



12SY7

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# PENTAGRID CONVERTER

SINGLE-ENDED METAL TYPE

For use with 12-cell storage-battery supply

## GENERAL DATA

### Electrical:

Heater, for Unipotential Cathode:

Voltage. . . . .	12.6 . . . . .	ac or dc volts
Current. . . . .	0.15 . . . . .	amp

Direct Interelectrode Capacitances:

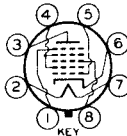
Grid No.3 to All Other Electrodes (RF Input)	9.5 <sup>●</sup>	μf
Plate to All Other Electrodes (Mixer Output)	12 <sup>●</sup>	μf
Grid No.1 to All Other Electrodes (Osc. Input)	7 <sup>●</sup>	μf
Grid No.3 to Plate . . . . .	0.13 max. <sup>●</sup>	μf
Grid No.1 to Grid No.3 . . . . .	0.15 max. <sup>●</sup>	μf
Grid No.1 to Plate . . . . .	0.06 max. <sup>●</sup>	μf
Grid No.1 to Shell, Grid No.5, and All Other Electrodes Except Cathode	4.4	μf
Grid No.1 to Cathode . . . . .	2.6	μf
Cathode to Shell, Grid No.5, and All Other Electrodes Except Cathode	5	μf

### Mechanical:

Mounting Position. . . . .	Any
Maximum Overall Length . . . . .	2-5/8"
Maximum Seated Length. . . . .	2-1/16"
Maximum Diameter . . . . .	1-5/16"
Bulb . . . . .	Metal Shell, MT-8G
Base . . . . .	Small Wafer Octal 8-Pin BR

Basing Designation for BOTTOM VIEW

- Pin 1 - Shell,  
Grid No.5
- Pin 2 - Heater
- Pin 3 - Plate
- Pin 4 - Grids No.2 &  
No.4



- Pin 5 - Grid No.1
- Pin 6 - Cathode
- Pin 7 - Heater
- Pin 8 - Grid No.3

## CONVERTER

Maximum Ratings, Design-Center Values:

PLATE VOLTAGE. . . . .	300 max. volts
GRIDS-No.2 and No.4 (SCREEN) VOLTAGE . . . . .	100 max. volts
GRIDS-No.2 and No.4 SUPPLY VOLTAGE . . . . .	300 max. volts
PLATE DISSIPATION. . . . .	1.0 max. watt
GRIDS-No.2 & No.4 DISSIPATION. . . . .	1.0 max. watt
TOTAL CATHODE CURRENT. . . . .	14 max. ma.
GRID-No.3 (CONTROL GRID) VOLTAGE:	
Negative bias value. . . . .	50 max. volts
Positive bias value. . . . .	0 max. volts
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode	90 max. volts
Heater positive with respect to cathode	90 max. volts

● with shell connected to cathode.

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### Characteristics - Separate Excitation: \*

Plate Voltage. . . . .	26.5	100	250	volts
Grids-No.2 & No.4 Voltage	26.5	100	100	volts
Grid-No.3 Voltage. . . . .	-1	-2	-2	volts
Grid-No.1 (Oscillator Grid) Resistor	20000	20000	20000	ohms
Plate Resistance (Approx.)	-	0.5	1.0	megohm
Conversion Transconductance	250	425	450	$\mu$ mhos
Conversion Transconductance (Approx.)	8 <sup>♠</sup>	2 <sup>♠</sup>	2 <sup>♠</sup>	$\mu$ mhos
Plate Current. . . . .	0.45	3.3	3.5	ma.
Grids-No.2 & No.4 Current	1.7	8.5	8.5	ma.
Grid-No.1 Current. . . . .	0.1	0.5	0.5	ma.
Total Cathode Current. . .	2.25	12.3	12.5	ma.

NOTE: The transconductance between grid No.1 and grids No.2 and No.4 connected to plate (not oscillating) is approximately 4500  $\mu$ mhos under the following conditions: grids No.1, No.3, No.5 and shell at 0 volts; grids No.2 and No.4 and plate at 100 volts. Under the same conditions, the plate current is 27 milliamperes, and the amplification factor is 13.

\* The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

♠ With grid-No.3 bias of -6 volts.

♠ With grid-No.3 bias of -35 volts.

