

Sylvania Type 6BA5

PENTODE VOLTAGE AMPLIFIER

8DY-0-0

PHYSICAL SPECIFICATIONS

Base.....	Flexible Leads
Bulb.....	T-3
Maximum Overall Bulb Length.....	1.375"
Minimum Lead Length.....	1.500"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Maximum Plate Voltage.....	150 Volts
Maximum Screen Voltage.....	140 Volts
Maximum Plate Dissipation.....	0.7 Watt
Maximum Screen Dissipation.....	0.3 Watt
Maximum Heater-Cathode Voltage.....	90 Volts
Maximum Grid Circuit Resistance (cathode bias).....	1 Megohm

Direct Interelectrode Capacitances:

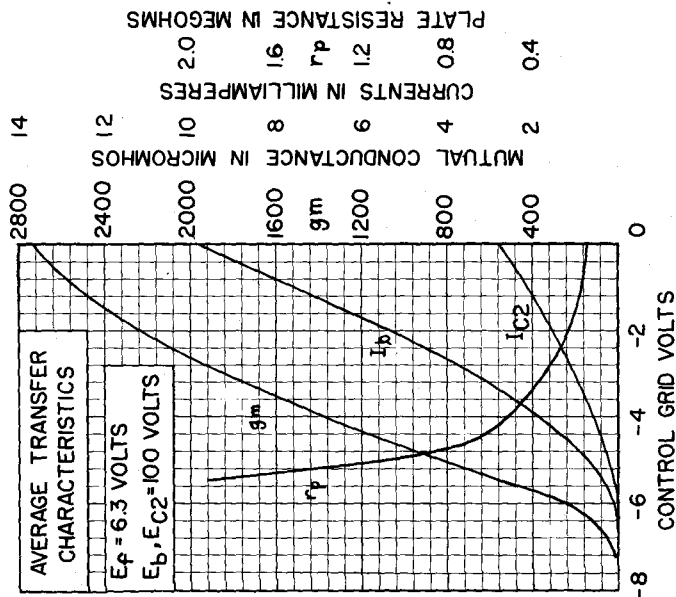
	Unshielded	Shielded*
Grid to Plate.....	0.1	.065 μ f.
Input.....	3.2	3.4 μ f.
Output.....	1.6	3.6 μ f.

*External shield of 0.405" diameter connected to cathode.

TYPICAL OPERATION CLASS A₁ AMPLIFIER

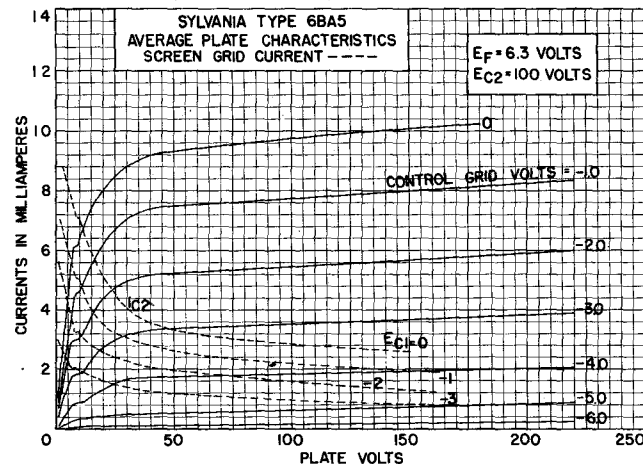
Heater Voltage.....	6.3 Volts
Heater Current.....	150 Ma.
Plate Voltage.....	100 Volts
Screen Voltage.....	100 Volts
Cathode Bias Resistor.....	270 Ohms
Plate Current.....	5.5 Ma.
Screen Current.....	2 Ma.
Mutual Conductance.....	2,150 μ mhos
Plate Resistance.....	175,000 Ohms
Control Grid Bias Voltage for $I_b = 10 \mu$ a.....	-13.5 Volts

For use in resistance coupled circuits, see data in appendix.



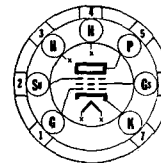
SYLVANIA RADIO TUBES

6BA5 (Cont'd)



6BA6 Sylvania Type

REMOTE CUT-OFF RF PENTODE



7BK-0-2

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7 Pin
Bulb.....	T-5 1/2"
Maximum Overall Length.....	2 1/8"
Maximum Seated Height.....	1 1/8"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.30 Ampere
Maximum Plate Voltage.....	300 Volts
Maximum Screen Voltage.....	125 Volts
Maximum Screen Supply Voltage.....	300 Volts
Maximum Plate Dissipation.....	3 Watts
Maximum Screen Dissipation.....	0.6 Watt
Minimum Control Grid Voltage.....	0 Volt
Maximum Heater-Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:*

Grid to Plate.....	0.0035 μ f. Max.
Input.....	5.5 μ f.
Output.....	5.0 μ f.

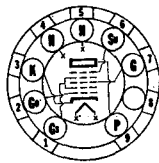
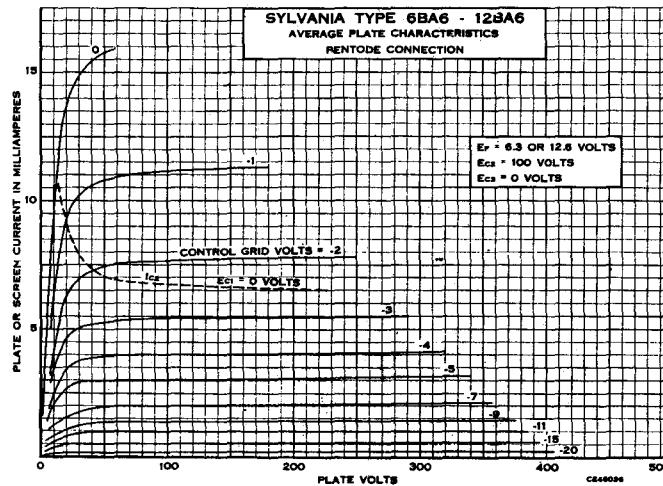
*Without external shield.

TYPICAL OPERATION

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.30	0.30 Ampere
Plate Voltage.....	100	250 Volts
Suppressor Grid.....	Connected to Cathode at Socket	
Screen Voltage.....	100	100 Volts
Self-Bias Resistor.....	68	68 Ohms
Plate Resistance (Approximate).....	0.25	1.0 Megohms
Mutual Conductance.....	4300	4400 μ mhos
Grid Voltage at $G_m = 40 \mu$ mhos.....	-20	-20 Volts
Plate Current.....	10.8	11 Ma.
Screen Current.....	4.4	4.2 Ma.

APPLICATION

Sylvania Type 6BA6 is a remote cut-off pentode of miniature construction. The remote cut-off characteristics allow smooth control of gain by changing grid bias voltage thus assuring satisfactory performance in a-v-c controlled circuits. Its small size and high mutual conductance together with low interelectrode capacitances make this tube suitable for compact, light weight equipment.



8CT-0-6&8

**Sylvania Type 6BA7****HEPTODE CONVERTER****PHYSICAL SPECIFICATIONS**

Base.....	Small-Button 9 Pin
Bulb.....	T-61 $\frac{1}{2}$
Maximum Overall Length.....	2 $\frac{5}{8}$ "
Maximum Seated Height.....	2 $\frac{3}{8}$ "
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	300 Ma.
Maximum Plate Voltage.....	300 Volts
Maximum Screen Voltage.....	100 Volts
Maximum Screen Supply Voltage.....	300 Volts
Maximum Plate Dissipation.....	2.0 Watts
Maximum Screen Dissipation.....	1.5 Watts
Maximum Total Cathode Current.....	22 Ma.
Maximum Signal Grid Voltage.....	
Negative Bias.....	100 Volts
Positive Bias.....	0 Volts
Maximum Heater-Cathode Voltage.....	90 Volts
Direct Interelectrode Capacitances: (Without Shield)	
Grid G to Plate.....	0.19 μ f. Max.
Grid G to Go.....	0.1 μ f. Max.
Grid Go to Plate.....	0.05 μ f. Max.
RF Input.....	9.5 μ f.
Oscillator Input.....	6.7 μ f.
Mixer Output.....	8.3 μ f.
Grid Go to all Except Cathode.....	3.4 μ f.
Grid Go to Cathode.....	3.3 μ f.
Cathode to all Except Grid Go.....	4.0 μ f.

6BA7 (Cont'd)

TYPICAL OPERATION CONVERTER (Separate Excitation*)

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	100	250 Volts
Suppressor and Internal Shield**.....	Connected directly to ground	
Screen Voltage.....	100	100 Volts
Control Grid Voltage.....	-1	-1 Volts
Oscillator Grid (Go) Resistor.....	20,000	20,000 Ohms
Plate Resistance (Approx.).....	0.5	1.0 Megohm
Conversion Transconductance.....	900	950 μ hos
Conversion Transconductance (Approx.) at Signal Grid Volts=-20.....	3.5	3.5 μ hos
Plate Current.....	3.6	3.8 Ma.
Screen Current.....	10.0	10.0 Ma.
Oscillator Grid Current.....	0.35	0.35 Ma.
Total Cathode Current.....	14.2	14.2 Ma.

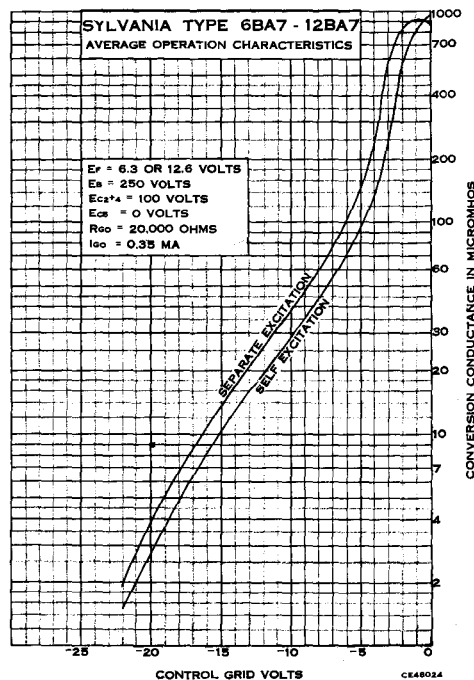
Note: The transconductance between grid Go and screen connected to plate (not oscillating) is approximately 8000 μ hos under the following conditions: signal applied to grid G at zero bias; screen and plate at 100 volts; grid G grounded. Under the same conditions, the plate current is 32.0 Ma, and the amplification factor is 16.5.

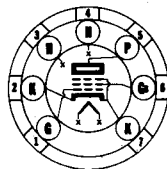
*The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

**Internal shield (pins 6 and 8) connected directly to ground.

APPLICATION

Sylvania Type 6BA7 is a high gain heptode converter of the miniature style, designed for use in FM broadcast service. A separate connection is provided for direct grounding of the suppressor. The short internal leads which are a feature of miniature construction, make the Type 6BA7 applicable for oscillator-mixer service in the 88-108 mc band. The Type 6BA7 has characteristics similar to those of the metal Type 6SB7-Y.





7BD-0-2 & 7



Sylvania Type 6BC5

SHARP CUTOFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7-Pin
Bulb.....	T5½
Maximum Overall Length.....	2½"
Maximum Seated Height.....	1½"
Mounting Position.....	Any

RATINGS

Heater Voltage (AC or DC).....	6.3 Volts
Maximum Plate Voltage.....	300 Volts
Maximum Screen Supply Voltage.....	300 Volts
Maximum Plate Dissipation.....	2.0 Watts
Maximum Screen Dissipation.....	0.5 Watts
Maximum Heater Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:

Pentode Connection	Shielded*	Unshielded
Grid to Plate.....	0.020	0.030 μ uf. Max.
Input.....	6.6	6.5 μ uf.
Output.....	3.1	1.8 μ uf.
Triode Connection**		
Grid to Plate.....	2.5	2.5 μ uf.
Input.....	4.0	3.9 μ uf.
Output.....	4.3	3.0 μ uf.

*With ¼" diameter shield (RMA Std. 316) connected to Pin 7.

**For triode connection tie screen grid to plate.

TYPICAL OPERATION

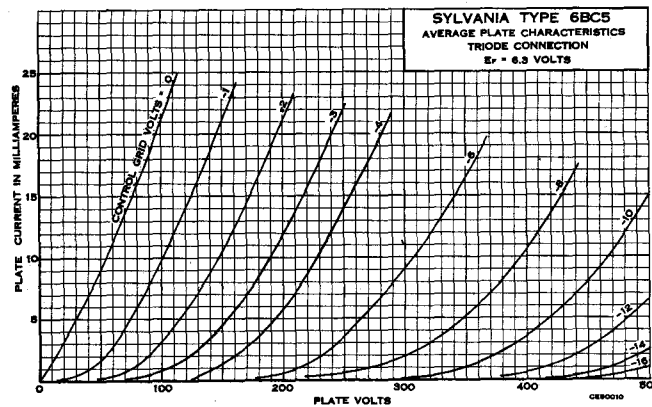
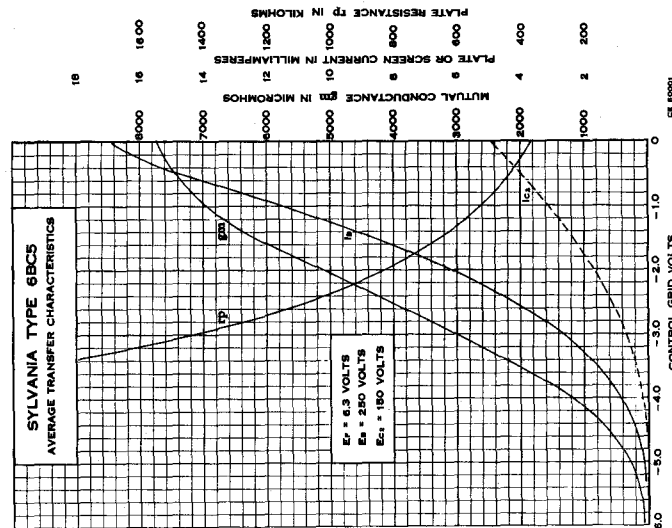
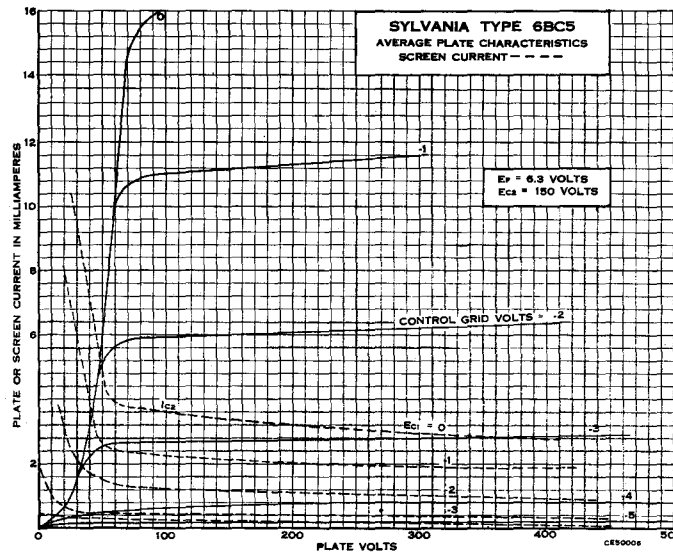
Heater Voltage.....	6.3	6.3	6.3 Volts
Heater Current.....	300	300	300 Ma.
Plate Voltage.....	100	125	250 Volts
Screen Voltage.....	100	125	250 Volts
Cathode Resistor.....	180	100	180 Ohms
Mutual Conductance.....	4900	6100	5700 μ mhos
Plate Current.....	4.7	8.0	7.5 Ma.
Screen Current.....	1.4	2.4	2.1 Ma.
Plate Resistance (approx.).....	0.6	0.5	0.8 Megohm
Control Grid Voltage (approx.) for Ib = 10 μ a.....	-5	-6	-8 Volts

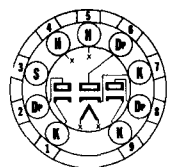
Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	250	180 Volts
Grid Voltage.....	2.6	4.9 Volts
Cathode Resistor.....	820	330 Ohms
Mutual Conductance.....	4400	6000 μ mhos
Plate Current.....	6.0	8.0 Ma.
Plate Resistance (approx.).....	.009	.006 Megohm
Amplification Factor.....	40	42

APPLICATION

Sylvania Type 6BC5 is a high mutual conductance sharp cut-off RF pentode of miniature construction. It may be used up to 400 megacycles and is particularly useful in television receivers where a slightly higher gain than that obtained with the similar Type 6AG5 is desired. The two cathode leads may be used to provide separate RF returns in circuits requiring this feature.

6BC5 (Cont'd)





9AX-0-3



Sylvania Type 6BC7

TRIPLE DIODE

PHYSICAL SPECIFICATIONS

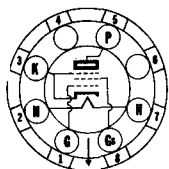
Base.....	Small Button 9-Pin
Bulb.....	T-6 $\frac{1}{2}$
Maximum Overall Length.....	2 $\frac{5}{16}$ "
Maximum Seated Height.....	1 $\frac{15}{16}$ "
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts.
Heater Current.....	450 Ma.
Maximum Diode Operation Current per Plate.....	12 Ma.
Maximum Peak Heater-Cathode Voltage.....	200 Volts

Direct Interelectrode Capacitances: (Unshielded)

Plate of Diode #1 to All Other Elements.....	3.5 μ f.
Plate of Diode #2 to All Other Elements.....	5.5 μ f.
Plate of Diode #3 to All Other Elements.....	3.5 μ f.



6CK-0-0



Sylvania Type 6BD5^{GT}

TELEVISION DEFLECTION AMPLIFIER

PHYSICAL SPECIFICATIONS

Base.....	Intermediate Octal 6-Pin
Bulb.....	T-9
Maximum Overall Length.....	3 $\frac{3}{8}$ "
Maximum Seated Height.....	3 $\frac{5}{8}$ "
Mounting Position.....	Vertical†

†Horizontal operation permitted if pins 2 and 7 are in a vertical plane.

RATINGS

Heater Voltage (AC or DC).....	6.3 Volts
Maximum Plate Voltage.....	325 Volts
Maximum Screen Voltage.....	325 Volts
Maximum Plate Dissipation.....	10 Watts
Maximum Cathode Current.....	100 Ma.
Maximum Peak Positive Surge Plate Voltage*.....	4000 Volts
Maximum Peak Negative Surge Control Grid Voltage.....	200 Volts
Maximum Screen Dissipation.....	3.0 Watts
Maximum Control Grid Circuit Resistance.....	1.0 Megohm
Maximum Peak Cathode Current.....	300 Ma.
Maximum Heater to Cathode Voltage.....	135 Volts

*The duration of the voltage pulse must not exceed 10 microseconds or 15% of the pulse recurrence period, whichever is smaller.

TYPICAL OPERATION DEFLECTION AMPLIFIER

Heater Voltage.....	6.3 Volts
Heater Current.....	0.9 Ampere
Plate and Screen Grid Supply Voltage.....	310 Volts
Peak Positive Surge Plate Voltage (approx.).....	2500 Volts
Peak Control Grid Surge Voltage (approx.).....	50 Volts
Cathode Current.....	90 Ma.
Mutual Conductance**.....	

**The mutual conductance is 5000 μ mhos when measured with 200 volts on plate and screen, and -12 volts on the control grid.

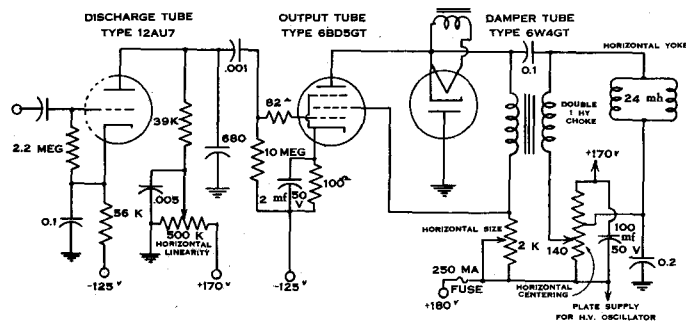
6BD5^{GT} (Cont'd)

APPLICATION

Sylvania Type 6BD5GT is a beam pentode tube adapted for use as a deflection amplifier tube in television sets. A typical circuit is shown below. The use of this tube and circuit provides full horizontal scanning for a 50° 12 inch picture tube with 11,000 volts anode supply. The stem and basing arrangement permit the use of this tube under the peak voltage condition found in this type of service.

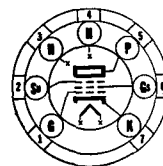
For curve data, reference should be made to type 6L6G, to which type 6BD5GT is similar up to its wattage ratings.

HORIZONTAL DEFLECTION AMPLIFIER



6BD6 Sylvania Type

REMOTE CUT-OFF RF PENTODE



7BK-0-2

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7 Pin
Bulb.....	T-5½
Maximum Overall Length.....	2½"
Maximum Seated Height.....	1½"
Mounting Position.....	Any

RATINGS

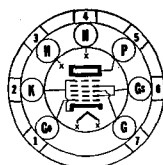
Heater Voltage AC or DC	6.3 Volts
Heater Current	300 Ma.
Maximum Plate Voltage	300 Volts
Maximum Screen Voltage	125 Volts
Maximum Plate Dissipation	4.0 Watts
Maximum Screen Dissipation	0.4 Watts
Maximum Cathode Current	14 Ma.
Maximum Heater-Cathode Voltage	90 Volts

Direct Interelectrode Capacitances:

	Shielded	Unshielded
Grid to Plate.....	0.005	0.004 $\mu\text{f. Max.}$
Input.....	4.3	4.3 $\mu\text{f.}$
Output.....	5.0	5.0 $\mu\text{f.}$

TYPICAL OPERATION

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	100	250 Volts
Screen Voltage.....	100	100 Volts
Control Grid Voltage.....	-1	-3 Volts
Plate Current.....	13	9 Ma.
Screen Current.....	5	3.5 Ma.
Plate Resistance.....	0.12	0.7 Megohm
Transconductance.....	2350	2000 μ mhos
Grid Voltage (approx.) for 10 μ mhos.....	-35	-35 Volts



7CH-0-0

**Sylvania Type 6BE6****HEPTODE CONVERTER****PHYSICAL SPECIFICATIONS**

Base.....	Miniature Button 7 Pin
Bulb.....	T5 $\frac{1}{2}$
Maximum Overall Length.....	2 $\frac{1}{8}$ "
Maximum Seated Height.....	1 $\frac{1}{8}$ "
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	300 Ma.
Maximum Plate Voltage.....	300 Volts
Maximum Screen Voltage.....	100 Volts
Maximum Screen Supply.....	300 Volts
Maximum Plate Dissipation.....	1.0 Watt
Maximum Screen Dissipation.....	1.0 Watt
Maximum Cathode Current.....	14.0 Ma.
Minimum Control Grid Voltage.....	0 Volt
Maximum Heater-Cathode Voltage.....	90 Volts
Direct Interelectrode Capacitances:*	
Grid 3 to Plate.....	0.30 μ l. Max.
Mixer Input.....	7.0 μ l.
Mixer Output.....	8.0 μ l.
Oscillator Input.....	5.5 μ l.
Grid 1 to Grid 3.....	0.15 μ l. Max.
Grid 1 to Plate.....	0.05 μ l. Max.
Grid 1 to Cathode.....	3.0 μ l.
Cathode to all except Grid 1.....	15.0 μ l.

*Without external shield.

