Electronic TUBES

6SA7—12SA7

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	μμf
Plate to All	9.5	μμf
Grid-Number 1 to All	7.0	μμf
Cathode to All Except Grid-Number 1	5.0	μμf
Grid-Number 1 to All Except Cathode	4.4	μμf
Grid-Number 3 to Plate, maximum	0.25	μμf
Grid-Number 3 to Grid-Number 1, maximum	0.15	μμf
Grid-Number 1 to Plate, maximum	0.06	μμf
Grid-Number 1 to Cathode	2.6	μμf

MAXIMUM RATINGS

DESIGN-CENTER VALUES

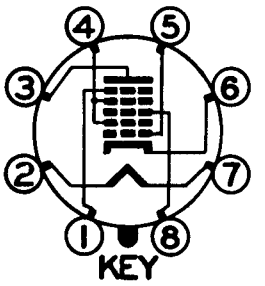
Plate Voltage	300	Volts
Screen-Supply Voltage	300	Volts
Screen Voltage	100	Volts
Positive DC Grid-Number 3 Voltage	0	Volts
Negative DC Grid-Number 3 Voltage	50	Volts
Plate Dissipation	1.0	Watts
Screen Dissipation	1.0	Watts
DC Cathode Current	14	Milliamperes
Heater-Cathode Voltage		
Heater Positive with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

* With pin 1 connected to pin 6.

GENERAL ELECTRIC

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

BASING DIAGRAM

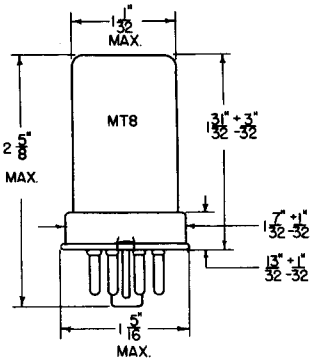


RETMA 8R
BOTTOM VIEW

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



RETMA 8-1

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

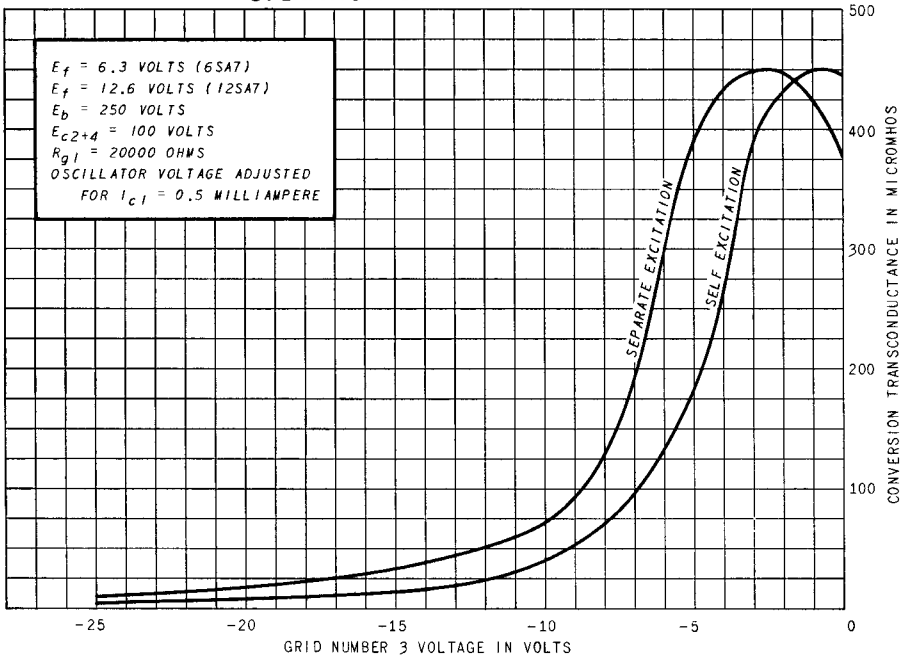
OSCILLATOR CHARACTERISTICS (NOT OSCILLATING)

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.

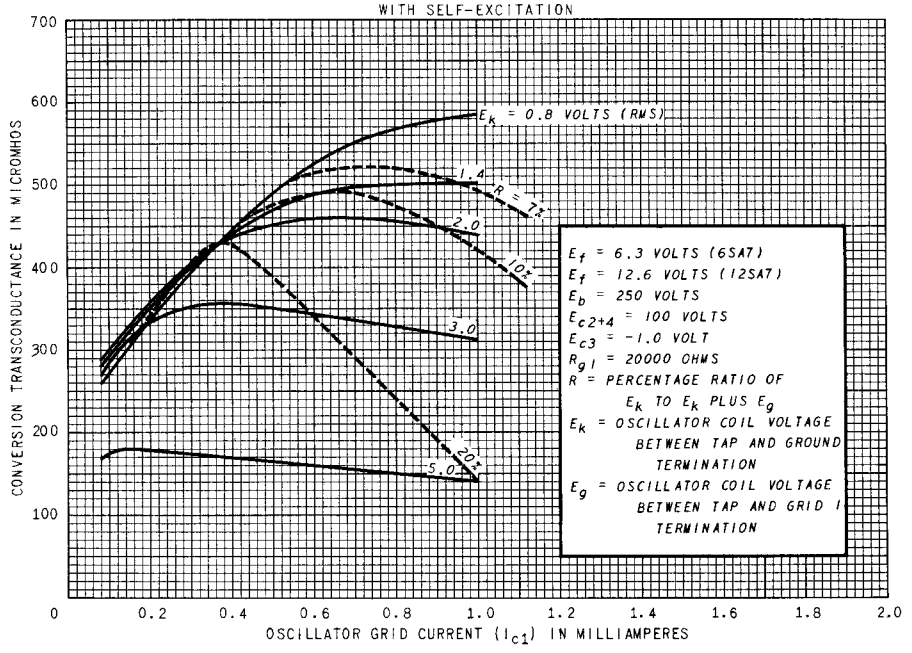
‡ Between grid number 1 and grids number 2 and 4 connected to plate.

