

Power Zener Diodes

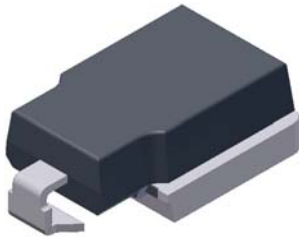
Features and Benefits

- DC blocking voltage, V_{DC} , 22 to 32 V
- Low V_F (0.95 to 1.0 V max, at $I_F = 6$ A)
- Low reverse leakage current, $I_R = 10 \mu A$
- High temperature range
- Flammability: UL94V-0 (Equivalent)

Applications

- High peak power
- High-temperature
- Clamping diode
- General use Zener diode

Package: Surface Mount SZ-10

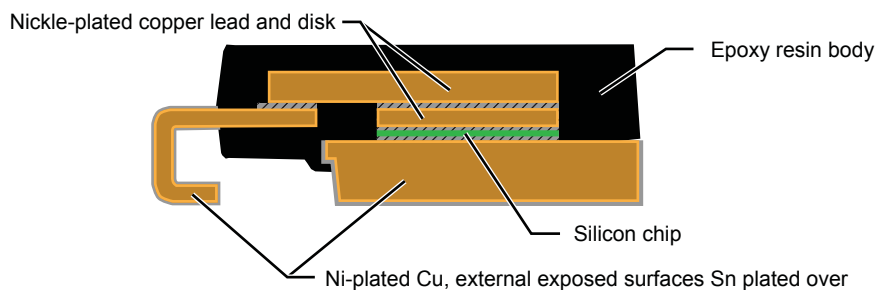


Not to scale

Description

The SZ-10 series are 22 V and 32 V Zener diodes capable of withstanding high peak power surges. The resin case and substantial mounting surfaces allow substantial heat dissipation, and operating temperatures up to $T_J = 175^\circ C$, facilitating heat-dissipation design.

Product Structure



Selection Guide

Part Number	Permissible Power Dissipation, P_D (W)	DC Blocking Voltage, V_{DC} (V)	Peak Surge Reverse Current, I_{RSM} (A)	Forward Voltage, $V_F(\max)$ (V)	Breakdown Voltage, V_Z (V)	Breakdown Region Equivalent Resistance, $R_Z(\text{typ})$ (V)	Tape and Reel Packing
SZ-10N27VL	5	22	70	1.0	24 to 30	0.08	Cathode Left
SZ-10N40VL	5	32	45	1.0	36 to 44	0.2	Cathode Left
SZ-10NN27VL	6	22	90	0.98	24 to 30	0.08	Cathode Left
SZ-10NN40VL	6	32	70	0.95	36 to 44	0.1	Cathode Left

Absolute Maximum Ratings

Characteristic	Symbol	Conditions	Rating	Unit	
Permissible Power Dissipation	P_D	SZ-10N27 SZ-10N40	See Power Derating chart	5	W
		SZ-10NN27 SZ-10NN40	See Power Derating chart	6	W
DC Blocking Voltage	V_{DC}	SZ-10N27 SZ-10NN27		22	V
		SZ-10N40 SZ-10NN40		32	V
Peak Surge Reverse Current	I_{RSM}	SZ-10N27 SZ-10NN40	Refer to figure 1	70	A
		SZ-10N40		45	A
		SZ-10NN27		90	A
Junction Temperature	T_J		-55 to 175	°C	
Storage Temperature	T_{stg}		-55 to 175	°C	

