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SZ-10N Series

Absolute Maximum Ratings

Unless otherwise specified, T_A = 25 °C.

Parameter	Symbol	Conditions	Rating	Unit	Remarks
Power Dissipation ⁽¹⁾	P _D	Lead temperature ⁽²⁾	5	W	SZ-10N27 SZ-10N40
			6		SZ-10NN27 SZ-10NN40
DC Blocking Voltage	V _{DC}	—	22	V	SZ-10N27 SZ-10NN27
			32		SZ-10N40 SZ-10NN40
Peak Surge Reverse Current	I _{RSM}	⁽³⁾	45	A	SZ-10N40
			70		SZ-10N27 SZ-10NN40
			90		SZ-10NN27
Junction Temperature	T _J	—	−55 to 175	°C	
Storage Temperature	T _{STG}	—	−55 to 175	°C	

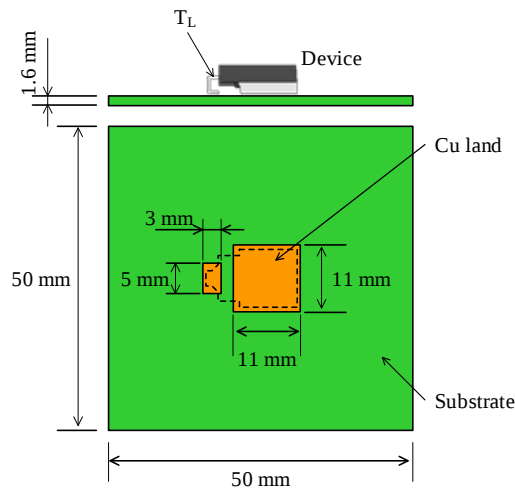


Figure 1. Lead Temperature Measurement Conditions

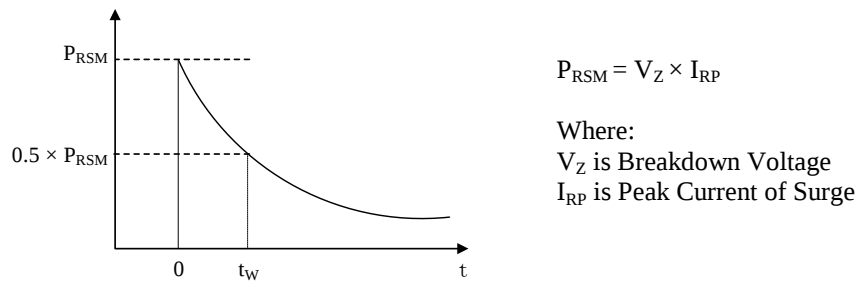


Figure 2. Definition of Peak Surge Reverse Current

⁽¹⁾ See Figure 3.

⁽²⁾ See Figure 1.

⁽³⁾ See Figure 2.

SZ-10N Series

Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Remarks
Forward Voltage Drop	V_F	$I_F = 6\text{ A}$	—	—	1.03	V	SZ-10N40
			—	—	1.00		SZ-10N27
			—	—	0.98		SZ-10NN40
			—	—	0.95		SZ-10NN27
Reverse Leakage Current	I_R	$V_R = V_{DC}$	—	—	10	μA	
Breakdown Voltage	V_Z	$I_Z = 10\text{ mA}$	24	—	30	V	SZ-10N27
			36	—	44		SZ-10NN27 SZ-10N40 SZ-10NN40
Breakdown Voltage Temperature Coefficient	r_Z	$I_Z = 10\text{ mA}$	—	22	—	$\text{mV}/^{\circ}\text{C}$	SZ-10N27
			—	36	—		SZ-10NN27 SZ-10N40 SZ-10NN40
Breakdown Region Equivalent Resistance	R_Z	$I_Z = 1\text{ A to }10\text{ A}$	—	0.08	—	Ω	SZ-10N27
			—	0.1	—		SZ-10NN27 SZ-10N40 SZ-10NN40
Thermal Resistance	$R_{th(j-L)}$	⁽⁴⁾	—	2.0	—	$^{\circ}\text{C}/\text{W}$	

⁽⁴⁾ $R_{th(j-c)}$ is thermal resistance between junction and lead. Lead temperature is measured as shown in Figure 1.

