V_{RM} = 400 V, $I_{F(AV)}$ = 1.5 A, t_{rr} = 50 ns
Fast Recovery Diode

SJPL-F4

Data Sheet

Description

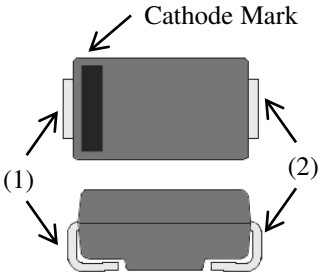
The SJPL-F4 is a fast recovery diode of 400 V / 1.5 A. The maximum t_{rr} of 50 ns is realized by optimizing a life-time control.

Features

- V_{RM} ---------- 400 V
- $I_{F(AV)}$ ---------- 1.5 A
- V_F ---------- 1.3 V
- t_{rr1} ---------- 50 ns
- Bare Lead Frame: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0
- Suitable for High Reliability and Automotive Requirement.

Package

SJP



(1) Cathode
(2) Anode

Not to scale

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 Converter, Offline Buck-boost Converter, etc.)

Absolute Maximum Ratings

Unless otherwise specified, T_A = 25 °C.

Parameter	Symbol	Conditions	Rating	Unit
Nonrepetitive Peak Reverse Voltage	V_{RSM}		400	V
Repetitive Peak Reverse Voltage	V_{RM}		400	V
Average Forward Current	$I_{F(AV)}$	See Figure 2 and Figure 3	1.5	A
Surge Forward Current	I_{FSM}	Half cycle sine wave, positive side, 10 ms, 1 shot	25	A
I^2t Limiting Value	I^2t	1 ms ≤ t ≤ 10 ms	3.125	A^2s
Junction Temperature	T_J		−40 to 150	°C
Storage Temperature	T_{STG}		−40 to 150	°C

Electrical Characteristics

Unless otherwise specified, T_A = 25 °C.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage Drop	V_F	T_J = 25 °C, I_F = 1.5 A	—	—	1.3	V
		T_J = 100 °C, I_F = 1.5 A	—	1.0	—	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 °C	—	—	50	μA
Reverse Recovery Time	t_{rr1}	$I_F = I_{RP}$ = 100 mA, 90% recovery point, T_J = 25 °C	—	—	50	ns
	t_{rr2}	I_F = 100 mA, I_{RP} = 200 mA, 75% recovery point, T_J = 25 °C	—	—	35	ns
Thermal Resistance [1]	$R_{th(J-L)}$		—	—	20	°C/W

Mechanical Characteristics

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

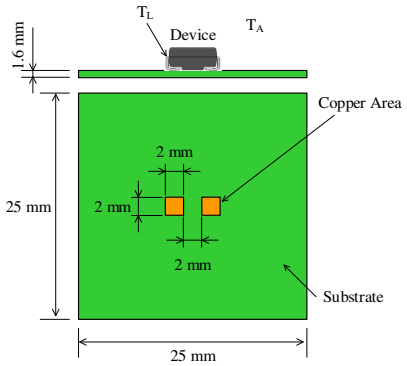


Figure 1. Lead Temperature Measurement Conditions

[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

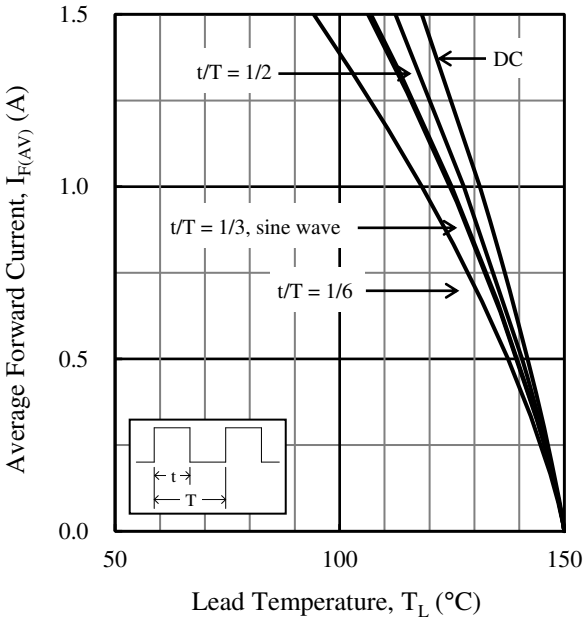


Figure 2. $I_{F(AV)}$ vs. T_L (T_J = 150 °C, V_R = 0 V)

