TETRODE THYRATRON

Tetrode inert gas-filled thyatron with negative control characteristic. Primarily designed for use in relay or grid-controlled rectifier circuits.

This data sheet should be read in conjunction with "DEFINITIONS AND OPERATIONAL RECOMMENDATIONS—THYRATRONS", preceding this section of the Handbook.

LIMITING VALUES (absolute ratings, not design centre)

It is important that these limits are never exceeded and such variations as mains fluctuations, component tolerances and switching surges must be taken into consideration in arriving at actual valve operating conditions.

Max. peak anode voltage
  Inverse 1.3 kV
  Forward 650 V

Max. cathode current
  Peak 500 mA
  Average (Max. averaging time 30 secs.) 100 mA
  Surge (Fault protection max. duration 0.1 secs.) 10 A

Max. negative control-grid voltage
  Before conduction 100 V
  During conduction 10 V

Max. average positive control-grid current for anode voltage more positive than -10 V (averaging time 1 cycle) 10 mA

Max. peak positive control-grid current during the time that the anode voltage is more positive than -10 V 50 mA

*Max. peak positive control-grid current during the time that the anode voltage is more negative than -10 V 30 μA

Max. control-grid resistor
  *(Recommended min. control-grid resistor 0.1 MΩ)

Max. negative shield-grid voltage
  Before conduction 100 V
  During conduction 10 V

Max. average positive shield-grid current for anode voltage more positive than -10 V (averaging time 1 cycle) 10 mA

**Max. shield-grid resistor 1.0 MΩ

Max. peak heater-cathode voltage
  Heater positive 25 V
  Heater negative 100 V

Heater voltage limits 5.7 to 6.9 V

Min. valve heating time 10 s

Max. operating frequency 500 c/s

Ambient temperature limits -75 to +90 °C

*It is not desirable that the control-grid should be positive when the anode is more negative than -10 V, but where this condition is unavoidable the control-grid resistor may need to be greater than the recommended minimum value.

**Where circuit conditions permit, the shield-grid should be connected directly to the cathode.
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CHARACTERISTICS

Electrical

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater voltage</td>
<td>6.3 V</td>
</tr>
<tr>
<td>Heater current at 6.3 V</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>0.60 A</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.66 A</td>
</tr>
<tr>
<td>Anode to control-grid capacitance</td>
<td>0.03 (\mu)F</td>
</tr>
<tr>
<td>Control-grid to cathode and shield-grid capacitance</td>
<td>2.5 (\mu)F</td>
</tr>
<tr>
<td>Deionisation time (approx.)</td>
<td></td>
</tr>
<tr>
<td>(V_{k1} = -100) V, (I_a = 100) mA</td>
<td>35 (\mu)s</td>
</tr>
<tr>
<td>(V_{k1} = -10) V, (I_a = 100) mA</td>
<td>75 (\mu)s</td>
</tr>
<tr>
<td>Ionisation time (approx.)</td>
<td></td>
</tr>
<tr>
<td>8 V</td>
<td>0.5 (\mu)s</td>
</tr>
<tr>
<td>Anode voltage drop</td>
<td>8 V</td>
</tr>
<tr>
<td>Critical grid current at (V_a = 460) V r.m.s.</td>
<td>0.5 (\mu)A</td>
</tr>
</tbody>
</table>

Mechanical

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of cooling</td>
<td>Convection</td>
</tr>
<tr>
<td>Mounting position</td>
<td>Any</td>
</tr>
<tr>
<td>Max. net weight</td>
<td>{ 0.5 oz., 14 g }</td>
</tr>
</tbody>
</table>
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Operating range of critical grid voltage

Range for $R_{gi} = 10M\Omega$

Range for $R_{gi} = 0.1M\Omega$
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CONTROL-GRID CURRENT PLOTTED AGAINST CONTROL-GRID VOLTAGE BEFORE CONDUCTION
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CONTROL-GRID CURRENT PLOTTED AGAINST CONTROL-GRID VOLTAGE DURING CONDUCTION