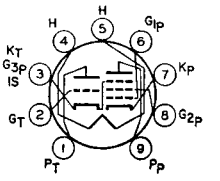
6LC8
8LC8

HIGH-MU TRIODE—SHARP-CUTOFF PENTODE

Miniature type used in color and black-and-white television receiver applications. Pentode unit is used in noise-immune gated-agc-amplifier circuits, and the triode unit in sync-separator circuits. **Outlines section,** 6E; requires miniature 9-contact socket. Type 8LC8 is identical with type 6LC8 except for heater ratings. For curves of average plate characteristics, refer to type 6KA8.



9QY

	6LC8	8LC8	
Heater Voltage (ac/dc)	6.3	8.4	volts
Heater Current	0.6	0.45	ampere
Heater Warm-up Time (Average)	11	11	seconds
Heater-Cathode Voltage:			
Peak value	±200 max	±200 max	volts
Average value	100 max	100 max	volts
Direct Interelectrode Capacitances:			
Triode Unit:			
Grid to Plate		2.2	pF
Grid to Cathode, Heater, Pentode Grid No.3, and Internal Shield		2.8	pF
Plate to Cathode, Heater, Pentode Grid No.3, and Internal Shield		2.2	pF
Pentode Unit:			
Grid No.1 to Plate		0.10 max	pF
Grid No.1 to Cathode, Heater, Grid No.3, Triode Cathode, and Internal Shield		10	pF
Grid No.3, Triode Cathode, and Internal Shield to Plate		3.4	pF
Grid No.1 to Grid No.3, Triode Cathode, and Internal Shield		0.36	pF
Grid No.3, Triode Cathode, and Internal Shield to Plate, Cathode, Heater, Grid No.1, and Grid No.2		12.5	pF

Class A_1 Amplifier

MAXIMUM RATINGS (Design-Maximum Values)		Triode Unit	
Plate Voltage		300	volts
Grid Voltage:			
Positive-bias value		0	volts
Negative-bias value		50	volts
Plate Dissipation		1.1	watts
CHARACTERISTICS	Triode Unit	Pentode Unit	
Plate Supply Voltage	200	150	volts
Grid-No.2 Supply Voltage	—	100	volts
Grid-No.1 Voltage	—2	—	volts
Cathode-Bias Resistor	—	180	ohms
Amplification Factor	70	—	
Plate Resistance (Approx.)	17500	100000	ohms
Transconductance, Grid No.1 to Plate	4000	4400	μmhos
Transconductance, Grid No.3 to Plate	—	600	μmhos
Plate Current	4	4	mA
Grid-No.2 Current	—	2.8	mA
Grid-No.1 Voltage (Approx.):			
For plate current of 10 μA	—5	—	volts
For plate current of 20 μA	—	—4	volts
Grid-No.3 Voltage (Approx.) for plate current of 20 μA	—	—7*	volts
MAXIMUM CIRCUIT VALUES			
Grid-Circuit Resistance:		Triode Unit	
For fixed-bias operation		0.25	megohm
For cathode-bias operation		1	megohm

* With no external connection to triode plate and triode grid.

Gated AGC Amplifier and Noise Inverter

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

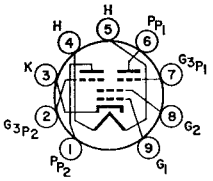
MAXIMUM RATINGS (Design-Maximum Values)	Pentode Unit	
DC Plate Voltage	300	volts
Peak Positive-Pulse Plate Voltage#	600	volts
Grid-No.3 (Control-Grid) Voltage:		
Positive-bias value	0	volts
Negative-bias value	100	volts
Grid-No.2 (Screen-Grid) Supply Voltage	300	volts
Grid-No.2 Voltage	See curve page 300	
Grid-No.1 (Control-Grid) Voltage:		
Positive-bias value	0	volts
Negative-bias value	50	volts

Plate Dissipation	2	watts
Grid-No.2 Input:		
For grid-No.2 voltages up to 150 volts	1.1	watts
For grid-No.2 voltages between 150 and 300 volts	See curve page 300	

MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.5	megohm
For cathode-bias operation	1	megohm

Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).



