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V_Z(max.) = 19.1 V / 28.9 V / 35 V / 42.2 V
Transient Voltage Suppressor

SJPZ-N Series

Data Sheet

Description

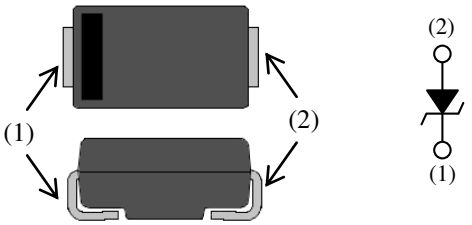
Sanken SJPZ-N series devices are power zener diodes designed for the protection of automotive electronic units from especially the surge generated during load dump conditions, voltage transients induced by inductive loads.

Features

- AEC-Q101 Qualified
- Meets ISO7637-2 Surge Protection Specification (Pulse 1-3)
- High Reliability and Automotive Requirement
- High Surge Capability
- Flammability UL94V-0 (Equivalent)
- Compliant with RoHS Directive

Package

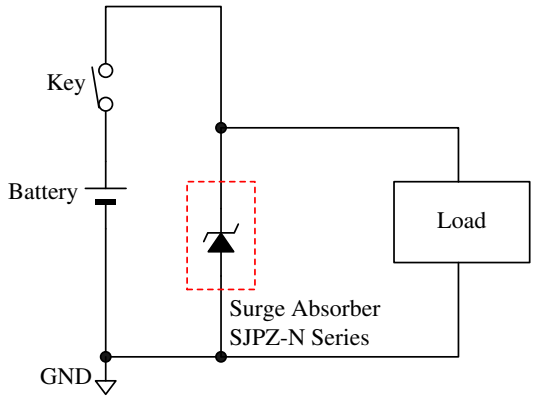
SJP



(1) Cathode
(2) Anode

Not to Scale

Typical Application



SJPZ-N Series

Products	V_Z		P_{RSM}*	P_D
	Min.	Max.		
SJPZ-N18	16.8V	19.1V	500W	2 W
SJPZ-N27	25.1V	28.9V		
SJPZ-N33	31.0V	35.0V		
SJPZ-N40	37.8V	42.2V		

*500 µs, single block pulse

Application

Protection of sensitive electronic equipment in passenger cars, trucks, vans and buses:

- Engine Control Units
- Electric Control Units
- Braking System
- Power Steering System
- Airbags
- Audio & Infotainment Equipment

CONTENTS

1. Absolute Maximum Ratings

Unless specifically noted T_A = 25 °C.

Parameter	Symbol	Conditions	Rating	Unit	Note
Power Dissipation [1]	P_D	Lead temperature, T_L [2]	2	W	
DC Blocking Voltage	V_{DC}	−	13	V	SJPZ-N18
			20		SJPZ-N27
			25		SJPZ-N33
			30		SJPZ-N40
Peak Reverse Power	P_{RSM}	500 μs, single block pulse	500	W	
Junction Temperature	T_j	−	−55 to 150	°C	
Storage Temperature	T_{stg}	−	−55 to 150	°C	

