

$V_Z(\text{max.}) = 19.1 \text{ V} / 28.9 \text{ V} / 35 \text{ V} / 42.2 \text{ V}$   
**Transient Voltage Suppressor**  
**SJPZ-N Series**

**Description**

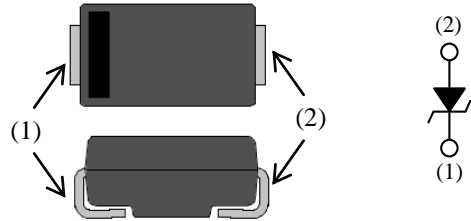
Sanken SJPZ-N series devices are power zener diodes designed for the protection of automotive electronic units from especially the surge generated during load dump conditions, voltage transients induced by inductive loads.

**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**

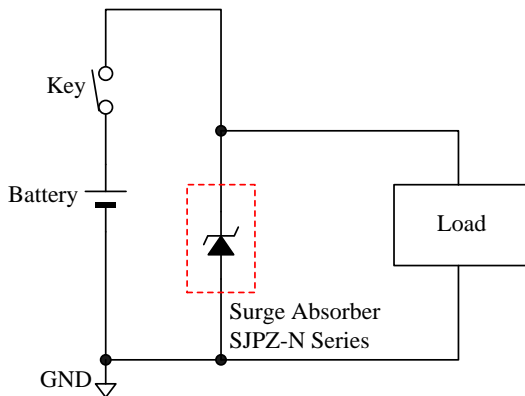
SJP



(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  $\mu$ s, 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

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## SJPZ-N Series

### 1. Absolute Maximum Ratings

Unless specifically noted  $T_A = 25\text{ }^\circ\text{C}$ .

Parameter	Symbol	Conditions	Rating	Unit	Note
Power Dissipation <sup>(1)</sup>	$P_D$	Lead temperature, $T_L$ <sup>(2)</sup>	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 $\mu\text{s}$ , single block pulse	500	W	
Junction Temperature	$T_j$	-	-55 to 150	$^\circ\text{C}$	
Storage Temperature	$T_{stg}$	-	-55 to 150	$^\circ\text{C}$	

<sup>(1)</sup> See Figure 3-1, Power Dissipation Curve

<sup>(2)</sup> See Figure 1-1

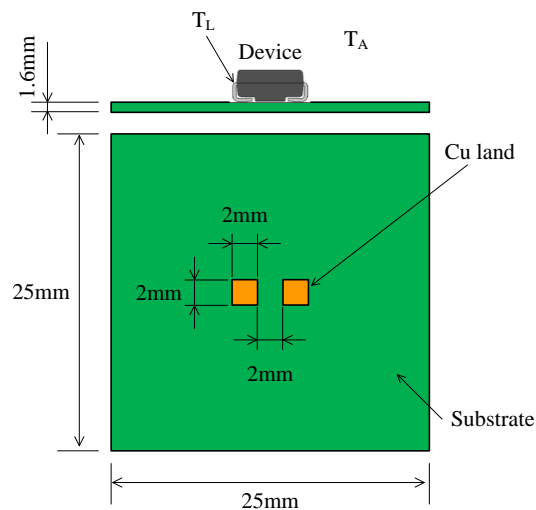


Figure 1-1 Lead temperature measurement condition

## SJPZ-N Series

### 2. Electrical Characteristics

Unless specifically noted,  $T_A = 25\text{ }^\circ\text{C}$ .

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Note
Forward Voltage Drop	$V_F$	$I_F = 2\text{ A}$	–	–	1.20	V	
Reverse Leakage Current	$I_R$	$V_R = 13\text{ V}$	–	–	1	$\mu\text{A}$	SJPZ-N18
		$V_R = 20\text{ V}$					SJPZ-N27
		$V_R = 25\text{ V}$					SJPZ-N33
		$V_R = 30\text{ V}$					SJPZ-N40
Breakdown Voltage	$V_Z$	$I_Z = 1\text{ mA}$	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	$r_Z$	$I_Z = 1\text{ mA}$	–	13	–	$\text{mV}/^\circ\text{C}$	SJPZ-N18
			–	23	–		SJPZ-N27
			–	29	–		SJPZ-N33
			–	35	–		SJPZ-N40
Breakdown Region Equivalent Resistance	$R_Z$	$I_Z = 10\text{ mA} \sim 20\text{ mA}$	–	2	–	$\Omega$	SJPZ-N18
			–	4	–		SJPZ-N27
			–	5	–		SJPZ-N33
			–	7	–		SJPZ-N40
Thermal Resistance	$R_{\text{th}(j-L)}$	(*)	–	20	–	$^\circ\text{C}/\text{W}$	

