



6SA7—12SA7

HEPTODE

FOR PENTAGRID CONVERTER APPLICATIONS

**6SA7
12SA7
ET-T824**
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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

Heater Voltage, AC or DC.....6.3

Heater Current.....0.3

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 $\mu\mu\text{f}$

12SA7

12.6 Volts

0.15 Amperes

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

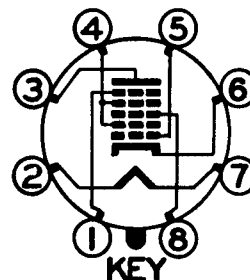
Heater-Cathode Voltage

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)

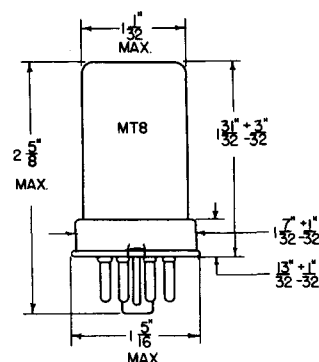
Pin 5—Grid Number 1 (Oscil-
lator Grid)

Pin 6—Cathode

Pin 7—Heater

Pin 8—Grid Number 3 (Mixer
Grid)

PHYSICAL DIMENSIONS



RETMA 8-1

GENERAL ELECTRIC

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

CHARACTERISTICS AND TYPICAL OPERATION

CONVERTER SERVICE†

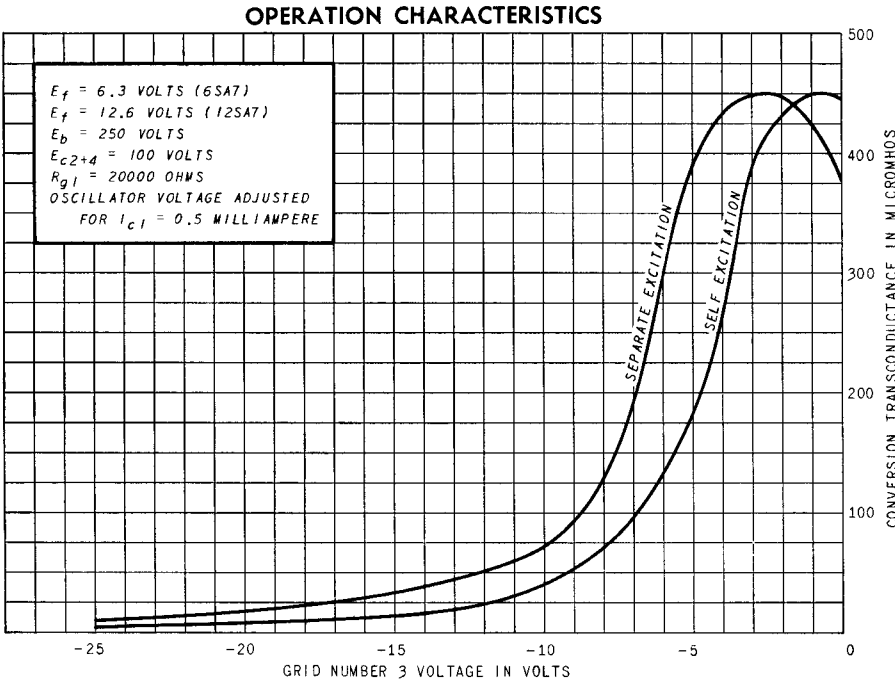
Plate Voltage	100	250	Volts
Screen Voltage	100	100	Volts
Grid-Number 3 Voltage	-2	-2	Volts
Grid-Number 1 Voltage, RMS	10	10	Volts
Grid-Number 1 Resistance	20000	20000	Ohms
Plate Resistance, approximate	0.5	1.0	Megohms
Conversion Transconductance	425	450	Micromhos
Plate Current	3.3	3.5	Milliamperes
Screen 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

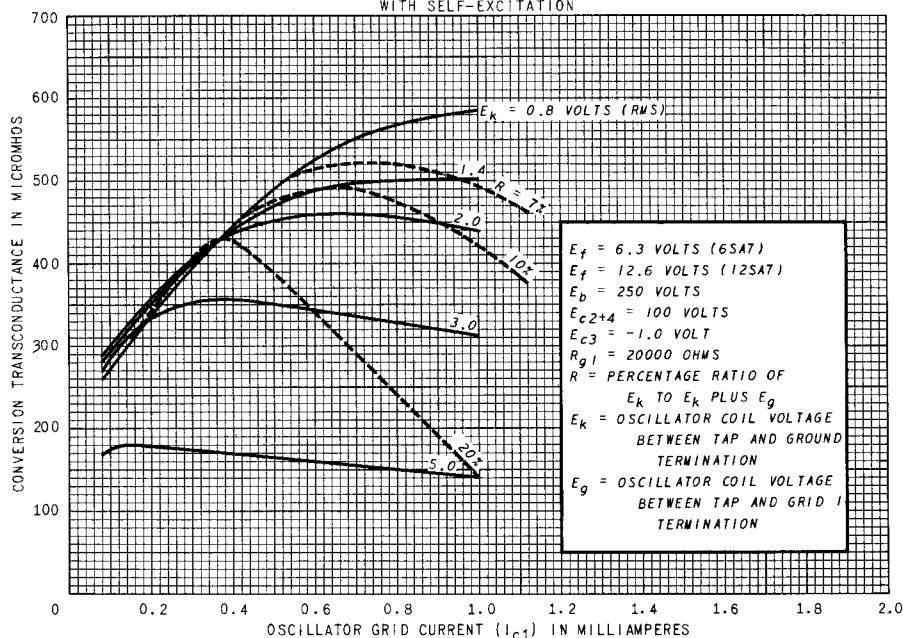
† Characteristics shown are obtained in the standard RTMA conversion conductance test set which uses separate excitation. The characteristics under these conditions correspond very closely with those obtained in a self-excited oscillatory circuit operating with zero bias.