[1] See Figure 3-1, Power Dissipation Curve
[2] See Figure 1-1

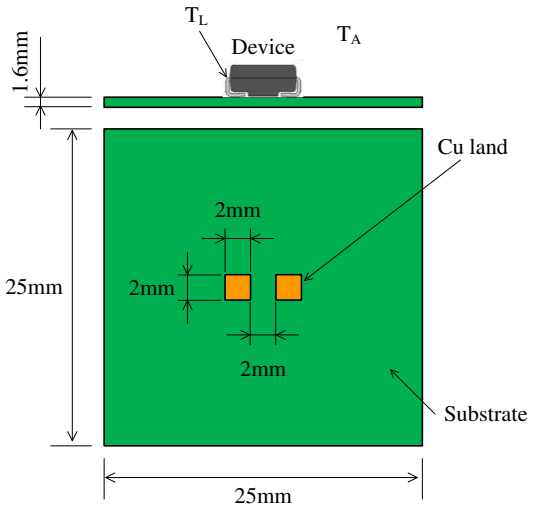


Figure 1-1 Lead temperature measurement condition

2. Electrical Characteristics

Unless specifically noted, T_A = 25 °C.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Note
Forward Voltage Drop	V_F	I_F = 2 A	−	−	1.20	V	
Reverse Leakage Current	I_R	V_R = 13V	−	−	1	μA	SJPZ-N18
		V_R = 20V					SJPZ-N27
		V_R = 25V					SJPZ-N33
		V_R = 30V					SJPZ-N40
Breakdown Voltage	V_Z	I_Z = 1 mA	16.8	−	19.1	V	SJPZ-N18
			25.1	−	28.9		SJPZ-N27
			31.0	−	35.0		SJPZ-N33
			37.8	−	42.2		SJPZ-N40
Breakdown Voltage Temperature Coefficient	r_Z	I_Z = 1 mA	−	13	−	mV/°C	SJPZ-N18
			−	23	−		SJPZ-N27
			−	29	−		SJPZ-N33
			−	35	−		SJPZ-N40
Breakdown Region Equivalent Resistance	R_Z	I_Z = 10mA~20m A	−	2	−	Ω	SJPZ-N18
			−	4	−		SJPZ-N27
			−	5	−		SJPZ-N33
			−	7	−		SJPZ-N40
Thermal Resistance	$R_{th(j-L)}$	(*)	−	20	−	°C/W	

(*) $R_{th(j-L)}$ is thermal resistance between junction and lead. Lead temperature is measured as shown in Figure 1-1.

3. Performance Curves

3.1. Power Dissipation

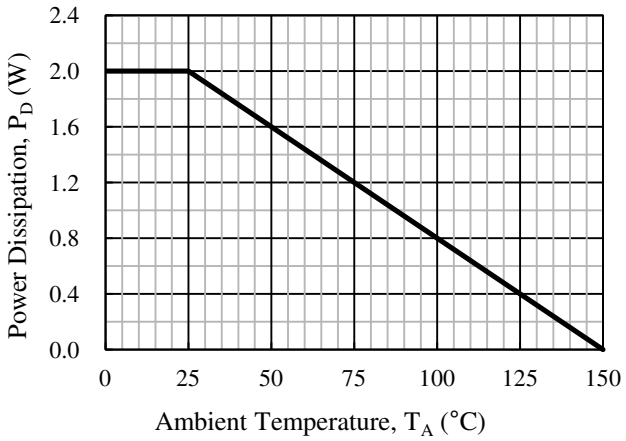


Figure 3-1 Power Dissipation curve*

* The mounting condition of the IC is shown in Figure 1-1.

