TECHNICAL MANUAL

SYLVANIA RADIO TUBES

A Technical Publication of

SYLVANIA ELECTRIC PRODUCTS INC.

EMPORIUM, PENNA.

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FOREWORD

Daily developments in every field of the electronics industry have necessitated many new tube types. Keeping abreast of these many types is always a problem for servicemen and engineers. In preparing the eighth edition of this manual, every effort has been expended to assure the completeness of its contents.

One important item is the size of the book. Although more than 45 types have been added to this edition, it has still turned out to be a thinner book, easier to handle and with less danger of torn pages. To accomplish this goal, much of the previously vacant half-pages have been utilized. Many curves have been dropped on those types which are now of interest only on a renewal basis. There are, consequently, many places where data on a particular type begins at mid-page and many pages which contain two or more types. At all times, however, numerical-alphabetical order has been maintained.

The increased number of cathode ray tubes has made it preferable to establish a separate section for these types. In this manner, comparisons may be made far more easily than if they were kept in the balance of the manual. Where A and B versions of television picture tubes have been included at the bottom of a listing, it should be noted that the basic diagram is shown only for the primary version. Differences encountered in the suffixed versions must be taken into consideration when studying this diagram.

The new loose-leaf binder requires no explanation. Its added simplicity of operation will make it more convenient to keep it up to date by means of the monthly supplement sheets. These additions are published in conjunction with Sylvania News, available without charge by sending a request to Sylvania Electric Products, Inc., Advertising Department, Emporium, Pennsylvania.

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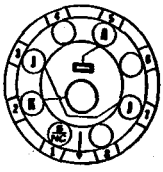


4AJ-0-0

Sylvania Type 0A3
Sylvania Type 0B3
Sylvania Type 0C3
Sylvania Type 0D3

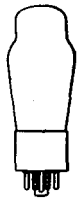
RATINGS

	OA3	OB3	OC3	OD3
Minimum Starting Voltage Required	105	125	133	185 Volts
Operating Current—Minimum	5	5	5	5 Ma.
Operating Current—Maximum	40	30	40	40 Ma.
Maximum Peak Current for 10 Seconds	100	100	100	100 Ma.

TYPICAL OPERATION

Heater Voltage	None Required			
Operating Voltage	75	90	105	150 Volts
Regulation (Maximum Voltage Change Minimum to Maximum Current)	6.5	6	4	5.5 Volts

4V-0-0



Sylvania Type 0A4G

COLD CATHODE CONTROL TUBE

PHYSICAL SPECIFICATIONS

Base	Small Octal 6-Pin
Bulb	ST-12
Maximum Overall Length	4 1/8"
Maximum Seated Height	3 1/16"
Mounting Position	Any

RATINGS

Min. Anode to Cathode Breakdown Voltage (Starter Anode Potential 0 Volts)	225 Volts
Starter Anode to Cathode Breakdown Voltage—Min.	70 Volts
Max.	90 Volts
Max. Starter Anode Current for Anode Breakdown	100 μa.
Starter Anode to Cathode Voltage Drop (Approx.)	60 Volts
Anode to Cathode Voltage Drop (Approx.)	70 Volts
Anode Current—Continuous Max.	25 Ma.
Instantaneous Max.	100 Ma.

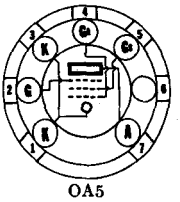
TYPICAL OPERATION

Anode Supply Voltage (RMS)	105 to 130 Volts
Starter Anode Voltage—Peak AC	70 Volts
Peak RF	55 Volts

Note; To assure stable operation, the 0A4G should be shielded from external light sources.

0A5 Sylvania Type

TRIGGERTUBE



OA5

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T-5½
Maximum Overall Length	1 5/8"
Maximum Seated Height	1 3/8"
Mounting Position	Any

RATINGS

Maximum Anode Operating Voltage DC	1000 Volts
Minimum Anode Operating Voltage DC (1)	500 Volts
Minimum Trigger Grid Firing Voltage (2)	+180 Volts
Minimum Hold-Off Voltage DC (3)	1500 Volts
Minimum Trigger Grid Pulse Voltage to Fire (2)	50 Volts
Maximum Trigger Grid Pulse Current (4)	40 μa.
Maximum Discharge Capacitance	0.5 μfd.
Maximum Power Input (5)	1.0 Watt
Maximum Repetition Rate	See Note 5
Minimum Peak Cathode Current to Produce Arc	10 Amperes
Ambient Temperature Range	−40 to +60° C.

(1) Operation at 250 volts is possible providing higher trigger pulse voltages are available.

(2) This is the sum of bias voltage and triggering pulse.

(3) Voltages above this limit may cause the tube to fire without application of pulse voltage. Measured in a typical circuit with a trigger grid bias of 90 volts and a keep-alive current of 50 ua.

(4) Measured in a typical circuit with 50 ua keep-alive current and 90 volts trigger grid bias.

(5) The maximum power input is given by $W = \frac{1}{2}CV^2f$ where C is the discharge capacitance in microfarads, V is the anode voltage in kilovolts and f is the number of flashes or pulses per second. This relation also determines the maximum repetition rate.

TYPICAL OPERATION

In an Electroflash Trigger Circuit

Anode Voltage DC	750 Volts
Trigger Grid Voltage	+90 Volts
Trigger Grid Circuit Resistance	0.25 Megohm
Trigger Pulse Voltage	85 Volts
Keep-Alive Current	50 μa.
Discharge Condenser	0.25 μfd.

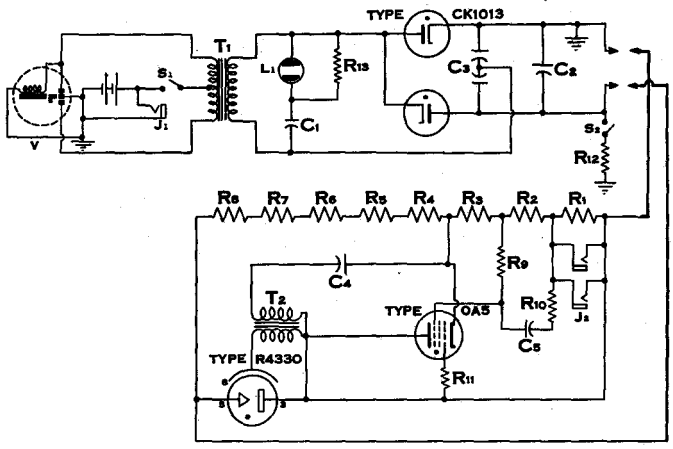
APPLICATION

Sylvania Type 0A5 is a miniature cold cathode gas discharge tube designed for use as a trigger tube for switching service requiring extremely high instantaneous peak currents (hundreds of amperes). It is sensitive enough and will carry high enough current to permit photocell operation of some devices without special amplifiers. The circuit below shows its use in a typical portable Electroflash unit, where its use reduces the current carrying capacity requirement of the switch and also reduces the shock hazard.

Note that for most applications the shield grid (Pin 5) is left floating. This increases the sensitivity. Connection to the cathode through a 10 meg. resistor increases the hold-off voltage considerably, but a higher trigger grid current will be required.

Sylvania Type 0A5 is manufactured under license granted by Edgerton, Germeshausen, and Grier, but no license is granted nor is a license to be implied under their circuit patents.

BATTERY ELECTROFLASH CIRCUIT DIAGRAM



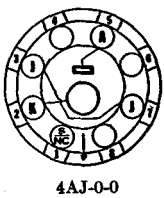
PARTS LIST

Condenser	Capacity	Working Voltage
C1	.001 μfd.	2500
C2	32 μfd.	2500
C3	.05 – .05 μfd.	2000
C4	.25 μfd.	1000
C5	.01 μfd.	600

Resistor	Ohms	Watts
R1	.51 Meg.	½
R2	1.8 Meg.	½
R3	.47 Meg.	½
R4 to R8	1.6 Meg. each	1
R9	10 Meg.	½
R10	.27 Meg.	½
R11	10 Meg.	½
R12	5000	10
R13	47,000	½

MISCELLANEOUS

Battery	4 Volt Storage
J1	Battery charging connection
J2	Camera and Synchronizer connection
L1	Neon Indicator Lamp
S1	Off-On switch S.P.S.T.
S2	Safety switch
T1	Vibrator Transformer
T2	Trigger Transformer
V	Vibrator



4AJ-0-0

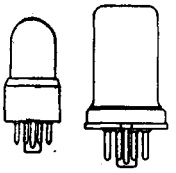
Sylvania Type 0B3
Sylvania Type 0C3
Sylvania Type 0D3

VOLTAGE REGULATORS

(SEE TYPE OA3 FOR SPECIFICATIONS AND RATINGS)

0Z4 Sylvania Type
0Z4G Sylvania Type

FULL WAVE GAS RECTIFIERS



4R-1-0 (0Z4)
4R-0-0 (0Z4G)

PHYSICAL SPECIFICATIONS

	0Z4	0Z4G
Base	Small Wafer Octal 6 Pin	Dwarf Octal 5 Pin
Bulb	Metal 8-3	T-7
Maximum Overall Length	2 5/8"	2 5/8"
Maximum Seated Height	2 1/16"	2 1/16"
Mounting Position	Any	Any

RATINGS

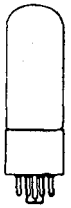
Heater Voltage	None Required
Peak Starting Plate Voltage	300 Min.
Peak Plate Current (Operating)	200 Ma.
Peak Plate to Plate Voltage	1000 Volts
DC Output Current	30 Ma. Min. 90 Ma. Max

TYPICAL OPERATION

Heater Voltage	None Required
AC Plate Voltage (RMS)	300 Volts
DC Output Current	90 Ma.

1A5GT Sylvania Type

POWER AMPLIFIER PENTODE



6X-0-0

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 7-Pin
Bulb	T-9
Maximum Overall Length	3 5/16"
Maximum Seated Height	2 3/4"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	1.6 Volts
Filament Voltage (Design Center for AC-DC Oper.)	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	110 Volts
Maximum Total Zero Signal Cathode Current	6 Ma.

TYPICAL OPERATION AS A CLASS A_1 AMPLIFIER

Filament Voltage	1.4	1.4 Volts
Filament Current	.050	.050 Ampere
Plate Voltage	85	90 Volts
Screen Voltage	85	90 Volts
Grid Voltage*	-4.5	-4.5 Volts
Plate Current	3.5	4.0 Ma.
Screen Current	0.7	0.8 Ma.
Plate Resistance	0.3	0.3 Megohm
Mutual Conductance	800	850 μmhos
Load Resistance	25,000	25,000 Ohms
Power Output	100	115 Milliwatts
Total Harmonic Distortion	10	7 Percent

*Self bias is recommended for battery operation although it reduces the power output slightly. It makes a separate bias supply unnecessary and allows the bias to decrease in proportion with the decrease in B supply volts with age.

7Z-1-0

Sylvania Type 1A7GT

HEPTODE CONVERTER

PHYSICAL SPECIFICATIONS

Base	Small Wafer Octal 8-Pin Metal Sleeve
Bulb	T-9
Cap	Miniature
Maximum Overall Length	3 5/16"
Maximum Seated Height	2 3/4"
Mounting Position	Any

RATINGS

Filament Voltage	1.4 Volts
Filament Current	0.05 Ampere
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	60 Volts
Maximum Screen Supply Voltage	110 Volts
Maximum Anode-Grid Voltage	110 Volts
Maximum Cathode Current	4.0 Ma.

TYPICAL OPERATION

Filament Voltage	1.4 Volts
Filament Current	0.05 Ampere
Plate Voltage	90 Volts
Screen Voltage**	45 Volts
Anode-Grid Voltage	90 Volts
Control-Grid Voltage (G)†	0 Volts
Oscillator Grid Resistor (Go)	200000 Ohms
Plate Resistance	0.6 Megohm
Plate Current	0.55 Ma.
Screen Current	0.6 Ma.
Anode-Grid Current	1.2 Ma.
Oscillator Grid Current	0.035 Ma.
Total Cathode Current	2.4 Ma.
Conversion Conductance;	
Control Grid Voltage at 0 Volts	250 μmhos
Control Grid Voltage at −2 Volts	50 μmhos
Control Grid Voltage at −3 Volts	5 μmhos

**Obtained preferably by using a properly by-passed 70,000 ohm resistor in series with a 90 volt supply.

†A resistance of at least 1 megohm should be in the grid return to negative filament pin.

8CP-0-0

Sylvania Type 1AC5

OUTPUT PENTODE

PHYSICAL SPECIFICATIONS

Base	Subminiature Button 8 Pin
Bulb	T-3
Maximum Overall Length	1¾"
Maximum Seated Height	1½"
Mounting Position	Any

RATINGS

Filament Voltage DC	1.25 Volts
Maximum Plate Voltage	67.5 Volts
Maximum Screen Voltage	67.5 Volts
Maximum Cathode Current	4.0 Ma.

1AC5 (Cont.)

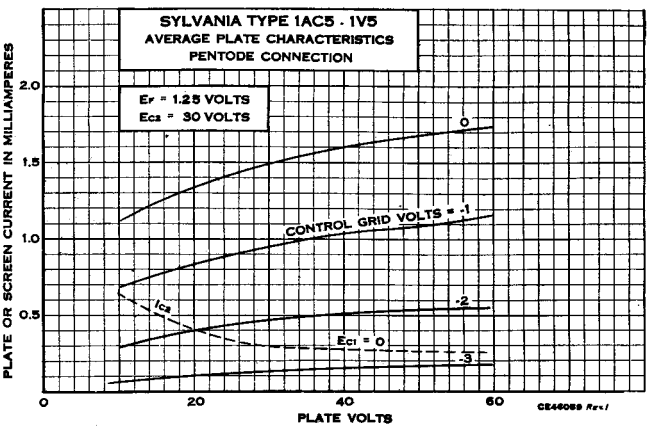
TYPICAL OPERATION

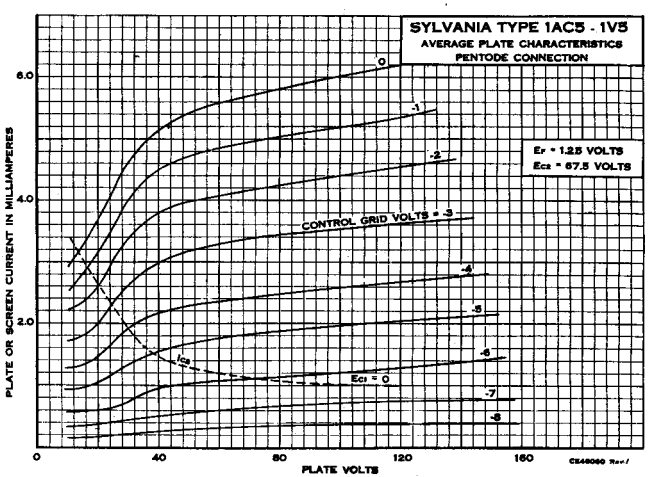
CLASS A AMPLIFIER

Filament Voltage DC	1.25	1.25	1.25 Volts
Filament Current	40	40	40 Ma.
Plate Voltage	30	45	67.5 Volts
Screen Voltage	30	45	67.5 Volts
Grid Voltage	−2.0	−3.0	−4.5 Volts
Plate Current	0.50	1.0	2.0 Ma.
Screen Current	0.10	0.2	0.4 Ma.
Plate Resistance (Approx.)	.200	.170	.150 Megohm
Mutual Conductance	450	600	750 μmhos
Load Resistance	50,000	40,000	25,000 Ohms
Power Output	5	15	50
Total Harmonic Distortion	10	10	10%

APPLICATION

Sylvania Type 1AC5 is an Output Pentode suitable for use in very small radio sets or amplifiers. The other types required for a normal set complement and designed for such usage are Types 1E8 (Converter), 1T6 (Diode Pentode) and 1AD5 (RF Pentode).





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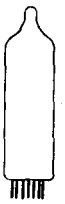


Sylvania Type 1AD5

SHARP CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base	Subminiature Button 8 Pin
Bulb	T-3
Maximum Overall Length	1¾"
Maximum Seated Height	1½"
Mounting Position	Any

Direct Interelectrode Capacitances:*

	Unshielded	Shielded*
Grid to Plate	.01 Max.	.009 μμf. Max.
Input	1.8	1.9 μμf.
Output	2.8	3.0 μμf.

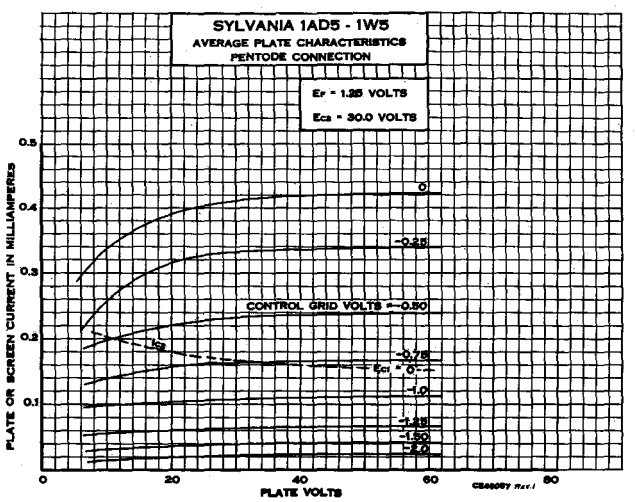
*With 0.405" diameter shield connected to negative filament. Leads numbering 1, 3 and 6 must be grounded to obtain these values.

TYPICAL OPERATION

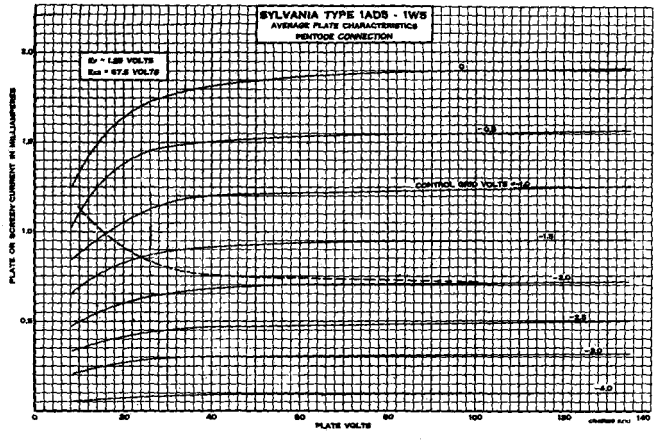
Filament Voltage DC	1.25	1.25	1.25 Volts
Filament Current	40	40	40 Ma.
Plate Voltage	30	45	67.5 Volts
Screen Voltage	30	45	67.5 Volts
Grid Voltage	0	0	0 Volts
Plate Current	0.45	0.9	1.85 Ma.
Screen Current	0.16	0.35	0.75 Ma.
Plate Resistance (Approx.)	0.7	0.7	0.7 Megohm
Mutual Conductance	430	580	735 μmhos
Control Grid Voltage for Ib=10 μa. (Approx.)	−3.0	−4.0	−6.0 Volts

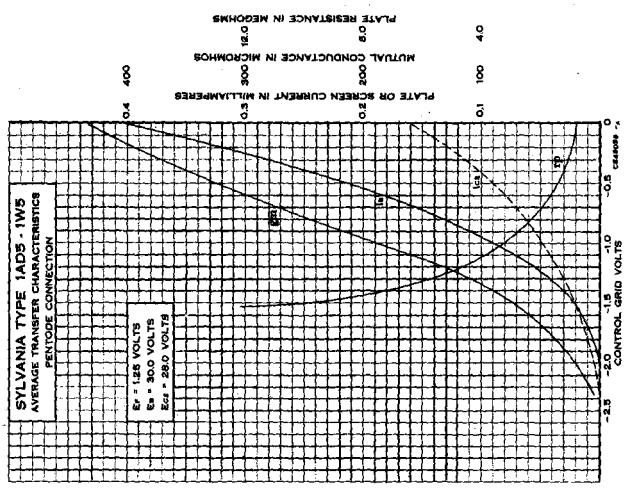
APPLICATION

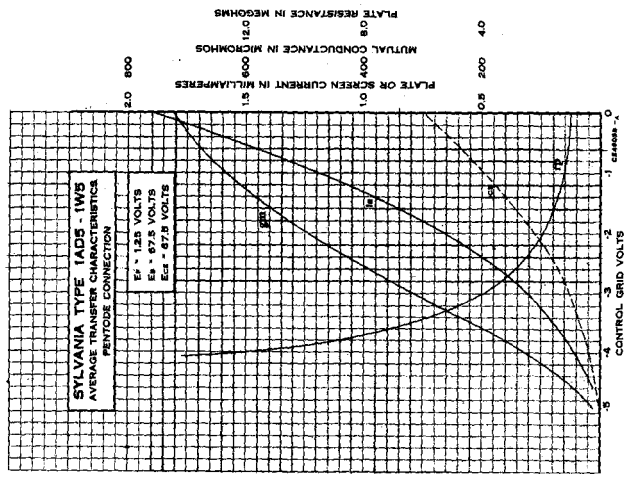
Sylvania Type 1AD5 is an RF Pentode tube suitable for use in very small radio sets or amplifiers. The other types required for a normal set complement and designed for such usage are Types 1E8 (Converter), 1T6 (Diode Pentode) and 1AC5 (Output Pentode).

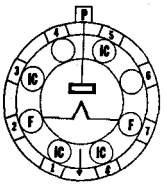


1AD5 (Cont'd)

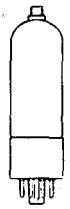

SYLVANIA TYPE 1AD5 - 1W5
AVERAGE PLATE CHARACTERISTICS
PENTODE CONNECTION
Ef = 1.25 VOLTS
Ecs = 67.5 VOLTS
PLATE OR SCREEN CURRENT IN MILLIAMPERES
PLATE VOLTS
CONTROL GRID VOLTS


SYLVANIA TYPE 1AD5 - 1W5
AVERAGE TRANSFER CHARACTERISTICS
PENTODE CONNECTION
Ef = 1.25 VOLTS
Eb = 30.0 VOLTS
Ecs = 28.0 VOLTS
PLATE RESISTANCE IN MEGOHMS
MUTUAL CONDUCTANCE IN MICROMHOS
PLATE OR SCREEN CURRENT IN MILLIAMPERES
CONTROL GRID VOLTS


SYLVANIA TYPE 1AD5 - 1W5
AVERAGE TRANSFER CHARACTERISTICS
PENTODE CONNECTION
Ef = 1.25 VOLTS
Eb = 67.5 VOLTS
Ecs = 67.5 VOLTS
PLATE RESISTANCE IN MEGOHMS
MUTUAL CONDUCTANCE IN MICROMHOS
PLATE OR SCREEN CURRENT IN MILLIAMPERES
CONTROL GRID VOLTS



3C-0-7



Sylvania Type 1B3GT

HALF-WAVE RECTIFIER

PHYSICAL SPECIFICATIONS

Base	Short Intermediate Shell Octal 6-Pin
Bulb	T-9
Cap	Small
Maximum Overall Length	4½"
Maximum Seated Height	3½"
Mounting Position	Any

RATINGS

Filament Voltage AC or DC	1.25 Volts
Filament Current	200 Ma.
Maximum Peak Inverse Plate Voltage	30,000 Volts
Maximum Peak Plate Current	17 Ma.
Maximum Average Plate Current	2 Ma.
Maximum Frequency of Supply Voltage	300 Kc.
Direct Interelectrode Capacitances*	
Plate to Filament (Approx.)	1.2 μμf.

* *Unshielded.*

APPLICATION

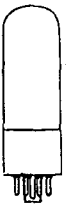
Sylvania Type 1B3GT is a high-vacuum half-wave rectifier designed for high voltage service where low currents are required. Typical examples are for operation of cathode-ray tubes and electroflash units.

When the high voltage is supplied by an oscillator care should be taken to use large leads and long radius corners to avoid corona loss. When the filament is also supplied by the oscillator the adjustment for proper operating temperature should be made optically by comparison with a similar filament on a readily metered supply.

WARNING

The voltages employed in some television receivers and other high voltage equipment are sufficiently high that high-voltage rectifier tubes may produce X-rays which can constitute a health hazard, unless such tubes are adequately shielded.

6X-0-0



Sylvania Type 1C5GT

POWER OUTPUT PENTODE

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 7-Pin
Bulb	T-9
Maximum Overall Length	3⅝"
Maximum Seated Height	2¾"
Mounting Position	Any

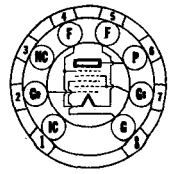
TYPICAL OPERATION

Filament Voltage	1.4	1.4 Volts
Filament Current	0.10	0.10 Ampere
Plate Voltage	83	90 Volts
Screen Voltage	83	90 Volts
Grid Voltage*	−7.0	−7.5 Volts
Plate Current	7.0	7.5 Ma.
Screen Current	1.6	1.6 Ma.
Plate Resistance	110000	115000 Ohms
Mutual Conductance	1500	1550 μmhos
Amplification Factor	165	180
Load Resistance	9000	8000 Ohms
Power Output	200	240 Mw.
Total Harmonic Distortion	10	10 Per Cent

*Negative filament return, Pin No. 7.

1C8 Sylvania Type

PENTAGRID CONVERTER



8CN-0-0

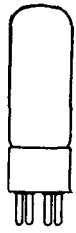
PHYSICAL SPECIFICATIONS

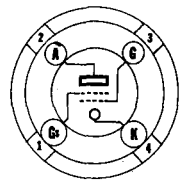
Base	Flexible Leads
Bulb	T-3
Maximum Bulb Length	1½"
Minimum Bead Length	1¼"
Mounting Position	Any

For additional data reference should be made to Type 1E8 which has the same operating conditions but differs in lead length.

1D21 Sylvania Type

STROBOTRON





1D21

PHYSICAL SPECIFICATIONS

Base	Small 4 Pin
Bulb	T-9
Maximum Overall Length	4 9/16"
Maximum Seated Height	3 5/8"
Mounting Position	Any

RATINGS

Maximum Anode Voltage DC*	300 Volts
Maximum Peak Inverse Anode Voltage	50 Volts
Minimum Peak Cathode Current	5 Amperes
Maximum Average Cathode Current	50 Ma.
Maximum Pulse Frequency	240 pps
Maximum Average Grid Current	15 Ma.
Maximum Control Grid Circuit Resistance	5 Megohms
Maximum Grid Current (Surge)	1 Ma.
Maximum Shield or Control Grid Voltage†	±50 Volts
Minimum Grid Pulse Voltage	175 Volts
Approx. Tube Voltage Drop—Glow Discharge	70 Volts
—Arc Discharge	20 Volts
Ambient Temperature Range	-55 to +90° Cent.

TYPICAL OPERATION

Anode Voltage*	300 Volts
Average Cathode Current	50 Ma.
Peak Cathode Current	10 to 200 Amperes
Control Grid Voltage†	0 Volts
Shield Grid Voltage†	+30 Volts
Pulse Voltage	175 Volts

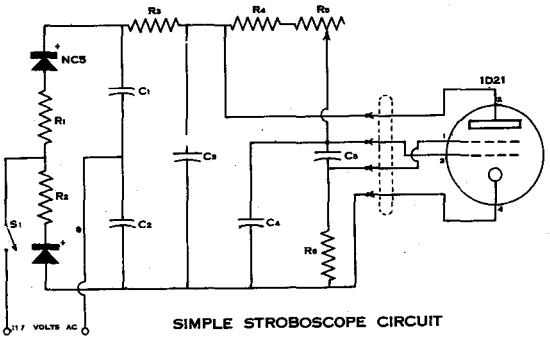
*Measured from anode to shield grid.
†Either grid may be used for control with proper bias on the other grid.

APPLICATION

Sylvania Strobotron Type 1D21 is a gas discharge tube which when used in a suitable circuit may be used for studying the motion of rotating or reciprocating parts up to 14,400 revolutions per minute.

A circuit for a simple stroboscope requiring a minimum of parts and capable of operating over the range from 600 to 6720 revolutions per minute is shown below.

Sylvania Strobotron tubes are manufactured under license granted by Edgerton, Germeshausen, and Grier, but no license is granted nor is a license to be implied under their circuit patents.

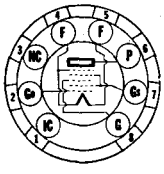


SIMPLE STROBOSCOPE CIRCUIT

PARTS LIST

R1—10 ohm, 1 w. res.
R2—10 ohm, 1 w. res.
R3—3500 ohm, 10 w. wirewound res.
R4—50,000 ohm, 1 w. res.
R5—1 megohm pot.
R6—2 megohm, 1 w. res.

C1—20 μfd., 450 v. elec. cond.
C2—20 μfd., 450 v. elec. cond.
C3—1 μfd., 400 v. cond.
C4—.1 μfd., 400 v. cond.
C5—.01 μfd., mica cond.
S1—S.p.s.t. toggle sw.



8CN-0-0

Sylvania Type 1E8

PENTAGRID CONVERTER

PHYSICAL SPECIFICATIONS

Base	Subminiature Button 8 Pin
Bulb	T-3
Maximum Overall Length	1¾″
Maximum Seated Height	1½″
Mounting Position	Any

Direct Interelectrode Capacitances:

	Unshielded
Control grid to all other electrodes	6.0 μμf.
Control grid to plate	0.4 μμf. Max.
Plate to all other electrodes	5.0 μμf.
Oscillator grid to control grid	0.2 μμf. Max.
Oscillator grid to all other electrodes	2.4 μμf.

TYPICAL OPERATION

Filament Voltage DC	1.25	1.25	1.25 Volts
Filament Current	40	40	40 Ma.
Plate Voltage	30	45	67.5 Volts
Screen Supply Voltage	30	45	67.5 Volts
Screen Grid Resistor	10,000	15,000	20,000 Ohms
Grid Voltage	0	0	0 Volts
Plate Current	0.30	0.6	1.0 Ma.
Screen Current	0.8	1.1	1.5 Ma.
Plate Resistance (Approx.)	0.3	0.4	0.4 Megohm
Conversion Transconductance	115	140	150 μmhos
Oscillator Grid Resistance	0.1	0.1	0.1 Megohm
Oscillator Grid Current	30	50	70 μa.
Control Grid Voltage for Gc=5 μmhos approx.	−7.0	−8.0	−9.0

Oscillator Characteristics*

Mutual Conductance ..... 730 μmhos

*In a non-oscillating condition with plate and screen tied together at a voltage of 30 volts, and zero volts on the oscillator and control grids.

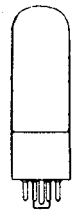
APPLICATION

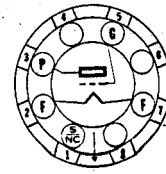
Sylvania Type 1E8 is a converter tube for use in very small radio sets. The other types required for a normal set complement and designed for such usage are Types 1T6 (Diode Pentode), 1AC5 (Output Pentode) and 1AD5 (RF Pentode).

This type corresponds in service and circuit requirements to Type 1R5 except for optimization of the performance at low voltages.

