

$V_{RM} = 600\text{ V}$, $I_{F(AV)} = 2.0\text{ A}$, $t_{rr} = 30\text{ ns}$
Fast Recovery Diode
SJPX-H6

Description

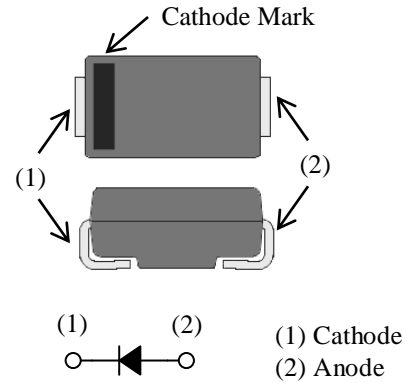
The SJPX-H6 is a fast recovery diode of 600 V / 2.0 A. The maximum t_{rr} of 30 ns is realized by optimizing a life-time control.

Features

- V_{RM} ----- 600 V
- $I_{F(AV)}$ ----- 2.0 A
- V_F ----- 1.5 V
- t_{rr1} ----- 30 ns
- Bare Lead Frame: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0
- Suitable for High Reliability and Automotive Requirement.

Package

SJP



Not to scale

Applications

- Freewheel Diode
(Offline Buck Converter, Offline Buck-boost Converter, etc.)

SJPX-H6

Absolute Maximum Ratings

Unless otherwise specified, $T_A = 25\text{ }^\circ\text{C}$.

| Parameter | Symbol | Conditions | Rating | Unit |
|------------------------------------|-------------|----------------------------------------------------|------------|----------------------|
| Nonrepetitive Peak Reverse Voltage | V_{RSM} | | 600 | V |
| Repetitive Peak Reverse Voltage | V_{RM} | | 600 | V |
| Average Forward Current | $I_{F(AV)}$ | See Figure 2 and Figure 3 | 2.0 | A |
| Surge Forward Current | I_{FSM} | Half cycle sine wave, positive side, 10 ms, 1 shot | 20 | A |
| I^2t Limiting Value | I^2t | $1\text{ ms} \leq t \leq 10\text{ ms}$ | 2.0 | A^2s |
| Junction Temperature | T_J | | -40 to 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{STG} | | -40 to 150 | $^\circ\text{C}$ |

Electrical Characteristics

Unless otherwise specified, $T_A = 25\text{ }^\circ\text{C}$.

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------|------|------|------|--------------------|
| Forward Voltage Drop | V_F | $T_J = 25\text{ }^\circ\text{C}$, $I_F = 2.0\text{ A}$ | — | — | 1.5 | V |
| | | $T_J = 100\text{ }^\circ\text{C}$, $I_F = 2.0\text{ A}$ | — | 1.1 | — | V |
| Reverse Leakage Current | I_R | $V_R = V_{RM}$ | — | — | 10 | μA |
| Reverse Leakage Current under High Temperature | $H \cdot I_R$ | $V_R = V_{RM}$, $T_J = 150\text{ }^\circ\text{C}$ | — | — | 3.0 | mA |
| Reverse Recovery Time | t_{rr1} | $I_F = I_{RP} = 100\text{ mA}$, 90% recovery point, $T_J = 25\text{ }^\circ\text{C}$ | — | — | 30 | ns |
| | t_{rr2} | $I_F = 100\text{ mA}$, $I_{RP} = 200\text{ mA}$, 75% recovery point, $T_J = 25\text{ }^\circ\text{C}$ | — | — | 20 | ns |
| Thermal Resistance ⁽¹⁾ | $R_{th(J-L)}$ | | — | — | 20 | $^\circ\text{C/W}$ |

Mechanical Characteristics

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|----------------|------------|------|-------|------|------|
| Package Weight | | — | 0.072 | — | g |

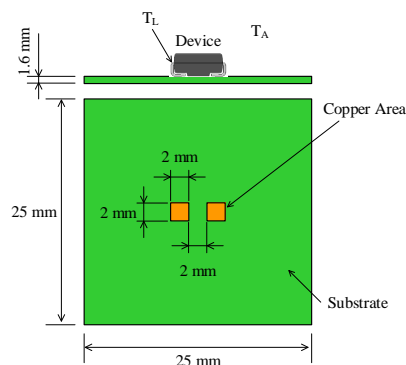


Figure 1. Lead Temperature Measurement Conditions

⁽¹⁾ $R_{th(J-L)}$ is thermal resistance between junction and lead. Lead temperature (T_L) is measured near the root of pin (see Figure 1).

