 110 Ma. Output Current. Choke or Condenser Input to Filter. 1275 A.C. Volts Per Plate, RMS, 30 Ma. Output Current. Choke or Condenser Input to Filter.								5W4GT
5X3	ST-16	Duodiode	5Q-0-0	Filament	5.0	3.000	.....	.....	.....	450 A.C. Volts Per Plate, RMS, 225 Ma. Output Current. Condenser Input to Filter.								5X3
5X4G	T-12	Duodiode	5Q-0-0	Filament	5.0	3.000	.....	.....	.....	450 A.C. Volts Per Plate, RMS, 225 Ma. Output Current. Condenser Input to Filter.								5X4G
5X4GA	T-19	Duodiode	5Q-0-0	Filament	5.0	3.000	.....	.....	.....	450 A.C. Volts Per Plate, RMS, 250 Ma. Output Current. Condenser Input to Filter.								5X4GA
5X8	T-6½	Tri. Pentode	9AK-0-0	Cathode	4.7I	0.600	1.4	2.6 4.5	1.0 1.4	Characteristics Same as Type 6X8. (5X8 Designed for Series String TV Receivers.)								5X8
5Y3GT	T-9	Duodiode	5T-0-0	Filament	5.0	2.000	.....	.....	.....	350 A.C. Volts Per Plate, RMS, 125 Ma. Output Current. Condenser Input to Filter. 500 A.C. Volts Per Plate, RMS, 125 Ma. Output Current. Choke Input to Filter.								5Y3GT
5Y3GA	T-12	Duodiode	5Q-0-0	Filament	5.0	2.000	.....	.....	.....	Characteristics Same as Type 5Y3GT.								5Y3GA
5Y4G	ST-14	Duodiode	5Q-0-0	Filament	5.0	2.000	.....	.....	.....	450 A.C. Volts Per Plate, RMS, 225 Ma. Output Current. Condenser Input to Filter.								5Y4G
5Y4GA	T-12	Duodiode	5Q-0-0	Filament	5.0	2.000	.....	.....	.....	450 A.C. Volts Per Plate, RMS, 225 Ma. Output Current. Condenser Input to Filter.								5Y4GA
5Z3	ST-16	Duodiode	4C-0-0	Filament	5.0	3.000	.....	.....	.....	450 A.C. Volts Per Plate, RMS, 225 Ma. Output Current. Condenser Input to Filter.								5Z3
5Z4	Metal	Duodiode	5L-1-0	Cathode	5.0	2.000	.....	.....	.....	350 A.C. Volts Per Plate, RMS, 125 Ma. Output Current. Condenser Input to Filter.								5Z4
5Z4GT	T-9	Duodiode	5L-0-0	Cathode	5.0	2.000	.....	.....	.....	350 A.C. Volts Per Plate, RMS, 125 Ma. Output Current. Condenser Input to Filter.								5Z4GT
6A3	ST-16	Triode	4D-0-0	Filament	6.3	1.000	16.0	7.0	5.0	250 45.0 60.0 60.0 800 5,250 4.2 325 68.0 40.0# 40.0# (Push Pull, Fixed Bias) 3,000 3,000 10,000 325 135 13.0 9.0 2.8 59,600 2,100 150 9,000 700 180 19.0 18.0 3.9 60,000 2,500 150 8,000 1,500								6A3
6A4/LA	ST-14	Power Pent.	5B-0-0	Filament	6.3	0.300	.....	.....	.....	Power Amp. (Push Pull, Fixed Bias) 3,000 3,000 10,000								6A4/LA
6A5G	ST-16	Triode	6T-0-0	Cathode	6.3	1.250	.....	.....	.....	Power Amp. 45.0 60.0 60.0 Per Tube, Push Pull, Fixed Bias 300 5,250 4.2 P.P.AB1 Amp. 325 68.0 40.0# 40.0# (Class A, One Tube, Dynamic Coupled) 3,000 3,000 10,000								6A5G
6A6	ST-14	Duotriode	7B-0-0	Cathode	6.3	0.800	.....	.....	.....	Power Amp. 300 0.0 17.5 Per Plate, Class B Operation, Zero Signal 10,000 10,000 Driver 250 5.0 6.0 11,300 3,100 35 594 6.0 7.0 11,000 3,200 35 (Class A Driver)								6A6
6A7, 6A7S	ST-12	Heptode	7C-0-0	Cathode	6.3	0.300	0.3	8.5	9.0	Characteristics Same as Type 6A8G, Except Capacitances.								6A7, 6A7S
6A8	Metal	Heptode	8A-1-0	Cathode	6.3	0.300	.06	12.0	12.0	100 1.5 50 1.1 1.3 600,000 360 (Ga = 100V, 2.0 Ma.) 250 3.0 100 3.5 2.7 360,000 550 (Ga = 250 V, 2.0 Ma.)								6A8
6A8G	ST-12	Heptode	8A-0-0	Cathode	6.3	0.300	0.26	9.5	12.0	6A8G								6A8G
6A8GT	T-9	Triode	8A-1-0	Cathode	6.3	0.150	0.26	9.5	12.0	6A8GT								6A8GT
6A84	T-5½	Triode	5CE-0-2	Cathode	6.3	0.150	1.5	2.2	1.4	6A84								6A84
6AB5/6N5	T-9	Electron Ray	6R-0-0	Cathode	6.3	0.150	.....	.....	.....	6AB5/6N5								6AB5/6N5
6AB6G	ST-12	Duotriode	7AU-0-0	Cathode	6.3	0.500	.....	.....	.....	6AB6G								6AB6G
6AB7	Metal	Pentode	8N-1-1	Cathode	6.3	0.450	.015m	8.0	5.0	6AB7								6AB7
6AC5GT	T-9	Triode	6Q-0-0	Cathode	6.3	0.400	.....	.....	.....	6AC5GT								6AC5GT
6AC6GT	T-9	Duotriode	7W-0-0	Cathode	6.3	1.100	.....	.....	.....	6AC6GT								6AC6GT
6AC7	Metal	Pentode	8N-1-1	Cathode	6.3	0.450	.015m	11.0	5.0	6AC7								6AC7
6AD4	T-3	Triode	8DK-0-0	Cathode	6.3	0.150	0.7	1.9	2.2	6AD4								6AD4

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 RF Input, Mixer Output.
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 (4) With Average Power Input of 350 Mw. Grid to Grid.
 (5) For two tubes with 40 volts RMS applied to each grid.
 (6) Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater.)
 (7) Pentode Operation.
 (8) Plate to Plate.
 (9) Approximate.
 (10) Applied through 250,000 ohms.
 (11) Conversion Transconductance.
 (12) Triode Operation.
 (13) Plate and Target Supply Voltage.

SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Ht—Heater Tap; IC—Internal Connection; DO NOT USE, J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

SYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (*) Capacitances in μ f.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milliwatts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Cap.													Cin.	Coult
6AD5G, GT	ST-12, T-9	Triode	6Q-0-0	Cathode	6.3	0.300	3.3*	4.1*	3.9*	2.0	.....	0.9	.....	66,000	1,500	100	.....	6AD5G, GT	
6AD6G	T-9	Electron Ray	7AG-0-0	Cathode	6.3	0.150	.....	.....	.....	100§ (Ray Control Volts = 45 Approx. For 0° Shadow, Approx. = 23 Volts for 135° Shadow.) 150§ (Ray Control Volts = 75 Approx. For 0° Shadow, Approx. = 50 Volts for 135° Shadow.)	250 250	4.0 34.0	6.5	19,000 90,000	325 2,500	6	7,000	3,200	6AD6G
6AD7G	ST-14	Tri. Pentode	8AY-0-0	Cathode	6.3	0.850	.....	.....	.....	95	15	.....	.....	3,500	1,900	4.2	.....	6AD7G	
6AE5GT	T-9	Triode	6Q-0-0	Cathode	6.3	0.300	.....	.....	.....	250	.....	6.5	.....	2,500	1,000	25	.....	6AE5GT	
6AE6G	ST-12	Duo Plate Triode	7AH-0-0	Cathode	6.3	0.150	.....	.....	.....	250 250	.....	0.91 4.5	.....	3,500	950	33	.....	6AE6G	
6AE7GT	T-9	Duotriode	7AX-0-0	Cathode	6.3	0.500	2.5 2.5	3.0 3.0	1.8 1.8	250 250	.....	10.0	.....	4,650	3,000	14	.....	6AE7GT	
6AF4, 6AF4A	T-5½	Triode	7DK	Cathode	6.3	0.225	1.9*	2.2*	0.45*	100 - 4	.....	22	DC Grid Current \uparrow = 0.4 Ma.	4,900	1,500	7.4	.....	6AF4, 6AF4A	
6AF5G	ST-12	Triode	6Q-0-0	Cathode	6.3	0.300	.....	.....	.....	180	18.0	.....	.....	4,900	1,500	.....	.....	6AF5G	
6AF6G	T-9	Twin Elec. Ray	7AG-0-0	Cathode	6.3	0.150	.....	.....	.....	100§ (Ray Control Volts = Approx. 60 for 0° Shadow, Approx. Zero Volts for 100° Shadow.) 135§ (Ray Control Volts = Approx. 81 for 0° Shadow, Approx. Zero Volts for 100° Shadow.)	100 195 250	5.5 7.2 7.0	1.6 2.0	300,000 500,000 800,000	4,750 5,100 5,000	.....	.....	6AF6G	
6AG5	T-5½	Pentode	7BD-0-2&7	Cathode	6.3	0.300	.025m	6.1	2.3	300	3	30.0	7.0	130,000	11,000	.....	10,000	3,000	6AG5
6AG7	Metal	Pentode	8Y-1-3	Cathode	6.3	0.650	.06	13.0	7.5	300	3	30.0	7.0	130,000	11,000	.....	10,000	3,000	6AG7
6AH4GT	T-9	Triode	8EL	Cathode	6.3	0.750	4.4*	7.0*	1.7*	250	23	.....	.....	1,780	4,500	8	.....	6AH4GT	
6AH5G	ST-16	Beam Pent.	6AP-0-0	Cathode	6.3	0.900	.....	.....	.....	350	18	54	2.5	33,000	5,200	.....	4,200	10,800	6AH5G
6AH6	T-5½	Pentode	7BK-0-0	Cathode	6.3	0.450	.02m	10.0	3.6	300	160	10	2.5	500,000	9,000	.....	.....	.....	6AH6
6AH6V	T-5½	Pentode	7BD-0-2&7	Cathode	6.3	0.175	.01	3.9	2.85	150 160	150	12.5	.....	3,000	11,000	40	.....	.....	6AH6V
6AH7GT	T-9	Duotriode	8BE-0-0	Cathode	6.3	0.300	.035m	10.0	3.6	Characteristics Same as Type 12AH7GT.	.....	.....	.....	.....	.....	.....	.....	.....	6AH7GT
6AJ4	T-6½	Triode	9BX	Cathode	6.3	0.225	.....	.....	.....	125	68	16	.....	4,200	10,000	42	.....	6AJ4	
6AJ5	T-5½	Pentode	7BD-0-0	Cathode	6.3	0.175	.02	4.0	2.8	28	27	1.0	1.0	100,000	2,500	.....	.....	6AJ5	
6AJ7	Metal	Pentode	8N-1-1	Cathode	6.3	0.450	.....	.....	.....	300	160	10.0	2.5	1 Meg.	9,000	9,000	.....	.....	6AJ7
6AK4	T-3	Triode	8DK	Cathode	6.3	0.125	1.3	2.2	2.2	900	680	9.5	.....	5,300	3,800	20	.....	6AK4	
6AK5	T-5½	Pentode	7BD-0-2&7	Cathode	6.3	0.175	.01	3.9	2.85	200	90	7.5	2.5	340,000	5,000	1,700	.....	6AK5	
6AK6	T-5½	Power Pent.	7BK-0-0	Cathode	6.3	0.150	0.12*	3.6*	4.2*	180	9.0	15.0	2.5	900,000	2,300	.....	10,000	1,100	6AK6
6AK7	Metal	Power Pent.	8Y-1-3	Cathode	6.3	0.650	.06	13.0	7.5	300	3.0	30.0	7.0	130,000	11,000	.....	10,000	3,000	6AK7
6AL5	T-5½	Duotriode	6BT-0-6	Cathode	6.3	0.300	.....	.....	.....	117 A.C. Volts Per Plate, RMS, 9 Ma. Output Current.	.....	.....	.....	300 Ohms Min. Effective Plate Supply Impedance.	.....	.....	.....	.....	6AL5
6AL6G	ST-16	Beam Amp.	6AM-0-0	Cathode	6.3	0.900	.....	.....	.....	Characteristics Same as Type 6L6G.	.....	.....	.....	.....	.....	.....	.....	6AL6G	
6AL7GT	T-9	Electron Ray	8CH-0-0	Cathode	6.3	0.150	.....	.....	.....	315§ Grid Voltage for Fluorescent C.O. = -6 (App.). Deflection Sens = 1.0 MM. Per Volt (App.).	.....	.....	.....	8,700	9,800	85	.....	6AL7GT	
6AM4	T-6½	Triode	9BX	Cathode	6.3	0.225	2.8	4.6	0.16	200	100	10	2.4	130,000	2,600	.....	16,000	1,400	6AM4
6AM5	T-5½	Pentode	6CH-0-0	Cathode	6.3	0.200	.....	.....	.....	250	13.5	16	2.4	130,000	2,600	.....	16,000	1,400	6AM5
6AM6	T-5½	Pentode	7DB-0-6	Cathode	6.3	0.300	.01	10.0	3.25	200	9	2.7	1 Meg.	7,500	7,500	.....	.....	.....	6AM6
6AM8	T-6½	Diode Pent.	9CY	Cathode	6.3	0.450	.015	6.0	3.4	200	190	11.5	2.7	0.6 Meg.	7,000	.....	.....	.....	6AM8
6AN4	T-5½	Triode	7DK	Cathode	6.3	0.225	1.7*	2.9*	0.25*	200	100	13	.....	7,000	10,000	70	.....	6AN4	
6AN5	T-5½	Power Pent.	7BD-0-0	Cathode	6.3	0.450	.075	9.0	4.8	190	6.0	12.0	12.0	12,500	8,000	.....	2,500	1,300	6AN5
6AN6	T-5½	Quadruple Di.	7BJ-0-0	Cathode	6.3	0.900	.....	.....	.....	75 Volts RMS Per Plate, 8 Ma. D.C. Output Per Plate.	.....	.....	.....	.....	.....	.....	.....	6AN6	
6AN7	T-6½	Tri. Hexode	9Q-0-3	Cathode	6.3	0.230	0.1	3.8	9.2	250	85	3.0	.....	100,000	750	.....	.....	6AN7	
6AN8	T-6½	Tri. Pentode	9DA	Cathode	6.3	0.450	1.5*	2.0*	0.27*	250	6.0	13.0	.....	5,750	3,300	19	.....	6AN8	
6AQ5	T-5½	Beam Pent.	7BZ-0-0	Cathode	6.3	0.450	.04m*	7.0*	2.3*	200	180	9.5	4.8	0.3 Meg.	6,200	.....	.....	.....	6AQ5
6AQ5A	T-5½	Beam Pent.	7BZ-0-0	Cathode	6.3	0.450	0.17	8.0	11.0	200	12.5	45.0	2.5	52,000	4,100	.....	5,000	4,500	6AQ5A
6AQ6	T-5½	Duotriode Tri.	7BT-0-0	Cathode	6.3	0.150	1.8	1.7	1.5	180	8.5	180	3.0	58,000	3,700	.....	5,500	2,000	6AQ6
6AQ7GT	T-9	Duotriode Tri.	8CK-0-0	Cathode	6.3	0.300	2.8	2.3*	1.5*	100	1.0	0.8	.....	61,000	1,150	70	.....	.....	6AQ7GT
6AR5	T-5½	Power Pent.	6CC-0-0	Cathode	6.3	0.400	.....	.....	.....	250	2.0	2.3	.....	44,000	1,600	70	.....	.....	6AR5
6AR6	T-11	Pentode	6BQ-0-0	Cathode	6.3	1.200	0.55*	11.0*	7.0*	250	16.5	34	5.7	65,000	2,400	.....	7,000	3.2	6AR6
6AS5	T-5½	Beam Pent.	7CV-0-0	Cathode	6.3	0.800	0.6*	12.0*	6.2*	300	36.0	300	4.0	91,000	5,400	113	.....	.....	6AS5

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate;
 †† For two tubes with 40 volt RMS applied to each grid.
 * I Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater.)
 (3) Has special mechanical and/or life characteristics.
 † Applied through 20,000 ohms.
 †† Per Tube or Section.
 ††† Plate and Target Supply Voltage.
 † Pentode Operation.
 †† Plate to Plate.
 ††† Approximate.
 † Conversion Transconductance.
 †† Triode Operation.

SYMBOLS FOR BASE DIAGRAMS: · Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Ht—Heater Tap; IC—Internal Connection; DO NOT USE; J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

SYLVANIA TUBES -- AVERAGE CHARACTERISTICS

Type	Construction		Emitter			Note (1) (*) Capacitances in μf .		Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Beaming Diag.	Type	Volts	Amps.	Csp.													Cin.	Couf.
6A56	T-5½	Pentode	7CM-0-0	Cathode	6.3	0.175	.02	4.0	3.0	R-F Amp.	190	9.0	120	35	5.5	.....	3,500	.....	6A56
6A57G	ST-16	Duotriode	8BD-0-0	Cathode	6.3	2.500	.....	.....	.....	Power Amp.	135	250	125	.....	280	.....	7,000	.....	6A57GT
6A58	T-6½	Diode Pent.	9DS-0-7	Cathode	6.3	0.450	.02*	7.0*	2.4*	Def. Amp.	200	180	150	3.0	300,000	.....	6,200	.....	6A58
6A16	T-5½	Duotriode Tri.	7BT-0-0	Cathode	6.3	0.300	2.1*	2.3*	1.1*	Det. Amp.	100	1.0	.....	0.8	54,000	.....	1,300	.....	6A16
6A18	T-6½	Tri. Pentode	9DW-0-0	Cathode	6.3	0.450	1.5	2.4	1.0	Tri. Osc. Converter	250	3.0	.....	1.0	58,000	.....	1,900	.....	6A18
6AU4GT	T-9	Diode	4CG-0-0	Cathode	6.3	1.800	.....	.....	.....	T.V. Damper	.....	.....	.....	.....	.....	.....	.....	.....	6AU4GT
6AU4GTA	T-9	Diode	4CG-0-0	Cathode	6.3	1.800	.....	.....	.....	T.V. Damper	.....	.....	.....	.....	.....	.....	.....	.....	6AU4GTA
6AU5GT	T-9	Beam Pent.	6CK-0-0	Cathode	6.3	1.250	0.5*	11.3*	7.0*	Horiz. Defl. Amp.	.....	.....	.....	.....	.....	.....	.....	.....	6AU5GT
6AU6	T-5½	Pentode	7BK-0-2	Cathode	6.3	0.300	.0035*	5.5*	5.0*	R-F Amp.	100	1.0	100	5.2	600,000	.....	3,900	.....	6AU6
6AU6A	T-5½	Pentode	7BK-0-2	Cathode	6.3	0.300	.0035*	5.5*	5.0*	R-F Amp.	250	1.0	125	7.6	3.5 Meg.	.....	4,450	.....	6AU6A
6A8	T-6½	Tri. Pentode	9DX-0-6	Cathode	6.3	0.600	.046*	2.8*	2.6*	Tri. Amp. Pent. Amp.	150	150	150	9.5	7,200	.....	5,600	.....	6A8
6AV5GT	T-9	Beam Pent.	6CK-0-0	Cathode	6.3	1.200	.....	.....	.....	Horiz. Defl. Amp.	.....	.....	.....	.....	.....	.....	.....	.....	6AV5GT
6AV5GA	T-11 or T-12	Beam Pentode	6CK-0-0	Cathode	6.3	1.200	0.5*	14.0*	7.0*	Horizontal Def. Amp.	60	0	150	25	20,000	.....	5,500	.....	6AV5GA
6AV6	T-5½	Duotriode Tri.	7BT-0-0	Cathode	6.3	0.300	2.1	2.3	0.9	Det. Amp.	250	2.0	.....	1.2	62,500	.....	1,600	.....	6AV6
6AW7GT	T-9	Duotriode Tri.	8CQ-1-0	Cathode	6.3	0.300	.....	.....	.....	Det. Amp.	100	0	.....	1.4	1,900	.....	1,900	.....	6AW7GT
6AW8	T-6½	Tri. Pentode	9DX-0-6	Cathode	6.3	0.600	.....	.....	.....	Tri. Amp. Pent. Amp.	200	2.0	.....	4.0	17,500	.....	4,000	.....	6AW8
6AW8A	T-6½	Tri. Pentode	9DX-0-6	Cathode	6.3	0.600	.....	.....	.....	Tri. Amp. Pent. Amp.	200	180	150	13.0	400,000	.....	9,000	.....	6AW8A
6AX4GT	T-9	Diode	4CG	Cathode	6.3	1.200	.....	.....	.....	T.V. Damper	.....	.....	.....	.....	.....	.....	.....	.....	6AX4GT
6AX5GT	T-9	Duotriode	6S-0-0	Cathode	6.3	1.200	.....	.....	.....	F-W Rect.	.....	.....	.....	.....	.....	.....	.....	.....	6AX5GT
6AX6G	ST-14	Duotriode	7Q-0-0	Cathode	6.3	2.500	.....	.....	.....	F-W Rect. Amplifier	.....	.....	.....	.....	.....	.....	.....	.....	6AX6G
6AX7	T-6½	Duotriode	9A-0-0	Cathode	6.3/3.15	0.300/0.600	1.7*	1.6*	0.46*	.....	.....	.....	.....	.....	.....	.....	.....	.....	6AX7
6AX8	T-6½	Tri. Pentode	9AE-0-7	Cathode	6.3	0.450	1.8	2.5	1.0	Sync. Sep. Video Amp.	150	56	110	18	5,000	.....	8,500	.....	6AX8
6AZ5	T-3	Duotriode	8DF-0-4	Cathode	6.3	0.150	.006m	5.0	3.5	Rectifier	250	120	.....	3.5	400,000	.....	4,800	.....	6AZ5
6AZ8	T-6½	Tri. Pentode	9ED-0-5	Cathode	6.3	0.450	1.7*	2.0*	2.7*	Sync. Sep. Video Amp.	200	6	150	13.0	5,750	.....	3,300	.....	6AZ8
6B3	T-6½	Diode	9BD-0-0	Cathode	6.3	1.200	.....	.....	.....	T.V. Damper	.....	.....	.....	.....	.....	.....	.....	.....	6B3
6B4G	ST-16	Triode	5S-0-0	Filament	6.3	1.000	16.0	7.0	5.0	Power Amp.	.....	.....	.....	.....	.....	.....	.....	.....	6B4G
6B5	ST-14	Duotriode	6AS-0-0	Cathode	6.3	0.800	.....	.....	.....	Power Amp.	.....	.....	.....	.....	.....	.....	.....	.....	6B5
6B6G	ST-12	Duotriode Tri.	7V-0-0	Cathode	6.3	0.300	1.7	1.7	3.8	Det. Amp.	250	2.0	.....	0.9	91,000	.....	1,100	.....	6B6G
6B7	ST-12	Duodi. Pent.	7D-0-6	Cathode	6.3	0.300	.007	3.5*	9.5	R-F or I-F Det. Amp.	100	3.0	100	5.8	300,000	.....	950	.....	6B7
6B7S	ST-12	Duodi. Pent.	7D-6-6	Cathode	6.3	0.300	.007	3.5*	9.5	R-F or I-F Det. Amp.	180	3.0	75.0	3.4	1 Meg.	.....	840	.....	6B7S
6B8	Metal	Duodi. Pent.	8E-1-1	Cathode	6.3	0.300	.005m	6.0	9.0	A-F Amp.	250	4.5	50.0	0.65	.....	.....	.....	.....	6B8
6B8G	ST-12	Duodi. Pent.	8E-0-8	Cathode	6.3	0.300	.01m	3.6	9.5	Det. Amp.	.....	.....	.....	.....	.....	.....	.....	.....	6B8G
6B8GT	T-9	Pentode	8D-0-0	Cathode	6.3	0.150	.065	3.4	3.6	A-F Amp.	100	270	100	5.5	175,000	.....	2,150	.....	6B8GT
6BA3	T-3	Pentode	7BK-0-2	Cathode	6.3	0.300	.0035m*	5.5*	5.0*	R-F Amp.	100	68	100	10.8	250,000	.....	4,300	.....	6BA3
6BA6	T-5½	Pentode	7BK-0-2	Cathode	6.3	0.300	.0035m*	5.5*	5.0*	R-F Amp.	250	68	100	11.0	1.5 Meg.	.....	4,400	.....	6BA6
6BA7	T-6½	Heptode	8CT-0-6A8	Cathode	6.3	0.300	0.19m	9.5	8.3	Converter	100	1.0	100	3.6	500,000	.....	900	.....	6BA7
6BA8	T-6½	Tri. Pentode	9DX-0-6	Cathode	6.3	0.600	2.2	2.7	2.2	Tri. Amp. Pent. Amp.	200	8.0	150	8.0	6,700	.....	2,700	.....	6BA8
6BA8A	T-6½	Tri. Pentode	9DX-0-6	Cathode	6.3	0.600	2.2	1.9	3.9	Tri. Amp. Pent. Amp.	200	180	150	13.0	400,000	.....	9,000	.....	6BA8A

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate; RF input, Mixer Output.
 (3) Has special mechanical and/or life characteristics.
 (4) With Average Power Input of 320 Mw. Grid to Grid.
 (5) For two tubes with 40 volts RMS applied to each grid.
 (6) Controlled Heater Warm-up Time (applies to parallel connections of types having a trapped heater.)
 (7) Instantaneous Plate Knee Values for 6BA8A
 EB = 65 Volt, EC² = 150 Volt, EC¹ = 0.
 IB = 42 Ma., IC² = 12.5 Ma.
 (8) Applied through 250,000 ohms.
 (9) Per Tube or Section.
 (10) Plate and Target Supply Voltage.
 (11) Pentode Operation.
 (12) Triode Operation.
 (13) Conversion Transconductance.
 (14) Approximate.
 (15) Cathode Resistor (ohms).
 (16) m maximum

PENNSYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (2) Capacitances in $\mu\mu\text{f}$.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Cgp.													Cin.	Cout
6BC5	T-5½	Pentode	7BD-0-2&7	Cathode	6.3	0.300	.02	6.6	2.6	250 180 100 125 180	6.0 8.0 4.7 2.4 2.1	3.5 5.0	9,000 6,000 6,000 500,000 800,000	4,400 6,000 4,900 6,100 5,700	40 43	.....	.....	6BC5	
6BC7	T-6½	Triode Diode	9AX-0-3	Cathode	6.3	0.450	.....	.....	.....	High Perveance Diode	.....	.....	.....	.....	.....	.....	.....	6BC7	
6BC8	T-6½	Duotriode	9AJ-0-9	Cathode	6.3	0.400	1.4	2.5	1.3	Class A1 Amplifier	10.0	.....	.....	.....	.....	35	.....	6BC8	
6BD4	T-12	Beam Triode	8FU	Cathode	6.3	0.600	1.0*	3.8*	0.04m*	Hi-Volt. Reg.	195 Max. D.C. Grid Volts. 1.5 Ma. Max. D.C. Plate Current.	.....	.....	.....	.....	.....	.....	6BD4	
6BD4A	T-12	Beam Triode	8FU-0-0	Cathode	6.3	0.600	1.0*	3.8*	0.04m*	Hi-Volt. Reg.	195 Max. D.C. Grid Volts. 1.5 Ma. Max. D.C. Plate Current.	.....	.....	.....	.....	.....	.....	6BD4A	
6BD5GT	T-9	Beam Pent.	6CK-0-0	Cathode	6.3	0.900	.....	.....	.....	Horiz. Defl. Amp.	Maximum Peak Positive Pulse Plate Voltage = 4,000 Volts. Maximum D.C. Cathode Current = 100 Ma. Maximum Plate Dissipation = 10 Watts. Maximum Screen Dissipation = 3.0 Watts.	.....	.....	.....	.....	.....	.....	6BD5GT	
6BD6	T-5½	Pentode	7BK-0-2	Cathode	6.3	0.300	.004	4.3	5.0	R-F Amp.	250 100	9.0 13	3.5 5.0	700,000 190,000	2,000 2,350	.....	.....	6BD6	
6BD7	T-6½	Duotriode Tri.	9Z-0-7	Cathode	6.3	0.230	1.3	2.4	1.3	Det. Amp.	.....	.....	.....	.....	.....	.....	.....	6BD7	
6BE6	T-5½	Heptode	7CH-0-0	Cathode	6.3	0.300	0.3*	7.0*	8.0*	Converter	100 250	2.8 3.0	7.3 7.1	500,000 455 A 475 A	1,200 1,900	70	.....	6BE6	
6BF5	T-5½	Pentode	7BZ-0-0	Cathode	6.3	1.200	7.5*	7.0*	6.0*	Tri. Amp.	225	1,200	.....	.....	.....	.....	.....	6BF5	
6BF6	T-5½	Duotriode Tri.	7BT-0-0	Cathode	6.3	0.300	2.0	1.8	1.4	Det. Amp.	250	9.0	.....	.....	.....	.....	.....	6BF6	
6BF7	T-3	Duotriode	8DG-0-0	Cathode	6.3	0.300	1.5	2.0	2.0	R-F Amp.#	100	8.0	.....	.....	.....	.....	.....	6BF7	
6BF7A	T-3	Duotriode	8DG-0-0	Cathode	6.3	0.300	1.5	2.0	1.6	R-F Amp.#	100	8.0	.....	.....	.....	.....	.....	6BF7A	
6BF7W (3)	T-3	Duotriode	8DG-0-0	Cathode	6.3	0.300	1.5	2.0	1.6	R-F Amp.	.....	.....	.....	.....	.....	.....	.....	6BF7W (3)	
6BG6G	ST-16	Beam Pent.	5BT-0-0	Cathode	6.3	0.900	0.34m*	12.0*	6.5*	Horiz. Defl. Amp.	.....	.....	.....	.....	.....	.....	.....	6BG6G	
6BG6GA	T-12	Beam Pent.	5BT-0-0	Cathode	6.3	0.900	0.8*	11.0*	6.0*	Horiz. Defl. Amp.	.....	.....	.....	.....	.....	.....	.....	6BG6GA	
6BG7	T-3	Duotriode	8DG-0-0	Cathode	6.3	0.300	1.5	2.0	2.0	R-F Amp.#	100	8.0	.....	.....	.....	.....	.....	6BG7	
6BH6	T-5½	Pentode	7CM-0-7	Cathode	6.3	0.150	.0035m*	5.4*	4.4*	R-F Amp.	100	8.0	.....	.....	.....	.....	.....	6BH6	
6BH8	T-6½	Tri. Pentode	9DX-0-6	Cathode	6.31	0.600	2.4*	2.6*	3.8*	Tri. Amp.	150	5	.....	.....	.....	.....	.....	6BH8	
6BJ5	T-5½	Pentode	6CH	Cathode	6.3	0.640	.....	.....	.....	Power Amp.	250	5.0	5.5	40,000	10,500	450	7,000	4,000	6BJ5
6BJ6	T-5½	Pentode	7CM-0-7	Cathode	6.3	0.150	.0035m*	4.5*	5.0*	R-F Amp.	100	1.0	3.3	1.3 Meg.	3,600	.....	.....	.....	6BJ6
6BJ7	T-6½	Triode Diode	9AX-0-3	Cathode	6.3	0.450	.....	.....	.....	TV DC Rest'r Amplifier	.....	.....	.....	.....	.....	.....	.....	.....	6BJ7
6BJ8	T-6½	Duotriode Tri.	9ER-0-0	Cathode	6.31	0.600	2.6*	2.8*	0.38*	Class A1 Amplifier	90 950	13.5 8.0	.....	.....	.....	.....	.....	.....	6BJ8
6BK4	T-12	Beam Triode	8GC-0-0	Cathode	6.3	0.200	.03*	2.6*	1.0*	Hi-Volt. Reg.	250 Max. D.C. Plate Volts. 195 D.C. Grid Volts. 1.5 Ma. Max. D.C. Plate Current.	.....	.....	.....	.....	.....	.....	.....	6BK4
6BK5	T-6½	Beam Pent.	9BQ-0-0	Cathode	6.3	1.200	0.6*	13.0*	5.0*	Power Amp.	250	5.0	3.5	0.1 Meg.	8,500	6,500	3,500	.....	6BK5
6BK6	T-5½	Duotriode Tri.	7BT-0-2	Cathode	6.3	0.300	.....	.....	.....	Det. Amp.	100 250	1.0 1.2	.....	80,000 62,500	1,250 1,600	100 100	.....	.....	6BK6
6BK7	T-6½	Duotriode	9AJ-0-9	Cathode	6.3	0.450	1.9	3.0	1.1	VHF Amp.	100	120*	.....	.....	.....	.....	.....	.....	6BK7
6BK7A	T-6½	Duotriode	9AJ-0-9	Cathode	6.3	0.450	1.8*	3.0*	1.0*	VHF Amp.	150	56	.....	.....	.....	.....	.....	.....	6BK7A
6BK7B	T-6½	Duotriode	9AJ-0-9	Cathode	6.31	0.450	1.8*	3.0*	0.9*	VHF Amp.	150	56	.....	.....	.....	.....	.....	.....	6BK7B
6BL4	T-12	Diode	8GB-0-0	Cathode	6.3	3.000	.....	.....	.....	T.V. Damper	.....	.....	.....	.....	.....	.....	.....	.....	6BL4
6BL7GT	T-9	Duotriode	8BD-0-0	Cathode	6.3	1.500	6.0	4.2	0.9	Vert. Amp.#	.....	.....	.....	.....	.....	.....	.....	.....	6BL7GT
6BL8	T-6½	Tri. Pentode	9DC-0-7	Cathode	6.3	0.450	.025*	5.5*	3.8*	VHF Osc. VHF Amp.	100 170	2.0 10.0	2.8	400,000	5,000 6,200	20 47	.....	.....	6BL8
6BM8	T-6½	Tri. Pentode	9EX-0-2	Cathode	6.3	0.780	4.0*	2.7*	4.0*	Power Amp.	200	16.0	7.0	20,000	6,400	9.5	.....	.....	6BM8
6BN4	T-5½	Triode	7EG	Cathode	6.3	0.200	1.2	3.2	1.4	VHF Amp.	150	220	.....	.....	.....	.....	.....	.....	6BN4
6BN6	T-5½	Gated Beam	7DF-0-1	Cathode	6.3	0.300	.....	.....	.....	Quad. F. M. Defl.	65	1.3	60	0.23	5.0	.....	.....	.....	6BN6
6BN7	T-6½	Duotriode	9AJ-0-0	Cathode	6.3	0.750	0.7	1.4	0.3	Oscillator Amplifier	120 250	1.0 15.0	.....	14,000 2,900	2,000 5,500	28 12	.....	.....	6BN7
6BN8	T-6½	Duotriode Tri.	9ER	Cathode	6.31	0.600	2.5*	3.6*	0.32*	Class A1 Amp	100 950	1 3	.....	91,000 28,000	3,500 2,500	75 75	.....	.....	6BN8

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate; RF input, Mixer output.
 (3) Has special mechanical and/or life characteristics.
 (4) Applied through 250,000 ohms.
 (5) Per Tube or Section.
 (6) Conversion Transconductance.
 (7) Plate and Target Supply Voltage.
 (8) Triode Operation.
 (9) Approximate.
 (10) m maximum
 (11) Cathode Resistor (ohms).

PENNSYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter			Note (*) Capacitances in $\mu\mu\text{f}$.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Cgp.	Cin.												Cout
6BQ6G	ST-12	Beam Pent.	6AM-0-0	Cathode	6.3	1.200	0.6*	15.0*	7.5*	Horiz. Defl. Amp.	6,000 Max. Peak Pos. Plate Volts. 2.5 Watts Max. Screen Dissipation. 250	2.1	20,000	5,500	.....	.....	.....	6BQ6G
6BQ6GA	T-11	Beam Pent.	6AM-0-0	Cathode	6.3	1.200	0.6*	15.0*	7.5*	Horiz. Defl. Amp.	Characteristics Same as Type 6BQ6G. Dissipation Ratings Same as Type 6BQ6G. Maximum Peak Positive Plate Voltage = 5,500 Volts. Maximum D.C. Cathode Current = 110 Ma.	.....	.....	.....	.....	.....	.....	6BQ6GA
6BQ6GT	T-9	Beam Pent.	6AM-0-0	Cathode	6.3	1.200	0.6*	15.0*	7.5*	Horiz. Defl. Amp.	6,000 Max. Peak Pos. Plate Volts. 2.5 Watts Max. Screen Dissipation. 250	2.1	20,000	5,500	.....	.....	.....	6BQ6GT
6BQ6GTB	T-9	Beam Pent.	6AM-0-0	Cathode	6.3	1.200	0.6*	15.0*	7.5*	Horiz. Defl. Amp.	6,000 Max. Peak Pos. Plate Volts. 2.5 Watts Max. Screen Dissipation. 250	2.1	20,000	5,500	.....	.....	.....	6BQ6GTB
6BQ7	T-6 1/2	Duotriode	9AJ-0-9	Cathode	6.3	0.400	1.15	2.55	1.30	VHF Amp.	150	930 ^a	9	18,000	6,000	.....	.....	6BQ7
6BQ7A	T-6 1/2	Duotriode	9AJ	Cathode	6.3	0.400	1.2	2.6	1.2	VHF Amp.	150	930 ^a	9	5,900	6,000	.....	.....	6BQ7A
6BR8	T-6 1/2	Triode Pentode	9FA	Cathode	6.3	0.450	.008	5.0	3.5	Oscillator Mixer	150	56 ^b	18	5,000	8,500	.....	.....	6BR8
6BS8	T-6 1/2	Duotriode	9AJ	Cathode	6.3	0.400	1.15	2.6	1.2	VHF Amp.	150	930 ^a	10	5,000	7,900	.....	.....	6BS8
6BT6	T-5 1/2	Duodiode Tri.	7BT-0-2	Cathode	6.3	0.300	.....	.....	.....	Det. Amp.	100	1.0	0.8	54,000	1,300	.....	.....	6BT6
6BT8	T-6 1/2	Duodi. Pent.	9FE	Cathode	6.3	0.450	.04m*	7.0*	2.3*	Amp. Det.	200	180 ^b	150	300,000	6,200	.....	.....	6BT8
6BU6	T-5 1/2	Duodiode Tri.	7BT-0-2	Cathode	6.3	0.300	.....	.....	.....	Det. Amp.	100	3.0	3.9	11,000	1,500	.....	.....	6BU6
6BU8	T-6 1/2	Duo Pentode	9FG-0-2	Cathode	6.3	0.300	G3 to P 1.9	6.0	3.0	Sync. Sep.	100	0 Grid 1	67.5	180 Gr. 3	1,900	16.5	10,000	300	6BU8
6BV8	T-6 1/2	Duodiode Tri.	9FJ-0-0	Cathode	6.3	0.600	2.0*	3.8*	0.4*	Det. Amp.	200	330 ^b	11.0	5,900	5,600	33	.....	6BV8
6BW4	T-6 1/2	Duodiode	9DJ	Cathode	6.3	0.900	.....	.....	.....	F-W Rect.	325 A.C. Volts Per Plate, RMS, 100 Ma. Output Current. Capacitor Input to Filter. 450 A.C. Volts Per Plate, RMS, 100 Ma. Output Current. Choke Input to Filter.	.....	.....	.....	.....	.....	.....	6BW4
6BX7GT	T-9	Duotriode	8BD	Cathode	6.3	1.500	4.2	5.0	3.4	Vert. Amp.	250	390 ^b	42	1,300	7,600	10	.....	6BX7GT
6BX8	T-6 1/2	Duotriode	9AJ	Cathode	6.3	0.400	1.4	4.9	3.6	Vert. Osc.	65	1.0	9	.....	6,700	25	.....	6BX8
6BY5G	ST-14	Duodiode	6CN-0-0	Cathode	6.3	1.600	.....	.....	.....	F-W Rect.	375 A.C. Volts Per Plate, R.M.S., 175 Ma. D.C. Output Current. Condenser Input to Filter.	.....	.....	.....	.....	.....	.....	6BY5G
6BY5GA	T-12	Duodiode	6CN-0-0	Cathode	6.3	1.600	.....	.....	.....	T.V. Damp.	P.I.V. = 3,000 Volts Abs. Max. D.C. Plate Current = 175 Ma. Max. Each Plate.	.....	.....	.....	.....	.....	.....	6BY5GA
6BY6	T-5 1/2	Heptode	7CH-0-0	Cathode	6.3	0.300	.08m*	5.4*	7.6*	Sync. Separator	10	#1 & 2 = 0	25	1.4	3.5	Plate Current = 50 μ Amps. When Grid 3 Voltage = 2.5	.....	6BY6
6BY8	T-6 1/2	Diode Pent.	9FN	Cathode	6.3	0.600	.0033*	5.5*	5.0*	Det. Amp.	200	150 ^b	150	500,000	3,900	.....	.....	6BY8
6BZ6	T-5 1/2	Pentode	7CM-0-7	Cathode	6.3	0.300	.015m	7.5	2.8	R-F Amp.	100	5.0	2.1	500,000	3,900	.....	.....	6BZ6
6BZ7	T-6 1/2	Duotriode	9AJ-0-9	Cathode	6.3	0.400	1.2	9.6	1.9	VHF Amp.	250	180 ^b	150	11.0	2.6	0.6 Meg. \uparrow	.....	6BZ7
6BZ8	T-6 1/2	Duotriode	9AJ-0-9	Cathode	6.3	0.400	1.15*	2.3*	1.35	VHF Amp.	125	100 ^b	10	5,300	6,800	36	.....	6BZ8
6C4	T-5 1/2	Triode	6BG-0-0	Cathode	6.3	0.150	1.4	1.8	2.5	R-F Osc. R-F Amp.	300	27	25	.....	.....	.....	.....	6C4
6C5	Metal T-9	Triode	6O-1-1	Cathode	6.3	0.300	2.2	3.0	11.0	Amplifier	250	8.0	8.0	10,000	2,000	20	.....	6C5
6C6	ST-12	Pentode	6F-0-5	Cathode	6.3	0.300	.007m*	5.0*	6.5*	Amplifier	100	3.0	2.0	1 Meg.	1,185	.....	.....	6C6
6C7	ST-12	Duodiode Tri.	7G-3-6	Cathode	6.3	0.300	.....	.....	.....	Det. Amp.	250	3.0	0.5	1 Meg. +	1,235	.....	.....	6C7
6C8G	ST-12	Duotriode	8G-0-0	Cathode	6.3	0.300	1.8	2.6	2.0	Amplifier	250	3.0	3.9	16,000	1,250	90	.....	6C8G
6CA4	T-6 1/2	Duodiode	9M-0-0	Cathode	6.3	1.000	.....	.....	.....	F-W Rect.	350 A.C. Volts Per Plate, RMS, 150 Ma. Output Current.	.....	.....	.....	.....	.....	.....	6CA4
6CA5	T-5 1/2	Beam Pent.	7CV-0-0	Cathode	6.3	1.200	0.5*	15.0*	9.0*	Power Amp.	110	4.0	32	16,000	8,100	.....	.....	6CA5
6CB5	ST-16	Beam Pent.	8GD-0-0	Cathode	6.3	2.500	0.8*	24.0*	10.0*	Horiz. Defl. Amp.	6,800 Max. Peak Pos. Pulse Plate Volts. 23 Watts Max. Plate Dissipation. 175	30	175	90	5,000	8,800	6CB5
6CB5A	T-12	Pentode	7CM-0-7	Cathode	6.3	0.300	.02*	6.3*	1.9*	VHF Amp.	200	180 ^b	150	9.5	2.8	600,000 \uparrow	6,200	6CB5A	
6CB6A	T-5 1/2	Pentode	5BT-0-0	Cathode	6.3	2.500	0.8*	24.0*	9.5*	Horiz. Defl. Amp.	Maximum Peak Positive Plate Voltage = 6,600 Volts. Maximum D.C. Plate Current = 200 Ma. Maximum Plate Dissipation = 15 Watts. Maximum Screen Dissipation = 3 Watts.	.....	.....	.....	.....	.....	.....	6CB6A
6CD6G	ST-16	Beam Pent.	5BT-0-0	Cathode	6.3	2.500	1.1*	22.0*	8.5*	Horiz. Defl. Amp.	7,000 Max. Peak Pos. Pulse Plate Volts. 30 Watts Max. Screen Dissipation. 175	30	175	75	5.5	7,200	7,700	6CD6G
6CD6GA	T-12	Beam Pent.	5BT-0-0	Cathode	6.3	2.500	1.1*	22.0*	8.5*	Horiz. Defl. Amp.	7,000 Max. Peak Pos. Pulse Plate Volts. 30 Watts Max. Screen Dissipation. 175	30	175	75	5.5	7,200	7,700	6CD6GA
6CE5	T-5 1/2	Pentode	7BD	Cathode	6.3	0.300	.03*	6.5*	1.9*	R-F Amp.	200	180 ^b	150	9.5	2.8	600,000	6,200	6CE5
6CF6	T-5 1/2	Pentode	7CM	Cathode	6.3	0.300	.02*	6.3*	1.9*	Amplifier	200	180 ^b	150	9.5	2.8	0.6 Meg.	6,200	6CF6
6CG6	T-5 1/2	Pentode	7BK-0-2	Cathode	6.3	0.300	.008m	5.0	5.0	R-F Amp.	250	8.0	150	9.5	2.3	720,000	2,000	6CG6

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate;
 RF Input, Mixer Output.
 † Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater.)
 ‡ Has special mechanical and/or life characteristics.
 § With Average Power Input of 350 Mw. Grid to Grid.
 ¶ For two tubes with 40 volts RMS applied to each grid.
 †† Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater.)
 * Applied through 20,000 ohms.
 †† Pentode Operation.
 ‡ Conversion Transconductance.
 ††† Triode Operation.
 †††† Approximate.
 ††††† Maximum Cathode Resistor (ohms).

SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; HI—Heater Tap; IC—Internal Connection; DO NOT USE, J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

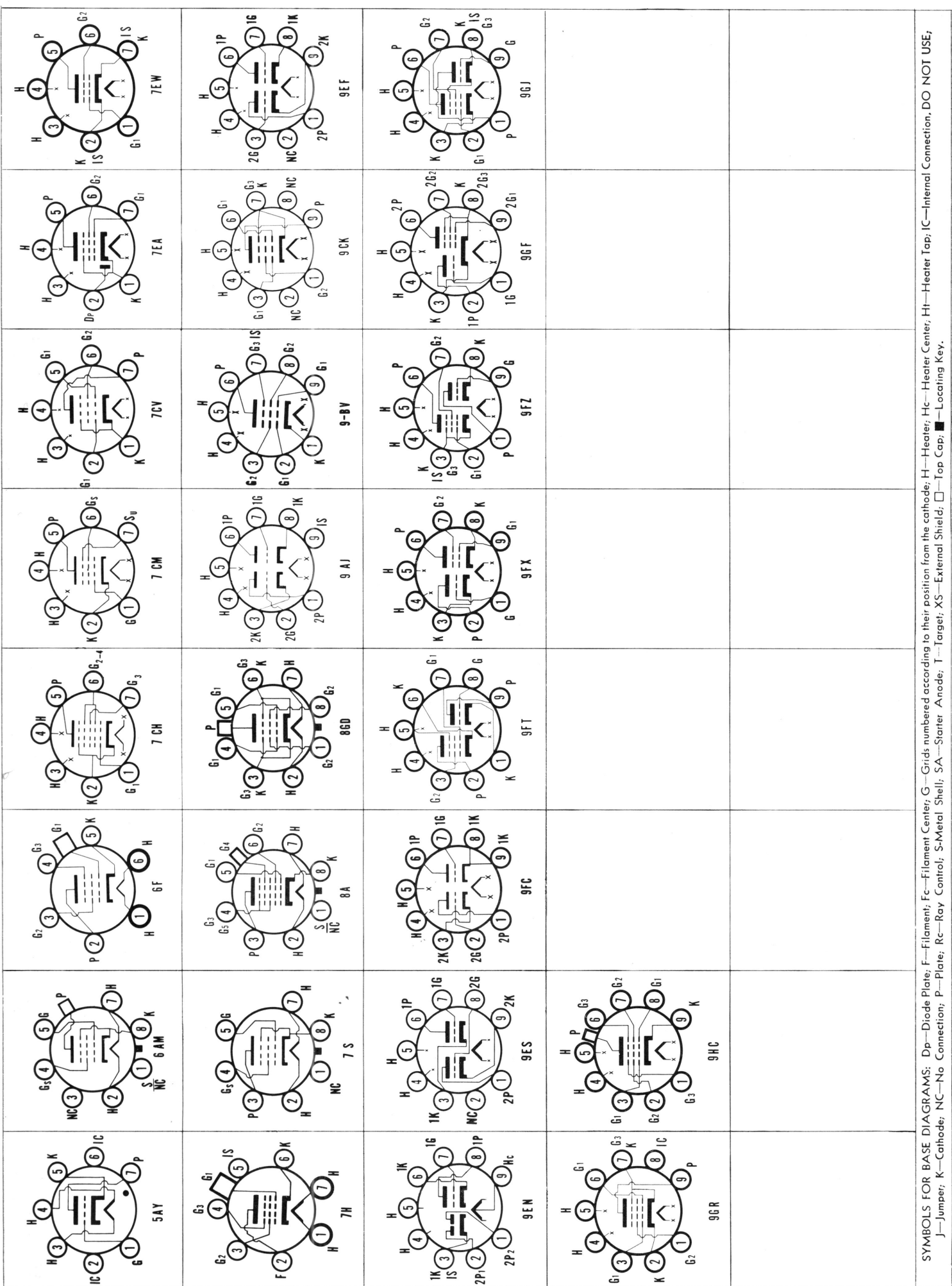
PENNSYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (*) Capacitances in $\mu\text{f.}$			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Csp.													Cin.	Couf.
6CG7	T-6½	Duotriode Tri. Pentode	9AJ-0-9	Cathode	6.31	0.600	4.0*	2.3*	2.2*	100	8.5	1.6	1.6	6,900	5,800	40	.....	6CG7
6CG8	T-6½	Pentode	9F	Cathode	6.3	0.450	1.5	3.0	1.0	200	150	1.6	1.6	.75 Meg.	4,600	.....	.....	6CG8
6CH7	T-6½	Duotriode Tri. Pent.	9FC-0-2	Cathode	6.3	0.400	1.1	2.4	0.8	150	220	1.0	1.0	5,300	6,800	36	.....	6CH7
6CH8	T-6½	Tri. Pent.	9FT-0-0	Cathode	6.3	0.450	1.6*	1.9*	1.6*	200	180	1.0	1.0	5,750	3,300	19	.....	6CH8
6CL5	T-19	Beam Pent.	8GD	Cathode	6.3	2.500	0.7*	20.0*	11.5*	7,000 Max. Peak Pos. Pulse Plate Volts. 25 Watts Max. Plate Dissipation.	30	7	0.15 Meg.	11,000	.....	.....	.....	6CL5
6CL6	T-6½	Power Pent.	9BV	Cathode	6.3	0.650	1.8	2.7	1.0	250	3	150	15	5,000	8,000	40	.....	6CL6
6CL8	T-6½	Tri. Tetrode	9FX	Cathode	6.31	0.450	1.8	5.0	3.0	135	1.0	125	12	100,000	5,800	.....	.....	6CL8
6CM6	T-6½	Beam Pent.	9CK	Cathode	6.3	0.450	0.7*	8.0*	8.5*	Maximum Peak Positive Pulse Plate Voltage = 2,000 Volts. Maximum D.C. Cathode Current = 40 Ma.	4.5	4.5	4.0	50,000	4,100	.....	5,500	6CM6
6CM7	T-6½	Duotriode	9ES	Cathode	6.31	0.600	3.8*	2.0*	0.5*	Maximum Peak Positive Pulse Plate Voltage = 2,200 Volts. Maximum D.C. Cathode Current = 70 Ma.	20.0	2.1	.....	4,100	4,400	18	.....	6CM7
6CM8	T-6½	Tri. Pentode	9FZ	Cathode	6.31	0.450	1.9	1.6	0.22	Class A1 Amp.	250	2	100	50,000	2,000	100	.....	6CM8
6CN7	T-6½	Duotriode Tri.	9EN-0-3	Cathode	6.3	0.300	1.8*	1.5*	0.5*	Det. Amp.	100	1.0	.....	54,000	1,300	70	.....	6CN7
6CR5	T-6½	Beam Pent.	9HC-0-0	Cathode	6.3	1.200	0.32*	12.9*	6.9*	Maximum Peak Positive Pulse Plate Voltage = 5,500 Volts. Maximum D.C. Cathode Current = 112.5 Ma.	65.0	2.1	.....	18,000	6,000	.....	.....	6CR5
6CR6	T-5½	Diode Pent.	7EA	Cathode	6.3	0.300	.....	.....	.....	Det.-Audio Amplifier	250	2.0	100	200,000	1,950	.....	.....	6CR6
6CR8	T-6½	Tri. Pentode	9GJ-0-8	Cathode	6.31	0.450	1.6*	2.0*	1.4*	Tri. Amp. Pent. Amp.	125	2.0	125	5,500	4,000	22	.....	6CR8
6CS5	T-6½	Beam Pent.	9CK	Cathode	6.3	1.300	0.5	15.0	9.0	Power Amp.	110	7.5	110	13,000	8,000	.....	2,000	6CS5
6CS6	T-5½	Dual Control Heptode	7CH	Cathode	6.3	0.300	0.7*	5.5*	7.5*	Triode Conn.	225	3.0	.....	1,500	3,800	6.2	.....	6CS6
6CS7	T-6½	Duotriode	9EF-0-0	Cathode	6.31	0.600	2.6*	1.8*	0.5*	SYNC. Separator.	100	0	Grid 1	0.7 Meg.	1,500 Gr. 3	.....	.....	6CS7
6CS8	T-6½	Tri. Pentode	9FZ-0-3	Cathode	6.31	0.450	1.6*	1.9*	0.2*	Tri. Amp. Pent. Amp.	125	2.0	125	5,500	4,000	22	.....	6CS8
6CU5	T-12	Beam Pent.	6AM-0-0	Cathode	6.3	1.200	0.7*	13.2*	8.6*	Power Amp.	120	8	110	10,000	7,500	.....	2,500	6CU5
6CX7	T-6½	Duotriode	9FC-0-2	Cathode	6.3	0.400	1.2	2.4	1.3	Characteristics and Ratings Same as Type 6BQ6G Except Max. D.C. Plate Supply = 550 Volts.	150	220	.....	6,400	.....	39	.....	6CX7
6CY5	T-5½	Tetrode	7EW-0-2,7	Cathode	6.3	0.200	0.3	4.5	3.0	VHF Amp.	125	1.0	80	100,000	8,000	.....	.....	6CY5
6D4	T-5½	Gas Triode	5AY-0-0	Cathode	6.3	0.850	.....	.....	.....	Relay Tube	350	50	Peak Cathode Current = 100 Ma. Cathode Current = 25 Ma. Approx. Volt Drop @ 25 Ma. = 16V.	.....	.....	.....	.....	6D4
6D6	ST-12	Pentode	6F-0-5	Cathode	6.3	0.300	0.07m	4.7*	6.5*	Amplifier	100	3.0	100	800,000	1,500	.....	.....	6D6
6D7	ST-12	Pentode	7H-5-6	Cathode	6.3	0.300	0.07*	5.0*	6.5*	Amplifier	135	3.0	67.5	600,000	325	.....	.....	6D7
6D8G	ST-12	Heptode	8A-0-0	Cathode	6.3	0.150	0.2	8.0	11.0	Converter	250	3.0	3.0	400,000	350	.....	.....	6D8G
6DA7	T-6½	Duotriode	9EF-0-0	Cathode	6.3	1.000	2.3*	2.0*	0.415*	Tri. Amp. Pent. Amp.	150	17.5	.....	1,100	5,700	6.3	.....	6DA7
6DB5	T-6½	Beam Pent.	9GR-0-0	Cathode	6.3	1.200	0.5*	15.0*	9.0*	Verf. Defl. Amp.	200	180	125	28,000	8,000	.....	.....	6DB5
6DB6	T-5½	Pentode	7CM-0-2	Cathode	6.3	0.300	0.035*	6.0*	5.0*	Color Demod.	150	1.0	150	50,000	2,050	.....	.....	6DB6
6DC6	T-5½	Pentode	7CM-0-7	Cathode	6.3	0.300	0.2*	6.5*	2.0*	Amplifier	200	180	150	500,000	5,500	.....	.....	6DC6
6DE6	T-5½	Pentode	7CM-0-7	Cathode	6.3	0.300	0.2m	6.3m	1.9m	Class A1 Amp.	200	180	150	0.6 Meg.	6,200	.....	.....	6DE6
6DG6GT	T-9	Beam Pent.	7S-0-0	Cathode	6.3	1.300	.....	.....	.....	Power Amp.	110	7.5	110	13,000	8,000	.....	2,000	6DG6GT