SZ10N27 Rating and Characteristic Curves

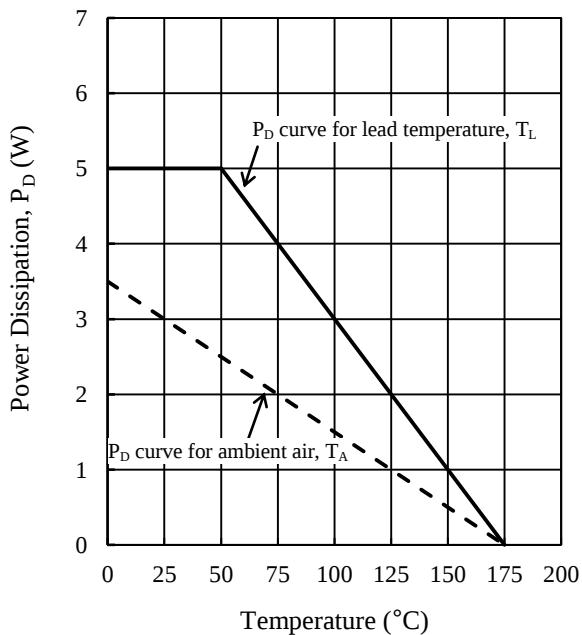


Figure 3. Power Dissipation Curves⁽⁵⁾

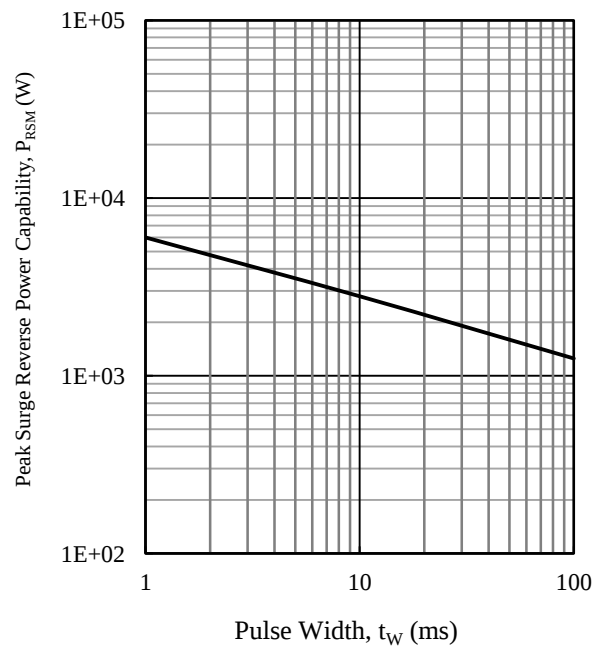


Figure 4. Peak Surge Reverse Power Capability⁽⁶⁾

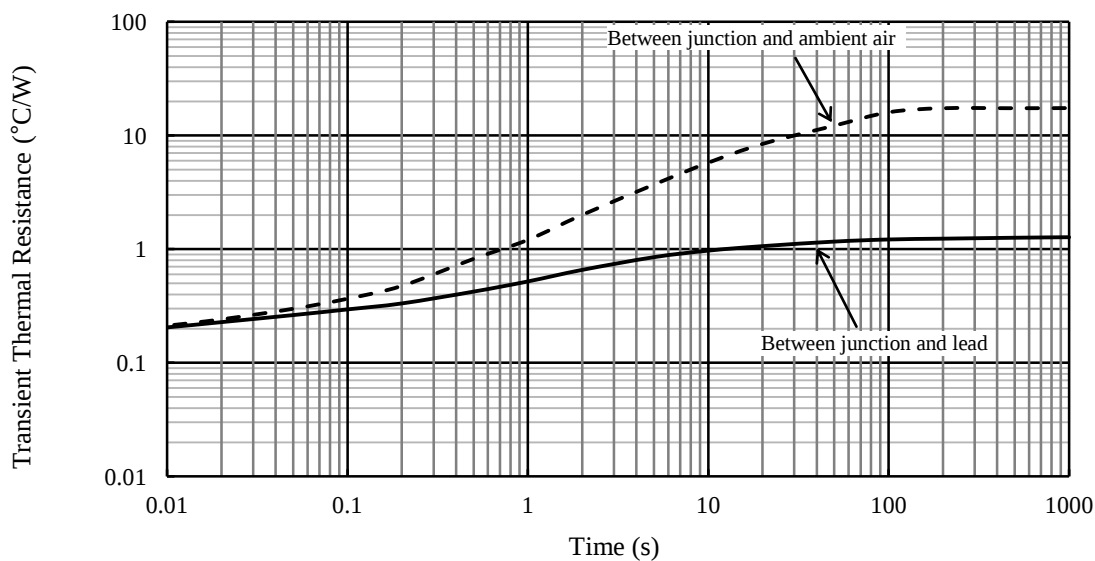


Figure 5. Typical Transient Thermal Resistance⁽⁷⁾

⁽⁵⁾ See Figure 1 for the measurement conditions of the lead temperature.

⁽⁶⁾ See Figure 2.

⁽⁷⁾ See Figure 1 for the measurement conditions of the lead temperature.

