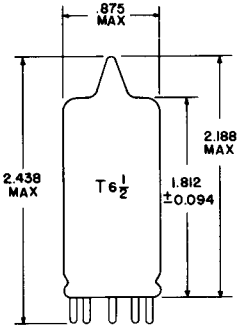
TUNG-SOL

TRIODE - HEPTODE

MINIATURE TYPE



GLASS BULB

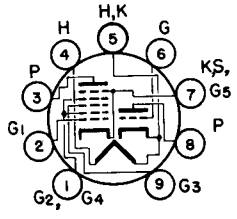
SMALL BUTTON
9 PIN BASE E9-1

OUTLINE DRAWING
JEDEC 6-10

COATED UNIPOTENTIAL CATHODES (2)

FOR

AUTOMOBILE RADIO
RECEIVER SERVICE
RF AMPLIFIER AND
FREQUENCY-CONVERTER



BOTTOM VIEW

BASING DIAGRAM
JEDEC 9KV

THE 12FX8A 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 12FX8A IS UNILATERALLY INTERCHANGEABLE WITH THE 12FX8 AND DIFFERS ONLY IN HAVING AN ADDITIONAL CONTROL ON THE CONVERSION-CONDUCTANCE CUT-OFF CHARACTERISTIC OF THE HEPTODE.

DIRECT INTERELECTRODE CAPACITANCES

WITHOUT EXTERNAL SHIELD

HEPTODE		
GRID #3 TO PLATE: (HG3 TO HP) MAX.	0.28	pf
GRID #3 TO GRID #1! (HG3 TO HG1), MAX.	0.12	pf
RF INPUT: HG3 TO (H+TK+HK+HG1+HG2,4+HG5+HP+I.S.)	6.0	pf
OSCILLATOR INPUT: HG1 TO (H+TK+HK+HG2,4+HG3+HG5+ HP+I.S.)	5.0	pf
MIXER OUTPUT: HP TO (H+TK+HK+HG1+HG2,4+HG3+HG5+I.S.)	5.0	pf
GRID #1 TO CATHODE: HG1 TO (HK+HG5+I.S.)	3.0	pf
OSCILLATOR OUTPUT: HK TO (H+TK+HG2,4+HG3+HP)	17	pf
GRID #1 TO PLATE: (HG1 TO HP) MAX.	0.16	pf
TRIODE		
GRID TO PLATE: (TG TO TP)	1.3	pf
INPUT: TG TO (TK+H)	2.2	pf
OUTPUT: TP TO (TK+H)	0.25	pf
TRIODE GRID TO HEPTODE GRID #3: (TG TO HG3), MAX.	0.01	pf
TRIODE PLATE TO HEPTODE GRID #3: (TP TO HG3), MAX.	0.18	pf
TRIODE PLATE TO HEPTODE PLATE: (TP TO HP), MAX.	0.20	pf

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HEATER CHARACTERISTICS AND RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

AVERAGE CHARACTERISTICS	12.6 VOLTS	270 MA.

HEATER SUPPLY LIMITS:

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 EXPECTANCE AT HIGH HEATER VOLTAGE. EQUIPMENT RELIABILITY CAN BE SIGNIFICANTLY INCREASED WITH IMPROVED SUPPLY-VOLTAGE REGULATION.

MAXIMUM HEATER-CATHODE VOLTAGE		
HEATER POSITIVE WITH RESPECT TO CATHODE	16	VOLTS
HEATER NEGATIVE WITH RESPECT TO CATHODE	16	VOLTS

MAXIMUM RATINGS

DESIGN CENTER VALUES - SEE EIA STANDARD RS-239

HEPTODE PLATE VOLTAGE	16	VOLTS
HEPTODE SCREEN-SUPPLY VOLTAGE	16	VOLTS
HEPTODE SCREEN VOLTAGE	16	VOLTS
HEPTODE POSITIVE DC GRID #3 VOLTAGE	0	VOLTS
HEPTODE NEGATIVE DC GRID #3 VOLTAGE	16	VOLTS
TRIODE PLATE VOLTAGE	16	VOLTS
HEPTODE GRID #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.

TYPICAL OPERATING CHARACTERISTICS

AVERAGE CHARACTERISTICS

	HEPTODE[A]	TRIODE	
PLATE VOLTAGE	12.6	12.6	VOLTS
SCREEN VOLTAGE	12.6	---	VOLTS
GRID #3 VOLTAGE	0.5[B]	---	VOLTS
GRID #3 RESISTANCE	2.2	---	MEGOHMS
GRID #1 VOLTAGE, RMS	1.6	---	VOLTS
GRID #1 RESISTANCE	0.033	2.2	MEGOHMS
GRID VOLTAGE	---	0.8[C]	VOLTS
PLATE RESISTANCE, APPROX.	0.5	---	MEGOHMS
CONVERSION TRANSCONDUCTANCE	300	---	MICROMHOS
TRANSCONDUCTANCE	---	1400	MICROMHOS
AMPLIFICATION FACTOR	---	10	
PLATE CURRENT	0.29	1.3	MA.
SCREEN CURRENT	1.25	---	MA.
GRID #3 VOLTAGE, APPROX.			
Gc = 10 μMHOS	-3.0	---	VOLTS
Gc = 1.0 μMHOS	-8.0	---	VOLTS
GRID VOLTAGE, APPROX.			
Ib = 10 μAMPS.	---	-3.2	VOLTS

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TUNG-SOL

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TYPICAL OPERATING CHARACTERISTICS - CONT'D.

HEPTODE OSCILLATOR CHARACTERISTICS (NOT OSCILLATING)

PLATE VOLTAGE	12.6	VOLTS
SCREEN, CONNECTED TO PLATE		
GRID #3 VOLTAGE	0	VOLTS
GRID #1 VOLTAGE	0	VOLTS
AMPLIFICATION FACTOR[D]	9	
TRANSCONDUCTANCE[D]	3600	μMHOS
CATHODE CURRENT	4.4	MA.
GRID #1 VOLTAGE, APPROX. Ib = 10 μAMPS.	-4.5	VOLTS

[A] SELF-EXCITED CONVERTER SERVICE.

[B] VOLTAGE DEVELOPED ACROSS 2.2 MEGOHM GRID #3 RESISTOR.

[C] VOLTAGE DEVELOPED ACROSS 2.2 MEGOHM GRID RESISTOR.

[D] BETWEEN GRID #1 AND GRIDS #2 & 4 CONNECTED TO PLATE.