

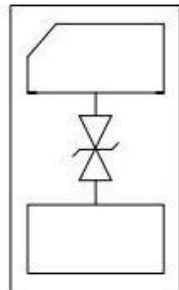
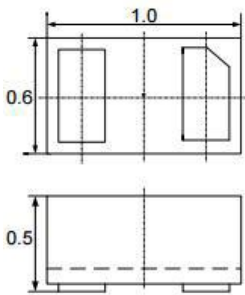
### Description

The SEN1501P1 is a 15 V with low capacitance of 1 line bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The small size and high ESD surge protection make SEN1501P1 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

### Features

- Low junction capacitance (typical value: 15pF)
- Working voltage: 15 V
- Low clamping voltage
- 2-pins leadless package
- RoHS Compliant

### Dimensions & Symbol (Unit: mm Max)



Dimensions

Pin and Circuit Schematic

### Mechanical Characteristics

- Package: DFN1006-2L (1.0X0.6X0.5mm)
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020

### Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation, Digital Cameras
- Peripherals, Audio Players, Industrial Equipment

### Marking & Ordering information



Part Number	Packaging	Reel Size
SEN1501P1	10000/Tape & Reel	7 inch

### Part Number Information

**S E N 15 0 1 P1 --X** (Notice1)



Notice1: X is Customer special code, if there any questions, please contact with local sales

Absolute maximum ratings ( $T_A=25^{\circ}\text{C}$ , RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power ( $t_p=8/20\mu\text{s}$ waveform)	$P_{pp}$	200	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	$I_{pp}$	5	A
ESD per IEC 61000-4-2 (Air)	VESD	$\pm 30$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 30$	
Operating Temperature Range	$T_J$	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^{\circ}\text{C}$

Electrical characteristics ( $T_A=25^{\circ}\text{C}$ )

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	$V_{RWM}$			15	V	
Breakdown Voltage	$V_{BR}$	16.7			V	$I_T = 1\text{mA}$
Reverse Leakage Current	$I_R$			0.2	$\mu\text{A}$	$V_{RWM} = 15\text{V}$
Clamping Voltage	$V_C$		20		V	$I_{PP} = 1\text{A}$ (8 x 20 $\mu\text{s}$ pulse)
Clamping Voltage	$V_C$		30	40	V	$I_{PP} = 5\text{A}$ (8 x 20 $\mu\text{s}$ pulse)
Junction Capacitance	$C_J$		15	20	pF	$V_R = 0\text{V}$ , $f = 1\text{MHz}$

Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)

