TWIN TRIODE
MINIATURE TYPE

HIGH-MU TRIODES

FOR
HIGH GAIN AUDIO AMPLIFIER SERVICE
IN MILITARY APPLICATIONS

COATED UNIPOTENTIAL CATHODE
ANY MOUNTING POSITION

GLASS BULB
SMALL BUTTON
9 PIN NOVAL E9-1
OUTLINE DRAWING
JEDEC 6-2

BOTTOM VIEW
BASING DIAGRAM
JEDEC 9A

THE 12AX7WA CONTAINS TWO INDEPENDENT HIGH-MU TRIODES IN THE 9 PIN MINIATURE CONSTRUCTION. IT IS ADAPTABLE TO APPLICATIONS WHERE HIGH VOLTAGE GAIN AND LOW HEATER POWER ARE THE IMPORTANT CONSIDERATION, SUCH AS VOLTAGE AMPLIFIER, PHASE INVERTERS OR MULTIVIBRATORS. THE CENTER TAPPED HEATER CONNECTION PERMITS OPERATION FROM EITHER A 6.3 VOLT OR 12.6 VOLT SUPPLY AND IN 300 MA, OR 150 MA, SERIES HEATER SERVICE.

DIRECT INTERELECTRODE CAPACITANCES

GRID TO PLATE: G TO P
1.7  pf
INPUT
1.8  pf
OUTPUT SECTION 1
0.46  pf
OUTPUT SECTION 2
0.34  pf

HEATER CHARACTERISTICS AND RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

SUPPLY CONNECTED TO PINS
4 AND 5
9 AND 4+5
AVERAGE VALUES - VOLTAGE
12.6
6.3
VOLTS
- CURRENT
150
300
MA.
LIMITS OF APPLIED VOLTAGE
12.6 ± 1.2
6.3 ± 0.6
VOLTS

MAXIMUM RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239
VALUES ARE FOR EACH UNIT

PLATE VOLTAGE
330
VOLTS
PLATE DISSIPATION
1.0
WATT
GRID VOLTAGE
NEGATIVE BIAS VALUE
-50
VOLTS
POSITIVE BIAS VALUE
0
VOLTS
BULB TEMPERATURE
+165°C
CHARACTERISTICS

CLASS A1 AMPLIFIER

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>250 V</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>-2 V</td>
</tr>
<tr>
<td>Plate Current</td>
<td>1.2 mA</td>
</tr>
<tr>
<td>Amplification Factor</td>
<td>100 µ</td>
</tr>
<tr>
<td>Transconductance</td>
<td>1,650 µMhos</td>
</tr>
<tr>
<td>Plate Resistance</td>
<td>62,500 Ω</td>
</tr>
</tbody>
</table>

SPECIAL TESTS AND RATINGS

Heater Cycling Rating
Altitude: 80,000 Feet
Shock: 

RESISTANCE COUPLED AMPLIFIER

<table>
<thead>
<tr>
<th>R&lt;sub&gt;p&lt;/sub&gt; MEG.</th>
<th>R&lt;sub&gt;g&lt;/sub&gt; MEG.</th>
<th>R&lt;sub&gt;gs&lt;/sub&gt; MEG.</th>
<th>E&lt;sub&gt;b&lt;/sub&gt; = 90 Volts</th>
<th>E&lt;sub&gt;b&lt;/sub&gt; = 180 Volts</th>
<th>E&lt;sub&gt;b&lt;/sub&gt; = 300 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.10</td>
<td>0.10</td>
<td>0.1</td>
<td>1700</td>
<td>31</td>
<td>5.0</td>
</tr>
<tr>
<td>0.10</td>
<td>0.10</td>
<td>0.1</td>
<td>2000</td>
<td>38</td>
<td>6.9</td>
</tr>
<tr>
<td>0.24</td>
<td>0.24</td>
<td>0.1</td>
<td>3500</td>
<td>43</td>
<td>6.5</td>
</tr>
<tr>
<td>0.24</td>
<td>0.24</td>
<td>0.1</td>
<td>3900</td>
<td>49</td>
<td>8.6</td>
</tr>
<tr>
<td>0.51</td>
<td>0.51</td>
<td>0.1</td>
<td>7100</td>
<td>50</td>
<td>7.4</td>
</tr>
<tr>
<td>0.51</td>
<td>0.51</td>
<td>0.1</td>
<td>7800</td>
<td>53</td>
<td>9.1</td>
</tr>
<tr>
<td>0.24</td>
<td>0.24</td>
<td>10</td>
<td>0</td>
<td>37</td>
<td>3.9</td>
</tr>
<tr>
<td>0.24</td>
<td>0.24</td>
<td>10</td>
<td>0</td>
<td>44</td>
<td>5.4</td>
</tr>
<tr>
<td>0.51</td>
<td>0.51</td>
<td>10</td>
<td>0</td>
<td>44</td>
<td>5.0</td>
</tr>
<tr>
<td>0.51</td>
<td>0.51</td>
<td>10</td>
<td>0</td>
<td>49</td>
<td>6.4</td>
</tr>
</tbody>
</table>

E<sub>o</sub> is maximum RMS voltage output for five percent total harmonic distortion.
Gain measured at 2.0 Volts RMS output.
For zero-bias data, generator impedance is negligible.
COUPLING CAPACITORS (C) SHOULD BE SELECTED TO GIVE DESIRED FREQUENCY RESPONSE. R_k SHOULD BE ADEQUATELY BY-PASSED.