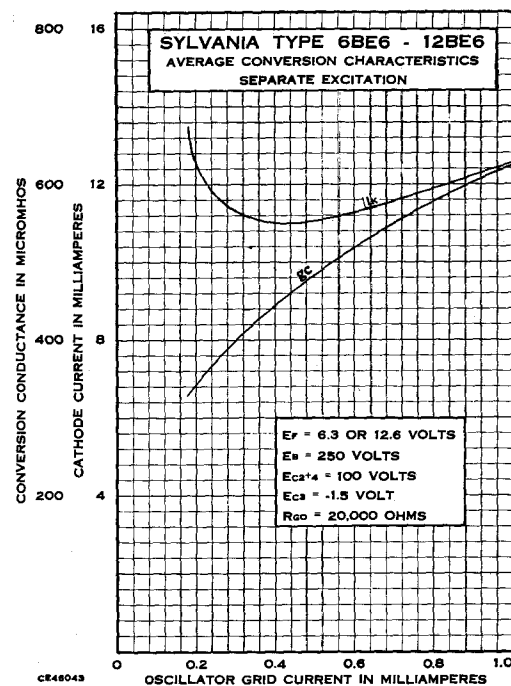
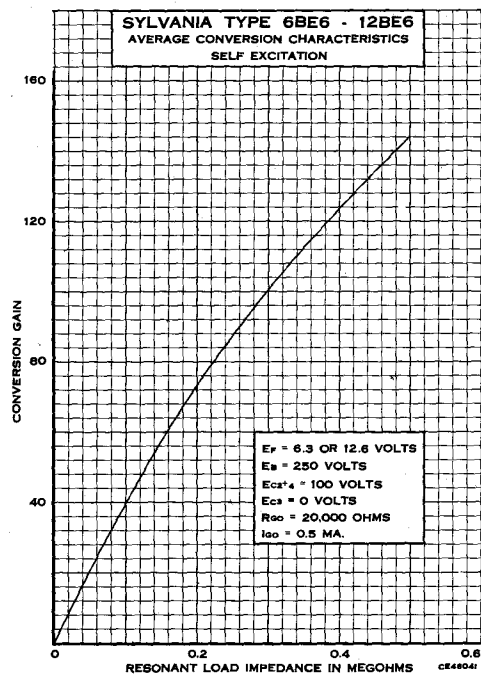
TYPICAL OPERATION**(SEPARATE EXCITATION)***

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	100	250 Volts
Screen Voltage.....	100	100 Volts
Control Grid Voltage.....	-1.5	-1.5 Volts
Plate Current.....	2.6	2.6 Ma.
Screen Current.....	7.5	7.5 Ma.
Oscillator Grid Current.....	0.5	0.5 Ma.
Total Cathode Current.....	10.6	10.6 Ma.
Oscillator Grid Resistor.....	20000	20000 Ohms
Plate Resistance (Approximate).....	0.4	1.0 Megohms
Conversion Transconductance.....	455	475 μ mhos
Conversion Transconductance, Eg3=-30 Volts.....	10 App.	10 App. μ mhos

*Data for self excitation in a zero bias circuit corresponds very closely to that for separate excitation.

APPLICATION

Sylvania Type 6BE6 is a miniature style heptode converter. It is similar in application to Type 6SA7GT and lock-in Type 7Q7. Operation data as given are for separate excitation but corresponds very closely to that obtained with self excitation. The small size of this tube lends itself readily to the design of light-weight compact equipment.





7BZ-0-0



Sylvania Type 6BF5

BEAM POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7-Pin
Bulb.....	T-5½"
Maximum Overall Length.....	2½"
Maximum Seated Height.....	2½"
Mounting Position.....	Any

RATINGS

VERTICAL DEFLECTION AMPLIFIER OPERATION

Heater Voltage AC or DC.....	6.3 Volts
Maximum Plate Voltage.....	250 Volts
Maximum Screen Voltage.....	250 Volts
Maximum Plate Dissipation.....	5 Watts
Maximum Screen Dissipation.....	1.25 Watts
Maximum Heater-Cathode Voltage.....	100 Volts
Maximum Plate Peak to Peak Pulse Component.....	+700 Volts
Maximum Control Grid Resistor.....	2.2 Megohms
Minimum Cathode Bias Resistor.....	820 Ohms
Maximum Plate Duty Cycle.....	7% of Vertical Repetition Rate

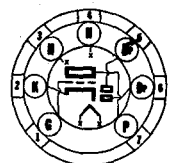
Direct Interelectrode Capacitances: Unshielded

	Pentode	Triode Connected
Grid #1 to Plate.....	0.65	7.5 μ f.
Input.....	14	7 μ f.
Output.....	6	6 μ f.

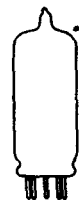
TYPICAL OPERATION

VERTICAL DEFLECTION AMPLIFIER (TRIODE CONNECTION)

Heater Voltage.....	6.3 Volts
Heater Current.....	1.2 Amperes
Plate Voltage.....	225 Volts
Screen (Tie to Plate).....	
Cathode Bias Resistor.....	1200 Ohms
Control Grid Input Potential Peak to Peak Sawtooth (approx.).....	40 Volts
Negative Control Grid Peaking Component (approx.).....	56 Volts
DC Plate Current.....	20 Ma.
Plate Peak Positive Pulse Component (approx.).....	500 Volts
Plate Peak to Peak Sawtooth Component.....	140 Volts
Sweep Height for 16" Tube with 53° Deflection Angle and 14 KV Anode Voltage.....	11½ Inches
Mutual Conductance.....	4200 μ mhos
Amplification Factor.....	6.7



7BT-0-0



Sylvania Type 6BF6

DUODIODE TRIODE

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7 Pin
Bulb.....	T-5½"
Maximum Overall Length.....	2½"
Maximum Seated Height.....	1½"
Mounting Position.....	Any

RATINGS—Triode Unit

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	300 Ma.
Maximum Plate Voltage.....	300 Volts
Maximum Plate Dissipation.....	2.5 Watt
Maximum Peak Heater-Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:—Triode Unit

	Shielded	Unshielded
Grid to Plate.....	2.0	2.0 μ f.
Grid to Cathode.....	1.8	1.8 μ f.
Plate to Cathode.....	1.4	1.1 μ f.

6BF6 (Cont'd)

TYPICAL OPERATION

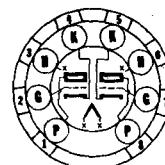
TRIODE UNIT - CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3 Volts
Heater Current.....	300 Ma.
Plate Voltage.....	250 Volts
Grid Voltage.....	-9 Volts
Amplification Factor.....	16
Plate Resistance.....	8500 Ohms
Transconductance.....	1900 μ mhos
Plate Current.....	9.5 Ma.
Load Resistance.....	10,000 Ohms
Total Harmonic Distortion.....	6.5 %
Power Output.....	300 Mw

Data for use in Resistance Coupled Amplifiers may be obtained by referring to type 7E6 in the appendix.

6BF7 Sylvania Type

DUOTRIODE



8DG-0-0

PHYSICAL SPECIFICATIONS

Base.....	Flexible Leads
Bulb.....	T-3
Maximum Bulb Overall Length.....	11 1/2"
Minimum Lead Length.....	1 1/2"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Maximum Plate Voltage.....	110 Volts
Maximum Plate Dissipation (each section).....	1.0 Watt
Maximum Heater-Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:

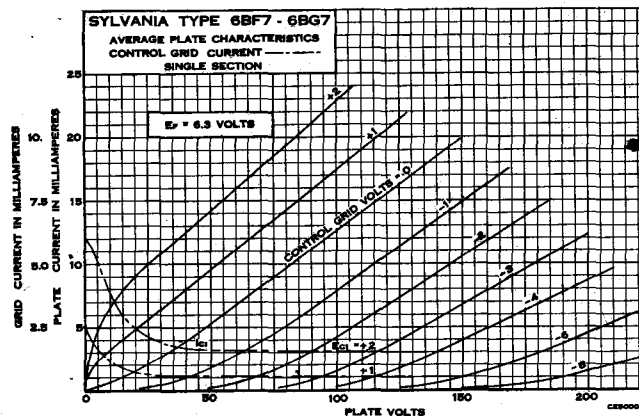
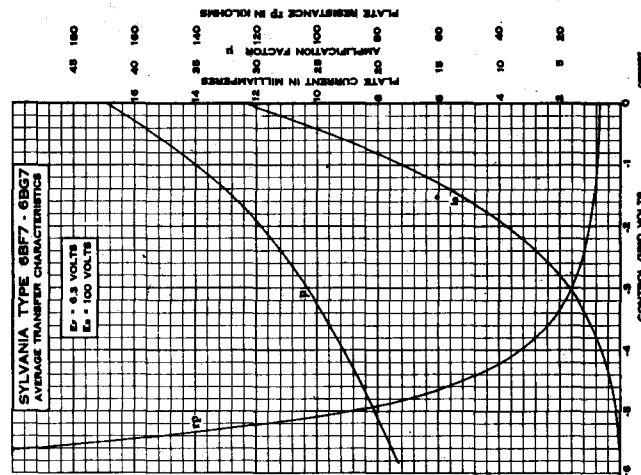
	Unshielded	Shielded
Grid to Plate (each section)	1.5	1.5 $\mu\text{f.}$
Input (each section)	2.0	2.0 $\mu\text{f.}$
Output (section #1)	0.28	1.6 $\mu\text{f.}$
(section #2)	0.30	2.0 $\mu\text{f.}$
Grid to Grid	0.009	0.008 $\mu\text{f.}$
Plate to Plate	0.75	0.55 $\mu\text{f.}$

*External shield 0.405" diameter connected to cathode.

TYPICAL OPERATION

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	300 Ma.
Plate Voltage.....	100 Volts
Cathode Bias Resistor.....	100 Ohms
Plate Current.....	8.0 Ma.
Amplification Factor.....	35
Mutual Conductance.....	4,800 μ mhos
Plate Resistance.....	7,000 Ohms
Control Grid Voltage for $I_b = 10 \mu$ a.....	-7.5 Volts

For use in resistance coupled circuits, see data in appendix.



Sylvania Type **6BG6-G**

BEAM POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base.....	Medium-Shell Octal 6 Pin
Bulb.....	ST-16
Cap.....	Miniature
Maximum Overall Length.....	5 11/16"
Maximum Seated Height.....	5 1/8"
Mounting Position.....	Vertical, Base Up or Down Horizontal, with Plane of Pins 2 and 7 Vertical

6BG6-G (Cont'd)

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.9 Ampere
Maximum Plate Voltage.....	700 Volts
Maximum Peak Positive Surge Plate Voltage*	6000 Volts
Maximum Screen Voltage**.....	350 Volts
Maximum Negative Control Grid Voltage.....	50 Volts
Maximum Peak Negative Surge Control Grid Voltage*	400 Volts
Maximum DC Plate Current.....	100 Ma.
Maximum Screen Input.....	3:2 Watts
Maximum Plate Dissipation.....	20 Watts
Maximum Heater-Cathode Voltage.....	135 Volts
Maximum Control Grid Circuit Resistance.....	1.0 Megohm

*The duty cycle of the voltage pulse must not exceed 15% of one scanning cycle and its duration must be limited to 10 microseconds.

**Preferably obtained from plate voltage supply through a series dropping resistor of sufficient magnitude to limit the screen grid input to the rated maximum value for wide variation in screen current.

Direct Interelectrode Capacitances:*

Grid to Plate.....	.65 μ f. Max.
Input.....	12.0 μ f.
Output.....	6.5 μ f.

*With no external shield.

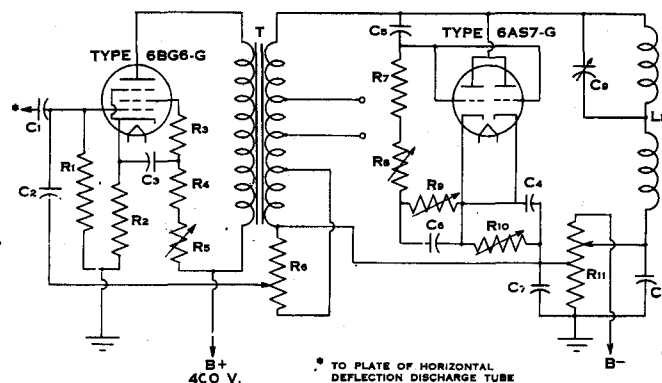
TYPICAL OPERATION DEFLECTION AMPLIFIER

DC Supply Voltage, Plate and Screen.....	400 Volts
Peak Positive Surge Plate Voltage (Approx.).....	4000 Volts
Peak Negative Surge Control Grid Voltage.....	-100 Volts
Plate Current.....	70 Ma.
Screen Current.....	6 Ma.
Control Grid Current.....	25 μ a
Transconductance (approx.).....	6000 μ mhos

APPLICATION

Sylvania Type 6BG6-G is a beam power amplifier designed for use as the driver tube in the horizontal deflection amplifier of television circuits using electro-magnetic deflection. A possible circuit is shown on the following page.

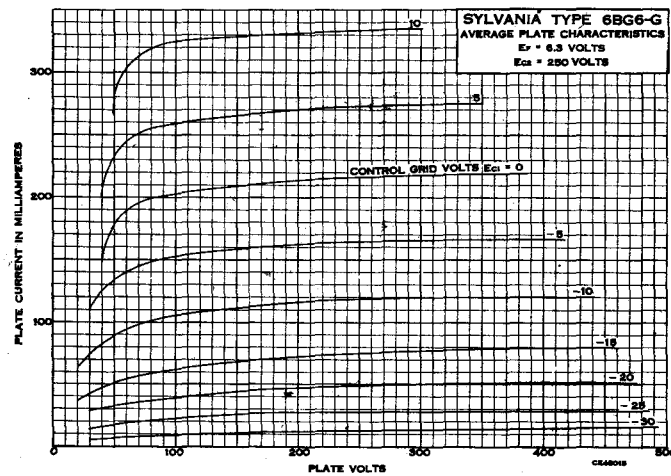
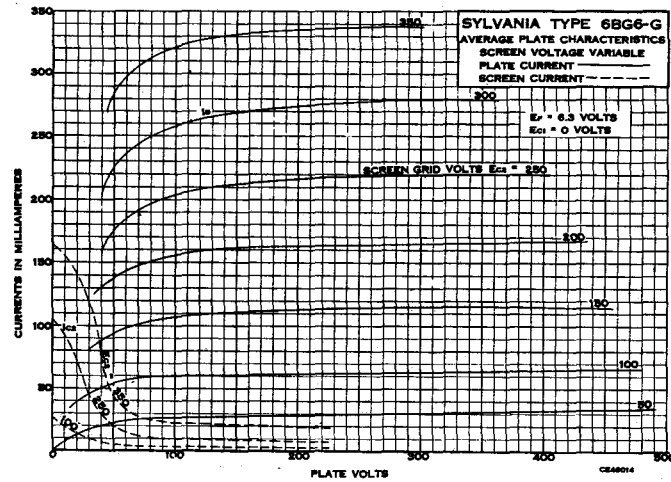
HORIZONTAL DEFLECTION CIRCUIT



C1: 0.01 μ f, 400 DC working volts
C2: 150 μ f, 400 DC working volts
C3 C4: 4 μ f, 450 DC working volts (electrolytic)
C5: 30 μ f, 1500-volt surge
C6: 0.02 μ f, 400 DC working volts
C7 C8: 100 μ f, 10 DC working volts
C9: Balancing Capacitor, 25 to 75 μ f, 800-volt surge
LH: Horizontal Deflecting Yoke, Teletron Type No. DY-15, or equivalent
R1: 500,000 ohms, 1/2 watt
R2: 100 ohms, 2 watts
R3: 100 ohms, 1/2 watt
R4: 8000 ohms, 4 watts

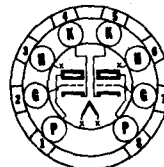
R5: Width Control, 50,000 ohms, 5 watts
R6: Peaking Amplitude and Linearity Control, 5000 ohms, wire wound, 2 watts
R7: 50,000 ohms, 1 watt
R8: Linearity Control, 25,000 ohms, 1 watt
R9: Linearity Control, 100,000 ohms, 1 watt
R10: Linearity Control, 1000 ohms, 5 watts
R11: Centering Control, 20 ohms, tapped at 10 ohms
T: Horizontal Deflection Transformer, Teletron Type No. YT-111H, or equivalent

(Cont'd) 6BG6-G



6BG7 Sylvania Type

DUOTRIODE



8DG-0-0

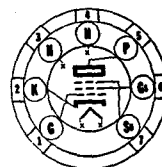
PHYSICAL SPECIFICATIONS

Base.....	Subminiature Button 8-Pin
Bulb.....	T-3
Maximum Overall Length.....	1 3/4"
Maximum Seated Height.....	1 1/2"
Mounting Position.....	Any

For other data, refer to corresponding Type 6BF7 which is identical except for lead length.

6BH6 Sylvania Type

SHARP CUT-OFF RF PENTODE



7CM-0-7

PHYSICAL SPECIFICATIONS

Base.....	Small-Button Miniature 7 Pin
Bulb.....	T-5 1/2
Maximum Overall Length.....	2 1/2"
Maximum Seated Height.....	1 1/2"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	150 Ma.
Maximum Plate Voltage.....	300 Volts
Maximum Screen Voltage.....	150 Volts
Maximum Screen Supply Voltage.....	300 Volts
Maximum Control Grid Voltage.....	
Negative bias value.....	50 Volts
Positive bias value.....	0 Volts
Maximum Plate Dissipation.....	3.0 Watts
Maximum Screen Dissipation.....	0.5 Watts
Maximum Heater-Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:*

Grid to Plate.....	0.0035 μ uf. Max.
Input.....	5.4 μ uf.
Output.....	4.4 μ uf.

*With no external shield.

TYPICAL OPERATION

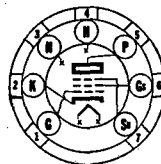
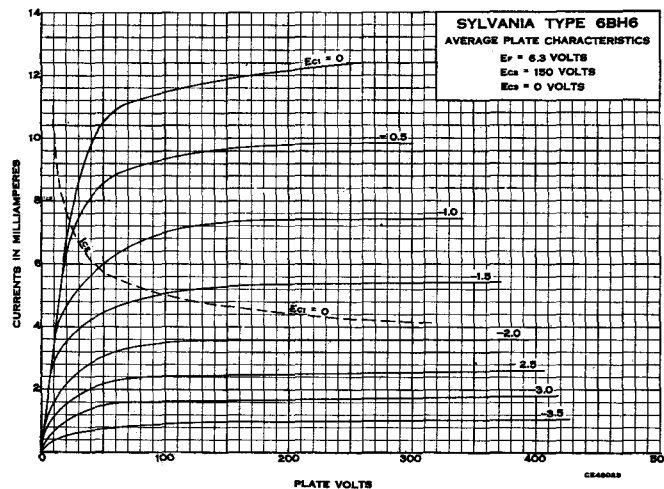
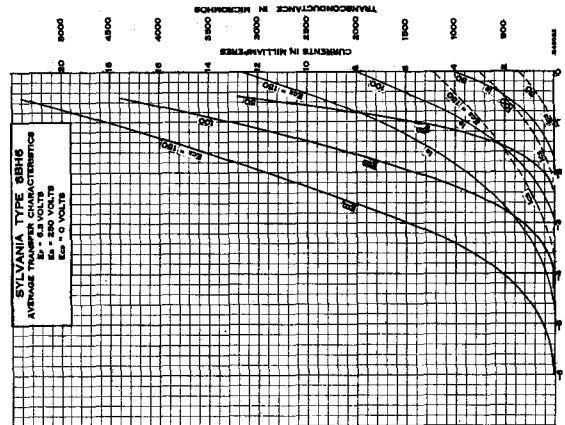
CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	150	150 Ma.
Plate Voltage.....	100	250 Volts
Suppressor.....	Connected to cathode at socket	
Screen Voltage.....	100	150 Volts
Control Grid Voltage.....	-1	-1 Volt
Plate Current.....	3.6	7.4 Ma.
Screen Current.....	1.4	2.9 Ma.
Control Grid Bias (approx.) for 10 μ a Plate Current.....	-5	-7.7 Volts
Plate Resistance.....	0.7	1.4 Megohms
Transconductance.....	3400	4600 μ mhos

APPLICATION

Sylvania Type 6BH6 is a sharp cut-off RF pentode of miniature construction. It has a 150 Ma. heater which makes it useful in AC/DC receivers, and in mobile equipment requiring low heater drain.

SYLVANIA RADIO TUBES



7CM-0-7



Sylvania Type 6BJ6

REMOTE CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7 Pin
Bulb.....	T-514
Maximum Overall Length.....	2 1/4"
Maximum Seated Height.....	1 1/4"
Mounting Position.....	Any

6BJ6 (Cont'd)

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	150 Ma.
Maximum Plate Voltage.....	300 Volts
Maximum Screen Voltage.....	125 Volts
Maximum Screen Supply Voltage.....	300 Volts
Maximum Plate Dissipation.....	3.0 Watts
Maximum Screen Dissipation.....	0.6 Watts
Maximum Control Grid Voltage.....	
Negative bias.....	50 Volts
Positive bias.....	0 Volts
Maximum Peak Heater-Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:*

Grid to Plate.....	0.0035 μ f. Max.
Input.....	4.5 μ f.
Output.....	5.0 μ f.

*Without external shield.

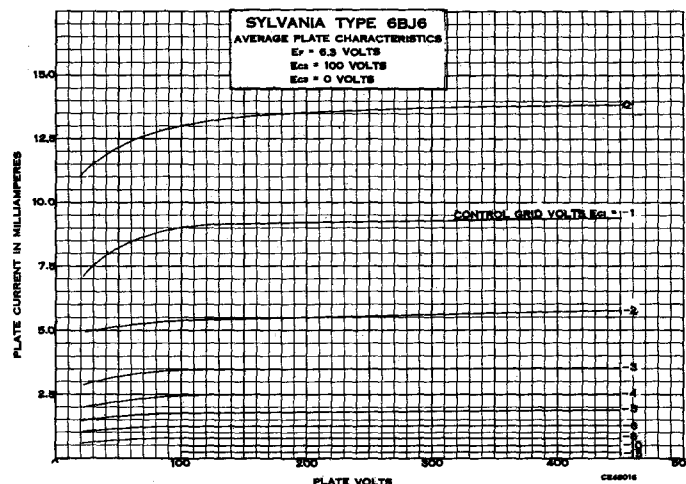
TYPICAL OPERATION

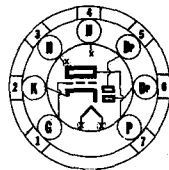
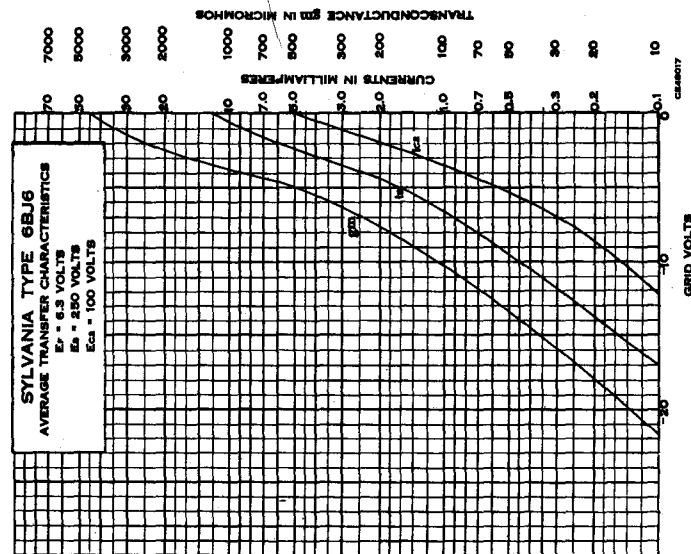
CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	150	150 Ma.
Plate Voltage.....	100	250 Volts
Screen Voltage.....	100	100 Volts
Control Grid Voltage.....	-1	-1 Volt
Suppressor.....	Connected to cathode at socket	
Control Grid Bias (Approx.)		
for 15 μ mhos Transconductance.....	-20	-20 Volts
Plate Current.....	9.0	9.2 Ma.
Screen Current.....	3.5	3.3 Ma.
Transconductance.....	3650	3800 μ mhos
Plate Resistance (Approx.).....	0.25	1.3 Megohms

APPLICATION

Sylvania Type 6BJ6 is a remote cut-off pentode of miniature construction designed for use in sets requiring 150 Ma. heater current. It is similar in application to Sylvania Type 6BA6.





7BT-0-2

**Sylvania Type 6BK6**

DUO-DIODE HIGH-MU TRIODE

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7 Pin
Bulb.....	T5 1/2
Maximum Overall Length.....	2 1/2"
Maximum Seated Height.....	2 1/8"
Mounting Position.....	Any

RATINGS

Heater Voltage (AC or DC).....	6.3 Volts
Heater Current.....	300 Ma.
Maximum Plate Volts.....	300 Volts
Average Diode Current per Diode at 10 Volts DC.....	4.0 Ma.
Maximum Heater Cathode Voltage.....	±90 Volts
Maximum Diode Current for Continuous Operation.....	1.0 Ma.
Maximum Positive Grid Voltage.....	0 Volts

Direct Interelectrode Capacitances:

	Shielded*	Unshielded
Either Diode Plate to Cathode.....	1.0	1.0 μ f.
Diode Plate No. 1 to Grid.....	.01	.013 μ f.

*With a 3/4" diameter shield (RMA Std. No. 316) connected to cathode.

