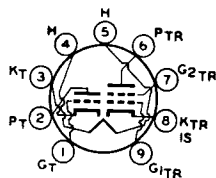


**MEDIUM-MU TRIODE—
SHARP-CUTOFF TETRODE**

6CL8A

5CL8A



9FX

Miniature type used as combined vhf oscillator and mixer in color and black-and-white television receivers. Outlines section, 6B; requires miniature 9-contact socket. For maximum ratings as class A₁ amplifier, see type 6U8A. Type 5CL8A is identical with type 6CL8A except for heater ratings.

Heater Voltage (ac/dc)	5CL8A 4.7	6CL8A 6.3	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	1.8	1.8	pF
Grid to Cathode, Tetrode Cathode, Heater, and Internal Shield	2.8	2.8	pF
Plate to Cathode, Tetrode Cathode, Heater, and Internal Shield	1.5	2	pF
Tetrode Unit:			
Grid No. 1 to Plate	0.02 max	0.01 max	pF
Grid No.1 to Cathode, Heater, Grid No.2, and Internal Shield	5	5	pF
Plate to Cathode, Heater, Grid No.2, and Internal Shield	2	3	pF
Tetrode Grid No.1 to Triode Plate	0.015 max	0.01 max	pF
Tetrode Plate to Triode Plate	0.15 max	0.03 max	pF
Heater to Cathode (Each Unit)	3	3	pF

Class A₁ Amplifier

CHARACTERISTICS

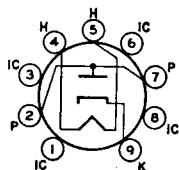
Plate Supply Voltage	125	125	volts
Grid-No.2 (Screen-Grid) Voltage	—	125	volts
Grid-No.1 Voltage	—1	—1	volt
Amplification Factor	40	—	
Plate Resistance (Approx.)	0.005	0.2	megohm
Transconductance	8000	6500	μmhos
Plate Current	14	12	mA
Grid-No.2 Current	—	.4	mA
Grid-No.1 Voltage (Approx.) for plate current of 20 μA	—9	—9	volts

MAXIMUM CIRCUIT VALUES

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

**HALF-WAVE
VACUUM RECTIFIER**

6CM3



9HP

Novar type used as damper tube in horizontal-deflection circuits of color and black-and-white television receivers. Outline section, 30B; requires novar 9-contact socket. Socket terminals 1, 3, 6, and 8 should not be used as tie points. This tube, like other power-handling tubes, should be adequately ventilated.

Heater Voltage (ac/dc)	6.3	volts
Heater Current	2.4	ampere
Direct Interelectrode Capacitances:		
Plate to Cathode and Heater	20	pF
Cathode to Plate and Heater	18	pF
Heater to Cathode	4	pF

Damper Service

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

MAXIMUM RATINGS (Design-Maximum Values)

Peak Inverse Plate Voltage#	5500	volts	
Peak Plate Current	1700	mA	
Average Plate Current	400	mA	
Plate Dissipation	12	watts	
Heater-Cathode Voltage:			
Peak value	+300	-5500	volts
Average value	+100	-900	volts

CHARACTERISTIC, Instantaneous Value

Tube Voltage Drop for plate current of 350 mA	10	volts
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Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).

6CM6

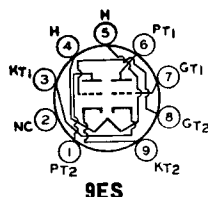
Refer to chart at end of section.

6CM7

8CM7

MEDIUM-MU DUAL TRIODE

Miniature type used as combined vertical-deflection oscillator and vertical-deflection amplifier in black-and-white television receivers. Unit No.1 is used as a conventional blocking oscillator in vertical-deflection circuits, and unit No.2 as a vertical-deflection amplifier. Outlines section, 6E; requires miniature 9-contact socket. Types 8CM7 is identical with type 6CM7 except for heater ratings.