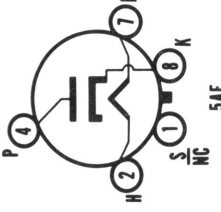
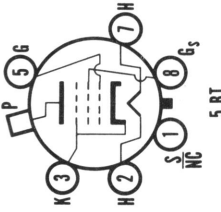
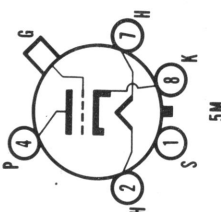
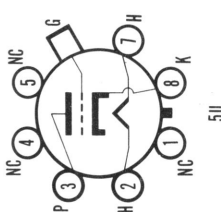
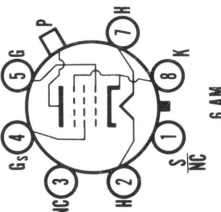
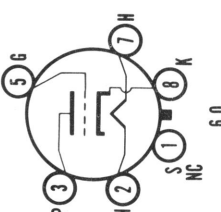
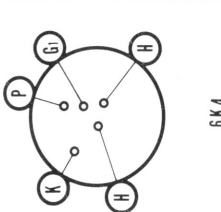
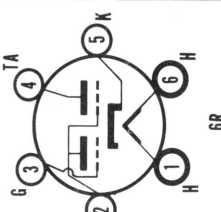
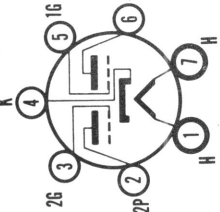
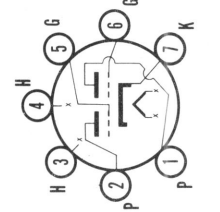
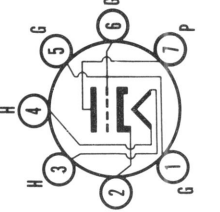
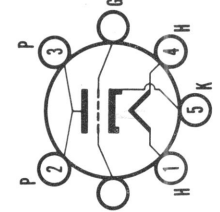
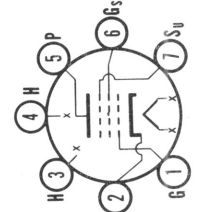
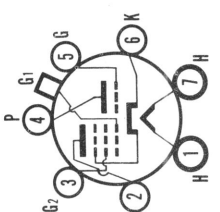
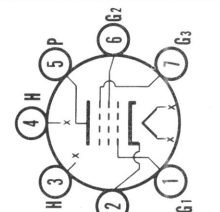
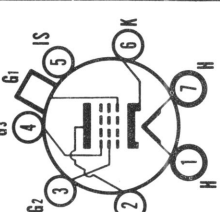
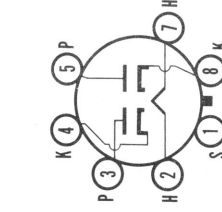
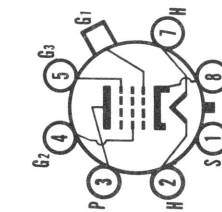
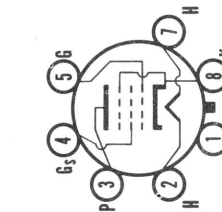
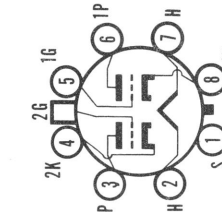
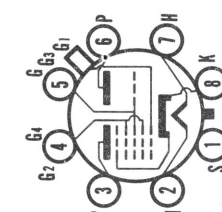
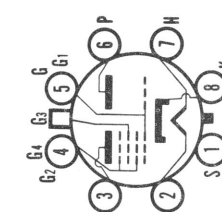

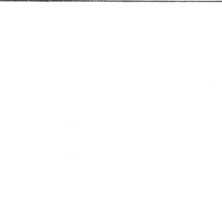

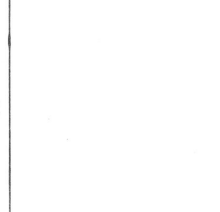





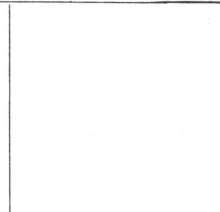
(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate; Tri Input, Mixer Output.
 (3) Has special mechanical and/or life characteristics.
 With a Voltage Power Input of 300 Mw. Grid to Grid. For full details see data sheet.
 I Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater).

* Applied through 250,000 ohms.
 # Per Tube or Section.
 † Conversion Transconductance.
 ‡ Triode Operation.
 † Pentode Operation.
 ‡ Plate to Plate.
 † Approximate.

m maximum Cathode Resistor (ohms).



SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; HI—Heater Tip; IC—Internal Connection; DO NOT USE, J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Hl—Heater Tap; IC—Internal Connection, DO NOT USE, J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

SYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (2) Capacitances in $\mu\mu\text{f}$.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Base/ Diag.	Type	Volts	Amps.	Cap.													Cin.	Cout
6DK6	T-5½	Pentode	7CM-0-7	Cathode	6.3	0.300	0.8*	6.3*	1.9*	125	56 ^m	12.0	3.8	9,800	.....	.....	.....	6DK6
6DN6	T-12	Beam Pent.	5BT-0-0	Cathode	6.3	2.500	0.8*	22.0*	11.5*	125	18	70	6.3	4,000	.....	.....	.....	6DN6
6DQ6	T-12	Beam Pent.	6AM-0-0	Cathode	6.3	1.200	0.55*	15.0*	7.0*	250	92.5	150	2.4	20,000	.....	.....	.....	6DQ6
6DQ6A	T-12	Beam Pent.	6AM	Cathode	6.3	1.200	0.55*	15.0*	7.0*	250	92.5	150	2.4	20,000	.....	.....	.....	6DQ6A
6DT6	T-5½	Gated Beam	7EN-0-0	Cathode	6.3	0.300	.02	.....	.....	150	560 ^m	1.1	2.1	150,000	.....	.....	.....	6DT6
6E5	T-9	Electron Ray	6R-0-0	Cathode	6.3	0.300	.....	.....	.....	100 [§]	615 Gr. #1 515 Gr. #3	.....	.....	.....	6E5	
6E6	ST-14	Duotriode	7B-0-0	Cathode	6.3	0.600	.....	.....	.....	180	20.0	11.5	.....	4,300	.....	.....	750	6E6
6E7	ST-12	Pentode	7H-5-6	Cathode	6.3	0.300	.....	.....	.....	250	.....	.....	.....	2,900	.....	.....	1,600	6E7
6F4	Acom	Triode	7BR-0-0	Cathode	6.3	0.225	1.9*	2.0*	0.6*	250	2.0	.....	.....	66,000	.....	.....	.....	6F4
6F5GT	Metal T-9	Triode	5M-1-0 5M-0-0	Cathode	6.3	0.300	2.3	2.2*	3.2*	250	.....	.....	.....	1,500	.....	.....	.....	6F5GT
6F6	Metal ST-14 T-9	Power Pent.	7S-1-0 7S-0-0	Cathode	6.3	0.700	.....	.....	.....	250	.....	.....	.....	80,000	.....	.....	3,200	6F6
6F6GT	Metal ST-14 T-9	Power Pent.	7S-1-0 7S-0-0	Cathode	6.3	0.700	.....	.....	.....	250	.....	.....	.....	80,000	.....	.....	3,200	6F6GT
6F7	ST-12	Pent. Triode	7E-0-6 7E-0-6	Cathode	6.3	0.300	.008m	3.2	12.5	100	3.0	100	1.6	990,000	.....	.....	.....	6F7
6F7S	ST-12	Pent. Triode	7E-0-6 7E-0-6	Cathode	6.3	0.300	.008m	3.2	12.5	100	3.0	100	1.6	990,000	.....	.....	.....	6F7S
6F8G	ST-12	Duotriode	8G-0-0	Cathode	6.3	0.600	3.2*	3.2*	1.0*	250	8.0	.....	.....	7,700	.....	.....	.....	6F8G
6G5	New Known as Type 6U5	Power Pent.	7S-0-0	Cathode	6.3	0.150	.....	.....	.....	135	6.0	11.5	2.0	170,000	.....	.....	600	6G5
6G6G	ST-12	Power Pent.	5AF-0-0	Cathode	6.3	0.150	.....	.....	.....	180	9.0	18.0	2.5	175,000	.....	.....	1,100	6G6G
6H4GT	T-9	Diode	7Q-0-1	Cathode	6.3	0.300	.....	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	6H4GT
6H6, 6H6GT	T-9, Metal	Duotriode	7BQ-0-1	Cathode	6.3	0.400	.....	.....	.....	117 A-C Volts Per Plate, RMS, 8.0 Ma. Output Current Per Plate.	.....	.....	.....	.....	.....	.....	.....	6H6, 6H6GT
6J4	T-5½	Triode	7G-0-0	Cathode	6.3	0.300	.....	.....	.....	150	200 ^m	.....	.....	4,500	.....	.....	.....	6J4
6J5	Metal T-9	Triode	6Q-1-0	Cathode	6.3	0.300	3.4	3.4	3.6	250	8.0	.....	.....	7,700	.....	.....	.....	6J5
6J5GT	Metal T-9	Triode	6Q-1-0	Cathode	6.3	0.300	3.8	4.2	5.0	250	8.0	.....	.....	7,700	.....	.....	.....	6J5GT
6J6	T-5½	Duotriode	7BF-0-7	Cathode	6.3	0.450	1.5	2.6	1.0	150	10.0	.....	.....	30.0	.....	.....	.....	6J6
6J6A	Metal ST-12	Pentode	7R-1-1	Cathode	6.3	0.450	1.5	2.6	1.0	100	50 ^m	.....	.....	7,100	.....	.....	.....	6J6A
6J7	Metal ST-12	Pentode	7R-1-1	Cathode	6.3	0.300	.005m	7.0	12.0	.....	.....	.....	.....	.....	.....	.....	.....	6J7
6J7G	ST-12	Triode	7R-1-1	Cathode	6.3	0.300	.007m	5.4	12.0	.....	.....	.....	.....	.....	.....	.....	.....	6J7G
6J8G	ST-12	Tri. Heptode	8H-0-8	Cathode	6.3	0.300	.02m	4.4	10.0	250	3.0	100	0.5	1.0 Meg.†	.....	.....	.....	6J8G
6K4	T-3	Triode	6K4	Cathode	6.3	0.150	2.2*	2.4*	0.85*	100	2.0	.....	.....	3,650	.....	.....	.....	6K4
6K5G	ST-12	Triode	5U-0-0	Cathode	6.3	0.300	2.0	2.9	4.7	100	1.5	.....	.....	78,000	.....	.....	.....	6K5G
6K5GT	T-9	Power Pent.	7S-0-0	Cathode	6.3	0.400	.....	.....	.....	250	3.0	1.10	.....	50,000	.....	.....	.....	6K5GT
6K6GT	T-9	Power Pent.	7S-0-0	Cathode	6.3	0.400	.....	.....	.....	100	7.0	100	1.6	104,000	.....	.....	350	6K6GT
6K7	Metal ST-12	Pentode	7R-1-0	Cathode	6.3	0.300	.005m	7.0	12.0	100	1.0	100	0.5	75,000	.....	.....	4,500	6K7
6K7G	ST-12	Tri. Hexode	7R-1-8	Cathode	6.3	0.300	.005m	4.6	12.0	100	1.0	100	0.5	150,000	.....	.....	.....	6K7G
6K8	Metal ST-12	Tri. Hexode	8K-1-0	Cathode	6.3	0.300	.03m	6.6	3.5	250	3.0	100	0.5	150,000	.....	.....	.....	6K8
6K8G	ST-12	Tri. Hexode	8K-1-8	Cathode	6.3	0.300	.08m	4.6	4.8	250	3.0	100	0.5	150,000	.....	.....	.....	6K8G
6L4	Acom	Triode	6R-0-0	Cathode	6.3	0.225	1.6*	1.8*	0.5*	250	3.0	100	2.5	600,000	.....	.....	.....	6L4
6L5G	ST-12	Triode	7BQ-0-0	Cathode	6.3	0.150	2.8	2.8	5.0	100	150 ^m	.....	.....	4,400	.....	.....	.....	6L5G
6L6	Metal ST-16	Beam Pent.	7S-1-0	Cathode	6.3	0.900	0.9*	11.5*	9.5*	250	14.0	250	5.0	22,500	.....	.....	6,500	6L6
6L6G	ST-14	Beam Pent.	7S-0-0	Cathode	6.3	0.900	.....	.....	.....	250	19.0	250	2.5	33,000	.....	.....	4,200	6L6G
6L6GA	ST-14	Beam Pent.	7S-0-0	Cathode	6.3	0.900	.....	.....	.....	270	22.5	250	1.0	33,000	.....	.....	5,000†	6L6GA
6L6GB	ST-14	Beam Pent.	7S-0-0	Cathode	6.3	0.900	.....	.....	.....	270	22.5	250	1.0	33,000	.....	.....	5,000†	6L6GB
6L6GAY	ST-14	Beam Pent.	7S-0-0	Cathode	6.3	0.900	.....	.....	.....	300	22.5	270	3.0	33,000	.....	.....	5,800†	6L6GAY

(1) Values are given bunched unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate, RF input, Mixer Output.
 (3) Has special mechanical and/or life characteristics.
 (4) With Average Power Input 300 Mw. Grid to Grid.
 (5) For two tubes with 40 volts RMS applied to each grid.
 (6) Controlled Heater Warm-up Time (applies to parallel connections of types having a rapped heater).
 † Pentode Operation.
 ‡ Plate to Plate.
 § Conversion Transconductance.
 ¶ Approximate.
 ** Triode Operation.
 †† Applied through 20,000 ohms.
 ‡‡ Per tube or section.
 §§ Plate and Target Supply Voltage.
 ¶¶ Grid Resistor 50,000 Plate Current 3.8 Ma., Mutual Conductance 3,000 (Triode Section not Oscillating)
 ††† Low Loss Base. Characteristics Same as 6L6GA.
 †††† Applied through 250,000 ohms.
 ††††† Pentode Operation.
 †††††† Plate to Plate.
 ††††††† Conversion Transconductance.
 †††††††† Approximate.
 ††††††††† Triode Operation.

SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Ht—Heater Tap; IC—Internal Connection, DO NOT USE, J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

PENNY TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) Capacitances in μ f.		Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type	
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.													Csp.	Cin.	Cout
6L7	Metal ST-12	Heptode	7I-1-1 7I-0-8	Cathode	6.3	0.300	.001m .005m	7.5 6.0	11.0 10.0	150 100	3.3 5.3	9.2 6.5	1 Meg. 600,000	350A 1,100	(G3 = Neg. 15 Volts) (G3 = Neg. 3.0 Volts)	7,000	3,900	6L7 6M3	
6M3	T-12	Diode	8GV	Cathode	6.3	3.000				250	36	5.2	40,000	10,000			3,900	6M3	
6M5	T-6 1/2	Beam Pent.	9N-0-0	Cathode	6.3	0.710	1.0m	10.0	6.2	250	36	5.2	5,400	6,000	32	7,000	3,900	6M5	
6N4	T-5 1/2	Triode	7CA-0-0	Cathode	6.3	0.200	1.1	3.0	1.6	(Input Section) (Output Section)	12.0		5,400	6,000	32	7,000	4,000	6N4	
6N6G	ST-14	Duotriode	7AU-0-0	Cathode	6.3	0.800				300	0.0	8.0	94,000	2,400	58	8,000	4,000	6N6G	
6N7GT	T-9 Metal	Duotriode	8B-0-0	Cathode	6.3	0.800				300	0.0	17.5 Per Plate, Class B Operation, Zero Signal	11,300 3,100	3,100	35	8,000† (Class A Driver)	10,000	6N7GT	
6N8	T-6 1/2	Duodi. Pent.	9T-0-0	Cathode	6.3	0.300	.002m	4.0	4.6	250	5.0	1.75	1.6 Meg.	2,200			300	6N8	
6P5GT	T-9	Triode	6Q-0-0	Cathode	6.3	0.300	2.6	3.4	5.5	250	5.0	1.75	1.6 Meg.	2,200			300	6P5GT	
6P7G	ST-12	Pent. Triode	7U-0-8	Cathode	6.3	0.300	.007m	2.8 2.7	12.0 2.5	250	9.5		9,500	1,450	13.8	(Plate Current to be adjusted to 0.2 Ma. with no Input Signal)	300	6P7G	
6Q4	T-6 1/2	Triode	9S-0-0	Cathode	6.3	0.480	3.4	5.4	.06m	250	15			12,000	80		300	6Q4	
6Q7G	Metal ST-12	Duodiode Tri.	7V-1-8 7V-0-8	Cathode	6.3	0.300	1.4 1.5 1.6	3.0 3.9 2.9	3.8 5.0 5.0	100 250	0.8 1.1		58,000 58,000	1,900 1,900	70 70		300	6Q7G 6Q7GT	
6R4	T-6 1/2	Triode	9R-0-0	Cathode	6.3	0.200	1.5	1.7	0.5	150	30			5,500	16		300	6R4	
6R6G	ST-12	Pentode	6AW-0-0	Cathode	6.3	0.300	.007m	4.5*	11.0*	250	7.0	1.7	800,000	1,450	1,160		300	6R6G	
6R7GT	Metal T-9	Duodiode Tri.	7V-1-1 7V-0-8	Cathode	6.3	0.300	2.3 2.1	4.8 2.6	3.8 5.2	250	9.5		8,500	1,900	16		300	6R7GT	
6R8	T-6 1/2	Triple Dio. Tri.	9E-0-3&8	Cathode	6.3	0.450	2.4	1.5*	1.1*	250	9.5		8,500	1,900	16		300	6R8	
6S4	T-6 1/2	Triode	9AC-0-0	Cathode	6.3	0.600	2.6*	4.2*	0.9*	250	9.5		8,500	1,900	16		300	6S4	
6S4A	T-6 1/2	Triode	9AC-0-0	Cathode	6.3	0.600	2.6*	4.2*	0.9*	250	9.5		8,500	1,900	16		300	6S4A	
6S7	Metal ST-12	Pentode	7R-1-1	Cathode	6.3	0.150	.005m .008m	6.5 4.4	10.5 8.0	135 250	3.7 8.5	0.9 2.0	1 Meg. 1 Meg.	1,950 1,750	375 1,100		300	6S7	
6S8GT	T-9	Triple Dio. Tri.	8CB-0-2	Cathode	6.3	0.300	2.0	1.2	5.0	250	2.0		91,000	1,100	100		300	6S8GT	
6SA7	Metal T-9	Heptode	8R-1-0 8AD-0-6 8AD-1-6	Cathode	6.3	0.300	0.13m 0.5m	9.5 11.0 11.0	12.0 11.0 11.0	100 250	3.3 3.5	8.5 8.5	500,000 1.0 Meg.	425A 450A			300	6SA7 6SA7GT 6SA7GT	
6SB7Y	Metal T-9	Heptode	8R-1-0	Cathode	6.3	0.300	0.13m	9.6	9.2	250	4.0		880A				300	6SB7Y	
6SC7, 6SC7GT	Metal, T-9	Duotriode	8S-1-0	Cathode	6.3	0.300	2.0	2.2	3.0	250	2.0		53,000	1,325	70	(Each Triode)	300	6SC7, 6SC7GT	
6SD7GT	T-9	Pentode	8N-1-5	Cathode	6.3	0.300	.0035	9.0	7.5	250	6.0		250,000 1.0 Meg.	3,350 3,600			300	6SD7GT	
6SE7GT	T-9	Pentode	8N-1-5	Cathode	6.3	0.300	.0035m	6.0	7.5	250	5.5		250,000 1,000,000	3,100 3,400			300	6SE7GT	
6SF5	Metal T-9	Triode	6AB-1-0 6AB-0-0	Cathode	6.3	0.300	2.4 2.6	4.0 4.2	3.6 3.8	250	0.9		66,000	1,500	100		300	6SF5 6SF5GT	
6SF7	Metal T-9	Diode Pent.	7AZ-1-1	Cathode	6.3	0.300	.004m	5.5	6.0	250	12 12.4	3.4 3.3	200,000 700,000	1,975 2,050			300	6SF7	
6SG7GT	Metal T-9	Pentode	8BK-1-1	Cathode	6.3	0.300	.003m .004m	8.5 8.5	7.0 7.0	250	8.2 11.8 9.2	3.9 4.4 3.4	250,000 900,000 1 Meg.	4,100 4,700 4,000			300	6SG7 6SG7GT	
6SH7	Metal T-9	Pentode	8BK-1-1	Cathode	6.3	0.300	.003m .004m	8.5 8.5	7.0 7.0	250	5.3 10.8	2.1 4.1	350,000 900,000	4,000 4,900			300	6SH7 6SH7GT	
6SJ7	Metal T-9	Pentode	8N-1-5	Cathode	6.3	0.300	.005m	6.0	7.0	250	2.9		700,000	1,575			300	6SJ7	
6SJT7GT (3)	T-9	Pentode	8N-0-5 8N-0-5 8N-0-5	Cathode	6.3	0.300	.005m .005m .005m	7.0 7.0 7.0	7.0 7.0 7.0	100 100 100	3.0 3.0 3.0	0.9 0.8	700,000 1.5 Meg.	1,650			300	6SJT7GT (3) 6SJT7GT 6SJT7GT	
6SK7	Metal T-9	Pentode	8N-1-1 8N-1-5 8N-1-5	Cathode	6.3	0.300	.003m .005m .005m	6.0 6.5 7.5	7.0 7.5 7.5	100 250	13.0 9.2	4.0 2.6	120,000 800,000	2,350 2,000			300	6SK7 6SK7GT 6SK7GT	
6SL7GT	T-9	Duotriode	8BD-0-0	Cathode	6.3	0.300	2.8* 3.4*	3.0* 3.2*	2.8* 3.2*	250	2.3		44,000	1,600	70		300	6SL7GT 6SL7GT (3)	
6SN7GT	T-6 1/2	Duotriode	9BD-0-0	Cathode	6.3	0.600	3.8* 4.0*	2.8* 3.0*	3.2* 1.2*	90 250	10.0 9.0		6,700 7,700	3,000 2,600	20 20		300	6SN7GT 6SN7GT (3)	
6SN7GT (3)	T-9	Duotriode	8BD	Cathode	6.3	0.600	4.0* 3.8*	9.9* 9.6*	0.7* 0.7*	Same as 6SN7GT except for Higher Maximum Plate Voltage and Dissipation Ratings.								300	6SN7GT (3)
6SN7GT (3)	T-9	Duotriode	8BD	Cathode	6.3	0.600	4.0* 3.8*	9.9* 9.6*	0.7* 0.7*	Same as 6SN7GT except for Higher Maximum Plate Voltage and Dissipation Ratings.								300	6SN7GT (3)
6SN7GT (3)	T-9	Duotriode	8BD	Cathode	6.3	0.600	4.0* 3.8*	9.9* 9.6*	0.7* 0.7*	Same as 6SN7GT except for Higher Maximum Plate Voltage and Dissipation Ratings.								300	6SN7GT (3)
6SO7	Metal T-9	Duodiode Tri.	8Q-1-1	Cathode	6.3	0.300	1.6	3.2	3.0	250	0.9		91,000	1,100	100		300	6SO7	
6SR7	Metal T-9	Duodiode Tri.	8Q-1-3	Cathode	6.3	0.300	2.3	3.0	3.4	250	9.5		8,500	1,900	16		300	6SR7	
6SR7GT	T-9	Duodiode Tri.	8Q-0-3	Cathode	6.3	0.300	2.3	3.0	3.8	250	9.5		8,500	1,900	16		300	6SR7GT	

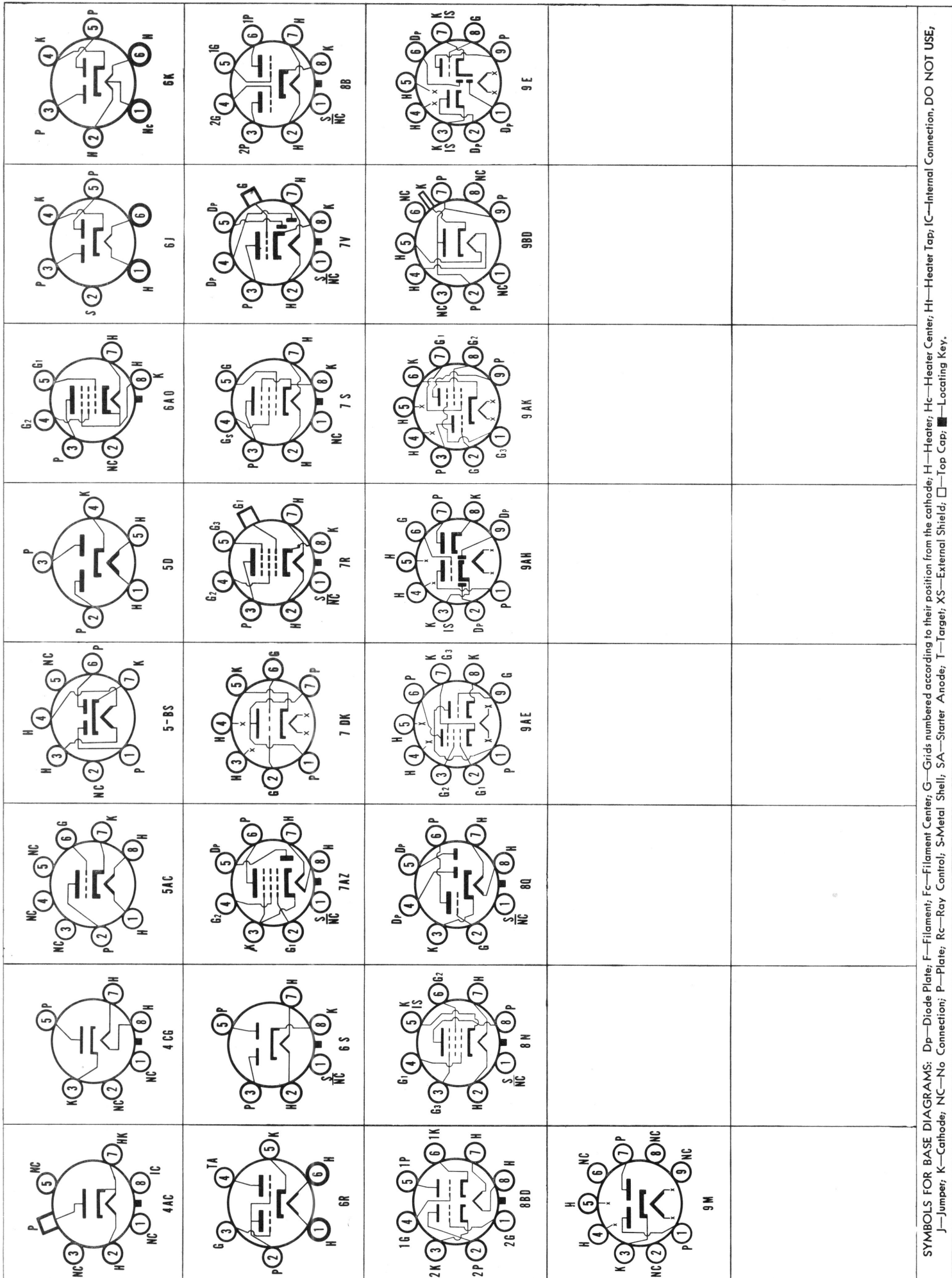
(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate; RF Input, Mixer Output.
 (3) Has special mechanical and/or life characteristics.
 † With Average Power Input of 350 Mw. Grid to Grid.
 ‡ For tubes with 40 volts RMS applied to each grid.
 § Plate and Target Supply Voltage.
 ¶ Applied through 250,000 ohms.
 * Pentode Operation.
 † Plate to Plate.
 ‡ Approximate.
 § Triode Operation.
 ¶ Conversion Transconductance.
 †† Triode Operation.
 ‡‡ Applied through 30,000 ohms.
 ††† Pentode Operation.
 ‡‡‡ Conversion Transconductance.
 †††† Approximate.