TYPICAL OPERATION

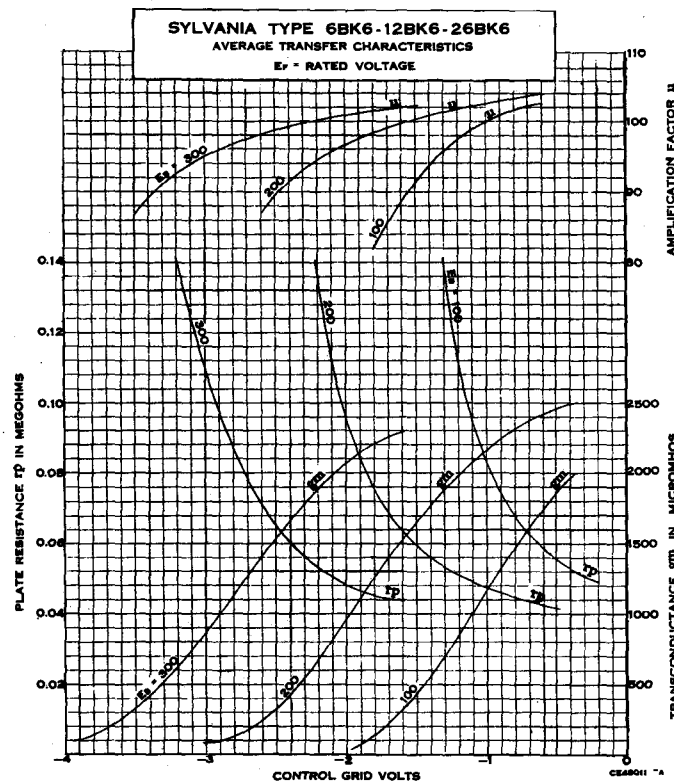
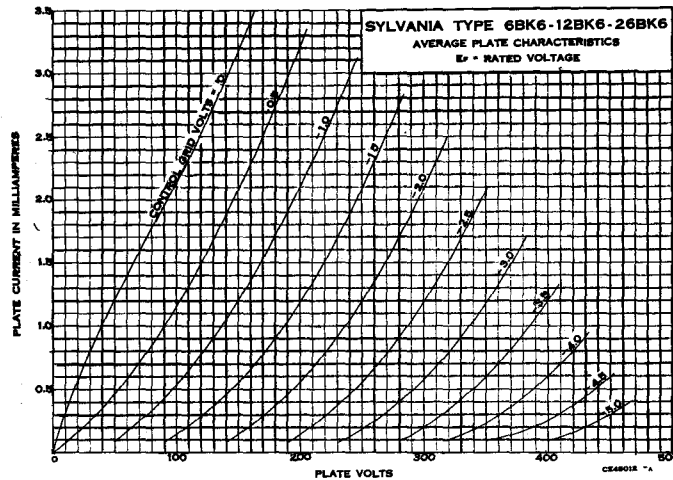
Heater Voltage (AC or DC).....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	100	250 Volts
Grid Voltage.....	-1.0	-2.0 Volts
Amplification Factor.....	100	100
Plate Resistance.....	80,000	62,500 Ohms
Mutual Conductance.....	1250	1600 μ mhos
Plate Current.....	0.5	1.2 Ma.

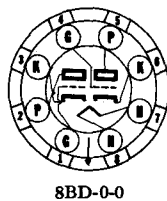
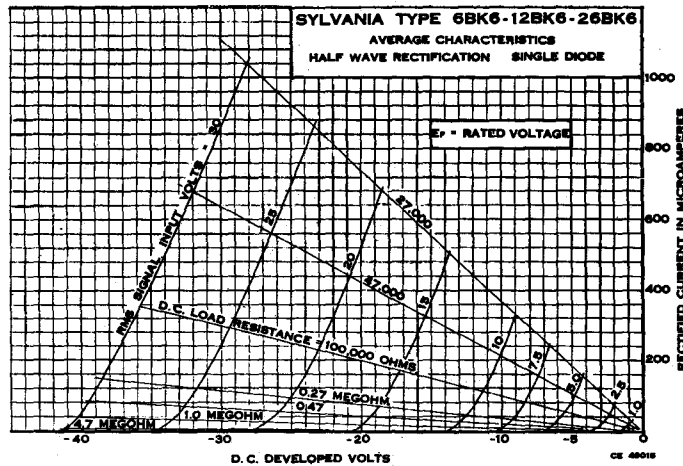
6BK6 (Cont'd)

APPLICATION

Sylvania Type 6BK6 is a miniature duo-triode high- μ triode having characteristics very similar to type 6AV6, except for the improved diode characteristics. The improved diode perveance gives better rectification efficiency at low signals and the improved diode shielding reduces undesirable audio coupling between diode and triode.

Data for use in Resistance Coupled Amplifier Circuits may be found in the appendix.





Sylvania Type 6BL7^{GT}

DUOTRIODE

PHYSICAL SPECIFICATIONS

Base	Short Intermediate Shell 8 Pin Octal
Bulb	T-9
Maximum Overall Length	3 ¹ / ₂ "
Maximum Seated Height	2 ¹ / ₄ "
Mounting Position	Any

RATINGS

Heater Voltage (AC or DC)	6.3 Volts
Heater Current	1.5 Amperes
Maximum Plate Supply Voltage	600 Volts
Maximum Plate Voltage	500 Volts
Maximum Peak Plate Voltage*	2000 Volts
Maximum Peak Negative Grid Voltage	-500 Volts
Maximum Cathode Current per Section	60 Ma.
Maximum Plate Dissipation per Section**	10 Watts
Maximum Peak Heater-Cathode Voltage	±200 Volts
Maximum Grid Circuit Resistance	4.7 Megohms

*The duration of the voltage pulse should not exceed 15 % of one vertical scanning cycle. In a 525 line, interlaced two to one, 30 frame per second television system, 15 % of one vertical scanning cycle is 2.5 milliseconds.

**Total dissipation for both sections is limited to 12 watts.

Direct Interelectrode Capacitances:

	Shielded %	Unshielded
Section 1—Grid to Plate	4.2	4.2 μ uf.
Input	5.0	4.4 μ uf.
Output	3.4	1.1 μ uf.
Section 2—Grid to Plate	4.0	4.0 μ uf.
Input	5.0	4.8 μ uf.
Output	3.2	1.2 μ uf.
Coupling—Grid to Grid	0.1	1.11 μ uf.
Plate to Plate	1.2	1.5 μ uf.

*With a 1¹/₈" diameter tube shield (RMA Std. #308) connected to cathode of section under test.

SYLVANIA RADIO TUBES

6BL7^{GT} (Cont'd)

TYPICAL OPERATION CLASS A₁ AMPLIFIER—SINGLE SECTION

Heater Voltage.....	6.3 Volts
Heater Current.....	1.5 Amperes
Plate Voltage.....	250 Volts
Grid Voltage.....	-9.0 Volts
Plate Current.....	40 Ma.
Amplification Factor.....	15
Mutual Conductance.....	7000 μ mhos
Plate Resistance.....	2150 Ohms
Grid Voltage for $I_b = 25 \mu$ a (approx.).....	-25 Volts
Grid Voltage for $I_b = 50 \mu$ a at $E_b = 600$ Volts (approx.).....	-60 Volts

AS A VERTICAL DEFLECTION AMPLIFIER SINGLE SECTION SCANNING A TYPE 16TP4 AT 14 KV.

Plate Supply Voltage.....	350 Volts
Peak Positive Plate Voltage.....	1030 Volts
Plate Voltage (Pulse Component).....	510 Volts
Plate Voltage, Peak to Peak (Sawtooth).....	340 Volts
Cathode Bias Resistor.....	2800 Ohms
Signal Voltage (Negative Peaking Component).....	20 Volts
Signal Voltage, Peak to Peak (Sawtooth).....	45 Volts
Average Plate Current.....	10.2 Ma.
Plate Current, Peak to Peak.....	40 Ma.
Plate Input.....	3.3 Watts
Plate Dissipation.....	2.2 Watts
Retrace Time.....	250 μ seconds

PARALLELED SECTIONS FOR HIGH EFFICIENCY WITH A TYPE 16TP4 AT 14 KV.

Plate Supply Voltage.....	300 Volts
Peak Positive Plate Voltage.....	1020 Volts
Plate Voltage (Pulse Component).....	540 Volts
Plate Voltage, Peak to Peak (Sawtooth).....	360 Volts
Cathode Bias Resistor.....	2600 Ohms
Signal Voltage (Negative Peaking Component).....	22 Volts
Signal Voltage, Peak to Peak (Sawtooth).....	43 Volts
Average Plate Current.....	10.2 Ma.
Plate Current, Peak to Peak.....	40 Ma.
Plate Input.....	2.8 Watts
Plate Dissipation.....	1.6 Watts
Retrace Time.....	220 μ seconds

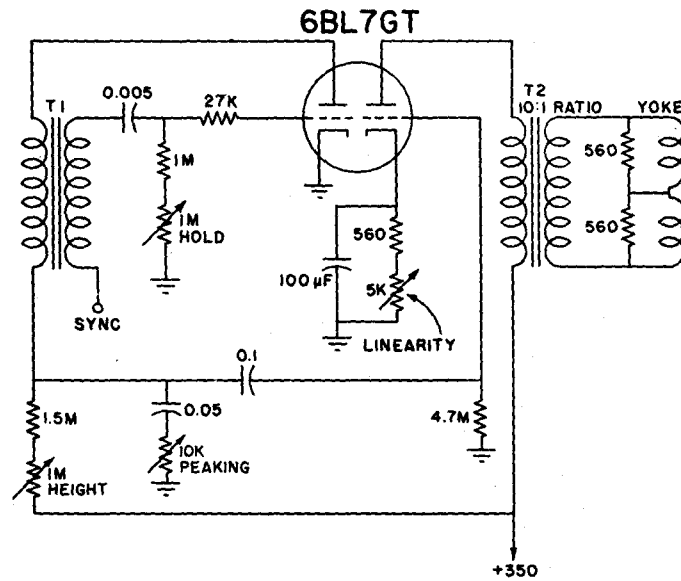
APPLICATION

Sylvania Type 6BL7GT is a high mutual conductance duotriode designed for use as a vertical deflection amplifier in television receivers. The high current available at low voltage provides the power necessary to deflect wide angle picture tubes, such as Sylvania Type 16TP4, when operated at their maximum (14 Kv.) second anode voltage. For certain applications where the plate supply voltage must be kept low and the highest efficiency obtained, the parallel connection of the two sections may be used. A separate triode will then be required for the sawtooth generator.

Circuit diagrams illustrating each use are shown on a following page together with the recommended components. Wave forms obtained at different points in the circuit are shown in Fig. 3 as obtained in the circuit of Fig. 1.

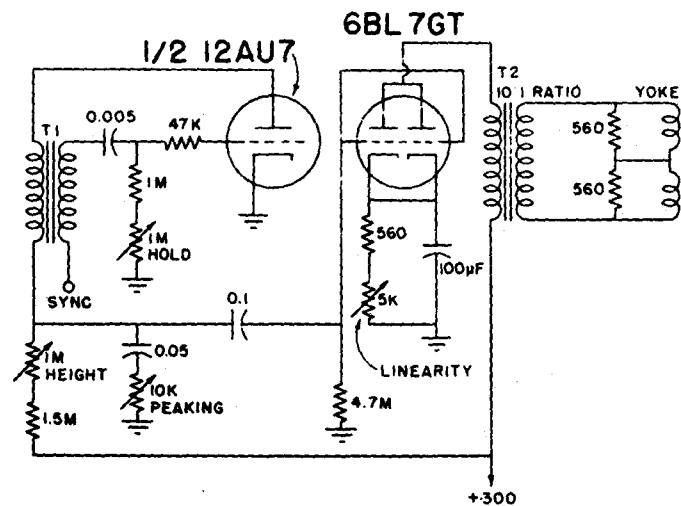
The operating efficiency of the Sylvania Type 6BL7GT is greater at low plate supply voltages for the reason that the power required for scanning is constant and the lowest plate supply voltage necessary to provide this power is, therefore, the condition of lowest power loss.

FIGURE 1



TYPICAL VERTICAL DEFLECTION CIRCUIT USING A SINGLE SECTION OF TYPE 6BL7GT IN THE OUTPUT CIRCUIT. THE SECOND SECTION IS USED FOR THE SAWTOOTH GENERATOR.

FIGURE 2



TYPICAL VERTICAL DEFLECTION CIRCUIT USING BOTH SECTIONS OF TYPE 6BL7GT IN PARALLEL IN THE OUTPUT CIRCUIT.

6BL7^{GT} (Cont'd)

The data given for higher voltages, however, are useful in showing the reserve power available for conservative design, for picture tubes requiring greater deflection power, and for flexibility in the choice of supply voltage.

The use of the boost voltage from the horizontal scanning circuit may permit the use of a lower supply voltage in the receiver.

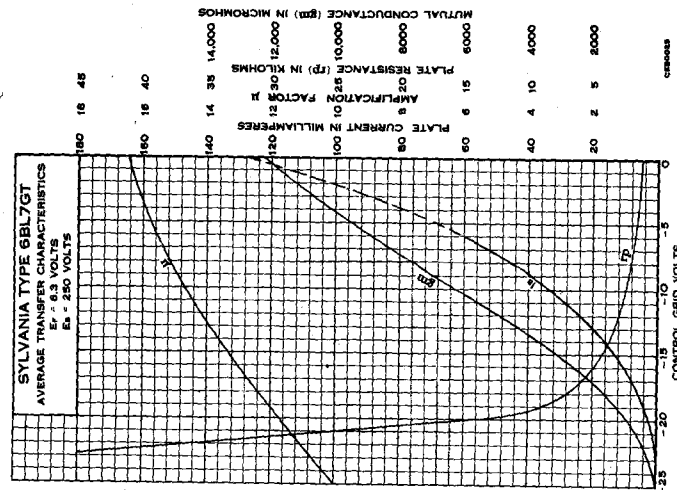
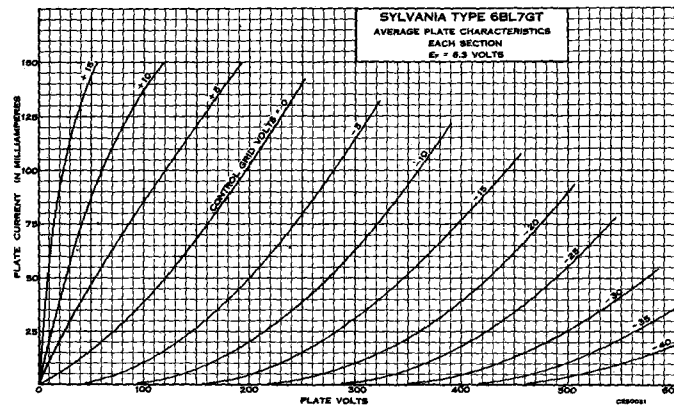
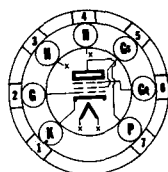


FIGURE 3





7DF-0-1



Sylvania Type 6BN6

GATED BEAM DISCRIMINATOR

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7 Pin
Bulb.....	T-5 1/2"
Maximum Overall Length.....	2 3/4"
Maximum Seated Height.....	2 3/8"
Mounting Position.....	Any

RATINGS

Heater Voltage.....	6.3 Volts
Maximum Plate Voltage.....	135 Volts
Maximum Screen Voltage.....	100 Volts
Maximum Total Cathode Current.....	10 Ma.
Maximum Peak Positive Grid Voltage.....	45 Volts

TYPICAL OPERATION

Heater Voltage.....	6.3 Volts
Heater Current.....	300 Ma.
Plate Voltage (Supply).....	80 Volts
Screen Voltage.....	60 Volts
Control Grid Voltage obtained by cathode bias resistor	
Cathode Bias Resistor*.....	200-400 Ohms
Plate Current.....	0.23 Ma.
Screen Current.....	5.0 Ma.
Plate Load Resistor.....	68000 Ohms

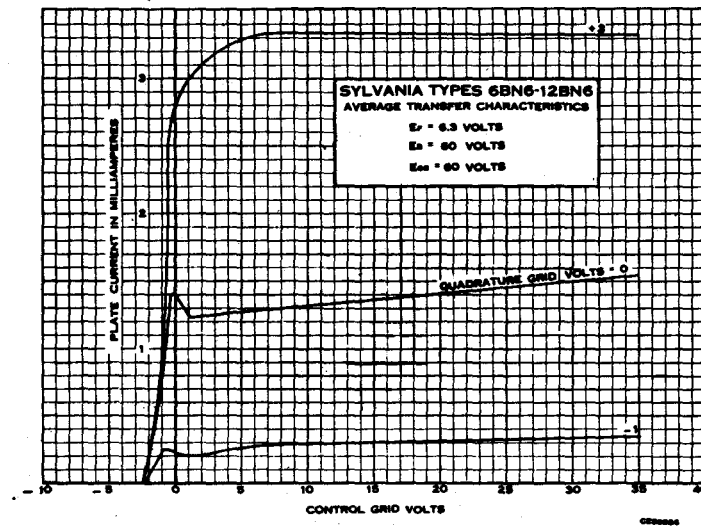
*Bias Voltage -1.3 approx. Fixed bias operation not recommended.

APPLICATION

Sylvania Type 6BN6 is a gated beam tube in miniature construction designed especially for use in FM limiter-discriminator circuits. It may also be used as a sync separator and square wave generator. Type 6BN6 represents a considerable departure from the construction and characteristics of a conventional pentode. Due to the use of a sharply focused electron beam, the first control grid has a step shaped control characteristic, the plate current rising abruptly from zero to a sharply defined maximum as the grid voltage changes from negative to positive. The second control grid has similar properties. If made strongly negative it cuts the plate current off, or over a range of potentials in the vicinity of zero it controls the height of the plate current maximum, but if made more positive it loses all control of the plate current, which cannot exceed a certain level.

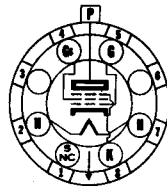
In the limiter discriminator application the first control grid is biased near the midpoint of its characteristic and passes current during the positive half cycle of signal, the peak amplitude of the current being limited to a definite value. After passing through the second accelerator the pulsed current produces a current in the second control grid by space charge coupling. If an LC circuit tuned to the signal frequency is connected to the second control grid, a voltage at signal frequency is produced which lags the signal voltage on grid 1, by about 90 degrees. The voltage on the second control grid, or quadrature grid, then controls the width of the plate current pulses to the plate, so that the average plate current is proportional to the frequency deviation of the signal, and the audio signal may be recovered from a load resistor in the plate circuit.

6BN6 (Cont'd)



Sylvania Type 6BQ6^{GT}

BEAM POWER AMPLIFIER



6AM-0-0



PHYSICAL SPECIFICATIONS

Base.....	Intermediate Octal 7 Pin
Bulb.....	T-9
Cap.....	Miniature
Maximum Overall Length.....	3 7/8"
Maximum Seated Height.....	3 5/8"
Mounting Position.....	Any

RATINGS

Heater Voltage (AC or DC).....	6.3 Volts
Maximum Plate Voltage.....	550 Volts
Maximum Peak Positive Surge Plate Voltage.....	5,000 Volts
Maximum Screen Voltage.....	200 Volts
Maximum Negative Control Grid Voltage.....	50 Volts
Maximum Peak Negative Surge Control Grid Voltage.....	100 Volts
Maximum DC Plate Current.....	100 Ma.
Maximum Screen Dissipation.....	2.5 Watts
Maximum Plate Dissipation.....	10 Watts
Maximum Control Grid Circuit Resistance.....	0.5 Megohms
Maximum Peak Heater-Cathode Voltage.....	180 Volts

Ratings are based on use in typical television service in which the duty cycle of the voltage pulse must not exceed 15% on one scanning cycle or 10 micro-seconds whichever is smaller.

Direct Interelectrode Capacitances†

Grid to Plate.....	0.95 μ l.
Input.....	14 μ l.
Output.....	9.5 μ l.

†With no external shield.

AVERAGE CHARACTERISTICS

Heater Voltage.....	6.3 Volts
Heater Current.....	1.2 Amperes
Plate Voltage.....	250 Volts
Screen Voltage.....	150 Volts
Control Grid Voltage.....	-22.5 Volts
Plate Current.....	55 Ma.
Screen Current.....	2.1 Ma.
Mutual Conductance.....	5,500 μ mhos

TYPICAL OPERATION

HORIZONTAL DEFLECTION AMPLIFIER

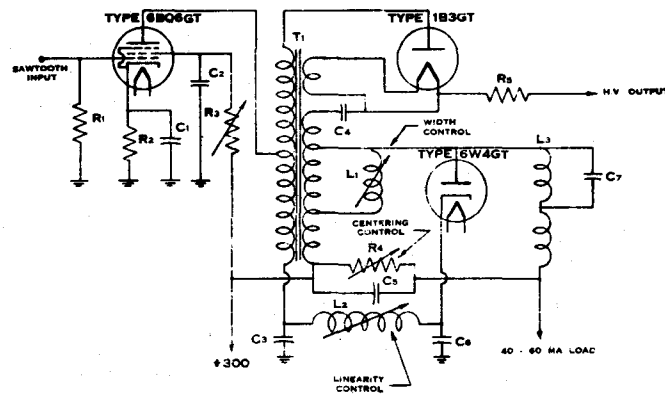
Plate and Screen Supply Voltage.....	275	300	325 Volts
Peak Positive Surge Plate Voltage.....	4000	4000	4,000 Volts
Peak Positive Grid Signal (Sawtooth).....	50	50	50 Volts
Peak Negative Grid Signal (Sawtooth).....	50	50	50 Volts
Cathode Bias Resistor.....	100	100	100 Ohms
Plate Current.....	85	85	83 Ma.
Screen Current.....	9	7	5 Ma.
Developed High Voltage.....	12.0	12.0	12.0 K Volts

APPLICATION

Sylvania Type 6BQ6^{GT} is a beam power amplifier designed for use as a driver tube in the horizontal deflection amplifier for television circuits using electro-magnetic deflection. The plate being brought out to the top cap permits the use of high surge voltages. A typical circuit is shown on the following page.

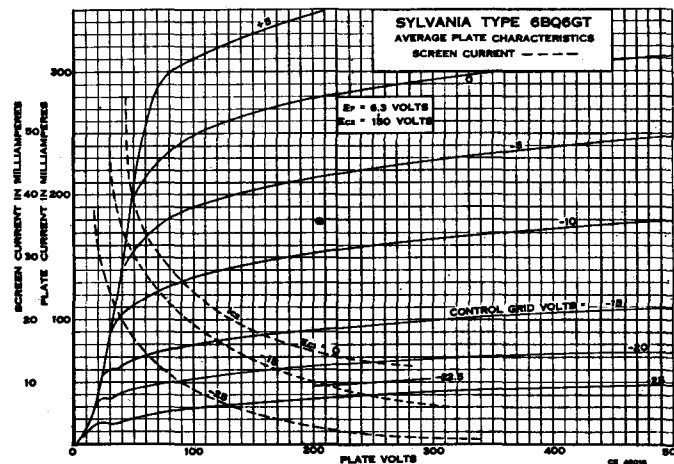
6BQ6^{GT} (Cont'd)

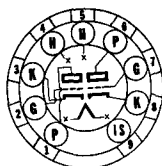
TYPICAL DEFLECTION AMPLIFIER CIRCUIT WITH "FLY BACK" TYPE HIGH VOLTAGE SUPPLY



PARTS LIST

C ₁ = 0.25 μ f.	R ₁ = .470 Megohm
C ₂ = 0.25 μ f.	R ₂ = 100 Ohms
C ₃ = 0.03 μ f.	R ₃ = 0.03 Megohm
C ₄ = 500 μ f.	R ₄ = 500 Ohms
C ₅ = 0.5 μ f.	R ₅ = .470 Megohm
C ₆ = 0.05 μ f.	
C ₇ = 56 μ f.	
T ₁ = G.E. Transformer #77J1-5 or Equivalent	
L ₁ , L ₂ = G.E. Variable Inductor #77J4 or Equivalent	
L ₃ = G.E. Yoke #77J11 or Equivalent	





9AJ-0-9



Sylvania Type 6BQ7

MEDIUM MU DUOTRIODE

PHYSICAL SPECIFICATIONS

Base	Small Button 9 Pin
Bulb	T-6 1/2"
Maximum Overall Length	2 3/8"
Maximum Seated Height	1 1/8"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Maximum Plate Voltage	250 Volts
Maximum Plate Dissipation	2 Watts
Maximum Cathode Current	20 Ma.
Maximum Peak Heater-Cathode Voltage	200 Volts

Direct Interelectrode Capacitances (Shielded):

	Section #1	Section #2
Grid to Plate	1.15	1.15 μ mf.
Input	2.55	...
Input (Grounded Grid)	...	4.75 μ mf.
Output	1.30	...
Output (Grounded Grid)	...	2.40 μ mf.

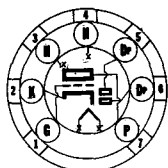
TYPICAL OPERATION

CLASS A₁ AMPLIFIER

Plate Voltage	150 Volts
Cathode Bias Resistor	220 Ohms
Plate Current	9 Ma.
Amplification Factor	35
Plate Resistance	5,800 Ohms
Mutual Conductance	6,000 μ mhos

APPLICATION

Sylvania Type 6BQ7 is a miniature type medium-mu duotriode designed for use in low-noise, vhf amplifiers.



7BT-0-2



Sylvania Type 6BU6

DUO-DIODE TRIODE

PHYSICAL SPECIFICATIONS

Base	Small Button 7 Pin
Bulb	T-5 1/2"
Maximum Overall Length	2 3/8"
Maximum Seated Height	2 3/8"
Mounting Position	Any

RATINGS

Heater Voltage	6.3 Volts
Maximum Plate Voltage	300 Volts
Maximum Positive dc Control Grid Voltage	0 Volts
Maximum Heater-Cathode Voltage	± 90 Volts
Average Diode Current per Diode at 10 Volts dc	4.0 Ma.
Average Diode Current per Plate for Continuous Operation	1.0 Ma.

