AMPEREX TUBE TYPE 8270

same as ZT 1000

TENTATIVE DATA

The Ampex 8270 is a grid controlled mercury vapor half wave rectifier. It has a maximum PIV of 21 kv at an average anode current of 2.5 amps. At a PIV below 15 kv the anode current may rise to 3 amps. Six of these tubes in a three phase full wave circuit provide 12 kv at 9 amps.

MECHANICAL

Mounting Position
Base

vertical, base down
Super Jumbo, 4 pins, with bayonet

Accessories

Socket
Anode Connector
Anode Cap (Supplied with the Tube)

S-31747
S-31748
S-31749

Dimensions

See outline drawing

Weight
Net Weight
Shipping Weight

1 lb. 1 oz.
5 lbs. 1 oz.

ELECTRICAL

Filament Heating
Filament Voltage
Filament Current
Filament Warm-Up Time, Minimum

Oxide-Coated
Direct
5 volts
13.0 amps
90 sec

Capacitances

Anode to Grid
Grid to Cathode

4 pf
13 pf

Typical Characteristics

Ionization Time
Deionization Time
Tube Voltage Drop (I_b = 3 amps)

10 \mu sek max
500 \mu sek max
12 volts

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1 This cap must always be mounted on the tube, also during preheating.
2 A phase shift of 90° ± 30° between E_b and E_f and/or use of a center-tapped filament transformer is recommended.
3 For average conditions, i.e.; temperature within limits and proper distribution of mercury, See Table I.

After transport, a storage period, and also after a long interruption of operation a longer warm-up time is required before anode voltage may be applied. In general a time of 60 minutes will be sufficient to ensure proper distribution of the mercury.
MAXIMUM RATINGS, ABSOLUTE VALUES

<table>
<thead>
<tr>
<th>Frequency</th>
<th>150</th>
<th>150</th>
<th>150 cps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Anode Voltage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inverse</td>
<td>21</td>
<td>15</td>
<td>2.5 kv</td>
</tr>
<tr>
<td>Forward</td>
<td>21</td>
<td>15</td>
<td>2.5 kv</td>
</tr>
<tr>
<td>Anode Current</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>2.5</td>
<td>3</td>
<td>5 amps</td>
</tr>
<tr>
<td>Peak</td>
<td>10</td>
<td>12</td>
<td>20 amps</td>
</tr>
<tr>
<td>Surge</td>
<td>100</td>
<td>120</td>
<td>200 amps</td>
</tr>
<tr>
<td>Grid Bias</td>
<td>300</td>
<td>300</td>
<td>300 volts</td>
</tr>
<tr>
<td>Grid Resistance</td>
<td>100</td>
<td>100</td>
<td>100 k ohms max</td>
</tr>
<tr>
<td>Grid Resistance</td>
<td>10</td>
<td>10</td>
<td>10 k ohms min</td>
</tr>
</tbody>
</table>

TABLE 1

<table>
<thead>
<tr>
<th>Peak Inverse Voltage</th>
<th>21</th>
<th>15</th>
<th>10</th>
<th>2.5</th>
<th>kv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature of Condensed Mercury</td>
<td>25-45</td>
<td>25-55</td>
<td>25-60</td>
<td>27-75</td>
<td>°C</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>15-30</td>
<td>15-35</td>
<td>15-40</td>
<td>15-55</td>
<td>°C</td>
</tr>
</tbody>
</table>

TYPICAL OPERATION

Grid Voltage ($E_b$ peak inverse 21 kv) $E_{c1} = -100$ volts
($E_b$ peak inverse 10 kv) $E_{c1} = -50$ volts
Grid Current $I_{c1} = 2$ ma

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4 Averaging time $T_{ev} = $ max. 30 sec.
5 Max duration 0.1 sec.
6 Direct voltage, before conduction.
7 Recommended value: 33 k ohms
8 If the equipment is started not more than twice daily, it is permissible to apply high voltage at a condensed-mercury temperature which is 5°C lower than the values mentioned in the table.
9 With natural cooling, approximate values.
10 The ambient temperature is defined as the temperature of the surrounding air and should be measured under the following conditions:
   a. Normal atmospheric pressure
   b. The tube should be adjusted to the worst possible operating conditions.
   c. The temperature should be measured when thermal equilibrium is reached.
   d. The distance from the thermometer to the outside of the envelope should be 3 inches (measured in a plane perpendicular to the main axis of the tube at the height of the condensed-mercury boundary).
   e. The thermometer should be shielded against direct heat radiation.
11 Transformer losses and voltage drops in tubes are neglected.
<table>
<thead>
<tr>
<th>Transformer secondary Voltage (kv r.m.s.)</th>
<th>FIG. 1</th>
<th>FIG. 2</th>
<th>FIG. 3</th>
<th>FIG. 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Voltage (kv)</td>
<td>6.7</td>
<td>13.4</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Output Current (Amps)</td>
<td>5</td>
<td>5</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Output Power (kw)</td>
<td>33.5</td>
<td>67</td>
<td>75</td>
<td>150</td>
</tr>
</tbody>
</table>

Peak Inverse Voltage = 21 KV

<table>
<thead>
<tr>
<th>Transformer Secondary Voltage (kv r.m.s.)</th>
<th>FIG. 1</th>
<th>FIG. 2</th>
<th>FIG. 3</th>
<th>FIG. 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Voltage (kv)</td>
<td>4.8</td>
<td>9.6</td>
<td>7.2</td>
<td>14.4</td>
</tr>
<tr>
<td>Output Current (Amps)</td>
<td>6</td>
<td>6</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Output Power (kw)</td>
<td>28.8</td>
<td>57.6</td>
<td>64.8</td>
<td>130</td>
</tr>
</tbody>
</table>

Peak Inverse Voltage = 15 KV
PIN CONNECTIONS
1. GRID
2. FILAMENT
3. FILAMENT
4. NO CONNECTION
CAP - ANODE
Rate of rise of condensed-mercury temperature

Control characteristics