Derating Curves

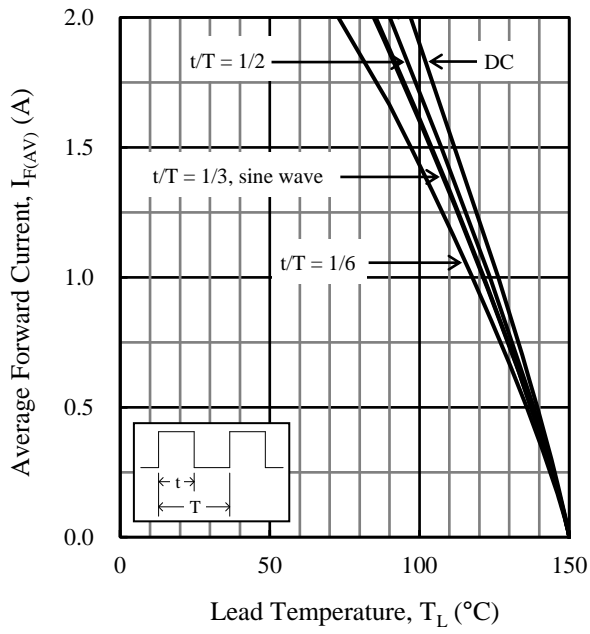


Figure 2. $I_{F(AV)}$ vs. T_L ($T_J = 150$ °C, $V_R = 0$ V)

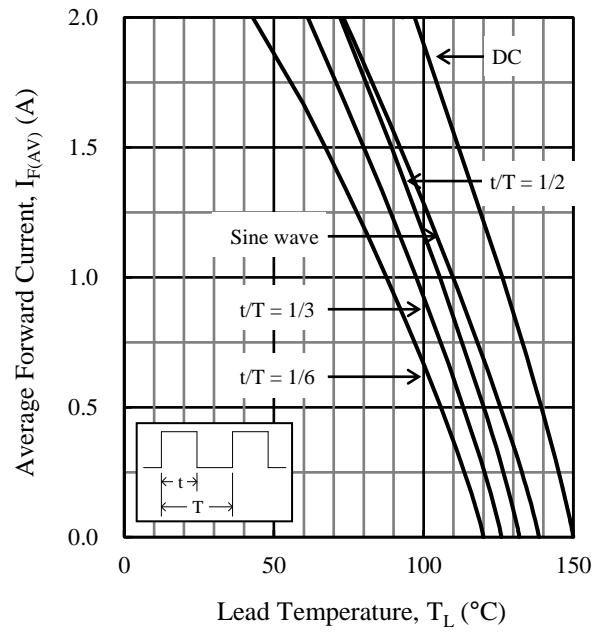


Figure 3. $I_{F(AV)}$ vs. T_L ($T_J = 150$ °C, $V_R = 600$ V)

Characteristic Curves

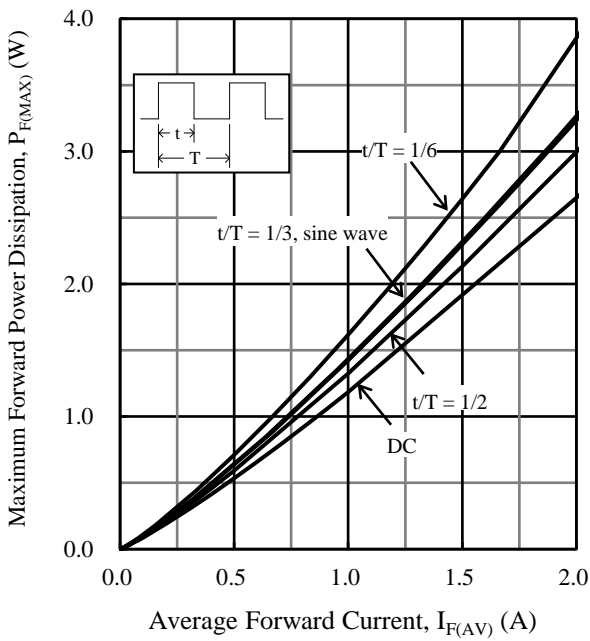


Figure 4. $P_{F(MAX)}$ vs. $I_{F(AV)}$ ($T_J = 150\text{ }^\circ\text{C}$)