9QZ

6LE8

TWIN PENTODE

10LE8, 15LE8

Miniature type used as combined color demodulator and matrix amplifier in color television receivers utilizing high-level demodulation systems. **Outlines section,** 6G; requires miniature 9-contact socket. Types 10LE8 and 15LE8 are identical with type 6LE8 except for heater ratings.

	6LE8	10LE8	15LE8	
Heater Voltage (ac/dc)	6.3	10.0	15.0	volts
Heater Current	0.76	0.45	0.3	ampere
Heater Warm-up Time (Average)	—	11	11	seconds
Heater-Cathode Voltage:				
Peak value	+200, −300 max			volts
Average value	+100			volts
Direct Interelectrode Capacitances:				
Plate (Each Unit) to All Other Electrodes		3.7		pF
Grid No.1 to All Other Electrodes		15.5		pF
Grid No.3 (Each Unit) to All Other Electrodes		6		pF
Grid No.3 to Plate (Each Unit)		2.7		pF
Grid No.3 (Unit No.1) to Grid No.3 (Unit No.2)		0.1		pF

Class A_1 Amplifier

MAXIMUM RATINGS (Design-Maximum Values)

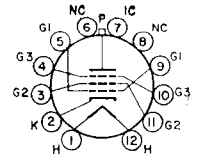
Plate Voltage (Each Unit)	300	volts
Grid-No.2 (Screen-Grid) Voltage	150	volts
Plate Dissipation (Each Unit)	2	watts
Grid-No.2 Input	2	watts

CHARACTERISTICS

	G_1 Control	G_3 Control	
Plate Voltage	100	100	volts
Grid-No.3 (Suppressor-Grid) Voltage	0	0	volts
Grid-No.2 Voltage	100	100	volts
Grid-No.1 (Control-Grid) Voltage, Negative-bias value	2.5	2.5	volts
Transconductance (Approx.)	5800	350	μmhos
Plate Resistance (Approx.)	50000	50000	ohms
Plate Current	8	7.6	mA
Grid-No.2 Current	15	14.5	mA
Grid-No.1 Voltage for plate current of 20 μA	−7.2	—	volts
Grid-No.1 Voltage for plate current of 100 μA	−6.3	—	volts
Grid-No.3 Voltage for plate current of 20 μA	—	−17.4	volts
Grid-No.3 Voltage for plate current of 100 μA	—	−16.5	volts

For replacement use type 6LF6/6LX6.

6LF6



12GW

6LF6/6LX6

BEAM POWER TUBE

20LF6

Duodecar type used as horizontal deflection amplifier in color television receivers. **Outlines section,** 16F; requires duodecar 12-contact socket. Type 20LF6 is identical with type 6LF6/6LX6 except for heater ratings.

	6LF6/ 6LX6	20LF6	
Heater Voltage (ac/dc)	6.3	20	volts
Heater Current	2.0	0.6	ampere
Peak Heater-Cathode Voltage	±275 max	±200 max	volts

Class A_1 Amplifier

CHARACTERISTICS

Plate Voltage	50	160	volts
Grid-No.3 (Suppressor-Grid) Voltage	0	0	volts
Grid-No.2 (Screen-Grid) Voltage	175	160	volts
Grid-No.1 (Control-Grid) Voltage	−10	0	volts
Plate Current	800	1400	mA
Grid-No.2 Current	70	45	mA

Horizontal-Deflection Amplifier

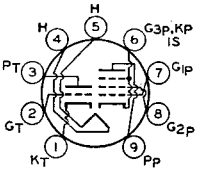
For operation in a 525-line, 30-frame system

MAXIMUM RATINGS (Design-Maximum Values)

Plate Voltage	990	volts
Peak Positive-Pulse Plate Voltage#	8000	volts
Plate Dissipation	40	watts
Grid-No.3 Voltage	50	volts
Grid-No.2 Voltage	275	volts
Grid-No.2 Input	9	watts
Beam Plates Circuit Resistor	10000	ohms
Peak Negative-Pulse Grid-No.1 Voltage	550	volts
Bulb Temperatures	300	°C

Pulse duration must not exceed 22% of a horizontal scanning cycle (18 microseconds).

6LF8 HIGH-MU TRIODE— SHARP-CUTOFF PENTODE



9DX

Miniature type used in video-amplifier stages of color and black-and-white television receivers. **Outlines section,** 6E; requires miniature 9-contact socket.

