



6SA7—12SA7

6SA7
12SA7
 ET-T824
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HEPTODE

FOR PENTAGRID CONVERTER APPLICATIONS

DESCRIPTION AND RATING

The 6SA7 and 12SA7 are metal pentagrid converters which are identical except for heater ratings. Each type is intended to perform the combined functions of the mixer and oscillator in superheterodyne receivers, especially those of the all-wave type. The 6SA7 and 12SA7 are constructed to provide excellent frequency stability.

GENERAL

Cathode—Coated Unipotential

	6SA7	12SA7
Heater Voltage, AC or DC.....	6.3	12.6 Volts
Heater Current.....	0.3	0.15 Amperes
Envelope—MT-8, Metal Shell		
Base—B8-21, Small Wafer Octal 8-Pin		
Mounting Position—Any		
Direct Interelectrode Capacitances*		
Grid-Number 3 to All.....	9.5	$\mu\mu\text{f}$
Plate to All.....	9.5	$\mu\mu\text{f}$
Grid-Number 1 to All.....	7.0	$\mu\mu\text{f}$
Cathode to All Except Grid-Number 1.....	5.0	$\mu\mu\text{f}$
Grid-Number 1 to All Except Cathode.....	4.4	$\mu\mu\text{f}$
Grid-Number 3 to Plate, maximum.....	0.25	$\mu\mu\text{f}$
Grid-Number 3 to Grid-Number 1, maximum.....	0.15	$\mu\mu\text{f}$
Grid-Number 1 to Plate, maximum.....	0.06	$\mu\mu\text{f}$
Grid-Number 1 to Cathode.....	2.6	$\mu\mu\text{f}$

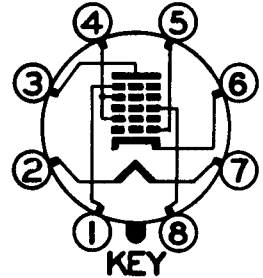
MAXIMUM RATINGS

DESIGN-CENTER VALUES

Plate Voltage.....	300	Volts
Screen-Supply Voltage.....	300	Volts
Screen Voltage.....	100	Volts
Positive DC Grid-Number 3 Voltage.....	0	Volts
Negative DC Grid-Number 3 Voltage.....	50	Volts
Plate Dissipation.....	1.0	Watts
Screen Dissipation.....	1.0	Watts
DC Cathode Current.....	14	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode.....	90	Volts
Heater Negative with Respect to Cathode.....	90	Volts

* With pin 1 connected to pin 6.

BASING DIAGRAM

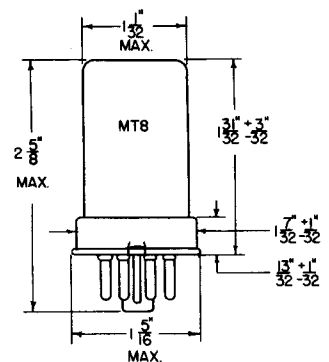


RETMA 8R
 BOTTOM VIEW

TERMINAL CONNECTIONS

- Pin 1—Shell and Grid Number 5
- Pin 2—Heater
- Pin 3—Plate
- Pin 4—Grids Number 2 and 4 (Screen)
- Pin 5—Grid Number 1 (Oscillator Grid)
- Pin 6—Cathode
- Pin 7—Heater
- Pin 8—Grid Number 3 (Mixer Grid)

PHYSICAL DIMENSIONS



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GENERAL ELECTRIC

Supersedes ET-T328B dated 2-51 and ET-T378B dated 1-52

CHARACTERISTICS AND TYPICAL OPERATION

CONVERTER SERVICE†

Plate Voltage	100	250	Volts
Screen Voltage	100	100	Volts
Grid-Number 3 Voltage	-2	-2	Volts
Grid-Number 1 Voltage, RMS	10	10	Volts
Grid-Number 1 Resistance	20000	20000	Ohms
Plate Resistance, approximate	0.5	1.0	Megohms
Conversion Transconductance	425	450	Micromhos
Plate Current	3.3	3.5	Milliamperes
Screen Current	8.5	8.5	Milliamperes
Grid-Number 1 Current	0.5	0.5	Milliamperes
Cathode Current	12.3	12.5	Milliamperes
Grid-Number 3 Voltage, approximate, $G_c = 10$ Micromhos	-25	-25	Volts
Grid-Number 3 Voltage, approximate, $G_c = 100$ Micromhos	-9	-9	Volts