 6AB	 6AW	 6B	 6AZ	 6CA	 6B	 6R	 6V	 6W	 6X	 6Y	 6Z	 6AA	 6AB	 6AC	 6AD	 6AE	 6AF	 6AG	 6AH	 6AI	 6AJ	 6AK	 6AL	 6AM	 6AN	 6AO	 6AP	 6AQ	 6AR	 6AS	 6AT	 6AU	 6AV	 6AW	 6AX	 6AY	 6AZ	 6BA	 6BB	 6BC	 6BD	 6BE	 6BF	 6BG	 6BH	 6BI	 6BJ	 6BK	 6BL	 6BM	 6BN	 6BO	 6BP	 6BQ	 6BR	 6BS	 6BT	 6BU	 6BV	 6BW	 6BX	 6BY	 6BZ	 6CA	 6CB	 6CC	 6CD	 6CE	 6CF	 6CG	 6CH	 6CI	 6CJ	 6CK	 6CL	 6CM	 6CN	 6CO	 6CP	 6CQ	 6CR	 6CS	 6CT	 6CU	 6CV	 6CW	 6CX	 6CY	 6CZ	 6DA	 6DB	 6DC	 6DD	 6DE	 6DF	 6DG	 6DH	 6DI	 6DJ	 6DK	 6DL	 6DM	 6DN	 6DO	 6DP	 6DQ	 6DR	 6DS	 6DT	 6DU	 6DV	 6DW	 6DX	 6DY	 6DZ	 6EA	 6EB	 6EC	 6ED	 6EE	 6EF	 6EG	 6EH	 6EI	 6EJ	 6EK	 6EL	 6EM	 6EN	 6EO	 6EP	 6EQ	 6ER	 6ES	 6ET	 6EU	 6EV	 6EW	 6EX	 6EY	 6EZ	 6FA	 6FB	 6FC	 6FD	 6FE	 6FF	 6FG	 6FH	 6FI	 6FJ	 6FK	 6FL	 6FM	 6FN	 6FO	 6FP	 6FQ	 6FR	 6FS	 6FT	 6FU	 6FV	 6FW	 6FX	 6FY	 6FZ	 6GA	 6GB	 6GC	 6GD	 6GE	 6GF	 6GH	 6GI	 6GJ	 6GK	 6GL	 6GM	 6GN	 6GO	 6GP	 6GQ	 6GR	 6GS	 6GT	 6GU	 6GV	 6GW	 6GX	 6GY	 6GZ	 6HA	 6HB	 6HC	 6HD	 6HE	 6HF	 6HG	 6HH	 6HI	 6HJ	 6HK	 6HL	 6HM	 6HN	 6HO	 6HP	 6HQ	 6HR	 6HS	 6HT	 6HU	 6HV	 6HW	 6HX	 6HY	 6HZ	 6IA	 6IB	 6IC	 6ID	 6IE	 6IF	 6IG	 6IH	 6IJ	 6IK	 6IL	 6IM	 6IN	 6IO	 6IP	 6IQ	 6IR	 6IS	 6IT	 6IU	 6IV	 6IW	 6IX	 6IY	 6IZ	 6JA	 6JB	 6JC	 6JD	 6JE	 6JF	 6JG	 6JH	 6JI	 6JJ	 6JK	 6JL	 6JM	 6JN	 6JO	 6JP	 6JQ	 6JR	 6JS	 6JT	 6JU	 6JV	 6JW	 6JX	 6JY	 6JZ	 6KA	 6KB	 6KC	 6KD	 6KE	 6KF	 6KG	 6KH	 6KJ	 6KK	 6KL	 6KM	 6KN	 6KO	 6KP	 6KQ	 6KR	 6KS	 6KT	 6KU	 6KV	 6KW	 6KX	 6KY	 6KZ	 6LA	 6LB	 6LC	 6LD	 6LE	 6LF	 6LG	 6LH	 6LJ	 6LK	 6LL	 6LM	 6LN	 6LO	 6LP	 6LQ	 6LR	 6LS	 6LT	 6LU	 6LV	 6LW	 6LX	 6LY	 6LZ	 6MA	 6MB	 6MC	 6MD	 6ME	 6MF	 6MG	 6MH	 6MJ	 6MK	 6ML	 6MM	 6MN	 6MO	 6MP	 6MQ	 6MR	 6MS	 6MT	 6MU	 6MV	 6MW	 6MX	 6MY	 6MZ	 6NA	 6NB	 6NC	 6ND	 6NE	 6NF	 6NG	 6NH	 6NJ	 6NK	 6NL	 6NM	 6NN	 6NO	 6NP	 6NQ	 6NR	 6NS	 6NT	 6NU	 6NV	 6NW	 6NX	 6NY	 6NZ	 6OA	 6OB	 6OC	 6OD	 6OE	 6OF	 6OG	 6OH	 6OJ	 6OK	 6OL	 6OM	 6ON	 6OO	 6OP	 6OQ	 6OR	 6OS	 6OT	 6OU	 6OV	 6OW	 6OX	 6OY	 6OZ	 6PA	 6PB	 6PC	 6PD	 6PE	 6PF	 6PG	 6PH	 6PJ	 6PK	 6PL	 6PM	 6PN	 6PO	 6PP	 6PQ	 6PR	 6PS	 6PT	 6PU	 6PV	 6PW	 6PX	 6PY	 6PZ	 6QA	 6QB	 6QC	 6QD	 6QE	 6QF	 6QG	 6QH	 6QJ	 6QK	 6QL	 6QM	 6QN	 6QO	 6QP	 6QQ	 6QR	 6QS	 6QT	 6QU	 6QV	 6QW	 6QX	 6QY	 6QZ	 6RA	 6RB	 6RC	 6RD	 6RE	 6RF	 6RG	 6RH	 6RJ	 6RK	 6RL	 6RM	 6RN	 6RO	 6RP	 6RQ	 6RR	 6RS	 6RT	 6RU	 6RV	 6RW	 6RX	 6RY	 6RZ	 6SA	 6SB	 6SC	 6SD	 6SE	 6SF	 6SG	 6SH	 6SJ	 6SK	 6SL	 6SM	 6SN	 6SO	 6SP	 6SQ	 6SR	 6SS	 6ST	 6SU	 6SV	 6SW	 6SX	 6SY	 6SZ	 6TA	 6TB	 6TC	 6TD	 6TE	 6TF	 6TG	 6TH	 6TJ	 6TK	 6TL	 6TM	 6TN	 6TO	 6TP	 6TQ	 6TR	 6TS	 6TT	 6TU	 6TV	 6TW	 6TX	 6TY	 6TZ	 6UA	 6UB	 6UC	 6UD	 6UE	 6UF	 6UG	 6UH	 6UJ	 6UK	 6UL	 6UM	 6UN	 6UO	 6UP	 6UQ	 6UR	 6US	 6UT	 6UU	 6UV	 6UW	 6UX	 6UY	 6UZ	 6VA	 6VB	 6VC	 6VD	 6VE	 6VF	 6VG	 6VH	 6VJ	 6VK	 6VL	 6VM	 6VN	 6VO	 6VP	 6VQ	 6VR	 6VS	 6VT	 6VU	 6VV	 6VW	 6VX	 6VY	 6VZ	 6WA	 6WB	 6WC	 6WD	 6WE	 6WF	 6WG	 6WH	 6WJ	 6WK	 6WL	 6WM	 6WN	 6WO	 6WP	 6WQ	 6WR	 6WS	 6WT	 6WU	 6WV	 6WW	 6WX	 6WY	 6WZ	 6XA	 6XB	 6XC	 6XD	 6XE	 6XF	 6XG	 6XH	 6XJ	 6XK	 6XL	 6XM	 6XN	 6XO	 6XP	 6XQ	 6XR	 6XS	 6XT	 6XU	 6XV	 6XW	 6XX	 6XY	 6XZ	 6YA	 6YB	 6YC	 6YD	 6YE	 6YF	 6YG	 6YH	 6YJ	 6YK	 6YL	 6YM	 6YN	 6YO	 6YP	 6YQ	 6YR	 6YS	 6YT	
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SYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (2) Capacitances in $\mu\mu\text{f}$.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Beaming Diag.	Type	Volts	Amps.	Cgp.													Cin.	Cout
6S57	Metal	Pentode	8N-1-0	Cathode	6.3	0.150	.004m	5.5	7.0	100	12.2	3.1	190,000	1,950	.....	.....	.....	6S57
6S7	Metal	Duodiode Tri.	8Q-1-0	Cathode	6.3	0.150	1.5	2.8	3.0	250	9.0	2.0	1,000,000	1,850	.....	.....	.....	6S7
6SU7GY	T-9	Duodiode	8BD-0-0	Cathode	6.3	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6SU7GY
6SV7	Metal	Diode Pent.	7AZ-1-0	Cathode	6.3	0.300	.004m	6.5	6.0	250	2.3	.....	.....	.....	16.0	.....	.....	6SV7
6SZ7	Metal	Duodiode Tri.	8Q-1-0	Cathode	6.3	0.150	1.1	2.6	2.8	250	7.5	2.8	1.5 Meg.	3,600	.....	.....	.....	6SZ7
6T4	T-5½	Triode	7DK	Cathode	6.3	0.225	1.7*	2.6*	0.4*	80	1.0	.....	.....	.....	70	.....	.....	6T4
6T5	ST-12	Electron Ray	6R-0-0	Cathode	6.3	0.300	.....	.....	.....	.....	18	.....	.....	1,860	7,000	.....	.....	6T5
6T7G	ST-12	Duodiode Tri.	7V-0-8	Cathode	6.3	0.150	1.7	1.8	3.1	100	0.3	.....	.....	95,000	680	.....	.....	6T7G
6T8	T-6½	Triple Dio. Tri.	9E-0-3 & 7	Cathode	6.3	0.450	.....	.....	.....	250	1.2	.....	.....	62,000	1,050	.....	.....	6T8
6U4GT	T-9	Diode	4CG-0-0	Cathode	6.3	0.450	2.2*	1.6*	1.0*	100	0.8	.....	.....	1,300	70	.....	.....	6U4GT
6U5	T-9	Electron Ray	6R-0-0	Cathode	6.3	1.200	.....	.....	.....	350 A.C. Volts Per Plate, R.M.S., 195 Ma. Output Current. Condenser Input to Filter.	.....	.....	.....	.....	.....	.....	.....	6U5
6U6GT	T-9	Beam Pent.	7S-0-0	Cathode	6.3	0.750	.....	.....	.....	110	44.0	4.0	10,000	5,600	.....	2,000	.....	6U6GT
6U7G	ST-12	Pentode	7R-0-8	Cathode	6.3	0.300	.007m	5.0	9.0	200	3.0	3.0	20,000	6,200	.....	3,000	.....	6U7G
6U8	T-6½	Tri. Pentode	9AE-0-7	Cathode	6.3	0.450	1.8	2.5	1.0	150	56	18.0	5,000	8,500	40	.....	.....	6U8
6V3, 6V3A	T-6½	Diode	9BD	Cathode	6.3	1.750	.....	.....	.....	250	68	110	400,000	5,200	.....	.....	.....	6V3, 6V3A
6V4	T-6½	Duodiode	9M-0-0	Cathode	6.3	0.600	.....	.....	.....	350 A.C. Volts Per Plate, R.M.S., 90 Ma. Output Current. Condenser Input to Filter.	.....	.....	.....	.....	.....	.....	.....	6V4
6V5GT	T-9	Pentode	6AO-0-0	Cathode	6.3	0.450	0.6	9.0	10.0	250	45	4.5	.....	4,100	.....	5,000	.....	6V5GT
6V6	Metal	Beam Pent.	7S-1-0	Cathode	6.3	0.450	0.3	10.0	11.0	180	8.5	3.0	50,000	3,700	.....	5,000	.....	6V6
6V6GT	T-9	Duodiode	7S-0-0	Cathode	6.3	0.450	0.7*	9.0*	7.5*	250	45.0	4.5	50,000	4,100	.....	5,000	.....	6V6GT
6V6GT	T-9	Duodiode	7S-0-0	Cathode	6.3	0.450	0.7*	9.0*	7.5*	250	45.0	4.5	50,000	4,100	.....	5,000	.....	6V6GT
6V7G	ST-12	Duodiode Tri.	7V-0-8	Cathode	6.3	0.300	1.3	1.5	6.0	135	10.5	3.7	11,000	750	8.3	25,000	75	6V7G
6V8	T-6½	Triple Diode Triode	9AH-0-3	Cathode	6.3	0.450	180	13.5	6.0	8,500	975	8.3	30,000	160	6V8
6W4GT	T-9	Diode	4CG-0-0	Cathode	6.3	1.200	.....	.....	.....	100	1.0	.....	.....	54,000	1,300	70	.....	6W4GT
6W5G	ST-12	Duodiode	6S-0-0	Cathode	6.3	0.900	.....	.....	.....	250	3.0	.....	.....	58,000	1,200	.....	.....	6W5G
6W6GT	T-9	Beam Pent.	7S-0-0	Cathode	6.3	1.200	0.8*	15.0*	9.0*	110	7.5	4.0	13,000	8,000	.....	2,000	.....	6W6GT
6W7G	ST-12	Pentode	7R-0-8	Cathode	6.3	0.150	.007m	5.0	8.5	250	2.0	0.5	1.5 Meg.	1,225	.....	.....	.....	6W7G
6X4	T-5½	Duodiode	5BS-0-0	Cathode	6.3	0.600	.....	.....	.....	325 Volts RMS Per Plate, 70 Ma. D-C Output. Condenser Input to Filter.	.....	.....	.....	.....	.....	.....	.....	6X4
6X5	Metal	Duodiode	6S-0-0	Cathode	6.3	0.600	.....	.....	.....	325 A-C Volts Per Plate, RMS, 70 Ma. Output Current. Condenser Input to Filter.	.....	.....	.....	.....	.....	.....	.....	6X5
6X5WG (3)	T-9	Triode Pentode	9AK	Cathode	6.3	0.450	1.4	2.6	1.0	100	8.5	1.6	6,900	5,800	40	.....	.....	6X5WG (3)
6X8	ST-12	Duodiode	4AC-0-0	Cathode	6.3	0.700	.06	4.5	1.4	250	7.7	.....	.....	.75 Meg.	4,600	.....	.....	6X8
6Y3G	ST-12	Diode	61-2-0	Cathode	6.3	0.800	.....	.....	.....	5,000 A-C Volts Per Plate, RMS, 7.5 Ma. Output Current. Choke or Condenser Input to Filter.	.....	.....	.....	.....	.....	.....	.....	6Y3G
6Y5	ST-12	Beam Pent.	7S-0-0	Cathode	6.3	1.250	.....	.....	.....	135	13.5	3.5	9,300	7,000	.....	2,000	.....	6Y5
6Y6G	ST-12	Duodiode	6S-0-0	Cathode	6.3	0.600	.....	.....	.....	200	180	2.2	80,000	3,750	.....	8,500	.....	6Y6G
6Y7G	ST-12	Duodiode	6S-0-0	Cathode	6.3	0.600	.....	.....	.....	285	19.0	5.0	10,000	10,000	.....	10,000	.....	6Y7G
6Z4	ST-12	Duodiode	5D-0-0	Cathode	6.3	0.500	.....	.....	.....	325 A-C Volts Per Plate, RMS, 60 Ma. Output Current. Condenser Input to Filter.	.....	.....	.....	.....	.....	.....	.....	6Z4
6Z5/12Z5	ST-12	Duodiode	6K-0-0	Cathode	6.3	0.800	.....	.....	.....	450 A-C Volts Per Plate, RMS, 60 Ma. Output Current. Choke Input to Filter.	.....	.....	.....	.....	.....	.....	.....	6Z5/12Z5
6Z7G	ST-12	Duodiode	8B-0-0	Cathode	6.3	0.300	.....	.....	.....	135	0.0	.....	.....	(Class B Operation)	.....	.....	.....	6Z7G
6Z95G	ST-12	Duodiode	6S-0-0	Cathode	6.3	0.300	.....	.....	.....	180	0.0	.....	.....	(Class B Operation)	.....	.....	.....	6Z95G
7A4/XXL	Lock-in	Triode	5AC-L-0	Cathode	6.3	0.300	4.0	3.4	3.0	90	0.0	.....	.....	6,700	3,000	20	.....	7A4/XXL

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to grid, RF input, Mizer Output.
 X Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater).
 (3) Has special mechanical and/or life characteristics.
 § With Average Power Input of 350 Mw. Grid to Grid.
 ¶ For two tubes with 40 volts RMS applied to each grid.
 † Pentode Operation.
 ‡ Cathode Resistor (ohms).
 § Triode Operation.
 ¶ Applied through 50,000 ohms.
 † Per Tube or Section.
 ‡ Conversion Transconductance.
 § Plate and Target Supply Voltage.
 ¶ Approximate.



SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Hc—Heater Tap; IC—Internal Connection; DO NOT USE, J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

SYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (*) Capacitances in $\mu\mu\text{f}$.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Mg.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Cgp.													Cin.	Cout
7A5	Lock-in	Beam Pent.	6AA-L-0	Cathode	6.3	0.750	0.44	13.0	7.2	7.5	40.0	3.0	14,000	5,800	.....	2,500	1,500	7A5
7A6	Lock-in	Duodiode	7DX-L-5	Cathode	6.3	0.150	.....	.....	.....	9.0	44.0	3.3	17,000	6,000	.....	2,700	2,200	7A6
7A7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.300	.003m	6.0	7.0	3.0	9.2	2.6	800,000 \ddagger	2,000	.....	.....	.....	7A7
7A8	Lock-in	Octode	8UL-L-7	Cathode	6.3	0.150	0.15m	7.5	9.0	3.0	1.8	3.2	700,000 \ddagger	375 Δ	(Gs = 100 V, 2.8 Ma.) (Gs = 250 V, 4.2 Ma.)	.....	.....	7A8
7AB7	Lock-in	Pentode	8BO-L-0	Cathode	6.3	0.150	.06m	3.5	4.0	3.0	3.0	1.3	500,000 \ddagger	1,800	.....	.....	.....	7AB7
7AD7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.600	.03	11.5	7.5	68 $\#$	28	7.0	300,000	9,500	.....	.....	.....	7AD7
7AF7	Lock-in	Duotriode	8AC-L-0	Cathode	6.3	0.300	2.3*	2.2*	1.6*	0	10.8	40	6,500	2,600	.....	.....	.....	7AF7
7AG7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.150	.0035m	7.0	6.0	250 $\#$	6.0	2.0	750,000	4,200	.....	.....	.....	7AG7
7AH7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.300	.0035m	7.0	6.5	250 $\#$	6.8	1.9	1 Mes.	3,300	.....	.....	.....	7AH7
7AJ7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.300	.007m	6.0	6.5	100	5.7	1.8	400,000	9,275	.....	.....	.....	7AJ7
7AK7	Lock-in	Pentode	8V-L-0	Cathode	6.3	0.800	4.0 Supt \ddagger	12.0	9.5	0	2.2	0.7	>1.0 Mes.	1,575	.....	.....	.....	7AK7
7AU7	T-6 $\frac{1}{2}$	Duotriode	9A-0-0	Cathode	7.0/ 3.5 \ddagger	0.300/ 0.600	1.5* 1.6*	1.6* 1.6*	0.4* 0.32*	1.5	2.0 Max. 2.0 Max.	0.45 4.3 Max.	11,500	6,500	7AU7
7B4	Lock-in	Triode	5AC-L-0	Cathode	6.3	0.300	1.6	3.2	3.2	1.0	0.4	.....	85,000	1,150	100	.....	.....	7B4
7B5	Lock-in	Power Pent.	6AE-L-0	Cathode	6.3	0.400	0.8	7.4	8.0	7.0	9.0	1.6	104,000	1,500	.....	12,000	350	7B5
7B6	Lock-in	Duodiode Tri.	8W-L-7	Cathode	6.3	0.300	1.6	3.0	2.4	1.0	0.4	.....	110,000	900	100	.....	.....	7B6
7B7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.150	.004m	5.0	6.0	3.0	8.2	1.8	300,000	1,675	.....	.....	.....	7B7
7B8	Lock-in	Heptode	8X-L-0	Cathode	6.3	0.300	0.2m	10.0	9.0	1.5	1.1	1.3	600,000	360 Δ	(Gs = 100 V, 2.0 Ma.) (Gs = 250 V, 4.0 Ma.)	.....	.....	7B8
7C4	Lock-in	H. F. Diode	4AH-L-0	Cathode	6.3	0.150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7C4
7C5	Lock-in	Beam Pent.	6AA-L-0	Cathode	6.3	0.450	0.4	9.5	9.0	8.5	99.0	3.0	50,000	3,700	.....	5,000	9,000	7C5
7C6	Lock-in	Duodiode Tri.	8W-L-7	Cathode	6.3	0.150	1.6	2.4	2.4	1.0	1.3	.....	100,000	850	85	.....	.....	7C6
7C7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.150	.004m	5.5	6.5	3.0	1.8	0.4	1.2 Mes. \ddagger	1,225	.....	.....	.....	7C7
7E5	Lock-in	Triode	8BN-L-0	Cathode	6.3	0.150	1.5	3.6	2.8	3.5	13.0	0.5	2.0 Mes. \ddagger	1,300	.....	.....	.....	7E5
7E6	Lock-in	Duodiode Tri.	8W-L-7	Cathode	6.3	0.300	1.5	3.0	2.4	9.0	9.5	.....	8,500	1,900	16	.....	.....	7E6
7E7	Lock-in	Duodi. Pent.	8AE-L-7	Cathode	6.3	0.300	.005m	4.6	5.5	1.0	10.0	2.7	150,000 \ddagger	1,600	.....	.....	.....	7E7
7F7	Lock-in	Duotriode	8AC-L-0	Cathode	6.3	0.300	1.6	2.4	2.0	1.0	0.65	.....	62,000 \ddagger	1,300	70	.....	.....	7F7
7F8	Lock-in	Duotriode	8BW-L-0	Cathode	6.3	0.300	1.7	2.8	1.4	2.0	6.0$\\#$	.....	44,000 \ddagger	1,600	70	.....	.....	7F8
7F8W (3)	Lock-in	Duotriode	8BW-L-0	Cathode	6.3	0.300	1.6	2.8	1.4	200 $\#$	11.0	.....	.....	.....	50	.....	.....	7F8W (3)
7G7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.450	0.06m	9.0	7.0	2.0	6.0	2.0	800,000 \ddagger	4,500	.....	.....	.....	7G7
7G8	Lock-in	Duotetode	8BV-L-0	Cathode	6.3	0.300	0.15m	3.4	2.6	2.5	4.5	0.8	925,000	2,100	.....	.....	.....	7G8
7H7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.300	.004m	8.0	7.0	1.5	7.5	2.6	350,000 \ddagger	4,000	.....	.....	.....	7H7
7J7	Lock-in	Tri. Heptode	8BL-L-7	Cathode	6.3	0.300	.03m	4.6	7.5	3.0	1.5	2.6	500,000 \ddagger	280 Δ	.....	.....	.....	7J7
7K7	Lock-in	Duodiode Tri.	8BF-L-7	Cathode	6.3	0.300	1.8	2.6	3.0	2.0	2.3	.....	44,000	1,600	70	.....	.....	7K7
7L7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.300	.01m	8.0	6.5	1.0	4.5	2.4	100,000 \ddagger	3,000	.....	.....	.....	7L7
7N7	Lock-in	Duotriode	8AC-L-0	Cathode	6.3	0.600	3.0	3.4	2.0	1.5	10.0	1.5	1.0 Mes. \ddagger	6,700	20	.....	.....	7N7