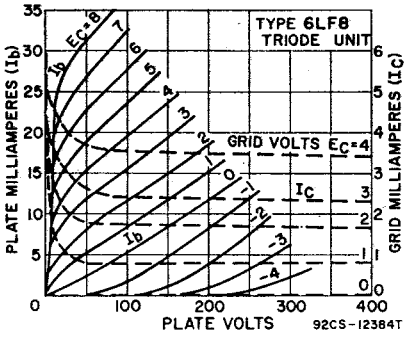
Heater Voltage (ac/dc)	6.3	volts
Heater Current	0.6	ampere
Heater Warm-up Time (Average)	11	seconds
Heater-Cathode Voltage:		
Peak value	±200 max	volts
Average value	100 max	volts
Direct Interelectrode Capacitances:		
Triode Unit:		
Grid to Plate	2.2	pF
Grid to Cathode, Heater, Pentode Cathode, Pentode Grid No.3, and Internal Shield	3.2	pF
Plate to Cathode, Heater, Pentode Cathode, Pentode Grid No.3, and Internal Shield	1.8	pF
Pentode Unit:		
Grid No.1 to Plate	0.06 max	pF
Grid No.1 to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	10	pF
Plate to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	3.6	pF
Pentode Grid No.1 to Triode Plate	0.008 max	pF
Pentode Plate to Triode Plate	0.15 max	pF

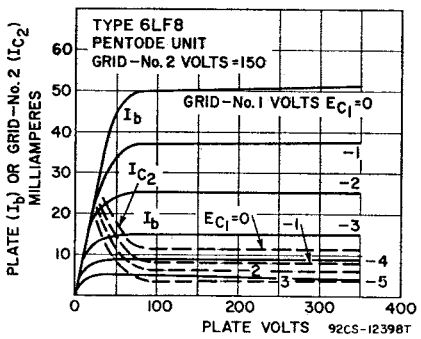
Class A Amplifier

MAXIMUM RATINGS (Design-Maximum Values)	Triode Unit	Pentode Unit	
Plate Voltage	330	330	volts
Grid-No.2 (Screen-Grid) Supply Voltage	—	330	volts
Grid-No.2 Voltage	—	See curve page 300	
Grid-No.1 (Control-Grid) Voltage:			
Positive-bias value	4	0	volts
Negative-bias value	−55	−55	volts
Grid-No.1 Current	8	0	mA
Plate Dissipation	1.1	3.75	watts
Grid-No.2 Input:			
For grid-No.2 voltages up to 165 volts	—	1.1	watts
For grid-No.2 voltages between 165 and 330 volts	—	See curve page 300	

CHARACTERISTICS

Plate Voltage	200	40	75	100	volts
Grid-No.2 Voltage	—	—	150	150	volts
Grid-No.1 Voltage	—2	3	0	—2.5	volts
Amplification Factor	70	40	—	—	
Plate Resistance (Approx.)	17500	10000	—	200000	ohms
Transconductance	4000	4000	—	11000	μmhos
Plate Current	4	11	50▪	20	mA
Grid-No.2 Current	—	—	12▪	5	mA
Grid-No.1 Current	0	2.7	0	0	mA
Grid-No.1 Voltage (Approx.) for plate current of 20 μA	—5	—	—	—8	volts





MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance:	Triode Unit	Pentode Unit	
For fixed-bias operation	0.5	0.25	megohm
For cathode-bias operation	1	1	megohm

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

Refer to chart at end of section.
For replacement use type 6LJ6A/6LH6A.

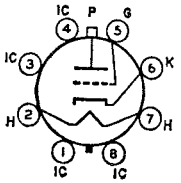
6LH6A

Refer to chart at end of section.

6LJ6

6LJ6A/ 6LH6A

BEAM TRIODE



8MQ

Glass octal type used for the shunt regulation of high-voltage, low-current power supplies in color and black-and-white television receivers. **Outlines section,** 21D; requires octal socket. For high-voltage and X-ray safety considerations, refer to page 93.

Heater Voltage (ac/dc)	6.3	volts
Heater Current	0.2	ampere
Heater Cathode Voltage	+ not recommended, —450*	volts
Direct Interelectrode Capacitances:		
Grid to Plate	1	pF
Grid to Cathode and Heater	2.6	pF
Plate to Cathode and Heater	1	pF

* Series impedance should be used with the cathode to limit the cathode current under prolonged short-circuit conditions to 450 mA.