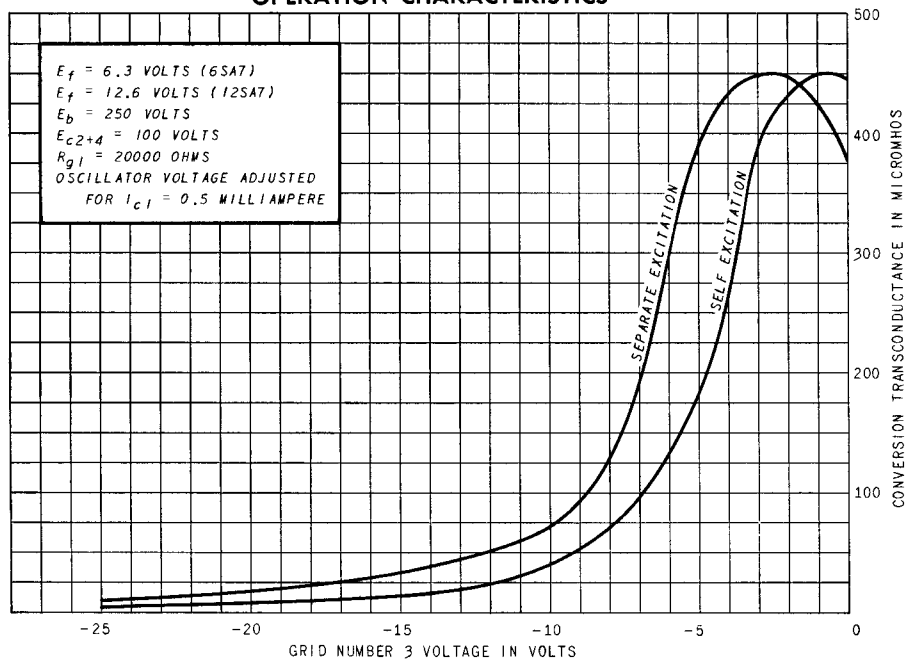
OSCILLATOR CHARACTERISTICS (NOT OSCILLATING)

Plate Voltage	100	Volts
Screen—Connected to Plate		
Grid-Number 3 Voltage	0	Volts
Grid-Number 1 Voltage	0	Volts
Amplification Factor ‡	14	
Transconductance ‡	4500	Micromhos
Cathode Current	25	Milliamperes
Grid-Number 1 Voltage, approximate, $I_b = 10$ Microamperes	-14	Volts

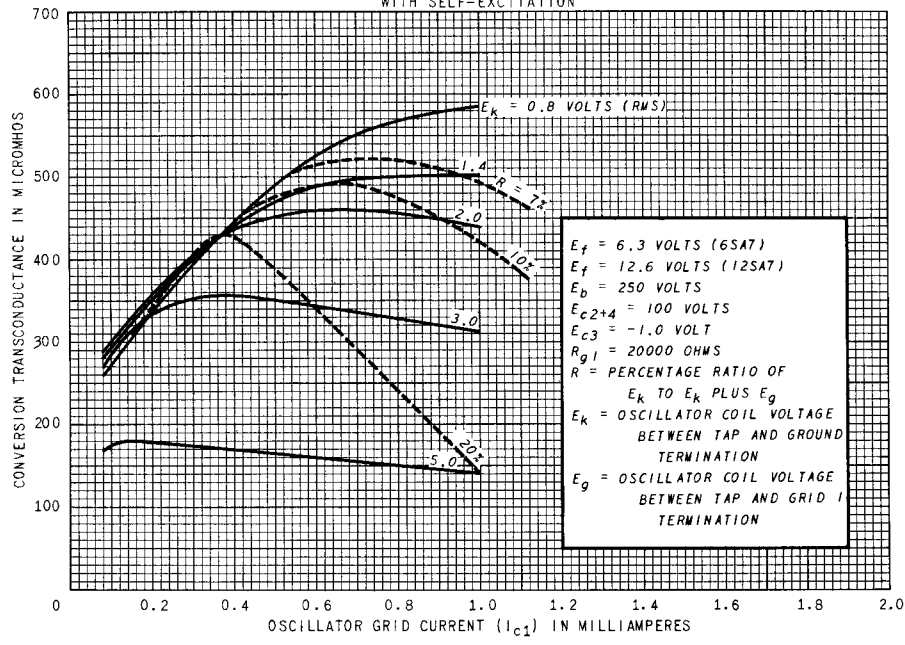
† Characteristics shown are obtained in the standard RTMA conversion conductance test set which uses separate excitation. The characteristics under these conditions correspond very closely with those obtained in a self-excited oscillatory circuit operating with zero bias.