Direct Interelectrode Capacitances:

	Shielded*	Unshielded
Either Diode Plate to Cathode	1.0	1.0 μ mf.
Diode Plate # 1 to Grid	.01	.013 μ mf. Max.

*With a 3/4" diameter shield (RMA Std. No. 316) connected to cathode.

(Cont'd)

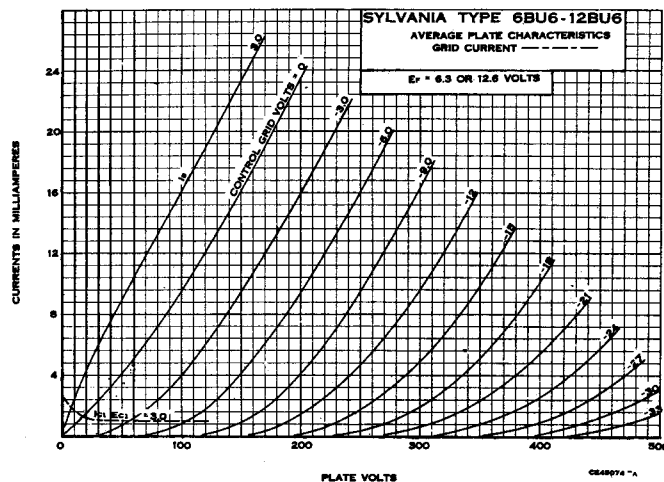
CLASS A₁ AMPLIFIER

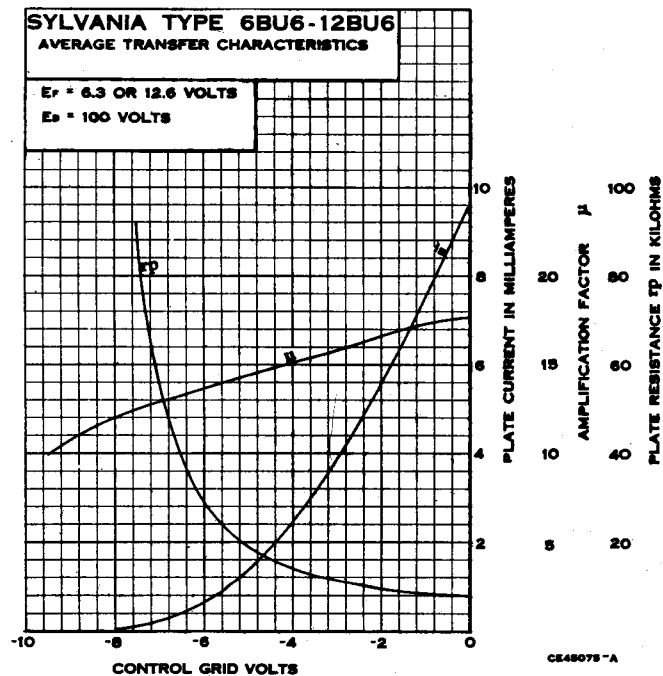
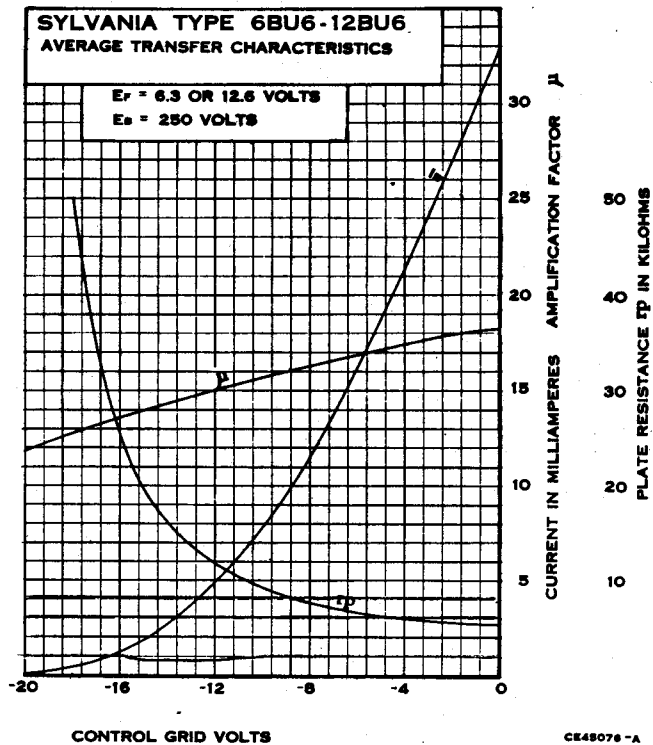
Heater Voltage (AC or DC).....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	100	250 Volts
Grid Voltage.....	-3.0	-9.0 Volts
Self Bias Resistor.....	770	950 Ohms
Plate Current.....	3.9	8.5 Ma.
Plate Resistance.....	11,000	8,500 Ohms
Mutual Conductance.....	1500	1900 μ mhos
Amplification Factor.....	16.5	16
Load Resistance.....		10,000 Ohms
Power Output.....		300 Mw.
Total Harmonic Distortion.....		6.5 %

APPLICATION

Sylvania Type 6BU6 is a miniature duo-diode triode having characteristics very similar to Type 6BF6, except for the improved diode characteristics. The improved diode perveance gives better rectification efficiency at low signals and the improved diode shielding reduces undesirable audio coupling between diode and triode.

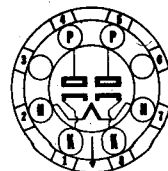
A diode load curve may be found by referring to Type 6BK6. Design data for use in resistance coupled circuits may be found in the appendix.





6BY5G Sylvania Type

FULL-WAVE RECTIFIER



6CN-0-0

PHYSICAL SPECIFICATIONS

Base.....	Medium Octal 7 Pin
Bulb.....	ST-14
Maximum Overall Length.....	4 5/8"
Maximum Seated Height.....	4 1/8"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Maximum Peak Inverse Voltage.....	1,400 Volts
Rectifier Service.....	3,000 Volts
Damper Service*.....	
Maximum Heater-Cathode Voltage.....	450 Volts
Heater Negative With Respect to Cathode.....	100 Volts
Heater Positive With Respect to Cathode.....	175 Ma.
Maximum DC Output Current.....	525 Ma.
Maximum Peak Plate Current.....	32 Volts
Tube Voltage Drop (Tube Conducting 175 Ma. Each Plate).....	

*Duration of voltage pulse not to exceed 15% of one scanning cycle. In the 525 line, 30 frame television system 15% of one scanning cycle is 10 microseconds.

TYPICAL OPERATION

FULL WAVE RECTIFIER, CONDENSER-INPUT FILTER

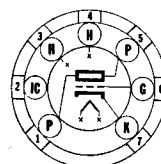
Heater Voltage.....	6.3 Volts
Heater Current.....	1.6 Amperes
AC Plate Supply Voltage (each plate) RMS.....	375 Volts
Filter Input Capacitance.....	8 μ f.
Effective Plate Supply Impedance per Plate.....	100 Ohms
DC Output Voltage.....	380 Volts
DC Output Current.....	175 Ma.

APPLICATION

Sylvania Type 6BY5G is a duodiode with separate uni-potential cathodes. It is suitable for damper-diode service in television deflection circuits or as a rectifier in conventional power supply applications.

6C4 Sylvania Type

HIGH FREQUENCY POWER TRIODE



6BG-0-0

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7 Pin
Bulb.....	T5 1/2
Maximum Overall Length.....	2 1/8"
Maximum Seated Height.....	1 1/8"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	150 Ma.
Maximum Plate Voltage.....	300 Volts
Maximum Plate Current.....	25 Ma.
Maximum Plate Dissipation.....	3.5 Watts
Maximum DC Grid Current.....	8.0 Ma.
Maximum Heater-Cathode Voltage.....	90 Volts
Direct Interelectrode Capacitances:*	
Grid to Plate.....	1.4 μ f.
Input.....	1.8 μ f.
Output.....	2.5 μ f.

*With close fitting shield connected to cathode.

SYLVANIA RADIO TUBES

TYPICAL OPERATION

Heater Voltage.....	6.3 Volts
Heater Current.....	150 Ma.

CLASS A₁ AMPLIFIER

Plate Voltage.....	100	250 Volts
Grid Voltage**.....	0	-8.5 Volts
Self-Bias Resistor.....		775 Ohms
Amplification Factor.....	19.5	17
Plate Resistance.....	6250	7700 Ohms
Mutual Conductance.....	3100	2200 μ mhms
Plate Current.....	11.8	10.5 Ma.

CLASS C POWER AMPLIFIER AND OSCILLATOR***

Plate Voltage.....	300 Volts
Grid Voltage**.....	-27 Volts
DC Plate Current.....	25 Ma.
DC Grid Current (Approximate).....	7.0 Ma.
Driving Power (Approximate).....	0.35 Watt
Power Output (Approximate).....	5.5 Watt

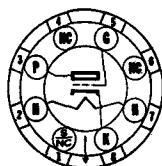
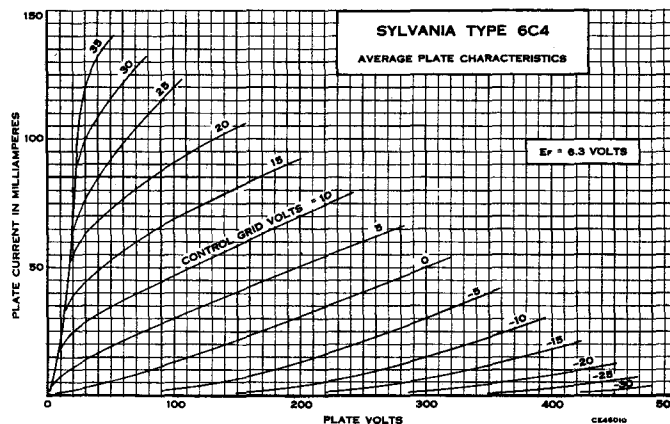
**Maximum grid circuit resistance should not exceed 0.25 megohm with fixed bias or 1.0 megohm with cathode resistor bias.

***Approximately 2.5 watts can be obtained at 150 megacycles as an oscillator with a grid resistor of 10,000 ohms and maximum rated input.

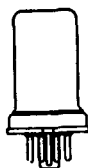
APPLICATION

Sylvania Type 6C4 is a miniature type high-frequency triode. It is intended for use at high frequencies as an oscillator or power amplifier. Good power output, at reasonable efficiencies, is obtainable from this tube at frequencies in the order of 150 megacycles.

For use in resistance coupled circuits, see data in appendix.



6Q-1-1

Sylvania Type 6C5^{GT}

MEDIUM-MU TRIODE

PHYSICAL SPECIFICATIONS

Base.....	6C5 Small Wafer Octal 6 Pin	6C5GT Small Wafer Octal 6 Pin Metal Sleeve
Bulb.....	Metal 8-3	T9
Maximum Overall Length.....	2 3/4"	3 1/4"
Maximum Seated Height.....	2 1/4"	2 3/4"
Mounting Position.....	Any	Any

6C5^{GT} (Cont'd)

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.3 Ampere
Maximum Plate Voltage.....	250 Volts
Minimum Grid Voltage.....	0 Volt
Maximum Plate Dissipation.....	2.5 Watts
Maximum Heater-Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:	6C5**	6C5GT*
Grid to Plate.....	2.0	2.2 μ uf.
Input.....	3.0	4.4 μ uf.
Output.....	11	12 μ uf.

*With 1 $\frac{1}{4}$ " diameter shield (RMA Std. 308) connected to cathode.

**With metal shell connected to cathode.

TYPICAL OPERATION

CLASS A AMPLIFIER

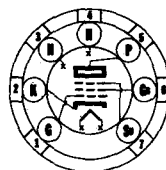
Heater Voltage.....	6.3 Volts
Heater Current.....	0.3 Amperes
Plate Voltage.....	250 Volts
Grid Voltage**.....	-8 Volts
Plate Current.....	8 Ma.
Plate Resistance.....	10000 Ohms
Mutual Conductance.....	2000 μ mbos
Amplification Factor.....	20

**The DC resistance in the grid circuit should not exceed 1.0 megohm.

For use in resistance coupled circuits see data in appendix.

6CB6 Sylvania Type

SHARP CUTOFF RF PENTODE



7CM-0-7

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7 Pin
Bulb.....	T-5 $\frac{1}{2}$
Maximum Overall Length.....	2 $\frac{1}{4}$ "
Maximum Seated Height.....	1 $\frac{1}{8}$ "
Mounting Position.....	Any

RATINGS

Heater Voltage (AC or DC).....	6.3 Volts
Maximum Plate Voltage.....	300 Volts
Maximum Screen Voltage.....	150 Volts
Maximum Heater-Cathode Voltage.....	$\pm$ 90 Volts
Maximum Plate Dissipation.....	2.0 Watts
Maximum Screen Dissipation.....	0.5 Watts

Direct Interelectrode Capacitances:*

Grid to Plate.....	0.020 μ uf. Max.
Input.....	6.3 μ uf.
Output.....	1.9 μ uf.

*With no external shield.

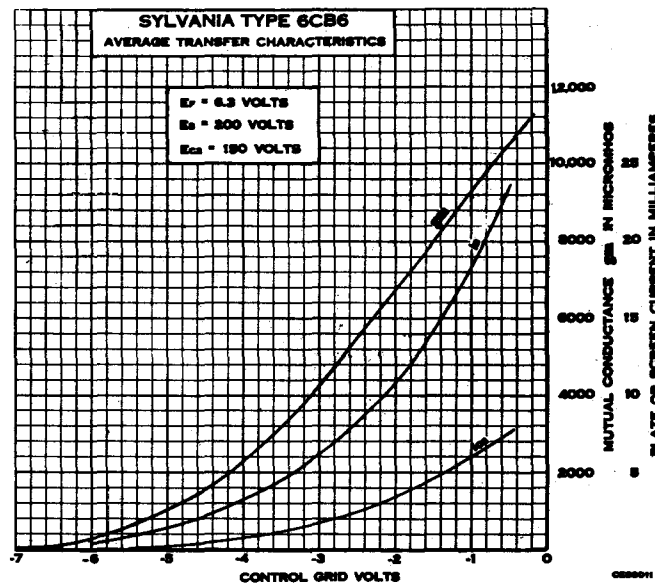
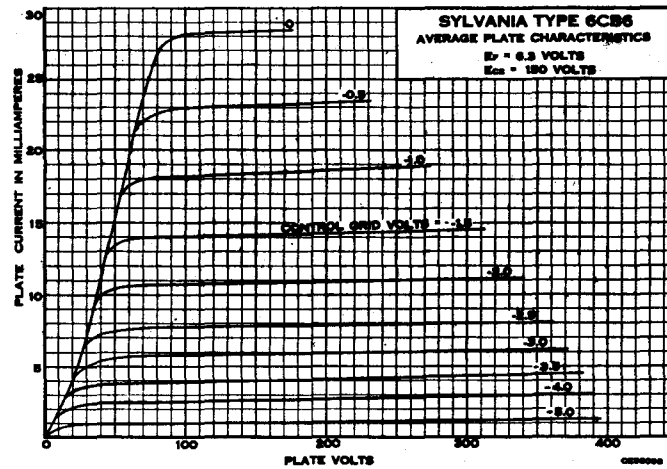
TYPICAL OPERATION

CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3 Volts
Heater Current.....	300 Ma.
Plate Voltage.....	200 Volts
Screen Voltage.....	150 Volts
Cathode Bias Resistor.....	180 Ohms
Plate Resistance (approx.).....	0.6 Megohm
Mutual Conductance.....	6200 μ mbos
Plate Current.....	9.5 Ma.
Screen Current.....	2.8 Ma.
Grid Voltage (approx.) for Ib = 10 μ amps.....	-8 Volts

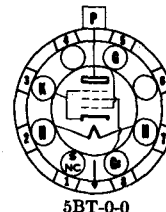
APPLICATION

Sylvania Type 6CB6 is a sharp cutoff pentode of the miniature construction designed for television use as an if amplifier operating in the vicinity of 40 megacycles. It may also be used as an rf amplifier in vhf television tuners. An added feature is the separate connection for the suppressor grid and internal shield.



6CD6G Sylvania Type

BEAM POWER AMPLIFIER
TELEVISION SCANNER



5BT-0-0

PHYSICAL SPECIFICATIONS

Base	Medium Octal 6 Pin
Bulb	ST-16
Cap.	Small
Maximum Overall Length	5-1/8"
Maximum Seated Height	5 1/8"
Mounting Position	Vertical*

*Horizontal operation permitted if pins 2 and 7 are in a vertical plane.

RATINGS

Heater Voltage (AC or DC)	6.3 Volts
Heater Current	2.5 Amperes
Maximum Plate Voltage	700 Volts
Maximum Peak Positive-Pulse Plate Voltage**	6000 Volts
Maximum Peak Negative-Pulse Plate Voltage**	-1500 Volts
Maximum Screen Voltage	175 Volts
Maximum Negative Control Grid Voltage	50 Volts
Maximum Peak Negative Pulse Control Grid Voltage	150 Volts
Maximum DC Plate Current	170 Ma.
Maximum Screen Dissipation	3 Watts
Maximum Plate Dissipation	15 Watts
Maximum Control Grid Circuit Resistance	1 Megohm
Maximum Peak Heater-Cathode Voltage	±135 Volts

**The duration of the pulse should not exceed 15% of one horizontal scanning cycle. In a 525 line, interlaced two to one, 30 frame per second television system, 15% of one horizontal scanning cycle is 10 microseconds.

Direct Interelectrode Capacitances:*

Grid to Plate	1.0 μ f. Max.
Input	2.6 μ f.
Output	10 μ f.

* With no external shield.

TYPICAL OPERATION

HORIZONTAL DEFLECTION AMPLIFIER FOR TYPE 19AP4

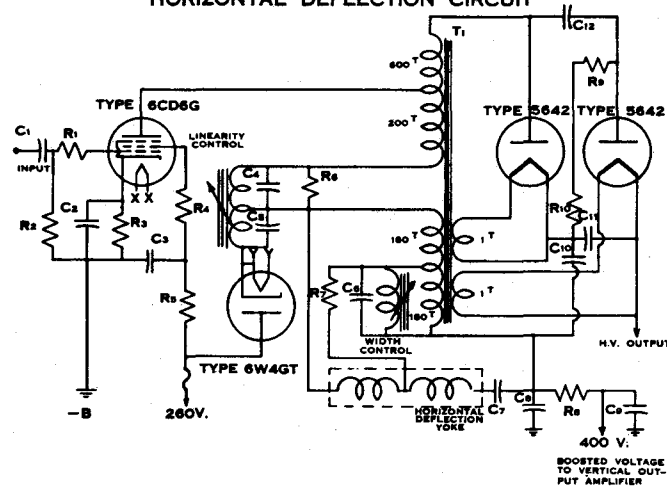
Heater Voltage	6.3 Volts
Heater Current	2.5 Amperes
Plate Voltage*	430 Volts
Screen Voltage	165 Volts
Cathode Bias Resistor	270 Ohms
Grid Signal Voltage (Peak to peak sawtooth components)	50 Volts
Grid Signal Voltage (Negative peaking component)	35 Volts
Plate Dissipation	9.6 Watts
Plate Current	112 Ma.
Screen Current	14 Ma.
Peak-Positive-Pulse Output Voltage	3400 Volts
Cathode Current (Peak to peak)	470 Ma.
High Voltage Available for Picture Tube Anode	12 Kv.

* This voltage consists of 250 volts from the DC power supply plus 180 volts boost from the damper circuit.

APPLICATION

Sylvania Type 6CD6G is a beam power tube designed for use in the horizontal output deflection circuits of television receivers. A typical circuit is shown on the following page for use with Sylvania Type 19AP4 and 250 volts supply.

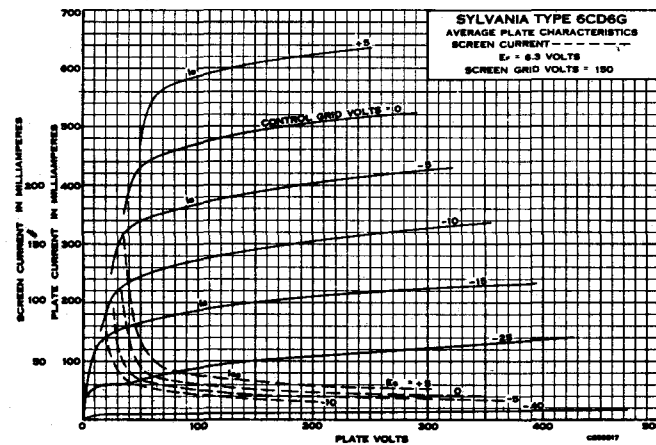
HORIZONTAL DEFLECTION CIRCUIT



PARTS LIST

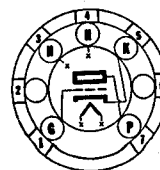
C ₁ = 0.001 μ f. 500 V.	R ₁ = 100 Ohm $\frac{1}{2}$ Watt
C ₂ = 2 μ f. 50 V.	R ₂ = 470 K $\frac{1}{2}$ Watt
C ₃ = 0.05 μ f. 400 V.	R ₃ = 270 Ohm 5 Watt
C ₄ = 0.03 μ f. 600 V.	R ₄ = 100 Ohm $\frac{1}{2}$ Watt
C ₅ = 0.1 μ f. 600 V.	R ₅ = 6.8 K 2 Watt
C ₆ = 1200 μ f. 1000 V.	R ₆ = 1 K 1 Watt
C ₇ = 0.22 μ f. 200 V.	R ₇ = 1 K $\frac{1}{2}$ Watt
C ₈ = 10 μ f. 450 V.	R ₈ = 1 K $\frac{1}{2}$ Watt
C ₉ = 10 μ f. 450 V.	R ₉ = 1.5 Meg. 2 Watt
C ₁₀ = 500 μ f. 10 Kv.	R ₁₀ = 1.5 Meg. 2 Watt
C ₁₁ = 500 μ f. 10 Kv.	
C ₁₂ = 500 μ f. 10 Kv.	

T₁ = Horizontal Output and H. V. Transformer
 L₁ = Deflection Yoke 14 mh



6D4 Sylvania Type

GAS TRIODE



5AY-0-0

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7 Pin
Bulb.....	T5 1/2
Maximum Overall Length.....	2 1/8"
Maximum Seated Height.....	1 1/8"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	250 Ma.
Minimum Heating Time*.....	30 Seconds
Maximum Voltage Between Elements.....	450 Volts
Peak Cathode Current.....	100 Ma.
Average Cathode Current (30 seconds maximum).....	25 Ma.
Tube Voltage Drop at 25 Ma. (Approximate).....	16 Volts
Maximum Heater-Cathode Voltages.....	-100 Volts +25 Volts

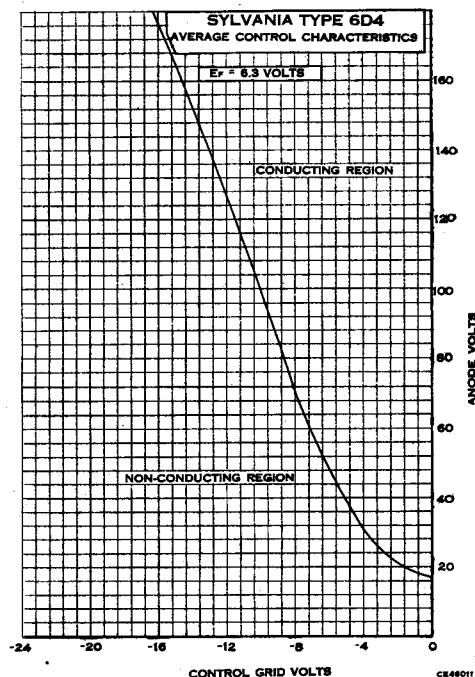
*Heater voltage must be applied before application of anode voltage so that the cathode reaches operating temperature.

TYPICAL OPERATION

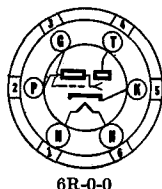
Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.25	250 Ma.
Anode Voltage.....	50	125 Volts
Approximate Grid Voltage to Start Conduction.....	-6.0	-12.0 Volts

APPLICATION

Sylvania Type 6D4 is a gas triode of miniature construction. It may be used as a relay control tube or as a relaxation oscillator. The miniature construction lends itself readily to use in compact light weight equipment.



