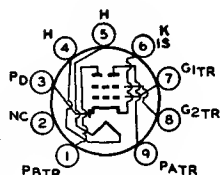


6FA7**DIODE—SHARP-CUTOFF,
TWIN-PLATE TETRODE**

Miniature type used in television receivers and in frequency-divider and complex-wave generator circuits of electronic musical instruments. Outlines section, 6E; requires miniature 9-contact socket.

**9MR**

Heater Voltage (ac/dc)	6.3	volts
Heater Current	0.3	ampere
Heater-Cathode Voltage:		
Peak value	±200 max	volts
Average value	100 max	volts
Direct Interelectrode Capacitances:		
Tetrode Unit:		
Grid No.1 to Plate A	0.040	pF
Grid No.1 to Plate B	0.030 max	pF
Grid No.1 to Cathode, Heater, Grid No.2, and Internal Shield	5.5	pF
Plate A to Cathode, Heater, Grid No.2, and Internal Shield	1.8	pF
Plate B to Cathode, Heater, Grid No.2, and Internal Shield	1.8	pF
Tetrode Grid No.1 to Diode Plate	0.022	pF
Tetrode Plate A to Diode Plate	0.020 max	pF
Tetrode Plate B to Diode Plate	0.055	pF

Class A₁ Amplifier**CHARACTERISTICS (Tetrode Unit)**

Plate A and Plate B connected together

Plate Voltage	100	volts
Grid-No.2 Voltage	100	volts
Grid-No.1 Supply Voltage	0	volts
Grid-No.1 Resistor (Bypassed)	2.2	megohms
Plate Resistance (Approx.)	90000	ohms
Transconductance	8200	μmhos
Plate Current	3.8	mA
Grid-No.2 Current	1.7	mA
Grid-No.1 Voltage (Approx.) for plate current of 20 μA	—4	volts

Using either Plate A or B, with unused plate grounded

Plate Voltage	100	volts
Grid-No.2 Voltage	100	volts
Grid-No.1 Supply Voltage	0	volts
Grid-No.1 Resistor (Bypassed)	2.2	megohms
Plate Resistance (Approx.)	130000	ohms
Transconductance	1900	μmhos
Plate Current	2.2	mA
Grid-No.2 Current	3	mA

Frequency Divider and Complex-Wave Generator

Tetrode Unit

MAXIMUM RATINGS (Design-Maximum Values)

Plate-A Voltage	330	volts
Plate-B Voltage	330	volts
Grid-No.2 (Screen-Grid) Supply Voltage	330	volts
Grid-No.2 Voltage	See curve page 98	
Grid-No.1 (Control-Grid) Voltage:		
Negative-bias value	50	volts
Positive-bias value	0	volts
Plate-A Dissipation	1.5	watts
Plate-B Dissipation	1.5	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 330 volts	See curve page 98	

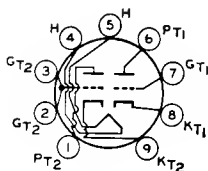
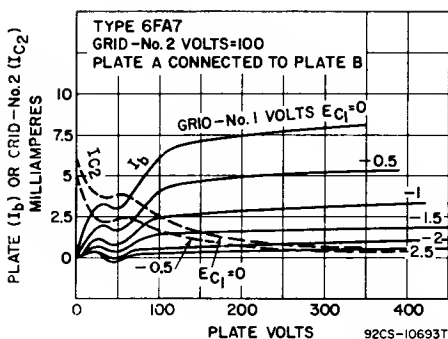
MAXIMUM CIRCUIT VALUE

Grid-No.1-Circuit Resistance, for grid-No.1-resistor-bias operation	2.2	megohms
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Diode Unit

MAXIMUM RATINGS (Design-Maximum Values)

Plate Current	1	mA
CHARACTERISTICS, Instantaneous Value		
Tube Voltage Drop for plate current of 2 mA	10	volts



9HF

DUAL TRIODE

6FD7

13FD7

Glass type containing high- μ and low- μ triode units used as combined vertical-deflection oscillator and vertical-deflection amplifier in television receivers. Outlines section, 10B; requires miniature 9-contact socket. Type 13FD7 is identical with type 6FD7 except for heater ratings.

	6FD7	13FD7	
Heater Voltage (ac/dc)	6.3	13	volts
Heater Current	0.925	0.45	ampere
Heater Warm-up Time (Average)	—	11	seconds
Heater-Cathode Voltage:			
Peak value	± 200 max	± 200 max	volts
Average value	100 max	100 max	volts
Direct Interelectrode Capacitances (Approx.):			
Grid to Plate	4.5	10	pF
Grid to Cathode and Heater	2.2	6.5	pF
Plate to Cathode and Heater	0.4	0.2	pF

Class A₁ Amplifier

	Unit No.1	Unit No.2	
Plate Voltage	250	60 — 150	volts
Grid Voltage	—3	0 — 17.5	volts
Amplification Factor	64	— 6	
Plate Resistance (Approx.)	40000	— 800	ohms
Transconductance	1600	— 7500	μ mhos
Plate Current	1.5	95 ^a 40	mA
Grid Voltage (Approx.):			
For plate current of 10 μ A	—5.5	—	volts
For plate current of 100 μ A	—	— 40	volts
Transconductance, For plate current of 1 mA	—	— 500	μ mhos
Plate Current, For grid voltage of —25 volts	—	— 6	mA

^a 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

	Unit No.1 Oscillator	Unit No.2 Amplifier	
MAXIMUM RATINGS (Design-Maximum Values)			
DC Plate Voltage	330	330	volts
Peak Positive-Pulse Plate Voltage [#]	—	1500	volts
Peak Negative-Pulse Grid Voltage	400	250	volts
Peak Cathode Current	70	175	mA
Average Cathode Current	20	50	mA
Plate Dissipation	1.5	10	watts

MAXIMUM CIRCUIT VALUES

Grid-Circuit Resistance:
For grid-resistor-bias or cathode-bias operation 2.2 2.2 megohms

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