

## Power Zener Diodes

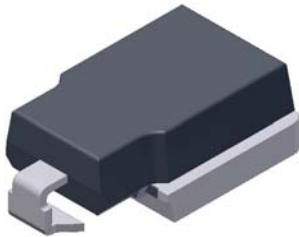
### Features and Benefits

- 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

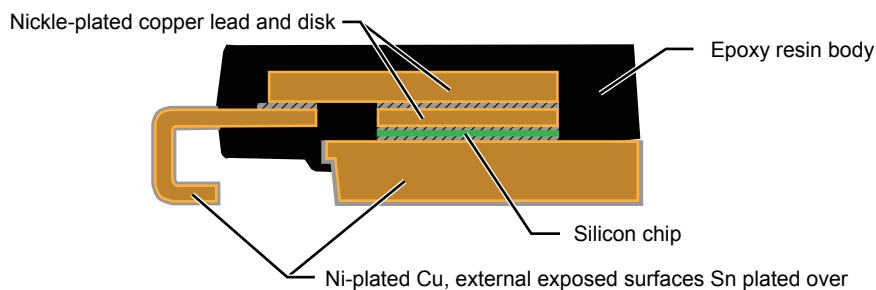


*Not to scale*

### 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	

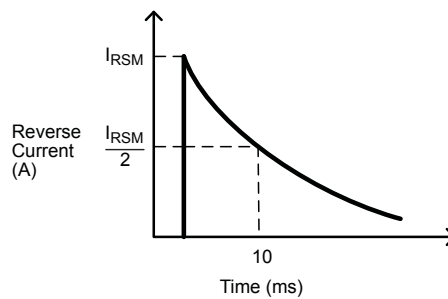
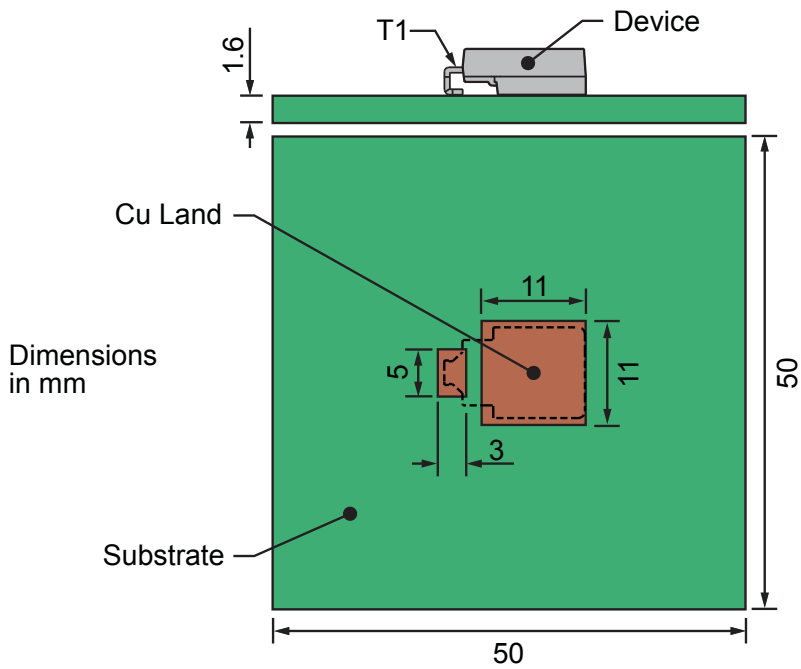
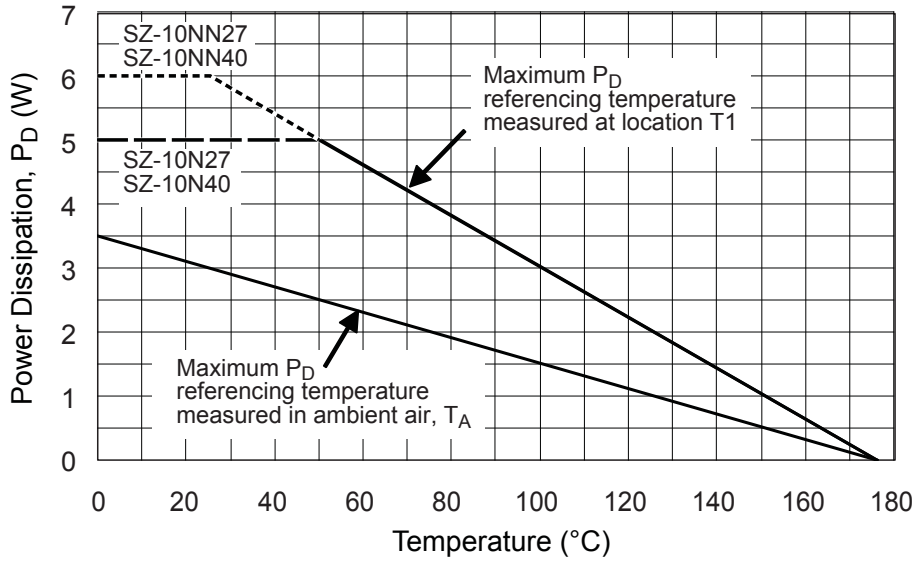


