TECHNICAL DATA

Refer to type 6LJ8.

Refer to type 6MB8.

For replacement use type 5J6.

Refer to type 6MQ8.

FULL-WAVE VACUUM RECTIFIER

Glass octal type for industrial and military applications. Outlines section, 19D; requires octal socket.

5R4GB
INDUSTRIAL TYPE

Full-Wave Rectifier

MAXIMUM RATINGS (Absolute-Maximum Values)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>40000</th>
<th>20000</th>
<th>2000</th>
<th>feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Inverse Plate Voltage</td>
<td>2650</td>
<td>3100</td>
<td></td>
<td>volts</td>
</tr>
<tr>
<td>AC Plate Supply Voltage Per Plate (RMS, without load)</td>
<td>See Rating Chart</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak Plate Current Per Plate</td>
<td>715</td>
<td>715</td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>DC Output Current Per Plate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hot-Switching Transient Plate Current Per Plate</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulb Temperature (At hottest point on bulb surface)</td>
<td>230</td>
<td>230</td>
<td></td>
<td>°C</td>
</tr>
</tbody>
</table>

TYPICAL OPERATION (With Capacitor-Input Filter)

For altitudes up to

<table>
<thead>
<tr>
<th>Parameter</th>
<th>40000</th>
<th>20000</th>
<th>2000</th>
<th>feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC-Plate-to-Plate Supply Voltage (RMS, without load)</td>
<td>1400</td>
<td>1500</td>
<td>2000</td>
<td>volts</td>
</tr>
<tr>
<td>Filter-Input Capacitor</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>µF</td>
</tr>
<tr>
<td>Total Effective Plate Supply Impedance Per Plate**</td>
<td>225</td>
<td>250</td>
<td>375</td>
<td>ohms</td>
</tr>
<tr>
<td>DC Output Voltage at Input to Filter (approx.):</td>
<td>910</td>
<td>1210</td>
<td></td>
<td>volts</td>
</tr>
<tr>
<td>At half-load current of 75 mA</td>
<td>750</td>
<td>800</td>
<td>1040</td>
<td>volts</td>
</tr>
<tr>
<td>At full-load current of 125 mA</td>
<td>605</td>
<td></td>
<td></td>
<td>volts</td>
</tr>
<tr>
<td>Voltage Regulation (approx.):</td>
<td>145</td>
<td>110</td>
<td>170</td>
<td>volts</td>
</tr>
<tr>
<td>DC Output Current</td>
<td>250</td>
<td>150</td>
<td>150</td>
<td>mA</td>
</tr>
</tbody>
</table>

TYPICAL OPERATION (With Choke-Input Filter)

For altitudes up to

<table>
<thead>
<tr>
<th>Parameter</th>
<th>40000</th>
<th>20000</th>
<th>2000</th>
<th>feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Output Voltage at Input to Filter for dc output (approx.):</td>
<td>1500</td>
<td>1900</td>
<td></td>
<td>volts</td>
</tr>
<tr>
<td>Filter-Input Choke</td>
<td>5</td>
<td>10</td>
<td></td>
<td>henries</td>
</tr>
<tr>
<td>Voltage Regulation (Approx.):</td>
<td>87.5 mA</td>
<td>125 mA</td>
<td>175 mA</td>
<td>250 mA</td>
</tr>
<tr>
<td>Half-load to full-load current</td>
<td>40</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC Output Current</td>
<td>250</td>
<td>175</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* If hot-switching is required in operation, choke-input circuits are recommended. Such circuits limit the hot-switching current to a value no higher than that of the peak plate current. When capacitor-input circuits are used, a maximum value of 3 amperes should not be exceeded.

** Indicated values for conditions shown will limit peak plate current to the maximum-rated value. When a filter-input capacitor larger than 20 µF is used, it may be necessary to increase plate-supply impedance to a higher value than that shown in the data to limit the peak plate current to the maximum-rated value.
5R4GY
5R4GYB

For replacement use type 5R4GB.

Refer to chart at end of section.

5T4
5T8
5U4G

Refer to type 6T8A.

Refer to chart at end of section.

