

**10Z10**

Refer to type 6Z10.

**11**

Refer to chart at end of section.

**11AF9**

Refer to type 6AF9.

**11AR11**

Refer to type 6AR11.

**11BM8****HIGH-MU TRIODE—  
POWER PENTODE**

Miniature type used as vertical deflection oscillator or af amplifier and vertical deflection amplifier or af power amplifier in television receivers. **Outlines section, 6G;** requires miniature 9-contact socket. This type is identical with type 16A8/PCL82 except for the following items:

Heater Voltage .....	10.7	volts
Heater Current .....	0.45	mA

**11BQ11**

Refer to type 8BQ11.

**11BT11****DUAL TRIODE—  
SHARP-CUTOFF PENTODE**

Duodecar type used in television receiver applications. The triode units are used for general-purpose applications; the pentode unit is used in video-amplifier service. **Outlines section, 8B;** requires duodecar 12-contact socket. **Heater:** volts (ac/dc), 10.7; amperes, 0.6; warm-up time (average), 11 seconds; maximum heater-cathode volts,  $\pm 200$  peak, 100 average.

**Class A<sub>1</sub> Amplifier****MAXIMUM RATINGS (Design-Maximum Values)**

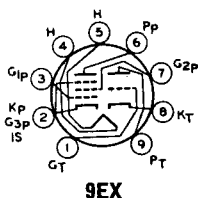
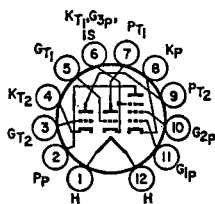
	Triode Unit No. 1	Triode Unit No. 2	Pentode Unit		
Plate Voltage .....	330	330	165	165	volts
Grid-No.2 (Screen-Grid) Voltage ..	—	—	165	165	volts
Grid-No.1 (Control-Grid) Voltage, Positive-bias value .....	0	0	0	0	volts
Plate Dissipation .....	1.5	2	3.5	3.5	watts
Grid-No.2 Input .....	—	—	1.5	1.5	watts

**CHARACTERISTICS**

Plate Voltage .....	200	200	35	150	volts
Grid-No.2 Voltage .....	—	—	100	100	volts
Grid-No.1 Voltage .....	—	—	0	—	volts
Cathode-Bias Resistor .....	270	470	—	82	ohms
Amplification Factor .....	69	40	—	—	—
Plate Resistance (Approx.) .....	12500	7600	—	51000	ohms
Transconductance .....	5500	5300	—	19000	$\mu$ mhos
Plate Current .....	7.1	7.2	54	17.4	mA
Grid-No.2 Current .....	—	—	13.5	3.2	mA
Grid-No.1 Voltage (Approx.) for plate current of 100 $\mu$ A .....	—	—8	—	—6.6	volts
Grid-No.1 Voltage (Approx.) for plate current of 50 $\mu$ A .....	—5.5	—	—	—	volts

**MAXIMUM CIRCUIT VALUES**

	Triode Unit No. 1	Triode Unit No. 2	Pentode Unit		
Grid-No.1-Circuit Resistance:					
For fixed-bias operation .....	0.5	0.5	0.05	0.1	megohm
For cathode-bias operation .....	1	1	0.1	0.1	megohm

**9X****12GS**

Refer to chart at end of section.

**11CA11**

Refer to chart at end of section.

**11CF11**

Refer to chart at end of section.

**11CH11**

Refer to chart at end of section.

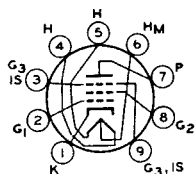
**11CY7**

Refer to type 6DS5.

**11DS5**

Refer to type 6FY7.

**11FY7**



**9BF**

**SHARP-CUTOFF PENTODE**

**11HM7**

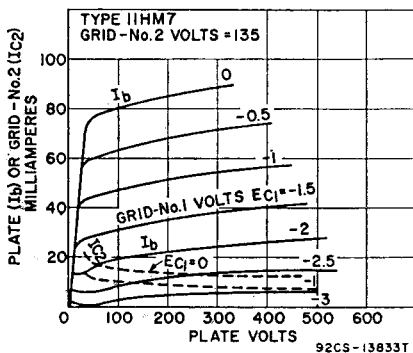
Miniature type with frame grid used as video output amplifier in color television receivers. Outlines section, 6E; requires miniature 9-contact socket.