Shunt Voltage-Regulator Service

MAXIMUM RATINGS (Design-Maximum Values)

Plate Voltage	27000	volts
Negative Grid Voltage	135	volts
Peak Negative Grid Voltage▪	440	volts
Plate Dissipation	40	watts
Average Plate Current	1.5	mA

TYPICAL OPERATION

Unregulated DC Supply Voltage	36000	volts
Equivalent Resistance of Unregulated Supply	11	megohms

DC Reference Voltage	200	volts
Equivalent Resistance of Reference Supply	1000	ohms
Effective Grid-Plate Transconductance	200	μmhos
DC Plate Current for Load Current of 0 mA	1000	μA
DC Plate Current for Load Current of 1 mA	45	μA
Regulated DC Output Voltage for Load Current of 0 mA	25000	volts
Regulated DC Ouput Voltage for Load Current of 1 mA	24500	volts
MAXIMUM CIRCUIT VALUE		
Grid-Circuit Resistance:		
For use with "Flyback Transformer" high voltage supply	3	megohms
X-RADIATION CHARACTERISTIC		
X-Radiation, Maximum:		
Statistical value controlled on a lot sampling basis	0.5	mR/hr

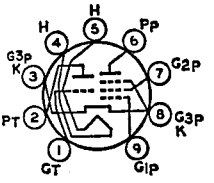
▪ For interval of 20 seconds maximum during equipment warm-up period.

Caution—Operation of this tube outside of the maximum values indicated above may result in either temporary or permanent changes in the X-radiation characteristic of the tube. Equipment design must be such that these maximum values are not exceeded.

6LJ8

4LJ8, 5LJ8

MEDIUM-MU TRIODE—SHARP-CUTOFF PENTODE



9GF

Miniature type used as a combined oscillator and mixer in vhf television receivers. **Outlines section,** 6B; requires 9-contact socket. Types 4LJ8 and 5LJ8 are identical with type 6LJ8 except for heater ratings.

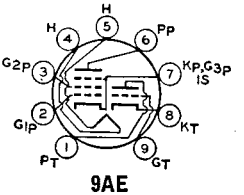
	4LJ8	5LJ8	6LJ8	
Heater Voltage (ac/dc)	4.3	5.6	6.3	volts
Heater Current	0.6	0.45	0.4	ampere
Heater Warm-up Time (Average)	11	11	—	seconds
Heater-Cathode Voltage:				
Peak value	±200 max	±200 max	±200 max	volts
Average value	100 max	100 max	100 max	volts

Class A_1 Amplifier

MAXIMUM RATINGS (Design-Maximum Values)	Triode Unit	Pentode Unit	
Plate Voltage	280	280	volts
Grid-No.2 (Screen-Grid) Supply Voltage	—	280	volts
Grid-No.2 Voltage	—	See curve page 300	
Cathode Current	20	20	mA
Grid-No.1 (Control-Grid) Voltage, Positive-bias value	0	0	volts
Plate Dissipation	2	2	watts
Grid-No.2 Input:			
For grid-No.2 voltages up to 140 volts	—	0.5	watts
For grid-No.2 voltages between 140 and 280 volts	—	See curve page 300	
CHARACTERISTICS			
Plate Voltage	125	125	volts
Grid-No.2 Voltage	—	125	volts
Cathode-Bias Resistor	68	33	ohms
Amplification Factor	40	—	
Plate Resistance (Approx.)	5000	125000	ohms
Transconductance	8000	13000	μmhos
Plate Current	13	12	mA
Grid-No.2 Current	—	3.5	mA
Grid-No.1 Voltage (Approx.) for plate current of 30 μA	—6.5	—4	volts
MAXIMUM CIRCUIT VALUES			
Grid-No.1-Circuit Resistance:			
For fixed-bias operation	1	0.5	megohm
For cathode-bias operation	0.5	0.25	megohm

