Power Zener Diodes

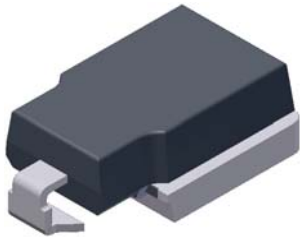
Features and Benefits

- 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 µA
- High temperature range
- Flammability: UL94V-0 (Equivalent)

Applications

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

Package: Surface Mount SZ-10

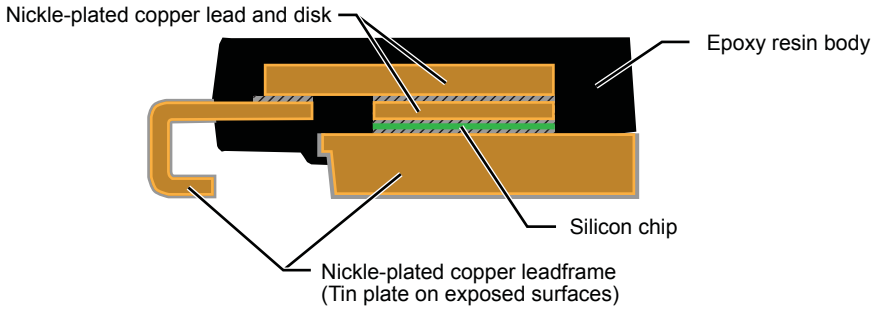


Not to scale

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°C, facilitating heat-dissipation design.

Product Structure



SANKEN ELECTRIC CO., LTD.
http://www.sanken-ele.co.jp/en/

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(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

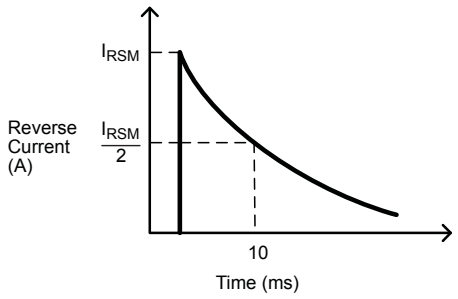
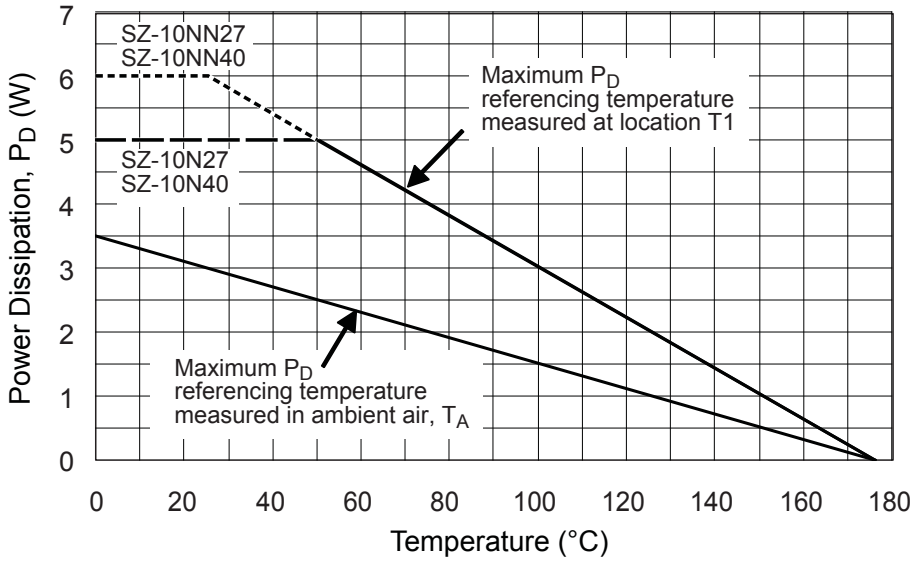