1G4GT Sylvania Type

MEDIUM-MU TRIODE





5S-0-0

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 7 Pin
Bulb	T-9
Maximum Overall Length	$3\frac{5}{16}$"
Maximum Seated Height	$2\frac{3}{4}$"
Mounting Position	Any

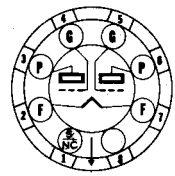
TYPICAL OPERATION

Filament Voltage DC	1.4 Volts
Filament Current	50 Ma.
Plate Voltage	90 Volts Max.
Grid Voltage*	-6.0 Volts
Plate Current	2.3 Ma.
Mutual Conductance	825 μmhos
Amplification Factor	8.8

*Negative filament return, Pin No. 7.

1G6GT Sylvania Type

DUO TRIODE POWER AMPLIFIER



7AB-0-0

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 7 Pin
Bulb	T-9
Maximum Overall Length	$3\frac{5}{16}$"
Maximum Seated Height	$2\frac{3}{4}$"
Mounting Position	Any

TYPICAL OPERATION

Filament Voltage DC	1.4 Volts
Filament Current	100 Ma.

CLASS A AMPLIFIER (Each Triode)

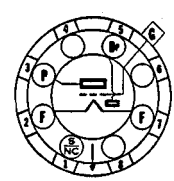
Plate Voltage	90 Volts
Grid Voltage	0 Volt
Plate Current	1.0 Ma.
Plate Resistance	40000 Ohms
Mutual Conductance	825 μmhos
Amplification Factor	33

CLASS B POWER AMPLIFIER

Plate Voltage	90 Volts Max.
Grid Voltage	0 Volt
Plate Current Per Plate (Zero Signal)	1.0 Ma.
Peak Plate Current Per Triode	20 Ma. Max.
Load Resistance (Plate to Plate)	12000 Ohms
Power Output*	675 Mw.
Distortion (Approx.)	3 Per Cent

1H5GT Sylvania Type

DIODE HIGH-MU TRIODE

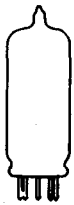


5Z-1-7

PHYSICAL SPECIFICATIONS

Base	Small Wafer 7 Pin Octal Metal Sleeve
Bulb	T-9
Cap	Miniature
Maximum Overall Length	$3\frac{5}{16}$"
Maximum Seated Height	$2\frac{3}{4}$"
Mounting Position	Any

6AR-0-1 & 5



Sylvania Type 1L4

SHARP CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T-5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Filament Voltage	
Battery Operation—Must Never Exceed	1.6 Volts
AC DC Power Line Operation—Design Center	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	90 Volts
Maximum Total Cathode Current	6.5 Ma.
Minimum Grid Bias	0 Volt

Direct Interelectrode Capacitances:*

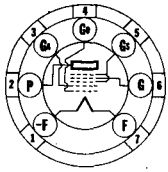
Grid to Plate	0.010 μμf Max.
Input	3.6 μμf
Output	7.5 μμf

*Measured without tube shield.

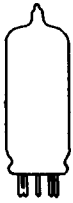
TYPICAL OPERATION

Filament Voltage DC	1.4	1.4 Volts
Filament Current	50	50 Ma.
Plate Voltage	90	90 Volts
Screen Voltage	67.5	90 Volts
Grid Voltage	0	0 Volts
Plate Resistance	0.6	0.35 Megohm
Mutual Conductance	925	1025 μmhos
Plate Current	2.9	4.5 Ma.
Screen Current	1.2	2.0 Ma.
Grid Bias for 10 μa. Plate Current	−6.0	−8.0 Volts

For use in resistance coupled amplifiers see appendix.



7DC-0-0



Sylvania Type 1L6

PENTAGRID CONVERTER

PHYSICAL SPECIFICATIONS

Base	Small Button 7 Pin
Bulb	T5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Filament Voltage DC	1.4 Volts
Filament Current	50 Ma.
Maximum Plate Voltage	110 Volts
Maximum Screen Supply Voltage	110 Volts
Maximum Screen Voltage	65 Volts
Maximum Anode Grid Voltage	110 Volts
Maximum Cathode Current	4.0 Ma.
Minimum Signal Grid Circuit Resistance	1.0 Megohm

1L6 (Cont'd)

Direct Interelectrode Capacitances:

	Shielded*	Unshielded
Grid G to Plate	0.30	0.45 μμf Max.
Grid G to Grid Ga	0.24	0.24 μμf
Grid G to Grid Go	0.19	0.19 μμf
Grid Go to Grid Ga	0.80	0.80 μμf
Grid G to All (RF Input)	7.5	7.5 μμf
Grid Ga to All except Go (Oscillator Output)	2.6	2.6 μμf
Grid Go to All except Ga (Oscillator Input)	2.2	2.2 μμf
Plate to All (Mixer Output)	12.0	7.0 μμf
Grid Go to Plate	0.10	0.15 μμf Max.

*With ¾" diameter shield (RMA Std. 316) connected to Pin 1.

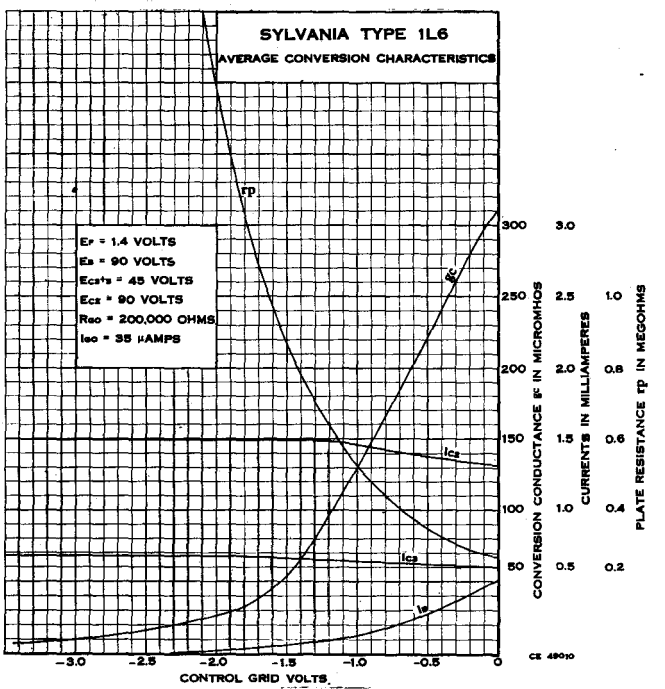
TYPICAL OPERATION

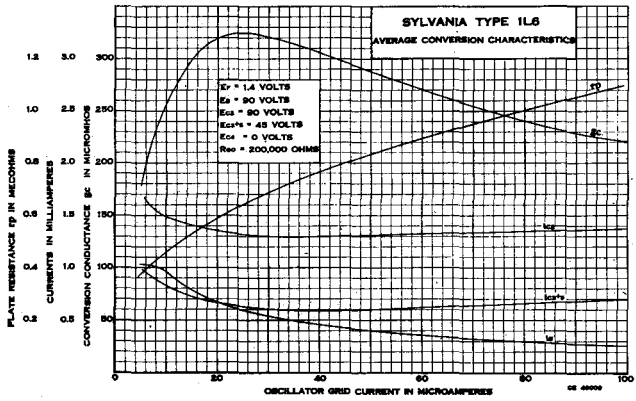
Filament Voltage	1.4 Volts
Filament Current	50 Ma.
Plate Voltage	90 Volts
Screen Voltage#	45 Volts
Anode Grid Voltage (Ega)	90 Volts
Control Grid Voltage	0 Volts
Control Grid Circuit Resistance	1.0 Megohm
Oscillator Grid Resistor (Rgo)	0.2 Megohm
Plate Resistance (Approx.)	0.65 Megohm
Plate Current	0.5 Ma.
Screen Current	0.6 Ma.
Anode Grid Current	1.2 Ma.
Oscillator Grid Current	0.035 Ma.
Total Cathode Current	2.35 Ma.
Conversion Transconductance	
Control Grid Voltage at 0 Volts	300 μmhos
Control Grid Voltage at -3.5 Volts (Approx.)	10 μmhos
Oscillator Mutual Conductance**	550 μmhos

**Not oscillating, Eb = 90 V, Egs = 45 V, Ega = 90 V, Eg and Ego = 0 V.
#Obtained preferably by using a properly bypassed dropping resistor of from 45,000 ohms to 75,000 ohms in series with the B supply.

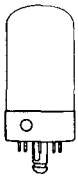
APPLICATION

Sylvania Type 1L6 is a miniature type pentagrid converter designed for use in low drain battery operated receivers. It is similar in construction and application to Types 1A7GT and 1LA6. The small size and low current requirements recommend it for use in small portable receivers.





5AD-L-0



Sylvania Type 1LA4

POWER OUTPUT PENTODE

PHYSICAL SPECIFICATIONS

Base	Lock-In 8 Pin
Bulb	T-9
Maximum Overall Length	2 15/32"
Maximum Seated Height	2 1/4"
Mounting Position	Any

RATINGS

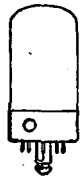
Maximum Filament Voltage	1.6 Volts
Filament Voltage (Design Center for AC-DC Operation)	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	110 Volts
Maximum Total Zero Signal Cathode Current	6 Ma.

TYPICAL OPERATION AS A CLASS A_1 AMPLIFIER

Filament Voltage DC	1.4	1.4 Volts
Filament Current	50	50 Ma.
Plate Voltage	85	90 Volts
Screen Voltage	85	90 Volts
Grid Volts*	−4.5	−4.5 Volts
Self-Bias Resistor*	1000	950 Ohms
Plate Current	3.5	4.0 Ma.
Screen Current	0.7	0.8 Ma.
Plate Resistance	0.3	0.3 Megohm
Mutual Conductance	800	850 μmhos
Load Resistance	25,000	25,000 Ohms
Power Output	100	115 Milliwatts
Total Harmonic Distortion	10	7 Per Cent

*Self bias is recommended for battery operation. Although it reduces the power output slightly it makes a separate bias supply unnecessary and allows the bias to decrease in proportion with the decrease in B supply volts with age.

7AK-L-0



Sylvania Type 1LA6

HEPTODE CONVERTER

PHYSICAL SPECIFICATIONS

Base	Lock-In 8 Pin
Bulb	T-9
Maximum Overall Length	2 15/32"
Maximum Seated Height	2 1/4"
Mounting Position	Any

1LA6 (Cont'd)

RATINGS

Maximum Filament Voltage	1.6 Volts
Design Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Supply	110 Volts
Maximum Screen Voltage	65 Volts
Maximum Anode-Grid Voltage	110 Volts
Maximum Cathode Current	4.0 Ma.

Direct Interelectrode Capacitances:*

Grid G to Plate	0.4 μμf
Mixer Input	7.5 μμf
Mixer Output	8.0 μμf
Oscillator Input	2.8 μμf
Oscillator Output	3.2 μμf

*With 1⅝" diameter tube shield (RMA Std. 308) connected to negative filament.

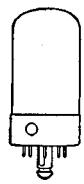
TYPICAL OPERATION

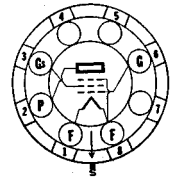
Filament Voltage DC	1.4 Volts
Filament Current	50 Ma.
Plate Voltage	90 Volts
Screen Voltage**	45 Volts
Anode-Grid Voltage	90 Volts
Control Grid Voltage (G)	0 Volt
Oscillator Grid Resistor (Go)	200000 Ohms
Plate Resistance	0.75 Megohm
Plate Current	0.55 Ma.
Screen Current	0.6 Ma.
Anode-Grid Current	1.2 Ma.
Oscillator Grid Current	0.035 Ma.
Conversion Conductance	250 μmhos
Control Grid Voltage at −3 Volts	10 μmhos

**Obtained preferably by using a properly by-passed voltage dropping resistor of 45,000 to 70,000 ohms in series with the "B" voltage supply.
A resistance of at least 1 megohm should be in the grid return to negative fil.

1LB4 Sylvania Type

POWER OUTPUT PENTODE





5AD-L-0

PHYSICAL SPECIFICATIONS

Base	Lock-In 8 Pin
Bulb	T-9
Maximum Overall Length	2 35/64"
Maximum Seated Height	2¼"
Mounting Position	Any

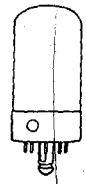
RATINGS

Maximum Filament Voltage	1.6 Volts
Design Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	110 Volts
Maximum Cathode Current	6.0 Ma.

TYPICAL OPERATION

Filament Voltage DC	1.4	1.4	1.4	1.4 Volts
Filament Current	50	50	50	50 Ma.
Plate Voltage	45	62.5	67.5	90 Volts
Screen Voltage	45	62.5	67.5	90 Volts
Grid Voltage	−4.5	−5.0	−6.0	−9.0 Volts
Plate Current (Zero Signal)	1.6	3.8	3.8	5.0 Ma.
Screen Current (Zero Signal)	0.3	0.8	0.8	1.0 Ma.
Plate Resistance (Approx.)	0.4	0.3	0.3	0.25 Megohm
Mutual Conductance	650	875	875	925 μmhos
Load Resistance	20000	16000	16000	12000 Ohms
Power Output	35	90	100	200 Mw.
Total Harmonic Distortion	10	10	10	10 Per Cent

7AO-L-8



Sylvania Type 1L

SHARP CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base	Lock-In 8 Pin
Bulb	T-9
Maximum Overall Length	$2^{25}/_{32}$"
Maximum Seated Height	$2\frac{1}{4}$"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	1.6 Volts
Design Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	45 Volts

Direct Interelectrode Capacitances:*

Grid to Plate	0.007 $\mu\mu$f Max.
Input	3.2 $\mu\mu$f
Output	7.0 $\mu\mu$f

*With $1\frac{5}{16}$" diameter shield (RMA Std. 308) connected to negative filament

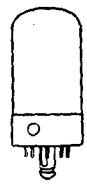
TYPICAL OPERATION

Filament Voltage DC	1.4	1.4 Volts
Filament Current	50	50 Ma.
Plate Voltage	45	90 Volts
Screen Voltage	45	45 Volts
Grid Voltage*	0	0 Volt
Suppressor	Connected to Negative Filament at Socket	
Plate Current	1.1	1.15 Ma.
Screen Current	.35	.30 Ma.
Plate Resistance	0.7	1.5 Megohm Approx.
Mutual Conductance	750	775 μmhos
Grid Voltage for Ib=10 μa	-3.4	-3.4 Volts

*A resistance of at least 1 megohm should be in the grid return to negative filament Pin No. 8.

For data on use as a resistance coupled amplifier see appendix.

7AK-L-0



Sylvania Type 1LC6

HEPTODE CONVERTER

PHYSICAL SPECIFICATIONS

Base	Lock-In 8 Pin
Bulb	T-9
Maximum Overall Length	$2^{25}/_{32}$"
Maximum Seated Height	$2\frac{1}{4}$"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	1.6 Volts
Design Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen or Anode Grid Supply	110 Volts
Maximum Anode-Grid Voltage	50 Volts
Maximum Screen Grid Voltage	45 Volts
Maximum Cathode Current	3.0 Ma.

Direct Interelectrode Capacitances:*

Grid G to Plate	0.28 $\mu\mu$f.
Mixer Input	9.00 $\mu\mu$f.
Mixer Output	5.50 $\mu\mu$f.
Oscillator Input	2.40 $\mu\mu$f.
Oscillator Output	4.80 $\mu\mu$f.

*With $1\frac{5}{16}$" dia. tube shield (RMA Std. M8-308) connected to negative filament.

1LC6 (Cont'd)

TYPICAL OPERATION

Filament Voltage	1.4	1.4 Volts
Filament Current	0.050	0.050 Ampere
Plate Voltage	45	90 Volts
Screen Voltage*	35	35 Volts
Anode-Grid Voltage	45	45 Volts
Control Grid Voltage	0	0 Volt
Oscillator Grid Resistor	200000	200000 Ohms
Plate Resistance	300000	650000 Ohms
Plate Current	0.7	0.75 Ma.
Screen Current	0.75	0.70 Ma.
Anode-Grid Current	1.4	1.4 Ma.
Oscillator Grid Current	0.035	0.035 Ma.
Total Cathode Current	2.9	2.9 Ma.
Conversion Conductance:		
At 0 Volts	250	275 μmhos
At -2 Volts	50	50 μmhos
At -3 Volts	5	5 μmhos approx.

*Obtained preferably by using a properly by-passed voltage dropping resistor in series with B voltage supply. In order to avoid oscillation difficulties the screen voltage must be at least 10 volts lower than the oscillator anode.

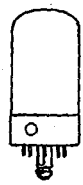
†A resistance of at least 1 megohm should be in the grid return to negative filament, Pin No. 8.

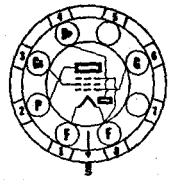
Note; The characteristics of the oscillator section (not oscillating) are; GM=550 μmhos (approx.), MU=14, and anode-grid current=2.7 ma.

Conditions; Ep=90 volts, Ega=45 volts, Egs=35 volts, and Ego and Eg=0 volts.

1LD5 Sylvania Type

DIODE PENTODE





6AX-L-8

PHYSICAL SPECIFICATIONS

Base	Lock-In 8 Pin
Bulb	T-9
Maximum Overall Length	2 25/64"
Maximum Seated Height	2 1/4"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	1.6 Volts
Design Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	50 Volts
Maximum Diode Drop for 0.5 Ma.	10 Volts

Diode plate located at negative end of filament.

Direct Interelectrode Capacitances:*

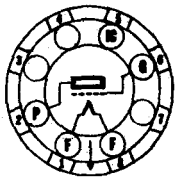
Grid to Plate	0.18 μμf.
Input	3.20 μμf.
Output	6.00 μμf.

*With 1 5/8" dia. shield (RMA Std. 308) connected to negative filament.

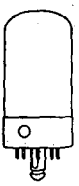
TYPICAL OPERATION

Filament Voltage DC	1.4	1.4 Volts
Filament Current	50	50 Ma.
Plate Voltage	45	90 Volts
Screen Voltage	45	45 Volts
Grid Voltage	0	0 Volt
Plate Current	0.55	0.6 Ma.
Screen Current	0.12	0.1 Ma.
Plate Resistance	900000	750000 Ohms
Mutual Conductance	550	575 μmhos

For resistance coupled information refer to table in appendix.



4AA-L-0



Sylvania Type 1LE3

MEDIUM-MU TRIODE

PHYSICAL SPECIFICATIONS

Base	Lock-In 8 Pin
Bulb	T-9
Maximum Overall Length	2 15/16"
Maximum Seated Height	2 1/4"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	1.6 Volts
Design Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	110 Volts

Direct Interelectrode Capacitances:*

Grid to Plate	1.7 μμf.
Input	1.7 μμf.
Output	3.0 μμf.

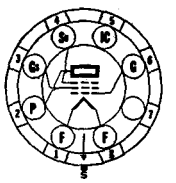
*With 1 1/16" diameter shield (RMA Standard 308) connected to negative filament.

TYPICAL OPERATION

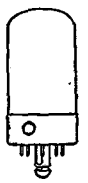
Filament Voltage DC	1.4	1.4 Volts
Filament Current	0.050	0.050 Ampere
Plate Voltage	90	90 Volts
Grid Voltage*	0	−3 Volts
Plate Current	4.5	1.4 Ma.
Plate Resistance	11200	19000 Ohms
Mutual Conductance	1300	760 μmhos
Amplification Factor	14.5	14.5

*Negative Filament return to Pin No. 8.

For use in resistance coupled circuits, see appendix.



7AO-L-8



Sylvania Type 1LG5

SEMI-REMOTE CUT-OFF

RF PENTODE

PHYSICAL SPECIFICATIONS

Base	Lock-In 8 Pin
Bulb	T-9
Maximum Overall Length	2 15/16"
Maximum Seated Height	2 1/4"
Mounting Position	Any

RATINGS

Maximum Filament Voltage Must Never Exceed	1.6 Volts
AC-DC Power Line Design Center	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	110 Volts

Direct Interelectrode Capacitances:*

Grid to Plate	.007 μμf. Max.
Input	3.2 μμf.
Output	7.0 μμf.

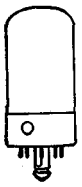
*With 1 1/16" diameter shield (RMA Std. 308) connected to negative filament.

TYPICAL OPERATION

Filament Voltage DC	1.4	1.4	1.4 Volts
Filament Current	50	50	50 Ma.
Plate Voltage	45	90	90 Volts
Screen Voltage	45	45	90 Volts
Control Grid Voltage	0	0	−1.5 Volts
Control Grid Resistor	2.0	2.0	2.0 Megohm
Suppressor Grid	Connected to Negative Filament at Socket		
Plate Current	1.5	1.7	3.7 Ma.
Screen Current	0.45	0.4	0.9 Ma.
Mutual Conductance	800	800	1150 μmhos
Plate Resistance (Approx.)	0.35	>1.0	0.5 Megohm
Control Grid Voltage for Gm=10 μmhos (Approx.)	−9.0	−10.0	−19 Volts

1LH4 Sylvania Type

DIODE HIGH-MU TRIODE



5AG-L-1

PHYSICAL SPECIFICATIONS

Base	Lock-In 8Pin
Bulb	T-9
Maximum Overall Length	2 15/16"
Maximum Seated Height	2 1/4"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	1.6 Volts
Design Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Diode Drop at 0.5 Ma.	10 Volts

TYPICAL OPERATION

Filament Voltage DC	1.4 Volts
Filament Current	50 Ma.
Plate Voltage	90 Volts
Grid Voltage*	0 Volt
Plate Current	0.15 Ma.
Plate Resistance	240000 Ohms
Mutual Conductance	275 μmhos
Amplification Factor	65

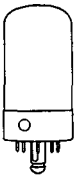
*A resistor of at least 1 megohm should be in the grid return so negative filament, pin No. 8.

Note; Diode plate location at negative end of filament.

For use in resistance coupled circuits, see appendix.

1LN5 Sylvania Type

SHARP CUT OFF RF PENTODE



7AO-L-8

PHYSICAL SPECIFICATIONS

Base	Lock-In 8 Pin
Bulb	T-9
Maximum Overall Length	2 15/16"
Maximum Seated Height	2 1/4"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	1.6 Volts
Design Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	110 Volts

Direct Interelectrode Capacitances:*

Grid to Plate	0.007 μμf. Max.
Input	3.0 μμf.
Output	8.0 μμf.

*With 1 5/16" dia. (RMA Std. 308) shield connected to negative filament.

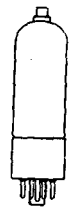
TYPICAL OPERATION

Filament Voltage DC	1.4 Volts
Filament Current	50 Ma.
Plate Voltage	90 Volts
Screen Voltage	90 Volts
Grid Voltage*	0 Volt
Plate Current	1.6 Ma.
Screen Current	0.35 Ma.
Plate Resistance	1.1 Megohms Approx.
Mutual Conductance	800 μmhos
Mutual Conductance at -4.5 Volts (Approx.)	10 μmhos

*Negative filament return, Pins No. 8 and 5.

For use in resistance coupled circuits, see appendix.

5Y-1-7



Sylvania Type 1N

SHARP CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base	Small Wafer 7-Pin Octal Metal Sleeve
Bulb	T-9
Cap	Miniature
Maximum Overall Length	3 5/16"
Maximum Seated Height	2 3/4"
Mounting Position	Any

Direct Interelectrode Capacitances:*

Grid to Plate	.007 μμf. Max.
Input	3.4 μμf.
Output	10.0 μμf.

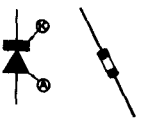
*With 1 5/16" diameter shield (RMA Std. 308) connected to negative filament.

TYPICAL OPERATION

Filament Voltage DC	1.4 Volts
Filament Current	50 Ma.
Plate Voltage	90 Volts
Screen Voltage	90 Volts
Grid Voltage*	0 Volt
Plate Current	1.2 Ma.
Screen Current	0.3 Ma.
Plate Resistance (Approx.)	1.5 Megohms
Mutual Conductance	750 μmhos
Mutual Conductance at -3.2 Volts (Approx.)	50 μmhos
Mutual Conductance at -4 Volts (Approx.)	5 μmhos

*Negative filament return, Pin No. 7.

For Resistance Coupled Amplifier Data refer to type 1LN5 in appendix.



Sylvania Type 1N34

CRYSTAL DIODES

PHYSICAL SPECIFICATIONS

Style	See Outline
Connections	.025 Leads
Maximum Body Length	3/4"
Maximum Body Diameter	9/32"
Maximum Lead Length per Lead	1 5/8"
Mounting Position	Any
Temperature Range	-50 to +75° C.
Nominal Shunt Capacitance	1 μμf.

Cathode Terminal Indicated by Green Band on Body.

RATINGS

Type	Peak Inverse Working Voltage	Peak Current Ma.	Transient Surge Current Ma.	Average Current Ma.	Minimum Forward Current At 1 Volt Ma.	Maximum Reverse Current μa.
1N34Ø	60	150	500	40	5.0	50 at -10 v; 800 at -50 v
1N35*	50	60	100	22.5	7.5	10 at -10 v
1N38Ø	100	150	500	40	3.0	6 at -3 v; 625 at -100 v
1N39	200	150	500	40	3.0	200 at -100 v; 800 at -200 v
1N40♦	25	60	100	22.5	12.75†	50 at -10 v
1N41♦	25	60	100	22.5	12.75†	50 at -10 v
1N42♦	50	60	100	22.5	12.75†	6 at -3 v; 625 at -100 v
1N54Ø	35	150	500	40	5.0	10 at -10 v
1N55Ø	150	150	500	40	3.0	300 at -100 v; 800 at -150 v
1N56Ø	40	200	1000	50	15.0	300 at -30 v
1N57	80	150	500	40	4.0	500 at -75 v
1N58Ø	100	150	500	40	4.0	800 at -100 v
1N60	50	150	500	40	**	**
1N71ʃ	40	200	1000	50	15.0	300 at -30 v

*Type 1N35 consists of two Diode units mounted in a fibre assembly. The units are matched within 10% for resistance in the forward direction at 1 volt.

†At 1.5 volts.

♦Each unit contains 4 selected diodes matched within ±2.5% in the forward direction at 1.5 volts.

ØAvailable in ceramic or glass cartridge. The letter A following the type number designates glass type.

**Units are tested in a circuit employing an input of 1.8 volts rms at 40 mc. 70% modulated at 400 cycles. Demodulated output across a 4700 ohm resistor shunted by a 5 μμf. capacitor is a minimum of 1.1 volts peak to peak.

ʃConsists of four matched low impedance germanium diodes each of which, with a voltage of one volt impressed in the forward direction, will pass a current within one ma. of the average current of the four. Ratings shown above are for each diode.

1N34 (Cont'd)

APPLICATION

Sylvania Germanium diodes are ruggedly built semi-conductors which may be used whenever a diode of their voltage and current rating is required. Their advantages are small size, no heater, low capacitance, no contact potential, and ruggedness.

A booklet describing their applications is available on request.

1P5GT Sylvania Type

REMOTE CUT-OFF RF PENTODE

5Y-1-7

PHYSICAL SPECIFICATIONS

Base	Small Wafer 7-Pin Metal Sleeve
Bulb	T-9
Cap	Miniature
Maximum Overall Length	3 5/16"
Maximum Seated Height	2 3/4"
Mounting Position	Any
Direct Interelectrode Capacitances:*	
Grid to Plate	0.007 μμf. Max.
Input	2.2 μμf.
Output	10.0 μμf.

*With 1 5/16" diameter shield (RMA 308) connected to negative filament.

TYPICAL OPERATION

Filament Voltage DC	1.4 Volts
Filament Current	50 Ma.
Plate Voltage	90 Volts
Screen Voltage	90 Volts
Grid Voltage*	0 Volt
Plate Current	2.3 Ma.
Screen Current	0.7 Ma.
Plate Resistance (Approx.)	0.8 Megohm
Mutual Conductance	750 μmhos
Mutual Conductance at −12 Volts Bias	10 μmhos

*Negative Filament return, Pin No. 7.

1Q5GT Sylvania Type

BEAM POWER AMPLIFIER

6AF-0-0

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 7-Pin
Bulb	T-9
Maximum Overall Length	3 5/16"
Maximum Seated Height	2 3/4"
Mounting Position	Any

RATINGS

Filament Voltage DC	1.4 Volts
Filament Current	100 Ma.
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	110 Volts
Maximum Cathode Current at Zero Signal	12 Ma.

TYPICAL OPERATION

Filament Voltage DC	1.4	1.4 Volts
Filament Current	100	100 Ma.
Plate Voltage	85	90 Volts
Screen Voltage	85	90 Volts
Grid Voltage	−5.0	−4.5 Volts
Peak A-F Signal Voltage	5.0	4.5 Volts
Plate Current (Zero Signal)	7.0	9.5 Ma.
Screen Current (Zero Signal)	0.8	1.6 Ma.
Mutual Conductance	1950	2200 μmhos
Load Resistance	9000	8000 Ohms
Power Output	250	270 Mw.
Total Harmonic Distortion	5.5	6.0 Per Cent

7AT-0-0

Sylvania Type 1R5

HEPTODE CONVERTER

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T-5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	1.6 Volts
Desing Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	90 Volts
Maximum Screen Voltage	67.5 Volts
Maximum Screen Supply	90 Volts
Maximum Cathode Current	5.5 Ma.

Direct Interelectrode Capacitances:*

Grid Go to Plate	0.10 μμf.
Signal Input	7.0 μμf.
Mixer Output	7.5 μμf.
Oscillator Input	3.8 μμf.
Grid (G) to Plate	0.4 μμf. Max.
Grid (G) to Grid (Go)	0.2 μμf. Max.
Grid (Go) to Plate	0.1 μμf. Max.

*Without shield.