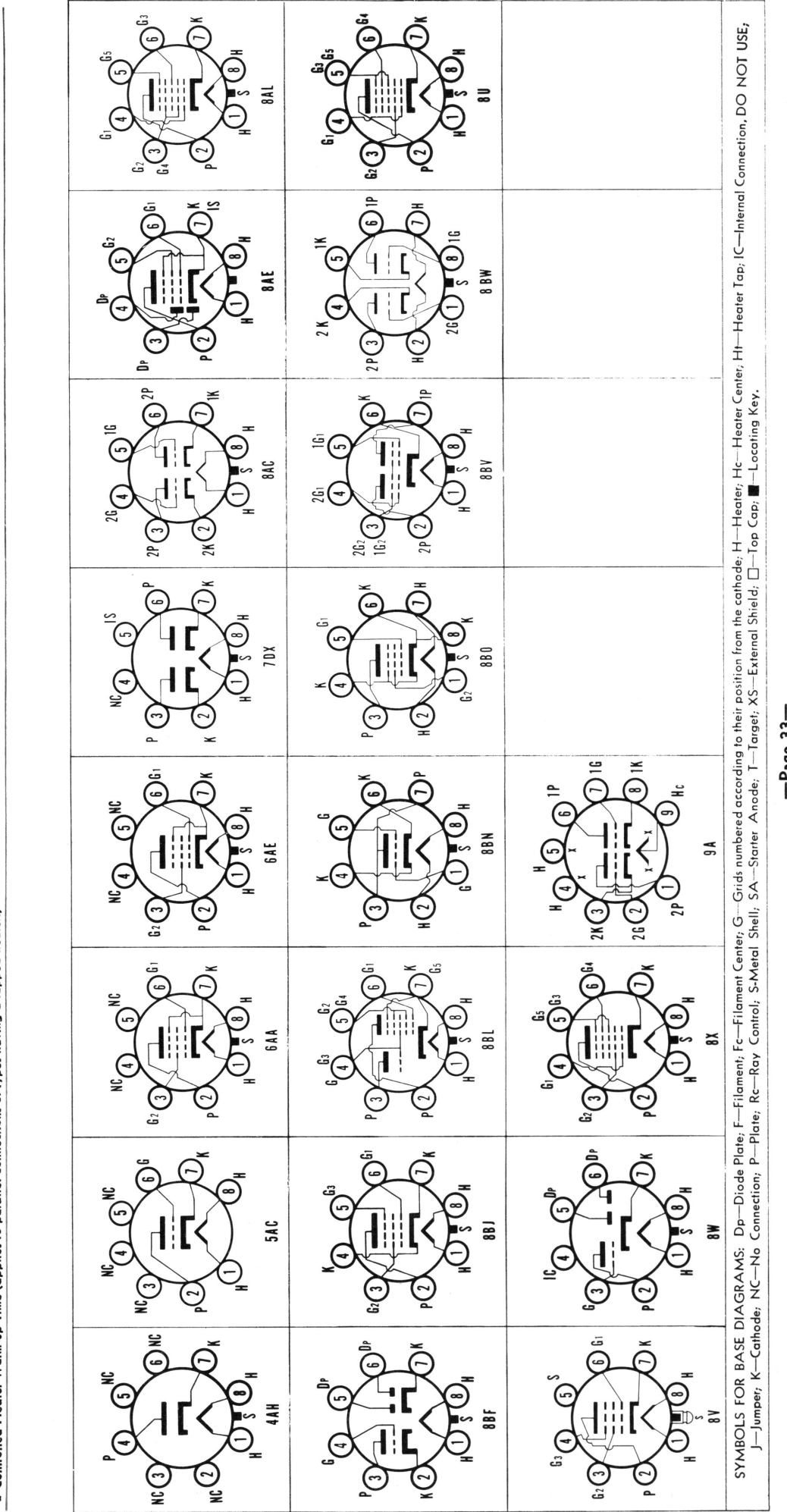
Type	Construction		Emitter		Note (*) Capacities in μf .		Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.													Cgp.	Cin.	Cout
7Q7	Lock-in	Heptode	8AL-L-0	Cathode	6.3	0.300	0.15m	9.0	9.0	9.0	3.3	8.5	500,000	595 Δ	(Osc. Grid Resistor 90,000)	.....	707
7R7	Lock-in	Duodi. Pent.	8AE-L-7	Cathode	6.3	0.300	.004m	5.6	5.3	100	3.4	1.0	500,000 Δ	9,100	.....	.....	7R7
7S7	Lock-in	Tri. Heptode	88L-L-7	Cathode	6.3	0.300	.03m	5.0	8.0	100	1.9	3.0	500,000 Δ	500 Δ	.....	.....	7S7
7T7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.300	.0035m	8.0	7.0	100	1.8	3.0	1.95 Meg. Δ	525 Δ	.....	.....	7T7
7V7	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.450	.002m	9.5	6.5	100	1.8	3.0	1.95 Meg. Δ	525 Δ	.....	.....	7V7
7W7	Lock-in	Pentode	88J-L-5	Cathode	6.3	0.450	.002m	9.5	7.0	100	1.8	3.0	1.95 Meg. Δ	525 Δ	.....	.....	7W7
7X6	Lock-in	Duodiode	7DX-L-0	Cathode	6.3	1.200	.....	.....	.....	250 \square	5.0	4.1	900,000 Δ	4,900	.....	.....	7X6

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate, RF input, Mixer Output.
 X Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater).

(3) Has special mechanical and/or life characteristics.
 §§ With Average Power Input of 320 Mw. Grid to Grid, RF Input, Mixer Output.
 †† For two tubes with 40 volts RMS applied to each grid.
 ‡ Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater).

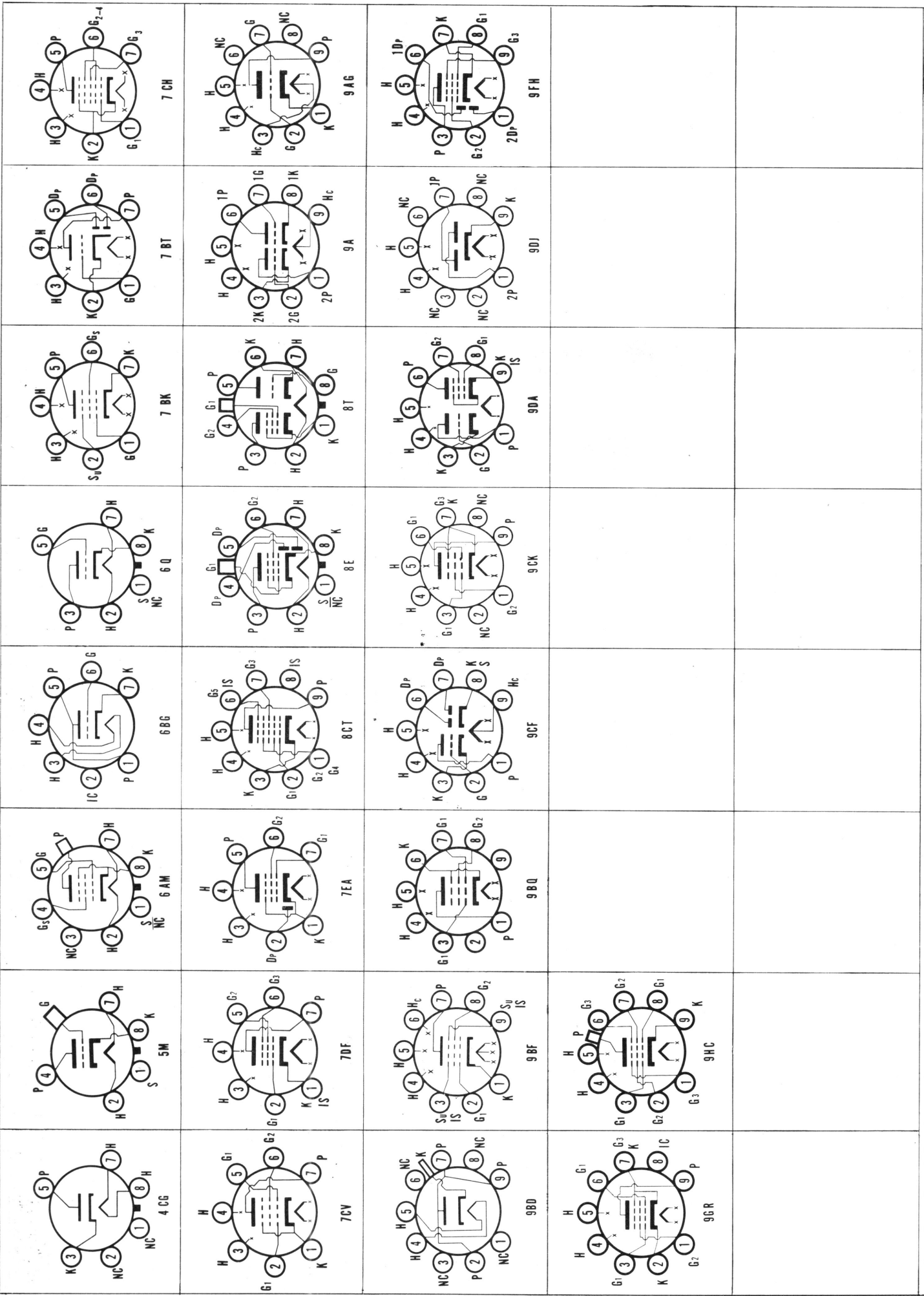
* Applied through 250,000 ohms. \square Pentode Operation.
 # Per Tube or Section. Δ Plate to Plate.
 \$ Plate and Target Supply Voltage. \uparrow Approximate.
 ** Triode Operation.

Characteristics Same as Type 7V7, Except Capacitances:
 935 Volts Per Plate, RMS, 75 Ma. DC Output Per Plate.
 117 Volts Per Plate, RMS, 75 Ma. DC Output.

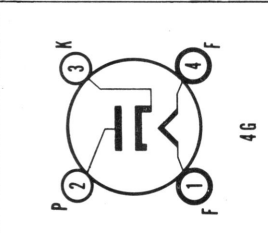
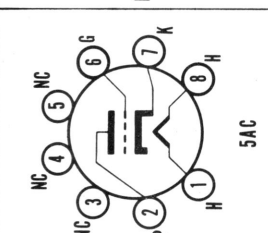
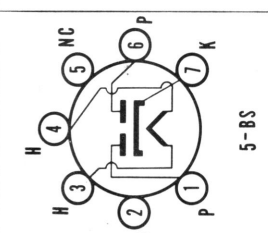
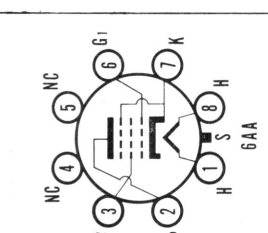
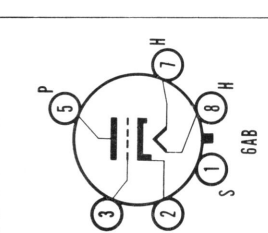
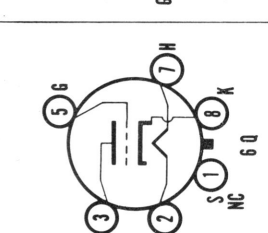
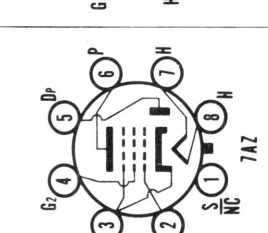
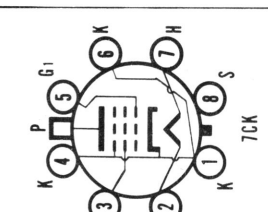
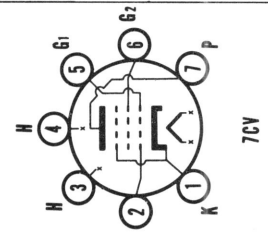
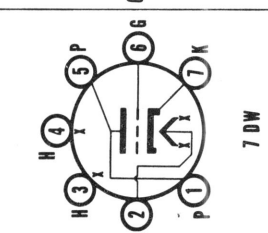
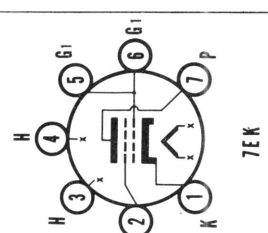
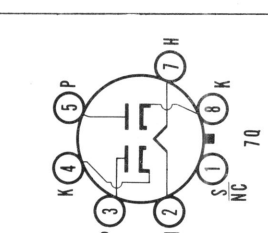
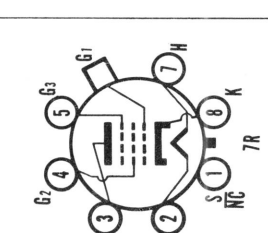
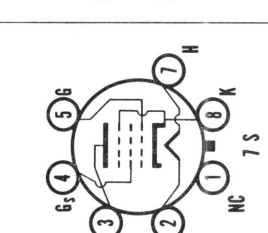
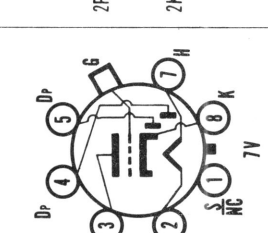
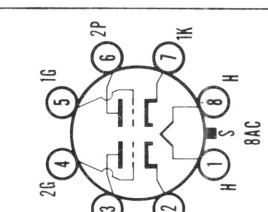
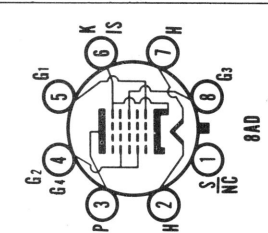
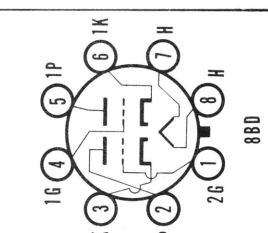
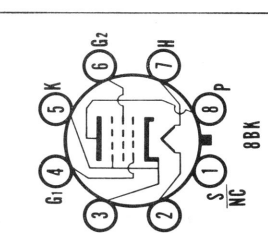
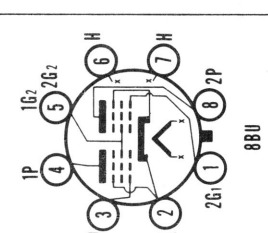
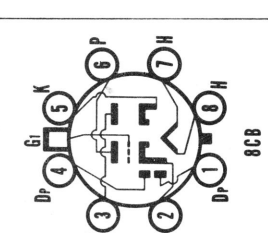
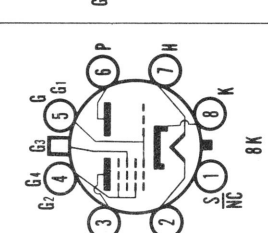
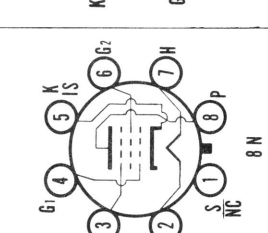
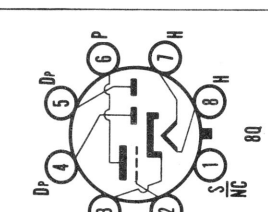
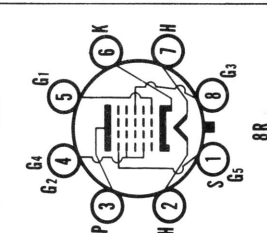
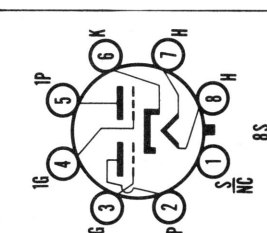
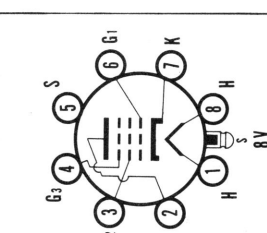
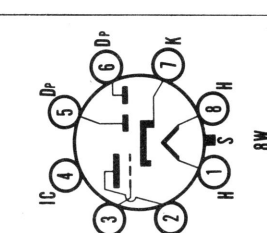
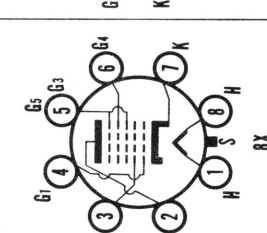
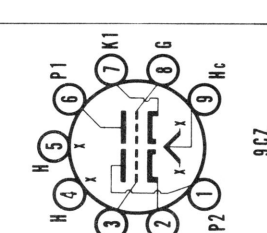


PENNSYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter			Note (1) (*) Capacitances in $\mu\text{f.}$			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type		Cgp.	Cin.	Cout												
				Diode	Triode																Volts	Amps.
7X7	Lock-in	Duodiode Tri.	8BZ-L-4	Cathode	6.3	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7X7
7Y4	Lock-in	Duodiode	5AB-L-0	Cathode	6.3	0.500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7Y4
7Z4	Lock-in	Duodiode	5AB-L-0	Cathode	6.3	0.900	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7Z4
8AU8	T-6 1/2	Tri. Pentode	9DX-0-6	Cathode	8.4I	0.450	2.2*	0.46*	2.8*	7.0*	0.32*	2.6*	.....	.....	.....	.....	.....	.....	.....	8AU8
8AW8A	T-6 1/2	Tri. Pentode	9DX-0-6	Cathode	8.4I	0.450	2.2	.....	3.4	1.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	8AW8A
8BA8A	T-6 1/2	Tri. Pentode	9DX-0-0	Cathode	8.4I	0.450	2.2*	.....	10.0	4.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	8BA8A
8BH8	T-6 1/2	Tri. Pentode	9DX-0-6	Cathode	8.4I	0.450	2.4*	0.46*	2.7*	1.9*	.....	.....	.....	.....	.....	.....	.....	.....	.....	8BH8
8CG7	T-6 1/2	Duotriode	9AJ-0-9	Cathode	8.4I	0.450	4.0*	.....	2.3*	2.2*	.....	.....	.....	.....	.....	.....	.....	.....	.....	8CG7
8CM7	T-6 1/2	Duotriode	9ES-0-0	Cathode	8.4I	0.450	3.8*	.....	2.0*	0.5*	.....	.....	.....	.....	.....	.....	.....	.....	.....	8CM7
8CN7	T-6 1/2	Duodiode Tri.	9EN-0-3	Cathode	8.4I	0.225/4.2I	1.8*	.....	3.5*	0.4*	.....	.....	.....	.....	.....	.....	.....	.....	.....	8CN7
8CS7	T-6 1/2	Duotriode	9EF-0-0	Cathode	8.4I	0.450	2.6*	2.6*	1.5*	0.5*	.....	.....	.....	.....	.....	.....	.....	.....	.....	8CS7
9A8	T-6 1/2	Tri. Pentode	9DC-0-7	Cathode	9.0	0.300	0.25*	1.5*	1.8*	3.0*	0.5*	.....	.....	.....	.....	.....	.....	.....	.....	9A8
9AU7	T-6 1/2	Duotriode	9A-0-0	Cathode	9.4I	0.225/4.7I	1.5	.....	5.5*	3.8*	.....	.....	.....	.....	.....	.....	.....	.....	.....	9AU7
9CL8	T-6 1/2	Tri. Tetrode	9FX-0-0	Cathode	9.5I	0.300	1.8	0.16	2.7	1.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	9CL8
9U8A	T-6 1/2	Tri. Pentode	9AE	Cathode	9.45I	0.300	1.8	0.06	5.0	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	9U8A
10	ST-16	Triode	4D-0-0	Filament	7.5	1.950	7.0*	.....	4.0*	3.0*	.....	.....	.....	.....	.....	.....	.....	.....	.....	10
10C8	T-6 1/2	Tri. Pentode	9DA-0-9	Cathode	10.5I	0.300	1.6*	0.4*	2.4*	0.2*	.....	.....	.....	.....	.....	.....	.....	.....	.....	10C8
10DA7	T-6 1/2	Duotriode	9EF-0-0	Cathode	10.5I	0.600	2.3*	6.9*	7.0*	2.2*	.....	.....	.....	.....	.....	.....	.....	.....	.....	10DA7
12A	ST-14	Triode	4D-0-0	Filament	5.0	0.250	3.5*	.....	4.0*	2.0*	.....	.....	.....	.....	.....	.....	.....	.....	.....	12A
12A4	T-6 1/2	Triode	9AG-0-0	Cathode	6.3	0.600	5.6*	.....	4.9*	0.9*	.....	.....	.....	.....	.....	.....	.....	.....	.....	12A4
12A5	ST-12	Beam Pent.	7F-0-0	Cathode	12.6	0.300	0.3	.....	9.0	9.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	12A5
12A6	Metal T-9	Beam Pent.	7S-0-0	Cathode	12.6	0.150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12A6
12A6GT	ST-12	Diode Pent.	7K-0-0	Cathode	12.6	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12A6GT
12A7	T-9	Diode Pent.	7K-0-0	Cathode	12.6	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12A7
12A8G	T-12	Heptode	8A-1-0	Cathode	12.6	0.150	0.26	.....	9.5	12.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	12A8G
12A8GT	T-9	Pentode	7BK	Cathode	12.6	0.150	0.04	.....	4.3	5.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	12A8GT
12AC6	T-5 1/2	Heptode	7CH	Cathode	12.6	0.150	0.25m	.....	8.0	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AC6
12AD6	T-6 1/2	Duotriode	9A	Cathode	12.6/6.3	0.225/0.450	1.8	.....	1.7	1.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AD6
12AD7	T-6 1/2	Duotriode	9A	Cathode	12.6/6.3	0.225/0.450	1.8	.....	1.7	1.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AD7
12AE6	T-5 1/2	Pentode	7BT-0-0	Cathode	12.6	0.150	0.06*	.....	5.5*	4.8*	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AE6
12AF6	T-5 1/2	Heptode	7BK-0-2	Cathode	12.6	0.150	0.065m*	.....	5.5*	7.5*	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AF6
12AH7GT	T-9	Duotriode	8BE-0-0	Cathode	12.6	0.150	3.0	2.2	2.8	2.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AH7GT
12AL5	T-5 1/2	Duodiode	6BT-0-6	Cathode	12.6	0.150	.....	.....	3.2	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AL5
12AQ5	T-5 1/2	Beam Pent.	7BZ-0-0	Cathode	12.6	0.225	0.35*	.....	8.3*	8.2*	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AQ5
12AT6	T-5 1/2	Duodiode Tri.	7BT-0-0	Cathode	12.6	0.150	2.1*	.....	2.2*	1.1*	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AT6
12A17	T-6 1/2	Duotriode	9A-0-0	Cathode	6.3	0.300	1.45*	1.45*	2.5*	0.45*	.....	.....	.....	.....	.....	.....	.....	.....	.....	12A17
12AU6	T-5 1/2	Pentode	7BK-0-2	Cathode	12.6	0.150	0.035m*	5.5*	5.0*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AU6
12AU7	T-6 1/2	Duotriode	9A-0-0	Cathode	6.3	0.300	1.5*	.....	1.6*	0.4*	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AU7
12AV5GA	T-11 or T-12	Beam Pent.	6CK-0-0	Cathode	12.6I	0.600	0.5*	.....	14.0*	7.0*	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AV5GA
12AV6	T-5 1/2	Duodiode Tri.	7BT-0-0	Cathode	12.6	0.150	2.1*	.....	2.5*	0.9*	.....	.....	.....	.....	.....	.....	.....	.....	.....	12AV6



SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Ht—Heater Tap; IC—Internal Connection, DO NOT USE; J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

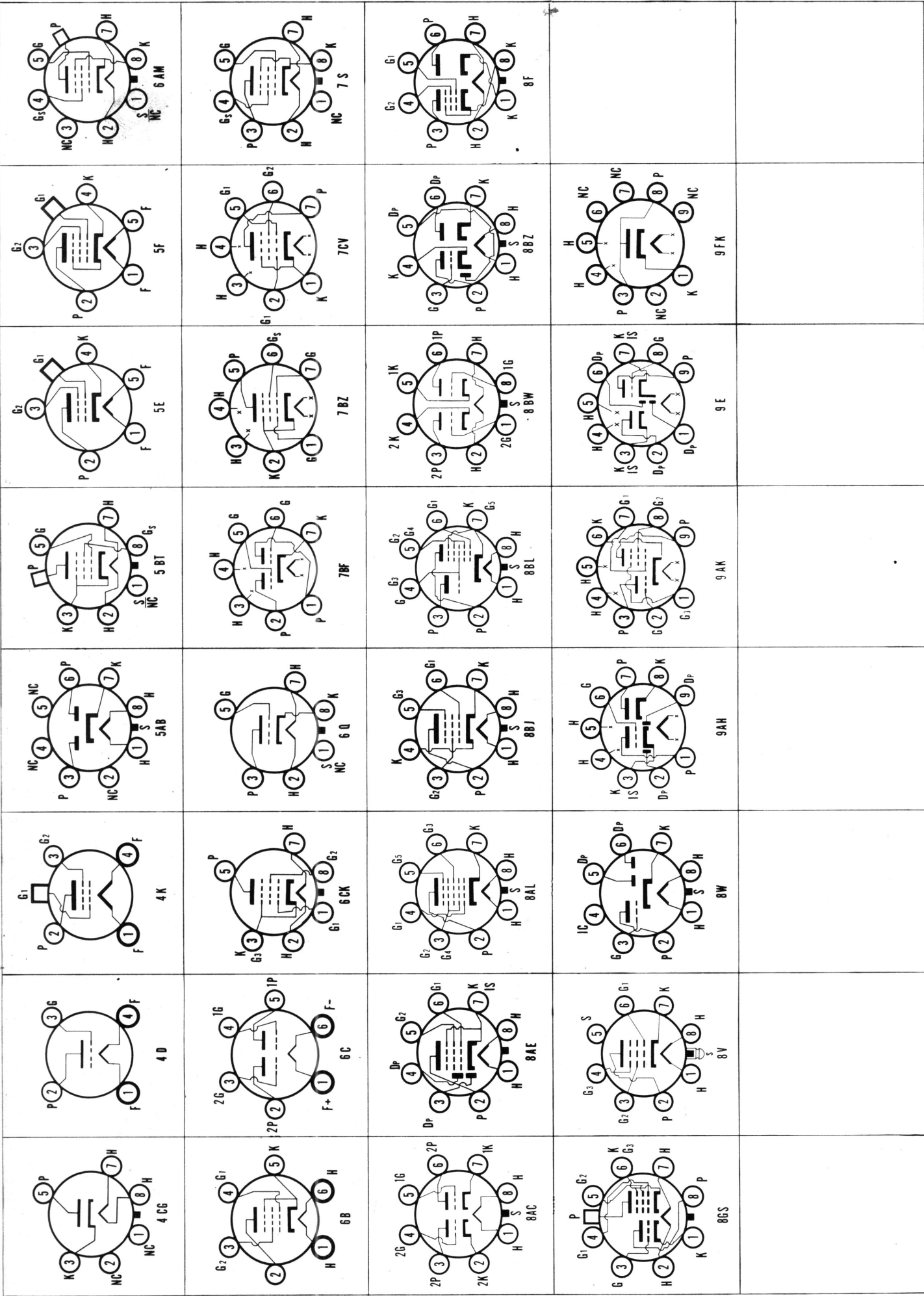
							
							
							
							

SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; HT—Heater Tap; IC—Internal Connection, DO NOT USE; J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