5U4GB

**FULL-WAVE VACUUM RECTIFIER**

Glass octal type used in power supplies of radio and color and black-and-white television receivers having high dc requirements. Outlines section, 19E; requires octal socket. This type may be supplied with pins 3, 5, and 7 omitted. Vertical mounting is preferred, but horizontal mounting is permissible if pins 2 and 4 are in vertical plane. The coated filament is designed to operate from the ac line through a step-down transformer. The voltage at the filament terminals should be 5 volts at an average line voltage of 117 volts. It is especially important that this tube, like other power-handling tubes, be adequately ventilated. For discussion of Rating Chart and Operation Characteristics, refer to Interpretation of Tube Data. Filament: volts (ac), 5; amperes, 3.

**Full-Wave Rectifier**

**MAXIMUM RATINGS** (Design-Maximum Values)

- Peak Inverse Plate Voltage .................................................. 1550 volts
- Peak Plate Current (Per Plate) .............................................. 1 ampere
- Hot-Switching Transient Plate Current (Per Plate) ..................... #
- AC Plate Supply Voltage (Per Plate, rms) .................................. See Rating Chart
- Average Output Current (Per Plate) ........................................ See Rating Chart

**TYPICAL OPERATION WITH CAPACITOR INPUT TO FILTER**

- AC Plate-to-Plate Supply Voltage (rms) .................................... 600 volts
- Filter-Input Capacitor* ...................................................... 40 μF
- Total Effective Plate-Supply Impedance per Plate ....................... 40 ohms
- DC Output Voltage at Input to Filter (Approx.)
  - At full-load current of
    - 150 mA .......................................................... 335 volts
    - 137.5 mA .................................................... 520 volts
    - 81 mA ......................................................... 680 volts
    - 300 mA ........................................................ 680 volts
    - 275 mA ......................................................... 680 volts
    - 162 mA ......................................................... 680 volts
  - At half-load current of
    - 150 mA ........................................................ 45 volts
    - 137.5 mA .................................................... 60 volts
    - 81 mA ......................................................... 60 volts
    - 300 mA ........................................................ 60 volts
    - 275 mA ......................................................... 60 volts
    - 162 mA ......................................................... 60 volts
- Voltage Regulation (Approx.)
  - Half-load to full-load current ............................................ 45 volts
TYPICAL OPERATION WITH CHOKE INPUT TO FILTER

AC Plate-to-Plate Supply Voltage (rms) .................. 900 1100 volts
Filter-Input Choke ........................................ 10 10 henries
DC Output Voltage at Input to Filter (Approx.):
At half-load current of 137.5 mA ............... 355 volts 465 volts
At full-load current of 348 mA ............... 340 volts
275 mA ............... 440 volts
Voltage Regulator (Approx.):
Half-load to full-load current ...................... 15 15 volts

# If hot switching is regularly required in operation, the use of choke-input circuits is recommended. Such circuits limit the hot-switching current to a value no higher than that of the peak plate current. When capacitor-input circuits are used, a maximum peak current value per plate of 4.5 amperes during the initial cycles of the hot-switching transient should not be exceeded.

* Higher values of capacitance than indicated may be used, but the effective plate-supply impedance may have to be increased to prevent exceeding the maximum rating for peak plate current.

OPERATION CHARACTERISTICS
FULL-WAVE CIRCUIT, CHOKE INPUT TO FILTER

TYPE 5U4GB
E = 5.0 VOLTS AC  SUPPLY FREQUENCY = 60 CPS
SOLID LINE CURVES = CHOKE OF INFINITE INDUCCANCE
LONG-DASH LINES = BOUNDARY LINES FOR CHOKE SIZES AS ShOWN
SHORT-DASH CURVES = REGULATION CURVES FOR REPRESENTATIVE CHOKE SIZES
CURRENT-AND-VOLTAGE BOUNDARY LINE 'CBA' IS THE SAME AS SHOWN ON RATING CHART

OPERATION CHARACTERISTICS
FULL-WAVE CIRCUIT, CAPACITOR INPUT TO FILTER

TYPE 5U4GB
E = 5.0 VOLTS AC  SUPPLY FREQUENCY = 60 CPS
CAPACITOR (C) INPUT TO FILTER 40 μF
TOTAL EFFECTIVE PLATE-SUPPLY IMPEDANCE
PER PLATE:
CURVE 1 2 3 4 5 6 7 8
OHMS 11 11 20 36 52 67 82 97
CURRENT-AND-VOLTAGE BOUNDARY LINE 'DEA' SEE RATING CHART