3.2. Peak Surge Reverse Power Capability

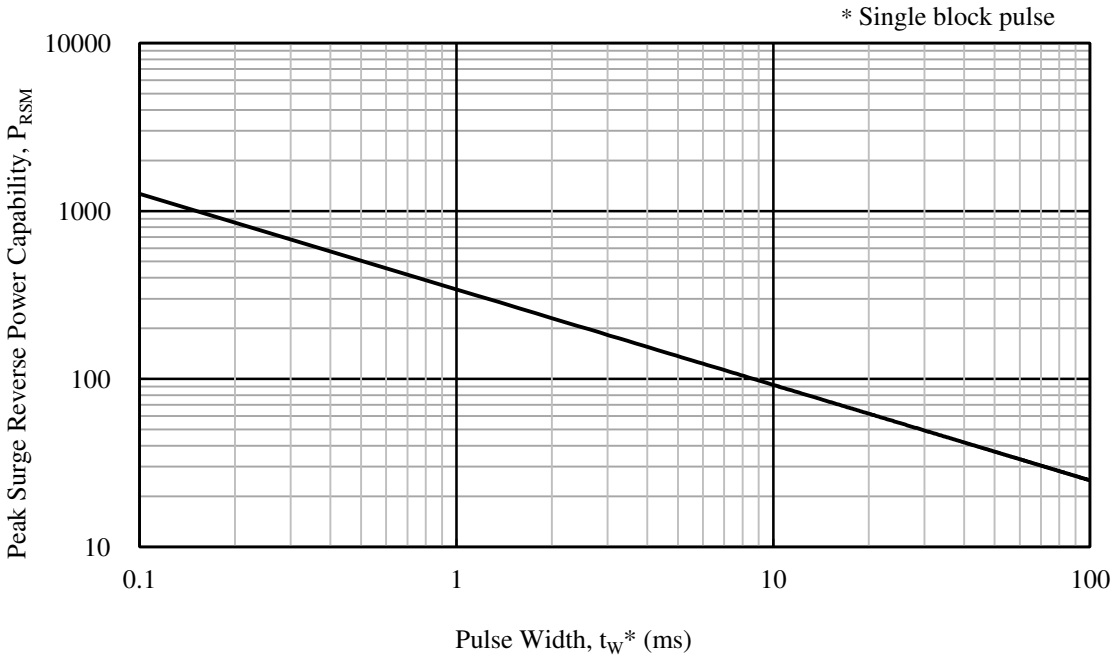


Figure 3-2 Peak surge reverse power capability

3.3. SJPZ-N18 Typical Characteristics

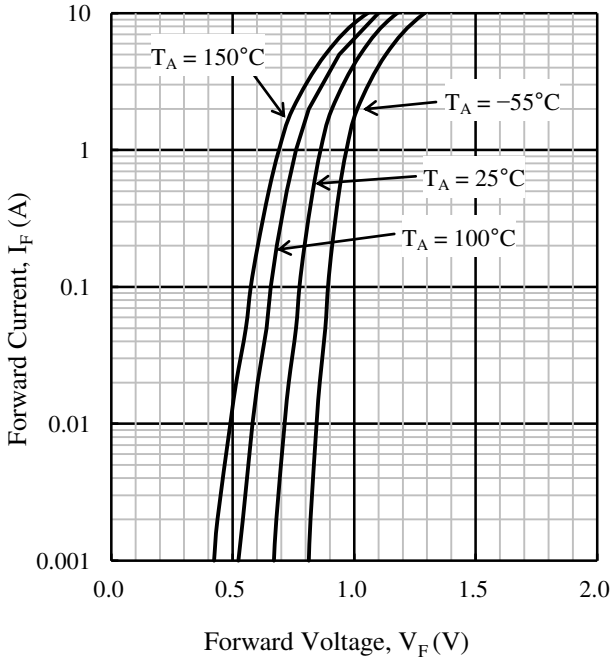


Figure 3-3 I_F-V_F typical characteristics

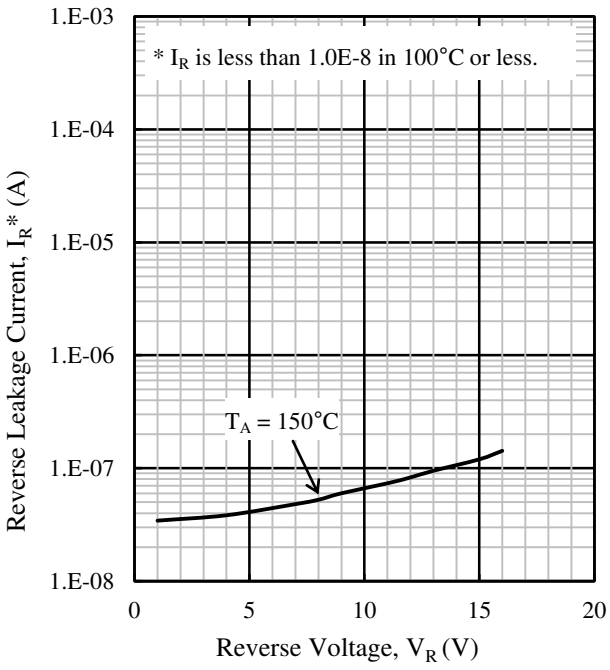


Figure 3-4 I_R-V_R typical characteristics

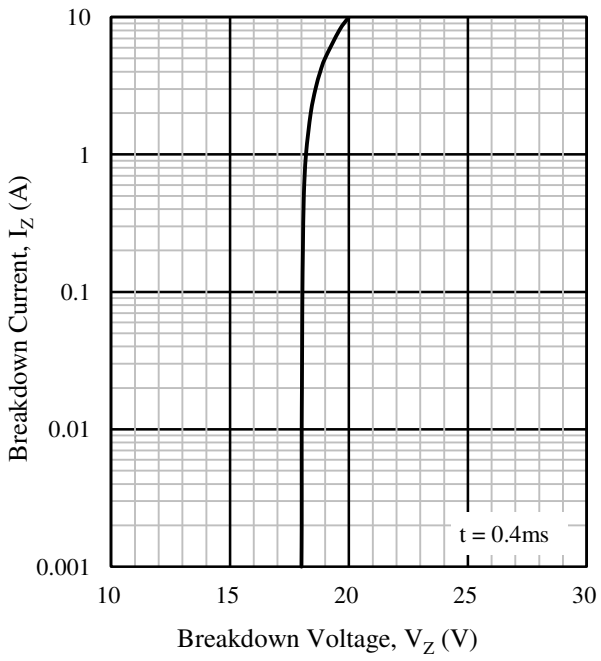