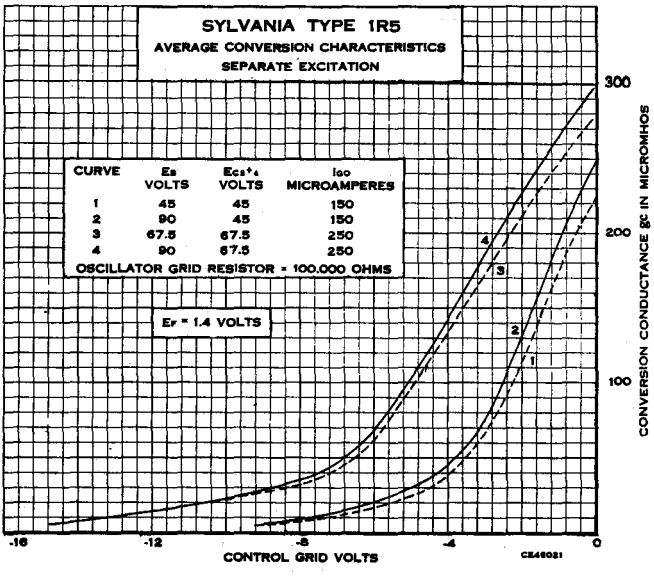
TYPICAL OPERATION

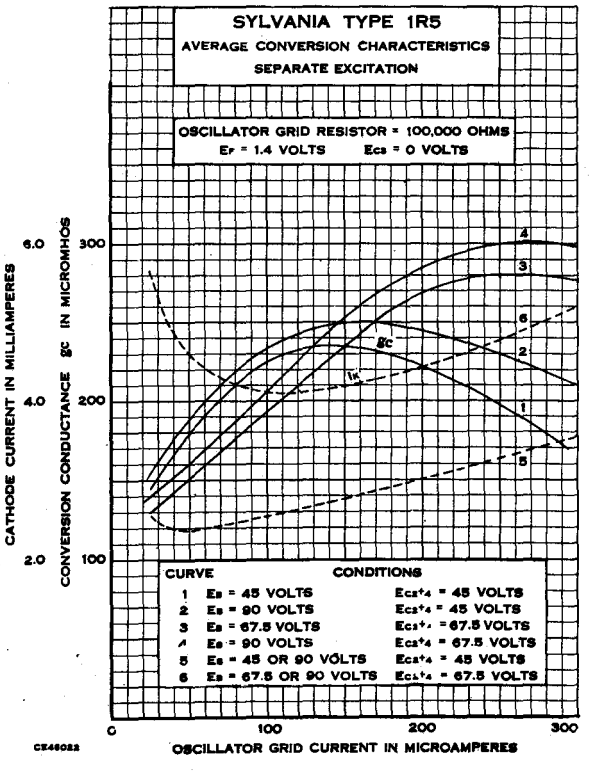
Filament Voltage	1.4	1.4	1.4	1.4 Volts
Filament Current	0.050	0.050	0.050	0.050 Ampere
Plate Voltage	45	67.5	90	90 Volts
Screen Voltage	45	67.5	45	67.5 Volts
Grid Voltage	0	0	0	0 Volt
Oscillator-Grid Resistor (Rgo)	0.1	0.1	0.1	0.1 Megohm
Plate Resistance (Approx.)	0.6	0.5	0.8	0.6 Megohm
Plate Current	0.7	1.4	0.8	1.6 Ma.
Screen Current	1.9	3.2	1.9	3.2 Ma.
Oscillator-Grid Current	0.15	0.25	0.15	0.25 Ma.
Total Cathode Current	2.75	5.0	2.75	5.0 Ma.
Conversion Conductance	235	280	250	300 μmhos
Grid Voltage (G) for Conversion Conductance of 5 μmhos	−9	−14	−9	−14 Volts

APPLICATION

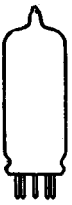
Sylvania Type 1R5 is a pentagrid converter of the miniature line especially designed for mixer-oscillator service in compact, light weight, portable equipment. The operating efficiency allows the tube to be used with extremely low B. Supply voltages. The internal construction of the tube is similar to that of Sylvania Type 6SA7GT, with the exception of the filament. Circuit applications for Type 6SA7GT may be used for Sylvania type 1R5.

1R5 (Cont.)


SYLVANIA TYPE 1R5
AVERAGE CONVERSION CHARACTERISTICS
SEPARATE EXCITATION
CURVE | Eb VOLTS | Ec2+4 VOLTS | Ioo MICROAMPERES
1 | 45 | 45 | 150
2 | 90 | 45 | 150
3 | 67.5 | 67.5 | 250
4 | 90 | 67.5 | 250
OSCILLATOR GRID RESISTOR = 100,000 OHMS
Ef = 1.4 VOLTS
300
200
100
CONVERSION CONDUCTANCE gc IN MICROMHOS
-16
-12
-8
-4
0
CONTROL GRID VOLTS
CS46021


SYLVANIA TYPE 1R5
AVERAGE CONVERSION CHARACTERISTICS
SEPARATE EXCITATION
OSCILLATOR GRID RESISTOR = 100,000 OHMS
Ef = 1.4 VOLTS Ec2 = 0 VOLTS
CATHODE CURRENT IN MILLIAMPERES
CONVERSION CONDUCTANCE gc IN MICROMHOS
6.0
4.0
2.0
300
200
100
gc
Ik
CURVE CONDITIONS
1 Eb = 45 VOLTS Ec2+4 = 45 VOLTS
2 Eb = 90 VOLTS Ec2+4 = 45 VOLTS
3 Eb = 67.5 VOLTS Ec2+4 = 67.5 VOLTS
4 Eb = 90 VOLTS Ec2+4 = 67.5 VOLTS
5 Eb = 45 OR 90 VOLTS Ec2+4 = 45 VOLTS
6 Eb = 67.5 OR 90 VOLTS Ec2+4 = 67.5 VOLTS
0
100
200
300
OSCILLATOR GRID CURRENT IN MICROAMPERES
CS46022

7AV-0-0



Sylvania Type 1S4

POWER AMPLIFIER PENTODE

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T5½
Maximum Overall Length	2¼"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	1.6 Volts
Design Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	90 Volts
Maximum Screen Voltage	67.5 Volts
Maximum Cathode Current Zero Signal	9.0 Ma.
Maximum Cathode Current Maximum Signal	11.0 Ma.

TYPICAL OPERATION

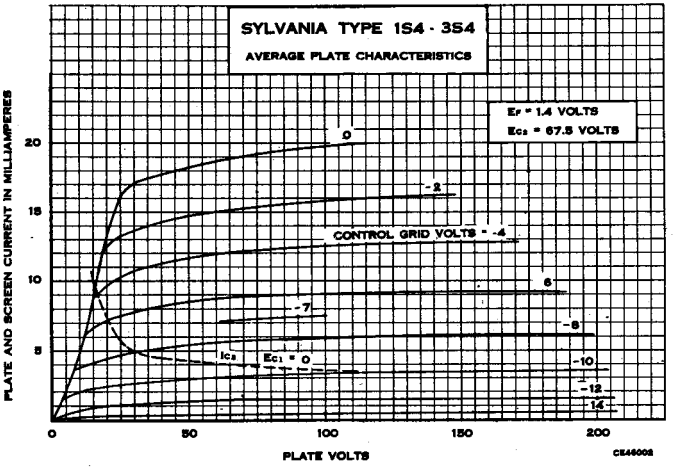
CLASS A AMPLIFIER

Filament Voltage DC	1.4	1.4	1.4 Volts
Filament Current	0.100	0.100	0.100 Ampere
Plate Voltage	45	67.5	90 Volts
Screen Voltage	45	67.5	67.5 Volts
Grid Voltage*	−4.5	−7	−7 Volts
Peak A-F Signal Voltage	4.5	7	7 Volts
Zero Signal Plate Current	3.8	7.2	7.4 Ma.
Zero Signal Screen Current	0.8	1.5	1.4 Ma.
Plate Resistance (Approx.)	0.1	0.1	0.1 Megohm
Mutual Conductance	1250	1550	1575 μmhos
Load Resistance	8000	5000	8000 ohms
Power Output	65	180	270 Milliwatts
Total Harmonic Distortion	12	10	12 Per Cent

*Negative Filament Return, Pin No. 1

APPLICATION

Sylvania Type 1S4 is a power amplifier pentode of the Miniature construction, especially designed for output service in compact, light weight, portable equipment. The high operating efficiency allows the tube to be used with extremely low B. Supply voltages.



1S5 Sylvania Type

DIODE PENTODE AMPLIFIER

6AU-0-0

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	1.6 Volts
Design Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	90 Volts
Maximum Screen Voltage	90 Volts
Maximum Signal Cathode Current	3.0 Ma.
Maximum Diode Current	0.25 Ma.

Direct Interelectrode Capacitances:*

Grid to Plate	0.2 μμf.
Input	2.2 μμf.
Output	2.4 μμf.

*With no external shielding.

TYPICAL OPERATION

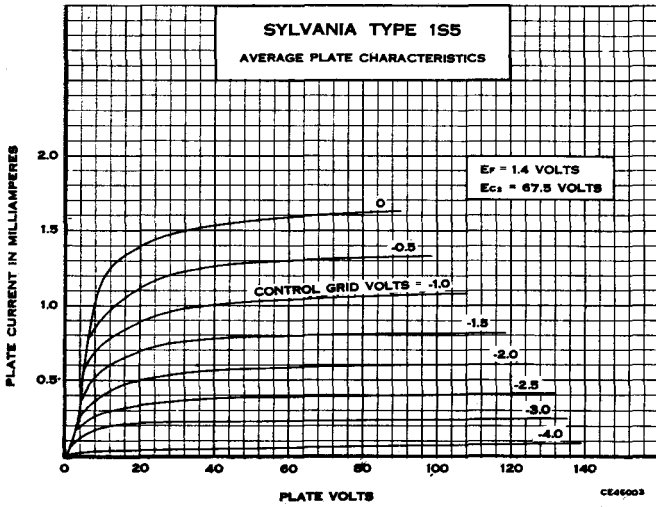
Filament Voltage DC	1.4	1.4 Volts
Filament Current	50	50 Ma.
Plate Voltage	67.5	90 Volts
Screen Voltage	67.5	90 Volts
Grid Voltage	0	0 Volt
Plate Current	1.6	2.7 Ma.
Screen Current	0.4	0.5 Ma.
Plate Resistance (Approx.)	0.6	0.5 Megohm
Mutual Conductance	625	720 μmhos

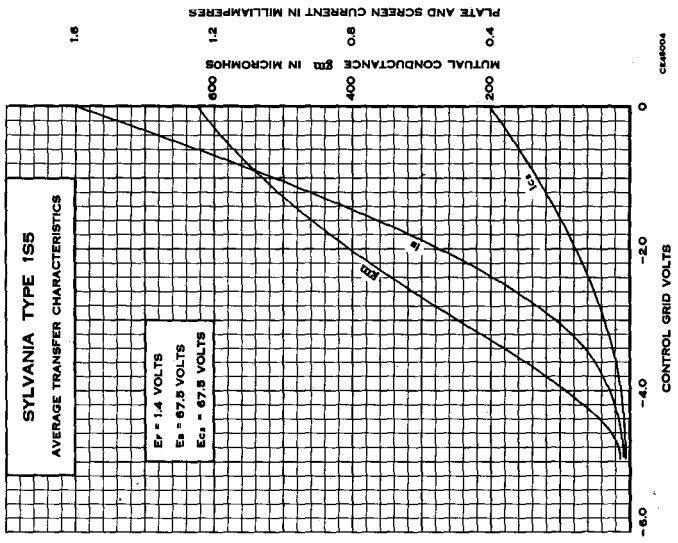
Note; Diode plate located at negative end of filament.

APPLICATION

Sylvania Type 1S5 is a diode pentode of the miniature construction, especially designed for detector-audio service in compact, light weight, portable equipment. The high operating efficiency allows the tube to be used with extremely low B supply voltages. The internal construction of Type 1S5 is similar to that of Sylvania Type 1LD5.

For use in resistance coupled circuits, see appendix.





8DA-0-0

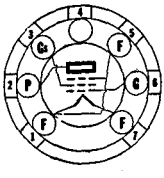
Sylvania Type 1S6

DIODE PENTODE

PHYSICAL SPECIFICATIONS

Base	Flexible Leads
Bulb	T-3
Maximum Bulb Length	1½"
Minimum Lead Length	1¼"
Mounting Position	Any

For additional data and curves, reference should be made to Type 1T6 which has the same operating conditions but differs in lead length.



6AR-0-1 & 5

Sylvania Type 1T4

REMOTE CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Maximum Filament Voltage DC	1.6 Volts
Filament Voltage DC (design center of AC-DC Power Line Operation)	1.3 Volts
Maximum Plate Voltage	90 Volts
Maximum Screen Voltage	90 Volts
Maximum Total Cathode Current	5.5 Ma.
Minimum Grid Bias Voltage	0 Volt

Direct Interelectrode Capacitances:*

Grid to Plate	0.01 μμf. Max.
Grid to all Electrodes Except Plate	3.6 μμf.
Plate to All Electrodes Except Grid G	7.5 μμf.

*With close-fitting tube shield connected to negative filament.

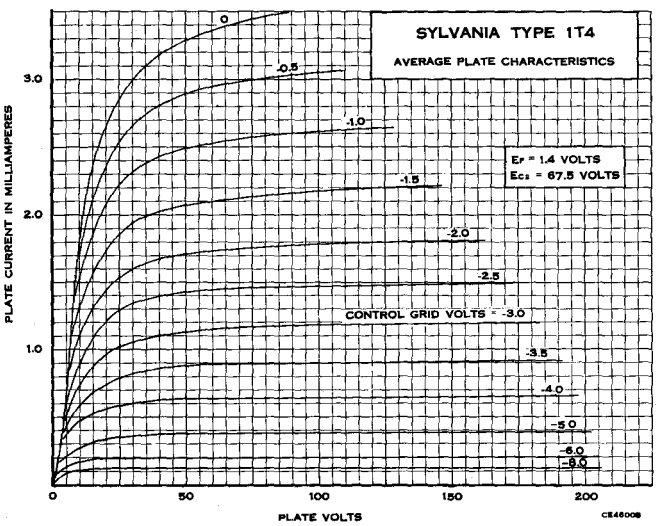
1T4 (Cont'd)

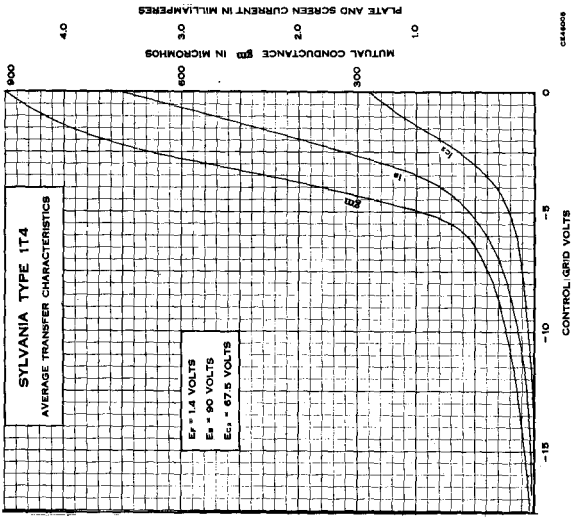
TYPICAL OPERATION

Filament Voltage DC	1.4	1.4	1.4	1.4 Volts
Filament Current	50	50	50	50 Ma.
Plate Voltage	45	67.5	90	90 Volts
Screen Voltage	45	67.5	45	67.5 Volts
Grid Voltage	0	0	0	0 Volt
Plate Current	1.7	3.4	1.8	3.5 Ma.
Screen Current	0.7	1.5	0.65	1.4 Ma.
Plate Resistance (Approx.)	0.35	0.25	0.8	0.5 Megohm
Mutual Conductance	700	875	750	900 μmhos
Grid Voltage for 10 μmhos	−10	−16	−10	−16 Volts

APPLICATION

Sylvania Type 1T4 is a rf-if remote cut-off pentode of the miniature style of construction. It is especially designed for radio frequency amplifier service in compact, light weight, portable equipment. The high operating efficiency allows the tube to be used with extremely low B supply voltages. The construction incorporates internal shielding which is connected to minus filament, and eliminates the need for an external bulb shield. A shielded socket should be employed to obtain the minimum Grid-plate capacity.





6X-0-0

Sylvania Type 1T

PENTODE POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 7 Pin
Bulb	T-9
Maximum Overall Length	3 5/16"
Maximum Seated Height	2 3/4"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	
Dry Battery Operation—Must Never Exceed	1.6 Volts
AC-DC Power Line Operation—Design Center	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	110 Volts
Maximum Cathode Current (Zero Signal)	7.3 Ma.

TYPICAL OPERATION

	Self Bias	Fixed Bias
Filament Voltage	1.4	1.4 Volts
Filament Current	0.05	0.05 Ampere
Plate Voltage	84.0	90 Volts
Screen Voltage	84.0	90 Volts
Control Grid Voltage	−6.0	−6.0 Volts
Plate Resistance (Approximate)	0.25	0.25 Megohms
Mutual Conductance	1050	1150 μmhos
Plate Current (Zero Signal)	5.4	6.5 Ma.
Plate Current (Maximum Signal)	5.5	6.5 Ma.
Screen Current (Zero Signal)	0.6	0.8 Ma.
Screen Current (Maximum Signal)	1.5	1.5 Ma.
Load Resistance	14000	14000 Ohms
Total Harmonic Distortion	7.5	7.5 Per Cent
Power Output	145	170 Milliwatts

8DA-0-0

Sylvania Type 1T6

DIODE PENTODE

PHYSICAL SPECIFICATIONS

Base	Subminiature Button 8 Pin
Bulb	T-3
Maximum Overall Length	1¾"
Maximum Seated Height	1½"
Mounting Position	Any

RATINGS

Filament Voltage	1.25 Volts
Maximum Plate Voltage	67.5 Volts
Maximum Screen Voltage	67.5 Volts
Maximum Cathode Current (Pentode Section)	2.0 Ma.
Maximum Diode Current for continuous operation	0.25 Ma.

TYPICAL OPERATION

CLASS A OPERATION

Filament Voltage DC	1.25	1.25	1.25 Volts
Filament Current	40	40	40 Ma.
Plate Voltage	30	45	67.5 Volts
Screen Voltage	30	45	67.5 Volts
Grid Voltage	0	0	0 Volts
Plate Current	0.33	0.75	1.6 Ma.
Screen Current	0.10	0.21	0.4 Ma.
Plate Resistance (Approx.)	0.5	0.5	0.4 Megohm
Mutual Conductance	330	475	600 μmhos
Average Diode Current with 10 Volts DC	1.5	1.5	1.5 Ma.

AS A RESISTANCE COUPLED AMPLIFIER

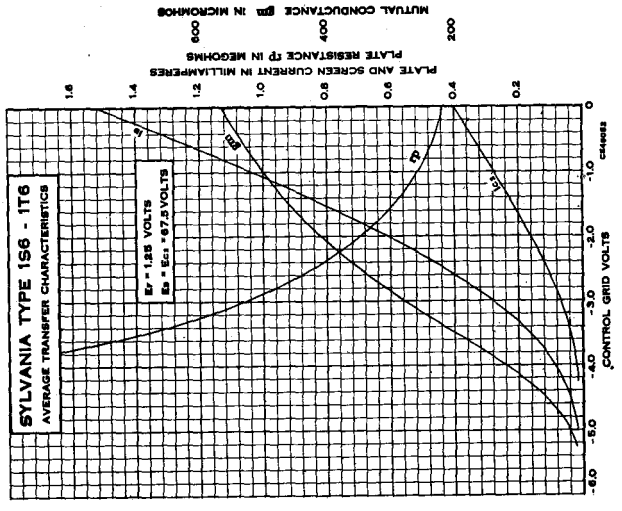
Plate Voltage	30	45	67.5 Volts
Screen Voltage	30	45	67.5 Volts
Voltage Gain (Approx.)	30 (1)	50 (2)	60 (2)

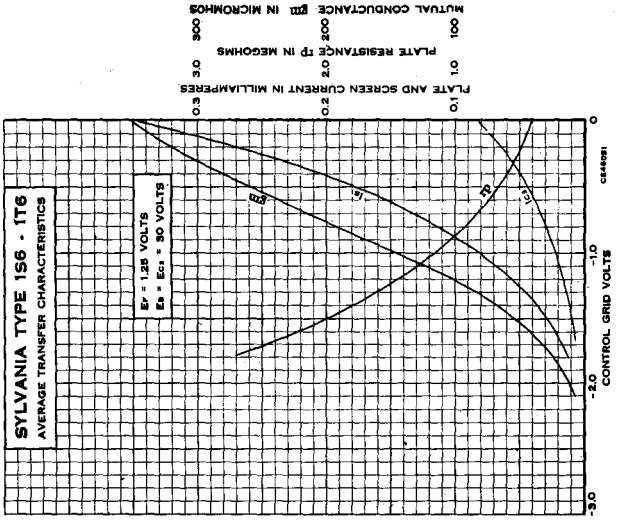
(1) With Rc2=2.2 megohms Rb=1.0 megohms Rcf=4.7 megohms
(2) With Rc2=3.9 megohms Rb=1.0 megohms' Rcf=4.7 megohms

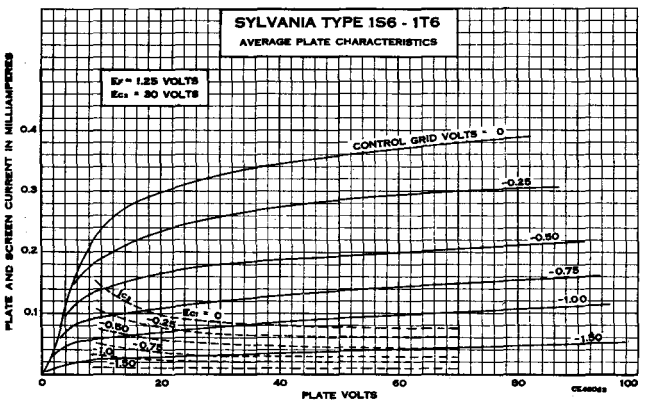
APPLICATION

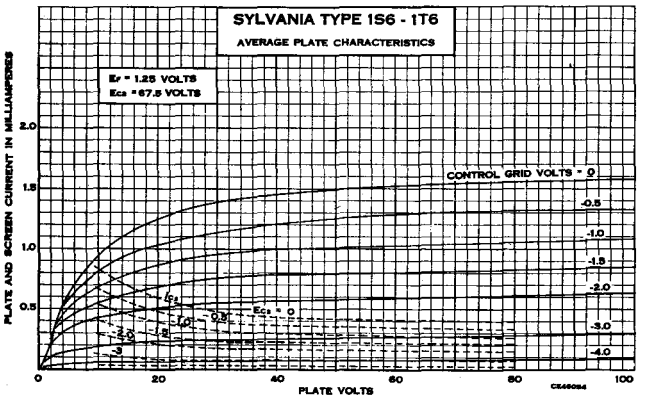
Sylvania Type 1T6 is a diode audio pentode tube suitable for use in very small radio sets or amplifiers. The other types required for a normal set complement and designed for such usage are Types 1E8 (Converter), 1AD5 (RF Pentode Amplifier) and 1AC5 (Output Pentode).

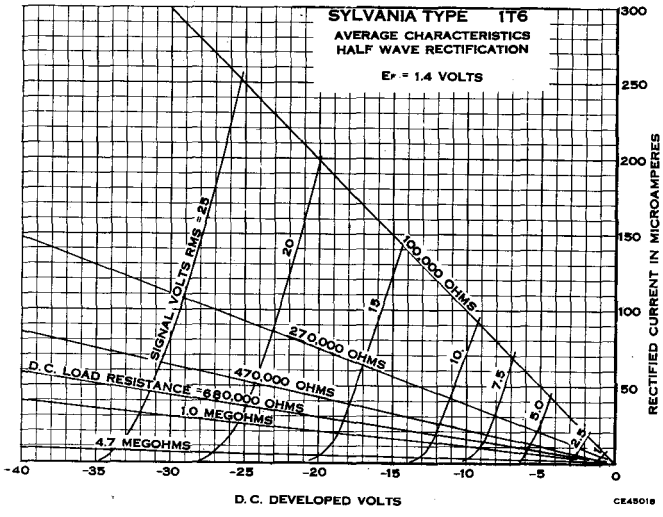
This type corresponds in service and circuit design to Types 1LD5 and 1S5 but is rated for use at lower voltages. The gains are comparable considering the reduced size and voltages.





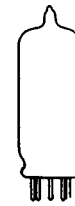

SYLVANIA TYPE 1S6 - 1T6
AVERAGE PLATE CHARACTERISTICS
Ef = 1.25 VOLTS
Ecs = 90 VOLTS
CONTROL GRID VOLTS = 0
-0.25
-0.50
-0.75
-1.00
-1.50
PLATE AND SCREEN CURRENT IN MILLIAMPERES
PLATE VOLTS
CE45028

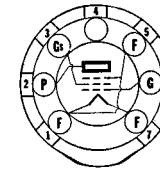

SYLVANIA TYPE 1S6 - 1T6
AVERAGE PLATE CHARACTERISTICS
Ef = 1.25 VOLTS
Ecs = 67.5 VOLTS
CONTROL GRID VOLTS = 0
-0.5
-1.0
-1.5
-2.0
-3.0
-4.0
PLATE AND SCREEN CURRENT IN MILLIAMPERES
PLATE VOLTS
CE45024


SYLVANIA TYPE 1T6
AVERAGE CHARACTERISTICS
HALF WAVE RECTIFICATION
Ef = 1.4 VOLTS
SIGNAL VOLTS RMS = 25
20
15
100,000 OHMS
270,000 OHMS
470,000 OHMS
D.C. LOAD RESISTANCE = 680,000 OHMS
1.0 MEGOHMS
4.7 MEGOHMS
10
7.5
5.0
2.5
RECTIFIED CURRENT IN MICROAMPERES
D.C. DEVELOPED VOLTS
CE45018

1U4 Sylvania Type

SHARP CUT-OFF RF PENTODE





6AR-0-1 & 5

PHYSICAL SPECIFICATIONS

Base	Miniature 7-Pin
Bulb	T-5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	1.6 Volts
Design Center for AC-DC Operation	1.3 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Voltage	110 Volts
Maximum Control Grid Voltage	−30 Volts
Minimum Control Grid Voltage	0 Volts
Maximum Total Cathode Current	6.5 Ma.

Direct Interelectrode Capacitances:*

Grid to Plate	.008 μμf. Max.
Input	3.6 μμf.
Output	7.5 μμf.

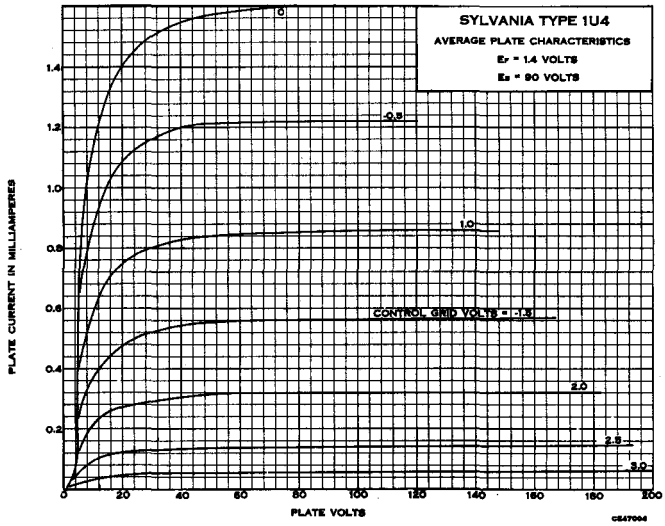
*With tight fitting external shield.

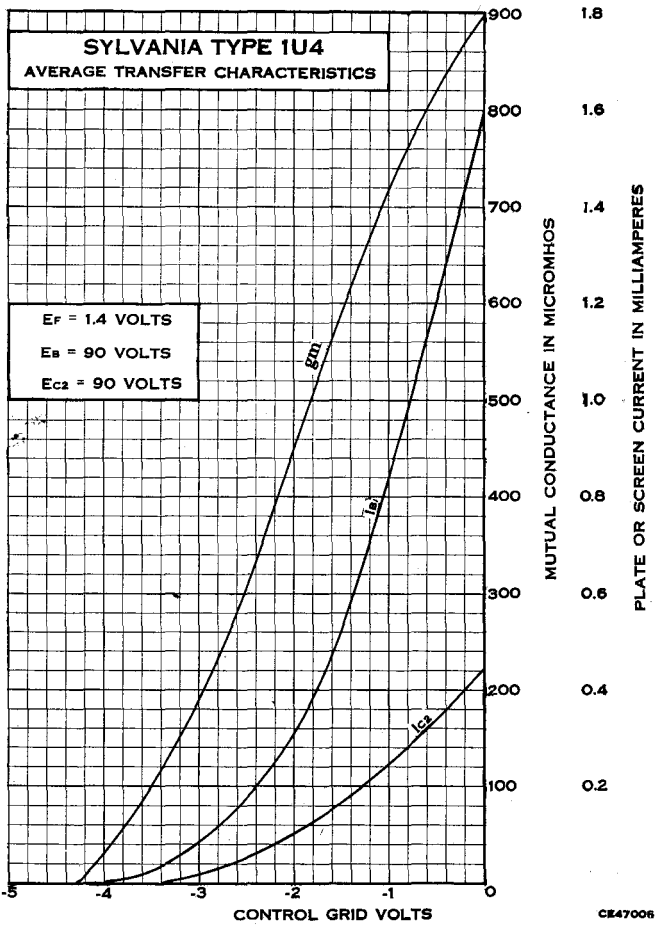
TYPICAL OPERATION

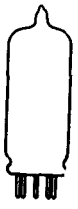
Filament Voltage DC	1.4 Volts
Filament Current	50 Ma.
Plate Voltage	90 Volts
Screen Voltage	90 Volts
Control Grid Voltage	0 Volts
Plate Resistance (Approx.)	1.5 Megohms
Mutual Conductance	900 umhos
Plate Current	1.6 Ma.
Screen Current	0.45 Ma.
Grid Bias Voltage for Mutual Conductance of 10 umhos	−4.5 Volts

APPLICATION

Sylvania Type 1U4 is a sharp cut-off RF pentode very similar in application and characteristics to Type 1LN5. Data required for its use in resistance coupled amplifier circuits are shown in appendix.







Sylvania Type 1U5

DIODE PENTODE AMPLIFIER

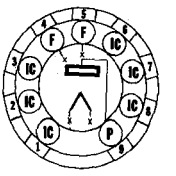
PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"

Note: With the exception of the base diagram given above, the characteristics of type 1U5 are identical, except for Capacitances, with those given for type 185 including curves, and Resistance Coupled Amplifier data given in appendix.

1V2 Sylvania Type

HALF WAVE VACUUM RECTIFIER



9U-0-0

PHYSICAL SPECIFICATIONS

Base	Miniature-Button 9-pin
Bulb	T6½
Maximum Overall Length	2 3/16"
Maximum Seated Height	1 15/16"
Mounting Position	Any

RATINGS

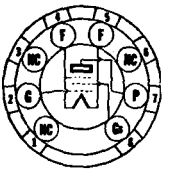
Heater Voltage (AC)	0.625 Volts
Heater Current	0.3 Amperes
Peak Inverse Plate Voltage (Max.)	7,500 Volts
Peak Plate Current (Max.)	10 Ma.
Average Plate Current (Max.)	0.5 Ma.
Direct interelectrode Capacitance (Approx.) with no external shield Plate to Filament	0.8 μμf.

APPLICATION

Sylvania Type 1V2 is a half-wave rectifier designed especially for use in television circuits using fly-back or high frequency oscillator supplies.

1V5 Sylvania Type

OUTPUT PENTODE



8CP-0-0

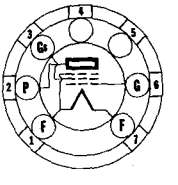
PHYSICAL SPECIFICATIONS

Base	Flexible Leads
Bulb	T-3
Maximum Bulb Length	1½"
Minimum Lead Length	1¼"
Mounting Position	Any

For additional data and curves, reference should be made to Type 1AC5 which has the same operating conditions but differs in lead length.

1W4 Sylvania Type

POWER AMPLIFIER PENTODE



5BZ-0-0

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-pin
Bulb	T5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

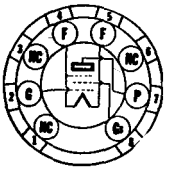
Filament Voltage	1.4 Volts
Maximum Plate Voltage	110 Volts
Maximum Screen Grid Voltage	110 Volts
Maximum Cathode Current	6.0 Ma.