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

### 3. Performance Curves

#### 3.1. Power Dissipation

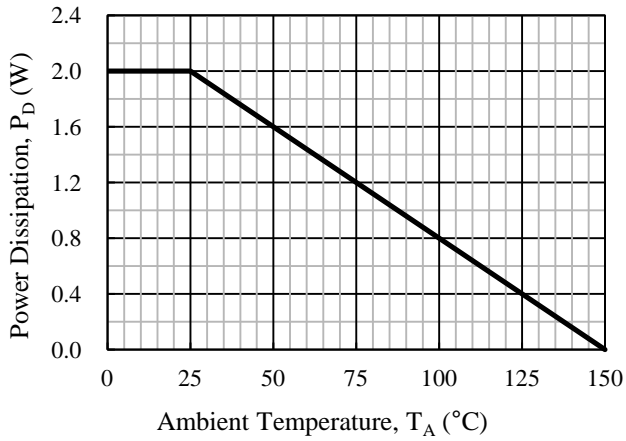


Figure 3-1 Power Dissipation curve\*

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

#### 3.2. Peak Surge Reverse Power Capability

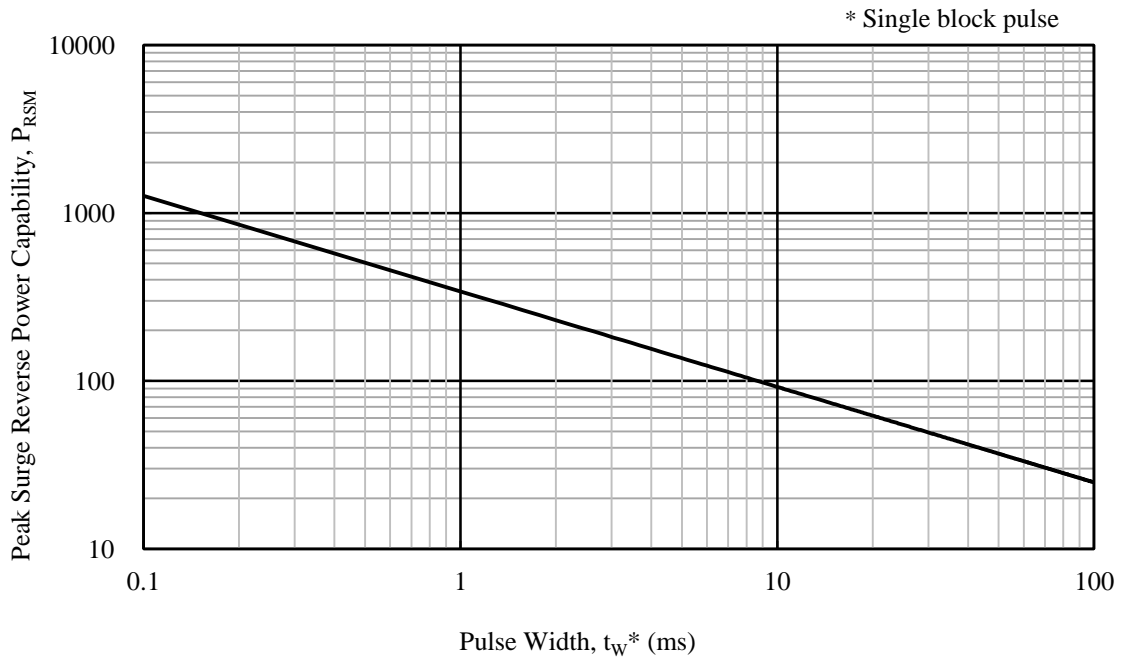


Figure 3-2 Peak surge reverse power capability