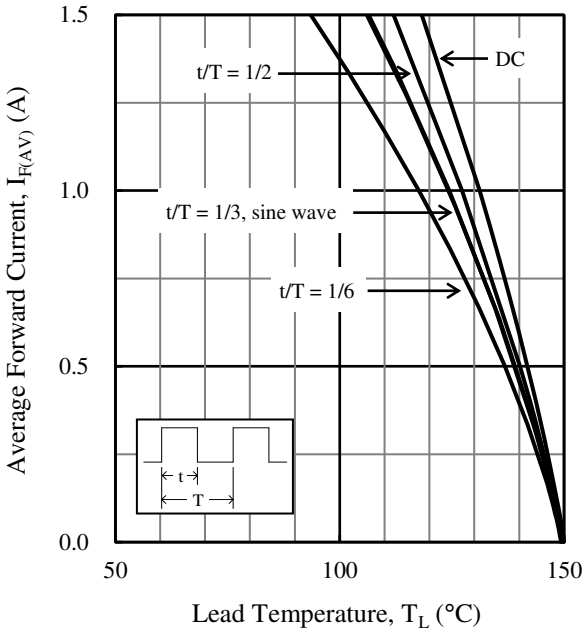


Figure 3. $I_{F(AV)}$ vs. T_L (T_J = 150 °C, V_R = 400 V)

Characteristic Curves

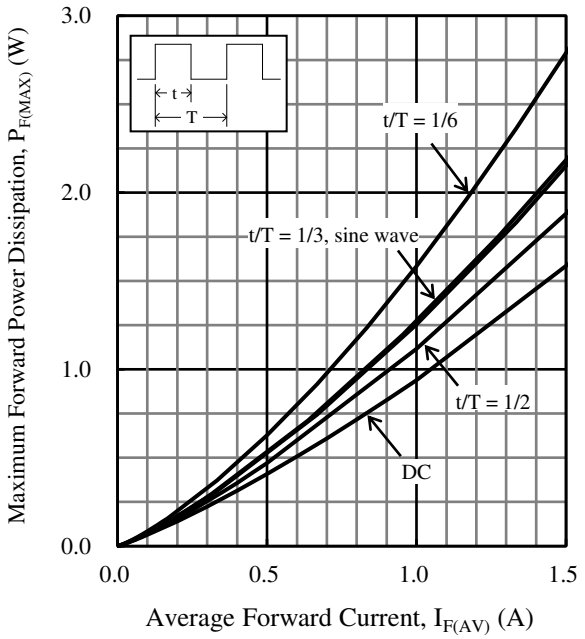


Figure 4. $P_{F(MAX)}$ vs. $I_{F(AV)}$ (T_J = 150 °C)

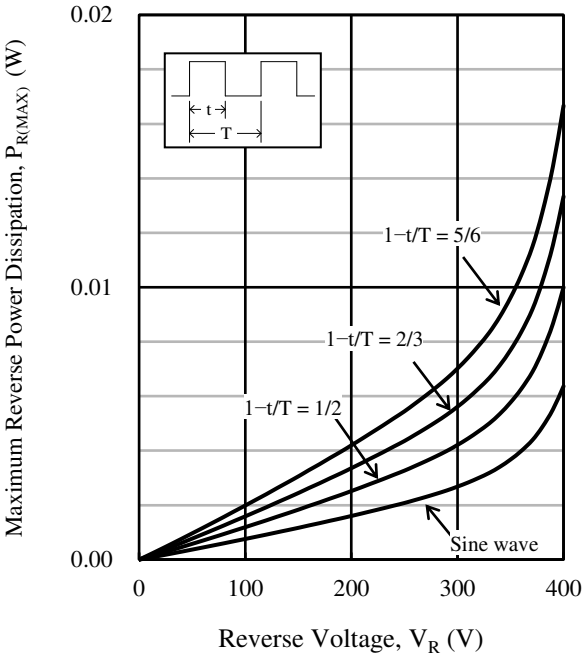


Figure 5. $P_{R(MAX)}$ vs. V_R (T_J = 150 °C)