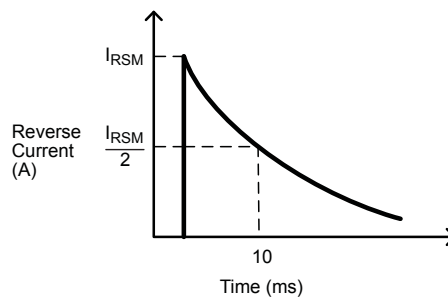
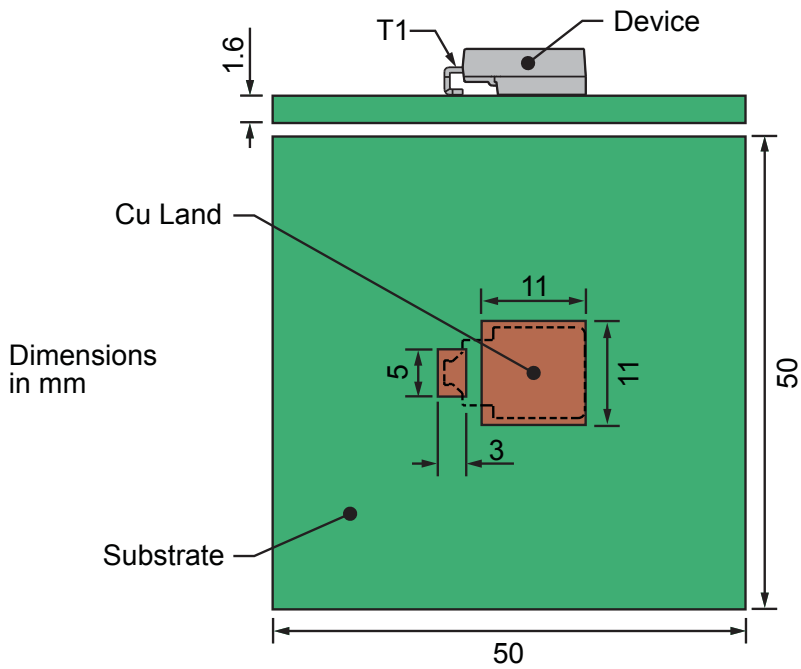
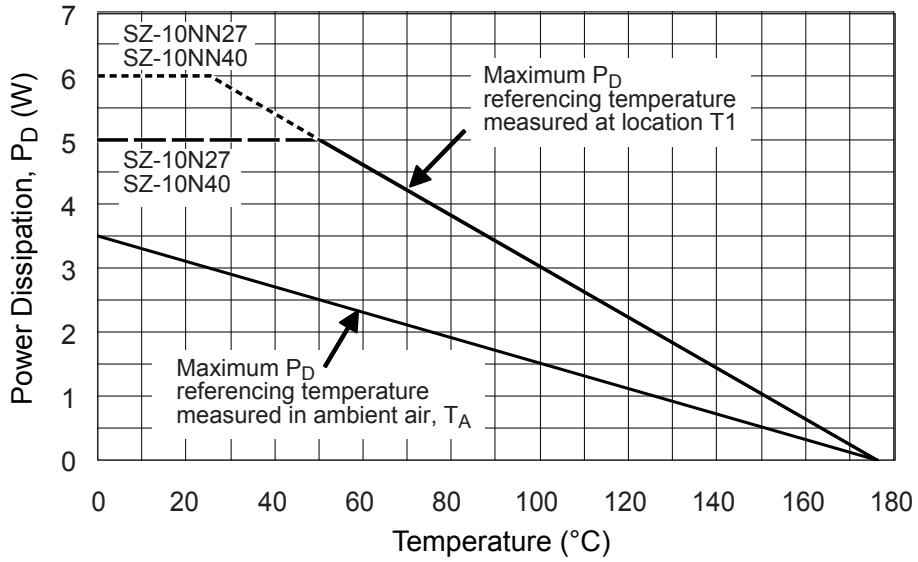


Figure 1. Waveform of reverse current surge

Electrical Characteristics valid at $T_A = 25^\circ\text{C}$, unless otherwise specified

Characteristic	Symbol	Test Conditions		Value	Unit
Forward Voltage Drop	V_F	SZ-10N27 SZ-10N40	$I_F = 6\text{ A}$	1.0 (max)	V
		SZ-10NN27		0.98 (max)	V
		SZ-10NN40		0.95 (max)	V
Reverse Leakage Current	I_R	$V_R = V_{DC}$		10 (max)	μA
Breakdown Voltage	V_Z	SZ-10N27 SZ-10NN27	$I_Z = 10\text{ mA}$	24 to 30	V
		SZ-10N40 SZ-10NN40		36 to 44	V
Breakdown Voltage Temperature Coefficient	r_Z		$I_Z = 10\text{ mA}$	36 (typ)	$\text{mV}/^\circ\text{C}$
Breakdown Region Equivalent Resistance	R_Z	SZ-10N27 SZ-10NN27	$I_Z = 1\text{ to }10\text{ A}$	0.8 (typ)	Ω
		SZ-10N40		0.2 (typ)	Ω
		SZ-10NN40		0.1 (typ)	Ω