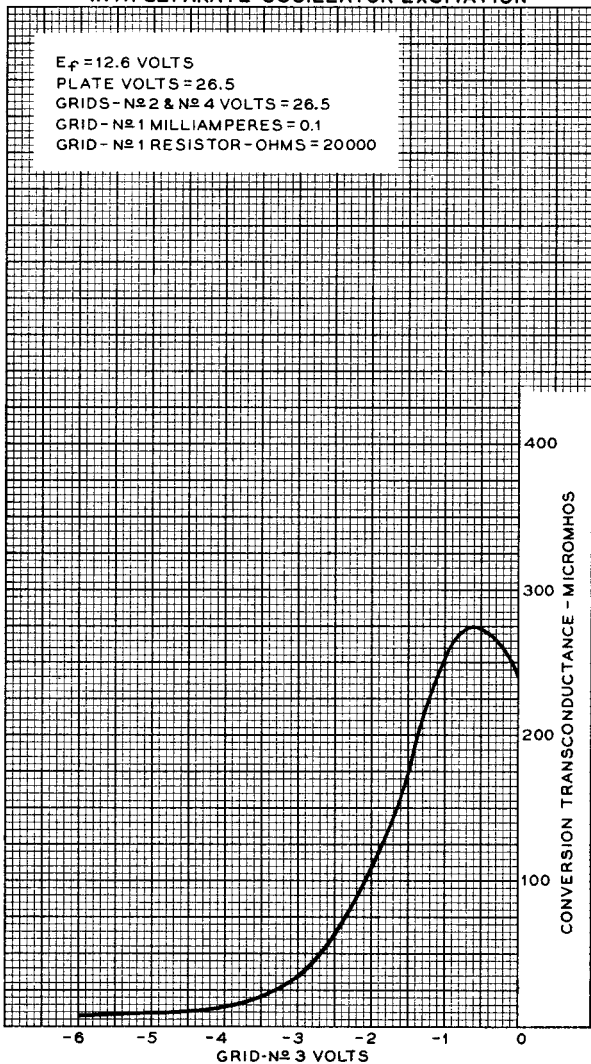
*The curves under Type 6SA7 also  
apply to the 12SY7.*



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# 12SY7 OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION

$E_f = 12.6$  VOLTS  
PLATE VOLTS = 26.5  
GRIDS - N<sup>o</sup> 2 & N<sup>o</sup> 4 VOLTS = 26.5  
GRID - N<sup>o</sup> 1 MILLIAMPERES = 0.1  
GRID - N<sup>o</sup> 1 RESISTOR - OHMS = 20000



JULY 29, 1946

TUBE DEPARTMENT  
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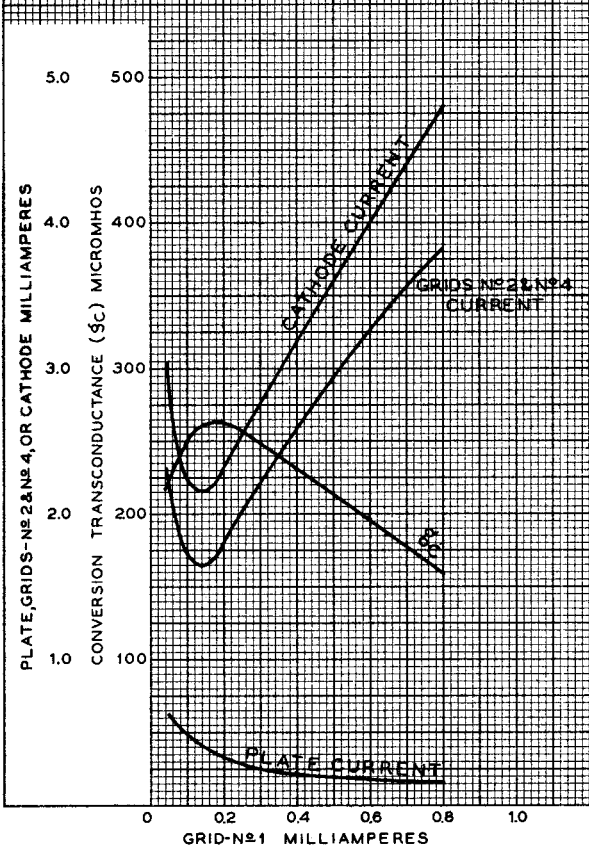
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### OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION

$E_f = 12.6$  VOLTS  
 PLATE VOLTS = 26.5  
 GRIDS - No 2 & No 4 VOLTS = 26.5  
 GRID - No 1 RESISTOR - OHMS = 20 000  
 GRID - No 3 VOLTS = -1



JULY 30, 1946

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