6LM8

MEDIUM-MU TRIODE—SEMI-REMOTE-CUTOFF PENTODE



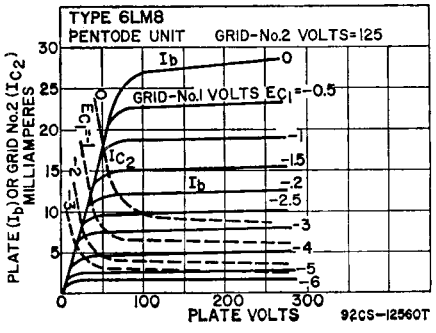
9AE

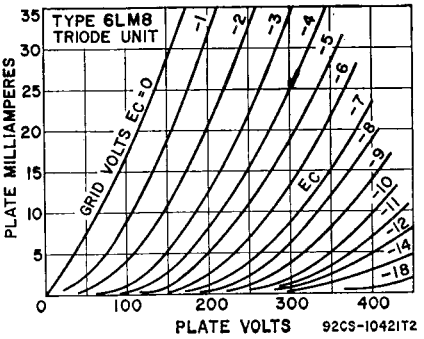
Miniature type used in color and black-and-white television receiver applications. The pentode unit is used in burst-amplifier circuits, and the triode unit as a general-purpose amplifier tube. **Outlines section,** 6B; requires miniature 9-contact socket.

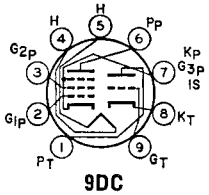
Heater Voltage (ac/dc)	6.3	volts
Heater Current	0.45	ampere
Heater-Cathode Voltage:		
Peak value	±200 max	volts
Average value	100 max	volts
Direct Interelectrode Capacitances:		
Triode Unit:		
Grid to Plate	1.8	pF
Grid to Cathode, Heater, Pentode Cathode, Pentode Grid No.3, and Internal Shield	3.2	pF
Plate to Cathode, Heater, Pentode Cathode, Pentode Grid No.3, and Internal Shield	1.9	pF
Pentode Unit:		
Grid No.1 to Plate	0.015 max	pF
Grid No.1 to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	5.5	pF
Plate to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	3.8	pF
Heater to Cathode (Each Unit)	3.2	pF

Class A_1 Amplifier

MAXIMUM RATINGS (Design-Maximum Values)	Triode Unit	Pentode Unit	
Plate Voltage	330	350	volts
Grid-No.2 (Screen-Grid) Supply Voltage	—	330	volts
Grid-No.2 Voltage	—	See curve page 300	
Grid-No.1 (Control-Grid) Voltage, Positive-bias value	0	0	volts
Plate Dissipation	2.5	2.5	volts
Grid-No.2 Input:			
For grid-No.2 voltages up to 165 volts	—	0.55	watts
For grid-No.2 voltages between 165 and 330 volts	—	See curve page 300	
CHARACTERISTICS			
Plate Voltage	125	125	volts
Grid-No.2 Voltage	—	125	volts
Grid No.1 Voltage	—1	—2	volts
Amplification Factor	46	—	
Plate Resistance (Approx.)	5400	150000	ohms
Transconductance	8500	6000	μmhos
Plate Current	13.5	12	mA
Grid-No.2 Current	—	4	mA
Grid-No.1 Voltage (Approx.) for plate current of 10 μA	—8	—14	volts
MAXIMUM CIRCUIT VALUES			
Grid-No.1-Circuit Resistance:			
For fixed-bias operation	0.5	0.25	megohm
For cathode-bias operation	1	0.5	megohm







9DC

6LN8/ LCF80

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

Miniature type used in frequency-changer service in television receivers. **Outlines section,** 6B; requires miniature 9-contact socket.

Heater Voltage (ac/dc)	6	volts
Heater Current	0.45	ampere
Peak Heater-Cathode Voltage	±100 max	volts

Class A_1 Amplifier

MAXIMUM RATINGS (Design-Maximum Values)	Triode Unit	Pentode Unit	
Plate Supply Voltage	550	550	volts
Plate Voltage	250	250	volts
Grid-No.2 (Screen-Grid) Supply Voltage	—	550	volts
Grid-No.2 Voltage:			
With cathode current of 14 mA	—	175	volts
With cathode current less than 10 mA	—	200	volts
Cathode Current	14	14	mA
Plate Dissipation	1.5	1.7	watts
Grid-No.2 Input:			
With plate dissipation greater than 1.2 watts	—	0.5	watt
With plate dissipation less than 1.2 watts	—	0.75	watt
CHARACTERISTICS			
Plate Voltage	100	170	volts
Grid-No.2 Voltage	—	170	volts
Grid-No.1 Voltage	−2	−2	volts
Amplification Factor	20	—	
Mu-Factor, Grid No.2 to Grid No.1	—	47	
Plate Resistance (Approx.)	—	0.4	megohm
Transconductance	5000	6200	μmhos
Plate Current	14	10	mA
Grid-No.2 Current	—	2.8	mA
Input Resistance at frequency of 50 MHz	—	0.01	megohm
Equivalent Noise Resistance	—	1500	ohms
MAXIMUM CIRCUIT VALUES			
Grid-No.1-Circuit Resistance:			
For fixed-bias operation	0.5	0.5	megohm
For cathode-bias operation	0.5	1	megohm

