The 12AD6 is a miniature heptode primarily intended to perform the combined functions of mixer and oscillator in automobile radio receivers. The tube is specially designed to operate with plate and screen voltages supplied directly from a 12-volt storage battery.

**GENERAL**

**ELECTRICAL**
- Cathode—Coated Unipotential
- Heater Voltage, AC or DC .................. 12.6* Volts
- Heater Current .......................... 0.15 Amperes

Direct Interelectrode Capacitances

<table>
<thead>
<tr>
<th>Capacitance</th>
<th>With Shield</th>
<th>Without Shield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid-Number 3 to All</td>
<td>8.0</td>
<td>8.0 μf</td>
</tr>
<tr>
<td>Plate to All</td>
<td>13</td>
<td>8.0 μf</td>
</tr>
<tr>
<td>Grid-Number 1 to All</td>
<td>5.5</td>
<td>5.5 μf</td>
</tr>
<tr>
<td>Cathode to All Except Grid-Number 1</td>
<td>20</td>
<td>15 μf</td>
</tr>
<tr>
<td>Grid-Number 3 to Plate, maximum</td>
<td>0.25</td>
<td>0.3 μf</td>
</tr>
<tr>
<td>Grid-Number 1 to Grid-Number 3, maximum</td>
<td>0.15</td>
<td>0.15 μf</td>
</tr>
<tr>
<td>Grid-Number 1 to Plate, maximum</td>
<td>0.05</td>
<td>0.1 μf</td>
</tr>
<tr>
<td>Grid-Number 1 to Cathode</td>
<td>3.0</td>
<td>3.0 μf</td>
</tr>
</tbody>
</table>

**MECHANICAL**
- Mounting Position—Any
- Envelope—T-5½, Glass
- Base—E7-1, Miniature Button 7-Pin

**MAXIMUM RATINGS**

**DESIGN-CENTER VALUES**
- Plate Voltage .......................... 30 Volts
- Screen-Supply Voltage .................. 30 Volts
- Screen Voltage ........................ 30 Volts
- Positive DC Grid-Number 3 Voltage  ......... 0 Volts
- Negative DC Grid-Number 3 Voltage ......... 30 Volts
- DC Cathode Current ..................... 20 Milliamperes

Heater-Cathode Voltage
- Heater Positive with Respect to Cathode .......... 30 Volts
- Heater Negative with Respect to Cathode .......... 30 Volts
- Grid-Number 3 Circuit Resistance ................. 10 Megohms

**PHYSICAL DIMENSIONS**
CHARACTERISTICS AND TYPICAL OPERATION

CONVERTER SERVICE
Plate Voltage ................................................................. 12.6 Volts
Screen Voltage .............................................................. 12.6 Volts
Grid-Number 3 Supply Voltage ........................................ 0 Volts
Grid-Number 3 Resistor (Bypassed) .................................... 2.2 Megohms
Grid-Number 3 Voltage, RMS, approximate ....................... 1.6 Volts
Grid-Number 1 Resistor .................................................. 33000 Ohms
Plate Resistance, approximate ..................................... 1.0 Megohms
Conversion Transconductance ..................................... 260 Micromhos
Plate Current .............................................................. 0.45 Milliamperes
Screen Current ............................................................ 1.5 Milliamperes
Grid-Number 1 Current .................................................. 0.050 Milliamperes
Grid-Number 3 Voltage, approximate
  \( G_c = 5 \) Micromhos .................................................. \(-2.2\) Volts
Grid-Number 3 Voltage, approximate
  \( G_c = 20 \) Micromhos ................................................ \(-1.8\) Volts

OSCIllATOR CHARACTERISTICS, NOT OSCILLATING
Plate Voltage ................................................................. 12.6 Volts
Screen, Connected to Plate .......................................... 0 Volts
Grid-Number 3 Voltage .................................................. 0 Volts
Grid-Number 1 Voltage .................................................. 0 Volts
Amplification Factor‡ ..................................................... 9.0
Transconductance‡ ....................................................... 3800 Micromhos
Cathode Current .......................................................... 5.0 Milliamperes
Grid-Number 1 Voltage, approximate
  \( I_b = 10 \) Microamperes .............................................. \(-4\) Volts

* When used in automobile service from a 12-volt source, under no circumstances should the heater voltage be less than 10.0 volts or more than 15.9 volts. These extreme variations in heater voltage may be tolerated for short periods; however, operation at or near these absolute limits in heater voltage necessarily involves sacrifice in performance at low heater voltage and in life expectancy at high heater voltage. Equipment reliability can be significantly increased with improved supply-voltage regulation.

‡ With external shield (RETMA 316) connected to pin 2.

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

- $E_f = \text{RATED VALUE}$
- $E_b = 12.6 \text{ VOLTS}$
- $R_{g3} = 2.2 \text{ WEGOHMS (BYPASED)}$
- $E_{c2+4} = 12.6 \text{ VOLTS}$
- $I_{g1} = 0.05 \text{ MILLIAMPERES}$
- $R_{g1} = 33000 \text{ OHMS}$
- SEPARATE EXCITATION

ELECTRONIC COMPONENTS DIVISION

GENERAL ELECTRIC

Schenectady 5, N.Y.