Figure 1. Waveform of reverse current surge

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)	$\mu\text{A}$
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)	$\Omega$
		SZ-10N40		0.2 (typ)	$\Omega$
		SZ-10NN40		0.1 (typ)	$\Omega$

Power Derating



Peak Surge Reverse Power

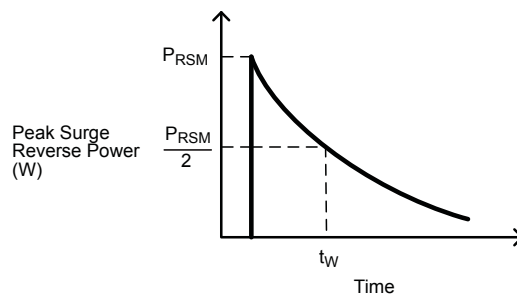
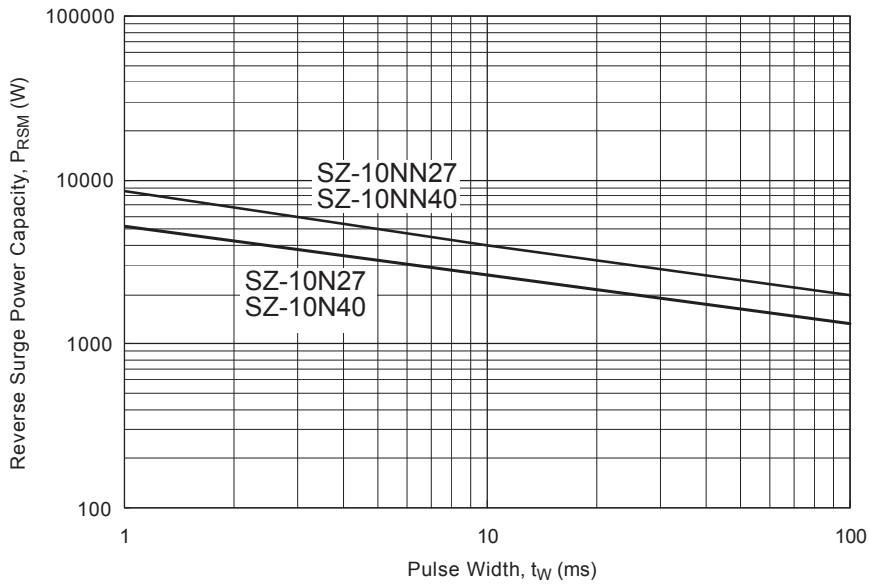
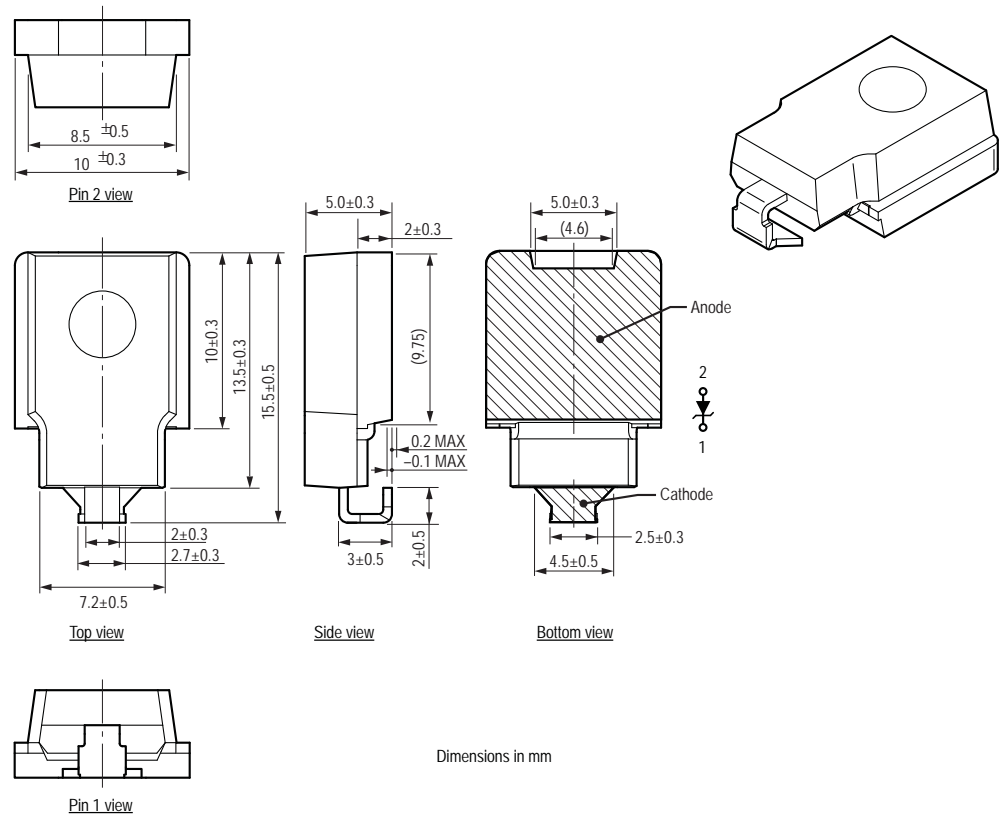
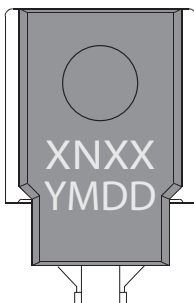


