Description
The SJPL-F4 is a fast recovery diode of 400 V / 1.5 A. The maximum $t_{rr}$ of 50 ns is realized by optimizing a life-time control.

Features
- $V_{RM} =$ 400 V
- $I_{F(AV)} =$ 1.5 A
- $V_f =$ 1.3 V
- $t_{rr} =$ 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)
### 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>400</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Repetitive Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>400</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Average Forward Current</td>
<td>$I_{F(AV)}$</td>
<td>1.5</td>
<td>A</td>
<td>See Figure 1 and Figure 2</td>
</tr>
<tr>
<td>Surge Forward Current</td>
<td>$I_{FSM}$</td>
<td>25</td>
<td>A</td>
<td>Half cycle sine wave, positive side, 10 ms, 1 shot</td>
</tr>
<tr>
<td>$I^t$ Limiting Value</td>
<td>$I^t$</td>
<td>3.125</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>$^\circ C$</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>$T_{STG}$</td>
<td>$-40$ to $150$</td>
<td>$^\circ C$</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>$T_J = 25 , ^\circ C, I_F = 1.5 , A$</td>
<td>—</td>
<td>—</td>
<td>1.3</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$T_J = 100 , ^\circ C, I_F = 1.5 , A$</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>10</td>
<td>$\mu$A</td>
</tr>
<tr>
<td>Reverse Leakage Current Under High Temperature</td>
<td>$I_{R_H}$</td>
<td>$V_R = V_{RM}, T_J = 150 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>50</td>
<td>$\mu$A</td>
</tr>
<tr>
<td>Reverse Recovery Time</td>
<td>$t_{r1}$</td>
<td>$I_R = I_{RP} = 100 , mA$ 90% recovery point, $T_J = 25 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>50</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>$t_{r2}$</td>
<td>$I_R = 100 , mA, I_{RP} = 200 , mA, 75% recovery point, T_J = 25 , ^\circ C$</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>20</td>
<td>$^\circ C$/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
($V_R = 400$ V)

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

Figure 4.  $V_R$ vs. $I_R$ Typical Characteristics
**SJPL-F4**

### 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
SJPL-F4

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:
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>LF4</td>
<td>SJPL-F4</td>
</tr>
</tbody>
</table>
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