TYPICAL OPERATION

Filament Voltage DC	1.4	1.4	1.4	1.4 Volts
Filament Current	50	50	50	50 Ma.
Plate Voltage	45	62.5	67.5	90 Volts
Screen Voltage	45	62.5	67.5	90 Volts
Grid Voltage	−4.5	−5.0	−6.0	−9.0 Volts
Plate Current	1.6	3.8	3.8	5.0 Ma.
Screen Current	0.3	0.8	0.8	1.0 Ma.
Plate Resistance (approx.)	0.4	0.3	0.3	0.25 Megohms
Mutual Conductance	650	875	875	925 μmhos
Load Resistance	20,000	16,000	16,000	12,000 Ohms
Power Output	35	90	100	200 Milliwatts
Total Harmonic Distortion	10	10	10	10 %

APPLICATION

Sylvania Type 1W4 is a miniature filament type power output tube for use in low drain battery operated receivers. Electrical characteristics are identical with those for Type 1LB4, including design for maximum power output with low B supply voltage.



8CP-0-0

Sylvania Type 1W5

SHARP CUT-OFF RF PENTODE

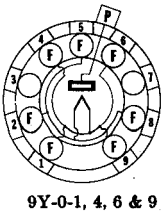
PHYSICAL SPECIFICATIONS

Base	Flexible Leads
Bulb	T-3
Maximum Bulb Length	1½"
Minimum Lead Length	1¼"
Mounting Position	Any

For additional data and curves, reference should be made to Type 1AD5 which has the same operating conditions but differs in lead length.

1X2 Sylvania Type

HIGH VOLTAGE HALF-WAVE RECTIFIER



9Y-0-1, 4, 6 & 9

PHYSICAL SPECIFICATIONS

Base	Miniature Button 9-Pin
Bulb	T6½
Cap	Skirted Miniature
Maximum Overall Length	2 11/16"
Mounting Position	Any

RATINGS AND OPERATION

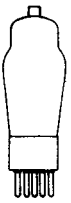
Filament Voltage	1.25 Volts
Filament Current	200 Ma.
Peak Inverse Plate Voltage (Max.)	15,000 Volts
Peak Plate Current (Max.)	10 Ma.
DC Output Current (Max.)	1 Ma.
Frequency of Supply Voltage (Max.)	300 kc.

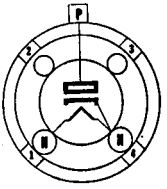
APPLICATION

Sylvania Type 1X2 is a high voltage, half-wave rectifier. It is designed for use in television circuits using either rf or fly-back type of power supply, as well as for use at power line frequency. See type 1B3GT for suggestions on reducing corona loss etc.

2X2A Sylvania Type

HIGH VOLTAGE HALF-WAVE RECTIFIER





4AB-0-0

PHYSICAL SPECIFICATIONS

Base	Small 4 Pin
Bulb	ST12
Cap	Small Metal
Maximum Overall Length	4 17/32"
Maximum Seated Height	3 39/32"
Mounting Position	Any

RATINGS AND OPERATION

Heater Voltage	2.5 Volts
Heater Current	1.75 Amperes
Maximum RMS Plate Voltage	4500 Volts
Peak Inverse Plate Voltage	12,500 Volts
Peak Plate Current	100 Ma.
Minimum Effective Plate Supply Impedance	0 Ohms
DC Output Current (Maximum)	7.5 Ma.

APPLICATION

Sylvania Type 2X2/879 is a high voltage, high vacuum half wave rectifier. It is designed for use in applications requiring high DC voltages at low current loads such as for anode supplies for cathode ray tubes. Filter requirements for this type of service are easily met since a simple resistive, capactive filter is usually adequate. Care should be taken to provide adequate insulation as in any high voltage installation.

7BB-0-0

Sylvania Type 3A4

POWER AMPLIFIER PENTODE

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

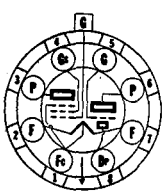
TYPICAL OPERATION

Filament Voltage		1.4 or 2.8* Volts
Filament Current		200 or 100 Ma.
Plate Voltage	135	150 Volts
Screen Voltage	90	90 Volts
Grid Voltage	−7.5	−8.4 Volts
Plate Current	14.8	13.3 Ma.
Screen Current	2.6	2.2 Ma.
Mutual Conductance	1900	1900 μmhos
Load Resistance	8000	8000 Ohms
Power Output Maximum Signal	600	700 Mw.

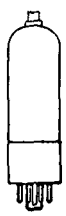
*For operation at 2.8 volts (filaments in series) a shunting resistor must be connected between pins 1 and 5 to make the voltage at this point equal to that across pins 5 and 7.

APPLICATION

Sylvania Type 3A4 is a miniature power amplifier pentode. It is similar to types 3Q4 and 3S4, but has higher plate voltage and current ratings with greater power output.



8AS-0-1



Sylvania Type 3A8GT

DIODE TRIODE
RF PENTODE

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 8-Pin
Bulb	T-9
Cap	Miniature
Maximum Overall Length	3½"
Maximum Seated Height	2 15/16"
Mounting Position	Any

RATINGS

	Series	Parallel
Maximum Filament Voltage		
Dry Battery Operation Must Never Exceed	3.2	1.6 Volts
AC-DC Power Line Operation Design Center	2.6	1.3 Volts
Maximum Plate Voltage		
Pentode	110	110 Volts
Triode	110	110 Volts
Maximum Screen Voltage	110	110 Volts
Minimum Diode Current with 10 Volts DC applied*	0.5	0.5 Ma.
Maximum Diode Current Continuous Operation	0.25	0.25 Ma.

	Triode	Pentode
Direct Interelectrode Capacitances:†		
Grid to Plate	2.0	0.012 μμf. Max.
Input	2.6	3.0 μμf.
Output	4.2	10.0 μμf.

*The diode triode filament is connected to pins 1 and 7. The diode is located at the negative end of the filament.

†With 1 5/16" diameter shield (RMA Std. 308) Connected to Negative Filament.

3A8GT (Cont'd)

TYPICAL OPERATION

	Series	Parallel
Filament Voltage DC	2.8	1.4 Volts
Filament Current	50	50 Ma.

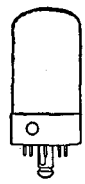
	Triode	Pentode
Plate Voltage	90	90 Volts
Screen Voltage	.	90 Volts
Grid Voltage**	0	0 Volt
Plate Resistance (Approximate)	0.2	0.8 Megohm
Mutual Conductance	325	750 μmhos
Plate Current	0.2	1.5 Ma.
Screen Current	....	0.5 Ma.

**Grid bias voltage is measured from the negative filament terminal of each unit. With Series filament, pin number 7 is the negative for the diode triode section and pin number 1 for the pentode section. With parallel filaments pin number 7 becomes negative for both.

Data for use in Resistance Coupled Amplifiers may be obtained by referring to types 1LN5 and 1LH4 in appendix.

3D6 Sylvania Type

BEAM POWER AMPLIFIER



6BB-L-0

PHYSICAL SPECIFICATIONS

Base	Lock-In 8-Pin
Bulb	T-9
Maximum Overall Length	2 15/32"
Maximum Seated Height	2 1/4"
Mounting Position	Any

RATINGS

	Series	Parallel
Maximum Filament Voltage DC	3.5*	1.75* Volts
Minimum Filament Voltage DC	2.8	1.40 Volts
Filament Current	0.110	0.220 Ampere
Maximum Plate Voltage	180	180 Volts
Maximum Screen Voltage	135	135 Volts
Maximum Cathode Current§	30	30 Ma.
Maximum Plate Dissipation	4.5	4.5 Watts
Maximum Screen Dissipation	0.9	0.9 Watt

*For parallel operation, connect pins No. 1 and No. 8 to positive voltage supply, and pin No. 7 to negative voltage supply. For series operation, connect pin No. 1 to positive and pin No. 8 to negative.

§When series operated, a shunting resistor should be connected across the section of filament between pins No. 7 and No. 8 of sufficient value to by-pass any cathode current in excess of the maximum per section. If other tubes in a series filament arrangement contribute to the filament current of Type 3D6, an additional shunting resistor may be required between pins No. 1 and No. 8.

Direct Interelectrode Capacitances:	Note 1	Note 2
Control Grid to Plate	0.30	0.30 μμf.
Input	7.5	7.5 μμf.
Output	5.5	6.5 μμf.

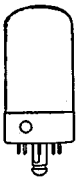
Note 1. With no external shield (Pin No. 5 connected to filament center tap).

Note 2. With 1 3/16" diameter shield (RMA Std. M8-308) connected to negative filament (Pin No. 5 connected to filament center tap).

TYPICAL OPERATION A-F POWER AMPLIFIER CLASS A_1

Filament Voltage	1.4	1.4	1.4 Volts
Filament Current	0.220	0.220	0.220 Ampere
Plate Voltage	90	135	150 Volts
Screen Voltage	90	90	90 Volts
Grid Voltage	−4.5	−4.5	−4.5 Volts
Peak A-F Signal Voltage	4.5	4.5	4.5 Volts
Plate Current Zero Signal	9.5	9.8	9.9 Ma.
Plate Current Maximum Signal	8.5	9.8	10.2 Ma.
Screen Current Zero Signal	1.6	1.2	1.0 Ma.
Screen Current Maximum Signal	3.2	2.0	1.8 Ma.
Mutual Conductance	2400	2400	2400 μmhos
Load Resistance	8000	12000	14000 Ohms
Total Distortion	5	5	5 Per Cent
Power Output	270	500	600 Mw.

7CJ-L-5



Sylvania Type 3E6

SHARP CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base	Lock-In 8-Pin
Bulb	T-9
Maximum Overall Length	2 15/32"
Maximum Seated Height	2 1/4"
Mounting Position	Any

RATINGS

	Parallel	Series
Maximum Filament Voltage	1.6	3.2 Volts
Design Center for AC, DC Operation	1.3	2.6 Volts
Maximum Plate Voltage	110	110 Volts
Maximum Screen Voltage	110	110 Volts
Maximum Cathode Current	12.0	6.0* Ma.

For parallel filament operation, connect pins 1 and 8 to positive supply and pin 5 to negative supply. For series operation, pin No. 1 is positive and pin No. 8 is negative.

*For each 1.4 volt section. A shunting resistor across the negative filament section is necessary to limit current to value given.

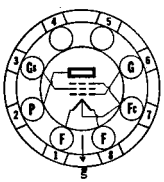
Direct Interelectrode Capacitances:**

Grid to Plate	0.007 μμf. Max.
Input	5.5 μμf.
Output	8.0 μμf.

**With 1 5/16" dia. shield (RMA Std. 308) connected to negative filament.

TYPICAL OPERATION

	Parallel	Series
Filament Voltage DC	1.4	2.8 Volts
Filament Current	100	50 Ma.
Plate Voltage	90	90 Volts
Screen Voltage	90	90 Volts
Grid Voltage	0	0 Volt
Grid Resistor	2.0	2.0 Megohms
Plate Current	4.2	2.9 Ma.
Screen Current	1.7	1.2 Ma.
Mutual Conductance	2000	1700 μmhos
Plate Resistance	0.25	0.325 Megohm
Grid Voltage for Ib=10 μa	−5.5	−4.0 Volts



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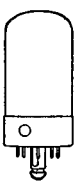


Sylvania Type 3LF4

BEAM POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base	Lock-In 8-Pin
Bulb	T-9
Maximum Overall Length	2 15/32"
Maximum Seated Height	2 1/4"
Mounting Position	Any

RATINGS

Maximum Filament Voltage	Series*	Parallel†
Dry Battery Operation must never Exceed	3.2	1.6 Volts
AC-DC Power Line Operation—Design Center	2.6	1.3 Volts
Maximum Plate Voltage	110	110 Volts
Maximum Screen Voltage	110	110 Volts
Maximum Cathode Current	6*	12 Ma.

3LF4 (Cont'd)

TYPICAL OPERATION
CLASS A AMPLIFIER

	Series*			Parallel†	
Filament Voltage	2.8	2.8	1.4	1.4	1.4 Volts
Filament Current	0.050	0.050	0.100	0.100	0.100 Ampere
Plate Voltage	90	110	85	90	110 Volts
Screen Voltage	90	110	85	90	110 Volts
Grid Voltage	−4.5	−6.6	−5.0	−4.5	−6.6 Volts
Peak A-F Signal Voltage	4.5	5.1δ	5.0	4.5	5.4δ Volts
Plate Current	8.0	8.5	7.0	9.5	10 Ma.
Screen Current	1.0	1.1	0.8	1.3	1.4 Ma.
Plate Resistance (App.)	80000	110000	70000	90000	100000 Ohms
Mutual Conductance	2000	2000	1950	2200	2200 μmhos
Load Resistance	8000	8000	9000	8000	8000 Ohms
Total Harmonic Distortion	8.5	8.5	5.5	6.0	6.0 Per Cent
Power Output	230	330	250	270	400 Mw.

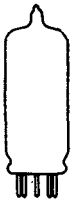
*A resistor of 270 ohms must be used in parallel with the negative section of the filament (Pins 7 and 8) in order to insure that the value of 6.0 Ma. total cathode current for each 1.4 volt section of the filament is not exceeded. When other tubes in series filament circuits contribute to the filament current of the 3LF4, an additional shunt resistor between pins 1 and 8 will be required.

†For parallel operation, connect pins 1 and 8 to the positive of the voltage supply and pin 7 to the negative.

δUse of a peak signal voltage equal to the bias voltage gives power output of 400 Mw. at 10% distortion and 500 Mw. at 10% distortion for the parallel connection.

3Q4 Sylvania Type

BEAM POWER AMPLIFIER



7BA-0-0

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T-5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Filament Voltage	Parallel	Series
Dry Battery Operation Must Never Exceed	1.6	3.2 Volts
AC-DC Power Line Operation Design Center	1.3	2.6 Volts
Maximum Plate Voltage	90	90 Volts
Maximum Screen Voltage	90	90 Volts
Maximum Cathode Current (Zero Signal)*	12	6 Ma.

*When series filament connections are used a shunting resistor should be used across the negative filament section (pins 1 and 5) to limit cathode current to the value specified. If other tubes in a series filament string contribute to the filament current of the 3Q4, another resistor should be connected between pins 1 and 7 so chosen to carry any excess current over ratings.

TYPICAL OPERATION CLASS A_1 AMPLIFIER

	Parallel Filament		Series Filament
Filament Voltage DC	1.4	1.4	2.8 Volts
Filament Current	100	100	50 Ma.
Plate Voltage	85	90	90 Volts
Screen Voltage	85	90	90 Volts
Grid Voltage	−5.0	−4.5	−4.5 Volts
Peak Signal Voltage	5.0	4.5	4.5 Volts
Zero Signal Plate Current	6.9	9.5	7.7 Ma.
Zero Signal Screen Current	1.5	2.1	1.7 Ma.
Plate Resistance (Approximate)	0.12	0.10	0.12 Megohm
Mutual Conductance	1975	2150	2000 μmhos
Load Resistance	10000	10000	10000 Ohms
Total Harmonic Distortion	10	7	7 PerCent
Maximum Signal Power Output	0.25	0.27	0.24 Watt

7AP-0-0

Sylvania Type 3Q5

BEAM POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 7 Pin
Bulb	T-9
Maximum Overall Length	$3\frac{3}{16}$"
Maximum Seated Height	$2\frac{3}{4}$"
Mounting Position	Any

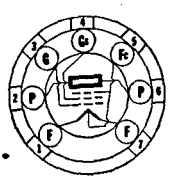
RATINGS

	Series	Parallel
Maximum Filament Voltage		
Dry Battery Operation Must Never Exceed	3.2	1.6 Volts
AC-DC Power Line Operation Design Center	2.6	1.3 Volts

TYPICAL OPERATION

	Series Filament	Parallel Filament
Filament Voltage DC	2.8	1.4 Volts
Filament Current	50	100 Ma.

For other rating and operating data refer to Sylvania Lock-In type 3LF4.



7BA-0-0

Sylvania Type 3S4

PENTODE POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T5½
Maximum Overall Length	$2\frac{1}{2}$"
Maximum Seated Height	$1\frac{7}{8}$"
Mounting Position	Any

RATINGS

	Parallel†	Series
Maximum Filament Voltage	1.6	3.2 Volts
Design Center for AC-DC Operation	1.3	2.6 Volts
Maximum Plate Voltage	90	90 Volts
Maximum Screen Voltage	67.5	67.5 Volts
Maximum Cathode Current	12.0	6.0* Ma.

†For parallel filament operation, tie pins 1 and 7. Negative end of filament connected to pin No. 5.

*A shunting resistor across negative filament section, pins 1 and 5, is necessary to limit cathode current to value given.

TYPICAL OPERATION

AMPLIFIER CLASS A_1

	Parallel Filament		Series Filament	
Filament Voltage DC	1.4	1.4	2.8	2.8 Volts
Filament Current	100	100	50	50 Ma.
Plate Voltage	67.5	90	67.5	90 Volts
Screen Voltage	67.5	67.5	67.5	67.5 Volts
Grid Voltage	−7	−7	−7	−7 Volts
Peak A-F Grid Voltage	7	7	7	7 Volts
Zero Signal Plate Current	7.2	7.4	6.0	6.1 Ma.
Zero Signal Screen Current	1.5	1.4	1.2	1.1 Ma.
Mutual Conductance	1550	1575	1400	1425 μmhos
Plate Resistance (Approx.)	0.1	0.1	0.1	0.1 Megohm
Load Resistance	5000	8000	5000	8000 Ohms
Total Harmonic Distortion	10	12	12	13 Per Cent
Maximum Signal Power Output	180	270	160	235 Milliwatts

3S4 (Cont'd)

APPLICATION

Sylvania Type 3S4 is a power amplifier pentode of miniature construction and is very similar to type 1S4 but designed for operation at either 1.4 volts or 2.8 volts. It is particularly suitable as an output tube in compact, light weight, portable equipment which may be operated on batteries or AC-DC power lines. The high operating efficiency allows the tube to be used with light weight low B supply voltages. Circuit applications are similar to those for Sylvania Types 1LB4 and 3Q5GT.

3V4 Sylvania Type

PENTODE POWER AMPLIFIER

6BX-0-0

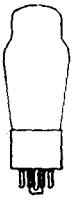
PHYSICAL SPECIFICATIONS

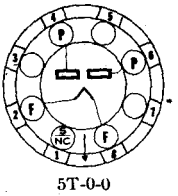
Base	Miniature Button 7 Pin
Bulb	T-5½
Maximum Overall Length	2 1/16"
Maximum Seated Height	1 7/8"
Mounting Position	Any

Note; With the exception of the base diagram given above the characteristics of type 3V4 are identical with those of type 3Q4 given on a previous page.

5AX4GT Sylvania Type

FULL WAVE RECTIFIER





5T-0-0

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 5-Pin
Bulb	T-9
Maximum Overall Length	3 3/8"
Maximum Seated Height	2 13/16"
Mounting Position	
Vertical	Base up or down
Horizontal	Pins 6 and 8 in vertical plane

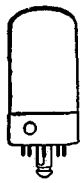
RATINGS

Filament Voltage AC or DC	5.0 Volts
Filament Current	2.5 Amperes
Maximum AC Plate Supply Voltage per Plate	
Capacitor Input	350 Volts
Choke Input	500 Volts
Maximum Peak Inverse Plate Voltage	1400 Volts
Maximum Peak Plate Current per Plate	
Steady State	525 Ma.
Transient	3.5 Amperes
Maximum DC Output Current	175 Ma.

TYPICAL OPERATION

FULL WAVE RECTIFIER

Input to Filter	Capacitor	Choke
Filament Voltage	5.0	5.0 Volts
AC Plate Supply Voltage per Plate	350	500 Volts
Filter Input Capacitance	10	... μf.
Filter Input Inductance	...	10 Henries
Effective Plate Supply Impedance per Plate	50	... Ohms
DC Output Current	175	175 Ma.
DC Output Voltage	330	375 Volts
Tube Voltage Drop, with 175 Ma. DC Plate Current per Plate	65	Volts



Sylvania Type 5AZ4

FULL-WAVE RECTIFIER

5T-L-0

PHYSICAL SPECIFICATIONS

Base	Lock-In 8 Pin
Bulb	T-9
Maximum Overall Length	3⅝"
Maximum Seated Height	2⅝"
Mounting Position	Vertical†

†Horizontal operation permitted if pins 6 and 8 are in vertical plane.

RATINGS

Filament Voltage AC	5.0 Volts
Filament Current	2.0 Amperes
Maximum Peak Inverse Voltage	1400 Volts
Maximum Steady State Peak Current Per Plate	400 Ma.
Maximum Transient Peak Current Per Plate	2.2 Amperes
Average Tube Voltage Drop at 125 Ma. Per Plate	60. Volts

The maximum values of plate supply voltage and output current are interrelated as well as dependent upon whether choke or condenser input is used. Intermediate values may be determined from the following table:

	Condenser Input			Choke Input	
AC Input Per Plate (RMS)	500	350	70	500	350 Volts
Output Current	85	125	150	125	150 Ma.

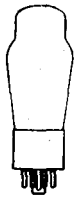
TYPICAL OPERATION

	Filter Circuit	
	Choke Input	Condenser Input
Filament Voltage AC	5.0	5.0 Volts
Filament Current	2.0	2.0 Amperes
AC Plate Voltage Per Plate (RMS)	500	350 Volts
DC Output Current	125	125 Ma.
Minimum Plate Supply Impedance Per Plate	...	50 Ohms
Input Choke	10	... Henrys

APPLICATION

Sylvania Type 5AZ4 is a lock-in full-wave filament type rectifier having the same ratings as Type 5Y3GT. Reference should be made to this type for the load curve under typical operating conditions.

5T-0-0



Sylvania Type 5R4GY

FULL WAVE RECTIFIER

PHYSICAL SPECIFICATIONS

Base	Medium Octal 5-Pin
Bulb	ST-16
Maximum Overall Length	5⅛"
Maximum Seated Height	4¾"
Mounting Position*	Vertical

*Horizontal operation if pins 1 and 4 are in a vertical plane.

RATINGS

Filament Voltage AC or DC	5.0 Volts
Filament Current	2.0 Amperes
Maximum Peak Inverse Voltage (No-Load Conditions)	2800 Volts
Maximum Peak Plate Current	650 Ma.

TYPICAL OPERATION

WITH CONDENSER-INPUT FILTER

AC Plate Voltage per Plate (RMS)	
Full Load	900 Volts
No Load	1000 Volts
Total Effective Plate-Supply Impedance per Plate**	575 Ohms
DC Output Current (Maximum)	150 Ma.

**For input condenser larger than 4 μf. a larger plate-supply impedance may be necessary to limit peak plate current to the rated value.

WITH CHOKE-INPUT FILTER

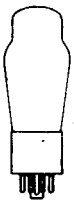
AC Plate Voltage per Plate (RMS)	
Full Load	950 Volts
No Load	1000 Volts
Input-Choke Inductance (Minimum)	10 Henries
DC Output Current (Maximum)	175 Ma.

APPLICATION

Sylvania Type 5R4GY is a full wave rectifier of the coated filament type. Operating conditions given above apply for use at altitudes up to 20,000 feet.

5U4G Sylvania Type

FULL-WAVE RECTIFIER



5T-0-0

PHYSICAL SPECIFICATIONS

Base	Medium Octal 5-Pin
Bulb	ST-16
Maximum Overall Length	5 5/16"
Maximum Seated Height	4 3/4"
Mounting Position	Vertical†

†Horizontal operation permitted if pins 1 and 4 are in vertical plane.

RATINGS

Filament Voltage (AC)	5.0 Volts
Filament Current	3.0 Amperes
Peak Inverse Voltage	1550 Volts
Tube Drop at 225 Ma. per Plate	58 Volts
Peak Plate Current (Per Plate)	675 Ma.

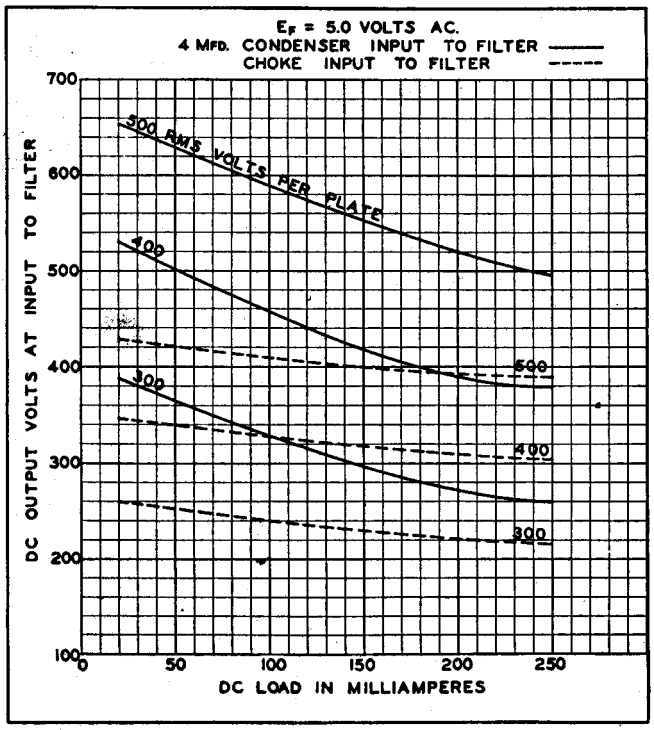
TYPICAL OPERATION

	Choke Input*	Condenser Input*
RMS Voltage Per Plate	550	450 Volts
DC Output Current (Maximum)	225	225 Ma.
Plate Supply Impedance (Minimum)	- -	75 Ohms
Input Choke (Minimum)	3	... Henrys

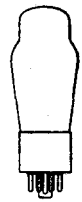
*Filter Circuit.

APPLICATION

Sylvania Type 5U4G is a high vacuum full-wave rectifier tube designed for heavier duty service than Type 5Y3G. Choke input filter arrangements are preferred for use with this tube, although somewhat higher plate supply voltages will be required to obtain the same output voltage obtained with condenser input filter circuits, but peak currents are reduced and voltage regulation is greatly improved under variable loads. Type 5U4G is identical to the older Type 5Z3 except for basing.



5L-0-0



Sylvania Type 5V4G

FULL-WAVE RECTIFIER

PHYSICAL SPECIFICATIONS

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

RATINGS

AC Heater Voltage	5.0 Volts
Heater Current	2.0 Amperes
Peak Inverse Voltage	1400 Volts
Tube Voltage Drop at 175 Ma. Per Plate	25 Volts
Peak Plate Current (Per Plate)	525 Ma.

TYPICAL OPERATION

CONDENSER INPUT TO FILTER

AC Voltage per Plate (RMS)	375 Volts Max.
DC Output Current	175 Ma. Max.
Plate Supply Impedance per Plate	100 Ohms Min.

CHOKE INPUT TO FILTER

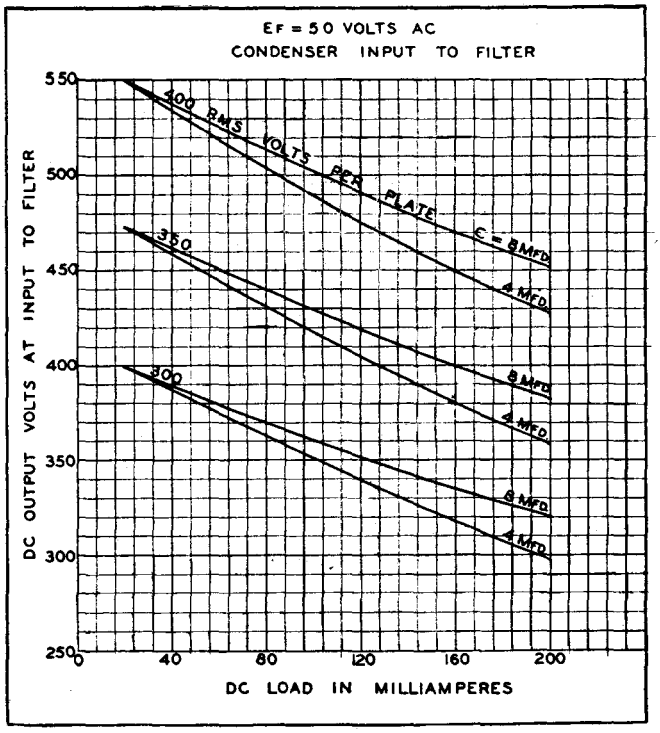
AC Voltage per Plate	500 Volts Max.
DC Output Current	175 Ma. Max.
Input Choke Value	4.0 Henrys Min.

APPLICATION

Sylvania 5V4G is a cathode type high vacuum rectifier designed for full-wave applications. This glass tube is identical to Type 83V except that it is equipped with an octal base. It is important to note that the base of this rectifier may contain all eight pins, although only four of these are connected. Sockets designed for Type 5V4G must accommodate the eight pin base. The cathode is connected internally to the heater, similar to the 83V construction.

The filament voltage should be held close to its rated value of 5 volts. Since the filament current is rather high it is necessary to employ wire of the proper current carrying capacity.

The performance of the 5V4G is quite similar to that of any other high vacuum rectifier. Conventional filter circuits, either of the condenser-input or choke-input type, are applicable but care must be exercised so as not to exceed the recommended maximum values of plate voltage and output current. Choke-input filters will reduce the peak plate current and afford improved voltage regulation, although there will be a sacrifice in d-c output voltage.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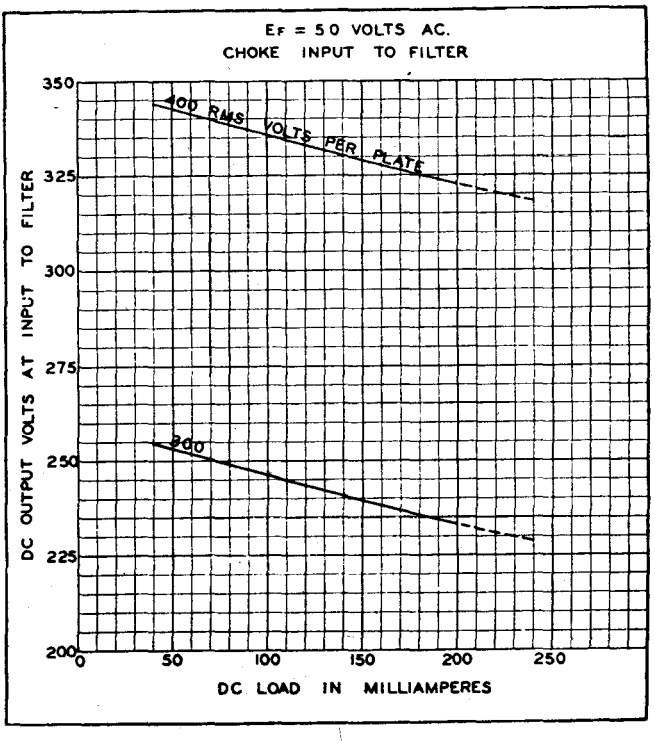
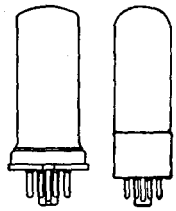
CONDENSER INPUT TO FILTER
DC OUTPUT VOLTS AT INPUT TO FILTER
550
500
450
400
350
300
250
0
40
80
120
160
200
DC LOAD IN MILLIAMPERES
400 RMS VOLTS PER PLATE
C = 8MFD.
4 MFD.
350
8 MFD.
4 MFD.
300
8 MFD.
4 MFD.