Figure 3-5 I_Z-V_Z typical characteristics

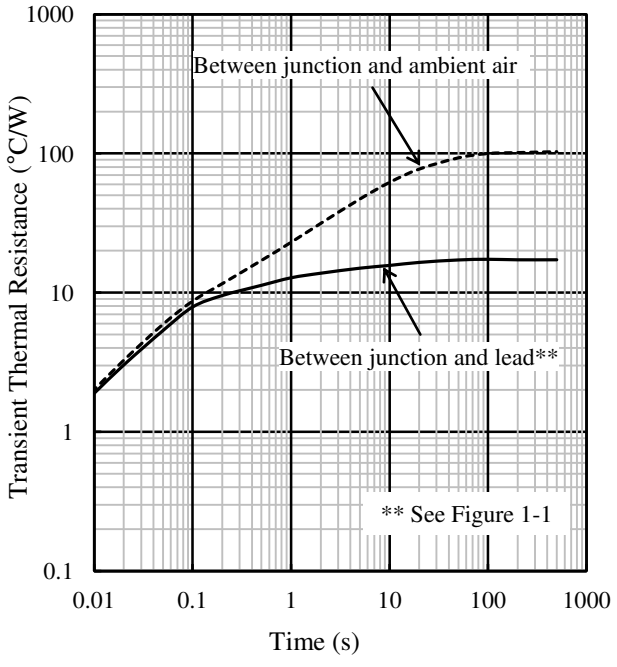


Figure 3-6 Typical transient thermal resistance

3.4. SJPZ-N27 Typical Characteristics

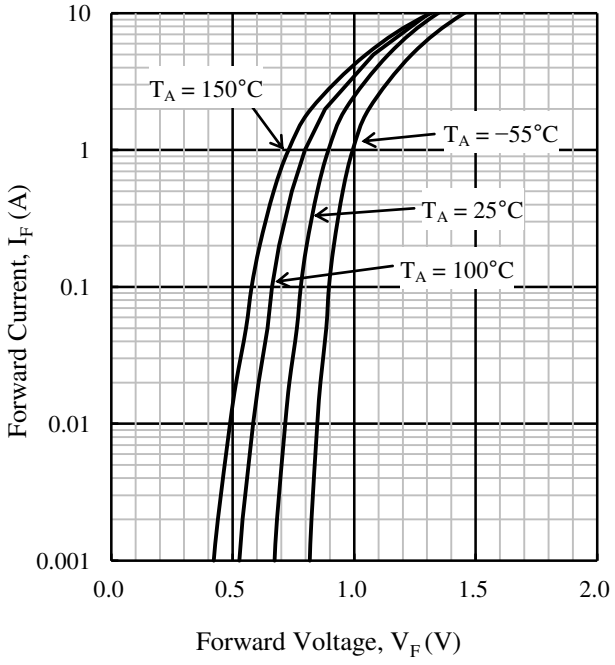


Figure 3-7 $I_F - V_F$ typical characteristics

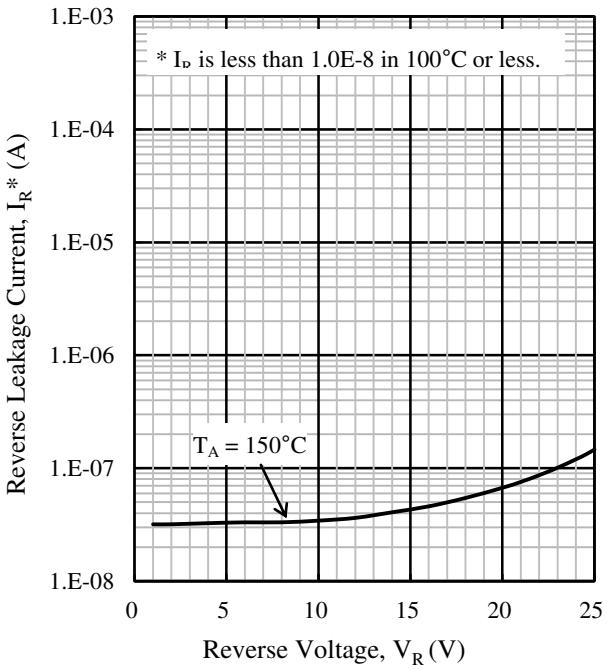


Figure 3-8 $I_R - V_R$ typical characteristics