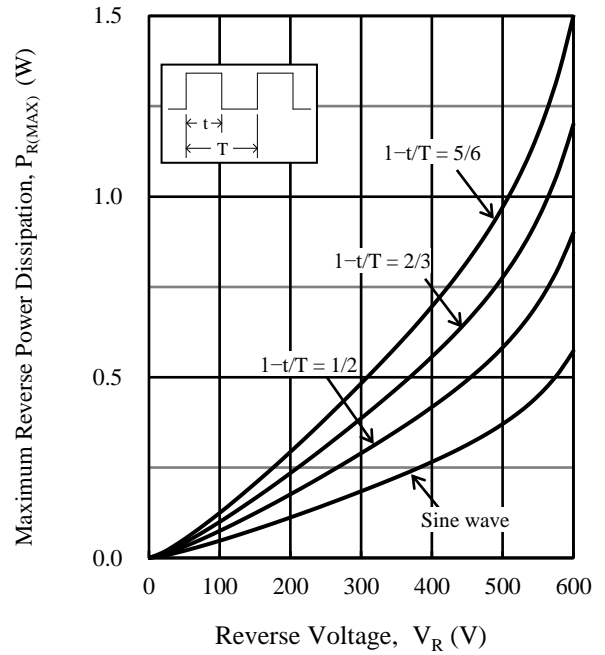


Figure 5. $P_{R(MAX)}$ vs. V_R ($T_J = 150\text{ }^\circ\text{C}$)