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

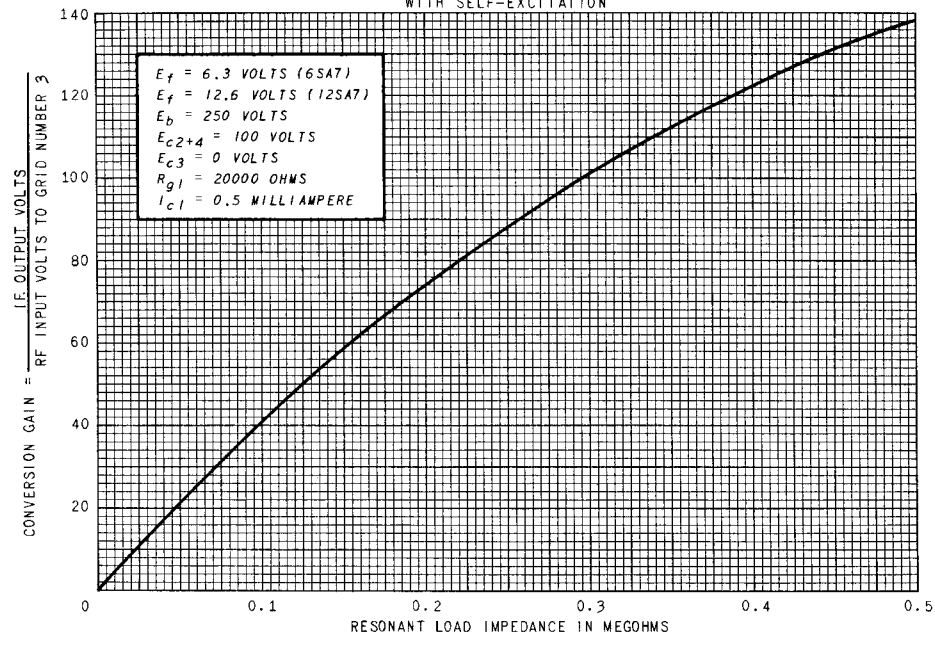
OPERATION CHARACTERISTICS

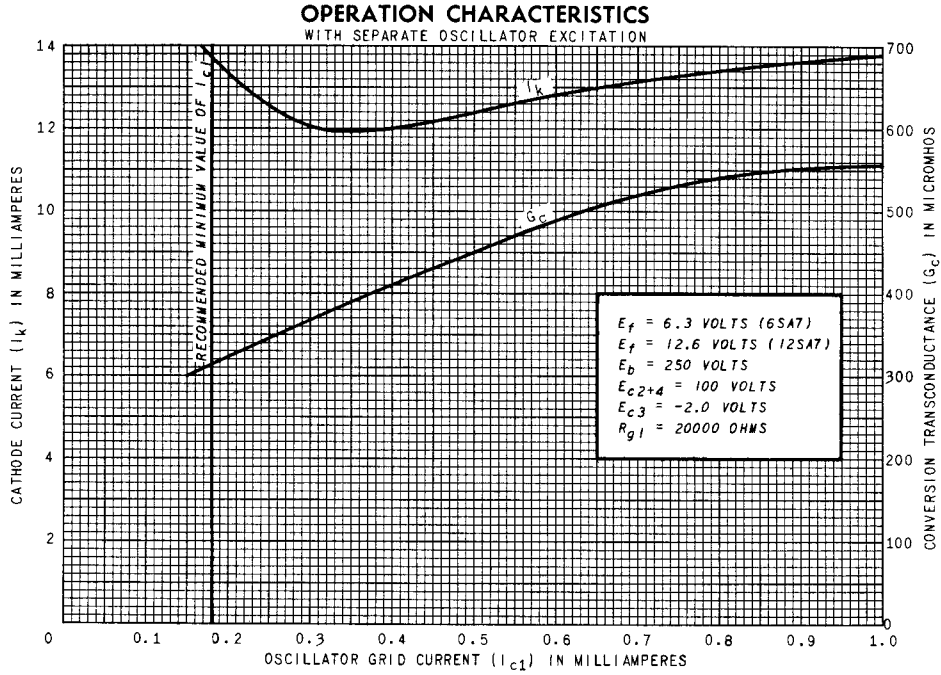


OPERATION CHARACTERISTICS
 WITH SELF-EXCITATION



OPERATION CHARACTERISTICS
 WITH SELF-EXCITATION





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