SYLVANIA RADIO TUBES



Sylvania Type 6E5

ELECTRON RAY INDICATOR TUBE

PHYSICAL SPECIFICATIONS

Base.....	Small 6 Pin
Bulb.....	T9
Maximum Overall Length.....	4 1/4"
Maximum Seated Height.....	3 1/4"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.3 Ampere
Maximum Plate Supply Voltage.....	250 Volts
Maximum Target Voltage.....	250 Volts
Minimum Target Voltage.....	100 Volts
Maximum Heater-Cathode Voltage.....	90 Volts

TYPICAL OPERATION

Heater Voltage.....	6.3	6.3	6.3 Volts
Plate Supply Voltage.....	100	200	250 Volts
Target Supply Voltage.....	100	200	250 Volts
Plate Current (Triode Unit)*.....	0.19	0.19	0.24 Ma.
Target Current (Approximate)*.....	1.0	3.0	4.0 Ma.
Grid Voltage (Triode Unit) † Approximate.....	0.0	0.0	0.0 Volt
Grid Voltage (Triode Unit) ‡ Approximate.....	-3.3	-6.5	-8.0 Volts
Triode Plate Resistor.....	0.5	1.0	1.0 Megohm

*With triode grid voltage of zero volts.

†For shadow angle of 90 degrees.

‡For shadow angle of zero degrees.

APPLICATION

Sylvania Type 6E5 consists of a triode, which functions as a d-c amplifier, and an electron ray device. This latter consists of a portion of the heated cathode as a source of the electrons which are attracted to the target by the positive potential on it. The shaded or unlighted sector is produced by the shadow of a control electrode which is attached to the plate of the triode.

This tube is designed primarily for use as a visible tuning indicator of the electron ray type. It contains a round conical plate or "Target" which fluoresces during operation, and is viewed through the top of the bulb. The visible indication is in the form of a fluorescent lighted sector covering about three-quarters of the area of the target when no voltage is applied to the control grid of the tube. When a negative voltage is applied to the control grid, the edges of the lighted portion close in over the previously unlighted or shaded 90° sector with a fan-like movement until the voltage is increased to a value such that the shaded portion is eliminated and the entire top surface of the target becomes uniformly illuminated.

If the control grid is made negative, the plate and therefore the electron ray-control electrode become more positive with respect to the cathode due to decreasing the voltage drop in the resistor which is connected externally between the target and the plate. As this control element becomes more positive its shadow on the target is reduced and the edges of the lighted portion close in as mentioned above.

In actual circuit use the varying negative voltage for controlling the shadow may be obtained from some point in the a-v-c circuit, thus giving an indication of resonance when the unlighted portion of the target is at minimum.

The principal difference between Type 6E5 and Type 6U5/6G5 is in the plate current cut-off characteristics, which are -8 volts and -22 volts respectively. Where difficulty is experienced due to complete closing of the shadow of the 6E5 it is recommended that the 6U5/6G5 be used. If no difficulty exists due to closing of the shadow from only a portion of the a-v-c voltage being used, increased indications on weak signals may be obtained by using a Type 6U5/6G5 and applying the total a-v-c voltage. Type 6U5/6G5 may be used to replace the 6E5 in nearly all present applications, and in general no circuit changes will be necessary.

6F5^{GT} Sylvania Type

HIGH-MU TRIODE



5M-1-0 (6F5)
5M-0-0 (6F5GT)

PHYSICAL SPECIFICATIONS

	6F5	6F5GT
Base.....	Small Wafer Octal 7 Pin	Intermediate Octal 7 Pin
Bulb.....	8-4	T-9
Cap.....	Miniature	Miniature
Maximum Overall Length.....	3 1/4"	3 3/4"
Maximum Seated Height.....	2 3/4"	2 3/4"
Mounting Position.....	Any	Any

TYPICAL OPERATION

CLASS A AMPLIFIER

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	100	250 Volts Max.
Grid Voltage*.....	-1	-2 Volts
Plate Current*.....	0.4	0.9 Ma.
Plate Resistance.....	85000	66000 Ohms
Mutual Conductance.....	1150	1500 μ hos
Amplification Factor.....	100	100
Heater-Cathode Voltage.....	90	90 Volts Max.

*These are rating values only and not operating points with coupling resistor.

For resistance coupled circuits use data given for type 7B4.

6F6^{GT} Sylvania Type

POWER AMPLIFIER PENTODES



7S-1-0 (6F6)
7S-0-0 (6F6GT)

PHYSICAL SPECIFICATIONS

	6F6	6F6G	6F6GT
Base.....	Small Wafer	Medium	Intermediate
	Octal 7 Pin	Octal 7 Pin	Octal 7 Pin
Bulb.....	8-6	ST14	T9
Maximum Overall Length.....	3 1/4"	4 3/8"	3 3/4"
Maximum Seated Height.....	2 11/16"	4 1/8"	2 3/4"
Mounting Position.....	Any	Any	Any

TYPICAL OPERATION

SINGLE TUBE—CLASS A₁ AMPLIFIER

	Pentode	Triode*
Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.7	0.7 Amperes
Plate Voltage.....	250	250 Volts
Screen Voltage.....	250	250 Volts
Grid Voltage.....	-16.5	-20 Volts
Peak A-F Signal Voltage.....	16.5	20 Volts
Plate Current (Zero Signal).....	34	31 Ma.
Plate Current (Maximum Signal).....	36	34 Ma.
Screen Current (Zero Signal).....	6.5	7 Ma.
Screen Current (Maximum Signal).....	10.5	13 Ma.
Plate Resistance (Approximate).....	80000	78000
Mutual Conductance.....	2500	2550
Amplification Factor.....	7000	7000
Load Resistance.....	7000	4000 Ohms
Power Output.....	3.2	4.8
Total Harmonic Distortion.....	8	9
Maximum Heater-Cathode Voltage.....	90	90 Volts

PUSH-PULL AMPLIFIER

	Class A ₁ Pentode	Class AB ₂ Pentode	Triode*
Heater Voltage.....	6.3	6.3	6.3 Volts
Heater Current.....	0.7	0.7	0.7 Amperes
Plate Voltage.....	315	375	350 Volts
Screen Voltage.....	285	250	... Volts
Grid Voltage.....	-24	-26	-38 Volts
Peak A-F Grid to Grid Voltage.....	48	82	123 Volts
Plate Current (Zero Signal).....	62	34	48 Ma.
Plate Current (Maximum Signal).....	80	82	92 Ma.
Screen Current (Zero Signal).....	12	5	... Ma.
Screen Current (Maximum Signal).....	19.5	19.5	... Ma.
Load Resistance (Plate to Plate).....	10000	10000	6000 Ohms
Power Output.....	11	18.5	13 Watts
Total Harmonic Distortion.....	4	3.5	2 Per Cent
Maximum Heater-Cathode Voltage.....	90	90	90 Volts

*With screen grid tied to plate.

APPLICATION

For single tube Class A amplifier service either transformer or impedance input-coupling devices are recommended. The 6F6 and 6F6G may also be resistance coupled from either the detector tube or the first audio stage if diode detection is used. If resistance coupling is employed the grid resistor must not exceed 500,000 ohms. This value can be utilized only when the output tube is operated entirely self-biased. When used with a fixed bias, or partially so, the resistor should not exceed 250,000 ohms.



7S-0-0

**Sylvania Type 6G6G****POWER AMPLIFIER PENTODE****PHYSICAL SPECIFICATIONS**

Base.....	Small Octal 7 Pin
Bulb.....	ST12
Maximum Overall Length.....	4 1/4"
Maximum Seated Height.....	3 3/4"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.150 Ampere
Maximum Plate Voltage.....	180 Volts
Maximum Screen Voltage.....	180 Volts
Maximum Plate Dissipation.....	2.75 Watts
Maximum Screen Dissipation.....	0.75 Watt
Maximum Heater-Cathode Voltage.....	90 Volts

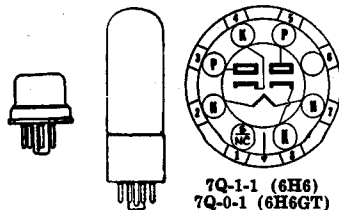
TYPICAL OPERATION**CLASS A₁ AMPLIFIER**

	Triode*	Pentode
Heater Voltage.....	6.3	6.3
Heater Current.....	0.15	0.15
Plate Voltage.....	180	135
Screen Voltage.....	135	135
Grid Voltage.....	-12	-6
Peak A-F Signal Voltage.....	12	6
Plate Current (Zero Signal).....	11	11.5
Screen Current (Zero Signal).....	2.0	2.5
Plate Resistance.....	4750	170000
Mutual Conductance.....	2000	2100
Amplification Factor.....	9.5	360
Load Resistance.....	12000	12000
Power Output.....	0.25	0.6
Total Harmonic Distortion.....	5	7.5

*With screen grid tied to plate.

6H6^{GT} Sylvania Type

DUODIODES



7Q-1-1 (6H6)
7Q-0-1 (6H6GT)

PHYSICAL SPECIFICATIONS

	6H6	6H6GT
Base.....	Small Wafer Octal 7 Pin	Intermediate Octal 7 Pin
Bulb.....	Metal 8-5	T9
Maximum Overall Length.....	1 3/4"	3 3/4"
Maximum Seated Height.....	1 3/4"	2 3/4"
Mounting Position.....	Any	Any
Direct Interelectrode Capacitances:*		
Plate No. 1 to Cathode.....	3.0	3.1 μ uf.
Plate No. 2 to Cathode.....	3.4	4.0 μ uf.
Coupling—Plate No. 1 to Plate No. 2.....	0.1	0.1 μ uf. Max.

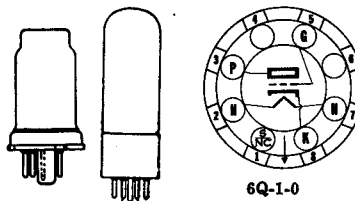
*With close-fitting tube shield on Type 6H6GT or shell of 6H6 connected to cathode.

TYPICAL OPERATION

Heater Voltage.....	6.3 Volts
Heater Current.....	0.30 Ampere
AC Voltage Per Plate (RMS).....	150 Volts Max.
DC Output Current.....	8 Ma. Max.

6J5^{GT} Sylvania Type

MEDIUM-MU TRIODES



6Q-1-0

PHYSICAL SPECIFICATIONS

	6J5	6J5GT
Base.....	Small Wafer Octal 6 Pin	Small Wafer Metal Sleeve Octal 6 Pin
Bulb.....	Metal 8-3	T9
Maximum Overall Length.....	2 3/4"	3 3/4"
Maximum Seated Height.....	2 3/4"	2 3/4"
Mounting Position.....	Any	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	300 Ma.
Maximum Plate Voltage.....	300 Volts
Minimum Grid Voltage.....	0 Volt
Maximum Plate Dissipation.....	2.5 Watts
Maximum Heater Cathode Voltage.....	90 Volts.
Direct Interelectrode Capacitances:*	
	6J5 6J5GT
Grid to Plate.....	3.4 3.8 μ uf.
Input.....	3.4 4.2 μ uf.
Output.....	3.6 5.0 μ uf.

*With standard RMA tube shield for Type 6J5GT or shell of 6J5 connected to cathode.

*With standard RMA tube shield for Type 6J5GT or shell of 6J5 connected to cathode.

TYPICAL OPERATION

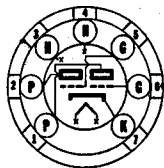
CLASS A AMPLIFIER

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	90	250 Volts
Grid Voltage**.....	0	-8 Volts
Plate Current.....	10.0	9.0 Ma.
Plate Resistance (Approximate).....	6700	7700 Ohms
Mutual Conductance (Approximate).....	3000	2600 μ mhos
Amplification Factor.....	20	20

**The DC Resistance in the Grid Circuit should not exceed 1.0 Megohm.

APPLICATION

In general the applications and operating conditions of these types will parallel those for Lock-In Type 7A4.



7BF-0-0



Sylvania Type 6J6

DUO TRIODE

PHYSICAL SPECIFICATIONS

Base.....	Miniature Button 7 Pin
Bulb.....	T5½
Maximum Overall Length.....	2½"
Maximum Seated Height.....	1¾"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.45 Ampere
Maximum Plate Voltage.....	300 Volts
Maximum Grid Voltage.....	-40 Volts
Maximum Plate Current (Per Plate).....	15 Ma.
Maximum Grid Current (Per Unit).....	8.0 Ma.
Maximum Plate Dissipation (Per Unit).....	1.5 Watts
Maximum Heater-Cathode Voltage.....	100 Volts
Direct Interelectrode Capacitances: Without Shield (Approx. each Unit)	
Grid to Plate.....	1.6 μ f.
Input.....	2.2 μ f.
Output.....	0.4 μ f.

TYPICAL OPERATION CLASS A₁ AMPLIFIER

(Per Section except as noted)

Plate Voltage.....	100 Volts
Self-Bias Resistor*.....	50 Ohms
Amplification Factor.....	38
Plate Resistance.....	7100 Ohms
Mutual Conductance.....	5300 μ mhos
Plate Current.....	8.5 Ma.

*Value is for both units operating as specified. Under rated maximum conditions total grid circuit resistance should not exceed 0.5 megohm. Fixed bias operation is not recommended.

CLASS C OSCILLATOR OR RF AMPLIFIER (Push-Pull)

Plate Voltage.....	150 Volts
Grid Voltage†.....	-10 Volts
Plate Current.....	30 Ma.
Grid Current (Approximate).....	16 Ma.
Driving Power (Approximate).....	0.35 Watt
Power Output (Approximate).....	3.5 Watts

†Obtained by grid resistor of 625 ohms or cathode resistor of 220 ohms.

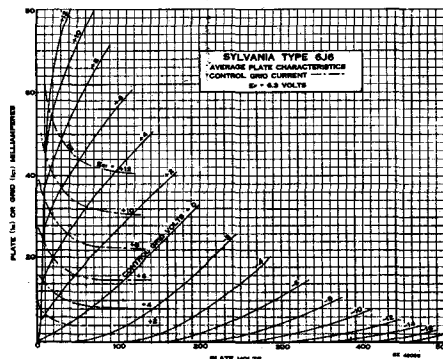
MIXER

Plate Voltage.....	150 Volts
Cathode-Bias Resistor*.....	820 Ohms
Oscillator Peak Voltage.....	3 Volts
Plate Resistance.....	10,200 Ohms
Conversion Transconductance.....	1900 μ mhos
Plate Current.....	4.8 Ma.

*Under rated maximum conditions total grid circuit resistance should not exceed 0.5 megohm. Fixed bias operation is not recommended.

APPLICATION

Sylvania Type 6J6 is intended as a high frequency oscillator, amplifier or mixer. Power outputs in the order of 3.5 watts are obtainable as a class C amplifier at moderate frequencies. With grids in push-pull and plates in parallel this tube will operate as a mixer at frequencies as high as 600 megacycles.



6J7^{GT} Sylvania Type

SHARP CUT-OFF RF PENTODES



7R-1-1 (6J7, GT)
7R-0-1 (6J7G)

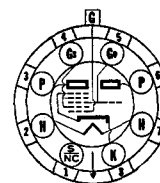
TYPICAL OPERATION

	Triode		Pentode	
Heater Voltage	6.3	6.3	6.3	6.3 Volts
Heater Current	0.3	0.3	0.3	0.3 Ampere
Plate Voltage	180	250	100	250 Volts
Grid Voltage*	-5.3	-8	-3	-3 Volts
Screen Voltage	Tie to Plate		100	100 Volts
Suppressor	Tie to Plate		Tie to Cathode	
Plate Current	5.3	6.5	2.0	2.0 Ma.
Screen Current	...		0.5	0.5 Ma.
Plate Resistance	0.011	0.01	1.0	>1.0 Megohms
Mutual Conductance	1800	1900	1185	1225 μ mhos
Amplification Factor	20	20	...	...
Grid Voltage for Current Cut-Off	...		-7	-7 Volts

*The d-c resistance in grid circuit should not exceed 1.0 megohm.

6J8G Sylvania Type

TRIODE HEPTODE CONVERTER



8H-0-8

PHYSICAL SPECIFICATIONS

Base	Small Octal 8 Pin
Bulb	ST-12
Cap.	Miniature
Maximum Overall Length	4 $\frac{15}{16}$ "
Maximum Seated Height	3 $\frac{3}{4}$ "
Mounting Position	Any

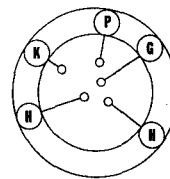
RATINGS

Heater Voltage	6.3 Volts
Heater Current	0.30 Ampere

The other characteristics of this tube have been substantially duplicated in Lock-In type 7J7 and further information may be obtained by reference to this type.

6K4 Sylvania Type

HIGH FREQUENCY TRIODE



6K4

PHYSICAL SPECIFICATIONS

Base	Flexible Leads
Bulb	T-3
Maximum Bulb Length	1 $\frac{1}{2}$ "
Minimum Lead Length	1 $\frac{1}{4}$ "
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Maximum Plate Voltage	250 Volts
Maximum Heater to Cathode Voltage	90 Volts
Maximum Plate Dissipation (open air)	3.0 Watts
Maximum Cathode Current	20.0 Ma.

Direct Interelectrode Capacitances:

	Shielded*	Unshielded
Grid to Plate.....	2.4	2.4 $\mu\text{f.}$
Input.....	2.4	2.4 $\mu\text{f.}$
Output.....	3.8	0.8 $\mu\text{f.}$

*With a .405" diameter shield connected to cathode.

TYPICAL OPERATION

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	150	150 Ma.
Plate Voltage.....	100	200 Volts
Grid Voltage* Obtained from Self Bias Resistor of.....	150	680 Ohms
Plate Current.....	13.0	11.5 Ma.
Transconductance.....	5500	3450 μmhos
Amplification Factor.....	20	16
Plate Resistance.....	3640	4650 Ohms
Grid Voltage for Plate Current Cut-Off to 10 $\mu\text{a.}$	-14	30 Volts

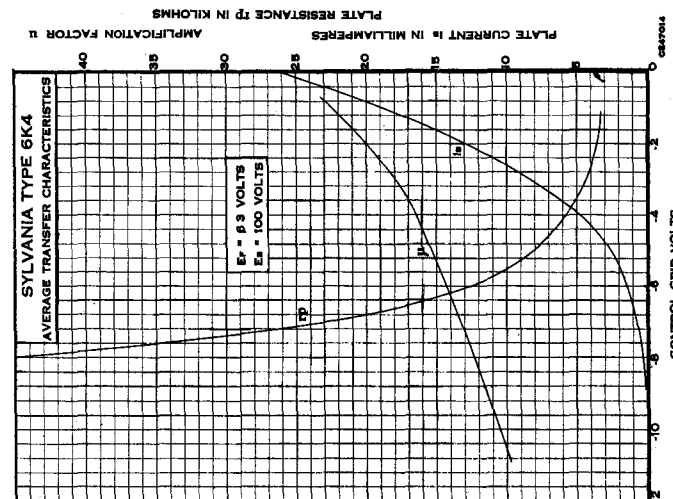
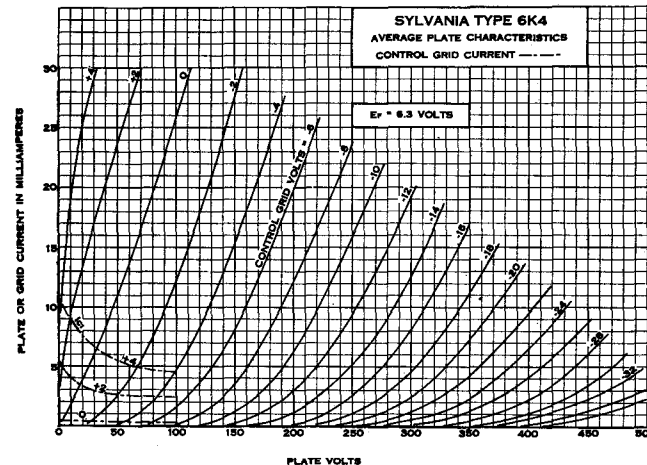
*Provides an operating bias of approximately 2.0 and 8.0 volts respectively.
Maximum grid circuit resistance should not exceed $\frac{1}{2}$ megohm. Fixed bias operation is not recommended.

APPLICATION

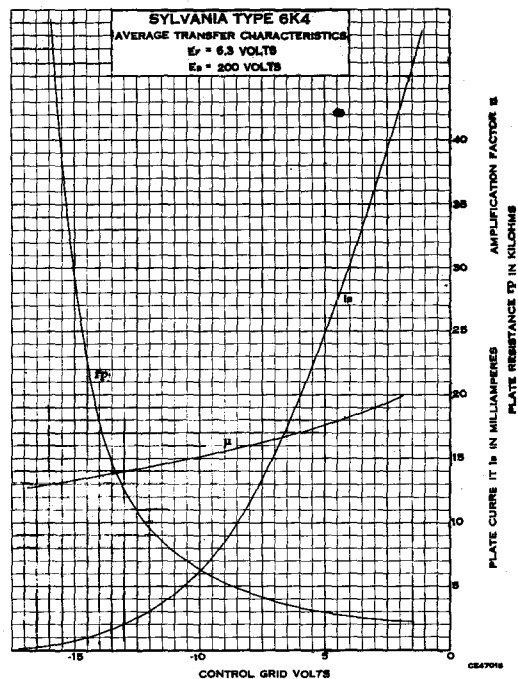
Sylvania Type 6K4 is designed for use in high frequency applications requiring a very small, light-weight tube, highly resistant to shock and vibration.

At frequencies of around 500 Mc., an output of approximately $\frac{1}{4}$ Watt may be obtained when used in a suitable circuit.

Data for use as a resistance coupled amplifier may be found in the appendix.

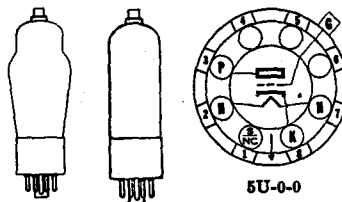


6K4 (Cont'd)



6K5^{GT} Sylvania Type

HIGH-MU TRIODE



PHYSICAL SPECIFICATIONS

Base.....	Small Octal 7 Pin
Bulb.....	T9 or ST12
Cap.....	Miniature
Maximum Overall Length.....	4 1/2"
Maximum Seated Height.....	3 1/2"
Mounting Position.....	Any
Direct Interelectrode Capacitances:*	
Grid to Plate.....	2.0 μ f.
Input.....	2.4 μ f.
Output.....	3.6 μ f.
*No external shield.	

TYPICAL OPERATION CLASS A AMPLIFIER

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.3	0.3 Ampere
Plate Voltage.....	250	250 Volts
Grid Voltage*.....	-1.5	-3 Volts
Plate Current*.....	0.35	1.1 Ma.
Plate Resistance (Approximate).....	78000	50000 Ohms
*Mutual Conductance (Approximate).....	900	1400 μ hos
Amplification Factor.....	70	70
Maximum Heater-Cathode Voltage.....	90	90 Volts

*These are rating values only and not operating points with coupling resistor.

Data for use in Resistance Coupled Amplifier Circuits may be found in the appendix under Type 6Q7GT.



Sylvania Type 6K6GT

POWER OUTPUT PENTODE

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 7 Pin
Bulb	T9
Maximum Overall Length	3 $\frac{3}{4}$ "
Maximum Seated Height	2 $\frac{3}{4}$ "
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	0.4 Ampere
Maximum Plate Voltage	315 Volts
Maximum Screen Voltage	285 Volts
Maximum Plate Dissipation	8.5 Watts
Maximum Screen Dissipation	2.8 Watts
Maximum Heater-Cathode Voltage	90 Volts

TYPICAL OPERATION

Heater Voltage	6.3	6.3	6.3 Volts
Heater Current	0.4	0.4	0.4 Ampere
Plate Voltage	100	250	315 Volts
Grid Voltage	-7	-18	-21 Volts
Screen Voltage	100	250	250 Volts
Plate Current (Zero Signal)	9.0	32.0	25.5 Ma.
Plate Current (Maximum Signal)	9.5	33.0	28.0 Ma.
Screen Current (Zero Signal)	1.6	5.5	4.0 Ma.
Screen Current (Maximum Signal)	3.0	10.0	9.0 Ma.
Plate Resistance	104000	68000	75000 Ohms
Mutual Conductance	1500	2300	2100 μ mhos
Peak Signal Voltage (a-f)	7	18	21 Volts
Load Resistance	12000	7600	9000 Ohms
Power Output	0.35	3.4	4.5 Watts
Total Harmonic Distortion	11	11	15 Percent

APPLICATION

Sylvania 6K6GT is an efficient power amplifier pentode of the indirectly heated cathode type. This tube is the "G" type equivalent of Type 41. It has a 6.3 volt heater and is adaptable to a-c, and automobile service.

Type 6K6GT may be used either singly or in push-pull combination. If a single tube is employed in the output stage, using self-bias, the self-biasing resistor should be properly bypassed. For the push-pull arrangement the value of this resistor is one-half that required for a single tube.

Transformer or impedance coupling devices are to be recommended. If it is desired to use resistance coupling, the grid resistor (with self-bias) should be limited to 1.0 megohm provided the heater voltage never exceeds about 7 volts. With fixed bias the maximum allowable resistance for the grid resistor is 0.1 megohm.

