**Description**

The SJPD-D5 is a fast recovery diode of 500 V / 1.0 A. The maximum $t_r$ of 40 ns is realized by optimizing a life-time control.

**Features**

- $V_{RM} = 500\,\text{V}$
- $I_{F(AV)} = 1.0\,\text{A}$
- $V_F = 1.4\,\text{V}$
- $t_{rr} = 40\,\text{ns}$
- 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

Unless otherwise specified, $T_A = 25 \, ^\circ C$

<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>1.0</td>
<td>A</td>
<td>See Figure 1 and Figure 2</td>
</tr>
<tr>
<td>Surge Forward Current</td>
<td>$I_{FSM}$</td>
<td>20</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>$I^t$ Limiting Value</td>
<td>$I^t$</td>
<td>2.0</td>
<td>A$^2$s</td>
<td>1 ms $\leq t \leq 10$ 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

Unless otherwise specified, $T_A = 25 \, ^\circ C$

<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>$T_J = 25 , ^\circ C, , I_F = 1.0 , A$</td>
<td>—</td>
<td>—</td>
<td>1.4</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>$T_J = 100 , ^\circ C, , I_F = 1.0 , A$</td>
<td>—</td>
<td>1.0</td>
<td>—</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Reverse Leakage Current</td>
<td>$I_R$</td>
<td>$V_R = V_{RM}$</td>
<td>—</td>
<td>—</td>
<td>10</td>
<td>μA</td>
</tr>
<tr>
<td>Reverse Leakage Current Under High Temperature</td>
<td>$I_{RHR}$</td>
<td>$V_R = V_{RM}, , T_J = 150 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>100</td>
<td>μA</td>
</tr>
<tr>
<td>Reverse Recovery Time</td>
<td>$t_{rr1}$</td>
<td>$I_F = I_{RP} = 100 , mA$, 90% recovery point, $T_J = 25 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>40</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>$t_{rr2}$</td>
<td>$I_F = 100 , mA$, $I_{RP} = 200 , mA$, 75% recovery point, $T_J = 25 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>30</td>
<td>ns</td>
</tr>
<tr>
<td>Thermal Resistance$^{(1)}$</td>
<td>$R_{th(J-L)}$</td>
<td>—</td>
<td>—</td>
<td>20</td>
<td>°C/W</td>
<td></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. $I_{F(AV)}$ Typical Characteristics ($V_R = 0$ V)

Figure 2. $T_C$ vs. $I_{F(AV)}$ Typical Characteristics ($V_R = 500$ V)

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

Figure 4. $V_R$ vs. $I_R$ Typical Characteristics
**Physical Dimensions**

- **SJP Package**

![Diagram of SJP Package](image)

**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](image)

**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)

YMDD

Cathode Mark

Specific Device Code (See Table 1)

<table>
<thead>
<tr>
<th>Specific Device Code</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD5</td>
<td>SJPD-D5</td>
</tr>
</tbody>
</table>
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