OPERATION CHARACTERISTICS



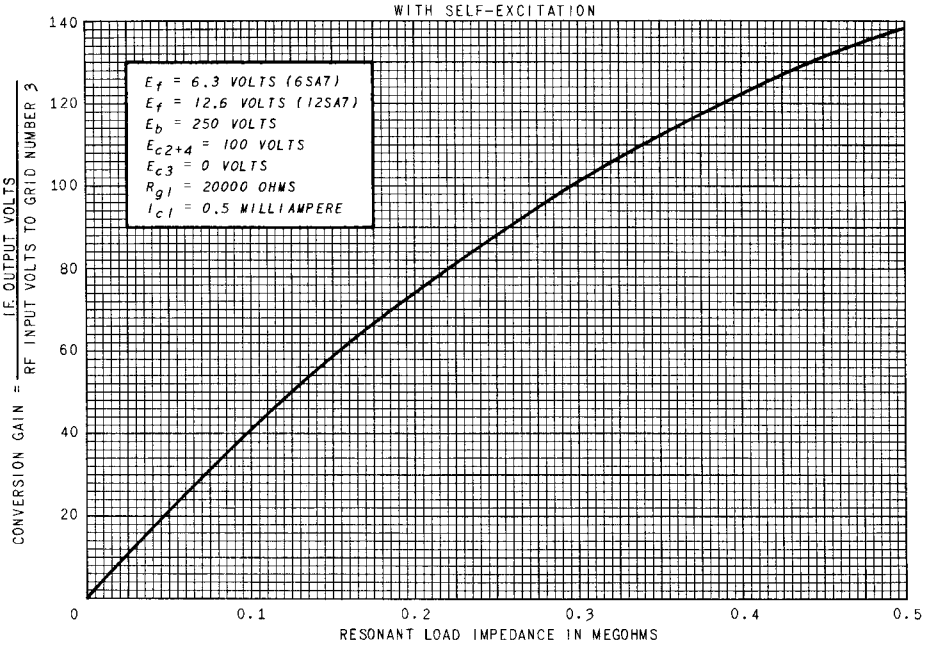
OPERATION CHARACTERISTICS

WITH SELF-EXCITATION



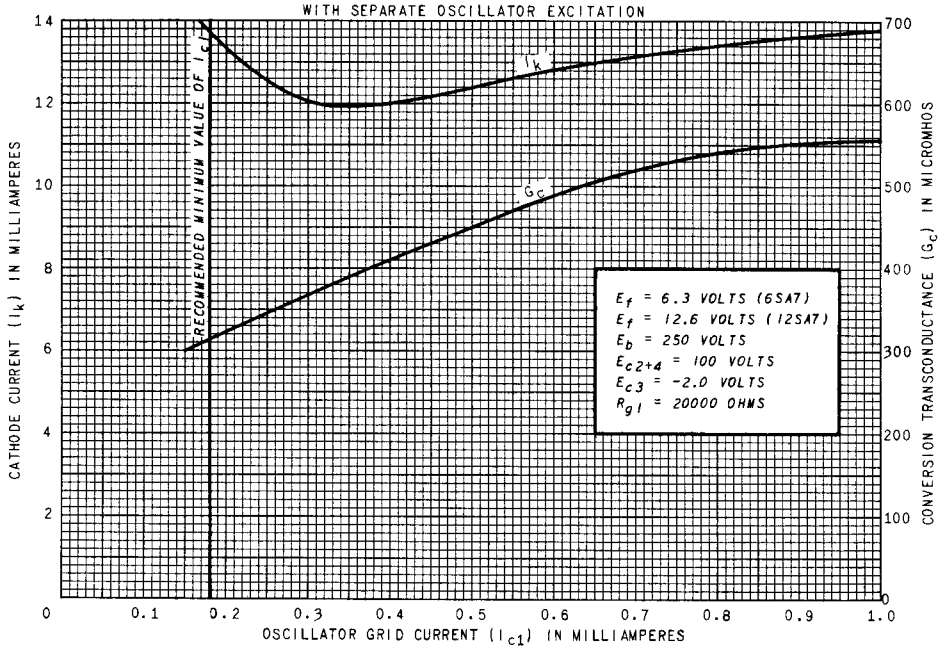
OPERATION CHARACTERISTICS

WITH SELF-EXCITATION



OPERATION CHARACTERISTICS

WITH SEPARATE OSCILLATOR EXCITATION



TUBE DEPARTMENT

GENERAL ELECTRIC

Schenectady 5, N. Y.