The recommended load resistance should be used if possible in order to keep the second harmonic at a minimum. If, however, two tubes are used in push-pull Class A, somewhat lower third harmonic in the output may be obtained by employing a lower load for both tubes than normal since the second harmonics will cancel with the push-pull arrangement.

For curve data reference should be made to type 7B5.

6K7^{GT} Sylvania Type

REMOTE CUT-OFF RF PENTODES



7R-1-0 (6K7)
7R-0-8 (6K7G)
7R-1-8 (6K7GT)

PHYSICAL SPECIFICATIONS

	6K7	6K7G	6K7GT
Base.....	Small Wafer Octal 7 Pin	Small Octal 7 Pin	Small Wafer Metal Sleeve Octal 7 Pin
Bulb.....	Metal 8-4	ST12	T9
Cap.....	Miniature	Miniature	Miniature
Maximum Overall Length.....	3 1/4"	4 13/16"	3 5/8"
Maximum Seated Height.....	2 5/8"	3 3/8"	2 3/4"
Mounting Position.....	Any	Any	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.3 Ampere
Maximum Plate Voltage.....	300 Volts
Maximum Screen Supply Voltage.....	300 Volts
Maximum Screen Voltage.....	125 Volts
Maximum Plate Dissipation.....	2.75 Watts
Maximum Screen Dissipation.....	.35 Watts
Minimum External Grid Bias.....	0 Volt
Maximum Heater-Cathode Voltage.....	90 Volts
Direct Interelectrode Capacitances:*	
Grid to Plate.....	.005 .007 .005 μ mf. Max.
Input G1 to (F + K + G2 + G3).....	7 5 4.6 μ mf.
Output P to (F + K + G2 + G3).....	12 12 12 μ mf.

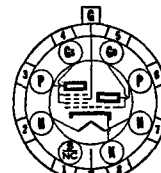
*With standard RMA tube shield on Type 6K7G and 6K7GT or shell of 6K7 connected to cathode.

TYPICAL OPERATION CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3	6.3	6.3 Volts
Heater Current.....	300	300	300 Ma.
Plate Voltage.....	100	250	250 Volts
Screen Voltage.....	100	100	125 Volts
Grid Voltage.....	-1.0	-3	-3 Volts
Suppressor.....			Tie to Cathode
Plate Current.....	9.5	7.0	10.5 Ma.
Screen Current.....	2.7	1.7	2.6 Ma.
Plate Resistance (Approx.).....	.15	0.8	0.6 Megohm
Mutual Conductance.....	1650	1450	1650 μ mhos
Grid Bias for Mutual Conductance=			
2 μ mhos.....	-38.5	-42.5	-52.5 Volts

6K8^{GT} Sylvania Type

TRIODE HEXODE CONVERTERS



8K-1-0 (6K8)
8K-0-8 (6K8G)
8K-1-8 (6K8GT)

PHYSICAL SPECIFICATIONS

	6K8	6K8G	6K8GT
Base.....	Small Wafer Octal 8 Pin	Small Octal 8 Pin	Small Wafer Metal Sleeve Octal 8 Pin
Bulb.....	Metal 8-2	ST12	T9
Cap.....	Miniature	Miniature	Miniature
Maximum Overall Length.....	3 1/4"	4 13/16"	3 5/8"
Maximum Seated Height.....	2 5/8"	3 3/8"	3"
Mounting Position.....	Any	Any	Any

RATINGS

Heater Voltage.....	6.3 Volts
Heater Current.....	0.3 Ampere
Maximum Hexode Plate Voltage.....	300 Volts
Maximum Hexode Screen Supply Voltage.....	300 Volts
Maximum Hexode Screen Voltage.....	150 Volts
Maximum Hexode Plate Dissipation.....	.75 Watt
Maximum Hexode Screen Dissipation.....	.7 Watt
Maximum Oscillator Anode Voltage.....	125 Volts
Maximum Oscillator Anode Dissipation.....	0.75 Watt
Maximum Total Cathode Current.....	16 Ma.
Minimum External Signal Grid Bias Voltage.....	0 Volt
Maximum Heater-Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:*

	6K8	6K8G, 6K8GT
Grid G to Hexode Plate (P).....	0.03	0.08 μ f. Max.
Grid G to Oscillator Plate.....	0.02	0.05 μ f. Max.
Grid G to Oscillator Grid (Go).....	0.2	0.2 μ f. Max.
Oscillator Grid (Go) to Oscillator Plate.....	1.1	1.8 μ f.
Oscillator Grid (Go) to Mixer Plate.....	0.1	0.15 μ f. Max.
Signal Input (G to all other Electrodes).....	6.6	4.6 μ f.
Oscillator Input (Go to all other Electrodes except Oscillator Plate).....	6.0	6.5 μ f.
Oscillator Output (P to all other Electrodes except Grid Go).....	3.2	3.4 μ f.
Mixer Output (P to all other Electrodes).....	3.5	4.8 μ f.

*With standard RMA tube shield on Type 6K8G, GT or shell of 6K8 connected to cathode.

TYPICAL OPERATION**AS A CONVERTER**

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.30	0.30 Ampere
Hexode Plate Voltage.....	100	250 Volts
Hexode Screen Voltage.....	100	100 Volts
Hexode Control-Grid Voltage.....	-3	-3 Volts
Oscillator Anode Voltage.....	100	100 Volts
Oscillator Grid Resistor.....	50000	50000 Ohms
Hexode Plate Current.....	2.3	2.5 Ma.
Hexode Screen Current.....	6.2	6.0 Ma.
Oscillator Plate Current.....	3.8	3.8 Ma.
Oscillator Grid and Hexode No. 1 Grid Current.....	0.15	0.15 Ma.
Cathode Current.....	12.5	12.5 Ma.
Hexode Plate Resistance (Approximate).....	0.4	0.6 Megohm
Conversion Conductance.....	325	350 μ mhos
Hexode Control-Grid Voltage at -6 Volts.....	125	140 μ mhos
Hexode Control-Grid Voltage at -10 Volts.....	43	45 μ mhos
Hexode Control-Grid Voltage at -30 Volts (Approximate).....	2	2 μ mhos

6L5G Sylvania Type**MEDIUM-MU TRIODES****PHYSICAL SPECIFICATIONS**

Base.....	Small Octal 6 Pin
Bulb.....	ST12
Maximum Overall Length.....	4 1/8"
Maximum Seated Height.....	3 1/4"
Mounting Position.....	Any
Direct Interelectrode Capacitances:*	
Grid to Plate.....	2.8 μ f.
Input.....	2.8 μ f.
Output.....	5.0 μ f.

*With standard RMA tube shield.

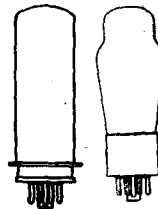
TYPICAL OPERATION

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	150	150 Ma.
Plate Voltage.....	100	250 Volts Max.
Grid Voltage.....	-3	-9 Volts
Plate Current.....	4.0	8.0 Ma.
Plate Resistance.....	10000	9000 Ohms
Mutual Conductance.....	1500	1900 μ mhos
Amplification Factor.....	15	17
Heater-Cathode Voltage.....	90	90 Volts Max.

For use in resistance coupled circuits, see data in appendix.

6L6 Sylvania Type
6L6G Sylvania Type
6L6GA Sylvania Type

BEAM POWER AMPLIFIERS



7S-1-0 (6L6)
7S-0-0 (6L6G, GA)

PHYSICAL SPECIFICATIONS

	6L6	6L6G	6L6GA
Base.....	Small Wafer	Medium	Medium
	Octal 7 Pin	Octal 7 Pin	Octal 7 Pin
Bulb.....	Metal 10-1	ST16	ST14
Maximum Overall Length.....	4 3/4"	5 1/4"	4 3/4"
Maximum Seated Height.....	3 3/4"	4 1/4"	4 1/4"
Mounting Position.....	Any	Any	Any

RATINGS

	Triode	Single Tube	Push-Pull
Heater Voltage.....	6.3	6.3	6.3 Volts
Heater Current.....	0.9	0.9	0.9 Ampere
Maximum Plate Voltage.....	300	350	350 Volts
Maximum Screen Voltage.....	Tie to Plate	250	270 Volts
Maximum Plate Dissipation.....	12	18.5	19.0 Watts
Maximum Screen Dissipation.....	2.7	2.7	2.5 Watts
Maximum Heater-Cathode Voltage...	90	90	90 Volts

TYPICAL OPERATION

CLASS A₁ AMPLIFIER SINGLE TUBE

Heater Voltage.....	6.3	6.3	6.3 Volts
Plate Voltage.....	250	300	350 Volts
Screen Voltage.....	250	200	250 Volts
Grid Voltage.....	-14	-12.5	-18 Volts
Peak A-F Signal Voltage.....	14	12.5	18 Volts
Plate Current (Zero Signal).....	72	48	54 Ma.
Plate Current (Maximum Signal).....	79	55	66 Ma.
Screen Current (Zero Signal).....	5	2.5	2.5 Ma.
Screen Current (Maximum Signal).....	7.3	4.7	7.0 Ma.
Mutual Conductance.....	6000	5300	5200 μmhos
Plate Resistance.....	22500	35000	33000 Ohms
Load Resistance.....	2500	4500	4200 Ohms
Power Output.....	6.5	6.5	10.8 Watts
Total Harmonic Distortion.....	10	11	15 Per Cent

PUSH-PULL AMPLIFIER, PENTODE CONNECTION

	Class A ₁		Class AB ₁		Class AB ₂	
Heater Voltage.....	6.3	6.3	6.3	6.3	6.3	6.3 Volts
Plate Voltage.....	250	270	360	360	360	360 Volts
Screen Voltage.....	250	270	270	270	225	270 Volts
Grid Voltage.....	-16	-17.5	-22.5	-22.5	-18	-22.5 Volts
Peak A-F Grid to Grid Voltage.....	32	35	45	45	52	72 Volts
Plate Current*.....	120	134	88	88	78	88 Ma.
Plate Current**.....	140	155	132	140	142	205 Ma.
Screen Current*.....	10	11	5	5	3.5	5 Ma.
Screen Current**.....	16	17	15	11	11	16 Ma.
Mutual Conductance.....	5500	5700				μmhos
Plate Resistance.....	24500	23500				Ohms
Load Resistance.....	5000	5000	6600	3800	6000	3800 Ohms
Power Output.....	14.5	17.5	26.5	18	31	47 Watts
Total Harmonic Distortion.....	2	2	2	2	2	2 Percent

*Zero Signal.

**Maximum Signal.

TRIODE OPERATION

CLASS A₁ AMPLIFIER Single Tube

Heater Voltage.....	6.3	6.3 Volts
Plate Voltage.....	300	250 Volts
Screen Voltage.....	Tie to Plate	
Grid Voltage.....	-27	-20 Volts
Peak A-F Signal Voltage.....	27	20 Volts
Plate Current (Zero Signal).....	41	40 Ma.
Plate Current (Maximum Signal).....	48	44 Ma.
Plate Resistance.....	1700	1700 Ohms
Mutual Conductance.....	4700	4700 μmhos
Amplification Factor.....	8	8
Load Resistance.....	5000	5000 Ohms
Power Output.....	2.4	1.4 Watts
Total Harmonic Distortion.....	5.6	5.0 Per Cent

APPLICATION

Sylvania Types 6L6 and 6L6G are power amplifier tubes designed for use in the output stage of radio receivers, particularly in those designed to have a reserve of power capability.

SYLVANIA RADIO TUBES

6L6
6L6G
(Cont.) **6L6GA**

The tubes provide high power output, power sensitivity and efficiency.

The design principles, responsible for the above features, involve the use of directed electron beams. These effects are produced by arranging the tube elements in such a manner that potential fields are set up which confine the electrons into beams of high density. Efficient suppressor action is produced by the space-charge effects formed between the screen and plate. Very little power is taken by the screen.

The second harmonic distortion is intentionally high in order to reduce the third and higher order harmonics to a minimum. Elimination of the second harmonic distortion can be obtained by using these tubes in a push-pull arrangement. If only one tube is used in a resistance coupled circuit, second harmonics can be reduced by generating out-of-phase second harmonics in preceding audio stages or by degeneration.

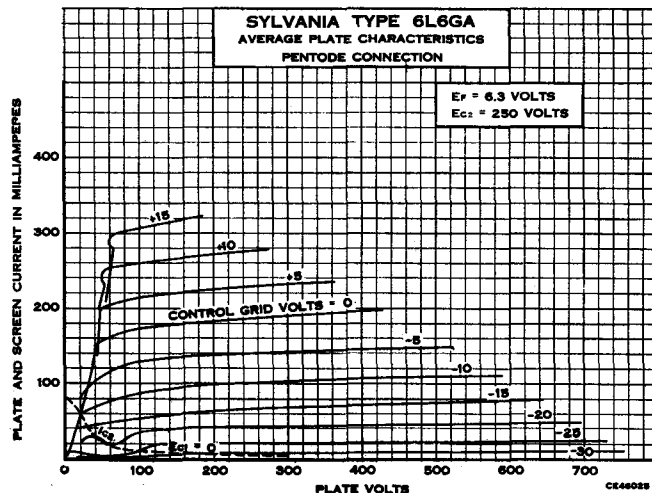
The Number "1" used in conjunction with the terms Class A and Class AB indicates that no grid current flows during any part of the input cycle. Likewise, the Number "2" indicates that grid current does flow during some part of the input cycle.

The heater voltage rating for Types 6L6 and 6L6G is 6.3 volts. Precautions should be taken to prevent the heater voltage from exceeding a maximum value of 7.0 volts during line voltage fluctuations. A minimum potential difference between heater and cathode should be maintained.

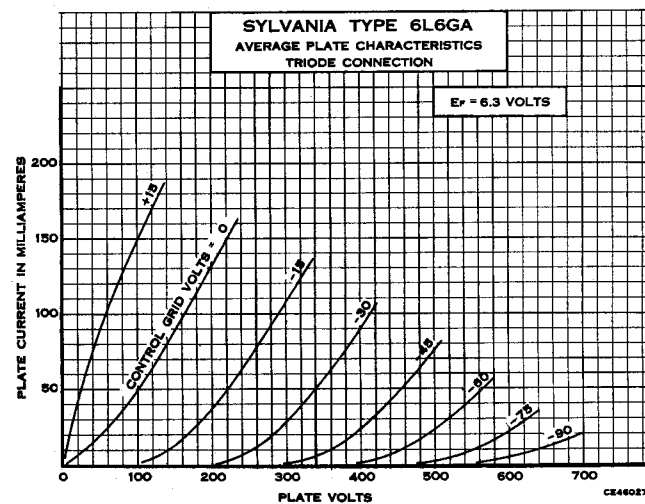
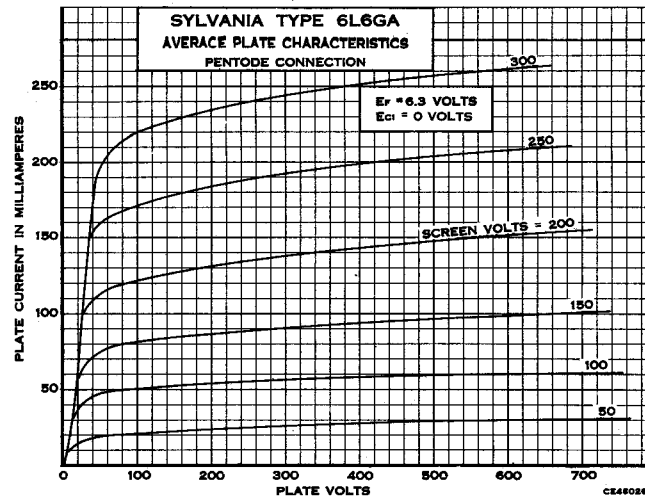
The maximum plate and screen dissipation must not be exceeded. Provision should be made for line voltage changes, especially when fixed-bias operation is employed.

Transformer or impedance coupling devices are recommended and the resistance introduced in the grid circuit should be kept as low as possible. For fixed bias this resistance should not exceed 0.1 megohm. The maximum grid circuit resistance when self-bias is employed may be 0.25 megohm if the heater voltage does not exceed 7.0 volts. See first note above.

For Class AB operation the driver stage should be designed so as to be capable of supplying the required peak power with low distortion to the grids of the output stage.

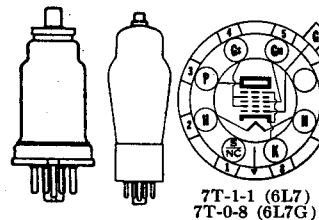


6L6GA (Cont'd)



6L7, G Sylvania Type

HEPTODE CONVERTER, AMPLIFIER



PHYSICAL SPECIFICATIONS

	6L7	6L7G
Base.....	Small Wafer Octal 7 Pin	Small Octal 7 Pin
Bulb.....	Metal 8-4	ST12
Cap.....	Miniature	Miniature
Maximum Overall Length.....	3 1/8"	4 15/16"
Maximum Seated Height.....	2 1/8"	3 3/8"
Mounting Position.....	Any	Any

RATINGS

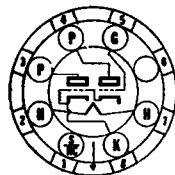
	Mixer	Amplifier
Heater Voltage AC or DC.....	6.3	6.3 Volts
Heater Current.....	0.3	0.3 Ampere
Maximum Plate Voltage.....	300	300 Volts
Maximum Screen Voltage.....	150	100 Volts
Maximum Plate Dissipation.....	1.0	1.5 Watts
Maximum Screen Dissipation.....	1.5	1.0 Watts
Maximum Heater-Cathode Voltage.....	90	90 Volts

TYPICAL OPERATION—MIXER

Heater Voltage.....	6.3	6.3 Volts
Plate Voltage.....	250	250 Volts
Screen Voltage (Gs).....	100	150 Volts
Control Grid Voltage (G).....	-3	-6 Volts
Modulator Grid Voltage (Gm).....	-10	-15 Volts
Peak Oscillator Voltage applied to Grid Gm (Min.).....	12	18 Volts
Plate Current.....	2.4	3.3 Ma.
Screen Current.....	7.1	9.2 Ma.
Plate Resistance.....	Greater than 1	Megohm
Conversion Conductance.....	375	350 μ mhos
Control Grid Voltage for Conversion Conductance of 5 Micromhos.....	-30	-45 Volts

CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3 Volts.
Plate Voltage.....	250 Volts
Screen Voltage (Gs).....	100 Volts
Control Grid Voltage (G).....	-3 Volts
Control Grid Voltage (Gm).....	-3 Volts
Plate Current.....	5.3 Ma.
Screen Current.....	6.5 Ma.
Plate Resistance (Approximate).....	0.6 Megohm
Amplification Factor.....	670
Mutual Conductance.....	1100 μ mhos
At -6 Volts Bias on Grids G and Gm.....	475 μ mhos
At -10 Volts Bias on Grids G and Gm.....	75 μ mhos
At -15 Volts Bias on Grids G and Gm (Approximate).....	5 μ mhos



7AU-0-0



Sylvania Type 6N6G

DIRECT COUPLED POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base.....	Medium Octal 7 Pin
Bulb.....	ST14
Maximum Overall Length.....	4 5/8"
Maximum Seated Height.....	4 1/8"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.8 Ampere
Maximum Output Plate Voltage.....	300 Volts
Maximum Input Plate Voltage.....	300 Volts
Maximum Heater-Cathode Voltage.....	90 Volts

TYPICAL OPERATION

CLASS A AMPLIFIER

Heater Voltage.....	6.3 Volts
Heater Current.....	0.8 Ampere
Plate Voltage (Output).....	300 Volts
Plate Voltage (Input).....	300 Volts
Grid Voltage (Input).....	0 Volt
Plate Current (Output).....	42 Ma.
Plate Current (Input).....	9 Ma.
Plate Resistance.....	24000 Ohms
Mutual Conductance†.....	2400 μ mhos
Amplification Factor.....	58
Load Resistance.....	7000 Ohms
Power Output*.....	4.0 Watts
Power Output**.....	6.5 Watts

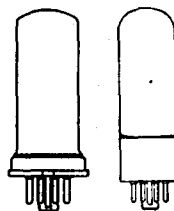
†Input grid—output plate Mutual Conductance.

*15 volts (r-m-s) signal; total distortion 5%.

**Input grid begins to draw grid current; total distortion 10%.

6N7^{GT} Sylvania Type

DUO TRIODE POWER AMPLIFIERS



8B-1-0 (6N7)
8B-0-0 (6N7GT)

PHYSICAL SPECIFICATIONS

	6N7	6N7GT
Base.....	Small Wafer Octal 8 Pin	Intermediate Octal 8 Pin
Bulb.....	Metal 8-6	T9
Maximum Overall Length.....	3 1/4"	3 3/16"
Maximum Seated Height.....	2 1/16"	2 3/4"
Mounting Position.....	Any	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.8 Ampere
Maximum Plate Voltage.....	300 Volts
Maximum Dynamic Peak Plate Current (per Plate).....	125 Ma.
Maximum Average Plate Dissipation (per Plate).....	5.5 Watts
Maximum Heater-Cathode Voltage.....	90 Volts

TYPICAL OPERATION

CLASS AB₂ POWER AMPLIFIER

(Values are for both sections unless otherwise specified)

	Ideal	Typical
Heater Voltage.....	6.3	6.3 Volts
Heater current.....	0.8	0.8 Ampere
Grid Impedance at 400 Cycles.....	0	516† Ohms
Plate Supply Impedance.....	0	1000 Ohms
Plate Voltage (Zero Signal).....	300	300 Volts
Grid Voltage (DC).....	0	0 Volt
Peak Signal Voltage (per Grid).....	29	41 Volts
Plate Current (per Plate Zero Signal).....	17.5	17.5 Ma.
Plate Current (per Plate Maximum Signal).....	35	35 Ma.
Peak Grid Current (per Grid Maximum Signal).....	20	22 Ma.
Load Resistance (Plate to Plate).....	8000	8000 Ohms
Power Output.....	10	10 Watts
Total Harmonic Distortion.....	4	8 Per Cent

†The 516 ohms impedance shown consists of 500 ohms resistance and 50 mh. inductance.

CLASS A DRIVER

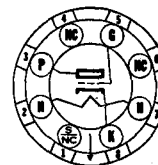
(Both grids and both plates connected together at the socket)

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.8	0.8 Ampere
Plate Voltage.....	250	254 Volts
Grid Voltage.....	-5	-6 Volts
Plate Current.....	6	7 Ma.
Plate Resistance.....	11300	11000 Ohms
Mutual Conductance.....	3100	3200 μmhos
Amplification Factor.....	35	35

For use in resistance coupled circuits see data in appendix.

6P5^{GT} Sylvania Type

MEDIUM-MU TRIODE



6Q-0-0

PHYSICAL SPECIFICATIONS

Base.....	Intermediate Octal 6 Pin
Bulb.....	T9
Maximum Overall Length.....	3 3/16"
Maximum Seated Height.....	2 3/4"
Mounting Position.....	Any

TYPICAL OPERATION
CLASS A AMPLIFIER

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	100	250 Volts
Grid Voltage.....	-5	-13.5 Volts
Plate Current.....	2.5	5 Ma.
Plate Resistance.....	12000	9500 Ohms
Mutual Conductance.....	1150	1450 μ mhos
Amplification Factor.....	13.8	13.8
Heater-Cathode Voltage.....	90	90 Volts Max.

BIASED DETECTOR

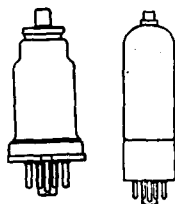
Heater Voltage.....	6.3	6.3 Volts
Plate Voltage.....	100	250 Volts Max.
Grid Voltage (Approximate).....	-8	-20 Volts
Plate Current—Adjust to 0.2 ma. with no a-c input signal.		

GRID LEAK DETECTOR

Heater Voltage.....	6.3 Volts
Plate Voltage.....	45 Volts
Grid Leak.....	1 to 5 Megohms
Grid Condenser.....	0.00025 μ f.



7V-1-8 (6Q7)
7V-0-8 (6Q7G)
7V-1-8 (6Q7GT)

**Sylvania Type 6Q7^{GT}****DUODIODE HIGH-MU TRIODE****PHYSICAL SPECIFICATIONS**

	6Q7	6Q7G	6Q7GT
Base.....	Small Wafer Octal 7 Pin	Small Octal 7 Pin	Small Wafer Metal Sleeve Octal 7 Pin
Bulb.....	Metal 8-4	ST12	T9
Cap.....	Miniature	Miniature	Miniature
Maximum Overall Length.....	3 1/4"	4 1/8"	3 5/8"
Maximum Seated Height.....	2 3/4"	3 3/4"	2 3/4"
Mounting Position.....	Any	Any	Any

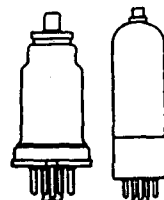
TYPICAL OPERATION

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	100	250 Volts
Grid Voltage*.....	-1.0	-3 Volts
Plate Current*.....	0.8	1.0 Ma.
Plate Resistance.....	58000	58000 Ohms
Mutual Conductance.....	1200	1200 μ mhos
Amplification Factor.....	70	70
Heater-Cathode Voltage.....	90	90 Volts Max.