EF = 5 0 VOLTS AC.
CHOKE INPUT TO FILTER
DC OUTPUT VOLTS AT INPUT TO FILTER
350
325
300
275
250
225
200
0
50
100
150
200
250
DC LOAD IN MILLIAMPERES
400 RMS VOLTS PER PLATE
300

5T-1-0 (5W4)
5T-0-0 (5W4GT)



Sylvania Type 5W4GT

FULL-WAVE RECTIFIER

PHYSICAL SPECIFICATIONS

	5W4	5W4GT
Base	Small Wafer Octal 5-Pin	Medium Octal 5-Pin
Bulb	Metal 8-6	T-9
Maximum Overall Length	3 1/4"	3 3/8"
Maximum Seated Height	2 1/16"	2 1/16"
Mounting Position	Any	Any

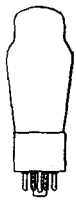
RATINGS

Filament Voltage AC	5.0 Volts
Filament Current	1.5 Amperes
Maximum Peak Inverse Voltage	1100 Volts
Tube Voltage Drop at 110 Ma. per Plate	50 Volts
Maximum Peak Plate Current (Per Plate)	300 Ma.

TYPICAL OPERATION

Filament Voltage AC	5.0 Volts
Filament Current	1.5 Amperes
RMS Voltage Per Plate	350 Volts
DC Output Current	100 Ma.
Minimum Plate Supply Impedance	50 Ohms

5Q-0-0



Sylvania Type 5X4G

FULL-WAVE RECTIFIER

PHYSICAL SPECIFICATIONS

Base	Medium Octal 8-Pin
Bulb	ST-16
Maximum Overall Length	5 5/16"
Maximum Seated Height	4 3/4"
Mounting Position	Vertical†

†Horizontal operation permitted if pins 1 and 4 are in a vertical plane.

For operation data, and curves refer to corresponding Type 5U4G which is identical except for basing.

Sylvania Type 5Y3GT
Sylvania Type 5Y4G

FULL-WAVE RECTIFIER

5Q-0-0
5Y4G

5T-0-0
5Y3GT

PHYSICAL SPECIFICATIONS

	5Y3GT	5Y4G
Base	Intermediate Octal 5-Pin	Medium Octal 8-Pin
Bulb	T-9	ST-14
Maximum Overall Length	3 3/8"	4 5/8"
Maximum Seated Height	2 13/16"	4 1/16"
Mounting Position	Vertical*	Vertical†

*Horizontal operation permitted if Pins 2 and 4 are in a vertical plane.

†Horizontal operation permitted if Pins 1 and 4 are in a vertical plane.

RATINGS

Filament Voltage AC	5.0 Volts
Filament Current	2.0 Amperes
Maximum Peak Inverse Voltage	1400 Volts
Maximum Steady State Peak Current per Plate	375 Ma.
Maximum Transient Peak Current per Plate	2.2 Amperes
Average Tube Voltage Drop at 125 Ma. per Plate	60 Volts

The maximum values of plate supply voltage and output current are interrelated as well as dependent upon whether choke or condenser input is used. Intermediate values may be determined from the following table:

	Condenser Input			Choke Input	
AC Input per Plate (RMS)	500	350	70	500	350 Volts
Output Current	85	125	150	125	150 Ma.

TYPICAL OPERATION

	Filter Circuit	
	Choke Input	Condenser Input
Filament Voltage AC	5.0	5.0 Volts
Filament Current	2.0	2.0 Amperes
AC Plate Voltage per Plate (RMS)	500	350 Volts
DC Output Current	125	125 Ma.
Minimum Plate Supply Impedance per Plate	...	50 Ohms
Input Choke	10	... Henrys

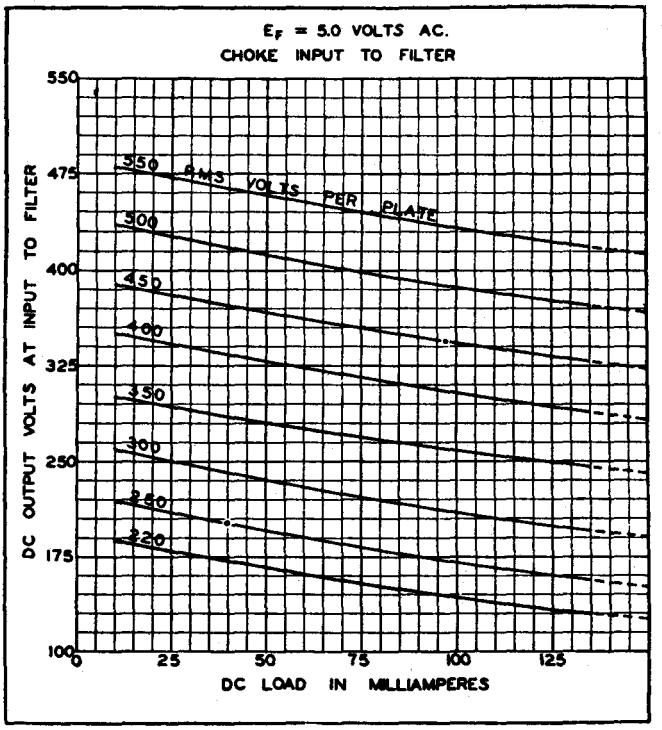
APPLICATION

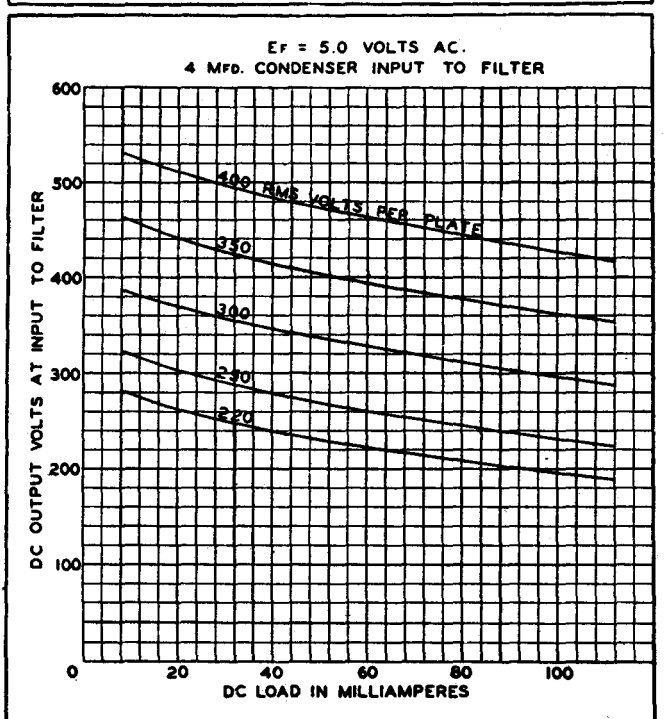
Sylvania Types 5Y3GT and 5Y4G are full-wave vacuum type rectifiers similar to Type 80 and are used for supplying direct current power from an a-c power supply line.

The filament employed in these types is of the oxide coated type. This filament is operated on alternating current from a five volt winding on the power transformer. The filament voltage should be held close to its rated value of 5 volts. Since the filament current is rather high (2.0 amperes) it is necessary to employ wire of the proper current carrying capacity. It is unnecessary to provide the filament winding with a center tap for most applications.

(Curves are shown on the following page).

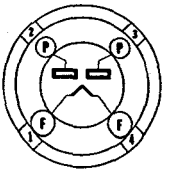
TYPES 5Y3G, 5Y4G, 80





5Z3 Sylvania Type

FULL-WAVE RECTIFIER



4C-0-0

PHYSICAL SPECIFICATIONS

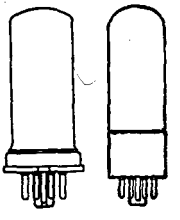
Base	Medium 4-Pin
Bulb	ST16
Maximum Overall Length	5 3/8"
Maximum Seated Height	4 3/4"
Mounting Position	Vertical†

†Horizontal operation permitted if pins 1 and 2 are in a vertical plane.

For further data on this type, refer to corresponding Type 5U4G, which is identical except for basing.

5Z4GT Sylvania Type

FULL-WAVE RECTIFIER



5L-1-0 (5Z4)
5L-0-0 (5Z4GT)

PHYSICAL SPECIFICATIONS

	5Z4	5Z4GT
Base	Small Wafer Octal 5 Pin	Intermediate Octal 5 Pin
Bulb	Metal 8-6	T9
Maximum Overall Length	3 1/4"	3 3/8"
Maximum Seated Height	2 11/16"	2 15/16"
Mounting Position	Any	Any

RATINGS

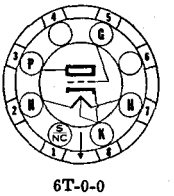
Heater Voltage	5.0 Volts
Heater Current	2.0 Ampere
Peak Inverse Voltage	1400 Volts
Peak Plate Current per Plate	375 Ma.
Tube Drop at 125 Ma. per Plate	20 Volts

TYPICAL OPERATION

	Choke Input	Condenser Input
Heater Voltage	5.0	5.0 Volts
Heater Current	2.0	2.0 Ampere
RMS Voltage Per Plate	500	350 Volts
DC Output Current	125	125 Ma.
Minimum Plate Supply Impedance Per Plate	...	50 Ohms
Minimum Input Choke	5.0	.... Henrys

6A5G Sylvania Type

POWER AMPLIFIER TRIODE



6T-0-0

PHYSICAL SPECIFICATIONS

Base	Medium Octal 8 Pin
Bulb	ST16
Maximum Overall Length	5 3/8"
Maximum Seated Height	4 3/4"
Mounting Position	Any

RATINGS

Heater Voltage	6.3 Volts
Heater Current	1.25 Amperes
Maximum Plate Voltage	325 Volts
Maximum Plate Dissipation	15 Watts

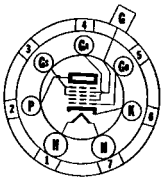
Direct Interelectrode Capacitances:*

Grid to Plate	16 μμf.
Input	7 μμf.
Output	5 μμf.

*Unshielded.

TPYICAL OPERATION as Amplifier

	Class A One Tube	Push-Pull Class AB_1 Two Tubes Fixed Bias	Self Bias
Heater Voltage	6.3	6.3	6.3 Volts
Heater Current	1.25	1.25	1.25 Amperes
Plate Voltage	250	325	325 Volts
Grid Voltage	−45	−68	.... Volts
Self-Bias Resistor	750	...	850 Ohms
Plate Current (Per Tube)	60	40	40 Ma.
Plate Resistance	800	....	.... Ohms
Mutual Conductance	5250	....	.... μmhos
Amplification Factor	4.2	....	....
Load Resistance (Total)	2500	3000	5000 Ohms
Power Output	3.75	15.	10 Watts
Harmonic Distortion	5.0	2.5	5.0 Per Cent



7C-0-0

Sylvania Type 6A7

HEPTODE CONVERTER

PHYSICAL SPECIFICATIONS

Base	Small 7 Pin
Bulb	ST12
Cap	Small Metal
Maximum Overall Length	$4^{17}/_{32}$"
Maximum Seated Height	$3^{29}/_{32}$"
Mounting Position	Any

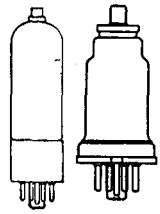
RATINGS

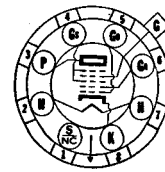
Heater Voltage AC or DC	6.3 Volts
Heater Current	300 Ma.
Maximum Plate Voltage	300 Volts
Maximum Screen Voltage	100 Volts
Maximum Screen Supply	300 Volts
Maximum Anode-Grid Supply	300 Volts
Maximum Anode-Grid Voltage	200 Volts
Maximum Plate Dissipation	1.0 Watt
Maximum Screen Dissipation	0.3 Watt
Maximum Anode-Grid Dissipation	0.75 Watt
Maximum Cathode Current	14 Ma.
Maximum Heater-Cathode Voltage	90 Volts

For typical operating conditions see Type 6A8G.

6A8G/GT Sylvania Type

HEPTODE CONVERTERS





8A-1-0 (6A8, GT)
8A-0-0 (6A8G)

PHYSICAL SPECIFICATIONS

	6A8	6A8G	6A8GT
Base	Small Wafer Octal 8 Pin	Small Octal 8 Pin	Small Wafer Octal 8 Pin Metal Sleeve
Bulb	Metal 8-4	ST12	T9
Cap	Miniature	Miniature	Miniature
Maximum Overall Length	3 1/8"	4 17/32"	3 5/16"
Maximum Seated Height	2 9/16"	3 23/32"	2 3/4"
Mounting Position	Any	Any	Any

TYPICAL OPERATION

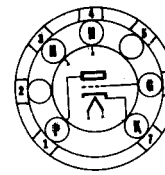
Heater Voltage	6.3	6.3 Volts
Heater Current	300	300 Ma.
Plate Voltage	100	250 Volts
Signal Grid Voltage	−1.5	−3.0 Volts
Screen Voltage	50	100 Volts
Anode-Grid Voltage	100	250* Volts
Oscillator Grid Resistance	50,000	50,000 Ohms
Plate Current	1.1	3.5 Ma.
Screen Current	1.3	2.7 Ma.
Anode-Grid Current	2.0	4.0 Ma.
Oscillator Grid Current	0.25	0.4 Ma.
Self-Bias Resistor	300	300 Ohms
Plate Resistance	0.5	0.3 Megohm
Conversion Conductance	360	550 μmhos
Conversion Conductance at		
Signal Grid Bias of −20 (Approx.)	3	..... μmhos
Signal Grid Bias of −35 (Approx.)	....	6 μmhos

*Through a 20,000 ohm resistor.

For ratings, refer to Type 6A7. Other data will be found under Lock-In Type 7B8 which is nearly identical in electrical characteristics.

6AB4 Sylvania Type

RF TRIODE



5CE-0-2

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T-5½
Maximum Overall Length	2 1/8"
Maximum Seated Height	1 7/8"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Maximum Plate Voltage	300 Volts
Maximum Plate Dissipation	2.5 Watts
Maximum Heater-Cathode Voltage	90 Volts
Maximum Negative Control DC Grid Voltage	−50 Volts

Direct Interelectrode Capacitances:

	Shielded*	Unshielded
Grid to Plate	1.5	1.5 μμf.
Input	2.4	2.2 μμf.
Output	1.4	0.50 μμf.
(Grounded Grid Operation)		
Plate to Cathode	0.20	0.24 μμf.
Input	5.2	5.0 μμf.
Output	2.6	1.7 μμf.

*RMA standard shield No. 316.
It is recommended that pin number 2 be grounded.

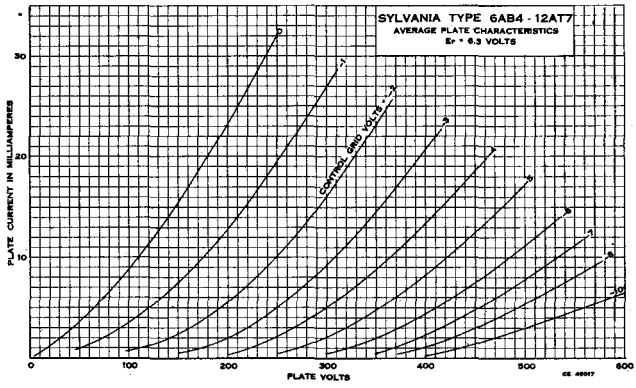
TYPICAL OPERATION

CLASS A_1 AMPLIFIER

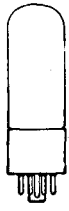
Heater Voltage AC or DC	6.3	6.3 Volts
Heater Current	150	150 Ma.
Plate Voltage	100	250 Volts
Cathode Resistor	270	200 Ohms
Plate Current	3.7	10 Ma.
Plate Resistance	15,000	10,900 Ohms
Mutual Conductance	4,000	5,500 μmhos
Amplification Factor	60	60
Control Grid Voltage (approx.) for Ib = 10 μa.	−5	−12 Volts

APPLICATION

Sylvania Type 6AB4 is a miniature triode to be used as a ground-grid rf amplifier, frequency converter or oscillator at frequencies below 300 megacycles.



6Q-0-0



6AC5GT Sylvania Type

HIGH-MU POWER AMPLIFIER

TRIODE

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 6 Pin
Bulb	T9
Maximum Overall Length	3 5/16"
Maximum Seated Height	2 3/4"
Mounting Position	Any

RATINGS

Maximum Plate Supply Voltage	250 Volts
Maximum Plate Dissipation	10 Watts
Maximum Heater-Cathode Voltage	90 Volts
Maximum Peak Plate Current per Tube	110 Ma.

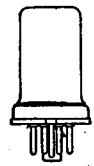
TYPICAL OPERATION FOR TWO TUBES:

Heater Voltage	6.3 Volts
Heater Current	0.4 Ampere
Plate Voltage	250 Volts
Grid Voltage	0 Volt
Peak Input Signal (Grid to Grid)	70 Volts
DC Plate Current (Zero Signal)	5 Ma.
Load Resistance (Plate to Plate)	10000 Ohms
Power Output‡	8 Watts

‡With peak input of 950 milliwatts to grids.

6AC7/1852 Sylvania Type

TELEVISION AMPLIFIER PENTODE



8N-1-1

PHYSICAL SPECIFICATIONS

Base	Small Wafer Octal 8 Pin
Bulb	Metal 8-1
Maximum Overall Length	2 5/8"
Maximum Seated Height	2 1/16"
Mounting Position	Any

RATINGS

Heater Voltage	6.3 Volts
Heater Current	0.450 Ampere
Maximum Plate Voltage	300 Volts
Maximum Screen Supply Voltage	300 Volts
Maximum Screen Voltage	150 Volts
Maximum Plate Dissipation	3.02 Watts
Maximum Screen Dissipation	0.38 Watt
Maximum Grid Resistor*	
Self Bias Fixed Screen Voltage	0.25 Megohm
Self Bias Series Screen Resistor	0.50 Megohm
Self-Bias Resistor (Minimum)	160 Ohms
Maximum Heater-Cathode Voltage	90 Volts

*For maximum voltage conditions.

Direct Interelectrode Capacitances:†

Grid to Plate	0.015 μμf. Max.
Input	11 μμf.
Output	5 μμf.

†With shell connected to cathode.

TYPICAL OPERATION CLASS A_1

Heater Voltage	6.3	6.3 Volts
Heater Current	0.450	0.450 Ampere
Plate Voltage	300	300 Volts
Screen Supply Voltage	150	300 Volts
Screen Resistor	.....	60000 Ohms
Suppressor Grid Voltage	0	0 Volts
Self-Bias Resistor	160	160 Ohms
Plate Current	10	10 Ma.
Screen Current	2.5	2.5 Ma.
Mutual Conductance	9000	9000 μmhos
Plate Resistance (Approximate)	1.0	1.0 Megohm

6AD4 Sylvania Type

HIGH MU TRIODE

8DK-0-0

PHYSICAL SPECIFICATIONS

Base	Flexible Leads
Bulb	T-3
Maximum Overall Bulb Length	1 3/8"
Minimum Lead Length	1 1/2"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Maximum Plate Voltage	150 Volts
Maximum Plate Dissipation	0.3 Watt
Maximum Heater-Cathode Voltage	90 Volts
Maximum Cathode Current	2 Ma.
Maximum Control Grid Circuit Resistance (cathode bias)	1 Megohm

Direct Interelectrode Capacitances:

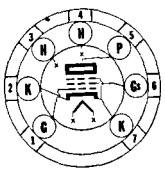
	Unshielded	Shielded*
Grid to Plate	0.80	0.70 μμf.
Input	1.70	1.90 μμf.
Output	0.70	2.20 μμf.

*External shield of 0.405" diameter connected to cathode.

TYPICAL OPERATION
CLASS A_1 AMPLIFIER

Heater Voltage	6.3 Volts
Heater Current	150 Ma.
Plate Voltage	100 Volts
Cathode Bias Resistor	820 Ohms
Plate Current	1.4 Ma.
Mutual Conductance	2000 μmhos
Amplification Factor	70
Plate Resistance	35,000 Ohms
Control Grid Voltage for Ib = 10 μa	−3.0 Volts

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



7BD-0-2 & 7

Sylvania Type 6AG5

SHARP CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T-5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	300 Ma.
Maximum Plate Voltage	300 Volts
Maximum Screen Voltage	150 Volts
Maximum Plate Dissipation	2 Watts
Maximum Screen Dissipation	0.5 Watt
Maximum Heater-Cathode Voltage	90 Volts
Direct Interelectrode Capacitances: (Without External Shield)	
Grid to Plate	0.025 μμf. Max.
Input	6.5 μμf.
Output	1.8 μμf.

TYPICAL OPERATION
CLASS A_1 AMPLIFIER
PENTODE CONNECTION

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	150 Volts
Self-Bias Resistor	100	100	200 Ohms
Plate Current	5.5	7.2	7.0 Ma.
Screen Current	1.6	2.1	2.0 Ma.
Grid Bias for 10 μa Plate Current	−5.0	−6.0	−8.0 Volts
Plate Resistance (Approx.)	0.3	0.5	0.8 Megohm
Transconductance	4750	5100	5000 μmhos

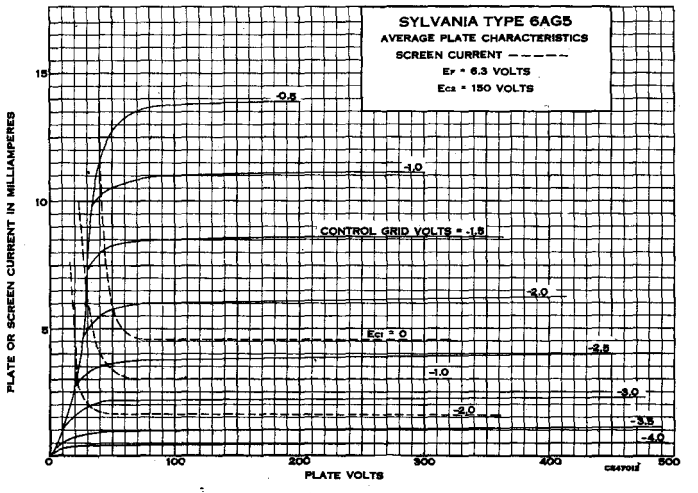
TRIODE CONNECTION

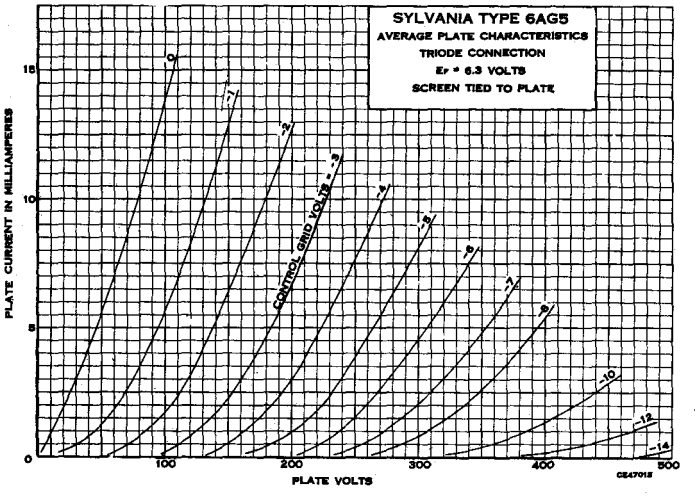
Heater Voltage	6.3	6.3 Volts
Heater Current	300	300 Ma.
Plate Voltage	180	250 Volts
Self-Bias Resistor	350	825 Ohms
Plate Current	7.0	5.5 Ma.
Plate Resistance	7900	11,000 Ohms
Amplification Factor	45	42
Transconductance	5700	3800 μmhos

APPLICATION

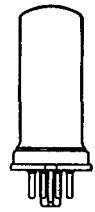
Sylvania Type 6AG5 is a sharp cut-off pentode of miniature construction having high mutual conductance. It is useful as a RF amplifier for frequencies up to 400 megacycles. Input and output capacitances are low and the dual cathode leads aid in preventing degeneration, by providing the means for cathode return isolation.

6AG5 (Cont.)


SYLVANIA TYPE 6AG5
AVERAGE PLATE CHARACTERISTICS
SCREEN CURRENT
Ef = 6.3 VOLTS
Ecc = 150 VOLTS
PLATE OR SCREEN CURRENT IN MILLIAMPERES
PLATE VOLTS
CONTROL GRID VOLTS = -1.5
Ec1 = 0
-0.5
-1.0
-2.0
-2.5
-3.0
-3.5
-4.0
0
5
10
15
100
200
300
400
500
CS47015


SYLVANIA TYPE 6AG5
AVERAGE PLATE CHARACTERISTICS
TRIODE CONNECTION
Ef = 6.3 VOLTS
SCREEN TIED TO PLATE
PLATE CURRENT IN MILLIAMPERES
PLATE VOLTS
CONTROL GRID VOLTS
0
-1
-2
-3
-4
-5
-6
-7
-8
-10
-12
-14
0
5
10
15
100
200
300
400
500
CS47015

8Y-1-3



Sylvania Type 6AG7

TELEVISION AMPLIFIER PENTODE

PHYSICAL SPECIFICATIONS

Base	Small Wafer Octal 8 Pin
Bulb	Metal 8-6
Maximum Overall Length	3¼"
Maximum Seated Height	2 11/16"
Mounting Position	Vertical§

§Horizontal if plane of pins number 2 and 7 is vertical.

RATINGS

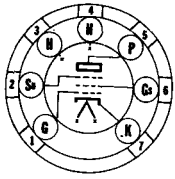
Heater Voltage AC or DC	6.3 Volts
Heater Current	0.650 Ampere
Maximum Plate Voltage	300 Volts
Maximum Screen Voltage	300 Volts
Maximum Plate Dissipation	9.0 Watts
Maximum Screen Dissipation	1.5 Watts
Minimum External Control Grid Voltage	0 Volts
Maximum Heater-Cathode Voltage	90 Volts
Direct Interelectrode Capacitances: Shell Connected to Cathode.	
Grid to Plate	0.060 μμf. Max.
Input	13.0 μμf.
Output	7.5 μμf.

TYPICAL OPERATION

CLASS A_1 AMPLIFIER

Heater Voltage	6.3 Volts
Heater Current	0.650 Ampere
Plate Voltage	300 Volts
Screen Voltage	150 Volts
Control Grid Voltage*	3.0 Volts
Self-Bias Resistor	81 Ohms
Peak AF Signal Voltage	3.0 Volts
Plate Resistance	0.13 Megohm
Mutual Conductance	11000 μmhos
Zero Signal Plate Current	30 Ma.
Maximum Signal Plate Current	30.5 Ma.
Zero Signal Screen Current	7.0 Ma.
Maximum Signal Screen Current	9.0 Ma.
Load Resistance	10000 Ohms
Power Output	3.0 Watts
Total Distortion	7.0 Per Cent

*Maximum grid circuit resistance should not exceed 0.25 megohm if fixed bias is used, or 1.0 megohm if self-bias is used.



7BK-0-0

Sylvania Type 6AH6

SHARP CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base	Small Button Miniature 7 Pin
Bulb	T-5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Maximum Plate Voltage	300 Volts
Maximum Screen Voltage	150 Volts
Maximum Plate Dissipation	3.2 Watts
Maximum Screen Dissipation	0.4 Watts
Maximum Cathode Current	13.0 Ma.
Maximum Heater-Cathode Voltage	90 Volts

6AH6 (Cont'd)

Direct Interelectrode Capacitances:*

Grid to Plate	.020 μμf. Max
Input	10 μμf.
Output	3.6 μμf.

*With ¾" diameter shield (RMA No. 316) connected to cathode.

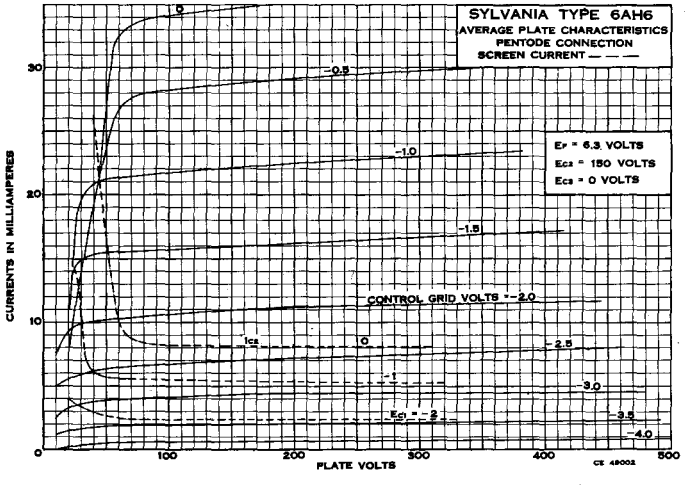
TYPICAL OPERATION

	Pentode Connection	Triode Connection
Heater Voltage AC or DC	6.3	6.3 Volts
Heater Current	450	450 Ma.
Plate Voltage	300	150
Screen Voltage	150	150
Suppressor Grid Voltage	tie to K	tie to P
Control Grid Voltage	Obtained by 160 Ohm Cathode Resistor	
Plate Resistance (Approx.)	500,000	3600 Ohms
Mutual Conductance	9,000	11,000 μmhos
Amplification Factor	...	40
Plate Current	10	12.5 Ma.
Screen Current	2.5	.... Ma.
Control Grid Voltage for Ib=10 μa (Approx.)	−7.0	−7.0 Volts

APPLICATION

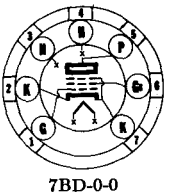
Sylvania Type 6AH6 is a sharp cut-off pentode designed for use in television, video and I.F. circuits where wide band amplification or low impedance output is required. The triode rating is to permit its use in cathode follower circuits.

The suppressor grid is not designed to have a large enough control characteristic for practical use.



6AJ5 Sylvania Type

SHARP CUT-OFF PENTODE



7BD-0-0

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T-5½
Maximum Overall Length	1⅝"
Maximum Seated Height	1¼"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Maximum Plate Voltage	180 Volts
Maximum Screen Supply Voltage	180 Volts
Maximum Plate Dissipation	1.7 Watts
Maximum Screen Dissipation	0.5 Watt
Maximum Positive Control DC Grid Voltage	0 Volts
Maximum Cathode Current	18 Ma.

Direct Interelectrode Capacitances:

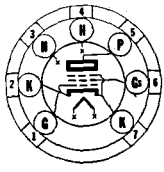
	Shielded*	Unshielded
Grid to Plate	0.02	0.03 μμf.
Input	4.0	4.0 μμf.
Output	2.8	2.1 μμf.

*External shield connected to pins 2 and 7.