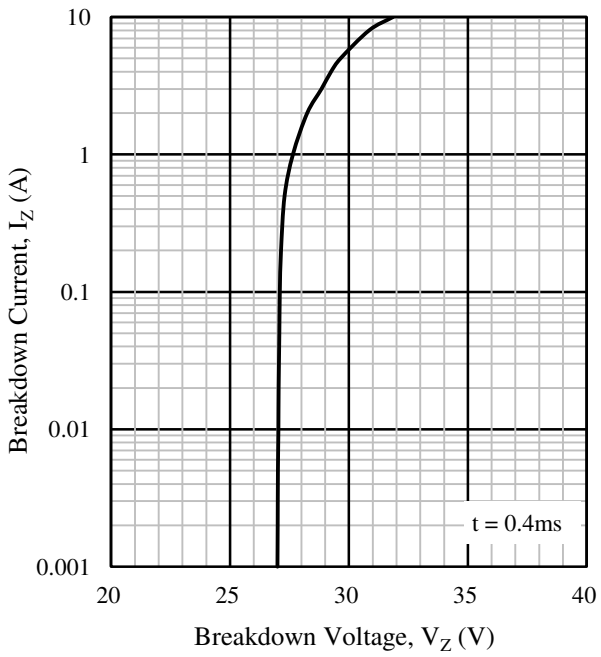


Figure 3-9 $I_Z - V_Z$ typical characteristics

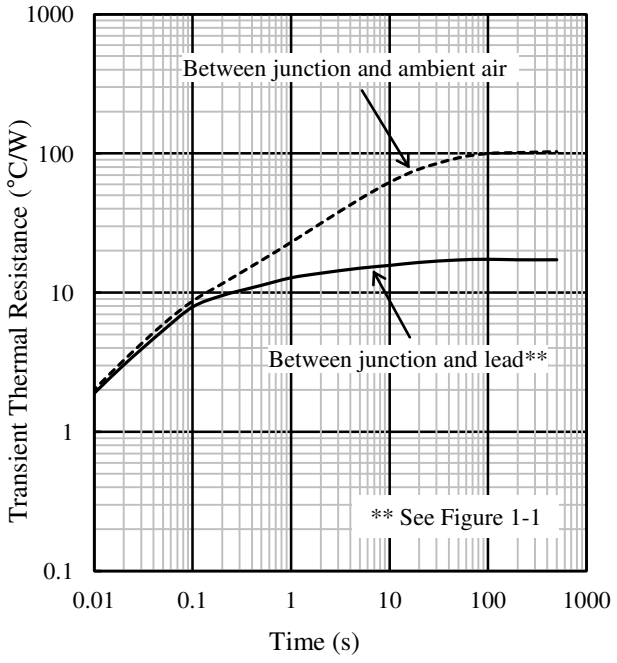


Figure 3-10 Typical transient thermal resistance

3.5. SJPZ-N33 Typical Characteristics

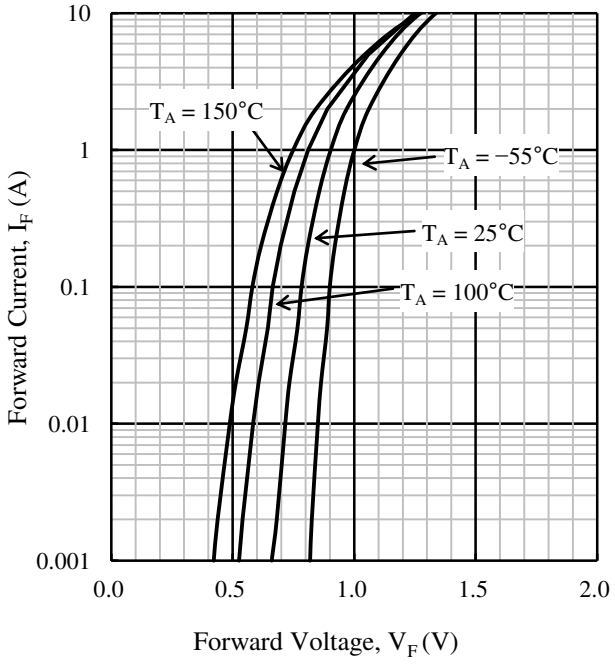


Figure 3-11 $I_F - V_F$ typical characteristics

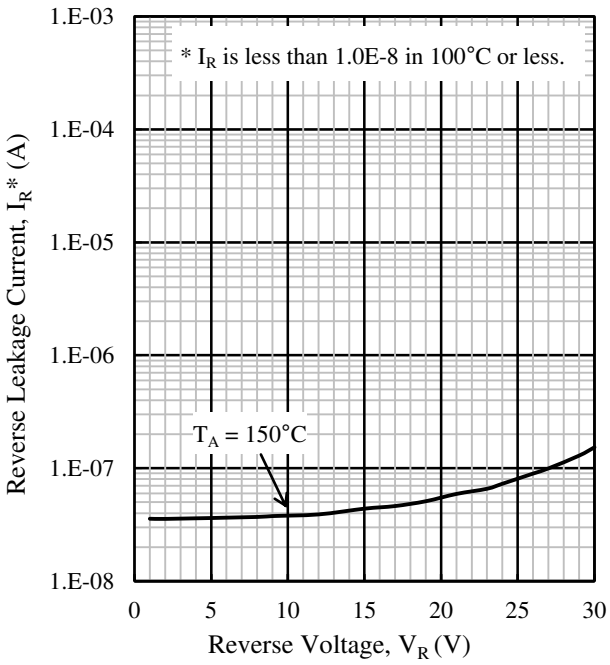


Figure 3-12 $I_R - V_R$ typical characteristics