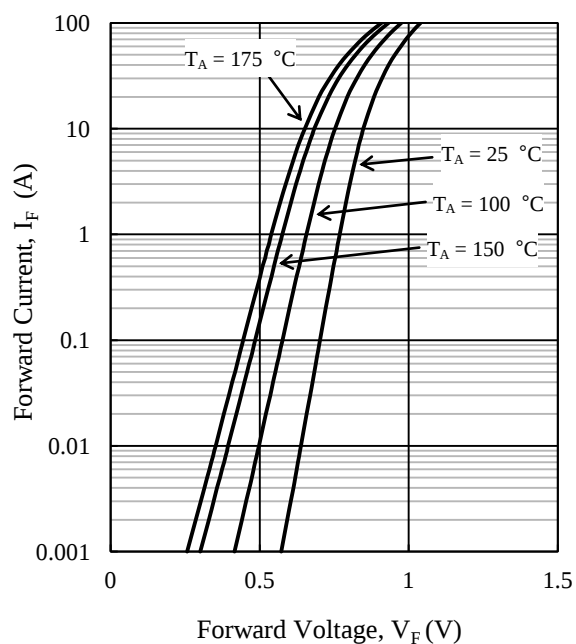


Figure 6. I_F vs. V_F Typical Characteristics

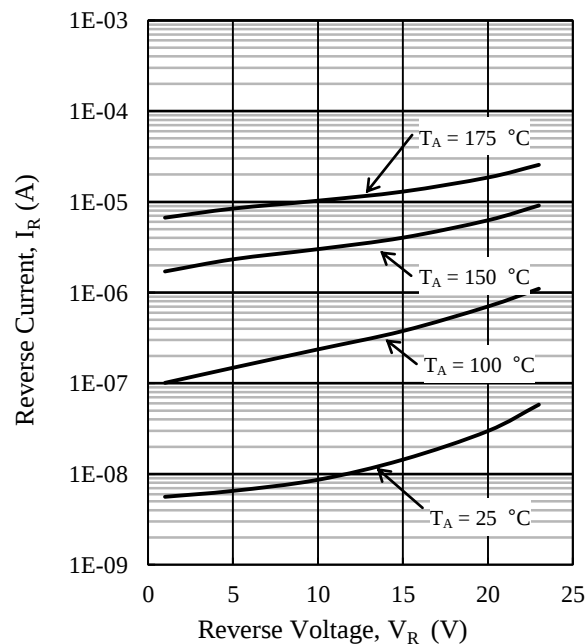


Figure 7. I_R vs. V_R Typical Characteristics

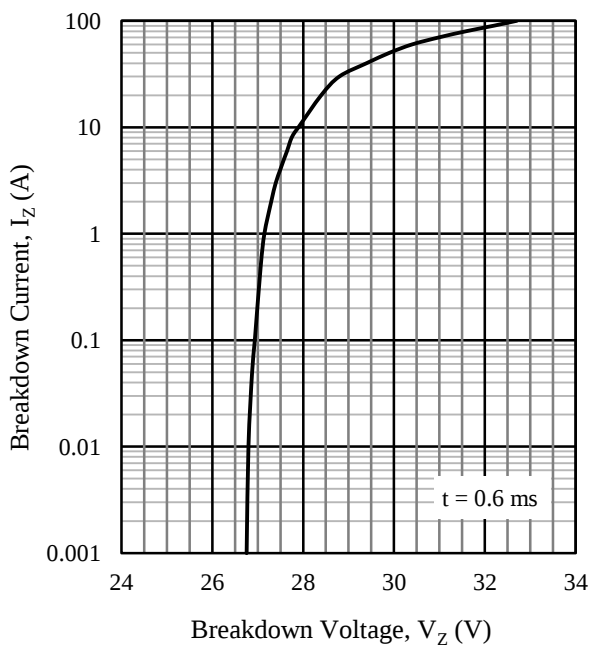


Figure 8. I_Z vs. V_Z Typical Characteristics

SZ10NN27 Rating and Characteristic Curves

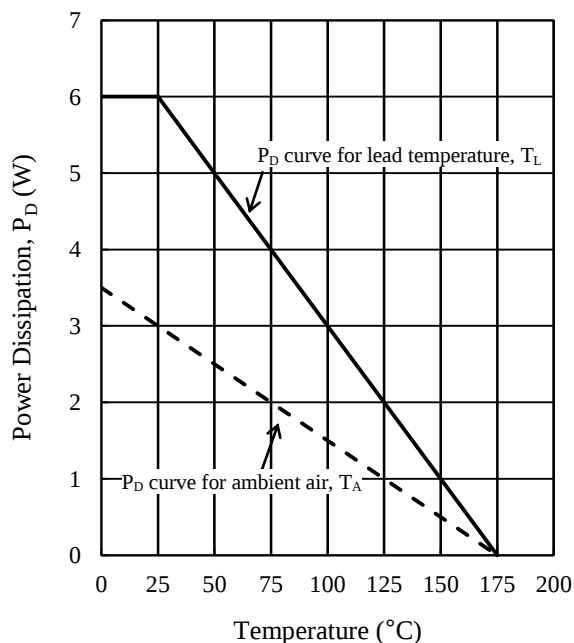


Figure 9. Power Dissipation Curves⁽⁸⁾

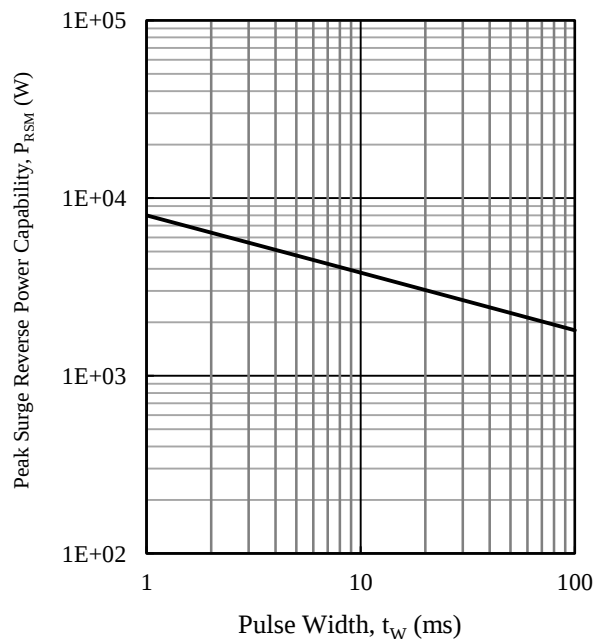


Figure 10. Peak Surge Reverse Power Capability⁽⁹⁾

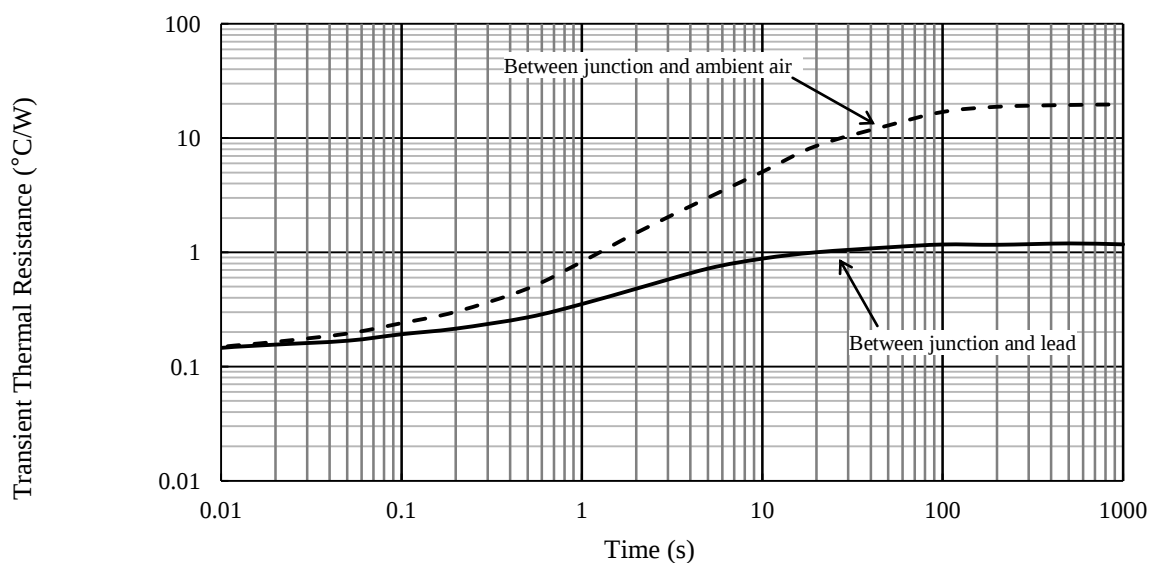


Figure 11. Typical Transient Thermal Resistance⁽¹⁰⁾

⁽⁸⁾ See Figure 1 for the measurement conditions of the lead temperature.

⁽⁹⁾ See Figure 2.

⁽¹⁰⁾ See Figure 1 for the measurement conditions of the lead temperature.