PENNY ELECTRONICS

Type	Construction		Emitter		Note (1) (2) Capacitances in μ fd.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Beating Diag.	Type	Volts	Amps.	Cap.													Cin.	Coult
14E6	Lock-in	Duodiode Tri.	8W-L-7	Cathode	12.6	0.150	1.5	3.0	2.4	Characteristics Same as Type 7E6.									14E6
14E7	Lock-in	Duodi. Pent.	8AE-L-7	Cathode	12.6	0.150	.005m	4.6	5.5	Characteristics Same as Type 7E7.									14E7
14F7	Lock-in	Duodiode	8AC-L-0	Cathode	12.6	0.150	1.6 $\#$	2.4 $\#$	2.0 $\#$	Characteristics Same as Type 7F7.									14F7
14F8	Lock-in	Duodiode	8BW-L-0	Cathode	12.6	0.150	1.2 $\#$	2.8 $\#$	1.4 $\#$	Characteristics Same as Type 7F8.									14F8
14H7	Lock-in	Pentode	8V-L-5	Cathode	12.6	0.150	.004m	8.0	7.0	Characteristics Same as Type 7H7.									14H7
14J7	Lock-in	Tri. Heptode	8BL-L-7	Cathode	12.6	0.150	.03m	4.6	7.5	Characteristics Same as Type 7J7.									14J7
14N7	Lock-in	Duodiode	8AC-L-0	Cathode	12.6	0.300	See 7N7	Characteristics Same as Type 7N7.									14N7		
14Q7	Lock-in	Heptode	8AL-L-0	Cathode	12.6	0.150	0.15m	9.0	9.0	Characteristics Same as Type 7Q7.									14Q7
14R7	Lock-in	Duodi. Pent.	8AE-L-7	Cathode	12.6	0.150	.004m	5.6	5.3	Characteristics Same as Type 7R7.									14R7
14S7	Lock-in	Tri. Heptode	8BL-L-7	Cathode	12.6	0.150	.03m	5.0	8.0	Characteristics Same as Type 7S7.									14S7
14W7	Lock-in	Pentode	8BL-L-5	Cathode	12.6	0.225	.002m	9.5	7.0	Characteristics Same as Type 7V7, Except Capacitances.									14W7
14X7	Lock-in	Duodiode Tri.	8BZ-L-4	Cathode	12.6	0.150	.....	.....	.....	Characteristics Same as Type 7X7.									14X7
14Y4	Lock-in	Duodiode	5AB-L-0	Cathode	12.6	0.300	.....	.....	.....	325 A-C Volts Per Plate, RMS, 70 Ma. Output Current. Condenser Input to Filter. 450 A-C Volts Per Plate, RMS, 70 Ma. Output Current. Choke Input to Filter.									14Y4
15	ST-12	Pentode	5F-0-4	Cathode	2.0	0.220	.01m	2.4*	8.0*	1.5	67.5	1.85	0.3	630,000	710	450	.....	15	
15A8	T-9	Tri. Beam Pent.	8GS	Cathode	15.01	0.600	3.4	2.6	0.9	11.0	.....	.....	.....	.....	.....	.....	.....	15A8	
17A5GA	T-11 or T-12	Beam Pent.	6CK-0-0	Cathode	16.81	0.450	0.5*	14.0*	7.0*	Characteristics Same as Type 6AV5GA.									17A5GA
17AX4GT	T-9	Diode	4CG-0-0	Cathode	16.81	0.450	.....	.....	.....	Characteristics Same as Type 6AX4GT.									17AX4GT
17C5	T-5 1/2	Beam Pent.	7CV-0-0	Cathode	16.81	0.450	0.64*	13.0*	6.1*	Characteristics Same as Type 50C5.									17C5
17CA5	T-5 1/2	Beam Pent.	7CV-0-0	Cathode	16.81	0.450	0.5*	15.0*	9.0*	Characteristics Same as Type 12CA5.									17CA5
17DQ6	T-12	Beam Pent.	6AM-0-0	Cathode	16.81	0.450	0.55*	15.0*	7.0*	Characteristics Same as Type 6DQ6.									17DQ6
17H3	T-6 1/2	Diode	9FK-0-0	Cathode	17.51	0.300	.....	.....	.....	Maximum Peak Inverse Pulse Voltage = 2,000 Volts. Maximum D.C. Output Current = 75 Ma.									17H3
17L6GT	T-9	Beam Pent.	7S-0-0	Cathode	16.81	0.450	.....	.....	.....	Characteristics Same as Type 25L6GT.									17L6GT
17R5	T-5 1/2	Beam Pent.	7CV-0-0	Cathode	16.81	0.450	0.55*	13.0*	9.0*	Characteristics Same as Type 12R5.									17R5
18	ST-14	Beam Pent.	6B-0-0	Cathode	14.0	0.300	.....	.....	.....	Characteristics Same as Type 6F6G.									18
18A5	T-9	Beam Pent.	6CK-0-0	Cathode	16.51	0.300	0.7*	13.0*	7.0*	Maximum Peak Positive Pulse Plate Voltage = 3,000 Volts. Maximum D.C. Cathode Current = 90 Ma. Maximum Plate Dissipation = 9 Watts.									18A5
19	ST-12	Duodiode	6C-0-0	Filament	2.0	0.260	.....	.....	.....	1.35	0.0	5.0	1.1	27,000	4,800	.....	.....	19	
19AQ5	T-5 1/2	Beam Pent.	7BZ	Cathode	18.9	0.150	.....	.....	.....	1.35	2.0	1.7	.....	(Class B Operation)	.....	.....	.....	19AQ5	
19AU4	T-9	Diode	4CG-0-0	Cathode	18.91	0.600	.....	.....	.....	1.35	6.0	0.1	.....	(Class B Operation)	.....	.....	.....	19AU4	
19AU4GTA	T-9	Diode	4CG-0-0	Cathode	18.91	0.600	.....	.....	.....	Characteristics Same as Type 6AU4GT. (19AU4 Designed for Series String TV Receivers).									19AU4GTA
19BG6G	ST-16	Beam Pent.	5BT-0-0	Cathode	18.9	0.300	0.65*	11.0*	6.5*	Characteristics Same as Type 6AU4GTA. (19AU4GTA Designed for Series String TV Receivers).									19BG6G
19BG6GA	T-12	Beam Pent.	5BT-0-0	Cathode	18.9	0.300	0.8*	11.0*	6.0*	Characteristics Same as Type 6BG6G.									19BG6GA
19C8	T-6 1/2	Tri. Dio. Tri.	9E-0-0	Cathode	18.9	0.150	.....	.....	.....	100	1.0	.....	.....	80,000	1,250	100	.....	19C8	
19J6	T-5 1/2	Duodiode	7BF-0-0	Cathode	18.9	0.150	1.5 $\#$	2.0 $\#$	0.4 $\#$	VHF Osc. Amp.									19J6
19T8	T-6 1/2	Tri. Pentode	9E-0-3 & 7	Cathode	18.9	0.150	2.4*	1.5*	1.1*	Characteristics Same as Type 6T8.									19T8
19V8	T-6 1/2	Tri. Pentode	9AH-0-3	Cathode	18.9	0.150	.....	.....	.....	100	1.0	.....	.....	54,000	1,300	70	.....	19V8	
19X8	T-6 1/2	Tri. Pentode	9AK	Cathode	18.9	0.150	.....	.....	.....	Same as 6X8.									19X8
20	T-8	Triode	4D-0-0	Filament	3.3	0.132	.....	.....	.....	90	16.5	.....	.....	7,800	450	3.5	9,600	20	
22	ST-14	Tetrode	4E-0-3	Filament	3.3	0.132	.02m	4.0*	10.0*	135	22.5	6.0	1.3	5,850	600	3.5	6,500	130	
24A	ST-14	Tetrode	5E-0-3	Filament	2.5	1.750	.007m	5.3	10.5	R-F Amp.									22
24S	ST-14	Tetrode	5E-4-3	Cathode	2.5	1.750	.007m	5.3	10.5	R-F Amp. (Plate Current to be adjusted to 0.1 Ma. with no Input Signal.)									24A 24S
25A6	Metal T-9	Power Pent.	7S-1-0	Cathode	25.0	0.300	.....	.....	.....	95	15.0	95	4.0	45,000	2,000	.....	4,500	900	
25A6GT	T-9	Diode Pent.	7S-0-0	Cathode	25.0	0.300	.....	.....	.....	125	90.0	135	8.0	35,000	2,450	.....	4,500	2,900	
25A7GT	T-9	Diode Pent.	8F-0-0	Cathode	25.0	0.300	.....	.....	.....	100	15.0	100	4.0	50,000	1,800	.....	4,500	770	
25AC5GT	T-9	Triode	6Q-0-0	Cathode	25.0	0.300	.....	.....	.....	110	15	.....	.....	15,200	3,800	58	2,000	2,000	

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate; RF input, Mixer Output.
 X Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater).
 (3) Has special mechanical and/or life characteristics.
 † With Average Power Input of 350 Mw. Grid to Grid.
 ‡ Per Tube or Section.
 § Plate and Target Supply Voltage.
 * Applied through 250,000 ohms.
 † Pentode Operation.
 ‡ Plate to Plate.
 § Conversion Transconductance.
 † Triode Operation.
 ‡ Approximate.



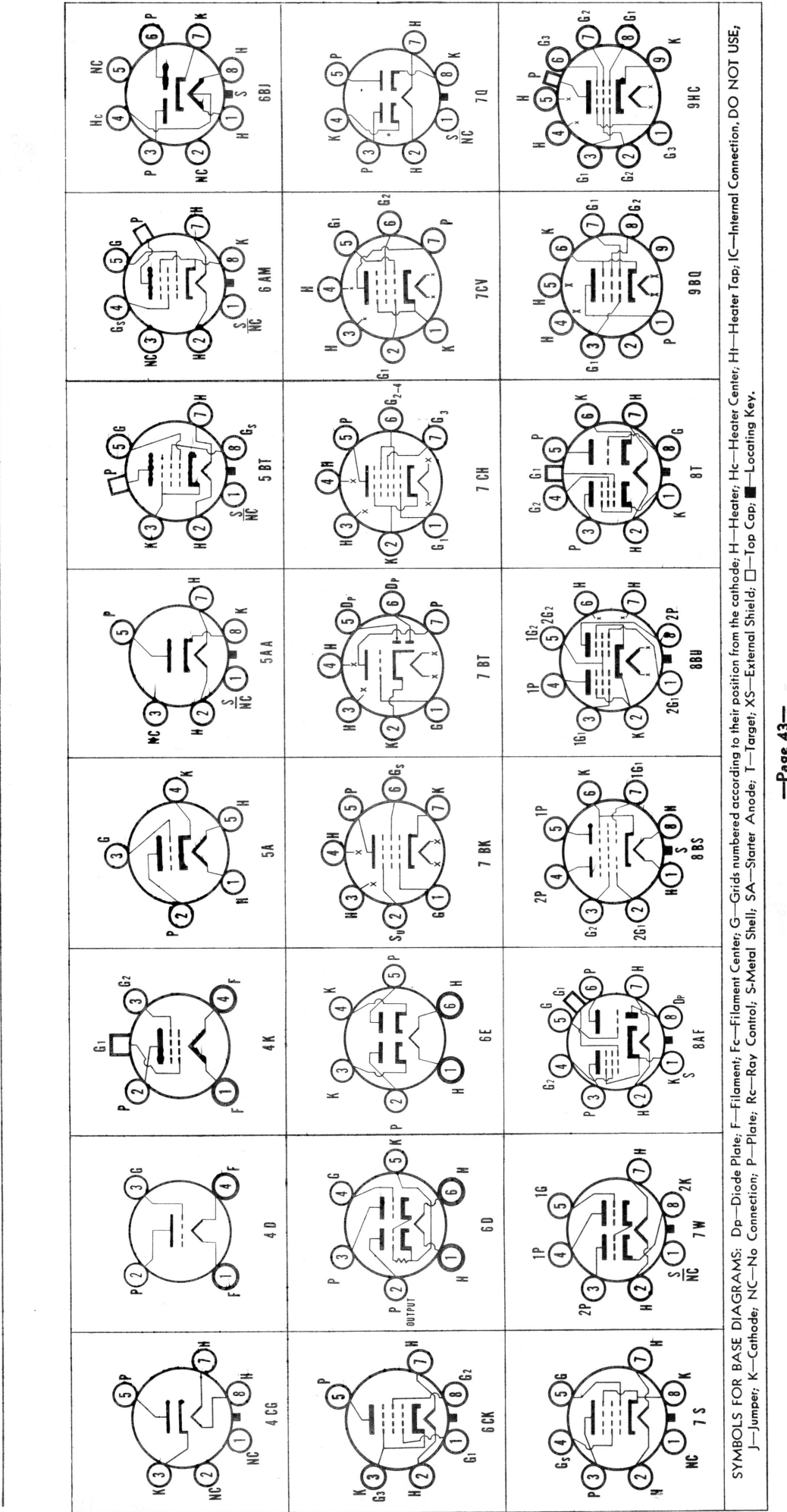
SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Ht—Heater Tap; IC—Internal Connection; DO NOT USE, J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

PENNSYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter			Note (1) (*) Capacitances in $\mu\mu\text{f}$.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Cgp.	Cin.													Cout
25A V5GT	T-9	Beam Pent.	6CK-0-0	Cathode	25.0	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25AV5GT	
25AV5GA	T-11 or T-12	Beam Pent.	6CK-0-0	Cathode	25.0	0.300	0.5*	14.0*	7.0*	Characteristics Same as Type 6AV5GT.										25AV5GA
25AX4GT	I-9	Diode	4CG	Cathode	25.0	0.300	.....	.....	.....	P.I.V. = 4,000 Volts Max. D.C. Plate Current = 195 Ma. Max.										25AX4GT
25B5	ST-12	Duodiode	6D-0-0	Cathode	25.0	0.300	.....	.....	.....	Characteristics Same as Type 25N6G.										25B5
25B6G	ST-14	Beam Pent.	7S-0-0	Cathode	25.0	0.300	.....	.....	.....	105	16.0	105	48.0	9.0	15,500	4,800	.....	1,700	9,400	25B6G
25B8GT	I-9	Pentode Tri.	8T-0-1	Cathode	25.0	0.150	.02	5.5	10.0	3.0	100	100	7.6	2.0	185,000	5,000	370	2,500	7,100	25B8GT
25BK5	T-6 1/2	Beam Pent.	9B0	Cathode	25.0	0.300	0.6	13.0	5.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25BK5
25BQ6GA	T-11	Beam Pent.	6AM-0-0	Cathode	25.0	0.300	0.6*	15.0*	7.5*	Characteristics and Ratings Same as Type 6BQ6G.										25BQ6GA
25BQ6GT	I-9	Beam Pent.	6AM-0-0	Cathode	25.0	0.300	0.6*	15.0*	7.5*	Characteristics Same as Type 6BQ6GT.										25BQ6GT
25C6G	T-5 1/2	Beam Pent.	7CV	Cathode	25.0	0.300	0.64*	13.0*	6.1*	Characteristics Same as Type 6BQ6GTB.										25C6G
25C6GA	ST-14	Beam Pent.	7S-0-0	Cathode	25.0	0.300	.....	.....	.....	Characteristics Same as Type 6Y6G.										25C6GA
25CA5	T-5 1/2	Beam Pent.	7CV-0-0	Cathode	25.0	0.300	0.5*	15.0*	9.0*	Characteristics Same as Type 6CA5.										25CA5
25CD6G	ST-16	Beam Pent.	5B1-0-0	Cathode	25.0	0.600	1.0m*	26.0m*	10.0m*	Characteristics Same as Type 6CD6G. (25CD6GA Designed for Series String TV Receivers).										25CD6G
25CD6GA	T-12	Beam Pent.	5B1-0-0	Cathode	25.0	0.600	1.1*	22.0*	8.5*	Characteristics Same as Type 6CD6GA. (25CD6GB Designed for Series String TV Receivers).										25CD6GA
25CD6GB	T-12	Beam Pent.	5B1-0-0	Cathode	25.0	0.600	1.1*	22.0*	8.5*	Characteristics Same as Type 6CR5.										25CD6GB
25CR5	T-6 1/2	Beam Pent.	9HC-0-0	Cathode	25.0	0.300	0.32*	12.9*	6.9*	Characteristics Same as Type 6CR5.										25CR5
25CU6	T-12	Beam Pent.	6AM-0-0	Cathode	25.0	0.300	0.55*	15.0*	7.0*	Characteristics Same as Type 6BQ6G, Except Max. D.C. Plate Supply = 550 Volts.										25CU6
25D8GT	T-9	Diode Triode Pentode	8AF-0-1	Cathode	25.0	0.150	2.5*	3.7*	4.5*	100	1.0	100	0.5	2.7	91,000	1,100	100	.....	.....	25D8GT
25DN6	T-12	Beam Pent.	5B1-0-0	Cathode	25.0	0.600	0.8*	22.0*	11.5*	Peak Positive Pulse Plate Voltages = 6,600 Volts Max. D.C. Cathode Current = 200 Ma. Maximum Plate Dissipation 15 Watts; Maximum Screen Dissipation = 3.0 Watts. (25DN6 Designed for Series String TV Receivers).										25DN6
25DQ6	T-12	Beam Pent.	6AM-0-0	Cathode	25.0	0.300	0.55*	15.0*	7.0*	Characteristics Same as Type 6DQ6.										25DQ6
25F5	T-5 1/2	Beam Pent.	7CV	Cathode	25.0	0.150	0.57*	12.0*	6.0*	Characteristics Same as Type 25L6GT.										25F5
25L6	Metal	Beam Pent.	7S-1-0	Cathode	25.0	0.300	0.3	16.0	13.5	Characteristics Same as Type 25L6GT.										25L6
25L6GT	T-9	Beam Pent.	7S-0-0	Cathode	25.0	0.300	.....	.....	.....	110	7.5	110	49.0	4.0	13,000	8,000	.....	2,000	2,100	25L6GT
25N6G	ST-12	Duodiode	7W-0-0	Cathode	25.0	0.300	.....	.....	.....	200	18.0	125	46	2.2	28,000	8,000	.....	4,000	3,800	25N6G
25S	New Known as Type 1B5																			
25W4GT	I-9	Diode	4CG-0-0	Cathode	25.0	0.300	.....	.....	.....	350 A-C Volts RMS, 195 Ma. D-C Output. Condenser Input to Filter										25W4GT
25W6GT	T-9	Beam Pent.	7S	Cathode	25.0	0.300	0.5	15.0	9.0	225**	-7.5	110	50	4.0	13,000	8,000	.....	2,000	2,100	25W6GT
25X6GT	T-9	Duodiode	7Q-0-0	Cathode	25.0	0.150	.....	.....	.....	195 Volts RMS Per Plate, 60 Ma. D-C Output Per Plate. 125 Volts RMS Per Plate, 60 Ma. D-C Output.										25X6GT
25Y5	ST-12	Duodiode	6E-0-0	Cathode	25.0	0.300	.....	.....	.....	117 A-C Volts Per Plate, RMS, 75 Ma. Output Current. 235 A-C Volts, RMS, 75 Ma. Output Current Per Plate.										25Y5
25Z4	Metal	Diode	5AA-1-0	Cathode	25.0	0.300	.....	.....	.....	117 A-C Volts Per Plate, RMS, 195 Ma. Output Current. Condenser Input to Filter.										25Z4
25Z5	ST-12	Duodiode	6E-0-0	Cathode	25.0	0.300	.....	.....	.....	Characteristics Same as Type 25Z6GT.										25Z5
25Z6	Metal	Duodiode	7Q-1-0	Cathode	25.0	0.300	.....	.....	.....	117 A-C Volts Per Plate, RMS, 195 Ma. Output Current. Condenser Input to Filter.										25Z6
25Z6GT	I-9	Duodiode	7Q-0-0	Cathode	25.0	0.300	.....	.....	.....	Characteristics Same as Type 25Z6GT.										25Z6GT
26	ST-14	Triode	4D-0-0	Filament	1.5	1.050	8.1*	2.8*	2.5*	90	7.0	.....	2.9	.....	8,900	935	8.3	.....	.....	26
26A6	T-5 1/2	Pentode	7BK-0-2	Cathode	26.5	0.070	.0035	6.0	5.0	26.5	Self	26.5	1.7	0.7	950,000	2,000	(Grid Leak Bias = 2 Mes.)	.....	.....	26A6
26A7GT	T-9	Duo. Beam Pent.	8BU-0-0	Cathode	26.5	0.600	1.2*	16.0*	13.0*	26.5	4.5	26.5	20.0#	2.0#	2,500#	5,500#	.....	1,500#	200#	26A7GT
26BK6	T-5 1/2	Duodiode Tri.	7BT-0-2	Cathode	26.5	0.070	.....	.....	.....	100	1.0	.....	0.5	.....	80,000	1,250	100	.....	.....	26BK6
26C6	T-5 1/2	Duodiode Tri.	7BT-0-0	Cathode	26.5	0.070	2.0	1.8	1.4	26.5	2 Mes.	.....	1.2	.....	62,500	1,600	100	.....	.....	26C6
26CG6	T-5 1/2	Pentode	7BK-0-2	Cathode	26.5	0.070	.008m	5.0	5.0	26.5	2 Mes.	.....	1.1	.....	15,500	1,100	17	.....	.....	26CG6
26D6	T-5 1/2	Heptode	7CH-0-0	Cathode	26.5	0.070	0.3	7.5	14.0	Characteristics Same as Type 6CG6.										26D6

Type	Construction		Emitter		Note (1) (2) Capacitances in $\mu\mu\text{f}$.		Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.													Cgp.	Cin.	Cout
27 27S	ST-12	Triode	5A-0-0 5A-0-4	Cathode	2.5	1.750	3.3*	3.2*	2.3*	3.0	4.7	5.0	10,000 9,000 9,000	900 1,000 1,000	9.0 9.0 9.0	27 27S	27 27S	
28D7 28D7W (3)	Lock-in	Dup. Beam Pent.	88S-L-0	Cathode	28.0	0.400	.....	.....	.....	28 28 28	9.0 12.5 1.0	0.7 1.0 4.0	4,000 4,000 1,500 ^T	(Rk = 390 Ohms) 3,400 .....	.....	80 100 600	28D7 28D7W (3)
28Z5	Lock-in	Double Diode	68J-L-0	Cathode	28.0	0.240	.....	.....	.....	35 A-C Volts Per Plate, RMS; 100 Ma. Output Current. 450 A-C Volts Per Plate, RMS; 100 Ma. Output Current. Condenser Input to Filter. Choke Input to Filter.	.....	.....	.....	.....	.....	.....	28Z5
30	ST-12	Triode	4D-0-0	Filament	2.0	0.060	6.0*	3.0*	2.1*	2.5 3.0 3.1	.....	.....	11,000 10,300 10,300	850 900 900	9.3 9.3 9.3	.....	30
31	ST-12	Triode	4D-0-0	Filament	2.0	0.130	.....	.....	.....	135 22.5 180	8.0 12.3	.....	4,100 3,600 1,050	985 3.8	3.8 3.8	7,000 3,700 375	185 31
32	ST-14	Tetrode	4K-0-3	Filament	2.0	0.060	.015m	5.3*	10.5*	135 180 180	3.0 3.0 2.0	0.4 0.4 0.4	950,000 1.2 M Ω s 650	640 1.7 780	610 780 .....	.....	32

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate; RF Input, Mixer Output.
 x Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater.)
 (3) Has special mechanical and/or life characteristics.
 (4) With Average Power Input of 390 Mw. Grid to Grid.
 (5) For two tubes with 40 volts RMS applied to each grid.
 (6) Plate Current to be adjusted to 0.2 Ma. with no Input Signal)
 * Applied through 950,000 ohms.
 # Per Tube or Section.
 § Plate and Target Supply Voltage.
 □ Pentode Operation.
 ▲ Conversion Transconductance.
 ** Triode Operation.
 m maximum
 n Cathode Resistor
 (ohms).
 † Approximate.



SYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (?) Capacitances in $\mu\mu\text{f}$.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milliwatts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Cgp.													Cin.	Cout
39L7GT	T-9	Diode Beam Pent.	8Z-0-0	Cathode	32.5	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	39L7GT
33	ST-14	Power Pent.	5K-0-0	Filament	2.0	0.260	1.0*	8.0*	12.0*	18.0	13.5	14.5	3.0	50,000	1,450	70	2,000	7,000	33
34	ST-14	Pentode	4M-0-4	Filament	2.0	0.060	.015m	6.0*	11.0*	67.5	2.7	1.1	1.0	400,000	560	224	.....	.....	34
35/51 35S/51S	ST-14	Tetrode	5E-0-3 5E-4-3	Cathode	2.5	1.750	.007m	5.3*	10.5*	3.0	67.5	2.8	1.0	600,000	600	360	.....	.....	35/51 35S/51S
35A5	Lock-in	Beam Pent.	6AA-L-0	Cathode	35.0	0.150	.....	.....	.....	110	40.0	3.0	2.0	14,000	5,800	.....	2,500	1,500	35A5
35B5	T-5½	Beam Pent.	7BZ-0-0	Cathode	35.0	0.150	0.4*	11.0*	6.5*	110	40.0	3.0	3.0	40,000	5,900	.....	4,500	3,300	35B5
35C5	T-5½	Beam Pent.	7CV-0-0	Cathode	35.0	0.150	0.6	.....	.....	110	40.0	3.0	3.0	5,800	5,800	.....	2,500	1,500	35C5
35L6GT	T-9	Beam Pent.	7S-0-0	Cathode	35.0	0.150	0.8*	13.0*	9.5*	110	40.0	3.0	2.0	14,000	5,800	.....	2,500	1,500	35L6GT
35W4	T-5½	Diode	5BQ-0-0	Cathode	35.0	0.150	.....	.....	.....	110	40.0	3.0	2.0	40,000	5,900	.....	4,500	3,300	35W4
35Y4	Lock-in	Diode	5AL-L-0	Cathode	35.0	0.150	.....	.....	.....	117 A-C Volts, RMS, 60 Ma. Output Current with Panel Lamp.									35Y4
35Z3	Lock-in	Diode	4Z-L-0	Cathode	35.0	0.150	.....	.....	.....	117 A-C Volts, RMS, 60 Ma. Output Current without Panel Lamp.									35Z3
35Z4GT	T-9	Diode	5AA-0-0	Cathode	35.0	0.150	.....	.....	.....	235 Max. A-C Volts, RMS, 100 Ma. Output Current with Panel Lamp.									35Z4GT
35Z5GT	T-9	Diode	6AD-0-0	Cathode	35.0	0.150	.....	.....	.....	235 Max. A-C Volts, RMS, 100 Ma. Output Current without Panel Lamp.									35Z5GT
35Z6G	ST-14	Duodiode	7Q-0-0	Cathode	35.0	0.300	.....	.....	.....	117 A-C Volts, RMS, 100 Ma. Output Current.									35Z6G
36	ST-12	Tetrode	5E-0-3	Cathode	6.3	0.300	.007m	3.7*	9.2*	1.5	2.8	Not Over	.....	1,000	475	.....	.....	.....	36
37	ST-12	Triode	5A-0-0	Cathode	6.3	0.300	2.0*	3.5*	2.9*	3.0	3.1	Plate Ma. 500,000	.....	1,050	525	.....	.....	.....	37
38	ST-12	Power Pent.	5F-0-0	Cathode	6.3	0.300	0.3*	3.5*	7.5*	13.5	13.5	1.5	130,000	925	190	13,500	550	.....	38
39/44	ST-12	Pentode	5F-0-4	Cathode	6.3	0.300	.007m	3.5*	10.0*	18.0	9.4	3.8	110,000	1,050	190	11,600	1,000	.....	39/44
40	ST-14	Triode	4D-0-0	Filament	5.0	0.250	8.0	2.8	2.2	3.0	5.6	1.6	375,000	960	360	.....	.....	.....	40
40A1	T-9	Ballast	8ES	.....	.....	.....	.....	.....	.....	135	1.5	.....	.....	150,000	300	30	.....	.....	40A1
40B2	T-9	Ballast	8ES	.....	.....	.....	.....	.....	.....	135	1.5	.....	.....	150,000	300	30	.....	.....	40B2
40Z5/45Z5GT	T-9	Diode	6AD-0-0	Cathode	45.0	0.150	.....	.....	.....	117 A-C Volts, RMS, 150 Ma. at 40 Volts; 155 Ma. at 60 Volts.									40Z5/45Z5GT
41	ST-12	Power Pent.	6B-0-0	Cathode	6.3	0.400	.....	.....	.....	135	1.5	.....	.....	100,000	1,300	190	.....	.....	41
42	ST-14	Power Pent.	6B-0-0	Cathode	6.3	0.650	.....	.....	.....	135	1.5	.....	.....	100,000	1,300	190	.....	.....	42
43	ST-14	Power Pent.	6B-0-0	Cathode	25.0	0.300	.....	.....	.....	135	1.5	.....	.....	100,000	1,300	190	.....	.....	43
45	ST-14	Triode	4D-0-0	Filament	2.5	1.500	7.0*	4.0*	3.0*	31.5	31.0	.....	.....	1,650	2,125	3.5	2,700	830	45
45Z3	T-5½	Diode	5AM-0-0	Cathode	45.0	0.075	.....	.....	.....	180	50.0	.....	.....	1,610	2,175	3.5	3,900	1,600	45Z3
45Z5GT	T-5½	Diode	5AM-0-0	Cathode	45.0	0.075	.....	.....	.....	180	50.0	.....	.....	1,700	2,050	3.5	4,600	2,000	45Z5GT
46	ST-16	Power Tet.	5C-0-0	Filament	2.5	1.750	.....	.....	.....	250	33.0	.....	.....	2,380	2,350	5.6	6,400	1,250	46
47	ST-16	Power Pent.	5B-0-0	Filament	2.5	1.750	1.2*	8.6*	1.3*	300	0.0	.....	.....	(Class B Operation)	16,000	.....	5,200	16,000	47
48	ST-16	Power Tet.	6A-0-0	Cathode	30.0	0.400	.....	.....	.....	195	30.0	.....	.....	60,000	2,500	150	7,000	2,700	48
49	ST-14	Power Tet.	5C-0-0	Filament	2.0	0.190	.....	.....	.....	125	22.5	.....	.....	11,000	3,900	43	1,500	3,000	49
50	ST-16	Triode	4D-0-0	Filament	7.5	1.250	7.1*	4.2*	3.4*	135	30.0	.....	.....	4,175	1,125	4.7	11,000	170	50
50A1	T-6½	Ballast	9CM	.....	.....	.....	.....	.....	.....	300	54.0	.....	.....	2,000	1,900	3.8	4,600	1,600	50A1
50A5	Lock-in	Beam Pent.	6AA-L-0	Cathode	50.0	0.150	.....	.....	.....	350	63.0	.....	.....	1,900	2,000	3.8	4,100	2,400	50A5
50AX6G	ST-14	Duodiode	7Q-0-0	Cathode	50.0	0.300	.....	.....	.....	400	70.0	.....	.....	1,800	2,100	3.8	3,670	3,400	50AX6G
50B5	T-5½	Beam Pent.	7BZ-0-0	Cathode	50.0	0.150	0.5*	13.0*	6.5*	110	49	.....	.....	14,000	7,500	.....	2,500	1,900	50B5
50BK5	T-6½	Beam Pent.	9BQ-0-0	Cathode	50.0	0.150	0.6*	13.0*	5.0*	250	5.0	.....	.....	0.1 Meg. \uparrow	8,500	.....	6,500	3,500	50BK5

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate, RF input, Mixer Output.
 (3) Has special mechanical and/or life characteristics.
 (4) With Average Power Input of 300 Mw. Grid to Grid.
 (5) For two tubes with 40 volts RMS applied to each grid.
 (6) Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater).

