The 5869 is a three-electrode mercury-vapor rectifying tube with negative control characteristics. This tube is designed for grid-control rectifier applications of relatively high voltage and current. The cathode is directly heated, oxide-coated.

Maximum Ratings, Absolute Values:

Maximum Peak Anode Voltage
- Inverse: 13,000 volts
- Forward: 13,000 volts

Condensed Mercury
- Temperature Limits: +25 to +55 °C, +25 to +60 °C

Maximum Plate Current
- Peak: 4.0 amperes
- Average: 1.0 amperes
- Surge, for design only
  (Maximum duration 0.1 seconds): 40 amperes
- Maximum Averaging time: 5 seconds

Maximum Negative Control-Grid Voltage
- Before Conduction: 300 volts

Maximum Positive Control-Grid Current
- Average (Averaging time, one cycle): 10 ma
- Peak: 50 ma

Maximum Grid Resistance
- 0.1 megohms

Frequency Range
- 25 to 150 cps

GENERAL

Electrical Data

<table>
<thead>
<tr>
<th></th>
<th>Min.</th>
<th>Bogey</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament Voltage</td>
<td>4.75</td>
<td>5.0</td>
<td>5.25</td>
</tr>
<tr>
<td>Filament Current at 5.0 volts</td>
<td>---</td>
<td>6.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Filament Heating Time* (before applying Plate Voltage)</td>
<td>120</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Anode-to-control-grid Capacitance</td>
<td>---</td>
<td>3</td>
<td>---</td>
</tr>
<tr>
<td>Control-grid-to-cathode Capacitance</td>
<td>---</td>
<td>8</td>
<td>---</td>
</tr>
<tr>
<td>Deionization Time, approximate</td>
<td>---</td>
<td>250</td>
<td>---</td>
</tr>
<tr>
<td>Ionization Time, approximate</td>
<td>---</td>
<td>10</td>
<td>---</td>
</tr>
<tr>
<td>Typical Bias at 13,000 volts</td>
<td></td>
<td>-100</td>
<td>volts</td>
</tr>
<tr>
<td>Typical Bias at 10,000 volts</td>
<td></td>
<td>-50</td>
<td>volts</td>
</tr>
<tr>
<td>Typical Grid Current (Average)</td>
<td></td>
<td>1</td>
<td>ma</td>
</tr>
<tr>
<td>Typical Grid Resistance</td>
<td>20,000</td>
<td></td>
<td>ohms</td>
</tr>
<tr>
<td>Tube Voltage Drop (Ib = 4 amperes)</td>
<td></td>
<td>15</td>
<td>volts</td>
</tr>
</tbody>
</table>

* The minimum heating time refers only to the filament. Sufficient additional time must be allowed to permit the condensed mercury temperature to rise to the minimum condensed mercury temperature limit and to permit all the mercury to condense in the lower part of the tube.

from RTMA release #1128, Jan 30, 1953
AMPEREX 5869

Mechanical Data

Type of cooling - Convection

Equilibrium Condensed-Mercury Temperature Rise
  At Full Load, approximate  25 °C
  At No Load, approximate  22 °C

Mounting position - Vertical with base down

Net Weight, approximate  8.5 ounces
Shipping Weight, approximate  22 ounces

OPERATIONAL NOTES

Note 1: In order to obtain maximum life period of the tube it is recommended to apply a filament voltage phase shift of 90° with respect to plate voltage.

Note 2: Characteristic Curves
The circuit returns are connected to the center tap of the filament transformer.

Note 3: General Control Characteristic Curve
The band width illustrated in this curve includes the unavoidable variations in the characteristics of a mercury thyratron. These include:

1. Shift due to condensed mercury temperature variation within the rated range.
2. Shift caused by filament voltage variation.
3. Differences from tube to tube due to manufacturing variances.
4. Shift due to aging effects within the guaranteed life period.