3.3. SJPZ-N18 Typical Characteristics

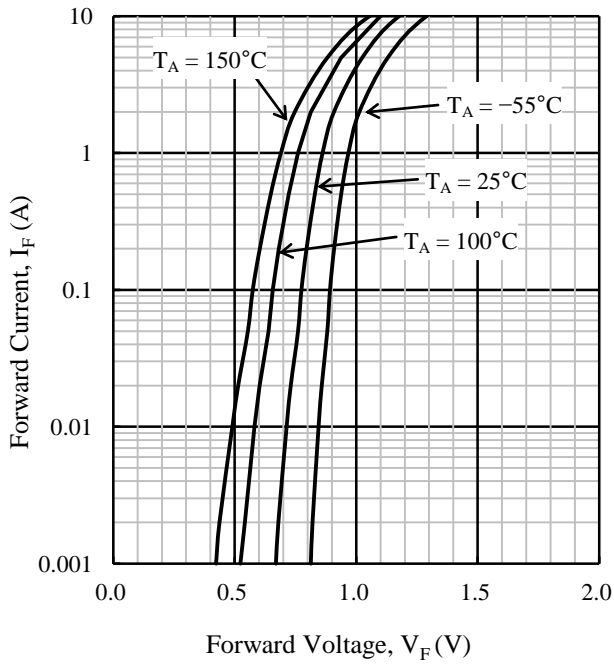


Figure 3-3  $I_F - V_F$  typical characteristics

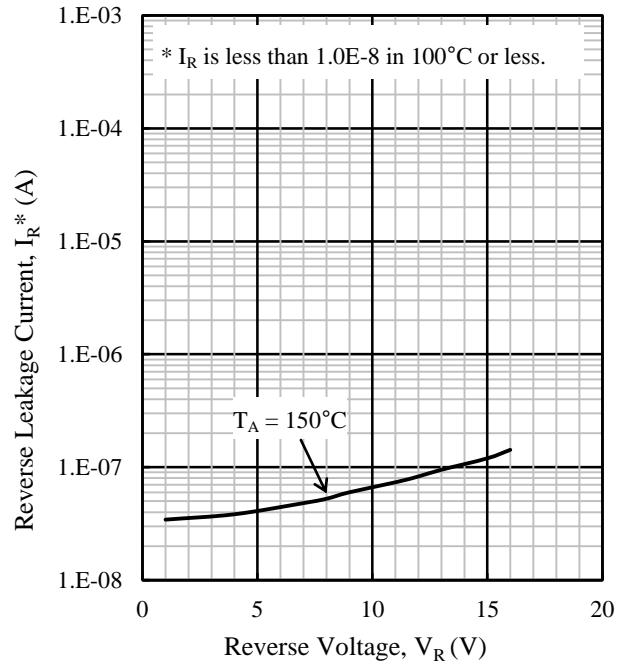


Figure 3-4  $I_R - V_R$  typical characteristics

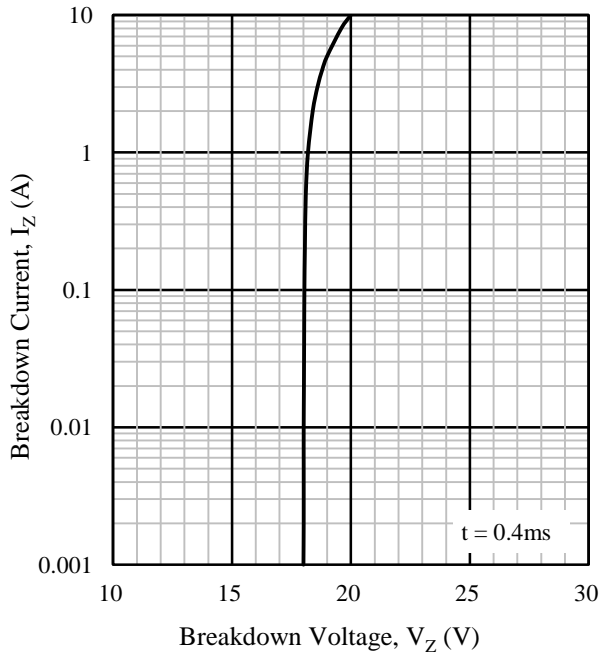


Figure 3-5  $I_Z - V_Z$  typical characteristics

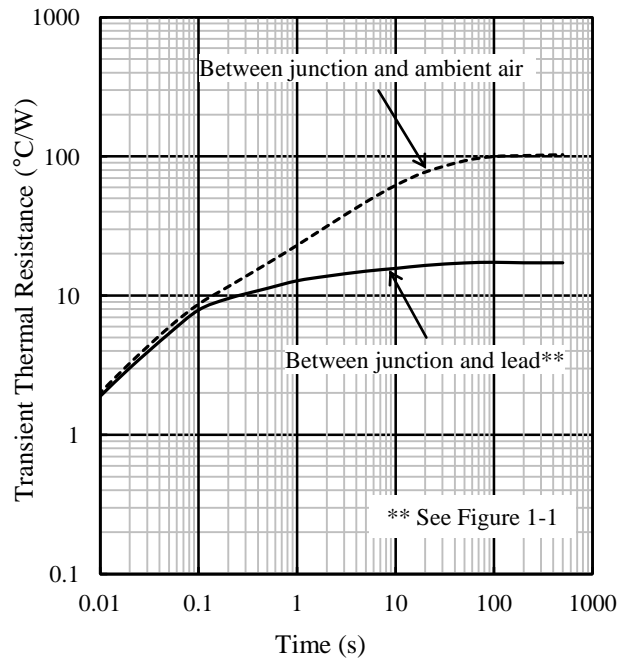


