V_{RM} = 500 V, $I_{F(AV)}$ = 3.0 A, t_{rr} = 50 ns
Fast Recovery Diode

SJPD-L5

Data Sheet

Description

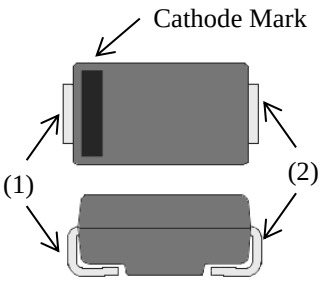
The SJPD-L5 is a fast recovery diode of 500 V / 3.0 A. The maximum t_{rr} of 50 ns is realized by optimizing a life-time control.

Features

- V_{RM} ---------- 500 V
- $I_{F(AV)}$ ---------- 3.0 A
- V_F ---------- 1.4 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}		500	V
Repetitive Peak Reverse Voltage	V_{RM}		500	V
Average Forward Current	$I_{F(AV)}$	See Figure 2 and Figure 3	3.0	A
Surge Forward Current	I_{FSM}	Half cycle sine wave, positive side, 10 ms, 1 shot	50	A
I^2t Limiting Value	I^2t	1 ms ≤ t ≤ 10 ms	12.5	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 = 3.0 A	—	—	1.4	V
		T_J = 100 °C, I_F = 3.0 A	—	1.0	—	V
Reverse Leakage Current	I_R	$V_R = V_{RM}$	—	—	15	µA
Reverse Leakage Current under High Temperature	H·I_R	$V_R = V_{RM}$, T_J = 150 °C	—	—	150	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

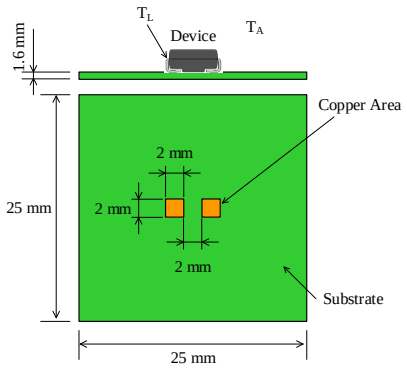


Figure 1. Lead Temperature Measurement Conditions

[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

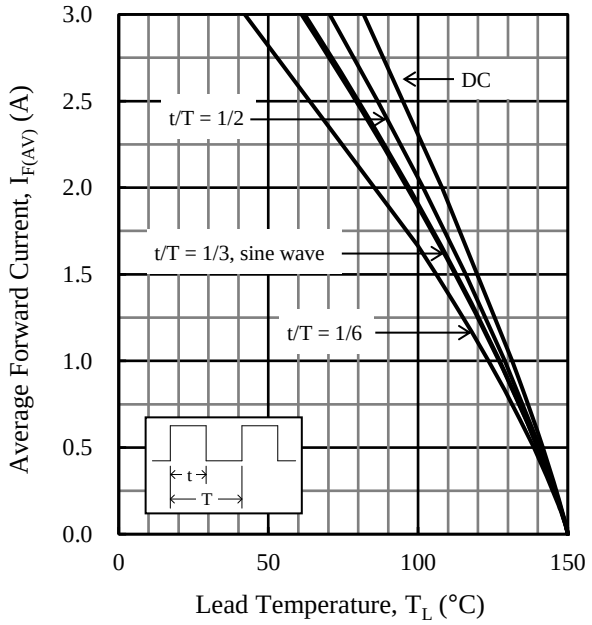


Figure 2. $I_{F(AV)}$ vs. T_L (T_J = 150 °C, V_R = 0 V)