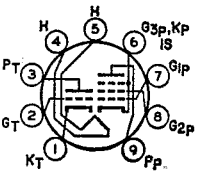
6LQ6
6LQ6/6JE6B
6LQ6/6JE6C

For replacement use type 6MJ6/6LQ6/6JE6C.

6LQ8
11LQ8

MEDIUM-MU TRIODE—SHARP-CUTOFF PENTODE

Miniature type used in color and black-and-white television receiver applications. The pentode unit is used as a video output tube. The triode unit is used in sync separator and sound-if circuits. **Outlines section,** 6E; requires miniature 9-contact socket. Type 11LQ8 is identical with type 6LQ8 except for heater ratings.



9DX

	6LQ8	11LQ8	
Heater Voltage (ac/dc)	6.3	10.9	volts
Heater Current	0.7	0.45	ampere
Heater Warm-up Time	—	11	seconds
Heater-Cathode Voltage:			
Peak value	±200 max	±200 max	volts
Average value	100 max	100 max	volts

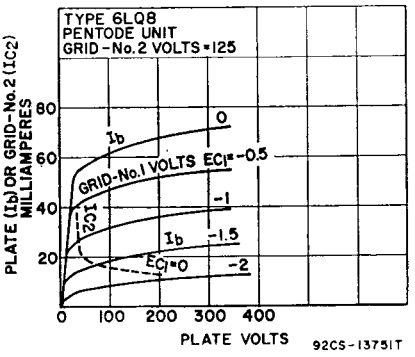
Direct Interelectrode Capacitances:		
Triode Unit:		
Grid to Plate	2.8	pF
Grid to Triode Cathode, Pentode Cathode, Heater, Pentode Grid No.3, and Internal Shield	4.2	pF
Plate to Triode Cathode, Pentode Cathode, Heater, Pentode Grid No.3, and Internal Shield	2.4	pF
Pentode Unit:		
Grid No.1 to Plate	0.12 max	pF
Grid No.1 to Cathode Heater, Grid No.2, Grid No.3, and Internal Shield	14	pF
Plate to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	4.8	pF
Triode Grid to Pentode Plate	0.015 max	pF
Pentode Plate to Triode Plate	0.17 max	pF

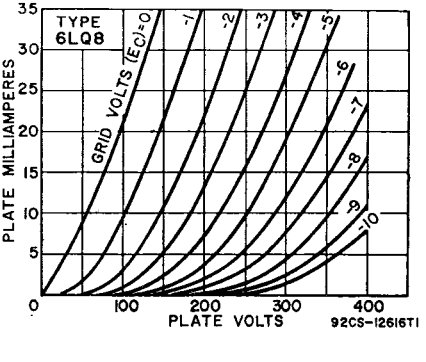
Class A_1 Amplifier

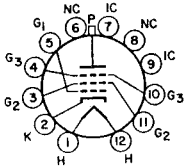
MAXIMUM RATINGS (Design-Maximum Values)	Triode Unit	Pentode Unit	
Plate Voltage	300	300	volts
Grid-No.2 (Screen-Grid) Supply Voltage	—	300	volts
Grid-No.2 Voltage	—	See curve page 300	
Grid-No.1 (Control-Grid) Voltage, Positive-bias value	0	0	volts
Plate Dissipation	2	5	watts
Grid-No.2 Input:			
For grid-No.2 voltages up to 150 volts	—	1	watts
For grid-No.2 voltages between 150 and 300 volts	—	See curve page 300	