Figure 3-6 Typical transient thermal resistance

3.4. SJPZ-N27 Typical Characteristics

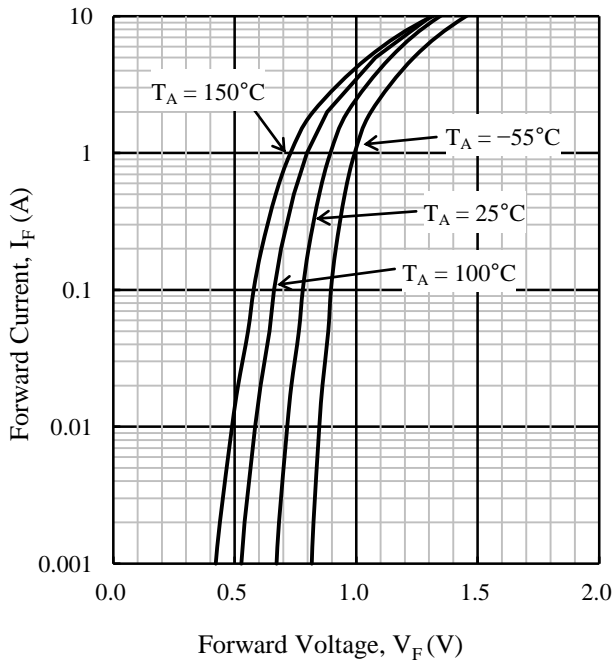


Figure 3-7  $I_F - V_F$  typical characteristics

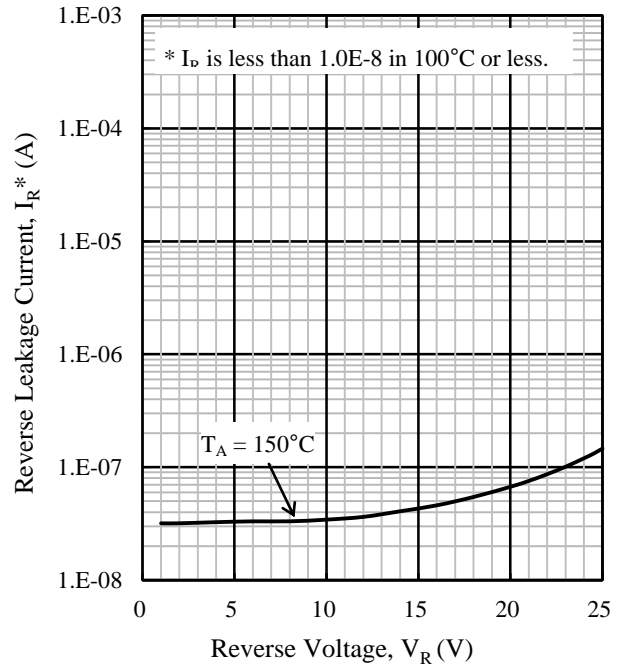


Figure 3-8  $I_R - V_R$  typical characteristics

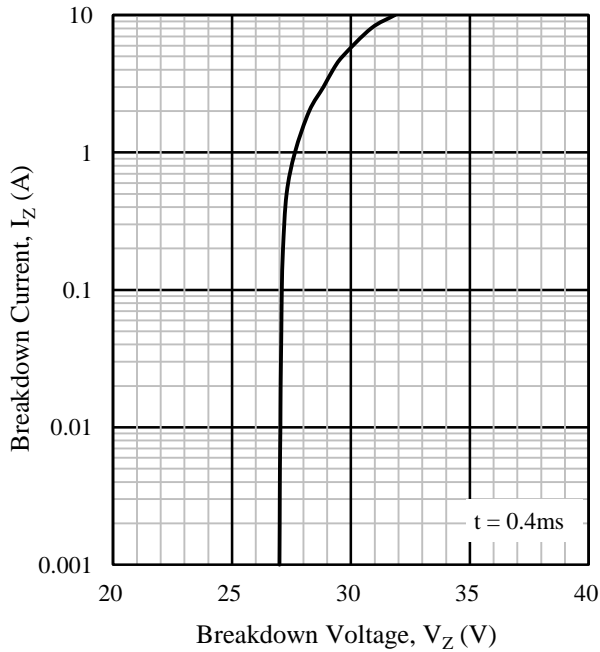


Figure 3-9  $I_Z - V_Z$  typical characteristics

