



12SY7

**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>  $\mu$ fPlate to All Other Electrodes (Mixer Output) 12<sup>•</sup>  $\mu$ fGrid No.1 to All Other Electrodes (Osc. Input) 7<sup>•</sup>  $\mu$ fGrid No.3 to Plate . . . . . 0.13 max.<sup>•</sup>  $\mu$ fGrid No.1 to Grid No.3 . . . . . 0.15 max.<sup>•</sup>  $\mu$ fGrid No.1 to Plate . . . . . 0.06 max.<sup>•</sup>  $\mu$ f

Grid No.1 to Shell, Grid No.5, and All

Other Electrodes Except Cathode 4.4  $\mu$ fGrid No.1 to Cathode . . . . . 2.6  $\mu$ f

Cathode to Shell, Grid No.5, and All

Other Electrodes Except Cathode 5  $\mu$ f**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

Basing Designation for BOTTOM VIEW . . . . . 8R

Pin 1 - Shell, Pin 5 - Grid No.1

Grid No.5 Pin 6 - Cathode

Pin 2 - Heater Pin 7 - Heater

Pin 3 - Plate Pin 8 - Grid No.3

Pin 4 - Grids No.2 &amp; No.4

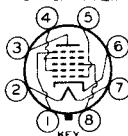
CONVERTER**Maximum Ratings, Design-Center Values:**

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 &amp; 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

<sup>•</sup> with shell connected to cathode.

JUNE 20, 1946

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

12SY7



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# PENTAGRID CONVERTER

## 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<br>Grid) Resistor  | 20000          | 20000          | 20000          | ohms   |
| Plate Resistance (Approx.)               | -              | 0.5            | 1.0            | megohm |
| Conversion Transconductance              | 250            | 425            | 450            | μmhos  |
| Conversion Transconductance<br>(Approx.) | 8 <sup>♠</sup> | 2 <sup>□</sup> | 2 <sup>□</sup> | μmhos  |
| 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 μmhos 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.

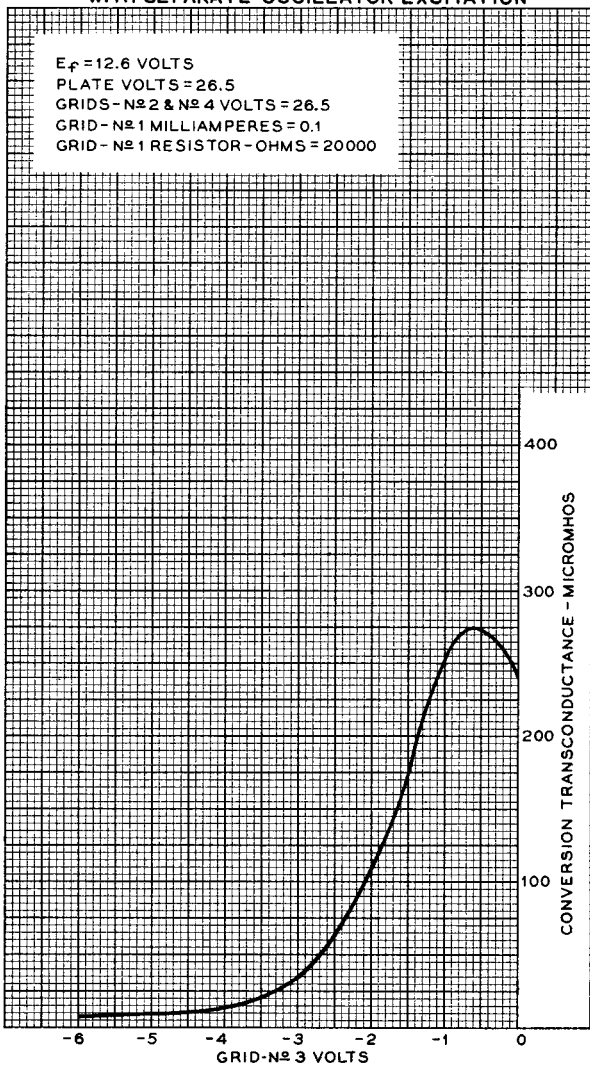
□ With grid-No.3 bias of -35 volts.

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



12SY7

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OPERATION CHARACTERISTICS  
WITH SEPARATE OSCILLATOR EXCITATION

JULY 29, 1946

TUBE DEPARTMENT

92C M - 6786

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

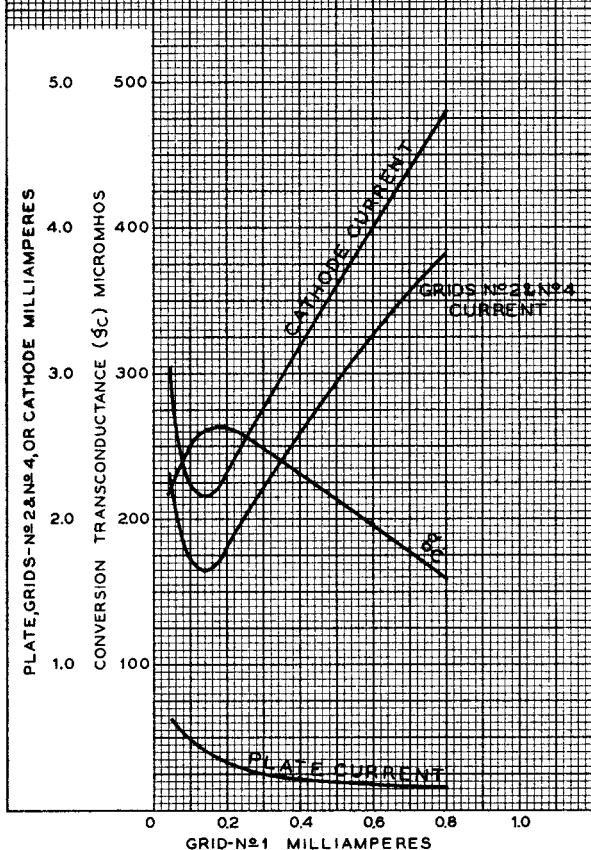
12SY7



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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

TUBE DEPARTMENT

92CM-6787

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