□ Applied through 250,000 ohms.
 # Per Tube or Section.
 * Conversion Transconductance.
 † Triode Operation.
 ‡ Plate and Target Supply Voltage.

■ Pentode Operation.
 †† Plate to Plate.
 ‡‡ Approximate.

■ maximum Cathode Resistor (ohms).

SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; H1—Heater Tap; IC—Internal Connection; DO NOT USE; J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

PENNSYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (?) Capacitances in $\mu\mu\text{f}$.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type		
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Csp.													Cin.	Couf.
50C5	T-5½	Beam Pent.	7C-V-0-0	Cathode	50.0	0.150	0.55*	13.0*	9.0*	110	7.5	4.0	10,000	7,500	.....	2,500	1,900	50C5			
50C6G	ST-14	Beam Pent.	7S-0-0	Cathode	50.0	0.150	.....	.....	.....	Characteristics Same as Type 6Y6G.									2,500	1,900	50C6G
50C6GA	T-12	Beam Pent.	7S-0-0	Cathode	50.0	0.150	.....	.....	.....	Characteristics Same as Type 95L6GT.									.....	.....	50C6GA
50L6GT	Lock-in	Duodiode	7S-0-0	Cathode	50.0	0.150	.....	.....	.....	Characteristics Same as Type 95Z6GT.									.....	.....	50L6GT
50X6	T-9	Duodiode	7DX-L-0	Cathode	50.0	0.150	.....	.....	.....	Characteristics Same as Type 95Z6GT.									.....	.....	50X6
50Y6GT	T-9	Duodiode	7Q-0-0	Cathode	50.0	0.150	.....	.....	.....	Characteristics Same as Type 95Z6GT.									.....	.....	50Y6GT
50Y7GT	T-9	Duodiode	8AN-0-0	Cathode	46.0	0.150	.....	.....	.....	117 A-C Volts, RMS; 65 Ma. Output with Panel Lamp. 150 A-C Volts, RMS; 65 Ma. Output Per Plate with Panel Lamp. 235 A-C Volts, RMS; 65 Ma. Output Per Plate with Panel Lamp.									.....	.....	50Y7GT
50Z6G	ST-12	Duodiode	7Q-0-0	Cathode	50.0	0.300	.....	.....	.....	235 Volts RMS Per Plate, 250 Ma. D-C Output.									.....	.....	50Z6G
50Z7G	ST-12	Duodiode	8AN-0-0	Cathode	50.0	0.150	.....	.....	.....	117 A-C Volts Per Plate, RMS, 65 Ma. Output Current. With Current passing thru Panel Lamp Section. 235 A-C Volts, RMS, 65 Ma. Output Current Per Plate.									.....	.....	50Z7G
EF50	Metal Glass	Pentode	9C-L-5 & 8	Cathode	6.3	0.300	.007m	8.0	5.0	250	160	250	10.0	3.1	.....	600,000	6,300	.....	EF50		
52	ST-14	Power Tel.	5C-0-0	Filament	6.3	0.300	.....	.....	.....	Class A Amplifier Class B									2,000	1,500	52
VT52	S-17	Triode	4D-0-0	Filament	7.0	1.180	7.7	5.0	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	VT52		
53	ST-14	Duodiode	7B-0-0	Cathode	2.5	2.000	.....	.....	.....	Characteristics Same as Type 56.									.....	.....	53
55	ST-12	Duodiode Tri.	6G-0-5	Cathode	2.5	1.000	1.5*	1.5*	4.3*	Characteristics Same as Type 6A6.									.....	.....	55
55S	ST-12	Duodiode Tri.	6G-5-5	Cathode	2.5	1.000	.....	.....	.....	Characteristics Same as Type 6V7G.									.....	.....	55S
56	ST-12	Triode	5A-0-0	Cathode	2.5	1.000	2.8*	3.5*	2.5*	250	13.5	.....	.....	.....	.....	.....	.....	.....	56		
56S	ST-12	Triode	5A-4-0	Cathode	2.5	1.000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	56S		
56AS	ST-12	Triode	5A-4-0	Cathode	6.3	0.400	2.8*	3.5*	2.5*	Characteristics Same as Type 56.									.....	.....	56AS
57	ST-12	Pentode	6F-0-5	Cathode	2.5	1.000	.007m	5.0*	6.5*	100	3.0	100	2.0	0.5	1 Meg.	1,185	.....	.....	57		
57S	ST-12	Pentode	6F-5-5	Cathode	2.5	1.000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	57S		
57AS	ST-12	Pentode	6F-5-5	Cathode	6.3	0.400	.007*	5.0*	6.5*	100	3.0	100	8.0	2.2	.....	9,500	1,450	.....	57AS		
58	ST-12	Pentode	6F-0-5	Cathode	2.5	1.000	.007m	4.7*	6.0*	250	3.0	100	8.2	2.0	.....	250,000	1,500	.....	58		
58S	ST-12	Pentode	6F-5-5	Cathode	2.5	1.000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	58S		
58AS	ST-12	Pentode	6F-5-5	Cathode	6.3	0.400	.007*	4.7*	6.0*	250	3.0	100	8.2	2.0	.....	800,000	1,600	.....	58AS		
59	ST-16	Power Pent.	7A-0-0	Cathode	2.5	2.000	.....	.....	.....	Characteristics Same as Type 58.									.....	.....	59
70A7GT	T-9	Diode Beam Pent.	8AB-0-0	Cathode	70.0	0.150	.....	.....	.....	125 A-C Volts Per Plate, RMS, 60 Ma. Output Current.									.....	.....	70A7GT
70L7GT	T-9	Diode Beam Pent.	8AA-0-0	Cathode	70.0	0.150	.....	.....	.....	117 A-C Volts, RMS, 70 Ma. Output Current. Condenser Input to Filter.									.....	.....	70L7GT
71A	ST-14	Triode	4D-0-0	Filament	5.0	0.250	7.5*	3.2*	2.9*	90	16.5	.....	.....	.....	.....	.....	.....	.....	71A		
75	ST-12	Duodiode Tri.	6G-0-5	Cathode	6.3	0.300	1.7*	1.7*	3.8*	135	27.0	.....	.....	.....	.....	.....	.....	.....	75		
75S	ST-12	Duodiode Tri.	6G-5-5	Cathode	6.3	0.300	.....	.....	.....	180	40.5	.....	.....	.....	.....	.....	.....	.....	75S		
76	ST-12	Triode	5A-0-0	Cathode	6.3	0.300	2.8*	3.5*	2.5*	250	13.5	.....	.....	.....	.....	.....	.....	.....	76		
77	ST-12	Pentode	6F-0-3	Cathode	6.3	0.300	.007m	4.7*	11.0*	100	1.5	60.0	1.7	0.4	.....	600,000	1,100	.....	77		
78	ST-12	Pentode	6F-0-5	Cathode	6.3	0.300	.007m	4.5*	11.0*	250	3.0	100	2.3	0.5	.....	1,000	.....	.....	78		
79	ST-12	Duodiode	6H-0-0	Cathode	6.3	0.600	.....	.....	.....	117 A-C Volts Per Plate, RMS, 60 Ma. Output Current.									.....	.....	79
80	ST-14	Duodiode	4C-0-0	Filament	5.0	2.000	.....	.....	.....	350 A-C Volts Per Plate, RMS, 125 Ma. Output Current. Condenser Input to Filter.									.....	.....	80
81	ST-16	Diode	4B-0-0	Filament	7.5	1.250	.....	.....	.....	500 A-C Volts Per Plate, RMS, 125 Ma. Output Current. Choke Input to Filter.									.....	.....	81
82	ST-14	Duodiode	4C-0-0	Filament	2.5	3.000	.....	.....	.....	700 A-C Volts Per Plate, RMS, 85 Ma. Output Current. Condenser Input to Filter.									.....	.....	82
83	ST-16	Duodiode	4C-0-0	Filament	5.0	3.000	.....	.....	.....	450 A-C Volts Per Plate, RMS, 115 Ma. Output Current. Condenser Input to Filter.									.....	.....	83
83V	ST-14	Duodiode	4AD-0-0	Cathode	5.0	2.000	.....	.....	.....	450 A-C Volts Per Plate, RMS, 225 Ma. Output Current. Condenser Input to Filter.									.....	.....	83V
84/6Z4	ST-12	Duodiode	5D-0-0	Cathode	6.3	0.500	.....	.....	.....	375 A-C Volts Per Plate, RMS, 175 Ma. Output Current. Condenser Input to Filter.									.....	.....	84/6Z4
85	ST-12	Duodiode Tri.	6G-0-5	Cathode	6.3	0.300	1.5*	1.5*	4.3*	235	2.0	.....	.....	.....	.....	.....	.....	.....	85		
85AS	ST-12	Duodiode Tri.	6G-5-5	Cathode	6.3	0.300	.....	.....	.....	Characteristics Same as Type 6V7G.									.....	.....	85AS
89	ST-12	Power Pent.	6F-0-0	Cathode	6.3	0.400	.....	.....	.....	160**	20.0	.....	.....	.....	.....	.....	.....	.....	89		
										180*	18.0	.....	.....	.....	.....	.....	.....	.....
												
VR-90-105-150				Cold						Now Listed as OB3, OC3 and ODD3.									.....	.....	VR-90-105-150
V-99	T-8	Triode	4E-0-0	Filament	3.3	0.063	3.5*	2.5*	2.9*	90	4.5	.....	.....	.....	.....	.....	.....	.....	V-99		
X99	T-9	Triode	4D-0-0	Filament	3.3	0.063	3.5*	2.5*	2.9*	90	4.5	.....	.....	.....	.....	.....	.....	.....	X99		
117L7/M7GT	T-9	Diode Beam Pent.	8AO-0-0	Cathode	117	0.090	117 A-C Volts, RMS, 75 Ma. Output Current. Condenser Input to Filter.									117L7/M7GT

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 RF Input, Mixer Output.
 X Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater.)

(3) Has special mechanical and/or life characteristics.
 †† With Average Power Input of 320 Mw. Grid to Grid.
 † For two tubes with 40 volts RMS applied to each grid.
 ‡ Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater.)

* Applied through 250,000 ohms.
 # Per Tube or Section.
 § Plate and Target Supply Voltage.

□ Applied through 20,000 ohms.
 ▲ Conversion Transconductance.
 ** Triode Operation.

• Pentode Operation.
 ▽ Plate to Plate.
 † Approximate.

<p>4AD</p>	<p>4B</p>	<p>4C</p>	<p>4D</p>	<p>4E</p>	<p>5A</p>	<p>5C</p>	<p>5D</p>
<p>6F</p>	<p>6G</p>	<p>6H</p>	<p>6I</p>	<p>6J</p>	<p>6K</p>	<p>6L</p>	<p>6M</p>
<p>7S</p>	<p>8AA</p>	<p>8AB</p>	<p>8AN</p>	<p>8A0</p>	<p>7CV</p>	<p>7DX</p>	<p>7Q</p>
<p>9C</p>	<p>8A0</p>	<p>8A0</p>	<p>8A0</p>	<p>8A0</p>	<p>8A0</p>	<p>8A0</p>	<p>8A0</p>

SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; Ht—Heater Tap; IC—Internal Connection; DO NOT USE, J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

PENNSYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (2) Capacitances in $\mu\mu\text{f}$.			Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Beating Diag.	Type	Volts	Amps.	Cgp.													Cin.	Couf.
117N7GT	T-9	Diode Beam Pent.	8AV-0-0	Cathode	117	0.090	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,000	1,200	117N7GT
117P7GT	T-9	Diode Beam Pent.	8AV-0-0	Cathode	117	0.090	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,000	850	117P7GT
117Z3	T-5½	Diode	4CB-0-0	Cathode	117	0.040	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	117Z3
117Z4GT	T-9	Diode	5AA-0-0	Cathode	117	0.040	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	117Z4GT
117Z6GT	T-9	Duodiode	7Q-0-0	Cathode	117	0.075	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	117Z6GT
189B/489B	ST-14	Triode	4D-0-0	Filament	5.0	1.950	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,500	1,350	189B/489B
183/483	ST-14	Triode	4D-0-0	Filament	5.0	1.950	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,500	1,800	183/483
210-T	ST-16	Triode	4D-0-0	Filament	7.5	1.950	7.0*	4.0*	3.0*	.....	.....	.....	.....	.....	.....	.....	.....	.....	210-T
485	ST-12	Triode	5A-0-0	Cathode	3.0	1.950	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	485
807	ST-16	Beam Pent.	5AW-0-0	Cathode	6.3	0.900	0.2m	12.0*	7.0*	.....	.....	.....	.....	.....	.....	.....	.....	.....	807
807W	T-12	Beam Pent.	5AW-0-0	Cathode	6.3	0.900	0.2m	12.0*	7.0*	.....	.....	.....	.....	.....	.....	.....	.....	.....	807W
864	T-9	Triode	4D-0-0	Filament	1.1	0.250	5.3*	3.3*	2.1*	.....	.....	.....	.....	.....	.....	.....	.....	.....	864
884	ST-12	Gas Triode	6Q-0-0	Cathode	6.3	0.600	6.0*	2.0*	0.6*	.....	.....	.....	.....	.....	.....	.....	.....	.....	884
885	ST-12	Gas Triode	5A-0-0	Cathode	2.5	1.500	6.0*	2.0*	0.6*	.....	.....	.....	.....	.....	.....	.....	.....	.....	885
950	ST-14	Beam Pent.	5K-0-0	Filament	2.0	0.120	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	950
954	Acorn	Pentode	5BB-0-0	Cathode	6.3	0.150	.007m	3.4	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	954
955	Acorn	Triode	5BC-0-0	Cathode	6.3	0.150	1.4	1.0	0.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	955
956	Acorn	Pentode	5BB-0-0	Cathode	6.3	0.150	.007m	3.4	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	956
957	Acorn	Triode	5BD-0-0	Filament	1.2	0.050	1.2	0.3	0.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	957
958-A	Acorn	Triode	5BD-0-0	Filament	1.25	0.100	2.6	0.6	0.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	958-A
959	Acorn	Pentode	5BE-0-0	Filament	1.25	0.050	.015m	1.8	2.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	959
FM1000	Lock-in	Heptode	FM1000	Cathode	6.3	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	FM1000
1005/CK1005	Metal	Gas Duodi.	5AQ-0-1	Filament	6.3	0.100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1005/CK1005
1901	Now Known as Type 7E5																		1901
1903-A	Now Known as Type 7C4																		1903-A
1904	Now Known as Type 7AB7																		1904
1906	Now Known as Type 7G8																		1906
1921	ST-12	Pentode	6F-0-5	Cathode	6.3	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1921
1922	ST-14	Beam Pent.	1922	Cathode	6.3	0.900	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1922
1923	ST-12	Pentode	7R-0-0	Cathode	6.3	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1923
1929	ST-12	Tetrode	4K-0-0	Filament	2.0	0.060	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1929
1930	T-9	Triode	4D-0-0	Filament	2.0	0.060	6.0*	3.0*	2.1*	.....	.....	.....	.....	.....	.....	.....	.....	.....	1930
1931	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.450	.015m	8.5	6.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	1931
1932	Now Known as Type 7G7																		1932
1936A	T-9	Diode	1936A	Filament	1.9	0.450	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1936A
1938	T-9	Duo. Beam Amplifier	8BS-L-0	Cathode	28.0	0.400	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1938
1947	T-3	Diode	1947	Filament	0.7	0.065	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1947
1965	ST-12	Diode	4AJ-0-0	Cold K	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1965
1966	T-9	Diode	4AJ-0-0	Cold K	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1966
1967	T-9	Gas Triode	No Jumper 4V-0-0	Cold K	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1967
1973	Lock-in	Pentode	8V-L-5	Cathode	6.3	0.300	.004m	6.0	6.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	1973
1974	T-9	Duodiode	6S-0-0	Cathode	6.3	0.600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1974
1975	ST-16	Duodiode	4C-0-0	Filament	5.0	1.750	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1975
1976	ST-16	Triode	4D-0-0	Filament	4.5	1.140	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1976
1980	Lock-in	Pentode	8V-L-5	Cathode	12.6	0.150	.004m	6.0	6.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	1980
1984	Lock-in	Pentode	8V-L-5	Cathode	12.6	0.150	.01	5.0	6.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	1984
1991	Now Known as Type 3B7																		1991
1993	Lock-in	Triode	4AA-L-0	Filament	1.4	0.110	1.7	1.7	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	1993
1994	Now Known as Type 1R4																		1994
1999	Now Known as Type 3D6																		1999
1612	Metal	Heptode	7I-1-0	Cathode	6.3	0.300	.001m	7.5	11.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	1612
1626	ST-12	Triode	6Q-0-0	Cathode	12.6	0.250	4.4*	3.2*	3.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	1626
1659	T-9	Electron Ray	7AL-0-0	Cathode	12.6	0.150	1659
2050	ST-12	Gas Tetrode	6BS-0-0	Cathode	6.3	0.600	0.26*	4.2*	3.6*	2050

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 (3) Has special mechanical and/or life characteristics.
 (4) Applied through 950,000 ohms.
 (5) Per Tube or Section.
 (6) Conversion Transconductance.
 (7) Plate and Target Supply Voltage.
 (8) Triode Operation.
 (9) Pentode Operation.
 (10) Plate to Plate.
 (11) Approximate.
 (12) Cathode Resistor (ohms).
 (13) Maximum Cathode Resistor (ohms).

<p>4AA</p>	<p>4A1</p>	<p>4C</p>	<p>4CB</p>	<p>4D</p>	<p>4K</p>	<p>4V</p>	<p>5A</p>
<p>5A</p>	<p>5A1</p>	<p>5AW</p>	<p>5B8</p>	<p>5B8</p>	<p>5B8</p>	<p>5BE</p>	<p>5K</p>
<p>6A5</p>	<p>6B5</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6AV</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>	<p>6E</p>	<p>6F</p>	<p>6G</p>
<p>6BS</p>	<p>6BS</p>	<p>6C</p>	<p>6CS</p>	<p>6D</p>			

PENNSYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter		Note (1) (*) Capacitances in $\mu\text{f.}$		Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.													Cgp.	Cin.	Couf
2051	ST-12	Gas Tetrode	6B8-0-0	Cathode	6.3	0.600	0.96*	4.2*	3.6*	0	75	For Relay Operation Limit Time to 30 Secs. 375 Ma. Peak Current, 8 Volts Tube Drop.						2051
5517/CK1013	T-5½	Gas Diode	5-BU	Cold K	6.3	0.150	0.1	3.4	2.9	90	1.4	300,000	2,000	600	1,700	5,000	5517/CK1013	
5590	T-5½	Pentode	78D-0-0	Cathode	6.3	0.150	0.1	3.4	2.9	90	1.4	300,000	2,000	600	1,700	5,000	5590	
5591	T-5½	Pentode	78D-0-0	Cathode	6.3	0.150	0.1	3.9	2.85	140	7.5	340,000	5,000	1,000	1,700	4,300	5591	
5608-A	ST-14	Duotriode	7B-0-0	Cathode	2.5	2.000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5608-A
5633 (3)	T-3	Pentode	5633	Cathode	6.3	0.150	0.1m	4.0	2.8	100	7.0	200,000	3,400	.....	.....	.....	5633 (3)
5634 (3)	T-3	Pentode	5633	Cathode	6.3	0.150	0.1m	4.4	2.8	100	6.5	240,000	3,500	.....	.....	.....	5634 (3)
5635 (3)	T-3	Duotriode	8DB-0-0	Cathode	6.3	0.450	1.2	2.6	1.6	100	4.8	10,000	3,800	38	.....	.....	5635 (3)
5636 (3)	T-3	Pentode	8DC-0-0	Cathode	6.3	0.020	0.15m	4.0	3.4	100	3.5	390,000	1,280A	.....	.....	.....	5636 (3)
5637 (3)	T-3	Triode	8DK-0-0	Cathode	6.3	0.150	1.3	2.8	3.2	100	1.4	26,000	2,700	70	.....	.....	5637 (3)
5638 (3)	T-3	Pentode	5638	Cathode	6.3	0.150	0.19	4.0	6.5	100	4.8	150,000	3,300	.....	.....	.....	5638 (3)
5639 (3)	T-3	Beam Pent.	8DL-0-0	Cathode	6.3	0.450	0.1m	9.5	7.5	100	21	50,000	9,000	.....	.....	1,000	5639 (3)
5640 (3)	T-3	Beam Pent.	8DL-0-0	Cathode	6.3	0.450	0.09	9.0	6.5	100	31.0	15,000	5,000	.....	.....	3,000	5640 (3)
5641 (3)	T-3	Diode	6C1-0-0	Cathode	6.3	0.450	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5641 (3)
5642	T-3	Diode	5642	Filament	1.25	0.200	.....	.....	0.6*	.....	.....	.....	.....	.....	.....	.....	5642
5643 (3)	T-3	Gas Tetrode	8DD-0-0	Cathode	6.3	0.15	0.1	1.7	1.6	0	20	(Grid Bias Voltage 180°; Out of Phase with Anode Voltage)						5643 (3)
5644 (3)	T-3	Gas Diode	4CN-0-0	Cold K	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5644 (3)
5645 (3)	T-2	Triode	5646	Cathode	6.3	0.150	1.2	2.4	3.4	100	5.0	7,400	2,700	90	.....	.....	5645 (3)
5646 (3)	T-2	Triode	5646	Cathode	6.3	0.150	1.2	2.4	3.4	100	1.4	99,000	2,400	70	.....	.....	5646 (3)
5647 (3)	T-1	Diode	5647	Cathode	6.3	0.150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5647 (3)
5651	T-5½	Gas Diode	5B0-0-0	Cold K	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5651
5654/6M5W (3)	T-5½	Pentode	78D-0-2&7	Cathode	6.3	0.175	0.2m	4.0	2.9	120	7.5	340,000	5,000	.....	.....	.....	5654/6M5W (3)
5670 (3)	T-6½	Duotriode	8CX-0-5	Cathode	6.3	0.350	1.1	2.2	1.0	120	8.2	6,370	5,500	35	.....	.....	5670 (3)
5679	Lock-in	Duotriode	7CX-L-5	Cathode	6.3	0.150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5679
5686 (3)	T-6½	Beam Pent.	9G-0-0	Cathode	6.3	0.350	0.8m	6.5	8.5	250	27	3,100	9,000	.....	.....	2,700	5686 (3)
5687	T-6½	Duotriode	9H-0-0	Cathode	6.3	0.900	3.8*	4.0*	0.45*	19	5.0	4,000	5,200	16	.....	.....	5687
5691 (3)	T-9	Duotriode	8BD-0-0	Cathode	6.3	0.600	3.6*	2.4*	2.3*	22	.....	44,000	1,600	70	.....	.....	5691 (3)
5692 (3)	T-9	Duotriode	8BD-0-0	Cathode	6.3	0.600	3.6*	2.7*	2.6*	2	.....	.....	.....	.....	.....	.....	5692 (3)
5693 (3)	Metal	Pentode	8N-1-0	Cathode	6.3	0.300	0.005m	5.8	6.8	100	3.0	0.85	1,650	.....	.....	.....	5693 (3)
5694 (3)	ST-14	Duotriode	8CS-0-0	Cathode	6.3	0.800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5694 (3)
5702	T-3	Pentode	5702	Cathode	6.3	0.200	0.03m	4.4	3.5	120	7.5	340,000	5,000	.....	.....	.....	5702
5703	T-3	Triode	5703	Cathode	6.3	0.200	1.15	2.7	2.1	120	9.0	.....	.....	.....	.....	.....	5703
5704	T-2	Diode	5704	Cathode	6.3	0.150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5704
5718 (3)	T-3	Triode	8DK-0-0	Cathode	6.3	0.150	1.3*	2.4	2.4	150	8.5	4,650	5,800	27	.....	.....	5718 (3)
5719 (3)	T-3	Triode	8DK-0-0	Cathode	6.3	0.150	0.8	1.9	2.2	150	680	30,500	2,300	70	.....	.....	5719 (3)
5722	T-5½	Diode	5CB-0-0	Filament	4.9	1.600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5722
5725 (3)	T-5½	Pentode	78D-0-0	Cathode	6.3	0.175	0.1	3.9	3.0	120	5.2	3,200	.....	.....	.....	.....	5725 (3)
5726/6M5W (3)	T-5½	Duotriode	6BT-0-6	Cathode	6.3	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5726/6M5W (3)
5731	Acorn	Triode	5BC-0-0	Cathode	6.3	0.150	1.3*	1.0*	0.4*	90	2.5	14,700	1,700	25	.....	.....	5731
5744	T-3	Triode	5744	Cathode	6.3	0.200	0.8	2.7	2.4	250	500	.....	.....	.....	.....	.....	5744
5749/68A6W (3)	T-5½	Pentode	78K-0-2	Cathode	6.3	0.300	0.0033m	5.5	5.5	100	10.8	250,000	4,300	.....	.....	.....	5749/68A6W (3)
5751 (3)	T-6½	Duotriode	9A-0-0	Cathode	6.3	0.350	1.4*	1.4*	.....	100	11.0	1.0 M Ω	4,400	.....	.....	.....	5751 (3)
5783	T-3	Gas Diode	5783	Cold K	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5783
5784	T-3	Pentode	5784	Cathode	6.3	0.200	0.03m	3.9	3.0	120	5.2	3,200	.....	.....	.....	.....	5784
5785	T2x3	Diode	5785	Filament	1.25	0.015	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5785
5787	T-3	Gas Diode	5787	Cold K	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5787
5814 (3)	T-6½	Duotriode	9A-0-0	Cathode	6.3	0.350/0.175	1.5*	1.6*	0.5*	100	0	6,250	3,100	19.5	.....	.....	5814 (3)
5814A (3)	T-6½	Duotriode	5814A	Cathode	12.6	0.175	1.5*	1.6*	0.4*	100	8.5	7,700	2,200	17.0	.....	.....	5814A (3)
5823	T-5½	Gas Triode	4CK-0-0	Cold K	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5823
5824 (3)	ST-14	Beam Pent.	7S-0-0	Cathode	25.0	0.300	.....	.....	.....	135	61	15,000	5,000	.....	.....	1,700	5824 (3)
5838 (3)	T-9	Duotriode	6S-0-0	Cathode	12.0	0.600	.....	.....	.....	300	.....	.....	.....	.....	.....	.....	5838 (3)
5839 (3)	T-9	Duotriode	6S-0-0	Cathode	26.5	0.285	.....	.....	.....	300	.....	.....	.....	.....	.....	.....	5839 (3)