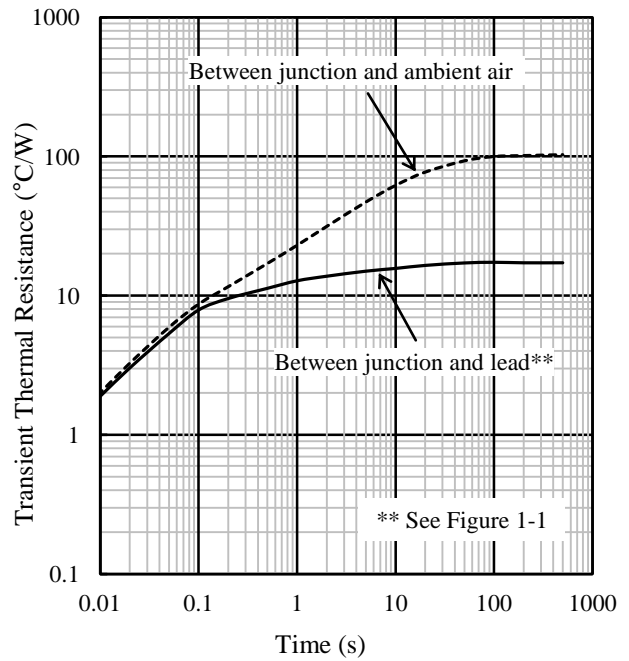


Figure 3-10 Typical transient thermal resistance

3.5. SJPZ-N33 Typical Characteristics

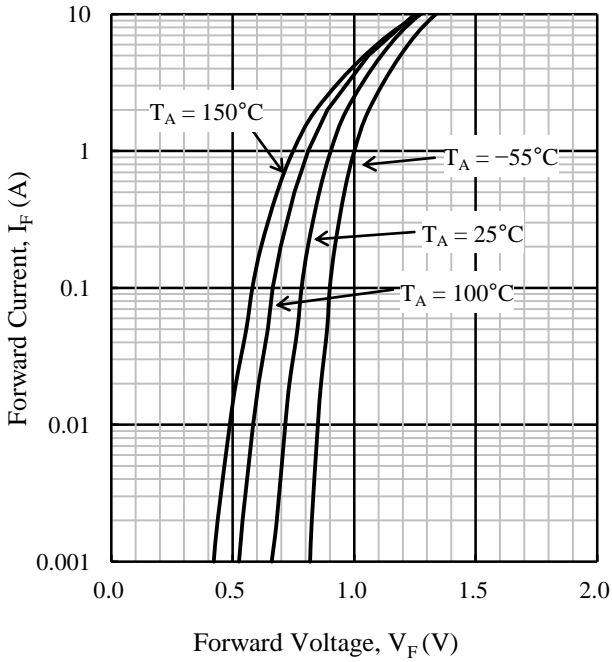


Figure 3-11  $I_F - V_F$  typical characteristics

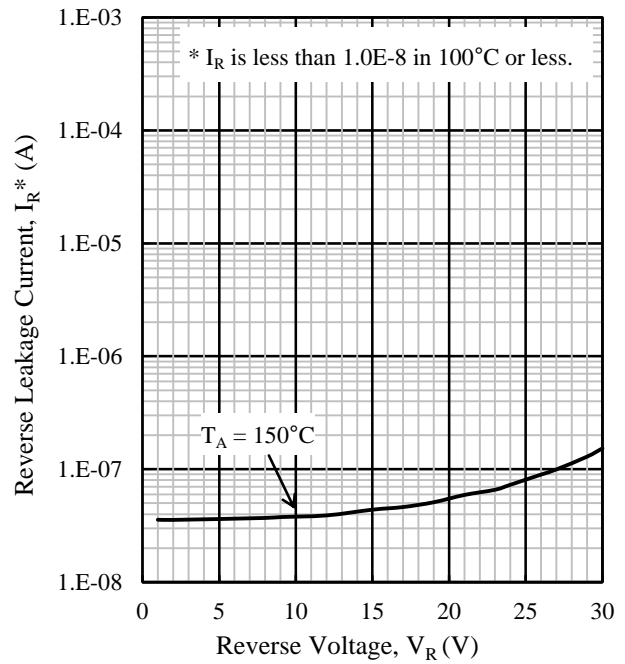


Figure 3-12  $I_R - V_R$  typical characteristics

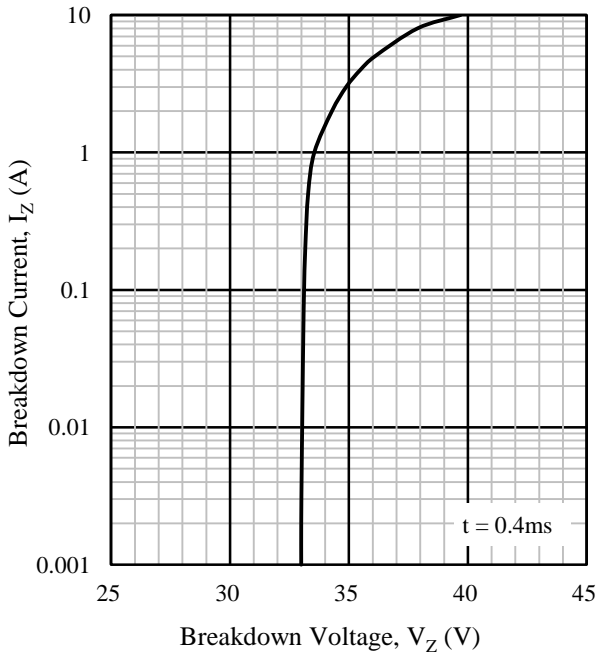