CHARACTERISTICS	Triode Unit	Pentode Unit		
Plate Supply Voltage	125	125	200	volts
Grid-No.2 Supply Voltage	—	125	125	volts
Cathode-Bias Resistor	68	82	68	ohms
Amplification Factor	46	—	—	
Plate Resistance (Approx.)	4400	55000	75000	ohms
Transconductance	10400	21000	23000	μmhos
Plate Current	15	16.5	20	mA
Grid-No.2 Current	—	3.1	3.5	mA
Grid-No.1 Voltage(Approx.) for plate current of 100 μA	—6	—4.2	—4.2	volts

MAXIMUM CIRCUIT VALUES	Triode Unit	Pentode Unit	
Grid-No.1-Circuit Resistance:			
For fixed-bias operation	0.5	0.1	megohm
For cathode-bias operation	1	0.25	megohm







12FY

BEAM POWER TUBE

6LR6

35LR6

Duodecar type used as horizontal-deflection amplifier in color and black-and-white television receivers. An integral radiator-fin design dissipates heat uniformly. **Outlines section,** 16E; requires duodecar 12-contact socket. Type 35LR6 is identical with type 6LR6 except for heater ratings.

	6LR6	35LR6	
Heater Arrangement	Parallel	Series	
Heater Voltage (ac/dc)	6.3	35	volts
Heater Current	2.5	0.45±0.03	amperes
Heater Warm-up Time (Average)	—	11	seconds
Heater-Cathode Voltage:			
Peak value	±200 max	±200 max	volts
Average value	100 max	100 max	volts

Class A_1 Amplifier

CHARACTERISTICS	Triode†† Connection		Pentode Connection		
Plate Voltage	125	60	175	60	volts
Grid-No.3 (Suppressor Grid) Voltage	—		Connected to cathode at socket		
Grid-No.2 (Screen-Grid) Voltage	125	115	110	110	volts
Grid-No.1 (Control-Grid) Voltage	—20	0	—20	0	volts
Plate Resistance (Approx.)	—	—	5300	—	ohms

Transconductance (Grid No.1 to Plate)	—	—	16000	—	μmhos
Plate Current	—	740†	140	700	mA
Grid-No.2 Current	—	38†	2.4	35	mA
Grid-No.1 Voltage (Approx.) for plate current of 1 mA	—	—	—42	—	volts
Ratio (Plate Current/Grid No.2 Current)	—	19.5:1	—	20:1	
Triode Amplification Factor	3.5	—	—	—	

† This value can be measured by a method involving a recurrent waveform such that the maximum ratings of the tube will not be exceeded.
†† Grid No. 2 connected to plate.

Horizontal-Deflection Amplifier

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

MAXIMUM RATINGS (Design-Maximum Values)

DC Plate Supply Voltage	990	volts
Peak Positive-Plate Pulse Voltage (Absolute Maximum)	7500	volts
Peak Negative-Pulse Plate Voltage	1100	volts
Positive Grid-No.3 Voltage	75	volts
DC Grid-No.2 Voltage	220	volts
Peak Negative-Pulse Grid-No.1 Voltage	330	volts
Average Cathode Current	375	mA
Peak Cathode Current	1300	mA
Plate Dissipation	30	watts
Grid-No.2 Input	5	watts
Bulb Temperature (At hottest point)	250	°C

MAXIMUM CIRCUIT VALUES

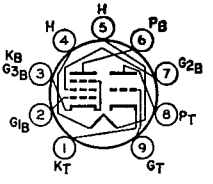
Grid-No.1-Circuit Resistance:		
Bias feedback high-voltage regulation	0.47	megohm
DC or pulse shunt high-voltage regulation	10	megohm

6LR8

21LR8, 31LR8

HIGH-MU TRIODE—BEAM POWER TUBE

Novar type used in combined vertical-deflection-oscillator and vertical-deflection-amplifier applications in color and black-and-white television receivers. **Outlines section, 17E;** requires novar 9-contact socket. Types 21LR8 and 31LR8 are identical with type 6LR8 except for heater ratings.