*These are rating values only and not operating points with coupling resistor.
For resistance coupled circuit data, see the appendix.



7V-1-1 (6R7)
7V-0-8 (6R7GT)

**Sylvania Type 6R7^{GT}****DUODIODE MEDIUM-MU TRIODE****PHYSICAL SPECIFICATIONS**

	6R7	6R7GT
Base.....	Small Wafer Octal 7 Pin	Intermediate Octal 7 Pin
Bulb.....	Metal 8-4	T9
Cap.....	Miniature	Miniature
Maximum Overall Length.....	3 1/4"	3 5/8"
Maximum Seated Height.....	2 3/4"	2 3/4"
Mounting Position.....	Any	Any

6R7^{GT} (Cont'd)

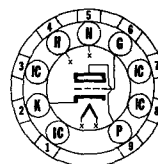
TYPICAL OPERATION

Heater Voltage.....	6.3 Volts
Heater Current.....	0.30 Ampere
Plate Voltage.....	250 Volts
Grid Voltage.....	-9 Volts
Plate Current.....	9.5 Ma.
Plate Resistance.....	8500 Ohms
Mutual Conductance.....	1900 μ mhos
Amplification Factor.....	16
Undistorted Power Output.....	285 Mw.
Maximum Heater-Cathode Voltage.....	90 Volts

For resistance coupled circuit data, see appendix.

6S4 Sylvania Type

MEDIUM MU TRIODE



9AC-0-0

PHYSICAL SPECIFICATIONS

Base.....	Small Button 9 Pin
Bulb.....	T-6 1/2"
Maximum Overall Length.....	2 5/8"
Maximum Seated Height.....	2 3/8"
Mounting Position.....	Any

RATINGS

Heater Voltage (AC or DC).....	6.3 Volts
Maximum Plate Voltage.....	500 Volts
Maximum Peak Plate Voltage*.....	2000 Volts
Maximum Grid Voltage DC.....	-50 Volts
Maximum Peak Negative Pulse Grid Voltage.....	-200 Volts
Maximum Cathode Current.....	30 Ma.
Maximum Plate Dissipation.....	7.5 Watts
Maximum Peak Heater-Cathode Voltage.....	$\pm$ 200 Volts
Maximum Grid Circuit Resistance.....	2.2 Megohm
Minimum Cathode Bias Resistance.....	220 Ohms

*The duration of the voltage pulse must not exceed 15% of one scanning cycle. In typical television service this is 2.5 milliseconds.

TYPICAL OPERATION

VERTICAL DEFLECTION AMPLIFIER#

Heater Voltage.....	6.3 Volts
Heater Current.....	0.6 Ampere
Plate Voltage.....	450 Volts
Cathode Bias Resistor.....	820 Ohms
Grid Input Voltage (peak to peak of sawtooth).....	60 Volts
(negative peaking component).....	48 Volts
Plate Current.....	18 Ma.
Plate Output Voltage (peak positive pulse component).....	800 Volts
(peak to peak of sawtooth).....	350 Volts

CLASS A₁ AMPLIFIER

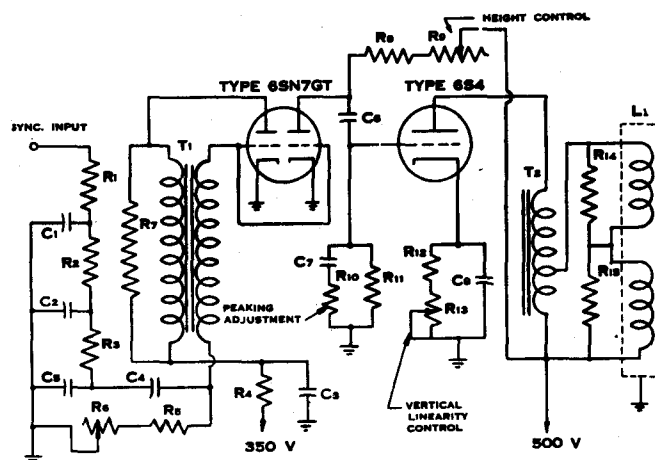
Plate Voltage.....	250 Volts
Grid Voltage.....	-8.0 Volts
Plate Current.....	26 Ma.
Mutual Conductance.....	4500 μ mhos
Amplification Factor.....	16
Plate Resistance.....	3600 Ohms

#For operation in a television receiver using a vertical deflection output transformer with a step-down ratio of approximately 11 to 1 to match the vertical deflection yoke coils having an inductance of approximately 40 mh.

APPLICATION

Sylvania Type 6S4 is a medium-mu triode in the miniature construction having characteristics designed for use as a vertical deflection amplifier in television receivers. When used with well designed components and adequate power supply, sufficient drive is available for use with 16" picture tubes such as Sylvania Type 16TP4 at its maximum anode voltage.

TYPICAL VERTICAL DEFLECTION CIRCUIT FOR SYLVANIA TYPE 16TP4 PICTURE TUBE



C1 C2 C4 C5: 0.005 μ f., 400 v

C3: 4 μ f., 400 v, electrolytic

C6: 0.1 μ f., 600 v

C7: 0.05 μ f., 600 v

C8: 100 μ f., 50 v, electrolytic

L1: Vertical Coils of 70°
Deflection Yoke

R1 R2 R3: 8200 Ohms, 0.5 watt

R4: 0.1 megohm 0.5 watt

R5 R8: 1.0 megohm, 0.5 watt

R6: Potentiometer, 1.0 megohm,
0.5 watt

R7: 10,000 ohms, 0.5 watt

R9: Potentiometer, 3.0 megohms,
1 watt

R10: Potentiometer, 5000 ohms,
0.5 watt (see Note)

R11: 2.2 megohms, 0.5 watt

R12: 820 ohms, 1 watt

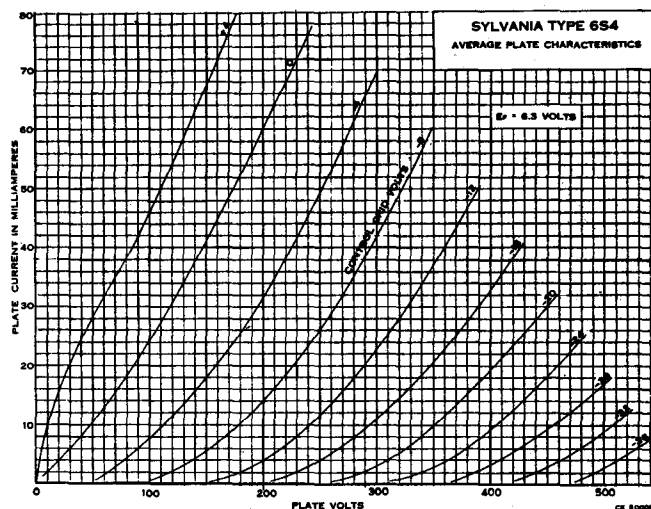
R13: Potentiometer, 3000 ohms,
1 watt, wire wound

R14 R15: 560 ohms, 0.5 watt

T1: Vertical Blocking Oscillator
Transformer, Stancor A-8121
or equivalent

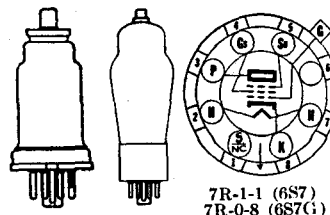
T2: Vertical-Deflection-Output
Transformer, Stancor A-8116
(using two windings) or RCA-
222T1 (Autotransformer)

Note: Fixed Resistance may be used after needed value for vertical peaking control has been determined with rheostat.



6S7, G Sylvania Type

REMOTE CUT OFF RF PENTODES



PHYSICAL SPECIFICATIONS

	6S7	6S7G
Base.....	Small Wafer Octal 7 Pin	Small Octal 7 Pin
Bulb.....	Metal 8-4	ST12
Cap.....	Miniature	Miniature
Maximum Overall Length.....	3 1/4"	4 13/16"
Maximum Seated Height.....	2 3/4"	3 3/8"
Mounting Position.....	Any	Any

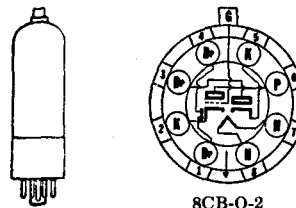
TYPICAL OPERATION

AMPLIFIER (CLASS A)

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.150	0.150 Ampere
Plate Voltage.....	135	250 Volts Max.
Grid Voltage.....	-3	-3 Volts Min.
Screen Voltage.....	67.5	100 Volts Max.
Suppressor.....	Tie to Cathode	
Plate Current.....	3.7	8.5 Ma.
Screen Current.....	0.9	2.0 Ma.
Plate Resistance (Approximate).....	1.0	1.0 Megohm
Mutual Conductance.....	1250	1750 μ mhos
Grid Voltage for 10 μ mhos.....	-25	-38.5 Volts
Heater-Cathode Voltage.....	90	90 Volts Max.

6S8^{GT} Sylvania Type

TRIPLE DIODE-TRIODE



PHYSICAL SPECIFICATIONS

Base.....	Intermediate Octal 8 Pin
Bulb.....	T-9
Cap.....	Miniature
Maximum Overall Length.....	3 5/8"
Maximum Seated Height.....	3 1/16"
Mounting Position.....	Any

RATINGS

Heater Voltage.....	6.3 Volts
Heater Current.....	300 Ma.
Maximum Plate Voltage.....	300 Volts
Maximum Plate Dissipation.....	0.5 Watts
Maximum Heater-Cathode Voltage.....	90 Volts

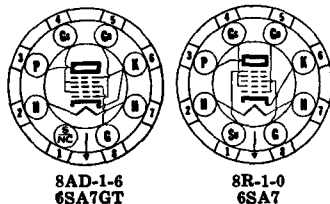
Direct Interelectrode Capacitances:

Triode grid to any diode plate.....	005 μ mf. Max
Diode input (approx. each).....	1 μ mf.

TYPICAL OPERATION

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	100	250 Volts
Grid Voltage.....	-1.0	-2.0 Volts
Plate Current.....	0.4	0.9 Ma.
Mutual Conductance.....	900	1100 μ mhos
Plate Resistance.....	110,000	91,000 Ohms
Amplification Factor.....	100	100

Reference should be made to Type 7B6 for curves and resistance coupled data.



Sylvania Type 6SA7^{GT}

HEPTODE CONVERTER

PHYSICAL SPECIFICATIONS

	6SA7	6SA7GT
Base.....	Small Wafer Octal 8 Pin	Intermediate Octal 8 Pin
Bulb.....	Metal 8-1	T9
Maximum Overall Length....	2 3/4"	3 3/4"
Maximum Seated Height.....	2 1/4"	2 3/4"
Mounting Position.....	Any	Any

Direct Interelectrode Capacitances:*

	6SA7*	6SA7GT**
Grid G to all other Electrodes (Signal Input)...	9.5 μ f.	9.5 μ f.
Plate to all other Electrodes (Mixer Output)...	12 μ f.	9.5 μ f.
Grid Go to all other Electrodes.....	7 μ f.	8.0 μ f.
Grid G to Plate.....	0.13 μ f. Max.	0.5 μ f.
Grid Go to Grid G.....	0.15 μ f. Max.	0.4 μ f.
Grid Go to Plate.....	0.06 μ f. Max.	0.4 μ f.
Grid Go to all other Electrodes except K.....	4.4 μ f.	5.0 μ f.
Grid Go to K.....	2.6 μ f.	3.5 μ f.
K to all other Electrodes except Grid Go.....	5 μ f.	20 μ f.

*With shell connected to cathode.

**With 1 1/4" diameter shield (RMA Std. 308) connected to cathode.

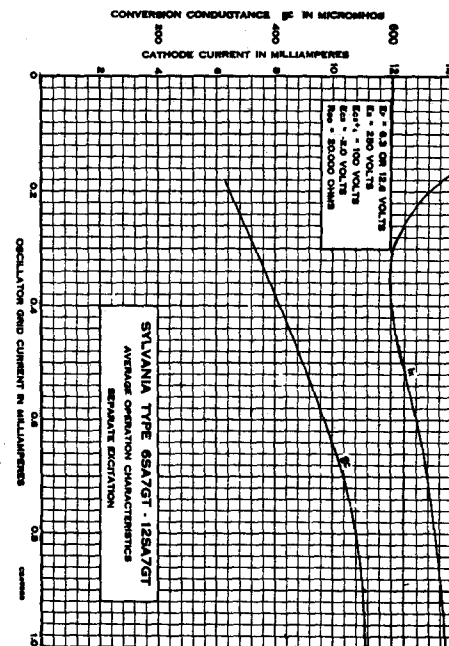
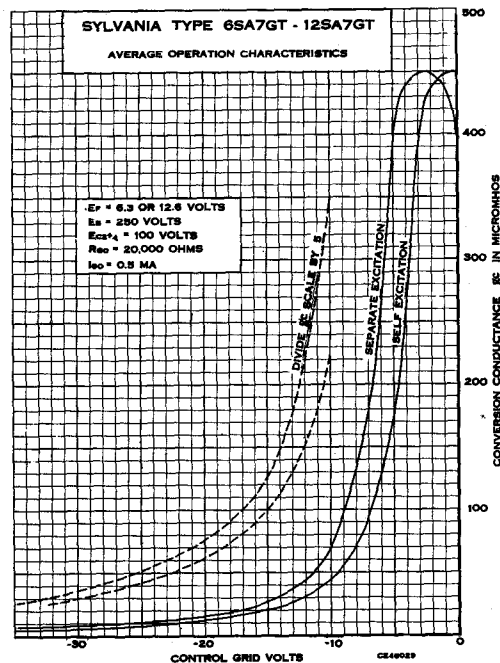
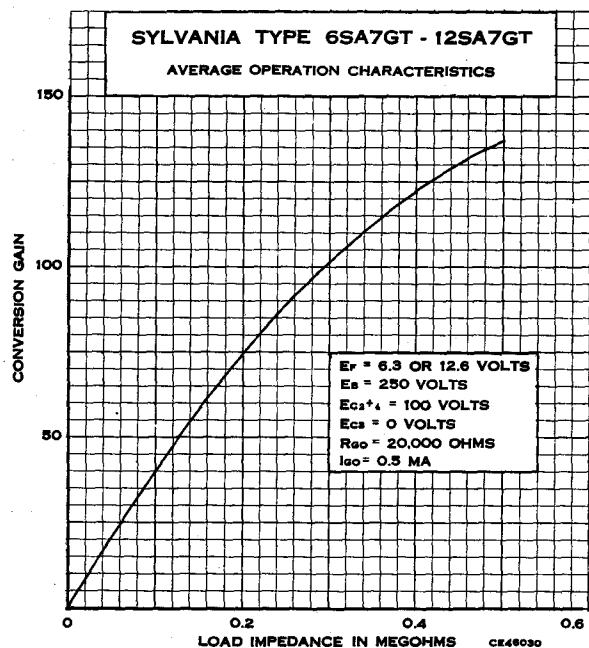
TYPICAL OPERATION

	Self-Excitation†		Separate Excitation	
Heater Voltage.....	6.3	6.3	6.3	6.3 Volts
Heater Current.....	300	300	300	300 Ma.
Plate Voltage.....	100	250	100	250 Volts
Control Grid Voltage				
(Grid G).....	0	0	-2	-2 Volts
Screen Voltage (Grid Gs)....	100	100	100	100 Volts
Grid No. 5 and Shell				
Voltage.....	0	0	0	0 Volt
Oscillator Grid Resistor				
(Grid Go).....	20000	20000	20000	20000 Ohms
Plate Current.....	3.2	3.4	3.3	3.5 Ma.
Screen Grid Current.....	8	8	8.5	8.5 Ma.
Oscillator Grid Current.....	0.5	0.5	0.5	0.5 Ma.
Plate Resistance (Approx.)...	0.5	0.8	0.5	1.0 Megohm
Conversion Transconductance	425	450	425	450 μ mhos
Control Grid Voltage				
(2 μ mhos Conv. Cond.)...	-35	-35	-35	-35 Volts
Max. Heater Cathode Voltage	90	90	90	90 Volts

†Values shown are approximate and are for a Hartley circuit with a feedback of approximately 2 volts peak in the cathode circuit.

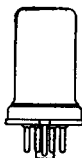
APPLICATION

Sylvania Types 6SA7, GT are single-ended pentagrid converters for service similar to other pentagrid converter types. The oscillator section is designed to operate in a Hartley circuit with the cathode connected to a tap on the oscillator coil. The mutual conductance between grid Go and grid Gs tied to the plate (not oscillating) is approximately 4500 μ mhos when grids Go, G and the shell are at zero volts, with grid Gs and plate at 100 volts. Characteristics for self-excitation in a Hartley circuit are shown above. Other application notes may be obtained by referring to Type 7Q7.





8R-1-0



Sylvania Type 6SB7Y

HEPTODE CONVERTER

PHYSICAL SPECIFICATIONS

Base.....	Micanol Small Wafer Octal 8 Pin
Bulb.....	Metal 8-1
Maximum Overall Length.....	2 3/4"
Maximum Seated Height.....	2 1/8"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	300 Ma.
Maximum Plate Voltage.....	300 Volts
Maximum Screen Voltage.....	100 Volts
Maximum Screen Supply Voltage.....	300 Volts
Maximum Plate Dissipation.....	2.0 Watts
Maximum Screen Dissipation.....	1.5 Watts
Maximum Total Cathode Current.....	22 Ma.
Maximum Control Grid Voltage Range.....	-100 to +0 Volts
Maximum Heater-Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:

Grid G to all other electrodes (signal input)*.....	9.6 μ f.
Plate to all other electrodes (Mixer output)*.....	9.2 μ f.
Grid Go to all other electrodes (oscillator input)*.....	7.3 μ f.
Grid G to plate*.....	0.13 μ f. Max.
Grid G to Grid Go*.....	0.16 μ f. Max.
Grid Go to plate*.....	0.06 μ f. Max.
Grid Go to all except cathode.....	3.8 μ f.
Grid Go to cathode.....	3.4 μ f.
Cathode to all except Go.....	4.5 μ f.

*With shell connected to cathode.

TYPICAL OPERATION

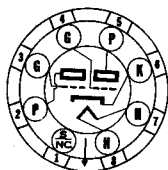
	Separate Excitation*		Self Excitation for 88-108 Mc.
Heater Voltage.....	6.3	6.3	6.3 Volts
Heater Current.....	300	300	300 Ma.
Plate Voltage.....	100	250	250 Volts
Screen Voltage.....	100	100	... Volts
Screen Supply Voltage.....	...	...	250 Volts
Screen Dropping Resistor.....	...	...	12,000 Ohms
Control Grid Voltage.....	-1.0	-1.0	0 Volts
Oscillator Grid Resistor.....	20,000	20,000	22,000 Ohms
Plate Resistance.....	0.5	1.0	... Megohm
Conversion Transconductance†.....	900	950	... μ mhos
Conversion Transconductance† at Eg=-20.....	3.5	3.5	... μ mhos
Signal Frequency.....	...	...	88 108 Mc.
Oscillation Frequency.....	...	...	98.7 118.7 Mc.
Plate Current.....	3.6	3.8	6.8 6.5 Ma.
Screen Current.....	10.2	10.0	12.6 12.5 Ma.
Oscillator Grid Current.....	0.35	0.35	0.13 0.14 Ma.

*Substantially the same characteristics may be obtained as a self excited oscillator by reducing the grid voltage to 0 volts.

†The oscillator mutual conductance is approximately 8000 micromhos with Ego = 0, Egs = Ep = 100 volts, Eg = 0.

APPLICATION

Sylvania Type 6SB7Y is very similar to Type 6SA7GT except for increased oscillator strength and conversion conductance which provide improved performance at high frequencies.



8S-1-0



Sylvania Type 6SC7

HIGH-MU DUO TRIODE

PHYSICAL SPECIFICATIONS

Base.....	Small Wafer Octal 8 Pin
Bulb.....	Metal 8-1
Maximum Overall Length.....	2 3/4"
Maximum Seated Height.....	2 1/8"
Mounting Position.....	Any

6SC7 (Cont'd)

TYPICAL OPERATION CLASS A AMPLIFIER (ONE TRIODE)

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	300 Ma.
Plate Voltage.....	250 Volts Max.
Grid Voltage.....	-2.0 Volts
Plate Current.....	2.0 Ma.
Plate Resistance.....	53000 Ohms
Mutual Conductance.....	1325 μ mhos
Amplification Factor.....	70
Heater-Cathode Voltage.....	90 Volts Max.

TYPICAL OPERATION AS PHASE INVERTER

Plate Supply Voltage.....	90	300 Volts
Plate Current per Section.....	0.15	0.65 Ma.
Plate Load Resistor (per Plate).....	0.25	0.25 Megohm
Self-Bias Resistor.....	3750	1675 Ohms
Grid Resistor for Following Tubes.....	0.5	0.5 Megohm
Voltage Amplification (At 5 volts RMS Output).....	30	42
Peak Output Voltage (RMS)*.....	18	110 Volts

*At start of grid current.

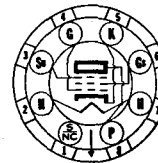
APPLICATION

Sylvania Type 6SC7 is a double triode amplifier in the single-ended construction. It is so designed that it is specially adaptable for phase inverter service. For resistance coupling data reference should be made to Type 7F7.

6SD7^{GT} Sylvania Type

SEMI-REMOTE CUT-OFF

RF AMPLIFIER



8N-1-5

PHYSICAL SPECIFICATIONS

Base.....	Small Wafer Octal 8 Pin, Metal Sleeve
Bulb.....	T9
Maximum Overall Length.....	3 $\frac{3}{16}$ "
Maximum Seated Height.....	2 $\frac{1}{4}$ "
Mounting Position.....	Any

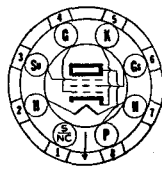
RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.300 Ampere
Maximum Plate Voltage.....	300 Volts
Maximum Screen Supply Voltage.....	300 Volts
Maximum Screen Voltage.....	125 Volts
Maximum Plate Dissipation.....	4 Watts
Maximum Screen Dissipation.....	0.4 Watt
Maximum Heater-Cathode Voltage.....	90 Volts
Direct Interelectrode Capacitances:*	
Grid to Plate.....	0.0035 μ fd. Max.
Input.....	9.0 μ fd.
Output.....	7.5 μ fd.

*Shell and internal shield connected to cathode.

TYPICAL OPERATION CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.300	0.300 Ampere
Plate Voltage.....	100	250 Volts
Screen Voltage.....	100	100 Volts
Control Grid Voltage.....	-2	-2 Volts
Self-Bias Resistor.....	260	255 Ohms
Suppressor Voltage.....	0	0 Volt
Plate Resistance (Approximate).....	0.25	1.0 Megohm
Mutual Conductance.....	3350	3600 μ mhos
Control Grid Voltage for 20 μ mhos.....	-11	-11 Volts
Plate Current.....	5.7	6.0 Ma.
Screen Current.....	2.0	1.9 Ma.



8N-1-5



Sylvania Type 6SE7^{GT}

SHARP CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base.....	Small Wafer Octal 8 Pin Metal Sleeve
Bulb.....	T9
Maximum Overall Length.....	3 $\frac{5}{16}$ "
Maximum Seated Height.....	2 $\frac{3}{4}$ "
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.300 Ampere
Maximum Plate Voltage.....	300 Volts
Maximum Screen Supply.....	300 Volts
Maximum Screen Voltage.....	125 Volts
Maximum Plate Dissipation.....	4.0 Watts
Maximum Screen Dissipation.....	0.4 Watt
Minimum External Control Grid Voltage.....	0 Volt
Maximum Heater-Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:*

Grid to Plate.....	0.005 μ fd. Max.
Input.....	8.0 μ fd.
Output.....	7.5 μ fd.

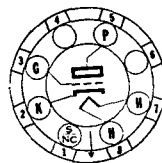
*With 1 $\frac{1}{16}$ " diameter shield (RMA Std. M8-308) connected to cathode.

TYPICAL OPERATION

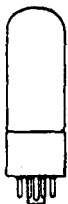
CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.300	0.300 Ampere
Plate Voltage.....	100	250 Volts
Screen Voltage.....	100	100 Volts
Grid Voltage.....	-1	-1.5 Volts
Plate Resistance (Approximate).....	0.1	1.0 Megohm
Mutual Conductance.....	3000	3100 μ mhos
Control Grid Voltage for Cut Off.....	-5	-5 Volts
Plate Current.....	5.5	4.5 Ma.
Screen Current.....	2.4	1.5 Ma.
Self-Bias Resistor.....	125	250 Ohms

Suppressor Connected to Cathode.