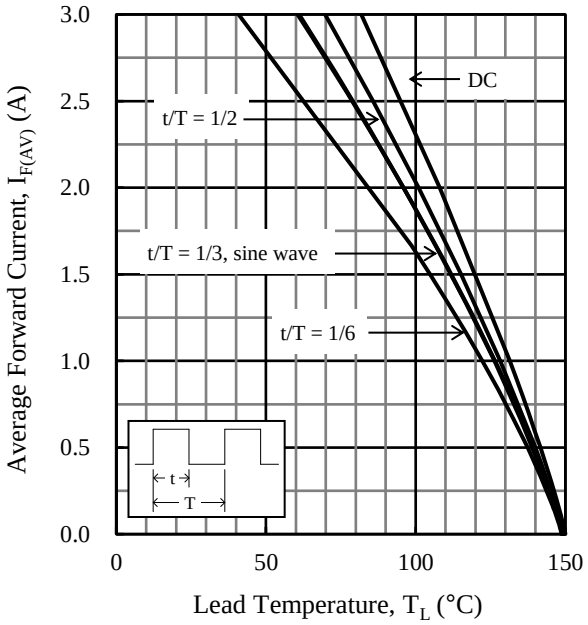


Figure 3. $I_{F(AV)}$ vs. T_L (T_J = 150 °C, V_R = 500 V)

Characteristic Curves

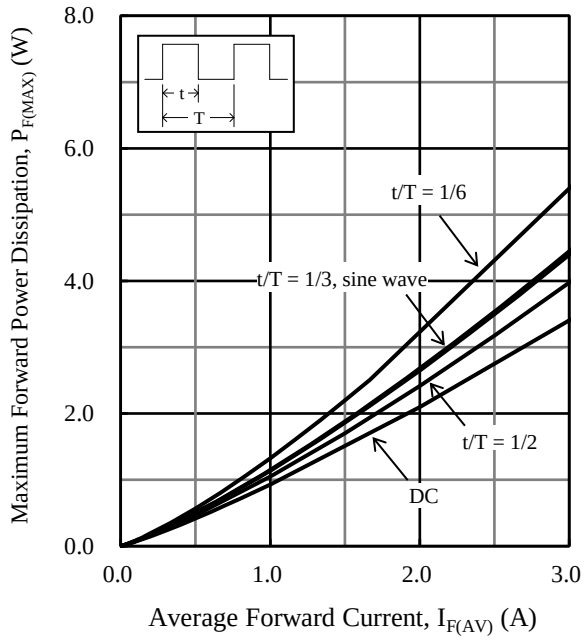


Figure 4. $P_{F(MAX)}$ vs. $I_{F(AV)}$ (T_J = 150 °C)

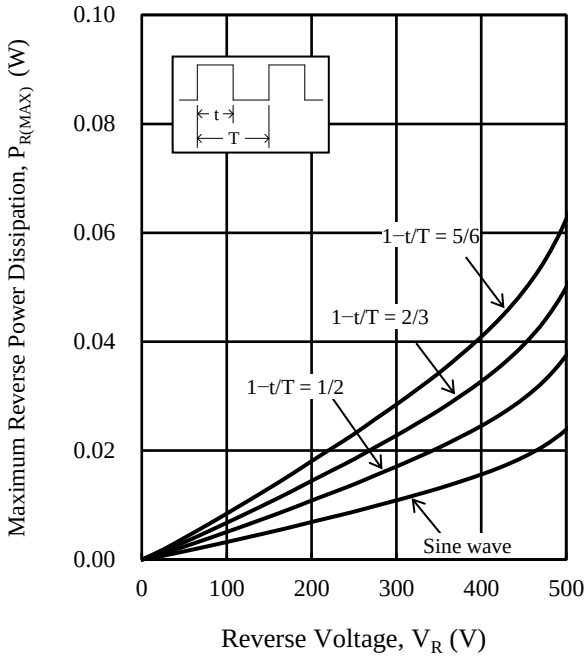


Figure 5. $P_{R(MAX)}$ vs. V_R (T_J = 150 °C)