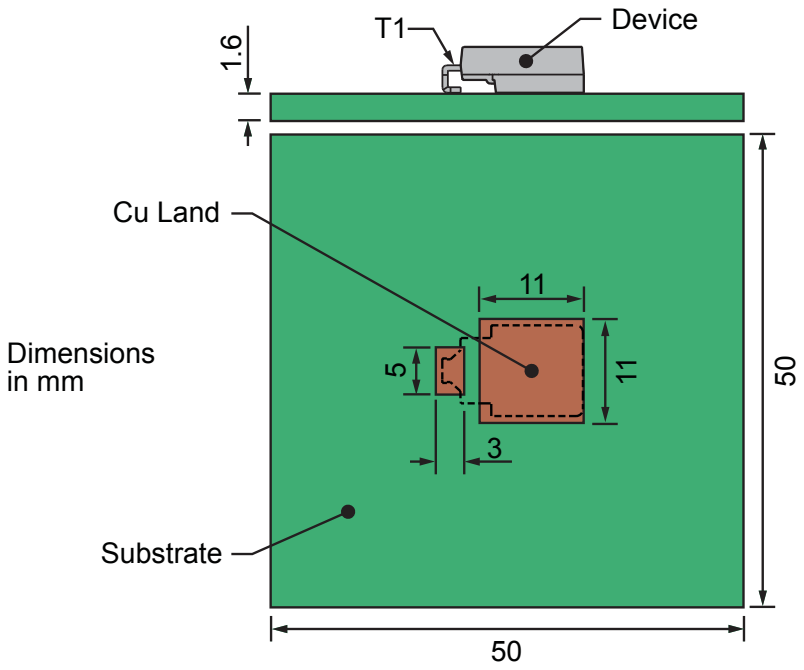
Figure 1. Waveform of reverse current surge

Electrical Characteristics valid at T_A = 25°C, unless otherwise specified

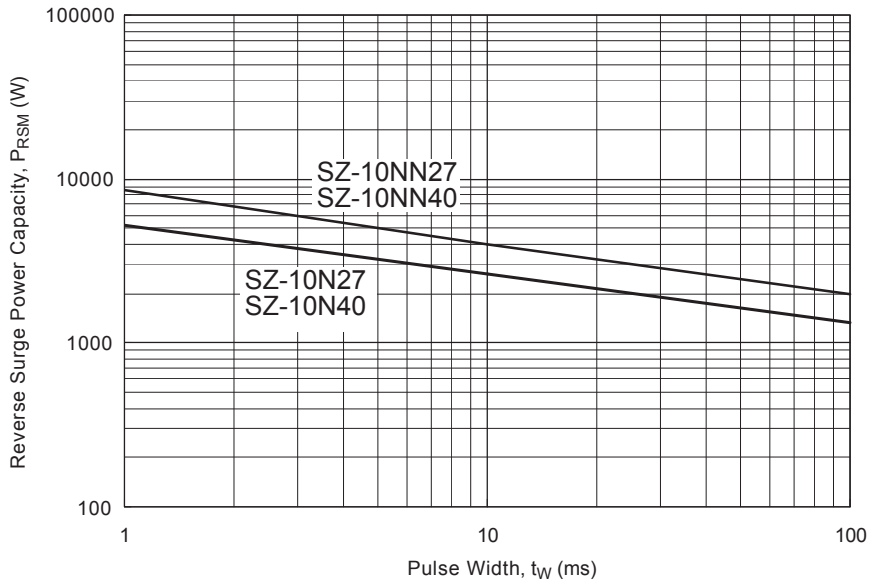
Characteristic	Symbol	Test Conditions		Value	Unit
Forward Voltage Drop	V_F	SZ-10N27 SZ-10N40	I_F = 6 A	1.0 (max)	V
		SZ-10NN27		0.98 (max)	V
		SZ-10NN40		0.95 (max)	V
Reverse Leakage Current	I_R	$V_R = V_{DC}$		10 (max)	μA
Breakdown Voltage	V_Z	SZ-10N27 SZ-10NN27	I_Z = 10 mA	24 to 30	V
		SZ-10N40 SZ-10NN40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