	6CM7	8CM7	
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 (Approx.):	Unit No.1	Unit No.2	
Grid to Plate	3.8	3	pF
Grid to Cathode and Heater	3.2	3.5	pF
Plate to Cathode and Heater	0.5	0.4	pF

Class A₁ Amplifier

CHARACTERISTICS

	Unit No.1	Unit No.2	
Plate Voltage	200	250	volts
Grid Voltage	-7	-8	volts
Amplification Factor	21	18	
Plate Resistance (Approx.)	10500	4100	ohms
Transconductance	2000	4400	μmhos
Plate Current	5	20	mA
Plate Current for grid voltage of -10 volts	1	—	mA
Grid Voltage (Approx.) for plate current of 10 μA	-14	—	volts

Vertical-Deflection Oscillator and Amplifier

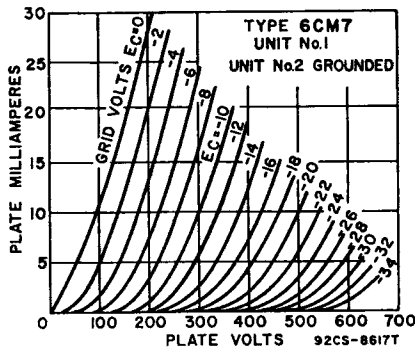
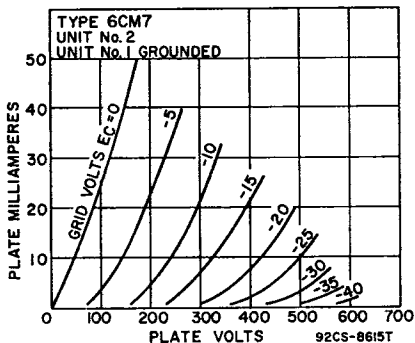
For operation in a 525-line, 30-frame system

	Unit No.1 Oscillator	Unit No.2 Amplifier	
MAXIMUM RATINGS (Design-Maximum Values)			
DC Plate Voltage	550	550	volts
Peak Positive-Pulse Plate Voltage#	—	2200	volts
Peak Negative-Pulse Grid Voltage	220	220	volts
Peak Cathode Current	77	77	mA
Average Cathode Current	17	22	mA
Plate Dissipation	1.45	6	watts

MAXIMUM CIRCUIT VALUES

Grid-Circuit Resistance:			
For fixed-bias operation	2.2	1	megohms
For cathode-bias operation	2.2	2.5	megohms
For grid-resistor-bias operation	2.2	—	megohms

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

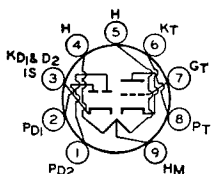


Refer to chart at end of section.

6CM8

TWIN DIODE—
HIGH-MU TRIODE

6CN7



9EN

Miniature type used as combined horizontal phase detector and reactance tube in color and black-and-white television receivers. The triode unit is used in sync-separator, sync-amplifier, or audio amplifier circuits. Outlines section, 6B; requires miniature 9-contact socket. For typical operation of triode unit as resistance-coupled amplifier, refer to Resistance-Coupled Amplifier section.

Heater Voltage (ac/dc):		
Series	6.3	volts
Parallel	3.15	volts
Heater Current:		
Series	0.3	ampere
Parallel	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	1.8	pF
Grid to Cathode and Heater	1.5	pF
Plate to Cathode and Heater	0.5	pF
Diode Units:		
Diode-No.1 Plate to Cathode of Diodes No.1 and No. 2, Heater, and Internal Shield	3.6	pF
Diode-No.2 Plate to Cathode of Diodes No.1 and No. 2, Heater, and Internal Shield	3.6	pF
Triode Grid to Either Diode Plate	0.006	pF

Triode Unit as Class A₁ Amplifier

MAXIMUM RATINGS (Design-Maximum Values)		
Plate Voltage	330	volts
Grid Voltage, Positive-bias value	0	volts
Plate Dissipation	1.1	watt
CHARACTERISTICS		
Plate Voltage	100	250
Grid Voltage	-1	-3
Amplification Factor	70	70
Plate Resistance (Approx.)	54000	58000
Transconductance	1300	1200
Plate Current	0.8	1
		ohms
		μmhos
		mA

Diode Units

MAXIMUM RATINGS (Design-Maximum Values)		
Plate Current (Each Unit)	5.5	mA