Power Derating



Peak Surge Reverse Power

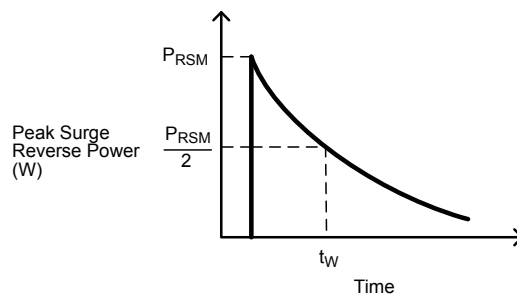
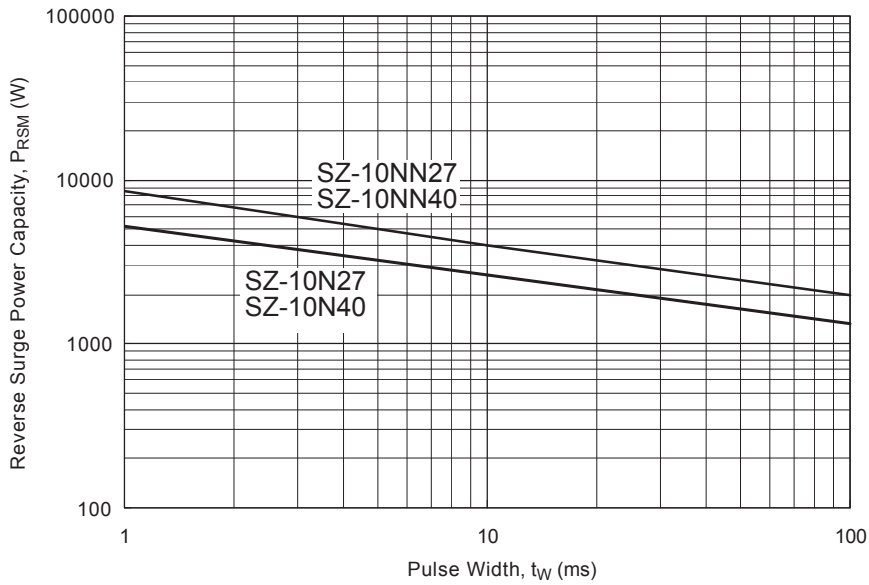
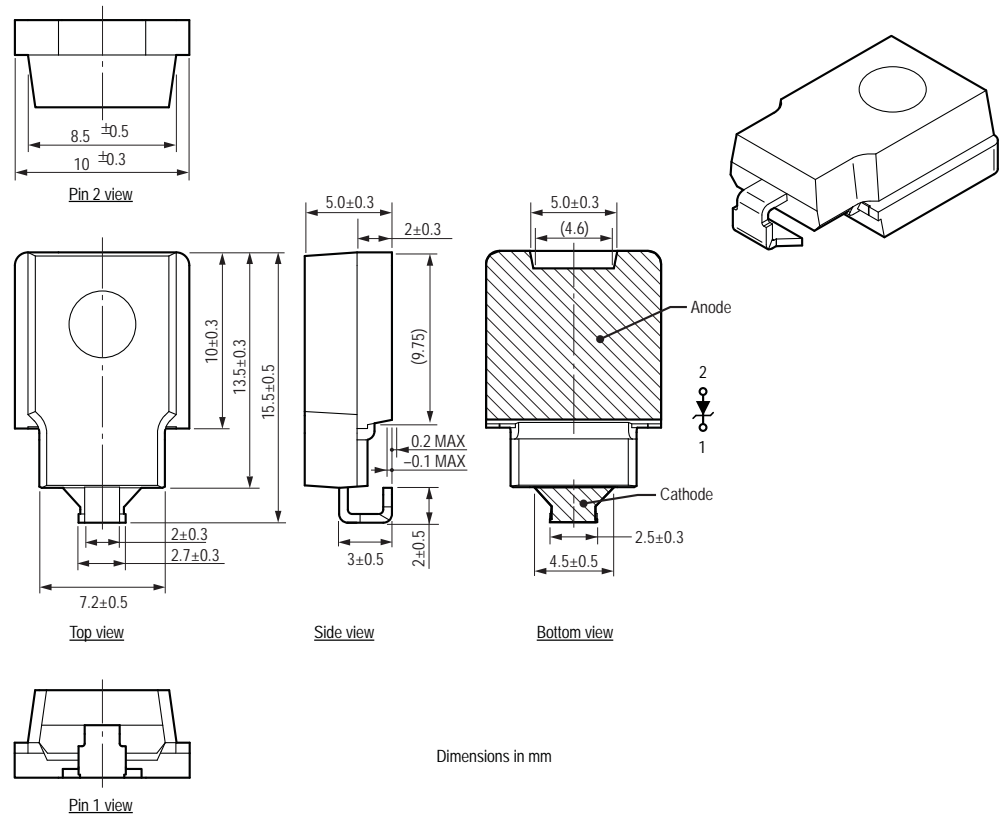
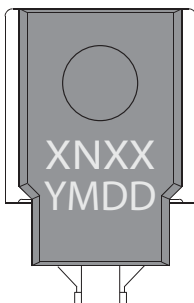