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate, RF input, Mixer Output.
 X Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater.)
 (3) Has special mechanical and/or life characteristics.
 † With Average Power Input of 320 Mw. Grid to Grid.
 ‡ For two tubes with 40 volts RMS applied to each grid.
 * Applied through 250,000 ohms.
 # Per Tube or Section.
 † Plate and Target Supply Voltage.
 ‡ Triode Operation.
 † Pentode Operation.
 ‡ Plate to Plate.
 † Approximate.
 ‡ Cathode Resistor (ohms).
 † maximum

<p>4CK</p>	<p>4CN</p>	<p>5BC</p>	<p>5B0</p>	<p>5B8U</p>	<p>5CB</p>	<p>6BS</p>	<p>6BT</p>
<p>6C1</p>	<p>6S</p>	<p>7B0</p>	<p>7BK</p>	<p>7CX</p>	<p>7S</p>	<p>8B0</p>	<p>8DL</p>
<p>8C1</p>	<p>8CS</p>	<p>8DB</p>	<p>8DC</p>	<p>8D0</p>	<p>8DK</p>	<p>8N</p>	<p>8P</p>
<p>9A</p>	<p>9G</p>	<p>9H</p>	<p>5633</p>	<p>5638</p>	<p>5642</p>	<p>5646</p>	<p>5647</p>
<p>5702</p>	<p>5703</p>	<p>5704</p>	<p>5714</p>	<p>5715</p>	<p>5714</p>	<p>5714</p>	<p>5714</p>

PENNSYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter			Note (1) (*) Capacitances in $\mu\mu\text{f}$.			Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Basing Diag.	Type	Volts	Amps.	Cgp.	Cin.												Couf.	Use	Grid No. 3 Voltage = 0 Grid No. 2 Voltage = 0 Grid No. 1 Voltage = -10
5840 (3)	T-3	Pentode	8DL-0-0	Cathode	6.3	0.150	.015m	4.2	3.4	100	7.5	2.4	280,000	5,000	.....	.....	.....	5840 (3)	
5844	T-5½	Duotriode	7BF-0-0	Cathode	6.3	0.300	2.6* 2.6*	2.6* 2.6*	0.4	100	4.8	.....	7,550†	3,700	.....	.....	.....	5844	
5845	T-5½	Duodiode	5CA-0-0	Filament	5.0m	0.435	.....	.....	0.8	300m	2.0m	.....	.....	.....	.....	.....	.....	5845	
5847	T-6½	Pentode	9X-0-3 & 4	Cathode	6.3	0.300	.04m	7.1	2.9	150	13	4.5	.....	19,500	.....	.....	.....	5847	
5851 (3)	T-3	Pentode	6CL-0-0	Filament	2.50	0.055	.055	2.5	3.0	125	5.5	0.9	175,000	1,600	.....	.....	.....	5851 (3)	
5852 (3)	T-9	Duodiode	6S-0-0	Cathode	6.3	1.200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	650	5852 (3)	
5871 (3)	T-9	Beam Pent.	7S-0-0	Cathode	6.3	0.450	0.7*	9.7*	7.5*	Characteristics Same as Type 5838.	.....	.....	.....	.....	.....	.....	.....	5871 (3)	
5879	T-6½	Pentode	9AD-0-0	Cathode	6.3	0.150	0.11m*	9.2*	2.4	250	1.8	0.4	2,000,000†	1,000	.....	.....	.....	5879	
5881	T-11	Beam Pent.	7S-0-0	Cathode	6.3	0.900	.....	.....	.....	.....	.....	.....	13,700	1,530	.....	.....	.....	5881	
5889	T-3	Pentode	5889	Filament	1.25	7.5Ma	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5889	
5896 (3)	T-3	Duodiode	8DJ-0-4	Cathode	6.3	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5896 (3)	
5897 (3)	T-3	Triode	8DK-0-0	Cathode	6.3	0.150	1.3	2.4	2.4	100	8.5	.....	4,650	5,800	.....	.....	.....	5897 (3)	
5898 (3)	T-3	Triode	8DK-0-0	Cathode	6.3	0.150	0.8	1.9	2.2	100	7.2	2.2	260,000	4,500	.....	.....	.....	5898 (3)	
5899 (3)	T-3	Pentode	8DL-0-0	Cathode	6.3	0.150	.015m	4.4	3.4	100	7.5	2.4	280,000	5,000	.....	.....	.....	5899 (3)	
5900 (3)	T-3	Pentode	8DL-0-0	Cathode	6.3	0.150	.015m	4.4	3.4	100	7.5	2.4	280,000	5,000	.....	.....	.....	5900 (3)	
5901 (3)	T-3	Pentode	8DL-0-0	Cathode	6.3	0.150	.015m	4.2	3.4	110	30	2.2	15,000	4,900	.....	.....	.....	5901 (3)	
5902 (3)	T-3	Pentode	8DL-0-0	Cathode	6.3	0.450	0.2m	6.5	7.5	90	1.6	0.45	1,500,000†	900	.....	.....	.....	5902 (3)	
5910	T-5½	Pentode	6AR-0-5	Filament	1.4	0.050	.008m	3.6	7.5	90	0	.....	.....	.....	.....	.....	.....	5910	
5915	T-5½	Dual Control Heptode	7CH-0-0	Cathode	6.3	0.300	.08* .35*	5.4* 6.9*	7.6*	150†	7.5	5.8	9.0	.....	.....	.....	.....	.....	5915
5915A (3)	T-5½	Dual Control Heptode	7CH-0-0	Cathode	6.3	0.300	.08* .35*	5.4* 6.9*	7.6*	150†	7.5	0	14.0	.....	.....	.....	.....	.....	5915A
5930 (3)	T-12	Triode	4D-0-0	Filament	2.5	2.500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5930 (3)	
5931 (3)	T-12	Duodiode	5T-0-0	Filament	5.0	3.000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5931 (3)	
5932 (3)	T-12	Beam Pent.	7S-0-0	Cathode	6.3	0.900	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5932 (3)	
5963 (3)	T-6½	Duotriode	9A-0-0	Cathode	6.3	0.300	1.5* 1.5*	1.9* 1.9*	0.5* 0.5*	67.5	8.5	.....	.....	6,600	3,200	.....	.....	.....	5963 (3)
5964 (3)	T-5½	Duotriode	7BF-0-0	Cathode	6.3	0.450	1.3*	2.1*	0.4*	150	5.0	.....	.....	6,500	6,000	.....	.....	.....	5964 (3)
5965	T-6½	Duotriode	9A-0-0	Cathode	6.3/12.6	0.450/3.0*	3.0*	4.0*	0.36*	150	200	8.5	.....	7,000†	6,700	.....	.....	.....	5965
5977 (3)	T-3	Triode	8DK-0-0	Cathode	6.3	0.150	1.3	2.0	2.2	100	10.0	.....	.....	3,650	4,500	.....	.....	.....	5977 (3)
5987 (3)	T-3	Triode	8DM-0-0	Cathode	6.3	0.450	3.2	3.2	5.0	100	9.0	.....	.....	1,850	.....	.....	.....	.....	5987 (3)
6004	T-9	Duodiode	5T-0-0	Filament	5.0	2.000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6004
6005 (3)	T-5½	Beam Pent.	7BZ-0-0	Cathode	6.3	0.450	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6005 (3)
6021 (3)	T-3	Duotriode	8DG-0-0	Cathode	6.3	0.300	1.4	2.1	.....	100	6.5	.....	6,480†	5,400	.....	.....	.....	.....	6021 (3)
X6030	Lock-in	Diode	X6030	Filament	3.0m	0.600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	X6030
6045	T-5½	Duotriode	7BF-0-0	Cathode	6.3	0.350	1.3* 1.3*	2.0* 2.0*	0.45* 0.34*	100	50	.....	.....	5,940†	6,400	.....	.....	.....	6045
6049 (3)	T-3	Pentode	8DL-0-0	Cathode	6.3	0.150	.009m	3.6	3.8	100	7.5	2.5	400,000	3,550	.....	.....	.....	.....	6049 (3)
6053 (3)	T-3	Duodiode	8DJ-0-4	Cathode	6.3	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6053 (3)
6053 (3)	T-3	Duodiode	8DJ-0-4	Cathode	26.5	0.075	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6053 (3)
6055 (3)	T-3	Triode	8DK-0-0	Cathode	26.5	0.045	1.8*	2.2*	0.8*	26.5	Self	.....	.....	5,000	.....	.....	.....	.....	6055 (3)
6056 (3)	T-3	Pentode	8DL-0-0	Cathode	26.5	0.045	.015m	4.0	3.4	26.5	Self	1.1	100,000	3,000	.....	.....	.....	.....	6056 (3)
6110 (3)	T-3	Duodiode	8DJ	Cathode	6.3	0.150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6110 (3)
6111 (3)	T-3	Duotriode	8DG	Cathode	6.3	0.300	1.5	1.9	0.28	100	220	8.5	.....	4,200	.....	.....	.....	.....	6111 (3)
6112 (3)	T-3	Duotriode	8DG	Cathode	6.3	0.300	1.0	1.7	0.23	100	1500	0.8	.....	38,900	1,800	.....	.....	.....	6112 (3)
6118 (3)	Metal	Duodiode Tri.	7V-1-1	Cathode	6.3	0.300	1.4	5.0	3.8	100	1.0	.....	.....	2,500	.....	.....	.....	.....	6118
6145	T-9	Pentode	8V-0-5	Cathode	6.3	0.600	.06m	14.0	7.5	150	3.4	8.0	0.1	.....	.....	.....	.....	.....	6145
6146	T-12	Beam Pent.	7CK-8-1, 4, 6	Cathode	6.3	1.250	0.24*	15.9*	10.6*	600	45	.....	.....	.....	.....	.....	.....	.....	6146
6205 (3)	T-3	Pentode	8DC-0-2&8	Cathode	6.3	0.150	.015	4.2	3.4	100	7.5	2.4	0.26	5,000	.....	.....	.....	.....	6205 (3)
6206	T-3	Pentode	8DC	Cathode	6.3	0.150	.015	4.2	3.4	100	7.5	2.0	0.26	4,500	.....	.....	.....	.....	6206 (3)
6287 (3)	T-6½	Beam Pent.	9CT-0-0	Cathode	6.3	0.600	1.1m	8.0	9.0	250	46	5.0	55	4,100	.....	.....	.....	.....	6287 (3)
6308 (3)	T-3	Gas Diode	8EX-0-0	Cold K	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6308 (3)

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate, RF input, Mixer Output.
 X Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater).

* Applied through 250,000 ohms.
 # Per Tube or Section.
 § Plate and Target Supply Voltage.

□ Applied through 20,000 ohms.
 ▲ Conversion Transconductance.
 + Triode Operation.

⋮ Pentode Operation.
 ▽ Plate to Plate.
 ⬆ Approximate.

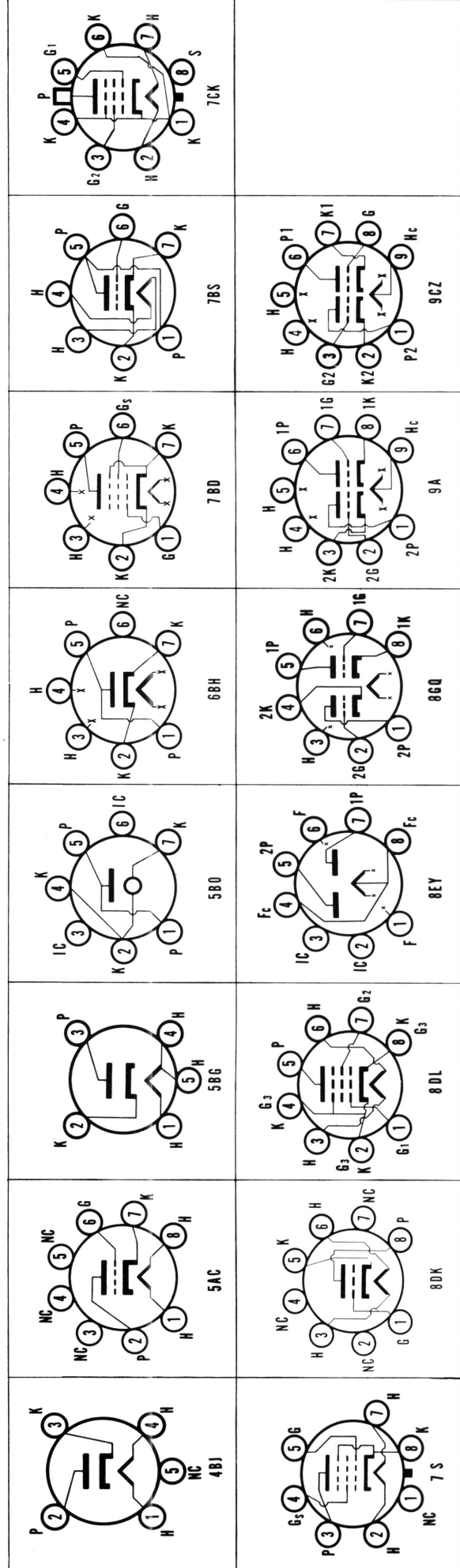
m maximum
 ■ Cathode Resistor
 (ohms).

<p>SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; HI—Heater Tap; IC—Internal Connection; DO NOT USE; J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key</p>																																								

SYLVANIA TUBES — AVERAGE CHARACTERISTICS

Type	Construction		Emitter			Note (1) (2) Capacitances In μf .		Use	Plate Volts	Negative Grid Volts	Screen Volts	Plate Current Ma.	Screen Current Ma.	Plate Resistance Ohms	Transconductance Micromhos	Amplification Factor	Ohms Load for Stated Power Output	Power Output Milli-watts	Type
	Bulb Size or Style	Class	Beating Diag.	Type	Volts	Amps.	Csp.													Cin.	Couf.
6350	T-6½	Duotriode	9CZ-0-0	Cathode	6.3	0.600	3.2*	3.6*	0.6*	150	5.0	11.0	.....	3,900	4,600	18	.....	.....	6350
6352	T-3	Duodiode	8EY-0-0	Filament Series	3.0	0.360	.....	.....	.....	Temperature Limited Diode. Max. Ef. = 4.0. Max. Eb. = 275. Max. Ib. = 1.1 Ma.	.....	.....	.....	.....	.....	.....	.....	.....	6352
6463	T-6½	Duotriode	9CZ-0-0	Cathode	6.3	0.600/0.300	5.0*/5.0*	3.0*/3.0*	0.6*/0.5*	200 250	11.0 650#	1.0 14.5	.....	3850#	5900	20	.....	.....	6463
6550	ST-16	Pentode	7S-0-0	Cathode	6.3	1.800	0.85*	14.0*	12.0*	Power Amp. P.P. Amp. 400 600	16.5 30.0	87.0 115.0	4.0 4.0	27,000 (Current and Output for Two Tubes)	9,000	20	3,000 5,000	80,000 100,000	6550
6626	T-5½	Gas Diode	5B0-0-0	Cold K	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6626
6627	T-5½	Gas Diode	5B0-0-0	Cold K	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6627
6690 (3)	T-3	Duotriode	8GQ-0-0	Cathode	6.3	0.300	2.1m 2.1m	.....	.....	.....	.....	8.0	.....	.....	4,800	35	.....	.....	6690 (3)
6788	T-3	Pentode	8DL	Cathode	6.3	0.175	0.032	2.5	3.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	6788
6814	T-3	Triode	8DK	Cathode	6.3	0.150	1.3	2.4	2.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	6814
6883	T-12	Beam Pent.	7CK-8-1,4,6	Cathode	12.6	0.625	0.24*	13.5*	8.5*	.....	.....	.....	.....	.....	.....	.....	.....	.....	6883
6893	T-9	Beam Pent.	7CK-8-1,4,6	Cathode	12.6	0.400	0.2*	12.5*	7.0*	.....	.....	.....	.....	.....	.....	.....	.....	.....	6893
6913	T-6½	Duotriode	9A-0-0	Cathode	6.3	0.600	3.4*	3.6*	0.5*	.....	.....	.....	.....	.....	.....	.....	.....	.....	6913
9001	T-5½	Pentode	7BD-0-7	Cathode	6.3	0.150	.01	3.6	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	9001
9002	T-5½	Triode	7BS-0-0	Cathode	6.3	0.150	1.4	1.2	1.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	9002
9003	T-5½	Pentode	7BD-0-7	Cathode	6.3	0.150	.01m	3.6	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	9003
9004	Acom	Diode	4B1-0-0	Cathode	6.3	0.150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9004
9005	Acom	Diode	5B8-0-0	Cathode	6.3	0.150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9005
9006	T-5½	Diode	68H-0-0	Cathode	6.3	0.150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9006
XXD	Now Listed as 14AF7/XXD																		XXD
XXFM	Now Known as Type 7X7																		XXFM
XXL	Lock-in Triode		5AC-L-0	Cathode	6.3	0.300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	XXL

(1) Values are given shielded unless marked with (*).
 (2) Converter tube capacitances given are signal grid to plate;
 RF Input, Mixer Output.
 X Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater).
 (3) Has special mechanical and/or life characteristics.
 § With Average Power Input of 350 Mw. Grid to Grid.
 ¶ For two tubes with 40 volts RMS applied to each grid.
 †† Controlled Heater Warm-up Time (applies to parallel connections of types having a tapped heater).
 * Applied through 20,000 ohms.
 † Pentode Operation.
 ‡ Plate to Plate.
 ††† Conversion Transconductance.
 †††† Triode Operation.

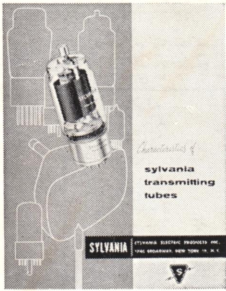


SYMBOLS FOR BASE DIAGRAMS: Dp—Diode Plate; F—Filament; Fc—Filament Center; G—Grids numbered according to their position from the cathode; H—Heater; Hc—Heater Center; H—Heater Tap; IC—Internal Connection. DO NOT USE, J—Jumper; K—Cathode; NC—No Connection; P—Plate; Rc—Ray Control; S—Metal Shell; SA—Starter Anode; T—Target; XS—External Shield; □—Top Cap; ■—Locating Key.

TUBE TYPE BASE ARRANGEMENTS

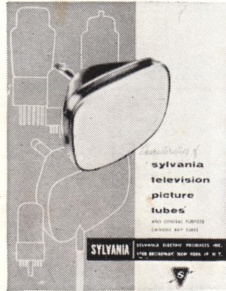
BASE	TYPE	BASE	TYPE	BASE	TYPE	BASE	TYPE	BASE	TYPE	BASE	TYPE	BASE	TYPE	BASE	TYPE	BASE	TYPE	
OAS	1F4, 33, 950	6S	6AX5GT, 6W5G, 6X5GT, 6X5WGT, 6Y5G, 1274, 5838, 5839, 5852	7E	6F7, 6F7S	8CP	1AC3, 1AD5, 1V5, 1W5	9AX	5X8, 6X8, 19X8									
1AG4	5V4G, GA, 5Z4, 5Z4GT	6T	6A3G	7EA	6CR6	8CQ	6AW7GT	9BA	6B7J, 6B7C									
1AJ5	6F5, 6F5GT, 12F5GT	6W	6A5G	7EK	2BN4, 6BN4	8CS		9BD	6V3, 6V3A, 6B3, 12B3									
1AK5	5X4G, 5X4GA, 5Y4G, GA	6X	1A5GT, 1C5GT, 1F5G, 1G5G, 1J5G, 1I5GT	7EN	1K5	8CT	6BA1, 12BA7	9BC	12B7J, 12B7Y									
1AK5	1D5GT, 1G4GT, 1H4G, 2A4G, 2A4GT	6Y	1A5GT, 1C5GT, 1F5G, 1G5G, 1J5G, 1I5GT	7EW	1F6	8DA	5635	9BV	6BK5, 12BK5, 25BK5									
1B3GT	6B4G	7A	1H6G	7F	1A5	8DD	5635, 6205, 6206	9BX	6CL6									
4AA	5A4W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7B	1A5GT, 1C5GT, 1F5G, 1G5G, 1J5G, 1I5GT	7G	6C7	8DD	5635, 6205, 6206	9CA	6AJ4, 6AM4									
4AB	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7C	1H6G	7H	6D7, 6E7	8DF	6A25	9CK	6CM6, 12CM6, 6CS5, 12CS5									
4AC	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7D	1G6GT, 1J6G, 1J6GT	7K	1A7	8DG	6B7T, A, 6BGT, 6021, 6111, 6112, 6B7W	9CL	60M1									
4AD	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7E	1F7G	7Q	1A7	8DJ	5896, 6032, 6033, 6110	9CM	62B7									
4AH	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7F	1F7G*															
4AJ	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7G	1A5GT, 1C5GT, 1F5G, 1G5G, 1J5G, 1I5GT															
4AM	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7H	6A5G, 6AF6G															
4AN	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7I	1LA6, 1LC6															
4AP	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7J	1N6GT															
4AQ	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7K	1A5GT, 1C5GT, 1F5G, 1G5G, 1J5G, 1I5GT															
4AR	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7L	1N6GT															
4AS	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7M	6A5G, 6AF6G															
4AT	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7N	1LA6, 1LC6															
4AU	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7O	1N6GT															
4AV	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7P	6A5G, 6AF6G															
4AW	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7Q	1LA6, 1LC6															
4AX	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7R	1N6GT															
4AY	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7S	6A5G, 6AF6G															
4AZ	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7T	1LA6, 1LC6															
4BA	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7U	1N6GT															
4BB	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7V	6A5G, 6AF6G															
4BC	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7W	1LA6, 1LC6															
4BD	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7X	1N6GT															
4BE	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7Y	6A5G, 6AF6G															
4BF	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7Z	1LA6, 1LC6															
4BG	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7A	1N6GT															
4BH	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7B	6A5G, 6AF6G															
4BI	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7C	1LA6, 1LC6															
4BJ	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7D	1N6GT															
4BK	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7E	6A5G, 6AF6G															
4BL	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7F	1LA6, 1LC6															
4BM	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7G	1N6GT															
4BN	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7H	6A5G, 6AF6G															
4BO	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7I	1LA6, 1LC6															
4BP	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7J	1N6GT															
4BQ	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7K	6A5G, 6AF6G															
4BR	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7L	1LA6, 1LC6															
4BS	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7M	1N6GT															
4BT	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7N	6A5G, 6AF6G															
4BU	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7O	1LA6, 1LC6															
4BV	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7P	1N6GT															
4BW	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7Q	6A5G, 6AF6G															
4BX	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7R	1LA6, 1LC6															
4BY	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7S	1N6GT															
4BZ	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7T	6A5G, 6AF6G															
4CA	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7U	1LA6, 1LC6															
4CB	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7V	1N6GT															
4CC	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7W	6A5G, 6AF6G															
4CD	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7X	1LA6, 1LC6															
4CE	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7Y	1N6GT															
4CF	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7Z	6A5G, 6AF6G															
4CG	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7A	1LA6, 1LC6															
4CH	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7B	1N6GT															
4CI	6A5W4, 5AX4GT, 5A4Z4, 5R4GY, GYA, 5U4WG, 5Y3, 5W4, 5Y3GA, GT, 5T4, 5U4G, GA, GB, 5W4GT, 5931, 6004	7C	6A5G, 6AF6G															

Technical Literature

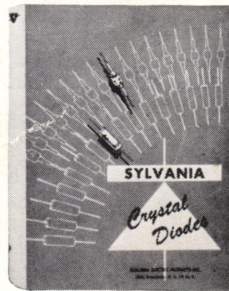


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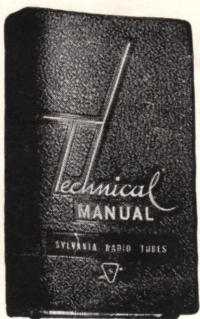


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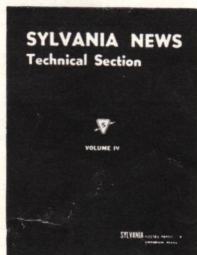


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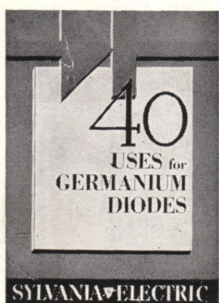
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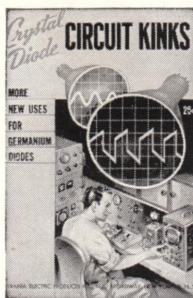
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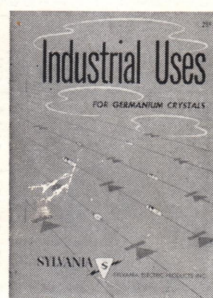
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