Figure 3-13  $I_Z - V_Z$  typical characteristics

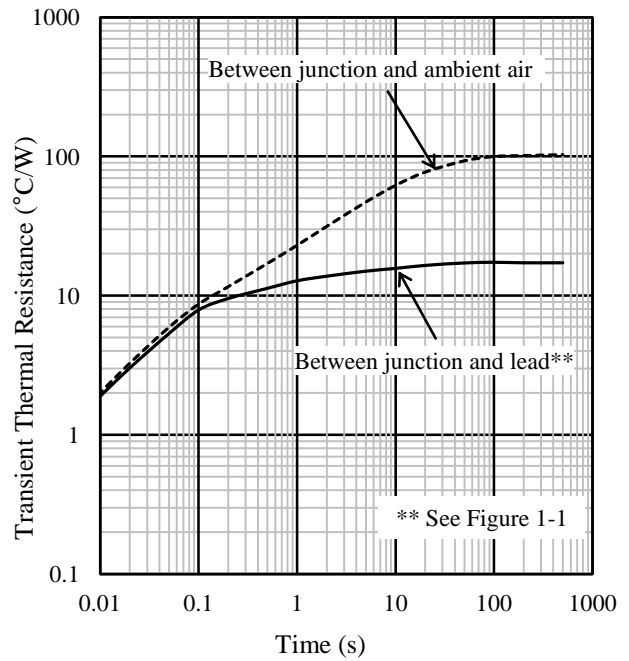


Figure 3-14 Typical transient thermal resistance



3.6. SJPZ-N40 Typical Characteristics

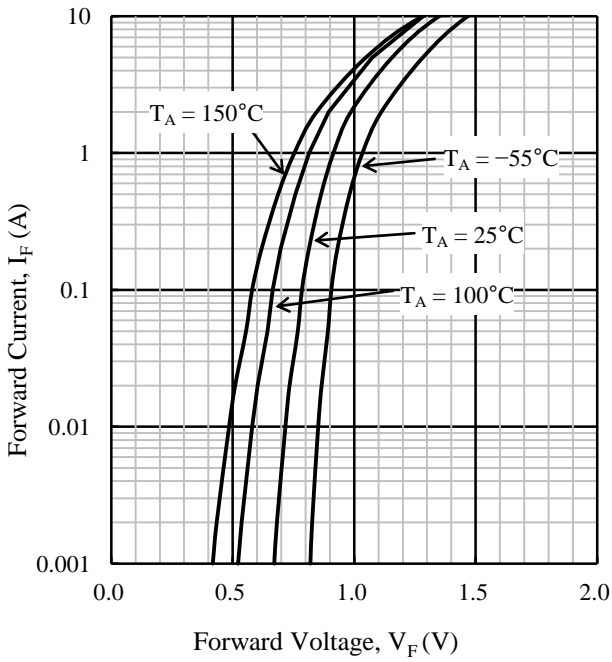


Figure 3-15  $I_F - V_F$  typical characteristics

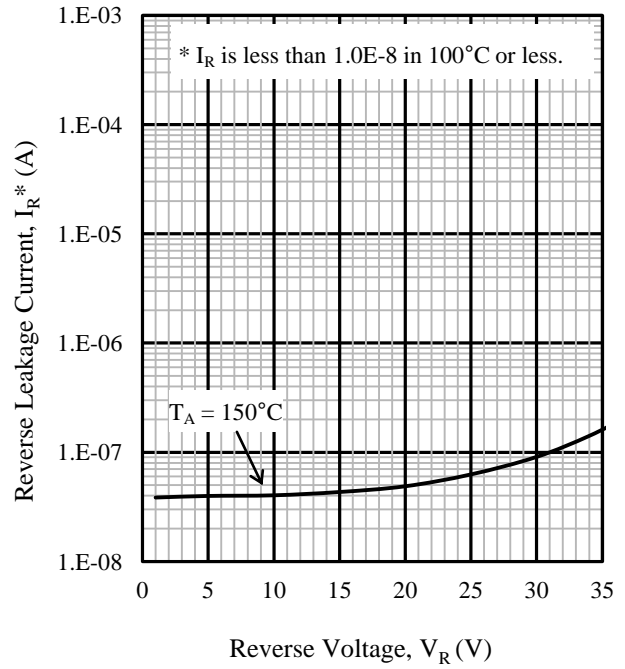


Figure 3-16  $I_R - V_R$  typical characteristics