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



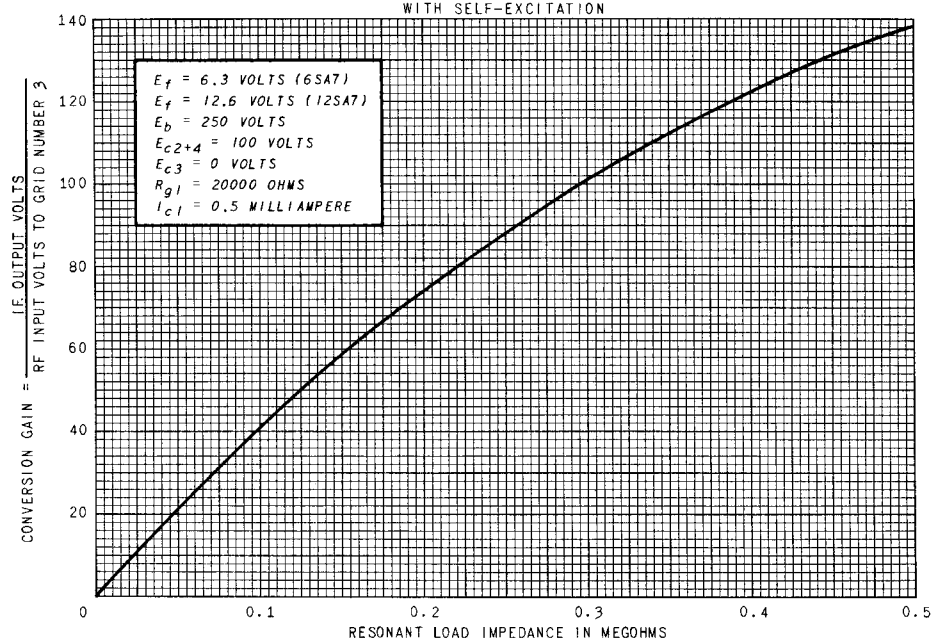
OPERATION CHARACTERISTICS

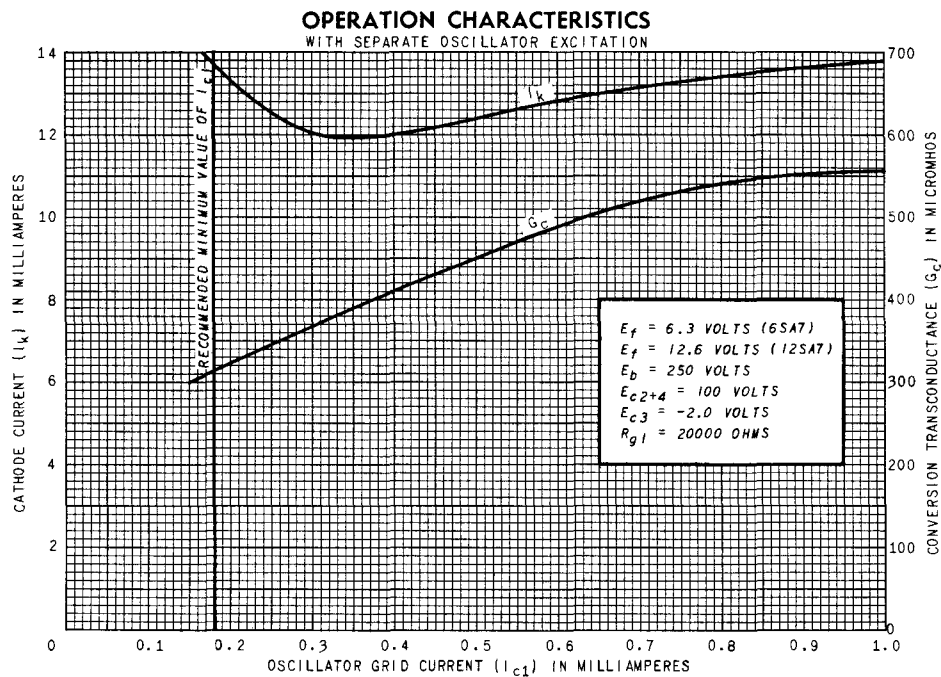
WITH SELF-EXCITATION



OPERATION CHARACTERISTICS

WITH SELF-EXCITATION





TUBE DEPARTMENT
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