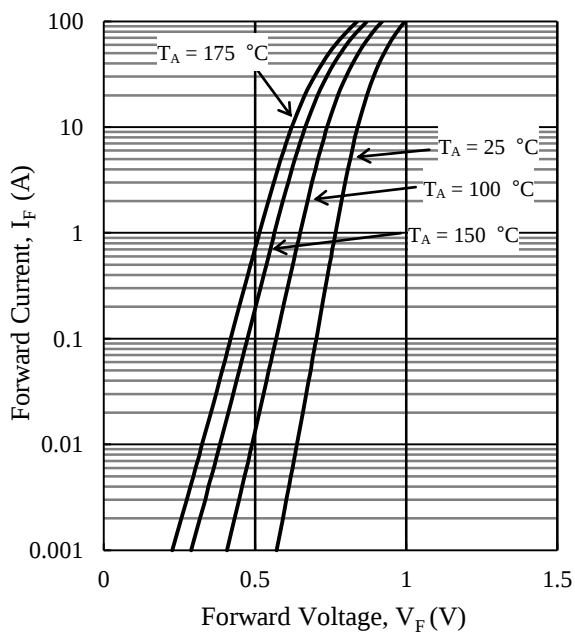


Figure 12. V_F vs. I_F Typical Characteristics

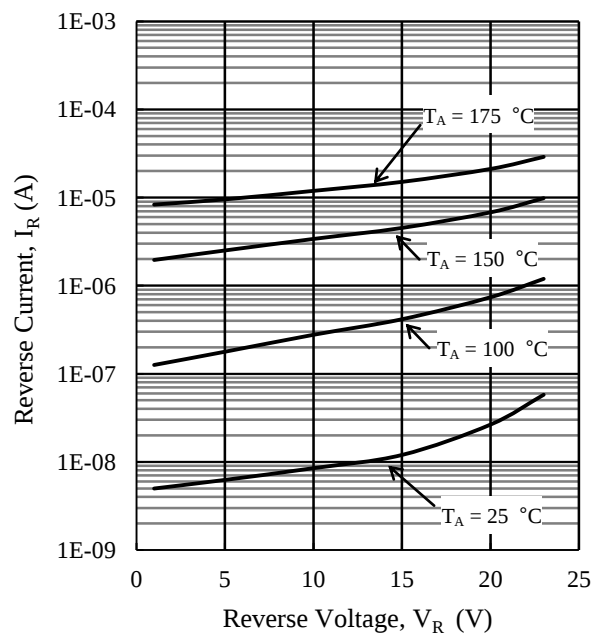


Figure 13. V_R vs. I_R Typical Characteristics

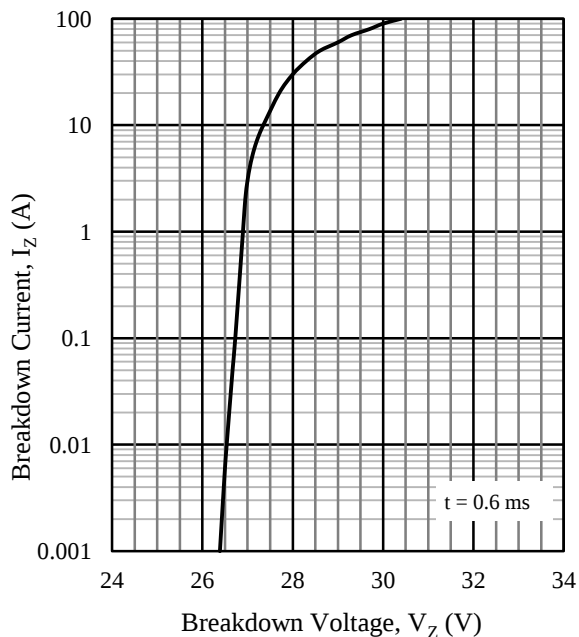


Figure 14. I_Z vs. V_Z Typical Characteristics

SZ10N40 Rating and Characteristic Curves

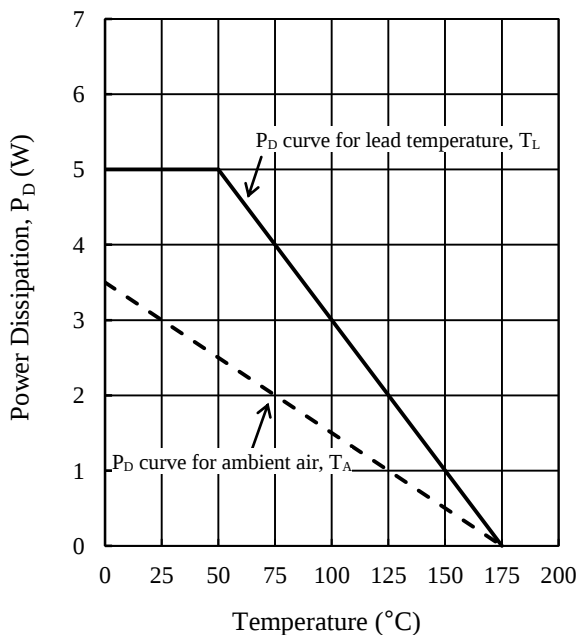


Figure 15. Power Dissipation Curves⁽¹¹⁾

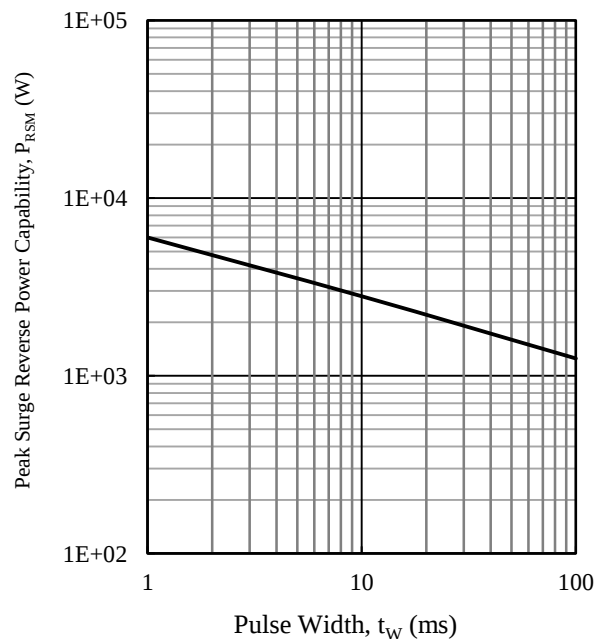


Figure 16. Peak Surge Reverse Power Capability⁽¹²⁾

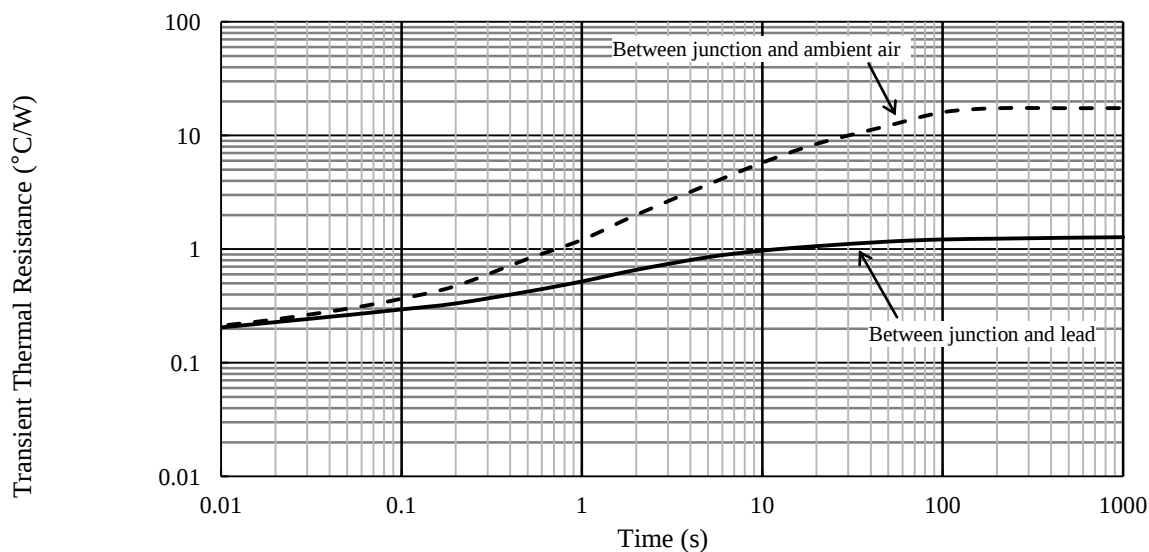


Figure 17. Typical Transient Thermal Resistance⁽¹³⁾

⁽¹¹⁾ See Figure 1 for the measurement conditions of the lead temperature.

⁽¹²⁾ See Figure 2.

⁽¹³⁾ See Figure 1 for the measurement conditions of the lead temperature.