TYPICAL OPERATION

CLASS A_1 AMPLIFIER

Heater Voltage	6.3 Volts
Heater Current	175 Ma.
Plate Voltage	28 Volts
Screen Grid Voltage	28 Volts
Control Grid Voltage	−1 Volt
Plate Resistance (approx.)	0.1 Megohm
Mutual Conductance	2,500 μmhos
Plate Current	2.7 Ma.
Screen Grid Current	1 Ma.
Control Grid Voltage for Ib = 10 μa.	−4.5 Volts



7BD-0-2 & 7

Sylvania Type 6AK5

RF AMPLIFIER PENTODE

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T-5½
Maximum Overall Length	1¾"
Maximum Seated Height	1½"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	0.175 Ampere
Maximum Plate Voltage	180 Volts
Maximum Screen Volts	140 Volts
Maximum Plate Dissipation	1.7 Watts
Maximum Screen Dissipation	0.5 Watt
Maximum DC Heater-Cathode Voltage	90 Volts
Maximum Cathode Current	18 Ma.

Direct Interelectrode Capacitances:*

Grid to Plate	0.02 μμf. Max.
Input	4.0 μμf.
Output	2.8 μμf.

*With a close fitting shield connected to the cathode.

6AK5 (Cont'd)

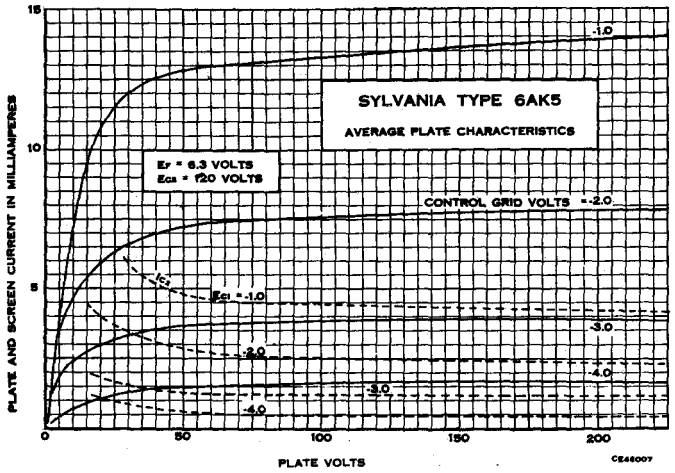
TYPICAL OPERATION
CLASS A_1 AMPLIFIER

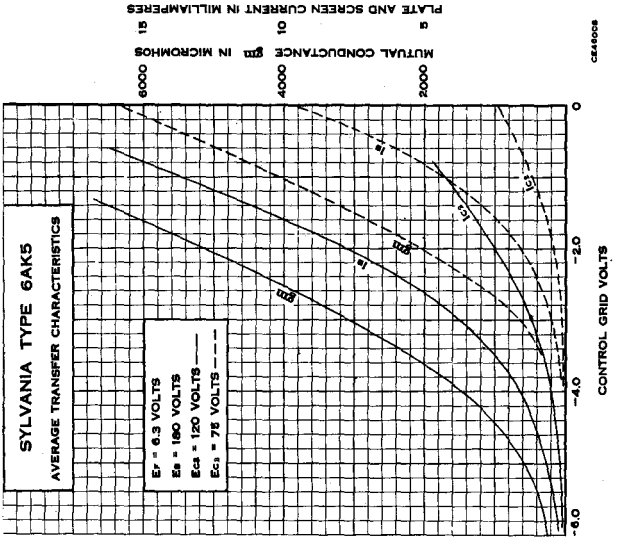
Heater Voltage	6.3	6.3 Volts
Heater Current	175	175 Ma.
Plate Voltage	120	180 Volts
Screen Voltage	120	120 Volts
Cathode Resistor**	180	180 Ohms
Plate Resistance (approx.)	0.30	0.50 Megohm
Mutual Conductance	5000	5100 μmhos
Plate Current	7.5	7.7 Ma.
Screen Current	2.5	2.4 Ma.

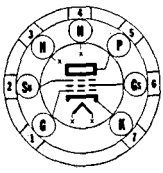
**Fixed Bias Operation is not recommended.

APPLICATION

Sylvania Type 6AK5 is a high-frequency, high mutual conductance pentode of miniature style of construction. It is intended for use at frequencies up to approximately 400 megacycles and the dual cathode leads, when properly used, help to isolate input and output circuits, thereby permitting greater gain per stage.







7BK-0-0

Sylvania Type 6AK6

PENTODE POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T-5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	150 Ma.
Maximum Plate Voltage	300 Volts
Maximum Screen Voltage	250 Volts
Maximum Plate Dissipation	2.75 Watts
Maximum Screen Dissipation	0.75 Watts
Maximum DC Heater-Cathode Voltage	100 Volts
Direct Interelectrode Capacitances:*	
Grid to Plate	0.12 μμf.
Input	3.6 μμf.
Output	4.2 μμf.

*Without external shield.

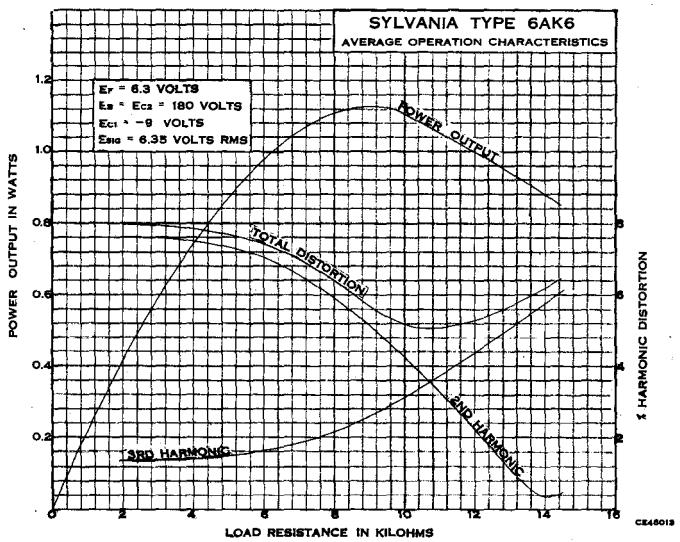
TYPICAL OPERATION

A.F. POWER AMPLIFIER

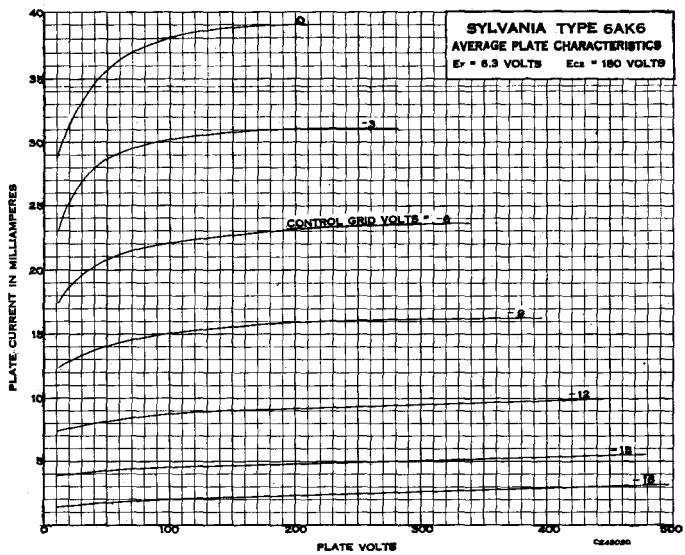
Heater Voltage	6.3 Volts
Heater Current	150 Ma.
Plate Voltage	180 Volts
Suppressor	Connected to Cathode at Socket
Screen Voltage	180 Volts
Grid Voltage	−9 Volts
Peak AF Grid Voltage	9 Volts
Zero Signal Plate Current	15 Ma.
Zero Signal Screen Current	2.5 Ma.
Plate Resistance	0.2 Megohm
Transconductance	2300 μmhos
Load Resistance	10,000 Ohms
Total Harmonic Distortion	10 %
Maximum Signal Power Output	1.1 Watts

APPLICATION

Sylvania Type 6AK6 is a power amplifier pentode designed for use in compact light-weight radio equipment. It is similar in characteristics to Sylvania Type 6G6G.

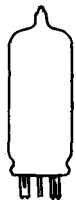


6AK6 (Cont'd)



6AL5 Sylvania Type

DUODIODE



6BT-0-6

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T5½
Maximum Overall Length	1¾"
Maximum Seated Height	1½"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	0.3 Ampere
Maximum Peak Inverse Plate Voltage	330 Volts
Maximum Peak Plate Current per Plate	54 Ma.
Maximum DC Output Current per Plate	9.0 Ma.
Maximum DC Heater-Cathode Voltage	330 Volts

Direct Interelectrode Capacitances:

	Unshielded	Shielded*
Plate Input each Unit	2.5	3.2 μμf.
Coupling Plate to Plate	.068	.026 μμf.
Cathode Input each Unit	3.4	3.6 μμf.

*With a ¾" diameter shield (RMA Std. 316) connected to internal shield.

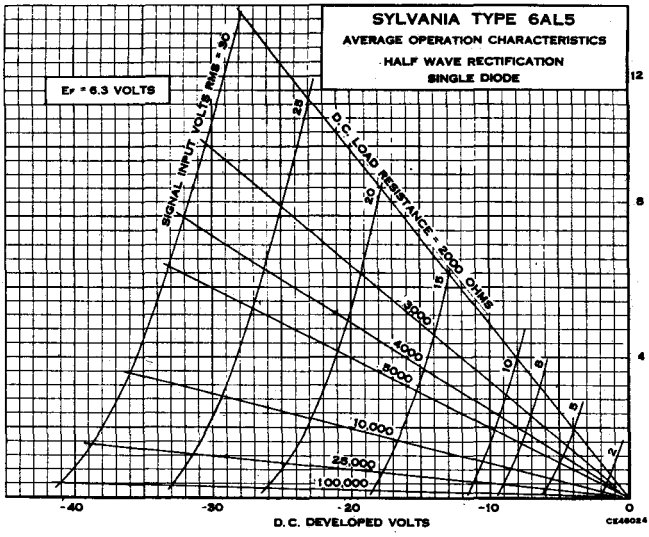
TYPICAL OPERATION
AS A HALF WAVE RECTIFIER

AC Voltage Per Plate (RMS)	117 Volts
Minimum Effective Plate Supply Impedance	300 Ohms
DC Output Current Per Plate	9.0 Ma.

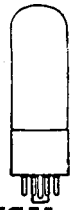
APPLICATION

Sylvania Type 6AL5 is a double diode of miniature type of construction. It is designed especially for high-frequency operation having a resonant frequency per unit of approximately 700 megacycles. Each diode unit is completely separate from the other and isolated by means of an internal shield thus permitting independent operation of each diode.

In ratio detector service, use of a series resistor to operate the heater at a voltage of 5.3 volts is recommended. This provides considerably lower hum output without loss of performance.



8CH-0-0



Sylvania Type 6AL7GT

TUNING INDICATOR

PHYSICAL SPECIFICATIONS

Base	Intermediate Shell 8 Pin Octal
Bulb	T-9
Maximum Overall Length	3 1/16"
Maximum Seated Height	2 1/2"
Mounting Position	Any

RATINGS

Heater Voltage	6.3 Volts
Maximum Target Voltage	365 Volts
Minimum Target Voltage	220 Volts
Maximum Heater-Cathode Voltage	90 Volts

TYPICAL OPERATION

TUNING INDICATOR SERVICE

Heater Voltage	6.3 Volts
Heater Current	150 Ma.
Target Voltage	315 Volts
Control Grid Voltage*	0 Volts
Deflection Electrode Voltages†	0 Volts
Deflection Sensitivity (Approx.)	1 mm per Volt
Control Grid Voltage for Fluorescent Cut-Off (Approx.)	-6.0 Volts
Cathode Bias Resistor (Approx.)	3300 Ohms

*When not used for fluorescent control the grid should be connected to the cathode.

†The illustration shows the fluorescent areas controlled by the deflection electrodes connected to D1, D2 and D3 respectively.

6AL7GT (Cont'd)

APPLICATION

Sylvania Type 6AL7GT is a tuning indicator tube using the principle of the cathode ray tube and designed for use with FM circuits. The fluorescent coating is applied to a mica screen and the relative values of the voltages applied to the deflection electrodes are indicated by the location and size of the illuminated area.

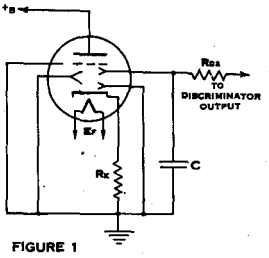


FIGURE 1

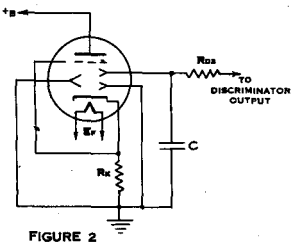


FIGURE 2

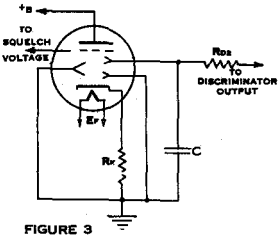


FIGURE 3

SQUELCH VOLTAGE
6 V. (APPROX.) = OFF CHANNEL

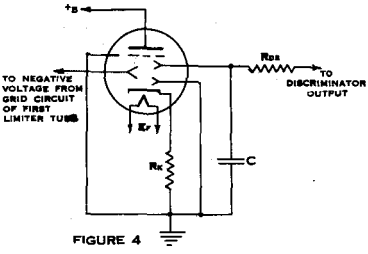


FIGURE 4

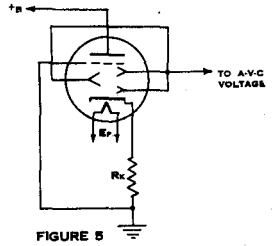
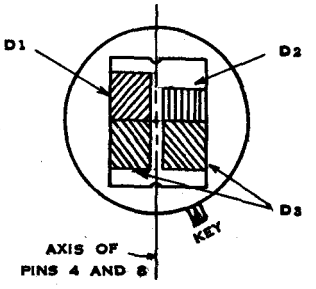


FIGURE 5

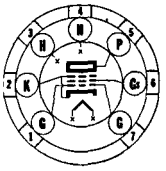


COMMON CONDITIONS FOR ALL CIRCUITS

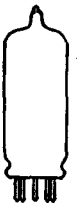
Er = 6.3 VOLTS
+B = 250 VOLTS D-C APPROXIMATE
Rk = 3300 OHMS
Rds = 1.0 MEGOHM
C = 0.05 MICROFARAD

PATTERN RESPONSE IN VARIOUS CIRCUITS

CONTROL VOLTAGE SOURCE	SIGNAL	CIRCUIT (SEE FIGURE)	OFF CHANNEL (-)	ON CHANNEL OFF TUNE (-)	ON TUNE	ON CHANNEL OFF TUNE (+)	OFF CHANNEL (+)
DISCRIMINATOR	FM	1 AND 2					
DISCRIMINATOR AND SQUELCH	FM	3					
DISCRIMINATOR AND LIMITER	FM	4					
AVC	AM	5					



7BZ-0-0



Sylvania Type 6AQ5

BEAM POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T-5½
Maximum Overall Length	2 5/8"
Maximum Seated Height	2 3/8"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	450 Ma.
Maximum Plate Voltage	250 Volts
Maximum Screen Voltage	250 Volts
Maximum Plate Dissipation	12 Watts
Maximum Screen Dissipation	2 Watts
Maximum Peak Heater-Cathode Voltage	90 Volts
Maximum Grid-Circuit Resistance	
For Fixed Bias	0.1 Megohm
For Cathode Bias	0.5 Megohm

Direct Interelectrode Capacitances:

	Shielded†	Unshielded
Grid to Plate	0.17	0.35 μμf.
Input	8.0	7.6 μμf.
Output	11.0	6.0 μμf.

†With a ¾" diameter shield (RMA Std. 316) connected to Cathode.

TYPICAL OPERATION

AF POWER AMPLIFIER - CLASS A_1

Heater Voltage	6.3	6.3 Volts
Heater Current	450	450 Ma.
Plate Voltage	180	250 Volts
Screen Voltage	180	250 Volts
Control Grid Voltage	−8.5	−12.5 Volts
Peak AF Grid Voltage	8.5	12.5 Volts
Zero Signal Plate Current	29	45 Ma.
Maximum Signal Plate Current	30	47 Ma.
Zero Signal Screen Current (Approx.)	3	4.5 Ma.
Maximum Signal Screen Current (Approx.)	4	7 Ma.
Plate Resistance (Approx.)	58,000	52,000 Ohms
Transconductance	3700	4100 μmhos
Load Resistance	5500	5000 Ohms
Total Harmonic Distortion	8	8 %
Maximum Signal Power Output	2.0	4.5 Watts

AF POWER AMPLIFIER - CLASS AB_1*

Plate Voltage	250 Volts
Screen Voltage	250 Volts
Control Grid Voltage	−15 Volts
Peak AF Grid to Grid Voltage	30 Volts
Zero Signal Plate Current	70 Ma.
Maximum Signal Plate Current	79 Ma.
Zero Signal Screen Current	5 Ma.
Maximum Signal Screen Current	13 Ma.
Plate Resistance (per tube)	60,000 Ohms
Transconductance (per tube)	3750 μmhos
Effective Load Resistance (plate to plate)	10,000 Ohms
Total Harmonic Distortion	5 %
Maximum Signal Power Output	10 Watts

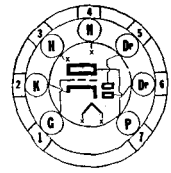
*Values are for two tubes.

APPLICATION

Sylvania Type 6AQ5 is a beam power amplifier in the miniature style designed for use in compact AC or auto sets. Since it is identical to Type 6V6GT except that the highest rating is not recommended, the same characteristic curves may be used. These are shown with Sylvania Type 7C5.

6AQ6 Sylvania Type

DUODIODE HIGH-MU TRIODE



7BT-0-0

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	150 Ma.
Maximum Plate Voltage	300 Volts
Maximum Heater-Cathode Voltage	90 Volts

TYPICAL OPERATION

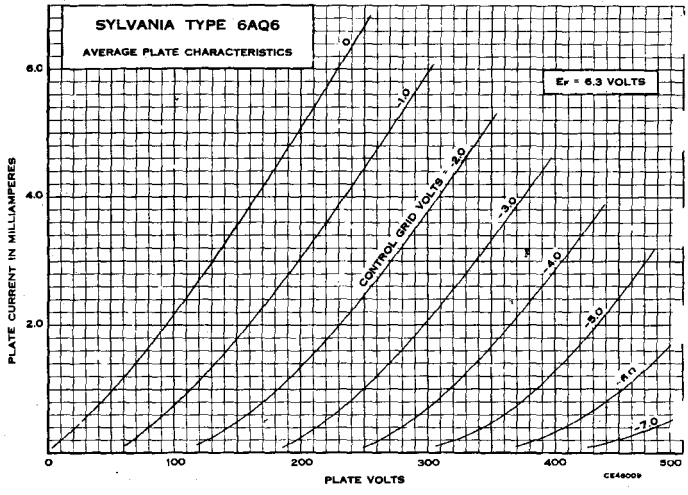
CLASS A_1 AMPLIFIER

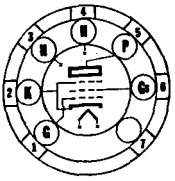
Heater Voltage	6.3	6.3 Volts
Heater Current	150	150 Ma.
Plate Voltage	100	250 Volts
Grid Voltage	−1.0	−3.0 Volts
Amplification Factor	70	70
Plate Resistance	61000	58000 Ohms
Mutual Conductance	1150	1200 μmhos
Plate Current	0.8	1.0 Ma.

APPLICATION

Sylvania Type 6AQ6 is a double diode, high-mu triode of miniature construction. It is similar to type 6Q7 but has lower heater drain and lower internal capacitances. Its small size facilitates the design of small compact receivers.

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





6CC-0-0

Sylvania Type 6AR5

BEAM POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T-5½
Maximum Overall Length	2⅝"
Maximum Seated Height	2⅜"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Maximum Plate Voltage	250 Volts
Maximum Screen Voltage	250 Volts
Maximum Plate Dissipation	8.5 Watts
Maximum Screen Dissipation	2.5 Watts
Maximum Heater-Cathode Voltage	90 Volts

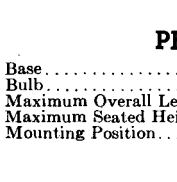
TYPICAL OPERATION

Heater Voltage AC or DC	6.3	6.3 Volts
Heater Current	400	400 Ma.
Plate Voltage	250	250 Volts
Screen Voltage	250	250 Volts
Grid Voltage*	−16.5	−18 Volts
Self-Bias Resistor	420	500 Ohms
Peak Signal Voltage	16.5	18 Volts
Plate Current (Zero Signal)	34	32 Ma.
Plate Current (Maximum Signal)	35	33 Ma.
Screen Current (Zero Signal)	5.7	5.5 Ma.
Screen Current (Maximum Signal)	10	10 Ma.
Plate Resistance (Approx.)	65,000	68,000 Ohms
Mutual Conductance	2,400	2,300 μmhos
Load Resistance	7,000	7,600 Ohms
Power Output	3.2	3.4 Watts
Total Harmonic Distortion	7	11 %

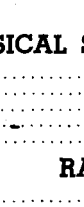
*Maximum grid circuit resistance should not exceed 0.5 megohms for self-bias operation, or 0.1 megohm for fixed bias operation.

APPLICATION

Sylvania Type 6AR5 is a miniature tube for use in locations where the space requirements do not permit use of the Types 7B5 or 6K6G, and which do not require the 315 volt rating. For curve data, reference should be made to Type 7B5.



7CV-0-0



Sylvania Type 6AS5

BEAM POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T-5½
Maximum Overall Length	2⅝"
Maximum Seated Height	2⅜"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Maximum Plate Voltage	150 Volts
Maximum Screen Voltage	117 Volts
Maximum Plate Dissipation	5.5 Watts
Maximum Screen Dissipation	1.0 Watt
Maximum Heater-Cathode Voltage	90 Volts
Direct Interelectrode Capacitances: (approx.)*	
Grid No. 1 (Control Grid) to Plate	0.6 μμf.
Input	12 μμf.
Output	6.2 μμf.

*With no external shield.

6AS5 (Cont'd)

TYPICAL OPERATION
CLASS A_1 AMPLIFIER

Heater Voltage	6.3 Volts
Heater Current	0.8 Ampere
Plate Voltage	150 Volts
Screen Voltage	110 Volts
Control Grid Voltage*	-8.5 Volts
Peak AF Grid Voltage	8.5 Volts
Plate Current (Zero Signal)	35 Ma.
Plate Current (Maximum Signal)	36 Ma.
Screen Current (Zero Signal)	2 Ma.
Screen Current (Maximum Signal)	6.5 Ma.
Mutual Conductance	5600 μmhos
Load Resistance	4500 Ohms
Power Output (Maximum Signal)	2.2 Watts
Total Harmonic Distortion	10 %

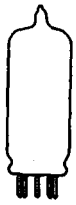
*Maximum grid circuit resistance should not exceed 0.5 megohm for self bias operation, or 0.1 megohm for fixed bias operation.

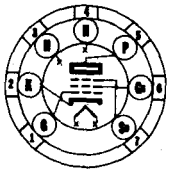
APPLICATION

Sylvania Type 6AS5, a miniature beam power amplifier, is used in the output stage of automobile and ac operated receivers. It delivers relatively large power output at low plate and screen voltages.

6AS6 Sylvania Type

PENTODE WITH SUPPRESSOR CONTROL





7CM-0-0

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T-5½
Maximum Overall Length	1¾"
Maximum Seated Height	1½"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	175 Ma.
Maximum Plate Voltage	180 Volts
Maximum Screen Voltage	140 Volts
Maximum Plate Dissipation	1.7 Watts
Maximum Screen Dissipation	0.75 Watt
Maximum Peak Heater-Cathode Voltage	90 Volts
Maximum Cathode Current	18 Ma.

Direct Interelectrode Capacitances:

	Unshielded	Shielded*
Grid to Plate	0.025	0.02 μμf.
Input	3.9	4.0 μμf.
Output	2.2	3.0 μμf.

*External shield connected to pin #2 (cathode.)

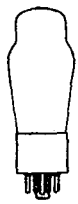
TYPICAL OPERATION

Heater Voltage	6.3	6.3 Volts
Heater Current	175	175 Ma.
Plate Voltage	120	120 Volts
Screen Voltage	120	120 Volts
Suppressor Voltage	-3	0 Volts
Control Grid Voltage	-2	-2 Volts
Plate Current	3.6	5.2 Ma.
Screen Current	4.8	3.5 Ma.
Mutual Conductance, Control-Grid	1850	3200 μmhos
Mutual Conductance, Suppressor Grid	810	470 μmhos

APPLICATION

Sylvania Type 6AS6 is a miniature pentode intended for low power applications at high and ultra-high frequencies. It can be used in delay circuits, mixers, gain controlled amplifiers, and gated amplifiers. The control grid and suppressor grid can be used as individual control elements.

8BD-0-0



Sylvania Type 6AS7G

LOW MU DUOTRIODE

PHYSICAL SPECIFICATIONS

Base	Medium Shell Octal 8 Pin
Bulb	ST-16
Maximum Overall Length	$5\frac{5}{16}$"
Maximum Seated Height	$4\frac{3}{4}$"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	2.5 Amperes
Maximum Plate Voltage	250 Volts
Maximum Plate Dissipation per Plate	13 Watts
Maximum Peak Heater-Cathode Voltage	300 Volts
Maximum Peak Inverse Plate Voltage	1700 Volts
Maximum Plate Current	125 Ma.

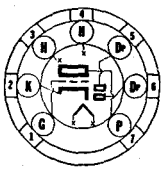
TYPICAL OPERATION

AS A DIRECT COUPLED AMPLIFIER

Plate Supply Voltage	135 Volts
Grid Voltage	Obtained by Self-Bias Resistor
Self-Bias Resistor	250 Ohms
Plate Current	125 Ma.
Plate Resistance	280 Ohms
Mutual Conductance	7000 μmhos
Amplification Factor	2.0

APPLICATION

Sylvania Type 6AS7G is a low mu duo triode power amplifier designed for television service as a booster scanner. Fixed bias operation is not recommended and the grid circuit resistance should not exceed 1 megohm.



7BT-0-0

Sylvania Type 6AT6

DUODIODE HIGH-MU TRIODE

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T5½
Maximum Overall Length	$2\frac{1}{8}$"
Maximum Seated Height	$1\frac{7}{8}$"
Mounting Position	Any

RATINGS

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

Direct Interelectrode Capacitances:*

Grid to Plate	2.1 μμf.
Input	2.3 μμf.
Output	1.1 μμf.
Diode No. 2 (Pin 5) to Grid	025 μμf. Max.

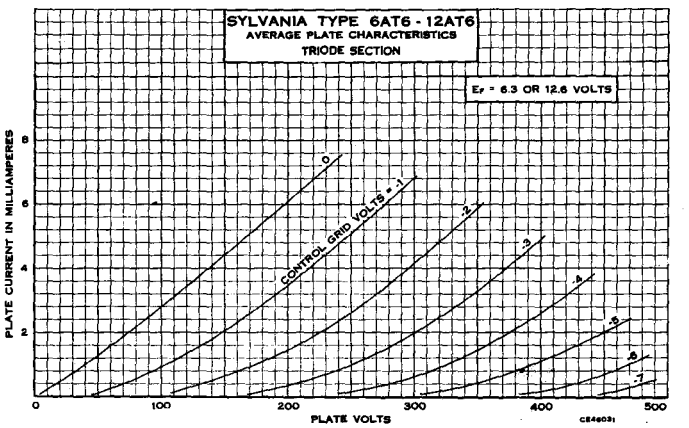
*Without external shield.

TYPICAL OPERATION

Heater Voltage	6.3	6.3 Volts
Heater Current	300	300 Ma.
Plate Voltage	100	250 Volts
Grid Voltage	−1.0	−3.0 Volts
Plate Current	0.8	1.0 Ma.
Amplification Factor	70	70
Plate Resistance	54000	58000 Ohms
Mutual Conductance	1300	1200 μmhos

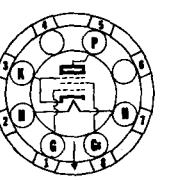
Data for use in Resistance Coupled Amplifier Circuits may be found in the appendix under type 6Q7GT.

6AT6 (Cont'd)



6AU5GT Sylvania Type

BEAM POWER AMPLIFIER
TELEVISION SCANNER



6CK-0-0

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 6-Pin
Bulb	T-9
Maximum Overall Length	3 5/16"
Maximum Seated Height	2 3/4"
Mounting Position	Any

RATINGS

Heater Voltage (AC or DC)	6.3 Volts
Heater Current	1.25 Amperes
Maximum Plate Voltage	450 Volts
Maximum Screen Voltage	200 Volts
Maximum Plate Dissipation	10 Watts
Maximum Peak Heater-Cathode Voltage	±180 Volts

Direct Interelectrode Capacitances*

Grid to Plate	0.5 μμf.
Input	11.3 μμf.
Output	7.0 μμf.

*Without external shield.

TYPICAL OPERATION

HORIZONTAL DEFLECTION AMPLIFIER**

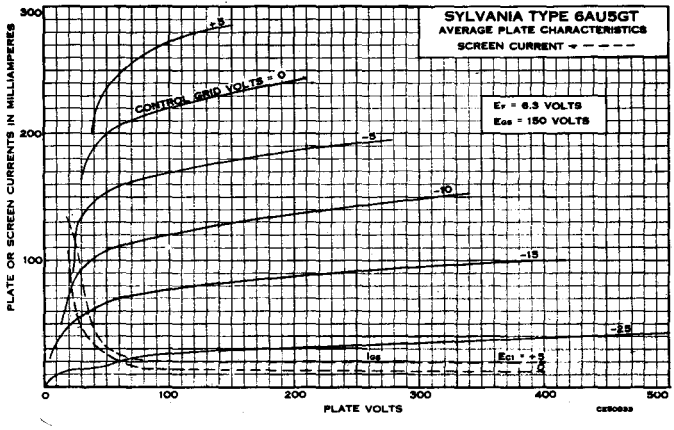
Heater Voltage (AC or DC)	6.3 Volts
Heater Current	1.25 Amperes
Plate Voltage†	450 Volts
Screen Voltage	167 Volts
Peak Positive-Surge Plate Voltage	4500 Volts
Peak Positive Grid Signal (Sawtooth)	85 Volts
Peak Negative Grid Signal (Sawtooth)	15 Volts
Plate Current	71 Ma.
Screen Current	6 Ma.
Developed High Voltage	12.0 K Volts

**Circuit used for these data is that given for Type 6BQ6GT.

†This voltage consists of 325 volts from DC power supply plus boost from the damper circuit.

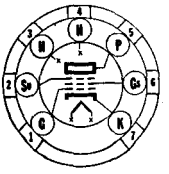
APPLICATION

Sylvania Type 6AU5GT is a beam power amplifier designed especially for use as a horizontal scanner in television receivers using magnetic deflection. For typical circuit see deflection amplifier circuit given for Type 6BQ6GT which uses a "fly-back" type high voltage supply.



6AU6 Sylvania Type

SHARP CUT-OFF RF PENTODE



7BK-0-2

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	300 Ma.
Maximum Plate Voltage	300 Volts
Maximum Screen Voltage	150 Volts
Maximum Screen Supply Voltage	300 Volts
Maximum Plate Dissipation	3 Watts
Maximum Screen Dissipation	0.65 Watt
Minimum Control Grid Voltage	0 Volt
Maximum Heater-Cathode Voltage	90 Volts

Direct Interelectrode Capacitances:*

Grid to Plate	0.0035 μμf. Max.
Input	5.5 μμf.
Output	5.0 μμf.

