

## TUNG-SOL

## HEPTODE

## MINIATURE TYPE

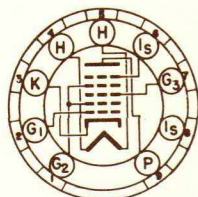
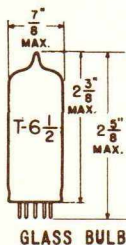
## UNIPOTENTIAL CATHODE

## HEATER

12.6 VOLTS 150 MA.

AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW

SMALL BUTTON

9 PIN BASE

THE 12BA7 IS A CATHODE TYPE HIGH GAIN PENTAGRID CONVERTER IN THE SMALL 9-PIN BUTTON CONSTRUCTION. IT IS DESIGNED FOR SERVICE AS A COMBINED LOCAL OSCILLATOR AND MIXER AT HIGH FREQUENCIES, ESPECIALLY IN THE FM BROADCAST BAND.

## DIRECT INTERELECTRODE CAPACITANCES

WITH NO EXTERNAL SHIELD

|                                                                         |      |            |
|-------------------------------------------------------------------------|------|------------|
| GRID #3 TO PLATE: ( $G_3$ TO P) MAX.                                    | 0.19 | $\mu\mu f$ |
| GRID #1 TO GRID #3: ( $G_1$ TO $G_3$ ) MAX.                             | 0.1  | $\mu\mu f$ |
| GRID #1 TO PLATE: ( $G_1$ TO P) MAX.                                    | 0.05 | $\mu\mu f$ |
| GRID #1 TO CATHODE: ( $G_1$ TO K)                                       | 3.3  | $\mu\mu f$ |
| GRID #1 TO ALL EXCEPT CATHODE:<br>$G_1$ TO ( $H+G_2+G_4+G_3+G_5+P+IS$ ) | 3.4  | $\mu\mu f$ |
| CATHODE TO ALL EXCEPT GRID #1:<br>K TO ( $H+G_2+G_4+G_3+G_5+P+IS$ )     | 4    | $\mu\mu f$ |
| RF INPUT: $G_3$ TO ( $H+K+G_1+G_2+G_4+G_5+P+IS$ )                       | 9.5  | $\mu\mu f$ |
| OSCILLATOR INPUT: $G_1$ TO ( $H+K+G_2+G_4+G_3+G_5+P+IS$ )               | 6.7  | $\mu\mu f$ |
| MIXER OUTPUT: P TO ( $H+K+G_1+G_2+G_4+G_3+G_5+IS$ )                     | 8.3  | $\mu\mu f$ |

## RATINGS

INTERPRETED ACCORDING TO RMA STANDARD MB-210

|                                                        |      |       |
|--------------------------------------------------------|------|-------|
| HEATER VOLTAGE                                         | 12.6 | VOLTS |
| MAXIMUM HEATER-CATHODE VOLTAGE                         | 90   | VOLTS |
| MAXIMUM PLATE VOLTAGE                                  | 300  | VOLTS |
| MAXIMUM GRIDS #2 & #4 VOLTAGE                          | 100  | VOLTS |
| MAXIMUM GRIDS #2 & #4 SUPPLY VOLTAGE                   | 300  | VOLTS |
| MAXIMUM NEGATIVE GRID #3 VOLTAGE                       | 100  | VOLTS |
| MAXIMUM POSITIVE GRID #3 VOLTAGE                       | 0    | VOLTS |
| MAXIMUM GRID #5 & INTERNAL SHIELD VOLTAGE <sup>A</sup> | 0    | VOLTS |
| MAXIMUM PLATE DISSIPATION                              | 2    | WATTS |
| MAXIMUM GRIDS #2 & #4 DISSIPATION                      | 1.5  | WATTS |
| MAXIMUM CATHODE CURRENT                                | 22   | MA.   |

<sup>A</sup> INTERNAL SHIELD (PINS #6 AND #8) CONNECTED DIRECTLY TO GROUND.

## TUNG-SOL

CONTINUED FROM PRECEDING PAGE

## TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

## CONVERTER SERVICE - SEPARATE EXCITATION

THE CHARACTERISTICS SHOWN WITH SEPARATE EXCITATION  
CORRESPOND VERY CLOSELY WITH THOSE OBTAINED IN A  
SELF-EXCITED OSCILLATOR CIRCUIT OPERATING WITH ZERO  
BIAS.

|                                                          |                              |        |        |
|----------------------------------------------------------|------------------------------|--------|--------|
| HEATER VOLTAGE                                           | 12.6                         | 12.6   | VOLTS  |
| HEATER CURRENT                                           | 150                          | 150    | MA.    |
| PLATE VOLTAGE                                            | 100                          | 250    | VOLTS  |
| GRIDS #2 & #4 VOLTAGE                                    | 100                          | 100    | VOLTS  |
| GRID #3 VOLTAGE                                          | -1                           | -1     | VOLTS  |
| GRID #5 AND INTERNAL SHIELD <sup>A</sup>                 | CONNECTED DIRECTLY TO GROUND |        |        |
| GRID #1 RESISTOR                                         | 20 000                       | 20 000 | OHMS   |
| PLATE RESISTANCE (APPROX.)                               | 0.5                          | 1      | MEGOHM |
| CONVERSION TRANSCONDUCTANCE                              | 900                          | 950    | μMHOS  |
| PLATE CURRENT                                            | 3.6                          | 3.8    | MA.    |
| GRIDS #2 & #4 CURRENT                                    | 10.2                         | 10     | MA.    |
| GRID #1 CURRENT                                          | 0.35                         | 0.35   | MA.    |
| TOTAL CATHODE CURRENT                                    | 14.2                         | 14.2   | MA.    |
| CONVERSION TRANSCONDUCTANCE<br>WITH $E_{C3} = -20$ VOLTS | 3.5                          | 3.5    | μMHOS  |

<sup>A</sup> INTERNAL SHIELD (PINS #6 AND #8) CONNECTED DIRECTLY TO GROUND.

## OSCILLATOR TRANSCONDUCTANCE

NOT OSCILLATING

|                                                                        |       |       |
|------------------------------------------------------------------------|-------|-------|
| GRID #3 VOLTAGE                                                        | 0     | VOLTS |
| GRID #1 VOLTAGE                                                        | 0     | VOLTS |
| GRIDS #2 & #4 CONNECTED TO PLATE                                       | 100   | VOLTS |
| PLATE CURRENT                                                          | 32    | MA.   |
| TRANSCONDUCTANCE BETWEEN GRID #1 & GRIDS #2 & #4<br>CONNECTED TO PLATE | 8 000 | μMHOS |
| AMPLIFICATION FACTOR                                                   | 16.5  |       |

SIMILAR TYPE REFERENCE: Except for heater ratings similar to 6SB7Y.

PLATE  
2087  
OCT. 1,  
1948