6AB-1-0 (6SF5)
6AB-0-0 (6SF5GT)



Sylvania Type 6SF5^{GT}

HIGH-MU TRIODE

PHYSICAL SPECIFICATIONS

	6SF5	6SF5GT
Base.....	Small Wafer Octal 6 Pin Metal 8-1	Intermediate Octal 6 Pin
Bulb.....	T9	T9
Maximum Overall Length.....	2 $\frac{5}{16}$ "	3 $\frac{5}{16}$ "
Maximum Seated Height.....	2 $\frac{1}{16}$ "	2 $\frac{3}{4}$ "
Mounting Position.....	Any	Any

Direct Interelectrode Capacitances:*

	6SF5*	6SF5GT**
Grid to Plate.....	2.4	2.6 μ fd.
Input.....	4.0	4.2 μ fd.
Output.....	3.6	3.8 μ fd.

*With shell connected to cathode.

**With 1 $\frac{1}{16}$ " diameter shield (RMA Std. M8-308) connected to cathode.

6SF5^{GT} (Cont'd)

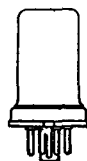
TYPICAL OPERATION CLASS A AMPLIFIER

Heater Voltage.....	6.3 Volts
Heater Current.....	0.3 Amperes
Plate Voltage.....	250 Volts Max.
Grid Voltage.....	-2 Volts
Plate Current.....	0.9 Ma.
Plate Resistance.....	66000 Ohms
Mutual Conductance.....	1500 μ mhos
Amplification Factor.....	100
Heater-Cathode Voltage.....	90 Volts Max.

For additional application notes and curve data refer to Type 7B4.

6SF7 Sylvania Type

DIODE RF PENTODE



7AZ-1-1

PHYSICAL SPECIFICATIONS

Base.....	Small Wafer Octal 8 Pin
Bulb.....	Metal 8-1
Maximum Overall Length.....	2 5/8"
Maximum Seated Height.....	2 1/8"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	300 Ma.
Maximum Plate Voltage.....	300 Volts
Maximum Screen Supply Voltage.....	300 Volts
Maximum Screen Voltage.....	100 Volts
Maximum Plate Dissipation.....	3.5 Watts
Maximum Screen Dissipation.....	0.5 Watt
Minimum Control Grid Bias.....	0 Volt
Minimum Diode Current at 10 Volts DC.....	0.8 Ma.
Maximum Continuous Diode Current.....	1.0 Ma.
Maximum Heater-Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:*

Grid to Plate.....	0.004 μ uf. Max.
Input.....	5.5 μ uf.
Output.....	6.0 μ uf.
Pentode Grid to Diode Plate.....	0.002 μ uf. Max.
Pentode Plate to Diode Plate.....	1.3 μ uf.

*With shell connected to cathode.

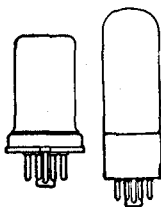
TYPICAL OPERATION CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	100	250 Volts
Screen Voltage.....	100	100 Volts
Grid Voltage.....	-1	-1 Volts
Self-Bias Resistor.....	65	65 Ohms
Plate Resistance (Approximate).....	0.2	0.7 Megohm
Mutual Conductance.....	1975	2050 μ mhos
Control Grid Voltage for 10 μ mhos.....	-35	-35 Volts
Plate Current.....	12.0	12.4 Ma.
Screen Current.....	3.4	3.3 Ma.

Refer to data on Type 7B6 for diode characteristics.



8BK-1-1



Sylvania Type 6SG7^{GT}

SEMI-REMOTE CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

	6SG7 Small Wafer Octal 8 Pin Metal 8-1	6SG7GT Small Wafer Octal 8 Pin Metal Sleeve T9
Base	Octal 8 Pin	8 Pin Metal Sleeve
Bulb	Metal 8-1	T9
Maximum Overall Length	2 3/8"	3 3/8"
Maximum Seated Height	2 1/8"	2 3/4"
Mounting Position	Any	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	300 Ma.
Maximum Plate Voltage	300 Volts
Maximum Screen Supply	300 Volts
Maximum Screen Voltage	200 Volts
Maximum Plate Dissipation	3 Watts
Maximum Screen Dissipation	0.6 Watt
Minimum External Control Grid Bias	0 Volt
Maximum Heater-Cathode Voltage	90 Volts

Direct Interelectrode Capacitances:

	6SG7*	6SG7GT**
Grid to Plate	0.003	0.035 μ l. Max.
Input	8.5	8.5 μ l.
Output	7.0	7.0 μ l.

*Shell connected to cathode.

**With 1 3/8" diameter tube shield (RMA Std. 308) connected to cathode.

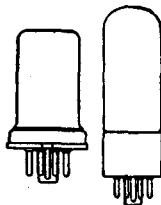
TYPICAL OPERATION

CLASS A₁ AMPLIFIER

Heater Voltage	6.3	6.3	6.3 Volts
Heater Current	300	300	300 Ma.
Plate Voltage	100	250	250 Volts
Screen Voltage	100	125	150 Volts
Control Grid Voltage	-1	-1	-2.5 Volts
Self-Bias Resistor	90	60	190 Ohms
Plate Resistance (Approximate)	0.25	0.9	>1.0 Megohm
Mutual Conductance	4100	4700	4000 μ mhos
Plate Current	8.2	11.8	9.2 Ma.
Screen Current	3.2	4.4	3.4 Ma.
Control Grid Voltage for 40 μ mhos	-17.5	-14.0	-17.5 Volts



8BK-1-1



Sylvania Type 6SH7^{GT}

SHARP CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

	6SH7 Small Wafer Octal 8 Pin Metal 8-1	6SH7GT Small Wafer Octal 8 Pin Metal Sleeve T9
Base	Octal 8 Pin	8 Pin Metal Sleeve
Bulb	Metal 8-1	T9
Maximum Overall Length	2 3/8"	3 3/8"
Maximum Seated Height	2 1/8"	2 3/4"
Mounting Position	Any	Any

6SH7^{GT} (Cont'd)

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.300 Ampere
Maximum Plate Voltage.....	300 Volts
Maximum Screen Supply.....	300 Volts
Maximum Screen Voltage.....	150 Volts
Maximum Plate Dissipation.....	3.0 Watts
Maximum Screen Dissipation.....	0.7 Watt
Minimum External Control Grid Bias.....	0 Volt
Maximum Heater Cathode Voltage.....	90 Volts

Direct Interelectrode Capacitances:

	6SH7*	6SH7GT**
Grid to Plate.....	0.003	0.004 μ f. Max.
Input.....	8.5	8.5 μ f.
Output.....	7.0	7.0 μ f.

*With shell connected to cathode.

**With 1 $\frac{1}{8}$ " diameter shield (RMA Std. M8-308) connected to cathode.

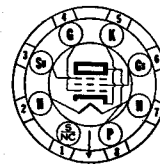
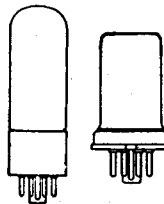
TYPICAL OPERATION

CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.300	0.300 Ampere
Plate Voltage.....	100	250 Volts
Screen Voltage.....	100	150 Volts
Control Grid Voltage.....	-1	-1 Volts
Self-Bias Resistor.....	135	65 Ohms
Plate Resistance (Approximate).....	0.35	0.9 Megohm
Mutual Conductance.....	4000	4900 μ mhos
Grid Bias for 10 μ a. Plate Current.....	-4.0	-5.5 Volts
Plate Current.....	5.3	10.8 Ma.
Screen Current.....	2.1	4.1 Ma.

6SJ7^{GT} Sylvania Type

SHARP CUT-OFF RF PENTODE



8N-1-1 (6SJ7)
8N-1-5 (6SJ7GT)

PHYSICAL SPECIFICATIONS

	6SJ7	6SJ7GT
Base.....	Small Wafer Octal 8 Pin	Small Wafer Metal Sleeve Octal 8 Pin
Bulb.....	Metal 8-1	T9
Maximum Overall Length.....	2 $\frac{3}{8}$ "	3 $\frac{1}{8}$ "
Maximum Seated Height.....	2 $\frac{1}{8}$ "	2 $\frac{1}{8}$ "
Mounting Position.....	Any	Any

Direct Interelectrode Capacitances:*

	6SJ7*	6SJ7GT**
Grid to Plate.....	0.005	0.005 μ f. Max.
Input.....	6.0	6.3 μ f.
Output.....	7.0	7.5 μ f.

*Shell connected to cathode.

**With 1 $\frac{1}{8}$ " diameter shield (RMA std. 308) connected to cathode.

TYPICAL OPERATION

CLASS A₁ AMPLIFIER

PENTODE CONNECTION

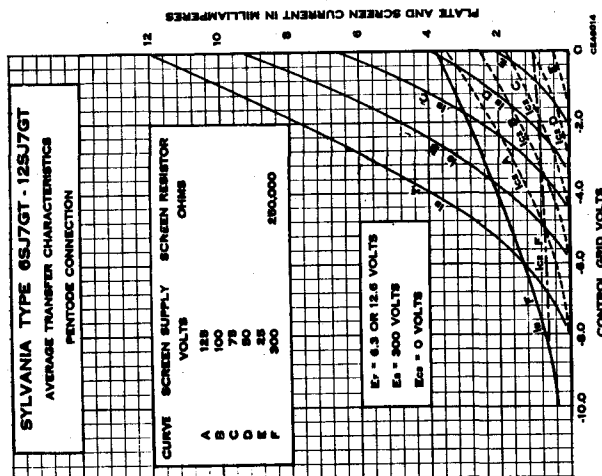
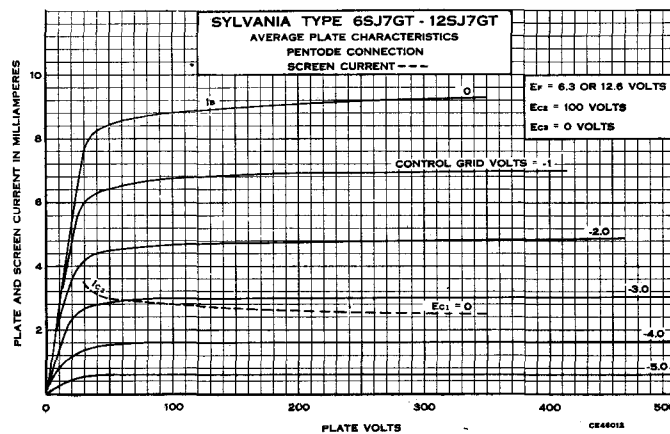
Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.3	0.3 Ampere
Plate Voltage.....	100	250 Volts Max.
Grid Voltage.....	-3	-3 Volts
Screen Voltage.....	100	100 Volts Max.
Suppressor.....	Tie to Cathode	
Plate Current.....	2.9	3.0 Ma.
Screen Current.....	0.9	0.8 Ma.
Plate Resistance (Approximate).....	0.7	1.0 Megohm
Mutual Conductance.....	1575	1650 μ mhos
Heater-Cathode Voltage.....	90	90 Volts Max.

TRIODE CONNECTION

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.3	0.3 Ampere
Plate Voltage.....	180	250 Volts Max.
Grid Voltage.....	-6.0	-8.5 Volts
Amplification Factor.....	19	19
Plate Resistance.....	8200	7600 Ohms
Mutual Conductance.....	2300	2500 μ mhos
Plate Current.....	6.0	9.2 Ma.

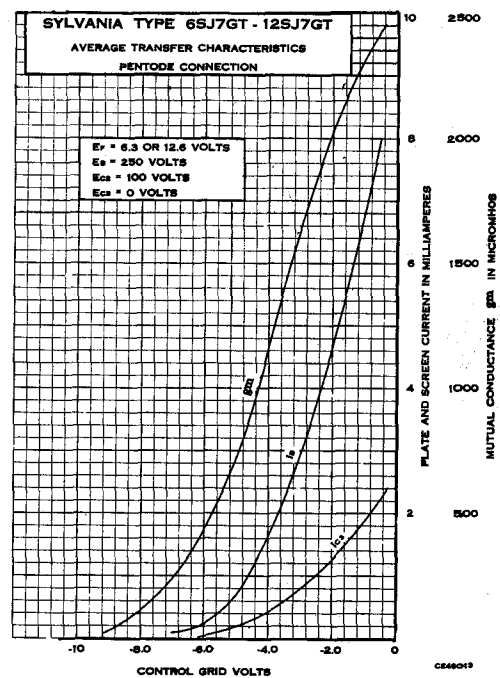
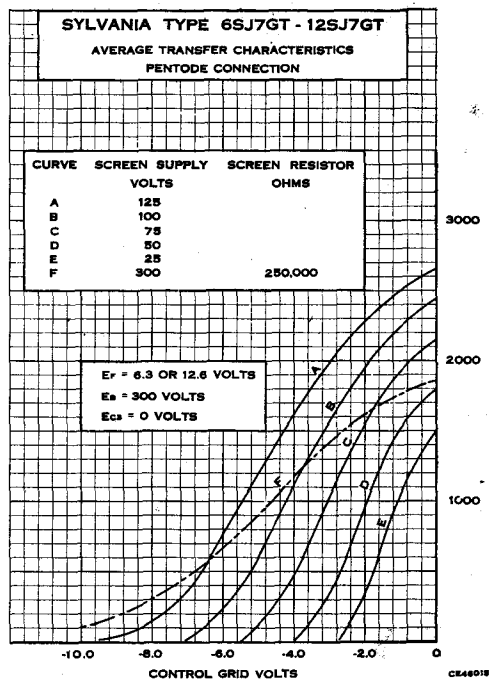
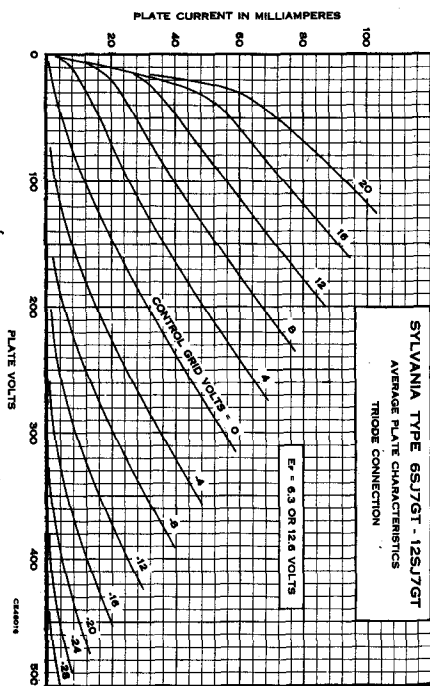
APPLICATION

Sylvania Types 6SJ7, GT are single-ended r-f pentode tubes having a sharp cut-off characteristic and designed for applications similar to those for Sylvania Type 6J7. Characteristics for this tube are also very similar to Type 7C7, but are not identical. For additional information on circuit application refer to Type 7C7. Resistance coupled circuit data may be found in the appendix.



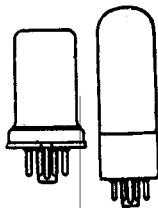
6SJ7GT (Cont'd)

SYLVANIA RADIO TUBES





8N-1-1 (6SK7)
8N-1-5 (6SK7GT)



Sylvania Type 6SK7^{GT}

REMOTE CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

	6SK7	6SK7GT
Base.....	Small Wafer Octal 8 Pin	Small Wafer Metal Sleeve Octal 8 Pin
Bulb.....	Metal 8-1	T9
Maximum Overall Length.....	2 5/8"	3 3/4"
Maximum Seated Height.....	2 1/8"	2 3/4"
Mounting Position.....	Any	Any

Direct Interelectrode Capacitances:*

	6SK7*	6SK7GT**
Grid to Plate.....	0.003 μ f. Max.	0.005 μ f. Max.
Input.....	6.0 μ f.	6.5 μ f.
Output.....	7.0 μ f.	7.5 μ f.

*With shell connected to cathode.

**With 1 1/8" diameter shield (RMA Std. M8-308) connected to cathode.

TYPICAL OPERATION

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	0.30	0.30 Ampere
Plate Voltage.....	100	250 Volts Max.
Grid Voltage.....	-1.0	-3 Volts Min.
Screen Voltage.....	100	100 Volts Max.
Suppressor.....	Tie to Cathode	
Plate Current.....	13.0	9.2 Ma.
Screen Current.....	4.0	2.6 Ma.
Plate Resistance (Approximate).....	0.12	0.8 Megohm
Mutual Conductance.....	2350	2000 μ mhos
Amplification Factor.....	475	1600 Approx.
Grid Voltage (10 μ mhos Mutual Cond.).....	-35	-35 Volts
Heater-Cathode Voltage.....	90	90 Volts Max.



8BD-0-0



Sylvania Type 6SL7^{GT}

HIGH-MU DUO TRIODE

PHYSICAL SPECIFICATIONS

Base.....	Intermediate Octal 8 Pin
Bulb.....	T9
Maximum Overall Length.....	3 3/4"
Maximum Seated Height.....	2 3/4"
Mounting Position.....	Any

TYPICAL OPERATION*

Heater Voltage.....	6.3 Volts
Heater Current.....	0.300 Ampere
Plate Voltage.....	250 Volts
Grid Voltage.....	-2.0 Volts
Self-Bias Resistor.....	870 Ohms
Plate Current.....	2.3 Ma.
Plate Resistance.....	44000 Ohms
Mutual Conductance.....	1600 μ mhos
Amplification Factor.....	70
Maximum Heater-Cathode Voltage.....	90 Volts

*Values are for one section except for heater.

6SN7^{GT} Sylvania Type

MEDIUM-MU DUO TRIODE



8BD-0-0

PHYSICAL SPECIFICATIONS

Base.....	Intermediate Octal 8 Pin
Bulb.....	T9
Maximum Overall Length.....	3 1/4"
Maximum Seated Height.....	2 3/4"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.60 Ampere

Direct Interelectrode Capacitances:*

	Triode 1§	Triode 2§
Grid to Plate.....	3.8	4.0 μ f.
Input.....	2.8	3.0 μ f.
Output.....	0.8	1.2 μ f.

*Without shield.

§Triode No. 1 connects to pins 4, 5 and 6. Triode No. 2 is connected to pins 1, 2 and 3.

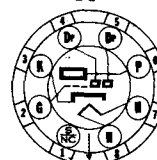
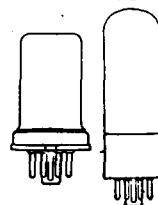
TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS CLASS A₁ AMPLIFIER (PER SECTION)

Heater Voltage.....	6.3	6.3	Volts
Heater Current.....	0.6	0.6	Ampere
Plate Voltage.....	90	250	Volts
Grid Voltage.....	0	-8	Volts
Self Bias Resistor.....	0	900	Ohms
Plate Current.....	10	9.0	Ma.
Plate Resistance.....	6700	7700	Ohms
Mutual Conductance.....	3000	2600	μ mhos
Amplification Factor.....	20	20	

For resistance coupled data, refer to Type 7A4 in appendix.

6SQ7^{GT} Sylvania Type

DUODIODE HIGH-MU TRIODE



8Q-1-1 (6SQ7)
8Q-1-3 (6SQ7GT)

PHYSICAL SPECIFICATIONS

	6SQ7 Small Wafer Octal 8 Pin	6SQ7GT Small Wafer Metal Sleeve Octal 8 Pin
Bulb.....	Metal 8-1	T9
Maximum Overall Length.....	2 3/4"	3 1/4"
Maximum Seated Height.....	2 1/4"	2 3/4"
Mounting Position.....	Any	Any

Direct Interelectrode Capacitances:*

Grid to Plate.....	1.6	1.8 μ f.
Input.....	3.2	4.2 μ f.
Output.....	3.0	3.4 μ f.

*With shell connected to cathode for type 6SQ7G. Without shield for type 6SQ7GT.

TYPICAL OPERATION CLASS A AMPLIFIER (TRIODE UNIT)

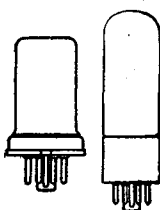
Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	300	300 Ma.
Plate Voltage.....	100	250 Volts
Grid Voltage.....	-1	-2 Volts
Plate Current.....	0.5	1.1 Ma.
Plate Resistance.....	110,000	85,000 Ohms
Mutual Conductance.....	925	1175 μ mhos
Amplification Factor.....	100	100
Maximum Heater-Cathode Voltage.....	90	90 Volts

Except for capacitances the electrical characteristics and circuit applications are the same as those for Sylvania Type 7B6 and reference can be made to that type for any necessary information.

SYLVANIA RADIO TUBES



8-Q-1-1 (6SR7)
8Q-0-3 (6SR7GT)



Sylvania Type 6SR7^{GT}

DUODIODE MEDIUM-MU TRIODE

PHYSICAL SPECIFICATIONS

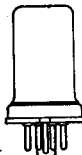
	6SR7	6SR7GT
Base.....	Small Wafer Octal 8 Pin	Small Wafer 8 Pin Metal Shell
Bulb.....	Metal 8-1	T9
Maximum Overall Length.....	2 5/8"	3 1/4"
Maximum Seated Height.....	2 1/4"	2 3/4"
Mounting Position.....	Any	Any

RATINGS AND OPERATION

Heater Voltages AC or DC.....	6.3 Volts
Heater Current.....	0.300 Ampere



8N-1-0



Sylvania Type 6SS7

REMOTE CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base.....	Small Wafer Octal 8 Pin
Bulb.....	Metal 8-1
Maximum Overall Length.....	2 5/8"
Maximum Seated Height.....	2 1/4"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	150 Ma.
Maximum Plate Voltage.....	300 Volts
Maximum Screen Supply Voltage.....	300 Volts
Maximum Screen Voltage.....	100 Volts
Minimum Grid Voltage.....	0 Volt
Maximum Plate Dissipation.....	2.25 Watts
Maximum Screen Dissipation.....	0.35 Watt
Maximum Heater-Cathode Voltage.....	90 Volts

TYPICAL OPERATION

CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3	6.3 Volts
Heater Current.....	150	150 Ma.
Plate Voltage.....	100	250 Volts
Screen Voltage.....	100	100 Volts
Grid Voltage.....	-1.0	-3.0 Volts
Suppressor.....	Connected to Cathode	
Plate Resistance (Approximate).....	0.12	1.0 Megohm
Mutual Conductance.....	1930	1850 μ mhoe
Grid Voltage for 10 μ mhoe.....	-35	-35 μ mhoe
Plate Current.....	12.2	9.0 Ma.
Screen Current.....	3.1	2.0 Ma.

6ST7 Sylvania Type

DUODIODE TRIODE



8Q-1-0

PHYSICAL SPECIFICATIONS

Base.....	Small Wafer Octal 8 Pin
Bulb.....	Metal 8-1
Maximum Overall Length.....	2 3/4"
Maximum Seated Height.....	2 1/4"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	0.15 Ampere
Maximum Plate Voltage.....	250 Volts
Maximum Plate Dissipation.....	2.5 Watts
Maximum Heater-Cathode Voltage.....	90 Volts

TYPICAL OPERATION

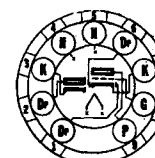
CLASS A₁ AMPLIFIER

Heater Voltage.....	6.3 Volts
Heater Current.....	0.15 Ampere
Plate Voltage.....	250 Volts
Grid Voltage.....	-9.0 Volts
Self-Bias Resistor.....	950 Ohms
Amplification Factor.....	16
Plate Resistance.....	8500 Ohms
Mutual Conductance.....	1900 μ mhos
Plate Current.....	9.5 Ma.

Reference should be made to Type 7E6 for further data.
For diode information, refer to Lock-In Type 7B6.

6T8 Sylvania Type

TRIPLE DIODE TRIODE



9E-0-3 & 7

PHYSICAL SPECIFICATIONS

Base.....	Small Button 9 Pin
Bulb.....	T-61 1/2
Maximum Overall Length.....	2 3/4"
Maximum Seated Height.....	1 15/16"
Mounting Position.....	Any

RATINGS

Heater Voltage AC or DC.....	6.3 Volts
Heater Current.....	450 Ma.
Maximum Plate Voltage.....	300 Volts
Maximum Plate Dissipation.....	1.0 Watt
Maximum Heater-Cathode Voltage.....	90 Volts
Maximum Diode Current per Plate.....	5.0 Ma.
Direct Interelectrode Capacitances:*	
Grid to each diode plate.....	0.035 μ mf. Max.
Diode input (pins 1 or 6).....	3.8 μ mf.
Diode input (pin 2).....	4.5 μ mf.

*With no external shield.

TYPICAL OPERATION

Heater Voltage AC or DC.....	6.3	6.3 Volts
Heater Current.....	450	450 Ma.
Plate Voltage.....	100	250 Volts
Grid Voltage.....	-1.0	-3.0 Volts
Plate Current.....	0.8	1.0 Ma.
Amplification Factor.....	70	70
Mutual Conductance.....	1300	1200 μ mhos
Plate Resistance.....	54,000	58,000 Ohms

APPLICATION

Sylvania Type 6T8 is a triple diode triode designed for use in FM-AM sets. When used as a ratio detector it is recommended that pins 1 and 2 be used as the diodes.

For curve data reference should be made to Type 6AQ6, and resistance coupled data may be found in the appendix under Type 6Q7GT.