Figure 2. Waveform of reverse power surge

## Package Outline



## Package Marking



1. Product Type Number: xNxx  
(see table)
  2. 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

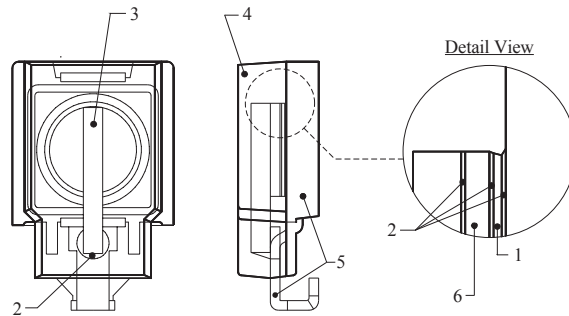


*Pin treatment Pb-free. Device composition compliant with the RoHS directive.*

### 5 W variants:

**SZ-10N27**  
**SZ-10N40**

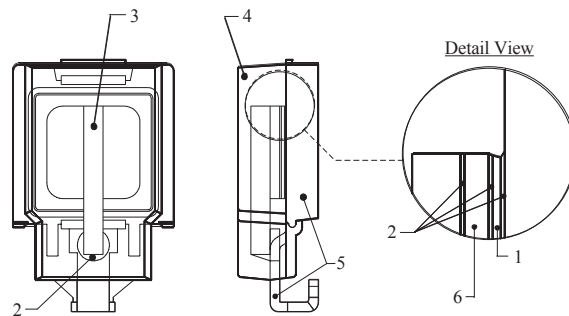
1. Chip: Si
2. Solder: Pb-based
3. Inside lead: Ni-plated Cu
4. Body: Plastic, epoxy resin
5. Leadframe: Ni-plated Cu, external exposed surfaces Sn plated over
6. Disk: Ni-plated Cu



### 6 W variants:

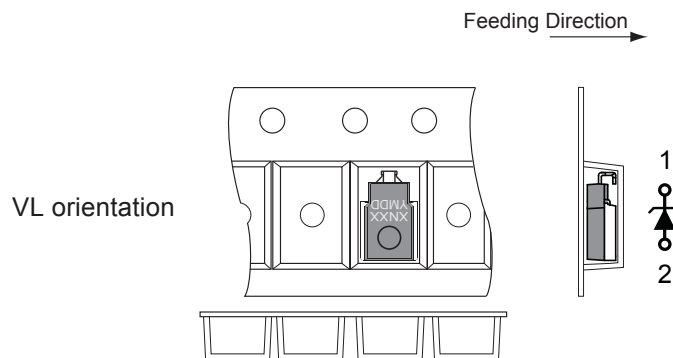
**SZ-10NN27**  
**SZ-10NN40**

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

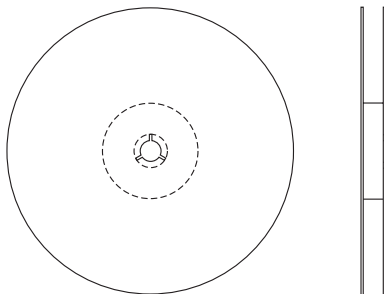


## Packing Options

### 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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