Description

The SJPD-L5 is a fast recovery diode of 500 V / 3.0 A. The maximum $t_{tr}$ of 50 ns is realized by optimizing a life-time control.

Features

- $V_{RM} =$ 500 V
- $I_{F(AV)} =$ 3.0 A
- $V_F =$ 1.4 V
- $t_{tr} =$ 50 ns
- Bare Lead Frame: Pb-free (RoHS Compliant)
- Suitable for High Reliability and Automotive Requirement.

Applications

- White Goods
- Audiovisual Equipment
- Lighting Equipment
- Industrial Electronic Equipment (Communication Equipment and Factory Automation)
- Secondary Side Rectifier Diode (Flyback Converter, LLC Converter, etc.)
- Freewheel Diode (Offline Buck and Buck-boost Converter)

Package

SJP

Not to scale
Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Unit</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Repetitive Reverse Voltage</td>
<td>$V_{RSM}$</td>
<td>500</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Repetitive Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>500</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Average Forward Current</td>
<td>$I_{F(AV)}$</td>
<td>3.0</td>
<td>A</td>
<td>See Figure 1 and Figure 2</td>
</tr>
<tr>
<td>Surge Forward Current</td>
<td>$I_{FSM}$</td>
<td>50</td>
<td>A</td>
<td>Half cycle sine wave, positive side, 10 ms, 1 shot</td>
</tr>
<tr>
<td>$t^2$ Limiting Value</td>
<td>$t^2$</td>
<td>12.5</td>
<td>A^2</td>
<td>1 ms ≤ t ≤ 10 ms</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>$T_J$</td>
<td>-40 to 150</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>$T_{STG}$</td>
<td>-40 to 150</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

Electrical Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward Voltage Drop</td>
<td>$V_F$</td>
<td>$T_J = 25$ °C, $I_F = 3.0$ A</td>
<td>—</td>
<td>—</td>
<td>1.4</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$T_J = 100$ °C, $I_F = 3.0$ A</td>
<td>—</td>
<td>1.0</td>
<td>—</td>
<td>V</td>
</tr>
<tr>
<td>Reverse Leakage Current</td>
<td>$I_R$</td>
<td>$V_R = V_{RM}$</td>
<td>—</td>
<td>—</td>
<td>15</td>
<td>μA</td>
</tr>
<tr>
<td>Reverse Leakage Current Under High Temperature</td>
<td>$H_I_R$</td>
<td>$V_R = V_{RM}, T_J = 150$ °C</td>
<td>—</td>
<td>—</td>
<td>150</td>
<td>μA</td>
</tr>
<tr>
<td>Reverse Recovery Time</td>
<td>$t_{r1}$</td>
<td>$I_F = I_{RP} = 100$ mA, 90% recovery point, $T_J = 25$ °C</td>
<td>—</td>
<td>—</td>
<td>50</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>$t_{r2}$</td>
<td>$I_F = 100$ mA, $I_{RP} = 200$ mA, 75% recovery point, $T_J = 25$ °C</td>
<td>—</td>
<td>—</td>
<td>35</td>
<td>ns</td>
</tr>
<tr>
<td>Thermal Resistance (1)</td>
<td>$R_{th(J-L)}$</td>
<td></td>
<td></td>
<td>—</td>
<td>20</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

(1)$R_{th(J-L)}$ is thermal resistance between junction and lead.
Rating and Characteristic Curves

Figure 1. $T_c$ vs. $I_{FAV}$ Typical Characteristics ($V_R = 0$ V)

Figure 2. $T_c$ vs. $I_{FAV}$ Typical Characteristics ($V_R = 500$ V)

Figure 3. $V_F$ vs. $I_F$ Typical Characteristics

Figure 4. $V_R$ vs. $I_R$ Typical Characteristics
SJPD-L5

Physical Dimensions

- **SJP Package**

![Diagram of SJP Package]

**NOTES:**
- Dimensions in millimeters
- Bare lead frame: Pb-free (RoHS compliant)
- When soldering the products, be sure to minimize the working time, within the following limits:
  - Flow: 260 ± 5 °C / 10 ± 1 s, 2 times
  - Soldering Iron: 380 ± 10 °C / 3.5 ± 0.5 s, 1 time
- MSL: JEDEC LEVEL1

- **SJP Land Pattern Example**

![Diagram of SJP Land Pattern Example]

**NOTE:**
- Dimensions in millimeters
Marking Diagram

Lot Number:
- Y is the last digit of the year of manufacture (0 to 9)
- M is the month of the year (1 to 9, O, N, or D)
- DD is the day of the month (01 to 31)

Specific Device Code (See Table 1)

Table 1. Specific Device Code

<table>
<thead>
<tr>
<th>Specific Device Code</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL5</td>
<td>SJPD-L5</td>
</tr>
</tbody>
</table>
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