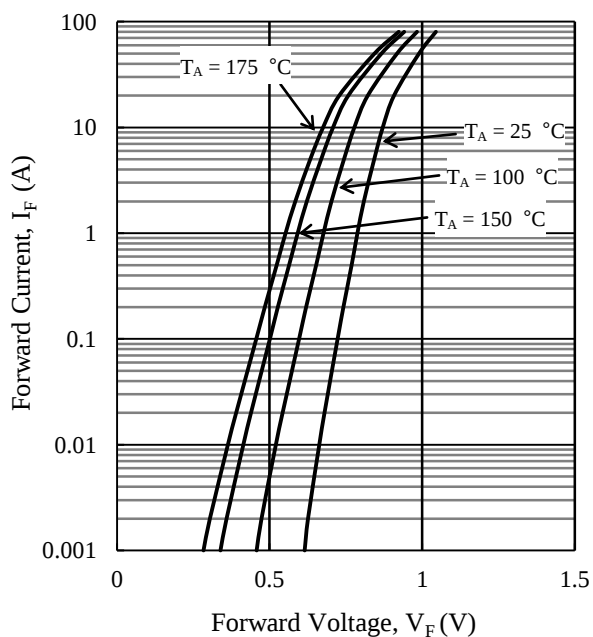


Figure 18. V_F vs. I_F Typical Characteristics

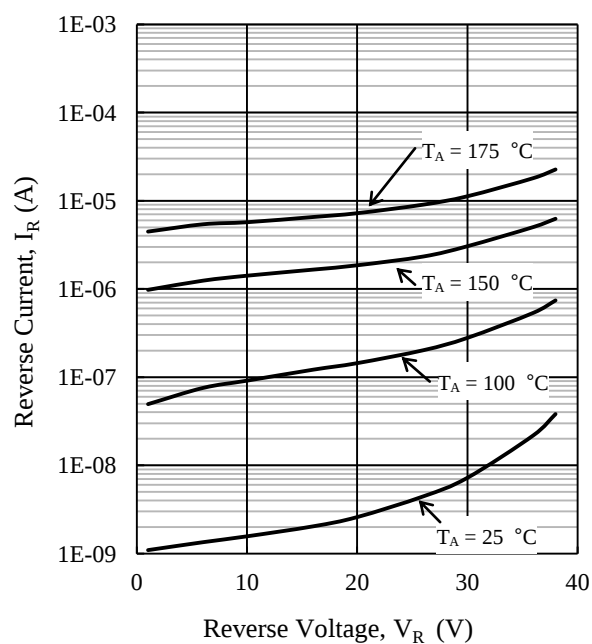


Figure 19. V_R vs. I_R Typical Characteristics

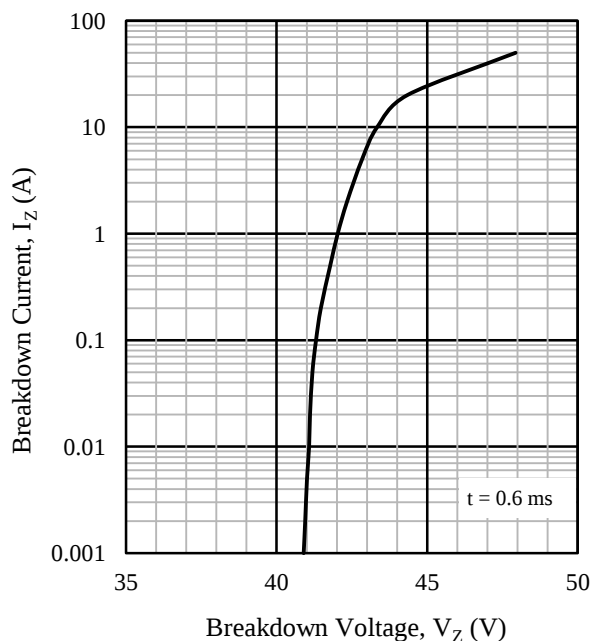


Figure 20. I_Z vs. V_Z Typical Characteristics

SZ10NN40 Rating and Characteristic Curves

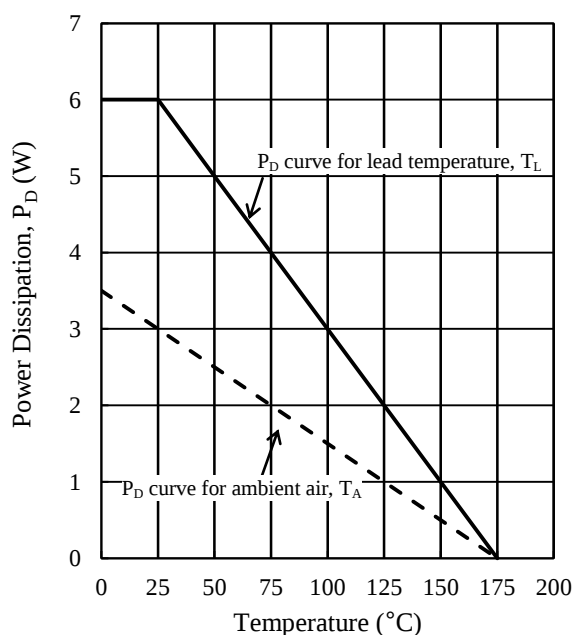


Figure 21. Power Dissipation Curves⁽¹⁴⁾