Heater Arrangement .....	<b>Series</b>	<b>Parallel</b>	
Heater Voltage (ac/dc) .....	11	5.5	volts
Heater Current .....	0.3	0.6	ampere
Heater-Cathode Voltage:			
Peak value .....		±200 max	volts
Average value .....		100 max	volts
Direct Interelectrode Capacitances:			
Grid No.1 to Plate .....		0.15 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 .....		5	pF

**Class A<sub>1</sub> 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 .....	7	watts
Grid-No.2 Input:		
For grid-No.2 voltages up to 165 volts .....	1	watt
For grid-No.2 voltages between 165 and 330 volts .....	See curve page 300	



**CHARACTERISTICS**

Plate Supply Voltage .....	200	volts
Grid-No.3 Voltage .....	0	volts
Grid-No.2 Voltage .....	135	volts
Cathode-Bias Resistor .....	47	ohms

Plate Resistance (Approx.) .....	40000	ohms
Transconductance .....	30000	$\mu$ mhos
Plate Current .....	30	mA
Grid-No.2 Current .....	5.2	mA
Grid-No.1 Voltage (Approx.) for plate current of 100 $\mu$ A .....	-4.5	volts

**MAXIMUM CIRCUIT VALUES**

Grid-No.1-Circuit Resistance:		
For fixed-bias operation .....	0.1	megohm
For cathode-bias operation .....	0.25	megohm

**11JE8** Refer to chart at end of section.

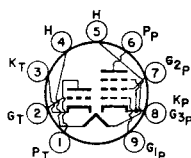
**11KV8** Refer to type 6KV8.

**11LQ8** Refer to type 6LQ8.

**11LT8** Refer to type 6LT8.

**11MS8****HIGH-MU TRIODE—  
BEAM POWER TUBE**

Miniature type used in combined vertical-deflection-oscillator and vertical-deflection-amplifier applications in black-and-white television receivers. **Outlines section**, 6G; requires miniature 9-contact socket. **Heater:** volts, 11.6; ampere, 0.45; warm-up time (approx.), 11 seconds; maximum heater-cathode volts,  $\pm 200$  peak, 100 average.

**9LY****Class A<sub>1</sub> Amplifier**

CHARACTERISTICS	Triode Unit		Beam Power Unit	
	Plate Voltage .....	100	100	120
Grid-No. 1 (Control-Grid) Voltage .....	—	—	110	volts
Grid-No. 1 (Control-Grid) Voltage .....	-0.85	0	-10	volts
Plate Current .....	5	10	50	mA
Grid-No. 2 Current .....	—	—	3	mA
Transconductance .....	5500	7000	8500	$\mu$ mhos
Amplification Factor* .....	60	63	5.8	
Plate Resistance (Approx.) .....	11	9	13	kilohms

**Vertical-Deflection Oscillator and Amplifier**

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

**MAXIMUM RATINGS (Design-Maximum Values)**

Plate Voltage .....	250	250	volts
Peak Positive Pulse Plate Voltage# .....	—	2000	volts
Grid-No. 2 Voltage .....	—	200	volts
Grid-No. 1 Voltage .....	—	0	volts
Plate Dissipation .....	0.5	6	watts
Grid-No. 2 Input .....	—	1.5	watts
Average Cathode Current .....	15	70	mA

**MAXIMUM CIRCUIT VALUES**

Grid-No. 1 Circuit Resistance .....	—	2	megohm
Grid-No. 1 Circuit Resistance:			
For fixed-bias operation .....	1	—	megohm
For cathode-bias operation .....	3.3	—	megohms

# Pulse duration must not exceed 15% of a vertical scanning cycle (2.5 milliseconds).

\* Grid-No. 2 connected to plate at socket.

**11Y9** Refer to chart at end of section.

**11Y9/LFL200** Refer to chart at end of section.

**12A5** Refer to chart at end of section.

**12A6** Refer to chart at end of section.