

Medium-Mu Triode— Pentagrid Converter

9-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating
Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

Heater Characteristics and Ratings (*Design-Center Values*):

Voltage (DC) ^a	12.6	^{+3.3} -2.6	volts
Current at heater volts = 12.6.	0.270		amp
Peak heater-cathode voltage (Each unit):			
Heater negative with respect to cathode.	16 max.		volts
Heater positive with respect to cathode.	16 max.		volts

Direct Interelectrode Capacitances:^b

Triode Unit:

Grid to plate	1.3	pf
Grid to cathode & heater.	2.2	pf
Plate to cathode & heater	0.25	pf

Heptode Unit:

Grid No.3 to plate.	0.28 max.	pf
Grid No.3 to grid No.1.	0.12 max.	pf
Grid No.3 to cathode & grid No.5 & internal shield, plate, grids No.2 & No.4, grid No.1, and heater (RF input).	6.0	pf
Plate to cathode & grid No.5 & internal shield, grids No.2 & No.4, grid No.1, and heater (Mixer output).	5.0	pf
Grid No.1 to cathode & grid No.5 & internal shield, grid No.3, grids No.2 & No.4, and heater (Oscillator input).	5.0	pf
Grid No.1 to cathode & grid No.5 & internal shield	3.0	pf
Cathode & grid No.5 & internal shield to plate, grids No.2 & No.4, grid No.3, and heater (Oscillator output).	17.0	pf
Grid No.1 to plate.	0.16 max.	pf
Triode grid to heptode grid No.3.	0.01 max.	pf
Triode plate to heptode grid No.3	0.18 max.	pf
Triode plate to heptode plate	0.2 max.	pf

Characteristics, Class A₁ Amplifier (Triode Unit):

With heater voltage of 12.6 volts

Plate Voltage	12.6	volts
Grid Voltage developed across a 2.2-megohm grid resistor.	-0.8	volt



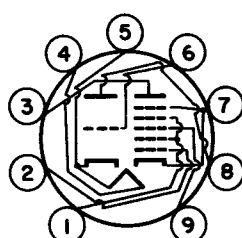
12FX8A

Amplification Factor.	10	
Plate Resistance (Approx.).	7150	ohms
Transconductance.	1400	μ hos
Plate Current	1.3	ma
Grid Voltage (Approx.) for plate μ a = 10.	-3.2	volts

Mechanical:

Operating Position.	Any
Type of Cathodes.	Coated Unipotential
Maximum Overall Length.	2.440"
Maximum Seated Length	2.190"
Length, Base Seat to Bulb Top (Excluding tip).	1.720" to 1.910"
Diameter.	0.750" to 0.875"
Bulb.	T6-1/2
Base.	Small-Button Noval 9-Pin (JEDEC No. E9-1)
Basing Designation for BOTTOM VIEW.	9KV

Pin 1-Heptode
Grid No.2,
Grid No.4
Pin 2-Heptode
Grid No.1
Pin 3-Heptode Plate
Pin 4-Heater
Pin 5-Heater,
Triode
Cathode



Pin 6-Triode Grid
Pin 7-Heptode
Grid No.5,
Cathode,
Internal
Shield
Pin 8-Triode Plate
Pin 9-Heptode
Grid No.3

HEPTODE UNIT — CONVERTER

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	16 max.	volts
GRID-No.3 (CONTROL-GRID) VOLTAGE:		
Negative-bias value	16 max.	volts
Positive-bias value	0 max.	volts
GRIDS-No.2 & No.4 (SCREEN-GRID) VOLTAGE	16 max.	volts

Typical Operation and Characteristics:

With self-excitation and heater voltage of 12.6 volts

Plate Voltage	12.6	volts
Grid-No.3 Voltage developed across a 2.2-megohm grid-No.3 resistor	-0.5	volt
Grids-No.2 & No.4 Voltage	12.6	volts
RMS Grid-No.1 (Oscillator-Grid) Voltage	1.6	volts
Grid-No.1 Resistor.	33000	ohms
Plate Resistance (Approx.).	0.5	megohm
Conversion Transconductance	300	μ hos
Grid-No.3 Voltage (Approx.) for conversion transconductance (μ hos) =		
10.	-3	volts
1	-8	volts
Plate Current	290	μ a
Grids-No.2 & No.4 Current	1.25	ma

Oscillator Characteristics (Not Oscillating):

*With grids No.2 & No.4 connected to plate
and with heater voltage of 12.6 volts*

Plate and Grids-No.2 & No.4 Voltage . . .	12.6	volts
Grid-No.3 Voltage	0	volts
Grid-No.1 Voltage	0	volts
Amplification Factor between grid No.1 and grids No.2 & No.4 connected to plate.	9	
Transconductance between grid No.1 and grids No.2 & No.4 connected to plate. .	3600	μ mhos
Cathode Current	4.4	ma
Grid-No.1 Voltage (Approx.) for plate μ a = 10	-4.5	volts

Maximum Circuit Values:

Grid-No.3-Circuit Resistance.	10 max.	megohms
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TRIODE UNIT — AMPLIFIER — Class A₁

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE	16 max.	volts
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Maximum Circuit Values:

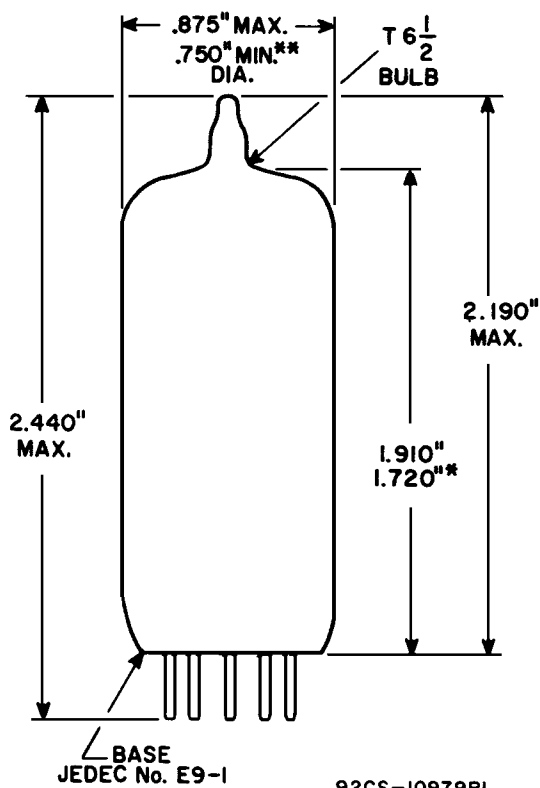
Grid-Circuit Resistance	10 max.	megohms
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^a For longest life, it is recommended that the heater be operated within the range of 11.0 to 14.0 volts.

^b Without external shield.



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* MEASURED FROM BASE SEAT TO BULB-TOP LINE AS DETERMINED BY A RING GAUGE OF $0.438''$ INSIDE DIAMETER.

** APPLIES IN ZONE STARTING $0.375''$ FROM BASE SEAT.