Silicon Rectifier Diodes

Use Advantages

Used as a general purpose rectifier in power supplies, or for clipping and steering applications.
High performance alternative to small signal diodes where space does not permit use of power rectifiers.
May be used in hostile environments where hermeticity and reliability are important i.e. (Military and Aero/Space). MIL-S- 19500/ 240 approvals.
Available up to JANTXV-1 level.
"S" level screening capability to Source Control Drawings.

Features

- Six Sigma quality
- Humidity proof glass
- Metallurgically bonded
- Thermally matched system
- No thermal fatigue
- High surge capability
- Sigma Bond™ plated contacts
- 100% guaranteed solderability
- (DO-213AA) SMD MELF commercial (LL) and MIL (UR-1) types available

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>( P_{tot} )</td>
<td>600 mWatts</td>
<td></td>
</tr>
<tr>
<td>( I_{AV} )</td>
<td>400 mAmps</td>
<td></td>
</tr>
<tr>
<td>( T_{O&amp;S} )</td>
<td>-65 to 175 °C</td>
<td></td>
</tr>
<tr>
<td>( Z_{jX} )</td>
<td>35 °C/W</td>
<td></td>
</tr>
</tbody>
</table>

Use Advantages

- High performance alternative to small signal diodes where space does not permit use of power rectifiers.
- May be used in hostile environments where hermeticity and reliability are important i.e. (Military and Aero/Space). MIL-S- 19500/ 240 approvals.
- Available up to JANTXV-1 level.
- "S" level screening capability to Source Control Drawings.

Features

- Six Sigma quality
- Humidity proof glass
- Metallurgically bonded
- Thermally matched system
- No thermal fatigue
- High surge capability
- Sigma Bond™ plated contacts
- 100% guaranteed solderability
- (DO-213AA) SMD MELF commercial (LL) and MIL (UR-1) types available

Detail Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Reverse Voltage (( V_R ))</th>
<th>Breakdown Voltage (MIN.)</th>
<th>Average Reverse Voltage Drop</th>
<th>Maximum Rectified Current (( I_{O} )) at ( V_R ) 25°C</th>
<th>Reverse Voltage Drop (( V_{P} )) @ ( I = 400 ) mA (MAX.)</th>
<th>Maximum Reverse Voltage Drop (( I_{FSM} )) at ( V_R ) 25°C</th>
<th>Maximum Reverse Voltage Drop (( I_{FSM} )) at ( V_R ) 100°C</th>
<th>Junction Capacitance (( C_{J} ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1N645,-1</td>
<td>225</td>
<td>275</td>
<td>0.4</td>
<td>0.15</td>
<td>1.0</td>
<td>0.2</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>1N646,-1</td>
<td>300</td>
<td>360</td>
<td>0.4</td>
<td>0.15</td>
<td>1.0</td>
<td>0.2</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>1N647,-1</td>
<td>400</td>
<td>480</td>
<td>0.4</td>
<td>0.15</td>
<td>1.0</td>
<td>0.2</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>1N648,-1</td>
<td>500</td>
<td>600</td>
<td>0.4</td>
<td>0.15</td>
<td>1.0</td>
<td>0.2</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>1N649,-1</td>
<td>600</td>
<td>720</td>
<td>0.4</td>
<td>0.15</td>
<td>1.0</td>
<td>0.2</td>
<td>25</td>
<td>3</td>
</tr>
</tbody>
</table>

Note 1: Surge Current @\( T_A \) = +25°C to +150°C, for 1 Second

For MELF DO-213AA surface mount package, replace "1N" prefix with "LL" for commercial.
DO-35 DERATING (175 C Tj)

DO-35 POWER DERATING CURVE

Temperature (3/8" from body) C

Power Dissipated (MILLI Watts)

500
400
300
200
100
0

0 20 40 60 80 100 120 140 160 180
Silicon Rectifier Diodes

1N645-1 thru 1N649-1

Diagram showing the relationship between voltage (Vr) and current (I) for different types of diodes, with typical values indicated.