DESCRIPTION AND RATING

TWIN DIODE GL-6203
FIVE-STAR TUBE ★ ★ ★ ★ ★

The GL-6203 is a miniature full-wave high-vacuum rectifier intended for use in power supplies of a-c and storage-battery-operated equipment. The tube is specially designed to assure dependable life and reliable service under the exacting conditions encountered in mobile and aircraft applications. Features include a high degree of mechanical strength and a heater-cathode construction designed to withstand many-thousand cycles of intermittent operation. This tube may be used in applications which are subjected to altitudes as high as 60,000 feet.

TECHNICAL INFORMATION

GENERAL

Electrical

Cathode - Coated Unipotential

Heater Voltage (A-c or D-c) 6.3 Volts
Heater Current 0.9 Ampere

Mechanical

Mounting Position - Any
Envelope - T-6 1/2, Glass
Base - Small Button 9-pin, E9-1

MAXIMUM RATINGS

Electrical*, Design-center Values

Rectifier Service - Sinusoidal Supply Voltages, Frequency Range 25 to 1000 Cycles per Second

Peak Inverse Plate Voltage
Altitudes up to 60,000 Feet† 1250 Volts

A-c Plate-supply Voltage per Plate, RMS - See Rating Chart I‡ 270 Milliamperes
Steady-state Peak Plate Current per Plate
Transient Peak Plate Current per Plate, Maximum Duration 0.2 Second 1.8 Amperes

D-c Output Current - See Rating Chart I‡
Heater-cathode Voltage
Heater Positive with Respect to Cathode 100 Volts
Heater Negative with Respect to Cathode 450 Volts

Mechanical

Peak Impact Acceleration§ 700 G
Bulb Temperature at Hottest Point (Absolute Maximum) +200 °C

CHARACTERISTICS AND TYPICAL OPERATION

Full-wave Rectifier

<table>
<thead>
<tr>
<th>Capacitor</th>
<th>Choke</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Filter</td>
<td>Input Filter</td>
</tr>
<tr>
<td>A-c Plate-supply Voltage per Plate, RMS</td>
<td>325</td>
</tr>
<tr>
<td>Filter Input Capacitor</td>
<td>4</td>
</tr>
<tr>
<td>Filter Input Choke</td>
<td>---</td>
</tr>
<tr>
<td>Total Plate-supply Resistance per Plate</td>
<td>150</td>
</tr>
<tr>
<td>D-c Output Current</td>
<td>70</td>
</tr>
<tr>
<td>D-c Output Voltage at Filter Input</td>
<td>355</td>
</tr>
</tbody>
</table>

Tube Voltage Drop
Measured with Applied D-c at 70 Milliamperes per Plate 22 Volts
* To simplify the application of the maximum ratings to circuit design, the electrical design-center maximum ratings are also presented in chart form as Rating Charts I, II, and III. Rating Chart I presents the maximum ratings for a-c plate-supply voltage and d-c output current. Rating Chart II provides a convenient method for checking conformance with the maximum steady-state peak plate current rating. Rating Chart III offers a convenient method for checking conformance with the maximum transient peak plate current rating.

With a capacitor-input filter, the conditions of each of Rating Charts I, II, and III must be satisfied in order to obtain performance within all of the appropriate electrical maximum ratings. With a choke-input filter, operation within the indicated boundary of Rating Chart I will assure performance within all of the appropriate electrical maximum ratings.

† The altitude ratings as presented refer to the limitations of the tube itself. Because the socket employed can become the limiting factor in high-altitude operation, consideration must be given to the voltage-breakdown capabilities of the tube and socket combination employed.

‡ The maximum ratings for a-c plate supply voltage and d-c output current are inter-related and are also dependent on whether a choke or capacitor-input filter is employed. This relationship is shown in Rating Chart I. With a capacitor-input filter, the operating point of d-c output current and a-c supply voltage must fall within the curve FADBEG. With a choke-input filter, the operating point must fall within the curve FADCDG.

§ Forces in any direction as applied by the Navy-type, High Impact (flyweight) Shock Machine for Electronic Devices or its equivalent.
RATING CHART III

For capacitor input filter

(Rated on maximum transient peak plate current
of 1.8 amperes per plate)

\[ R_a = R_{ac} + N^2 R_{prim} + R_A \]

WHERE:
- \( R_{ac} \) = Plate supply resistance per plate
- \( R_{prim} \) = D-c resistance of transformer secondary per section
- \( R_A \) = D-c resistance of added series resistance per plate
- \( N = \) Transformer voltage step-up ratio per section.

If series inductance is present in the plate supply, it is permissible to use a smaller-than-indicated value of plate supply resistance providing the rated maximum value of transient peak plate current is never exceeded.

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AVERAGE PLATE CHARACTERISTICS

Each section

\( F_p = 6.3 \) Volts

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