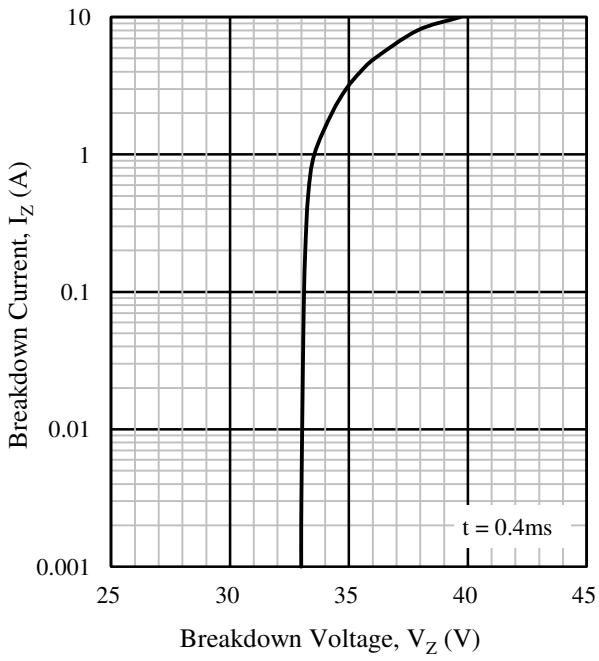


Figure 3-13 $I_Z - V_Z$ typical characteristics

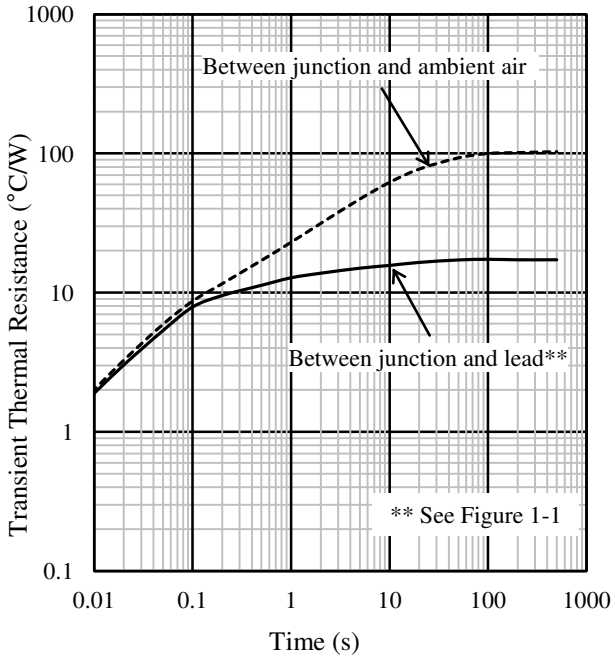


Figure 3-14 Typical transient thermal resistance

3.6. SJPZ-N40 Typical Characteristics

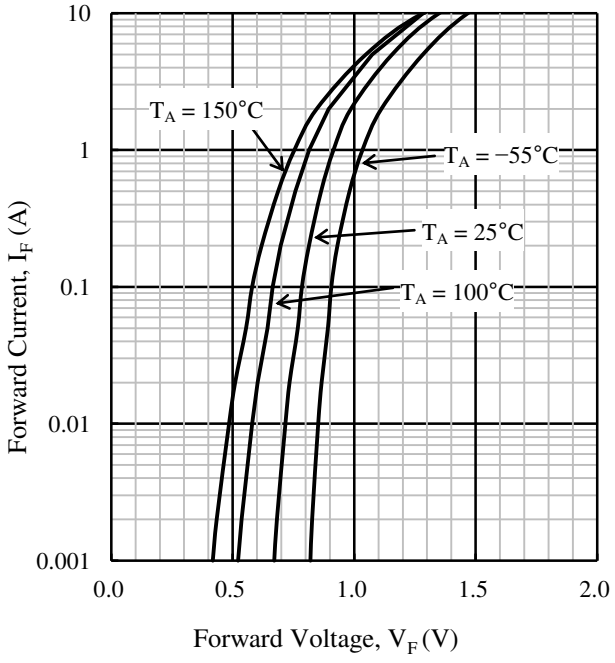


Figure 3-15 $I_F - V_F$ typical characteristics

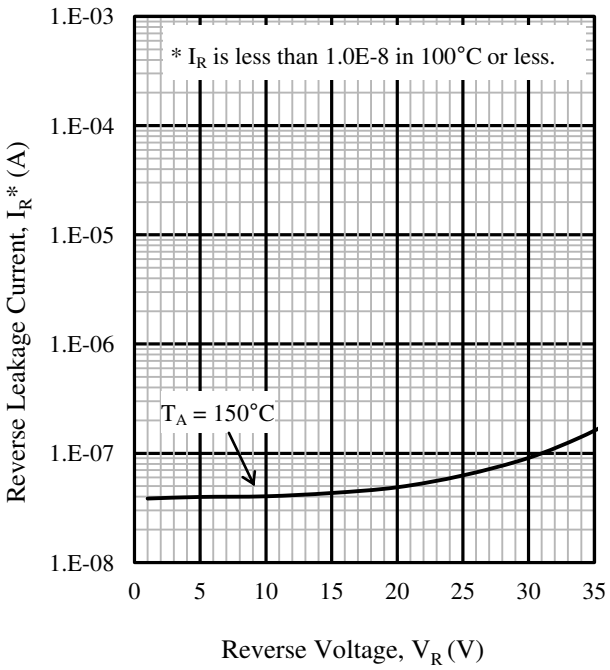


