Description

The SJPX-F2 is a fast recovery diode of 200 V / 1.5 A. The maximum t_\text{rr} of 30 ns is realized by optimizing a life-time control.

Features

- \( V_{\text{RM}} = 200 \text{ V} \)
- \( I_{\text{F(AV)}} = 1.5 \text{ A} \)
- \( V_F = 0.98 \text{ V} \)
- \( t_{\text{rr}} = 30 \text{ ns} \)
- 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
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>200</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Repetitive Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>200</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Average Forward Current</td>
<td>$I_{(F\text{AV})}$</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>30</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>4.5</td>
<td>s$^2$</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>$T_J = 25 , ^\circ C, I_F = 1.5 , A$</td>
<td>—</td>
<td>—</td>
<td>0.98</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>0.82</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>$H_I_R$</td>
<td>$V_R = V_{RM}, T_J = 150 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>mA</td>
</tr>
<tr>
<td>Reverse Recovery Time</td>
<td>$t_{r1}$</td>
<td>$I_F = I_{RP} = 100 , mA$ $90%$ recovery point, $T_J = 25 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>30</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>$t_{r2}$</td>
<td>$I_F = 100 , mA$, $I_{RP} = 200 , mA, 75%$ recovery point, $T_J = 25 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>25</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. $I_{F(AV)}$ Typical Characteristics ($V_R = 0$ V)

Figure 2. $T_C$ vs. $I_{F(AV)}$ Typical Characteristics ($V_R = 200$ V)

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

Figure 4. $V_R$ vs. $I_R$ Typical Characteristics
**SJPX-F2**

**Physical Dimensions**

- **SJP Package**

![SJP Package Diagram]

**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**

![SJP Land Pattern Example Diagram]

**NOTE:**
- Dimensions in millimeters
SJPX-F2

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>XF2</td>
<td>SJPX-F2</td>
</tr>
</tbody>
</table>
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DSGN-AEZ-16003