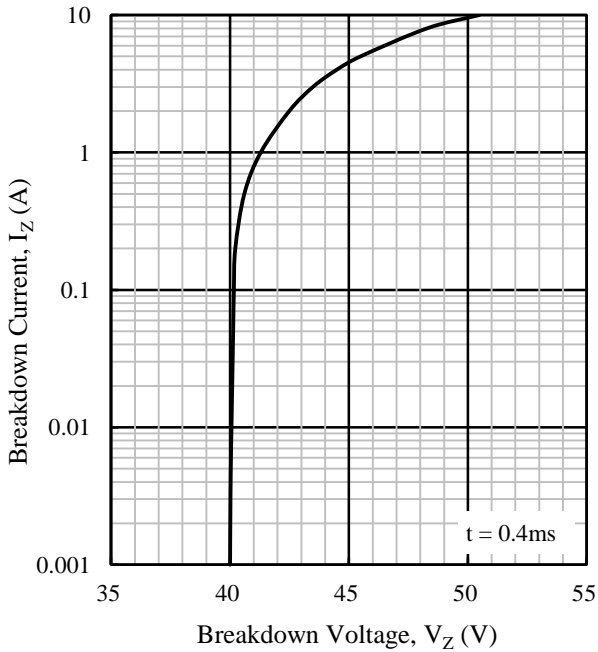


Figure 3-17  $I_Z - V_Z$  typical characteristics

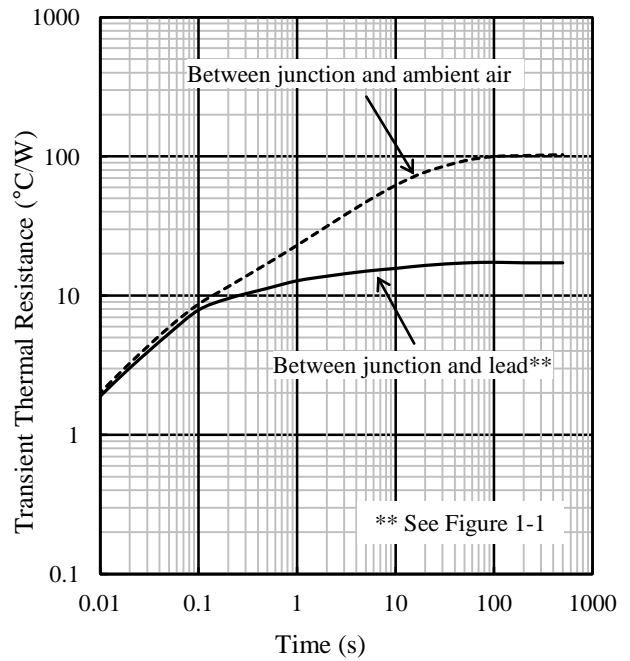
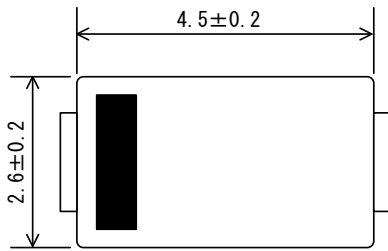


Figure 3-18 Typical transient thermal resistance

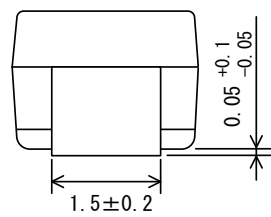
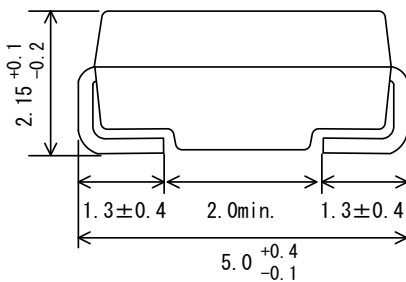
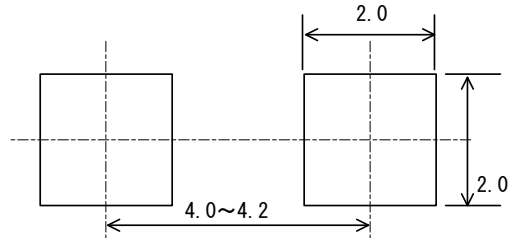
## SJPZ-N Series

### 4. External Dimensions

- SJP



Land Pattern Example



#### NOTES:

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

### 5. Marking Diagram

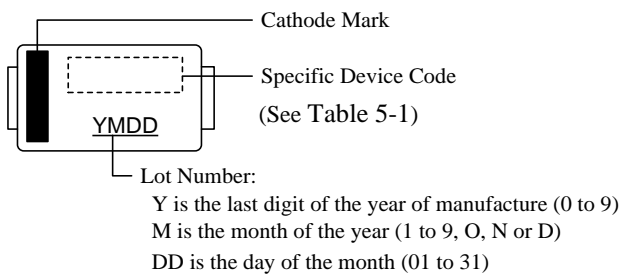


Table 5-1 Specific Device Code

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

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