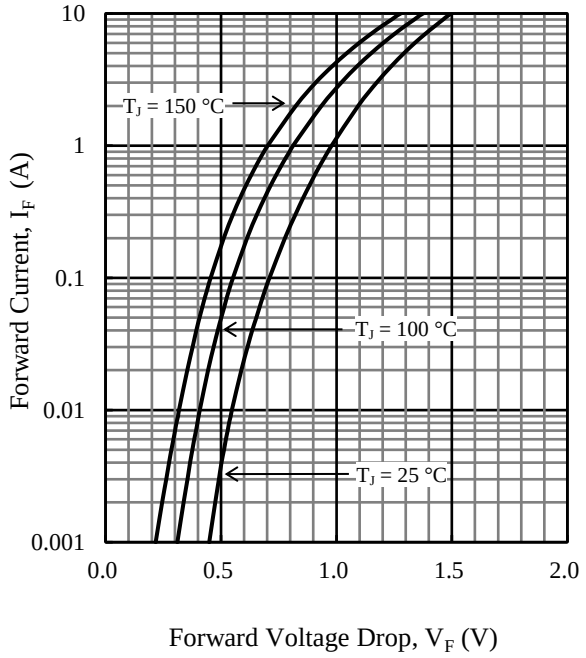


Figure 6. Typical Characteristics: I_F vs. V_F

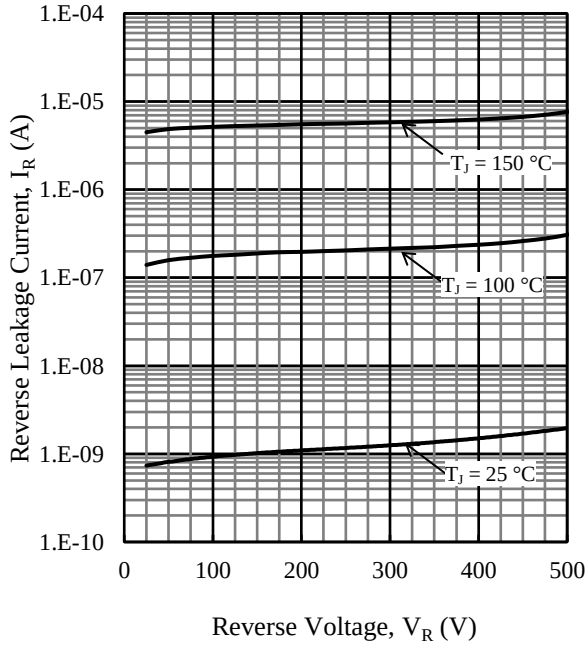


Figure 7. Typical Characteristics: I_R vs. V_R

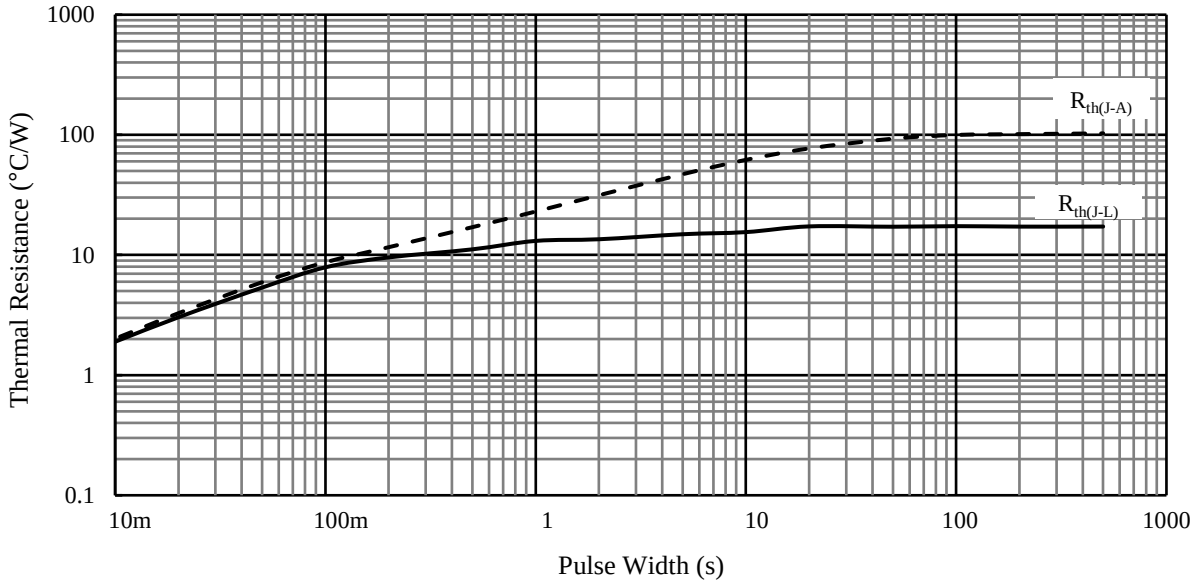
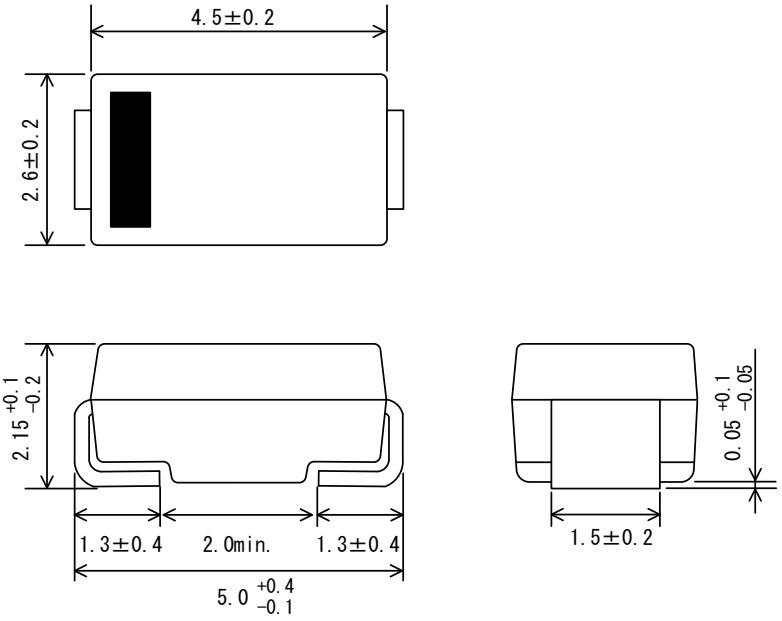


Figure 8. Typical Transient Thermal Resistance Characteristics