Power Derating





Peak Surge Reverse Power



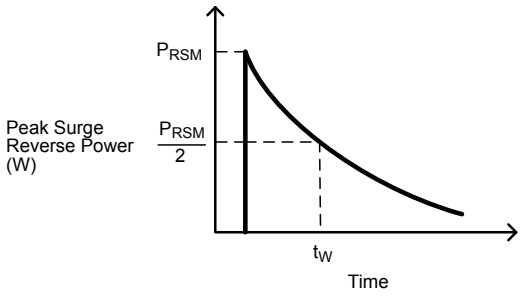
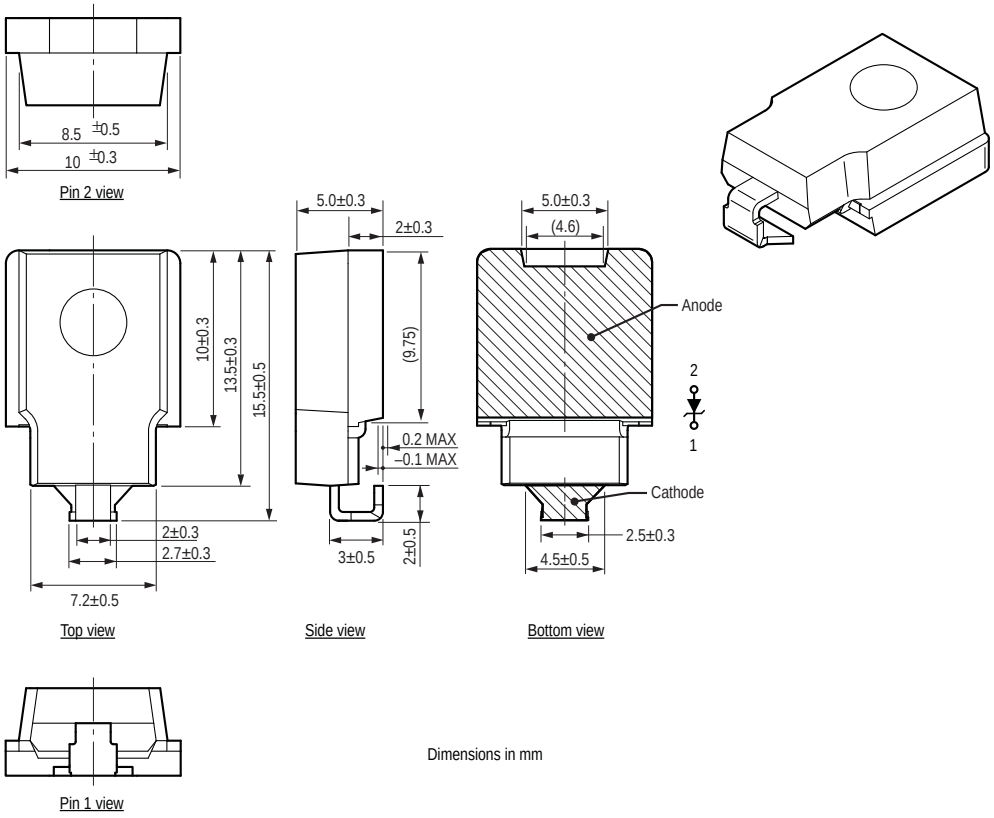
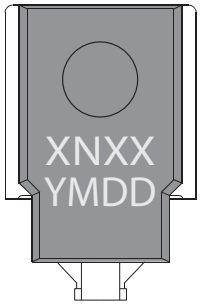


Figure 2. Waveform of reverse power surge

Package Outline



Package Marking



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)

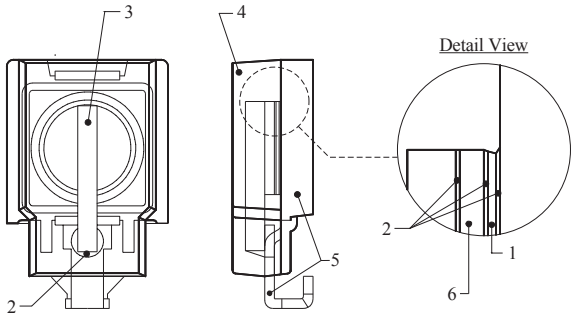
Example: *3507* indicates May 7, 2013

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

Material Composition and Internal Structure

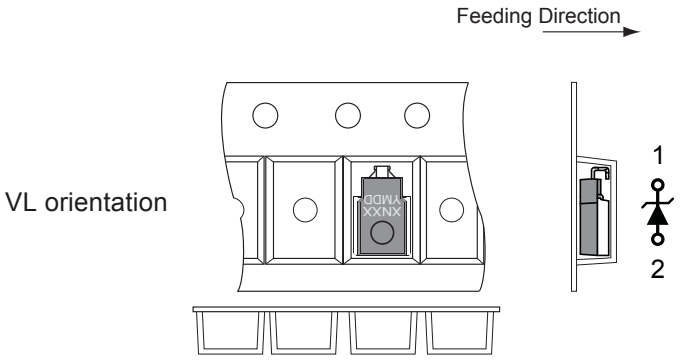
Pin treatment Pb-free. Device composition compliant with the RoHS directive.

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

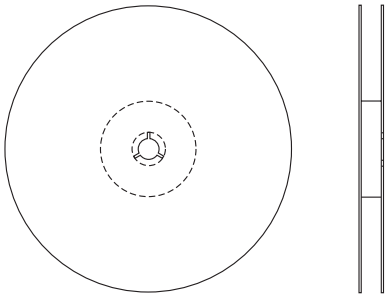


Packing Options

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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