

12FX8-A

TRIODE—HEPTODE

DESCRIPTION AND RATING

The 12FX8-A is a miniature triode-heptode designed for use in automobile radio receiver service where plate and screen voltages are supplied directly from a 12-volt storage battery. The triode section is intended for RF amplifier use and the heptode section for frequency-converter use.

The 12FX8-A is unilaterally interchangeable with the 12FX8 and differs only in having an additional control on the conversion-conductance cutoff characteristic of the heptode section.

GENERAL

ELECTRICAL

Cathode—Coated Unipotential

Heater Voltage, AC or DC.....12.6† Volts

Heater Current.....0.27 Amperes

Direct Interelectrode Capacitances†

Heptode

Grid-Number 3 to Plate: (Hg3 to Hp), maximum.....0.28 $\mu\mu\text{f}$

Grid-Number 3 to Grid-Number 1: (Hg3 to Hg1), max.....0.12 $\mu\mu\text{f}$

RF Input: Hg3 to (h+Tk+Hk+Hg1+Hg2, 4+Hg5+Hp+i.s.).....6.0 $\mu\mu\text{f}$

Oscillator Input: Hg1 to (h+Tk+Hk+Hg2, 4+Hg3+Hg5+Hp+i.s.).....5.0 $\mu\mu\text{f}$

Mixer Output: Hp to (h+Tk+Hk+Hg1+Hg2, 4+Hg3+Hg5+i.s.).....5.0 $\mu\mu\text{f}$

Grid-Number 1 to Cathode: Hg1 to (Hk+Hg5+i.s.).....3.0 $\mu\mu\text{f}$

Oscillator Output: Hk to (h+Tk+Hg2, 4+Hg3+Hp).....17 $\mu\mu\text{f}$

Grid-Number 1 to Plate: (Hg1 to Hp), maximum.....0.16 $\mu\mu\text{f}$

Triode

Grid to Plate: (Tg to Tp).....1.3 $\mu\mu\text{f}$

Input: Tg to (Tk+h).....2.2 $\mu\mu\text{f}$

Output: Tp to (Tk+h).....0.25 $\mu\mu\text{f}$

Triode Grid to Heptode Grid-Number 3: (Tg to Hg3), max..0.01 $\mu\mu\text{f}$

Triode Plate to Heptode Grid-Number 3: (Tp to Hg3), max..0.18 $\mu\mu\text{f}$

Triode Plate to Heptode Plate: (Tp to Hp), max.....0.20 $\mu\mu\text{f}$

MECHANICAL

Mounting Position—Any

Envelope—T-6½, Glass

Base—E9-1, Small Button 9-Pin

MAXIMUM RATINGS

DESIGN-CENTER VALUES

Heptode Plate Voltage.....16 Volts

Heptode Screen-Supply Voltage.....16 Volts

Heptode Screen Voltage.....16 Volts

Heptode Positive DC Grid-Number 3 Voltage.....0 Volts

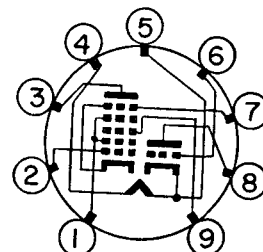
Heptode Negative DC Grid-Number 3 Voltage.....16 Volts

Triode Plate Voltage.....16 Volts

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BASING DIAGRAM



EIA 9KV

TERMINAL CONNECTIONS

Pin 1—Heptode Grid Numbers 2 and 4 (Screen)

Pin 2—Heptode Grid Number 1 (Oscillator Grid)

Pin 3—Heptode Plate

Pin 4—Heater

Pin 5—Heater and Triode Cathode

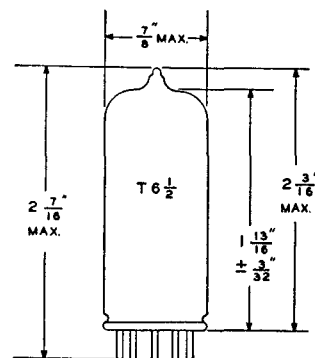
Pin 6—Triode Grid

Pin 7—Heptode Cathode, Grid Number 5, and Internal Shield

Pin 8—Triode Plate

Pin 9—Heptode Grid Number 3 (Signal Grid)

PHYSICAL DIMENSIONS



EIA 6-10

MAXIMUM RATINGS (Cont'd)**Heater-Cathode Voltage**

Heater Positive with Respect to Cathode.....	16	Volts
Heater Negative with Respect to Cathode.....	16	Volts
Heptode Grid-Number 3 Circuit Resistance.....	10	Megohms
Triode Grid-Circuit Resistance.....	10	Megohms

Design-Center ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under normal conditions.

These values are chosen by the tube manufacturer to provide acceptable serviceability of the tube in average applications, taking responsibility for equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all tubes.

The equipment manufacturer should design so that initially no design-center value for the intended service is exceeded with a bogey tube in equipment operating at the stated normal supply-voltage.

CHARACTERISTICS AND TYPICAL OPERATION**AVERAGE CHARACTERISTICS**

	Heptode§	Triode	
Plate Voltage.....	12.6	12.6	Volts
Screen Voltage.....	12.6	—	Volts
Grid-Number 3 Voltage.....	0.5†	—	Volts
Grid-Number 3 Resistance.....	2.2	—	Megohms
Grid-Number 1 Voltage, RMS.....	1.6	—	Volts
Grid-Number 1 Resistance.....	0.033	2.2	Megohms
Grid Voltage.....	—	0.8 #	Volts
Plate Resistance, approximate.....	0.5	—	Megohms
Conversion Transconductance.....	300	—	Micromhos
Transconductance.....	—	1400	Micromhos
Amplification Factor.....	—	10	
Plate Current.....	0.29	1.3	Milliamperes
Screen Current.....	1.25	—	Milliamperes
Grid-Number 3 Voltage, approximate			
Gc = 10 Micromhos.....	-3.0	—	Volts
Gc = 1.0 Micromho.....	-8.0	—	Volts
Grid Voltage, approximate			
Ib = 10 Microamperes.....	—	-3.2	Volts

HEPTODE OSCILLATOR CHARACTERISTICS (Not Oscillating)

Plate Voltage.....	12.6	Volts
Screen, Connected to Plate		
Grid-Number 3 Voltage.....	0	Volts
Grid-Number 1 Voltage.....	0	Volts
Amplification Factor§§.....	9	
Transconductance§§.....	3600	Micromhos
Cathode Current.....	4.4	Milliamperes
Grid-Number 1 Voltage, approximate		
Ib = 10 Microamperes.....	-4.5	Volts

† When used in automobile service from a 12-volt source, under no circumstances should the heater voltage be less than 10.0 volts or more than 15.9 volts. These extreme variations in heater voltage may be tolerated for short periods; however, operation at or near these absolute limits in heater voltage necessarily involves sacrifice in performance at low heater voltage and in life expectancy at high heater voltage. Equipment reliability can be significantly increased with improved supply-voltage regulation.

‡ Without external shield.

§ Self-excited converter service.

¶ Voltage developed across 2.2 megohm grid-number 3 resistor.

Voltage developed across 2.2 megohm grid resistor.

§§ Between grid-number 1 and grids number 2 and 4 connected to plate.

ELECTRONIC COMPONENTS DIVISION

GENERAL  **ELECTRIC**

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