Figure 3-16 $I_R - V_R$ typical characteristics

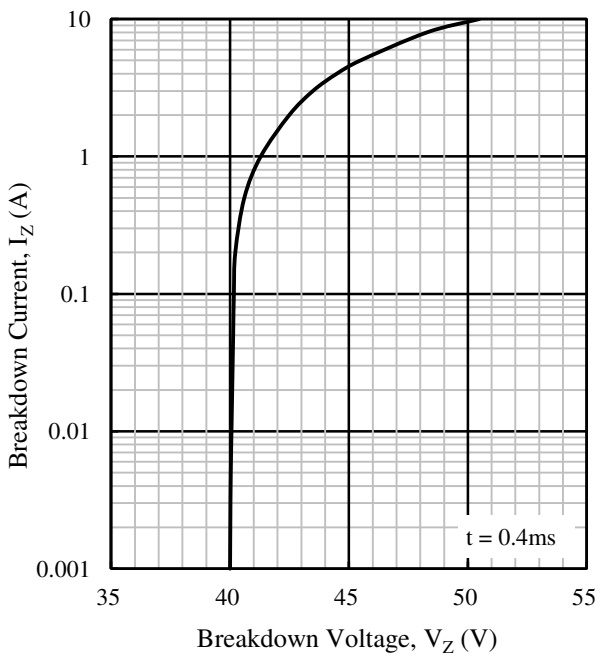


Figure 3-17 $I_Z - V_Z$ typical characteristics

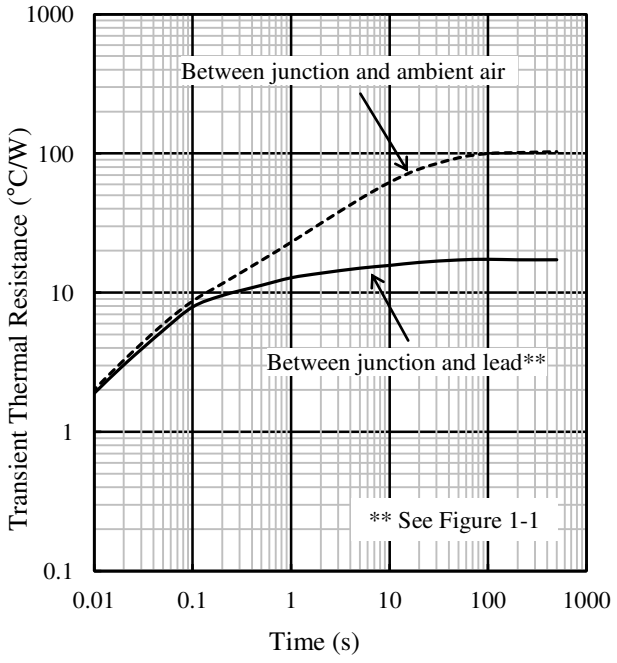
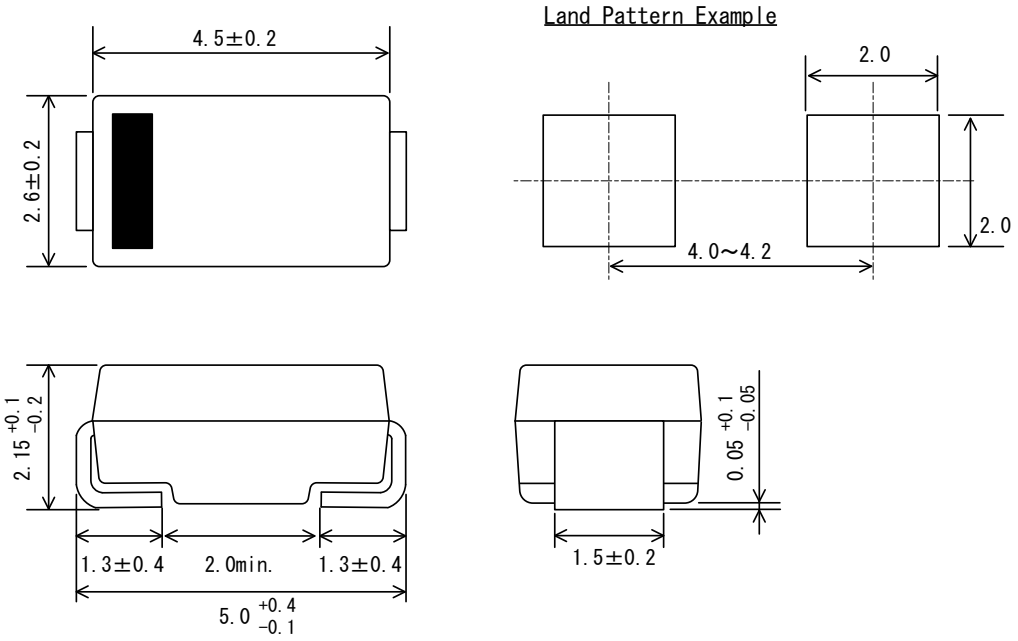


Figure 3-18 Typical transient thermal resistance

4. External Dimensions

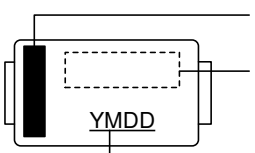
● SJP



NOTES:

● Dimension is in millimeters.
● Lead treatment Pb-free. Device composition compliant with the RoHS directive.
● MSL：JEDEC LEVEL1

5. Marking Diagram



Cathode Mark

Specific Device Code
(See Table 5-1)

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 5-1 Specific Device Code

Specific Device Code	Products
ZN18	SJPZ-N18
ZN27	SJPZ-N27
ZN33	SJPZ-N33
ZN40	SJPZ-N40

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