9QT

	6LR8	21LR8	31LR8	
Heater Voltage	6.3	21	31.5	volts
Heater Current	1.5	0.45	0.3	ampere
Heater Warm-up Time	—	11	11	seconds
Heater-Cathode Voltage:				
Peak value	±200 max	±200 max	±200 max	volts
Average value	100 max	100 max	100 max	volts

Class A_1 Amplifier

CHARACTERISTICS	Triode Unit	Beam Power Unit			
Plate Voltage	250	45	135	120	volts
Grid-No.2 (Screen-Grid) Voltage	—	125	120	120•	volts
Grid-No.1 (Control-Grid) Voltage	—4	0	—10	—10	volts
Amplification Factor	58	—	—	6.5	
Plate Resistance Approx.)	14000	—	14000	—	ohms
Transconductance	4100	—	9200	—	μmhos
Plate Current	2.6	200▪	51	—	mA
Grid-No.2 Current	—	200▪	3	—	mA
Grid-No.1 Voltage:					
For plate current of 10 μA	—6.6	—	—	—	volts
For plate current of 100 μA	—	—	—28	—	volts
For plate current of 1 mA	—	—	—24	—	volts

• Triode connection, Grid No.2 connected to plate at socket.

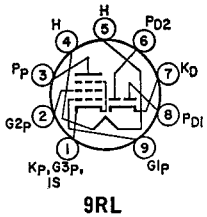
▪ This value can be measured by a method involving a recurrent waveform such that the maximum ratings of the tube will not be exceeded.

Vertical-Deflection Oscillator and Amplifier

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

MAXIMUM RATINGS (Design-Maximum Values)	Triode Unit Oscillator	Beam Power Unit Amplifier	
Plate Voltage	400	400	volts
Grid-No.2 Voltage	—	300	volts
Peak Positive-Pulse Plate Voltage#	—	2500	volts
Peak Negative-Pulse Grid-No.1 Voltage	400	250	volts
Peak Cathode Current	105	260	mA
Average Cathode Current	30	75	mA
Peak Power Output	2.5	—	watts
Plate Dissipation‡	2.5	14	watts
Grid-No.2 Input‡	—	2.75	watts
Bulb Temperature	—	210	°C
MAXIMUM CIRCUIT VALUES			
Grid-No.1-Circuit Resistance:			
For fixed-bias operation	—	1	megohm
For cathode-bias operation	2.2	2.2	megohms

Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).
‡ A bias resistor or other means is required to protect the tube in absence of excitation.



9RL

TWIN DIODE— SHARP-CUTOFF PENTODE

6LT8

8LT8, 11LT8

Miniature type used in television receiver applications. The pentode unit is used in low-frequency horizontal-oscillator applications. The diode units are used in horizontal afc discriminator circuits. **Outlines section,** 6B; requires miniature 9-contact socket. Types 8LT8 and 11LT8 are identical with type 6LT8 except for heater ratings.

	6LT8	8LT8	11LT8	
Heater Voltage	6.3	8.1	11.4	volts
Heater Current	0.6	0.45	0.315	ampere
Heater Warm-up Time (Average)	11	11	11	seconds
Heater-Cathode Voltage:				
Peak value	±200 max	±200 max	±200 max	volts
Average value	100 max	100 max	100 max	volts

Pentode Unit as Class A_1 Amplifier

MAXIMUM RATINGS (Design-Maximum Values)		
Plate Voltage	330	volts
Grid-No.2 (Screen-Grid) Supply Voltage	330	volts
Grid-No.2 Voltage	See curve page 300	
Grid-No.1 (Control-Grid) Voltage, Positive-bias value	0	volts
Plate Dissipation	3.1	watts
Grid-No.2 Input:		
For grid-No 2 voltages up to 165 volts	0.65	watt
For grid-No.2 voltages between 165 and 33 volts	See curve page 300	
CHARACTERISTICS		
Plate Voltage	125	volts
Grid No.3 (Suppressor Grid)	Connected to ground	
Grid-No.2 Voltage	125	volts
Cathode-Bias Resistor	56	ohms
Plate Resistance (Approx.)	200000	ohms
Transconductance	13000	μmhos
Plate Current	10	mA
Grid-No.2 Current	3.4	mA
Grid-No.1 Voltage (Approx.) for plate current of 20 μA	−3.5	volts
MAXIMUM CIRCUIT VALUE		
Grid-No.1-Circuit Resistance, for cathode-bias operation	1	megohm

Diode Unit (Each Unit)

MAXIMUM RATINGS (Design-Maximum Values)		
Plate Current (Continuous Operation)	5	mA
CHARACTERISTICS, Instantaneous Value		
Tube Voltage Drop for plate current of 20 mA	5	volts