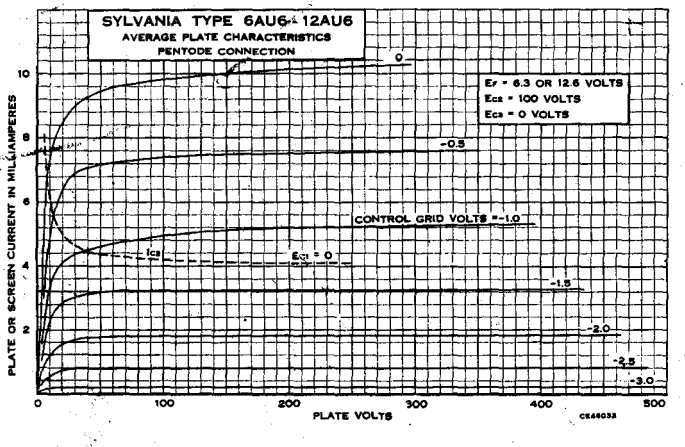
*Without external shield.

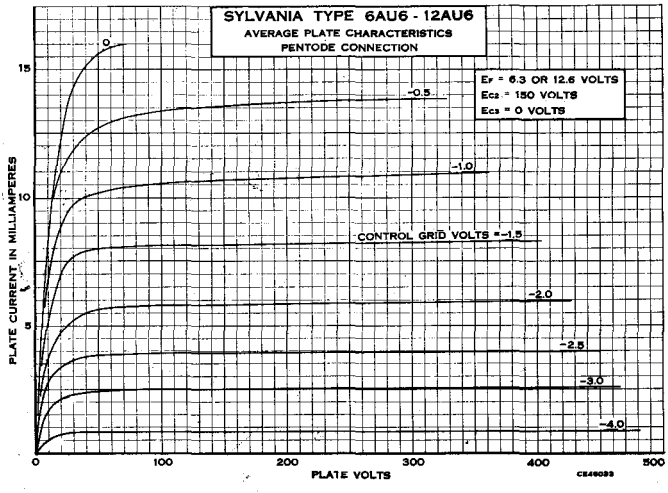
TYPICAL OPERATION

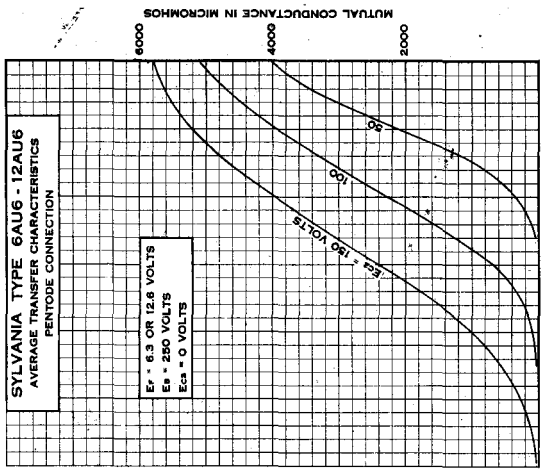
Heater Voltage	6.3	6.3	6.3 Volts
Heater Current	300	300	300 Ma.
Plate Voltage	100	250	250 Volts
Suppressor Grid	Connect to Cathode at Socket		
Screen Voltage	100	125	150 Volts
Control Grid Voltage	−1.0	−1.0	−1.0 Volt
Cathode Resistor	150	100	68 Ohms
Plate Resistance (Approximate)	0.5	1.5	1.0 Megohm
Mutual Conductance	3900	4500	5200 μmhos
Control Grid Voltage at 10 μa. Plate	−4.2	−5.5	−6.5 Volts
Plate Current	5.0	7.6	10.6 Ma.
Screen Current	2.1	3.0	4.3 Ma.

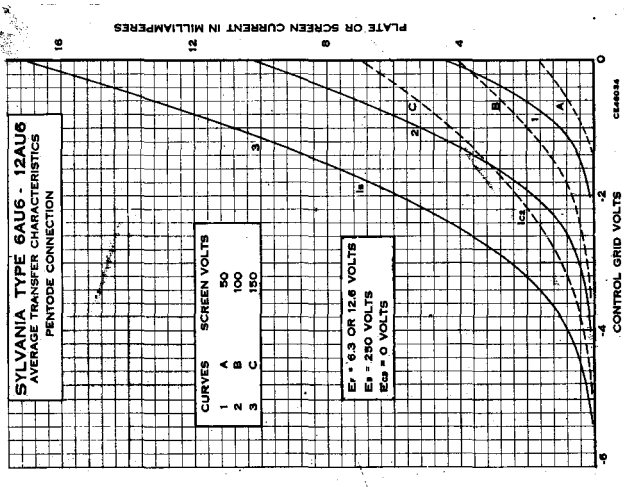
APPLICATION

Sylvania Type 6AU6 is a sharp cut-off pentode of miniature construction. It has high mutual conductance and low interelectrode capacitances. These characteristics combined with high plate resistance make it suitable for many RF and IF applications. The miniature type of construction lends itself readily to applications in compact light-weight equipment.




SYLVANIA TYPE 6AU6 - 12AU6
AVERAGE PLATE CHARACTERISTICS
PENTODE CONNECTION
Ef = 6.3 OR 12.6 VOLTS
Ec2 = 150 VOLTS
Ec3 = 0 VOLTS
PLATE CURRENT IN MILLIAMPERES
PLATE VOLTS
CONTROL GRID VOLTS = -1.5
0
-0.5
-1.0
-2.0
-2.5
-3.0
-4.0
CS46033

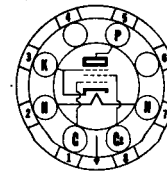

SYLVANIA TYPE 6AU6 - 12AU6
AVERAGE TRANSFER CHARACTERISTICS
PENTODE CONNECTION
Ef = 6.3 OR 12.6 VOLTS
Eb = 250 VOLTS
Ec3 = 0 VOLTS
MUTUAL CONDUCTANCE IN MICROMHOS
CONTROL GRID VOLTS
Ec2 = 150 VOLTS
100
50
CS46035


SYLVANIA TYPE 6AU6 - 12AU6
AVERAGE TRANSFER CHARACTERISTICS
PENTODE CONNECTION
CURVES SCREEN VOLTS
1 A 50
2 B 100
3 C 150
Ef = 6.3 OR 12.6 VOLTS
Eb = 250 VOLTS
Ec3 = 0 VOLTS
PLATE OR SCREEN CURRENT IN MILLIAMPERES
CONTROL GRID VOLTS
Ic2
Ib
CS46034

6AV5GT Sylvania Type

BEAM POWER AMPLIFIER

TELEVISION SCANNER



6CK-0-0

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 6-Pin
Bulb	T-9
Maximum Overall Length	3 5/16"
Maximum Seated Height	2 3/4"
Mounting Position	Any

RATINGS

Heater Voltage (AC or DC)	6.3 Volts
Heater Current	1.2 Amperes
Maximum Plate Supply Voltage	550 Volts
Maximum Screen Voltage	200 Volts
Maximum Peak Positive-Surge Plate Voltage*	5500 Volts
Maximum Negative Control Grid Voltage	100 Volts
Maximum Peak Negative-Surge Control Grid Voltage*	400 Volts
Maximum DC Plate Current	100 Ma.
Maximum Screen Dissipation	2.5 Watts
Maximum Plate Dissipation	11 Watts
Maximum Control Grid Circuit Resistance#	1 Megohm
Maximum Peak Heater-Cathode Voltage	180 Volts

*Absolute maximum value which must not be exceeded under any condition of operation. The duration of the voltage 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 vertical scanning cycle is 10 microseconds.

#As a protection against loss of excitation and resulting loss of developed bias a cathode resistor or other suitable device must be employed.

TYPICAL OPERATION**

HORIZONTAL DEFLECTION AMPLIFIER

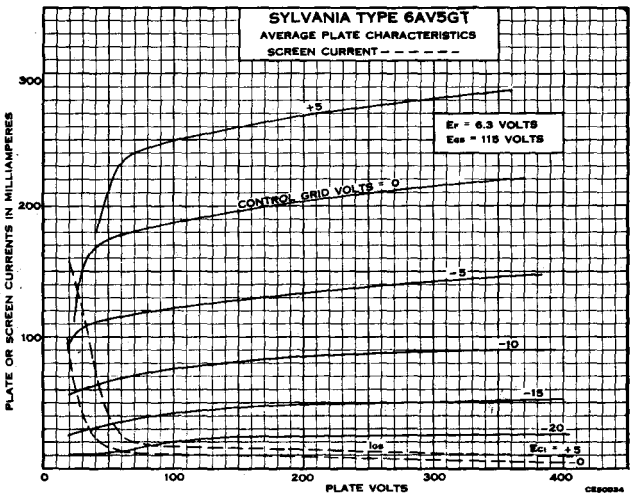
Heater Voltage (AC or DC)	6.3 Volts
Heater Current	1.2 Amperes
Plate Voltage†	460 Volts
Screen Voltage	136 Volts
Peak Positive-Surge Plate Voltage	4400 Volts
Peak Positive Grid Signal (Sawtooth)	65 Volts
Peak Negative Grid Signal (Sawtooth)	35 Volts
Plate Current	78 Ma.
Screen Current	7 Ma.
Developed High Voltage	12.0 K Volts

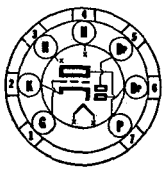
**Circuit used for these data is that given for Type 6BQ6GT.

†This voltage consists of 325 volts from DC power supply plus boost from the damper circuit.

APPLICATION

Sylvania Type 6AV5GT is a beam power amplifier designed especially for use as a horizontal scanner tube in television receivers using magnetic deflection. The typical operating conditions shown above may be obtained by using the circuit given for Type 6BQ6GT. This provides sufficient scan for use with a Sylvania Type 16TP4 picture tube.





7BT-0-0

Sylvania Type 6AV6

DUODIODE TRIODE

PHYSICAL SPECIFICATIONS

Base	Small Button Miniature 7 Pin
Bulb	T-5½
Maximum Overall Length	2 1/8"
Maximum Seated Height	1 7/8"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	300 Ma.
Maximum Plate Voltage (Triode Unit)	300 Volts
Maximum Peak Heater-Cathode Voltage	90 Volts
Maximum Diode Plate Current per diode	1.0 Ma.

6AV6 (Cont'd)

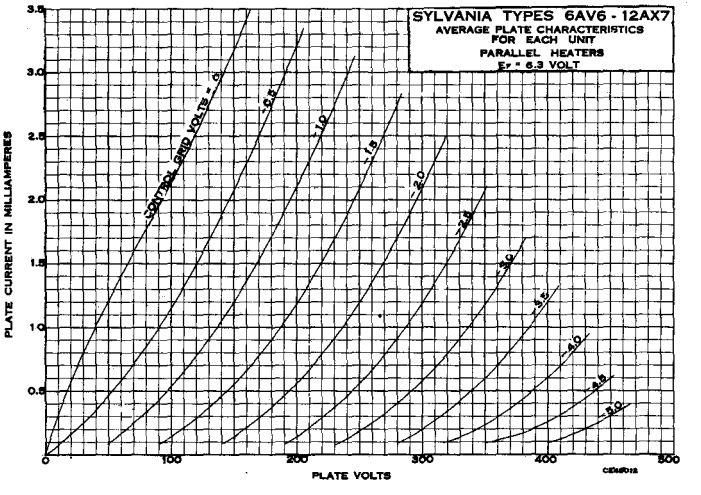
TYPICAL OPERATION

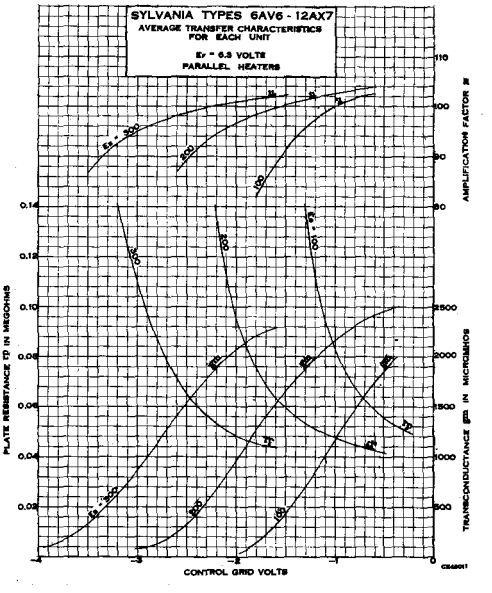
TRIODE UNIT - CLASS A_1 AMPLIFIER

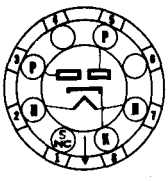
Heater Voltage	6.3	6.3 Volts
Heater Current	300	300 Ma.
Plate Voltage	100	250 Volts
Grid Voltage	−1	−2 Volts
Amplification Factor	100	100
Plate Resistance	80,000	62,500 Ohms
Transconductance	1250	1600 μmhos
Plate Current	0.5	1.2 Ma.

APPLICATION

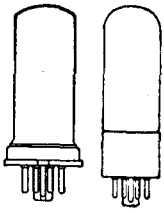
Sylvania Type 6AV6 is a high mu diode triode in the miniature style. It is very similar in characteristics to lock-in Type 7B4 and the resistance coupled data given in appendix will be substantially correct for this type also. Type 12AV6 is the 150 Ma. equivalent for use in AC-DC sets.







6S-0-0



Sylvania Type 6AX5GT

FULL-WAVE RECTIFIER

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 6-Pin
Bulb	T-9
Maximum Overall Length	3 5/16"
Maximum Seated Height	2 3/4"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Heater Current	1.2 Amperes
Maximum Peak Inverse Plate Voltage	1250 Volts
Maximum Peak Heater-Cathode Voltage	450 Volts
Maximum Peak Plate Current (per plate)	375 Ma.

TYPICAL OPERATION

CONDENSER INPUT TO FILTER

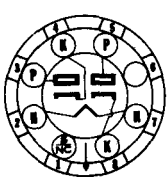
AC Voltage per Plate (RMS)	350	450 Volts
Plate Supply Impedance per Plate	50	105 Ohms
Filter Input Capacitor	10	10 μf.
DC Output Voltage at Input to Filter (approx.)		
At Half-Load Current of 62.5 Ma.	395	... Volts
40 Ma.	...	540 Volts
At Full-Load Current of 125 Ma.	350	... Volts
80 Ma.	...	490 Volts

CHOKE INPUT TO FILTER

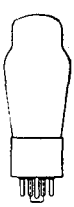
AC Voltage per Plate (RMS)	350	450 Volts
Filter Input Choke	10	10 Henries
DC Output Voltage at Input to Filter (approx.)		
At Half-Load Current of 75 Ma.	270	... Volts
62.5 Ma.	...	365 Volts
At Full-Load Current of 150 Ma.	250	... Volts
125 Ma.	...	350 Volts

APPLICATION

Sylvania Type 6AX5GT is a full-wave rectifier featuring the unipotential cathode. It is designed for use in ac operated receivers and automobile receivers.



7Q-0-0



Sylvania Type 6AX6G

FULL WAVE RECTIFIER

PHYSICAL SPECIFICATIONS

Base	Medium Octal 7-Pin
Bulb	ST-14
Maximum Overall Length	4 5/8"
Maximum Seated Height	4 1/16"
Mounting Position	Any

RATINGS

Heater Voltage AC or DC	6.3 Volts
Maximum Peak Inverse Voltage (per plate)	
Rectifier Operation	1250 Volts
Damper Operation*	2000 Volts
Maximum Heater-Cathode Voltage	
Heater Negative With Respect to Cathode	450 Volts
Heater Positive With Respect to Cathode	100 Volts
Maximum Peak Plate Current per Plate	600 Ma.
Maximum DC Output Current per Plate	125 Ma.

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

6AX6^{G} (Cont'd)

TYPICAL OPERATION

FULL WAVE RECTIFIER — CONDENSER INPUT

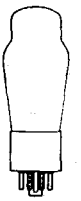
Heater Voltage AC or DC	6.3 Volts
Heater Current	2.5 Amperes
AC Plate Voltage per Plate (RMS)	350 Volts
DC Output Current	250 Ma.
Total Effective Plate Supply Impedance per Plate (Min.)	145 Ohms
DC Output Voltage at Input to Filter (approx.)	
At ½ Load (125 Ma.)	395 Volts
At Full Load (250 Ma.)	350 Volts

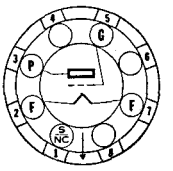
APPLICATION

Sylvania Type 6AX6G is a full wave rectifier featuring the coated unipotential cathode. It is suitable for damper-diode service in television deflection circuits or as a rectifier in conventional power supply applications.

6B4G Sylvania Type

POWER AMPLIFIER TRIODE





5S-0-0

PHYSICAL SPECIFICATIONS

Base	Medium Octal 8 Pin
Bulb	ST16
Maximum Overall Length	$5\frac{5}{16}$"
Maximum Seated Height	$4\frac{3}{4}$"
Mounting Position	Any

RATINGS

Filament Voltage	6.3 Volts
Filament Current	1.0 Ampere
Maximum Plate Voltage	325 Volts
Direct Interelectrode Capacitances:*	
Grid to Plate	16 μμf.
Input	7 μμf.
Output	5 μμf.

*Without external shield.

TYPICAL OPERATION AS AMPLIFIER

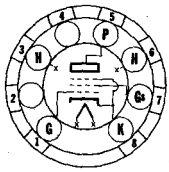
	Class A One Tube	Push Pull Class AB Two Tubes Fixed Bias	Self Bias
Filament Voltage	6.3	6.3	6.3 Volts
Filament Current	1.0	1.0	1.0 Ampere
Plate Voltage	250	325	325 Volts
Grid Voltage*	−45	−68	..... Volts
Self-Bias Resistor	750	.....	850 Ohms
Plate Current (Per Tube)	60	40	40 Ma.
Plate Resistance	800	.....	..... Ohms
Mutual Conductance	5250	.....	..... μmhos
Amplification Factor	4.2	.....	.....
Total Load Resistance	2500	3000	5000 Ohms
Power Output	3.2	15	10 Watts
Harmonic Distortion	5.0	2.5	5.0 Per Cent

*Measured from filament center tap when operated on AC.

APPLICATION

Sylvania 6B4G is a power amplifier triode, identical to Type 6A3 in electrical characteristics, and is used in the output stage of a-c operated receivers and public address systems.

Any of the conventional methods may be used for the input coupling provided that the resistance added in the grid return is not excessive. The d-c resistance in this circuit should be less than 0.5 megohm for a self-bias arrangement; with fixed bias the limit is 50,000 ohms. If the above values are exceeded, the bias voltage may be reduced as a result of grid current. This condition will cause excessive plate current to flow which, in turn, may cause damage to the tube or output transformer.



8DY-0-0

Sylvania Type 6BA5

PENTODE VOLTAGE AMPLIFIER

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:

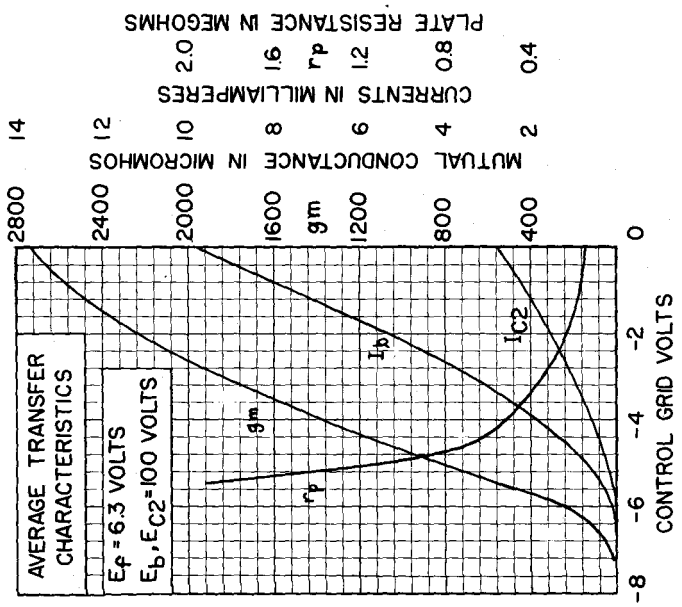
	Unshielded	Shielded*
Grid to Plate	0.1	.065 μμf.
Input	3.2	3.4 μμf.
Output	1.6	3.6 μμf.

*External shield of 0.405″ diameter connected to cathode.

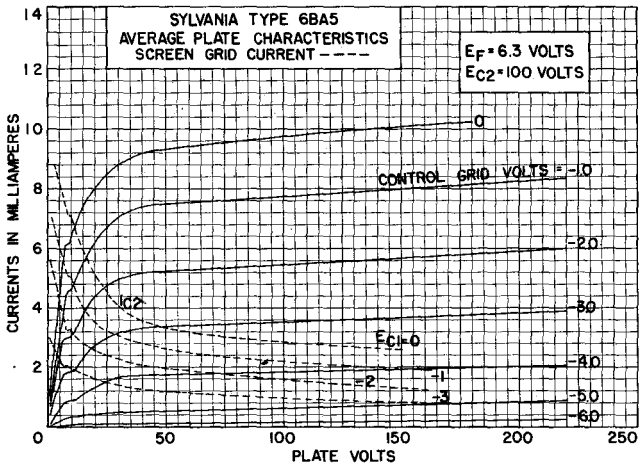
TYPICAL OPERATION
CLASS A_1 AMPLIFIER

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 μmhos
Plate Resistance	175,000 Ohms
Control Grid Bias Voltage for Ib = 10 μa.	−13.5 Volts

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

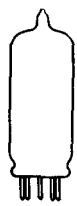


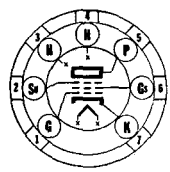
6BA5 (Cont'd)



6BA6 Sylvania Type

REMOTE CUT-OFF RF PENTODE





7BK-0-2

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T-5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
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 μμf. Max.
Input	5.5 μμf.
Output	5.0 μμf.

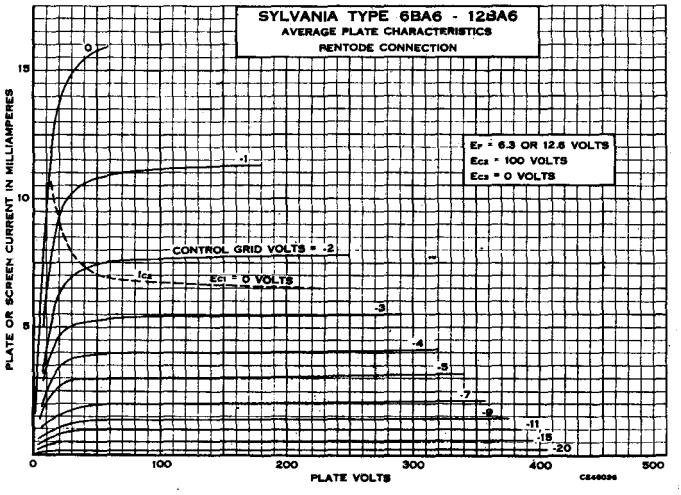
*Without external shield.

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 μmhos
Grid Voltage at Gm = 40 μmhos	−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-6½
Maximum Overall Length	2⅝"
Maximum Seated Height	2⅜"
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 μμf. Max.
Grid G to Go	0.1 μμf. Max.
Grid Go to Plate	0.05 μμf. Max.
RF Input	9.5 μμf.
Oscillator Input	6.7 μμf.
Mixer Output	8.3 μμf.
Grid Go to all Except Cathode	3.4 μμf.
Grid Go to Cathode	3.3 μμf.
Cathode to all Except Grid Go	4.0 μμf.

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 μmhos
Conversion Transconductance (Approx.) at Signal Grid Volts=−20	3.5	3.5 μmhos
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.

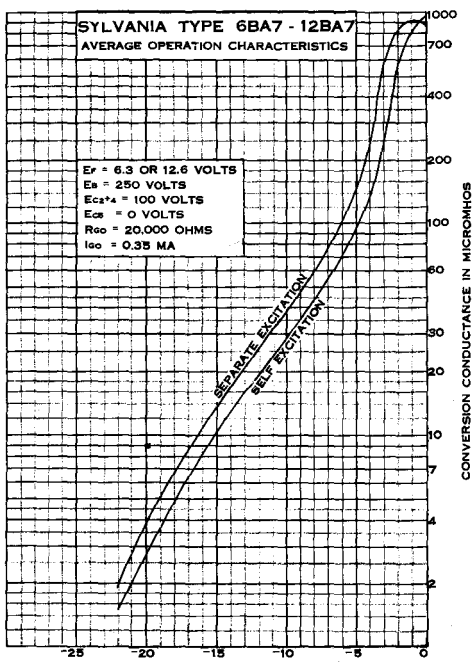
Note: The transconductance between grid Go and screen connected to plate (not oscillating) is approximately 8000 μmhos under the following conditions: signal applied to grid G at zero bias; screen and plate at 100 volts; grid G grounded. Under the same conditions, the plate current is 32.0 Ma, and the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

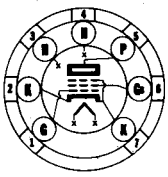
*The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

**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	2⅛"
Maximum Seated Height	1⅞"
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 μμf. Max.
Input	6.6	6.5 μμf.
Output	3.1	1.8 μμf.
Triode Connection**		
Grid to Plate	2.5	2.5 μμf.
Input	4.0	3.9 μμf.
Output	4.3	3.0 μμf.

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

**For triode connection tie screen grid to plate.

TYPICAL OPERATION

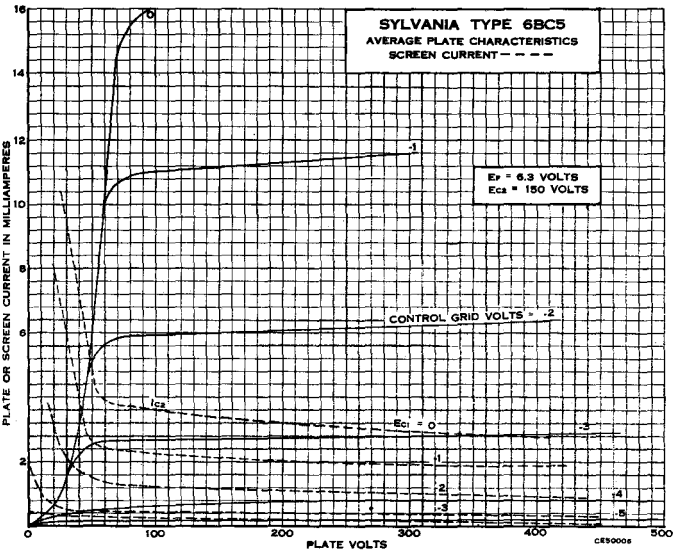
Heater Voltage	6.3	6.3	6.3 Volts
Heater Current	300	300	300 Ma.
Plate Voltage	100	125	250 Volts
Screen Voltage	100	125	250 Volts
Cathode Resistor	180	100	180 Ohms
Mutual Conductance	4900	6100	5700 μmhos
Plate Current	4.7	8.0	7.5 Ma.
Screen Current	1.4	2.4	2.1 Ma.
Plate Resistance (approx.)	0.6	0.5	0.8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

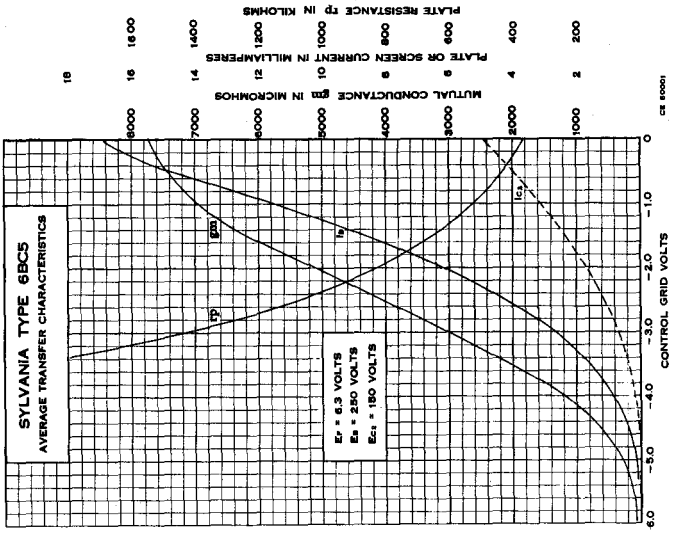
Heater Voltage	6.3	6.3 Volts
Heater Current	300	300 Ma.
Plate Voltage	250	180 Volts
Grid Voltage	2.6	4.9 Volts
Cathode Resistor	820	330 Ohms
Mutual Conductance	4400	6000 μmhos
Plate Current	6.0	8.0 Ma.
Plate Resistance (approx.)	.009	.006 Megohm
Amplification Factor	40	42

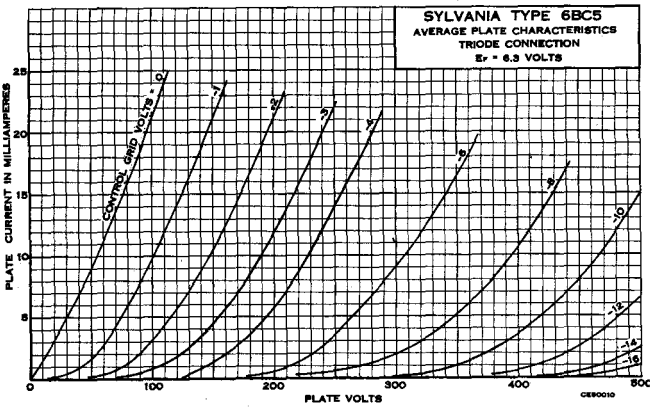
APPLICATION

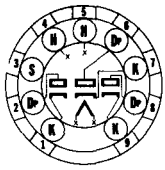
Sylvania Type 6BC5 is a high mutual conductance sharp cut-off RF pentode of miniature construction. It may be used up to 400 megacycles and is particularly useful in television receivers where a slightly higher gain than that obtained with the similar Type 6AG5 is desired. The two cathode leads may be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

6BC5 (Cont'd)


SYLVANIA TYPE 6BC5
AVERAGE PLATE CHARACTERISTICS
SCREEN CURRENT — — —
Ef = 6.3 VOLTS
Ec2 = 150 VOLTS
CONTROL GRID VOLTS = -2
Ec1 = 0
PLATE OR SCREEN CURRENT IN MILLIAMPERES
PLATE VOLTS
CE50006


SYLVANIA TYPE 6BC5
AVERAGE TRANSFER CHARACTERISTICS
Ef = 6.3 VOLTS
Eb = 250 VOLTS
Ec2 = 150 VOLTS
MUTUAL CONDUCTANCE gm IN MICROMHOS
PLATE OR SCREEN CURRENT IN MILLIAMPERES
PLATE RESISTANCE rp IN KILOHMS
CONTROL GRID VOLTS
CE 50001


SYLVANIA TYPE 6BC5
AVERAGE PLATE CHARACTERISTICS
TRIODE CONNECTION
Ef = 6.3 VOLTS
CONTROL GRID VOLTS = 0
PLATE CURRENT IN MILLIAMPERES
PLATE VOLTS
CE50010



9AX-0-3

Sylvania Type 6BC7

TRIPLE DIODE

PHYSICAL SPECIFICATIONS

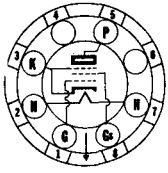
Base	Small Button 9-Pin
Bulb	T-6½
Maximum Overall Length	2 3/16"
Maximum Seated Height	1 15/16"
Mounting Position	Any

RATINGS

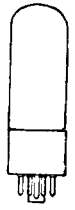
Heater Voltage AC or DC	6.3 Volts.
Heater Current	450 Ma.
Maximum Diode Operation Current per Plate	12 Ma.
Maximum Peak Heater-Cathode Voltage	200 Volts

Direct Interelectrode Capacitances: (Unshielded)

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



6CK-0-0



Sylvania Type 6BD5GT

TELEVISION DEFLECTION AMPLIFIER

PHYSICAL SPECIFICATIONS

Base	Intermediate Octal 6-Pin
Bulb	T-9
Maximum Overall Length	3⅞"
Maximum Seated Height	3 5/16"
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 μmhos when measured with 200 volts on plate and screen, and −12 volts on the control grid.