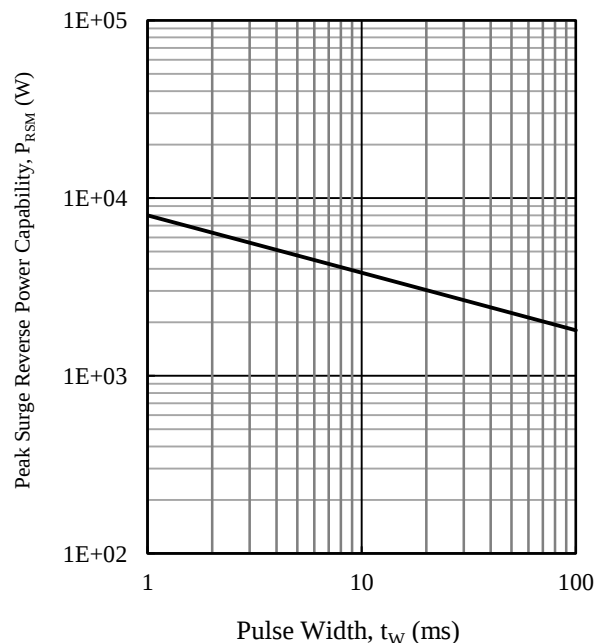


Figure 22. Peak Surge Reverse Power Capability⁽¹⁵⁾

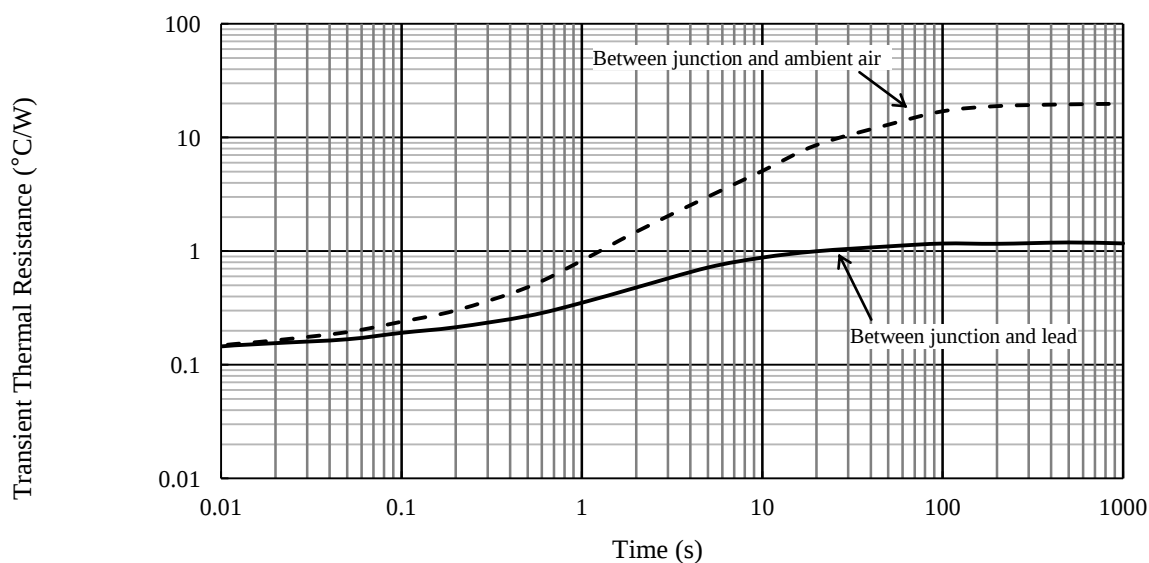


Figure 23. Typical Transient Thermal Resistance⁽¹⁶⁾

⁽¹⁴⁾ See Figure 1 for the measurement conditions of the lead temperature.

⁽¹⁵⁾ See Figure 2.

⁽¹⁶⁾ See Figure 1 for the measurement conditions of the lead temperature.