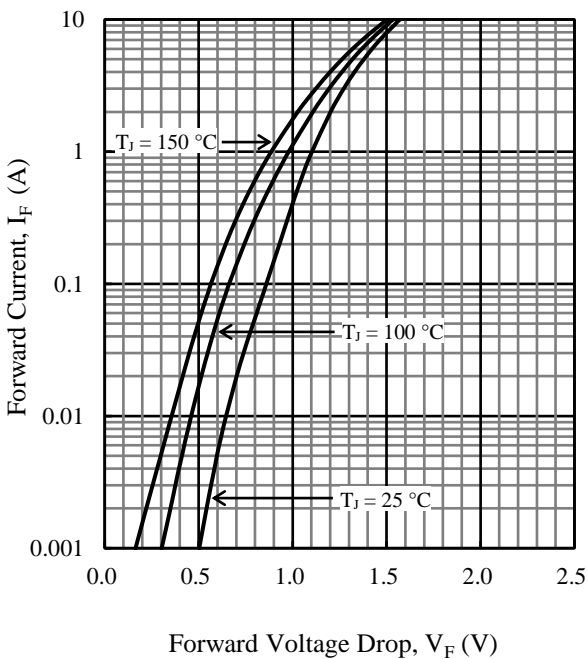


Figure 6. Typical Characteristics: I_F vs. V_F

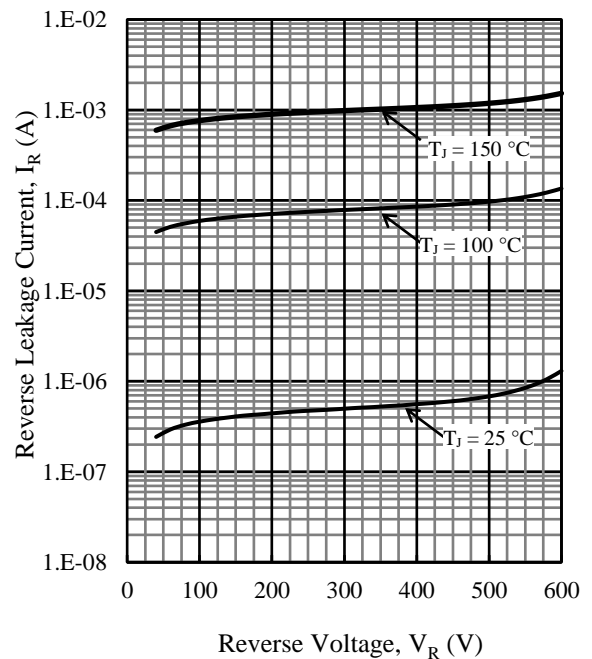


Figure 7. Typical Characteristics: I_R vs. V_R

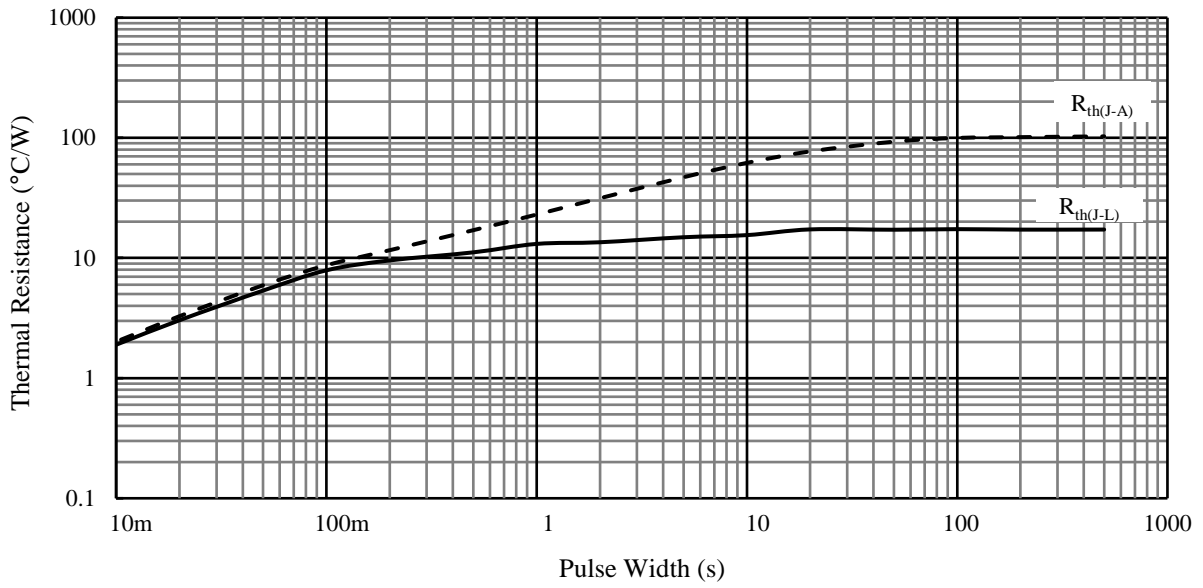
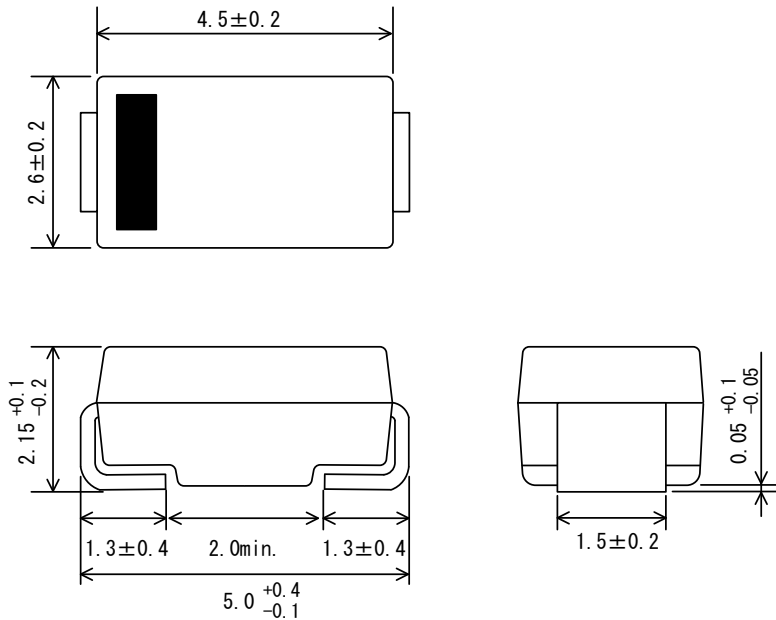


Figure 8. Typical Transient Thermal Resistance Characteristics

SJPX-H6

Physical Dimensions

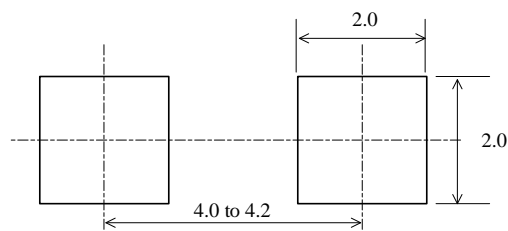
• SJP Package



NOTES:

- Dimensions in millimeters
- Bare lead frame: Pb-free (RoHS compliant)
- Moisture Sensitivity Level 1 (MSL 1)
- When soldering the products, it is required to minimize the working time within the following limits:
- Flow: 260 °C / 10 s, 1 time
- Reflow:
 - Preheat: 150 °C to 200 °C / 60 s to 120 s
 - Solder heating: 255 °C / 30s, 3 times (260 °C peak)
- Soldering Iron: 350 °C / 3.5 s, 1 time

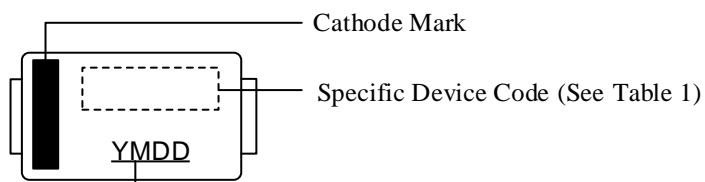
• SJP Land Pattern Example



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)

Table 1. Specific Device Code

| Specific Device Code | Part Number |
|----------------------|-------------|
| XH6 | SJPX-H6 |

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