Figure 2. Waveform of reverse power surge

Package Outline



Package Marking



- Product Type Number: xNxx
(see table)
- Lot Number:
1st letter: last digit of year
2nd letter: month
1 through 9 – January through September
O – October, N – November, D – December
3rd and 4th letters: day of month
(2 digits)
Example: 3507 indicates May 7, 2013

Product Type Number	Abbreviation of
BN27	SZ-10N27
BN40	SZ-10N40
DN27	SZ-10NN27
DN40	SZ-10NN40

Material Composition and Internal Structure

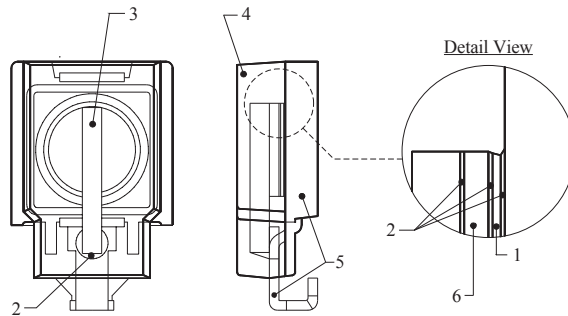


Pin treatment Pb-free. Device composition compliant with the RoHS directive.

5 W variants:

SZ-10N27
SZ-10N40

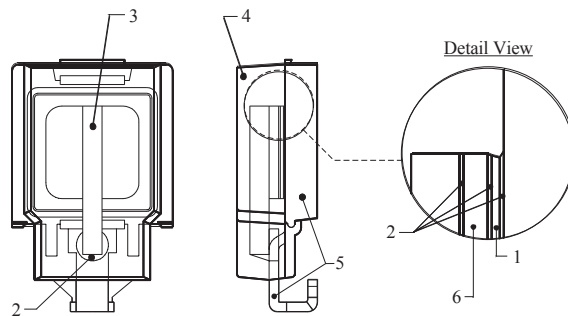
1. Chip: Si
2. Solder: Pb-based
3. Inside lead: Ni-plated Cu
4. Body: Plastic, epoxy resin
5. Leadframe: Ni-plated Cu, external exposed surfaces Sn plated over
6. Disk: Ni-plated Cu



6 W variants:

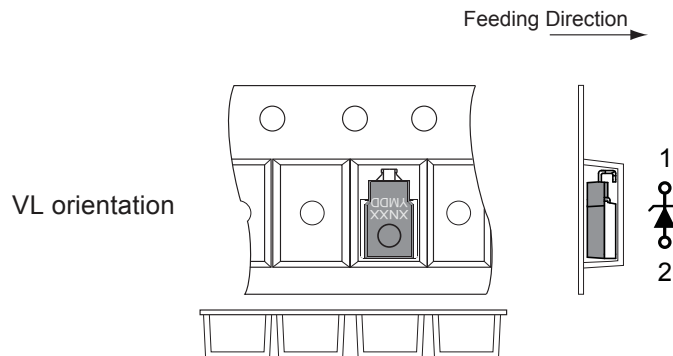
SZ-10NN27
SZ-10NN40

1. Chip: Si
2. Solder: Pb-based
3. Inside lead: Ni-plated Cu
4. Body: Plastic, epoxy resin
5. Leadframe: Ni-plated Cu, external exposed surfaces Sn plated over
6. Disk: Ni-plated Cu

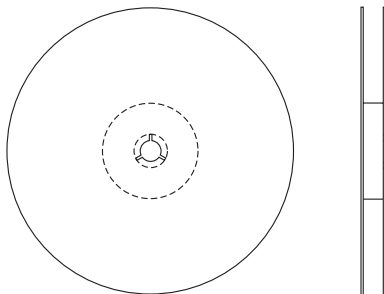


Packing Options

Embossed Tape



Reel



750 pieces per reel

- (1) Device is placed in the embossed pocket with the mounting electrode down.
- (2) 150 to 200 mm leader tape is attached to the tip of the tape.
- (3) 10 or more blank pockets are provided at both the beginning and the end of the tape.

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