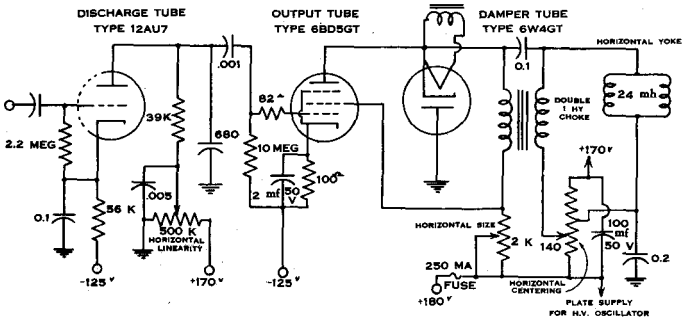
6BD5GT (Cont'd)

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.

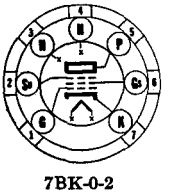
For curve data, reference should be made to type 6L6G, to which type 6BD5GT is similiar up to its wattage ratings.

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	2 1/8"
Maximum Seated Height	1 7/8"
Mounting Position	Any

RATINGS

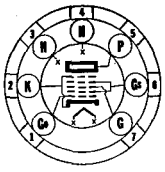
Heater Voltage AC or DC	6.3 Volts
Heater Current	300 Ma.
Maximum Plate Voltage	300 Volts
Maximum Screen Voltage	125 Volts
Maximum Plate Dissipation	4.0 Watts
Maximum Screen Dissipation	0.4 Watts
Maximum Cathode Current	14 Ma.
Maximum Heater-Cathode Voltage	90 Volts

Direct Interelectrode Capacitances:

	Shielded	Unshielded
Grid to Plate	0.005	0.004 μμf. Max.
Input	4.3	4.3 μμf.
Output	5.0	5.0 μμf.

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 μmhos
Grid Voltage (approx.) for 10 μmhos	−35	−35 Volts



7CH-0-0

Sylvania Type 6BE6

HEPTODE CONVERTER

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
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 μμf. Max.
Mixer Input	7.0 μμf.
Mixer Output	8.0 μμf.
Oscillator Input	5.5 μμf.
Grid 1 to Grid 3	0.15 μμf. Max.
Grid 1 to Plate	0.05 μμf. Max.
Grid 1 to Cathode	3.0 μμf.
Cathode to all except Grid 1	15.0 μμf.

***Without external shield.**

TYPICAL OPERATION

(SEPARATE EXCITATION)*

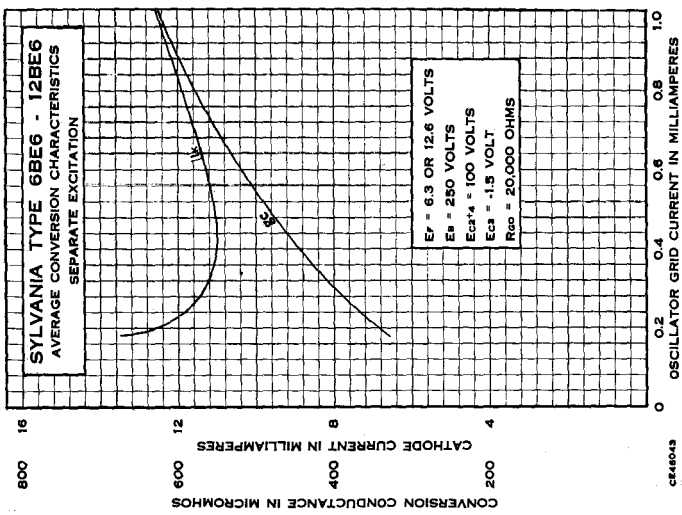
Heater Voltage	6.3	6.3 Volts
Heater Current	300	300 Ma.
Plate Voltage	100	250 Volts
Screen Voltage	100	100 Volts
Control Grid Voltage	−1.5	−1.5 Volts
Plate Current	2.6	2.6 Ma.
Screen Current	7.5	7.5 Ma.
Oscillator Grid Current	0.5	0.5 Ma.
Total Cathode Current	10.6	10.6 Ma.
Oscillator Grid Resistor	20000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

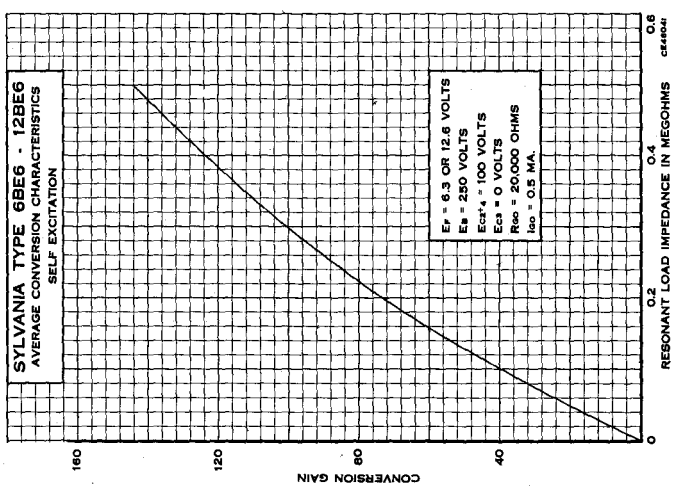
*Data for self excitation in a zero bias circuit corresponds very closely to that for separate excitation.

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.

6BE6 (Cont'd)


SYLVANIA TYPE 6BE6 - 12BE6
AVERAGE CONVERSION CHARACTERISTICS
SEPARATE EXCITATION
Ef = 6.3 OR 12.6 VOLTS
Eb = 250 VOLTS
Ecs*4 = 100 VOLTS
Ecs = -1.5 VOLT
Rgo = 20,000 OHMS
CONVERSION CONDUCTANCE IN MICROMHOS
CATHODE CURRENT IN MILLIAMPERES
OSCILLATOR GRID CURRENT IN MILLIAMPERES
CR46943


SYLVANIA TYPE 6BE6 - 12BE6
AVERAGE CONVERSION CHARACTERISTICS
SELF EXCITATION
Ef = 6.3 OR 12.6 VOLTS
Eb = 250 VOLTS
Ecs*4 = 100 VOLTS
Ecs = 0 VOLTS
Rgo = 20,000 OHMS
Iao = 0.5 MA.
CONVERSION GAIN
RESONANT LOAD IMPEDANCE IN MEGOHMS
CR46944

7BZ-0-0

Sylvania Type 6BF5

BEAM POWER AMPLIFIER

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7-Pin
Bulb	T-5½
Maximum Overall Length	2⅝"
Maximum Seated Height	2⅜"
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

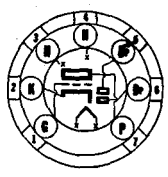
Direct Interelectrode Capacitances: Unshielded

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

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 μmhos
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	2⅛"
Maximum Seated Height	1⅞"
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 Voltss

Direct Interelectrode Capacitances:—Triode Unit

	Shielded	Unshielded
Grid to Plate	2.0	2.0 μμf.
Grid to Cathode	1.8	1.8 μμf.
Plate to Cathode	1.4	1.1 μμf.

6BF6 (Cont'd)

TYPICAL OPERATION

TRIODE UNIT - CLASS A_1 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 μmhos
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	1½"
Minimum Lead Length	1½"
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:

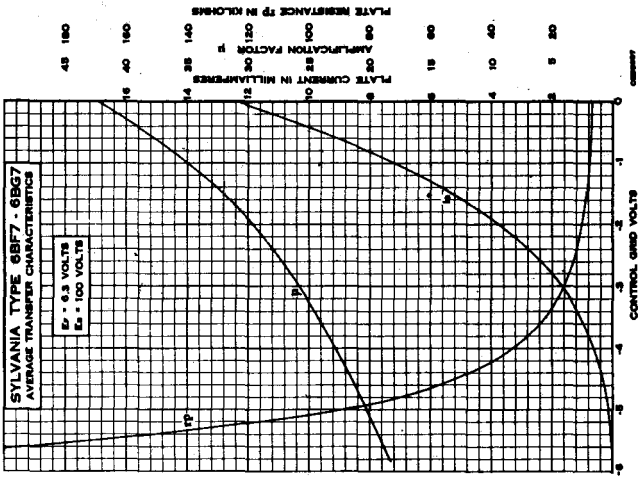
	Unshielded	Shielded
Grid to Plate (each section)	1.5	1.5 μμf.
Input (each section)	2.0	2.0 μμf.
Output (section #1)	0.28	1.6 μμf.
(section #2)	0.30	2.0 μμf.
Grid to Grid	0.009	0.008 μμf.
Plate to Plate	0.75	0.55 μμf.

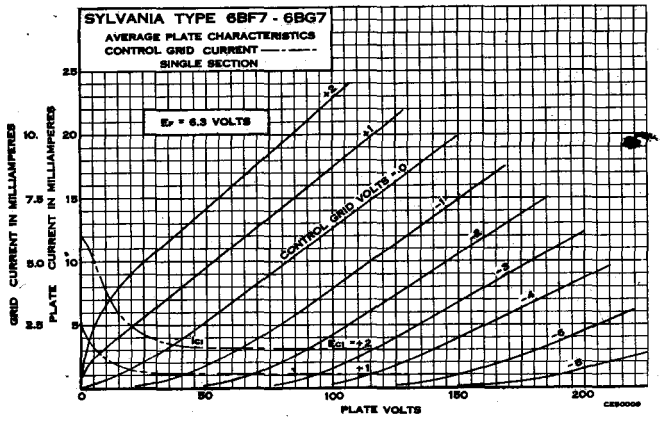
*External shield 0.405" diameter connected to cathode.

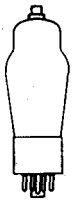
TYPICAL OPERATION

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 μmhos
Plate Resistance	7,000 Ohms
Control Grid Voltage for Ib = 10μa	−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

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 μμf. Max.
Input	12.0 μμf.
Output	6.5 μμf.

*With no external shield.

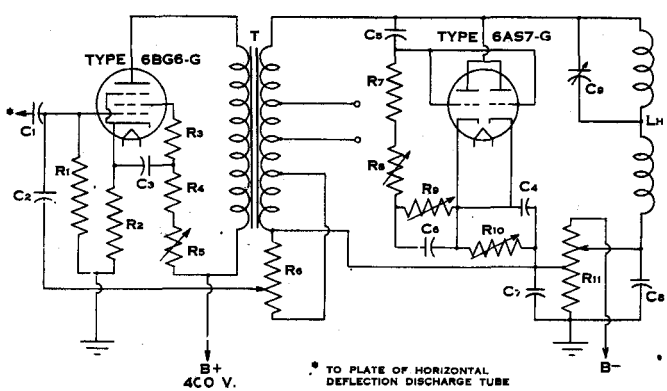
TYPICAL OPERATION
DEFLECTION AMPLIFIER

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 μa.
Transconductance (approx.)	6000 μmhos

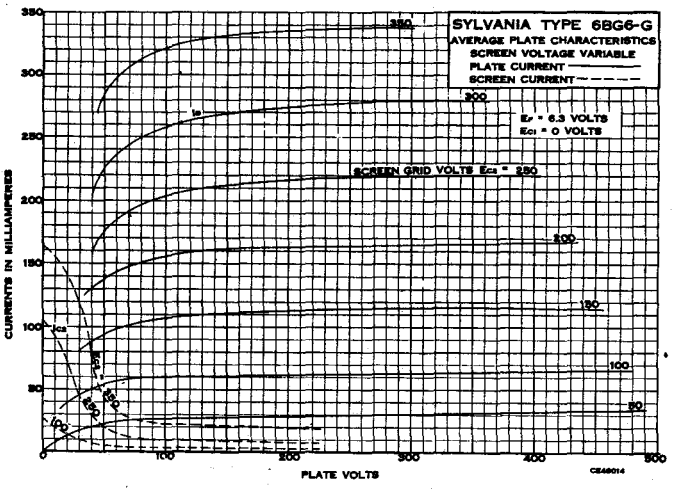
APPLICATION

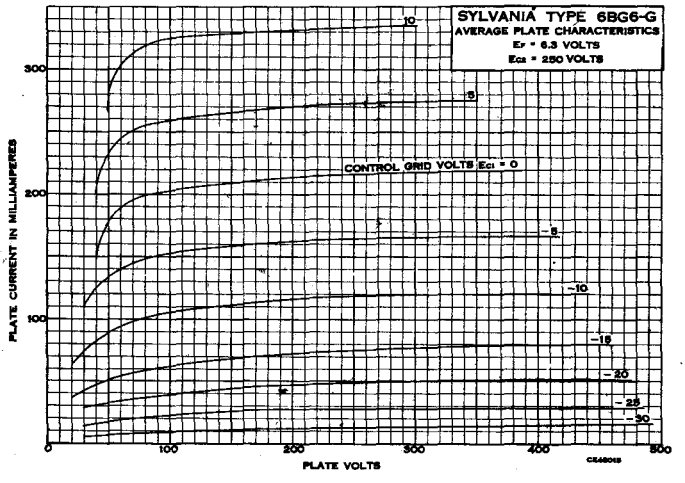
Sylvania Type 6BG6-G is a beam power amplifier designed for use as the driver tube in the horizontal deflection amplifier of television circuits using electro-magnetic deflection. A possible circuit is shown on the following page.

HORIZONTAL DEFLECTION CIRCUIT



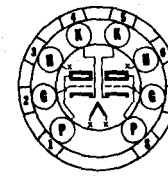
C1: 0.01 μf, 400 DC working volts
C2: 150 μμf, 400 DC working volts
C3 C4: 4 μf, 450 DC working volts (electrolytic)
C5: 30 μμf, 1500-volt surge
C6: 0.02 μf, 400 DC working volts
C7 C8; 100 μf, 10 DC working volts
C9: Balancing Capacitor, 25 to 75 μμf, 800-volt surge
LH: Horizontal Deflecting Yoke, Telectron Type No. DY-1S, 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, Telectron Type No. YT-111H, or equivalent


SYLVANIA TYPE 6BG6-G
AVERAGE PLATE CHARACTERISTICS
SCREEN VOLTAGE VARIABLE
PLATE CURRENT
SCREEN CURRENT
Ef = 6.3 VOLTS
Ec1 = 0 VOLTS
SCREEN GRID VOLTS Ec2 = 250
CURRENTS IN MILLIAMPERES
PLATE VOLTS
CS46014


SYLVANIA TYPE 6BG6-G
AVERAGE PLATE CHARACTERISTICS
Ef = 6.3 VOLTS
Ec2 = 250 VOLTS
CONTROL GRID VOLTS Ec1 = 0
PLATE CURRENT IN MILLIAMPERES
PLATE VOLTS
CS46015

6BG7 Sylvania Type

DUOTRIODE



8DG-0-0

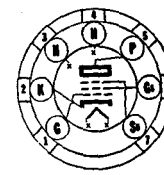
PHYSICAL SPECIFICATIONS

Base	Subminiature Button 8-Pin
Bulb	T-3
Maximum Overall Length	1¾"
Maximum Seated Height	1½"
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-5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
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 μμf. Max.
Input	5.4 μμf.
Output	4.4 μμf.

*With no external shield.

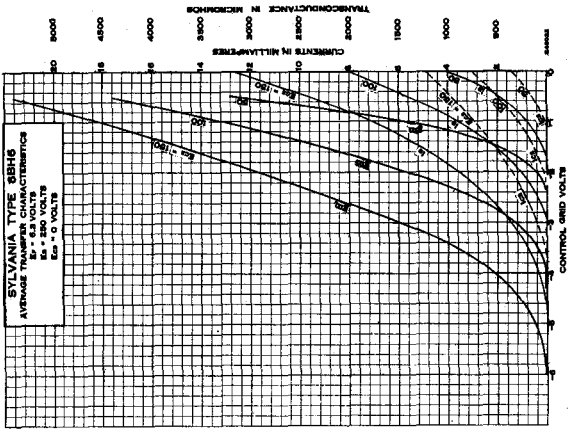
TYPICAL OPERATION

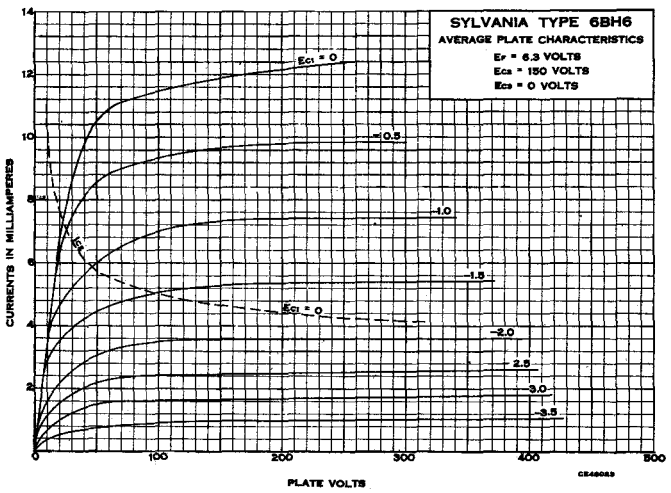
CLASS A_1 AMPLIFIER

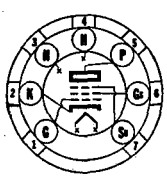
Heater Voltage	6.3	6.3 Volts
Heater Current	150	150 Ma.
Plate Voltage	100	250 Volts
Suppressor	Connected to cathode at socket	
Screen Voltage	100	150 Volts
Control Grid Voltage	−1	−1 Volt
Plate Current	3.6	7.4 Ma.
Screen Current	1.4	2.9 Ma.
Control Grid Bias (approx.) for 10 μa Plate Current	−5	−7.7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

APPLICATION

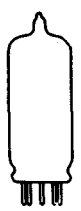
Sylvania Type 6BH6 is a sharp cut-off RF pentode of miniature construction. It has a 150 Ma. heater which makes it useful in AC/DC receivers, and in mobile equipment requiring low heater drain.







7CM-0-7



Sylvania Type 6BJ6

REMOTE CUT-OFF RF PENTODE

PHYSICAL SPECIFICATIONS

Base	Miniature Button 7 Pin
Bulb	T-5½
Maximum Overall Length	2⅛"
Maximum Seated Height	1⅞"
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 μμf. Max.
Input	4.5 μμf.
Output	5.0 μμf.

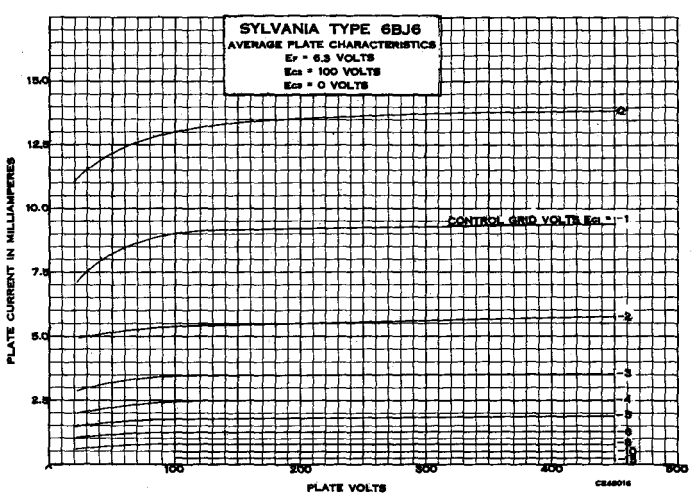
*Without external shield.

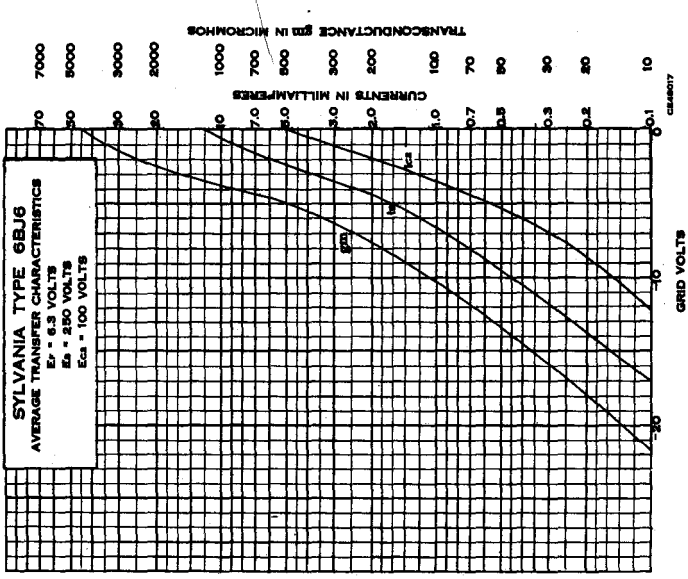
TYPICAL OPERATION
CLASS A_1 AMPLIFIER

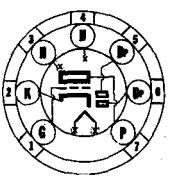
Heater Voltage	6.3	6.3 Volts
Heater Current	150	150 Ma.
Plate Voltage	100	250 Volts
Screen Voltage	100	100 Volts
Control Grid Voltage	−1	−1 Volt
Suppressor	Connected to cathode at socket	
Control Grid Bias (Approx.) for 15 μmhos Transconductance	−20	−20 Volts
Plate Current	9.0	9.2 Ma.
Screen Current	3.5	3.3 Ma.
Transconductance	3650	3800 μmhos
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	T5½
Maximum Overall Length	2⅝"
Maximum Seated Height	2⅜"
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 μμf.
Diode Plate No. 1 to Grid	01	.013 μμf.

*With a ¾" diameter shield (RMA Std. No. 316) connected to cathode.

TYPICAL OPERATION

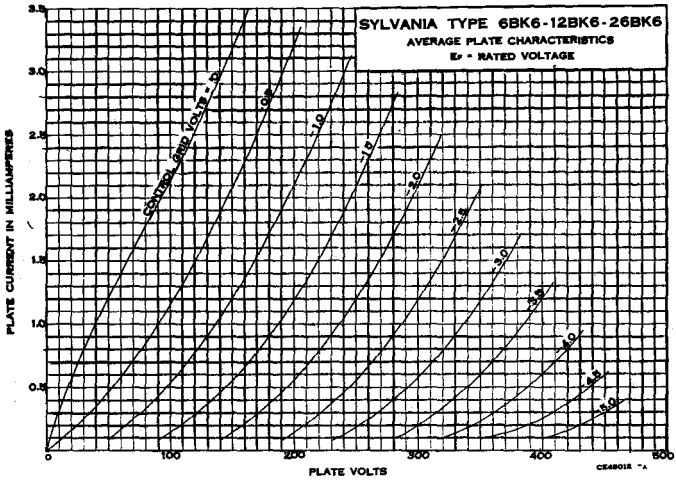
Heater Voltage (AC or DC)	6.3	6.3 Volts
Heater Current	300	300 Ma.
Plate Voltage	100	250 Volts
Grid Voltage	-1.0	-2.0 Volts
Amplification Factor	100	100
Plate Resistance	80,000	62,500 Ohms
Mutual Conductance	1250	1600 μmhos
Plate Current	0.5	1.2 Ma.

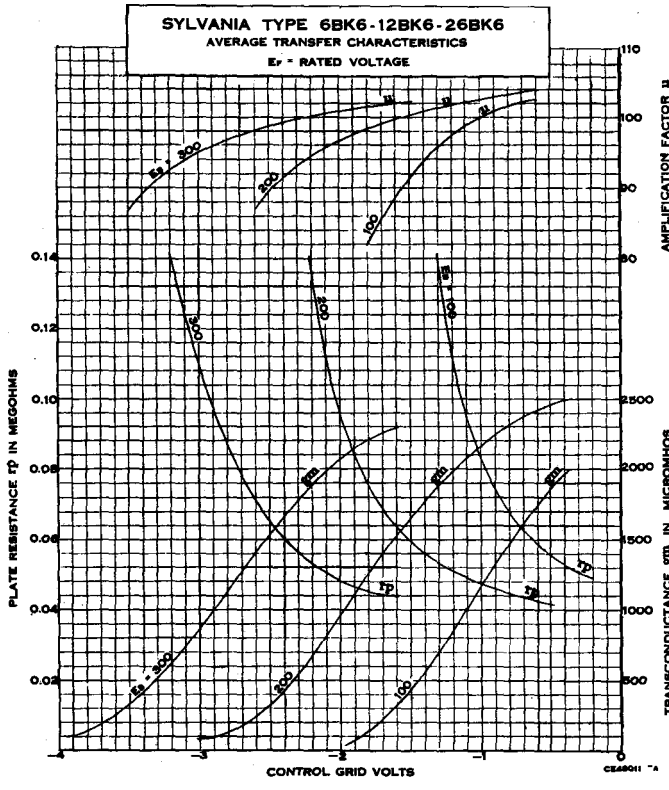
6BK6 (Cont'd)

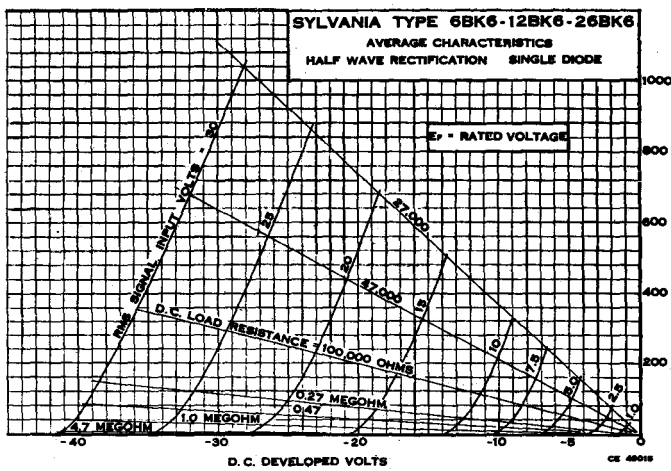
APPLICATION

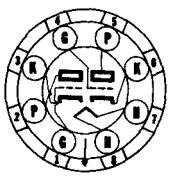
Sylvania Type 6BK6 is a miniature duo-triode high-mu triode having characteristics very similar to type 6AV6, except for the improved diode characteristics. The improved diode perveance gives better rectification efficiency at low signals and the improved diode shielding reduces undesirable audio coupling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

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









8BD-0-0

Sylvania Type 6BL7GT

DUOTRIODE

PHYSICAL SPECIFICATIONS

Base	Short Intermediate Shell 8 Pin Octal
Bulb	T-9
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	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 μμf.
Input	5.0	4.4 μμf.
Output	3.4	1.1 μμf.
Section 2—Grid to Plate	4.0	4.0 μμf.
Input	5.0	4.8 μμf.
Output	3.2	1.2 μμf.
Coupling—Grid to Grid	0.1	1.11 μμf.
Plate to Plate	1.2	1.5 μμf.

#With a $1\frac{5}{16}$" diameter tube shield (RMA Std. #308) connected to cathode of section under test.

TYPICAL OPERATION

CLASS A_1 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 μmhos
Plate Resistance	2150 Ohms
Grid Voltage for Ib = 25 μa (approx.)	-25 Volts
Grid Voltage for Ib = 50 μa at Eb = 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 μseconds

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 μseconds

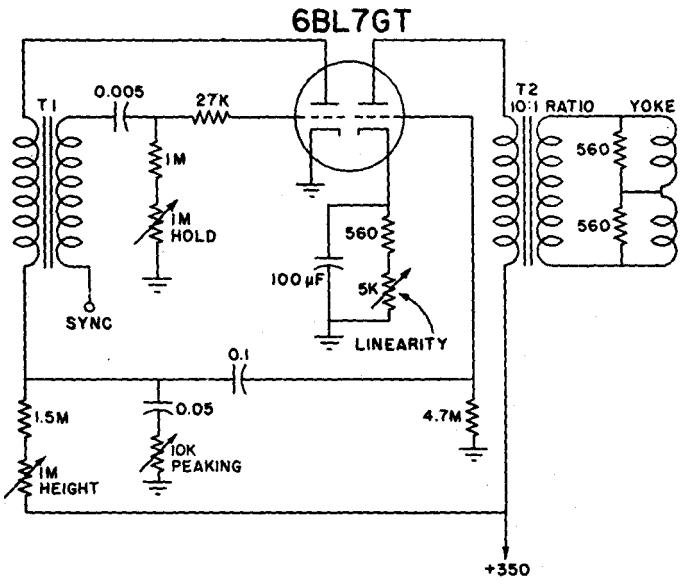
APPLICATION

Sylvania Type 6BL7GT is a high mutual conductance duo-triode 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.

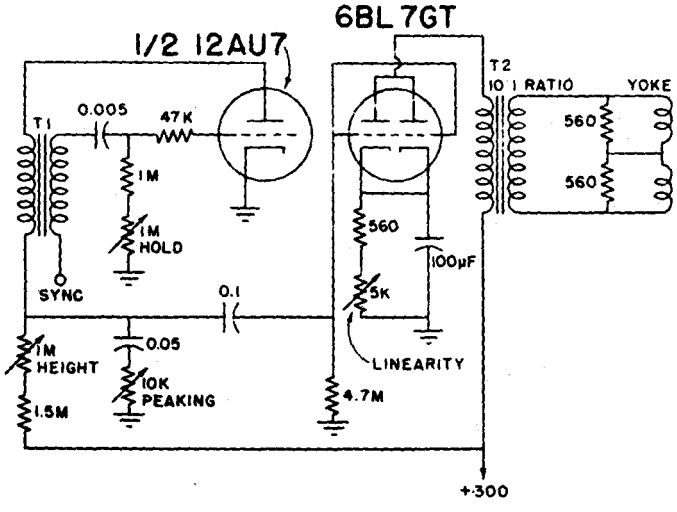
The operating efficiency of the Sylvania Type 6BL7GT is greater at low plate supply voltages for the reason that the power required for scanning is constant and the lowest plate supply voltage necessary to provide this power is, therefore, the condition of lowest power loss.

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.