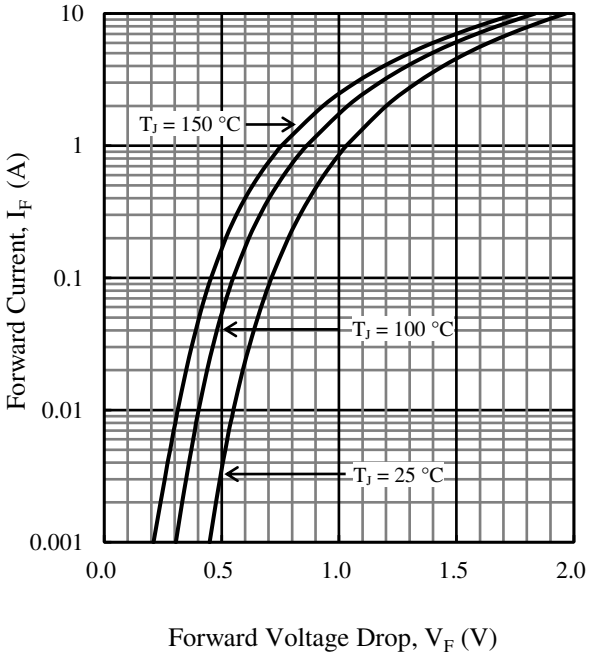


Figure 6. Typical Characteristics: I_F vs. V_F

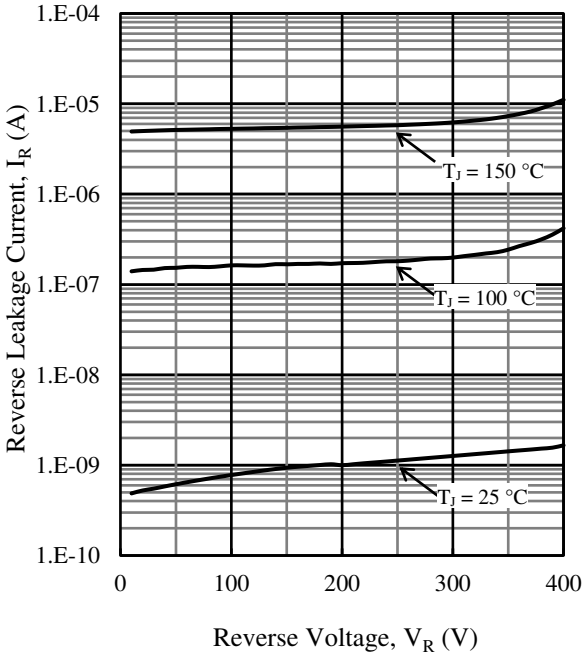


Figure 7. Typical Characteristics: I_R vs. V_R

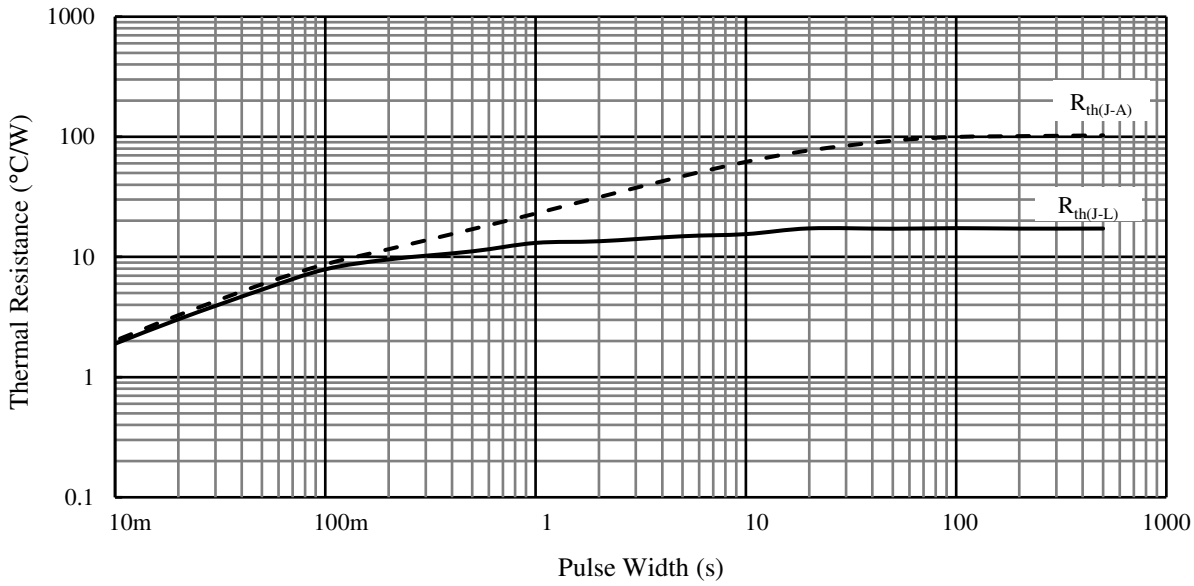
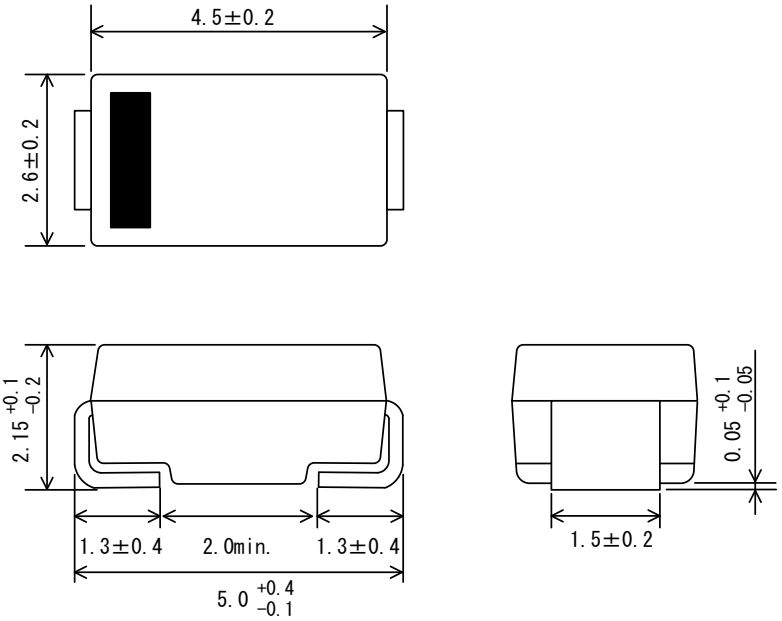


Figure 8. Typical Transient Thermal Resistance Characteristics

Physical Dimensions

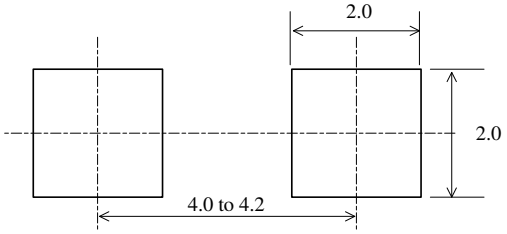
● **SJP Package**



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

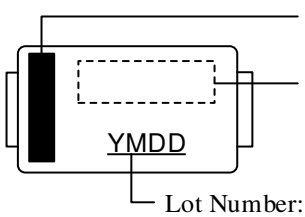
● **SJP Land Pattern Example**



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
LF4	SJPL-F4

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