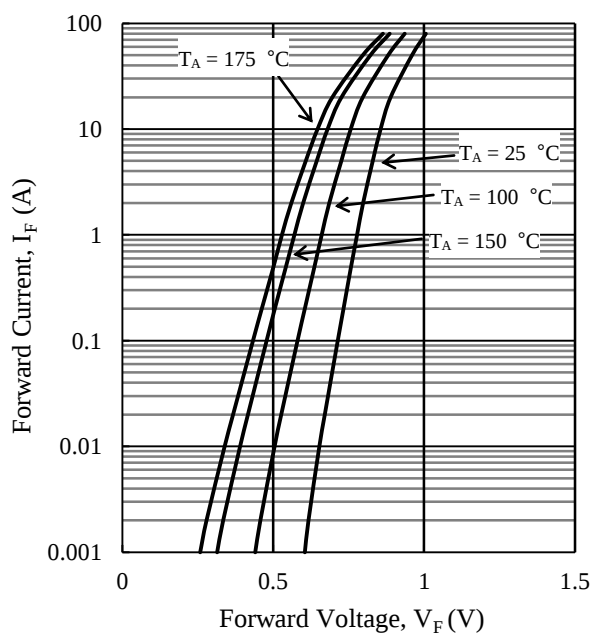


Figure 24. V_F vs. I_F Typical Characteristics

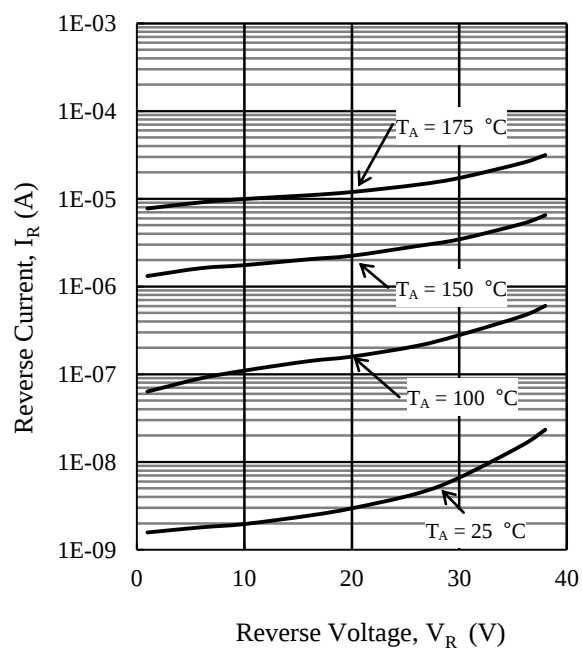


Figure 25. V_R vs. I_R Typical Characteristics

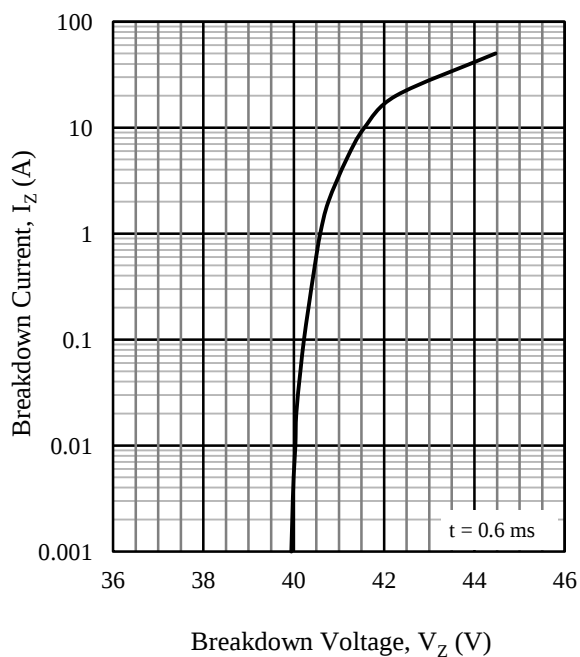
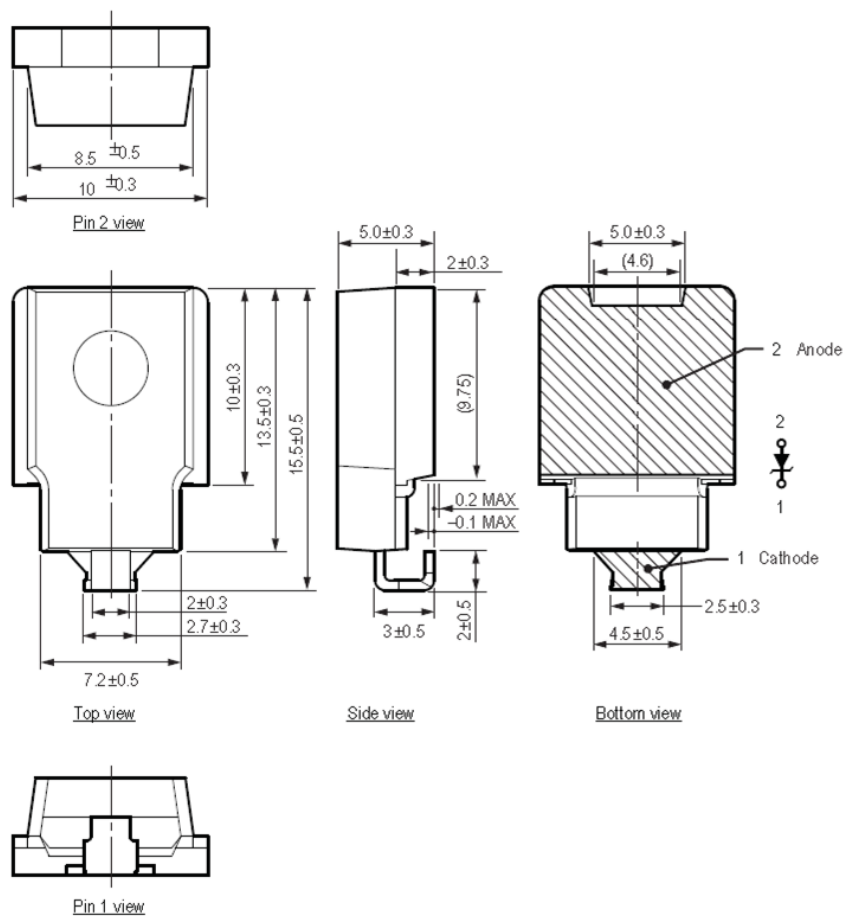


Figure 26. I_Z vs. V_Z Typical Characteristics

SZ-10N Series

Physical Dimensions

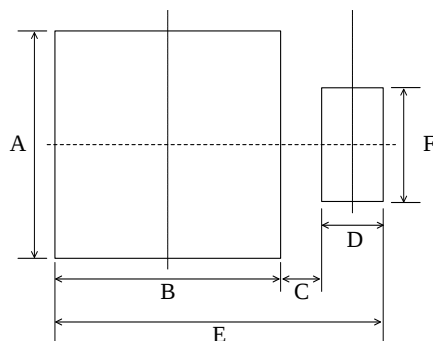
• SZ-10 Package



NOTES:

- Dimensions in millimeters
- Bare lead frame: Pb-free (RoHS compliant)
- When soldering the products, be sure to minimize the working time, within the following limits:
 Reflow (MSL 3)
 Preheat: 180 °C / 90 ± 30 s
 Solder heating: 250 °C / 10 ± 1s, 2 times (260 °C peak)
 Soldering iron: 380 ± 10 °C / 3.5 ± 0.5 s, 1 time

• SZ-10 Land Pattern Example



Symbol	Dimensions (mm)	
	Min.	Max.
A	10.8	11.2
B	10.8	11.2
C	2.4	2.6
D	3.1	3.5
E	16.5	17.1
F	5.3	5.7

SZ-10N Series

Marking Diagram

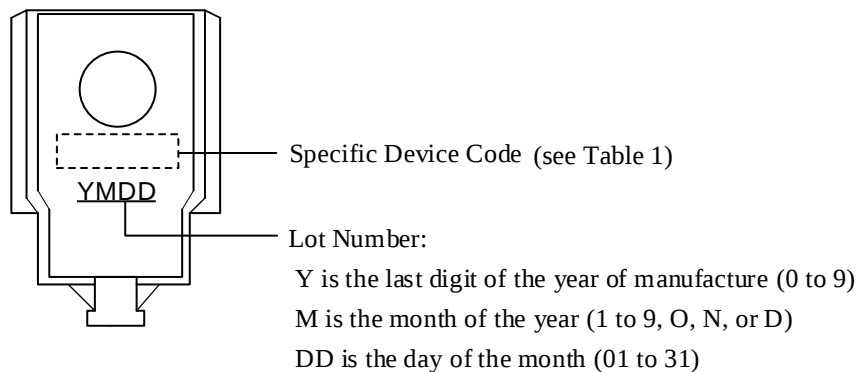


Table 1. Specific Device Code

Specific Device Code	Part Number
BN27	SZ-10N27
BN40	SZ-10N40
DN27	SZ-10NN27
DN40	SZ-10NN40

Important Notes

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