Physical Dimensions

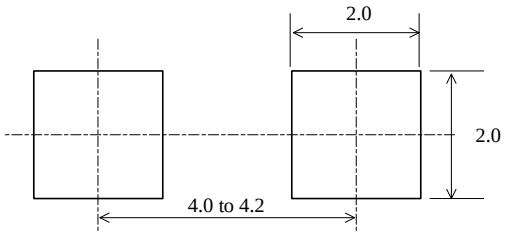
● **SJP Package**



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

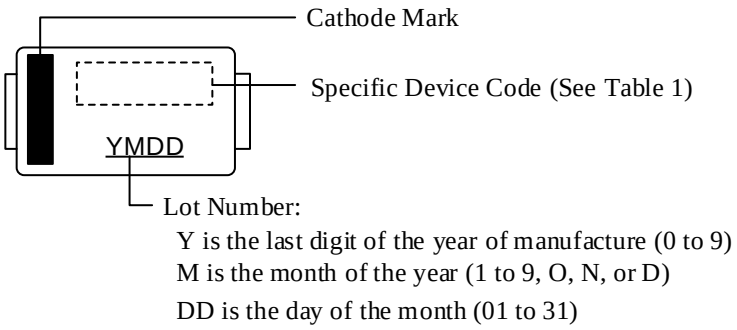


Table 1. Specific Device Code

Specific Device Code	Part Number
DL5	SJPD-L5

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