Figure 1: Peak Pulse Power Vs Pulse Time

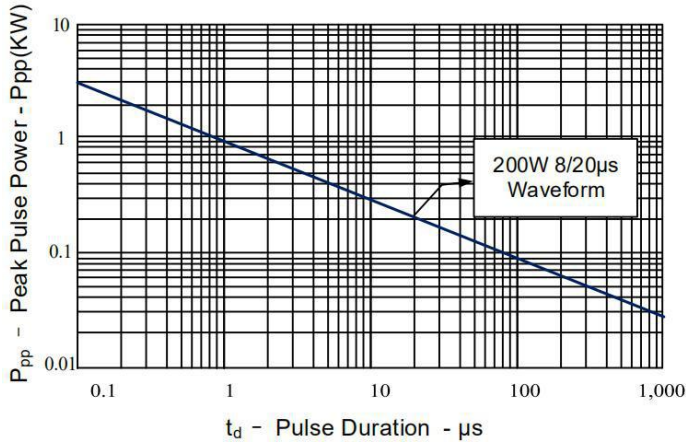


Figure 2: Power Derating Curve

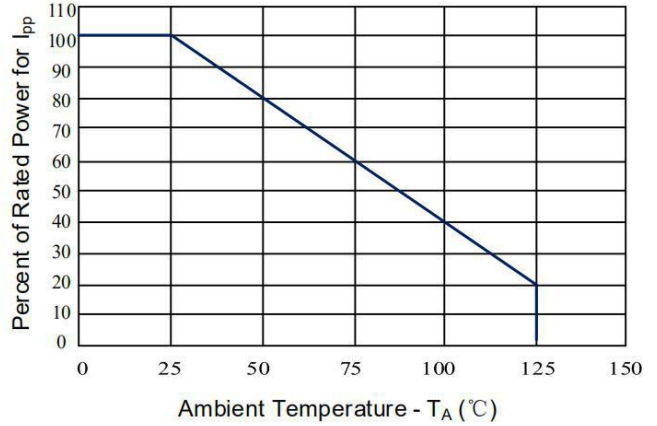


Figure 3: Clamping Voltage vs. Peak Pulse Current

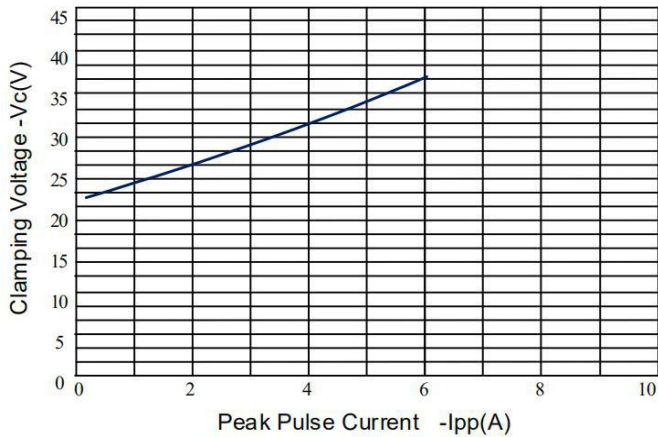


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

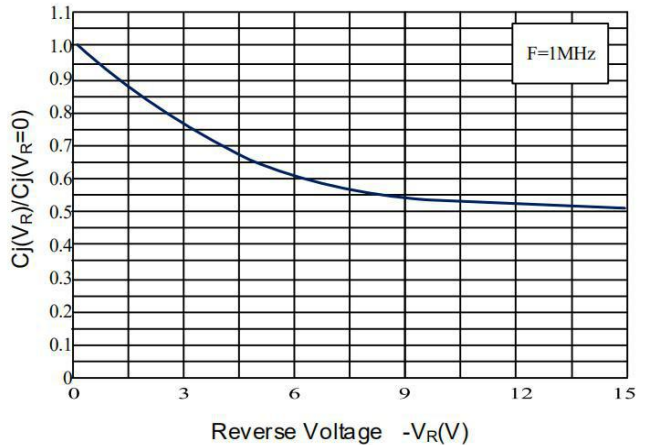
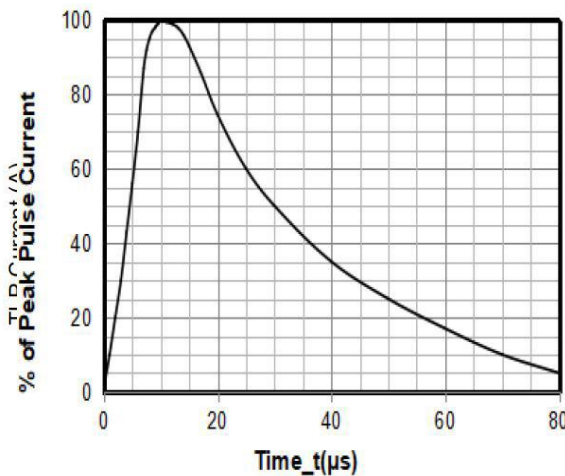
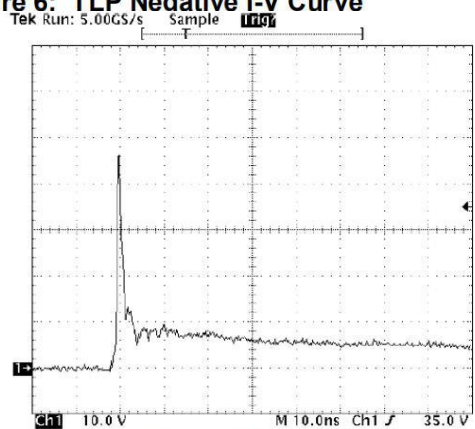


Figure 5: TLP Positive I-V Curve



8 X 20μs Pulse Waveform

Figure 6: TLP Negative I-V Curve



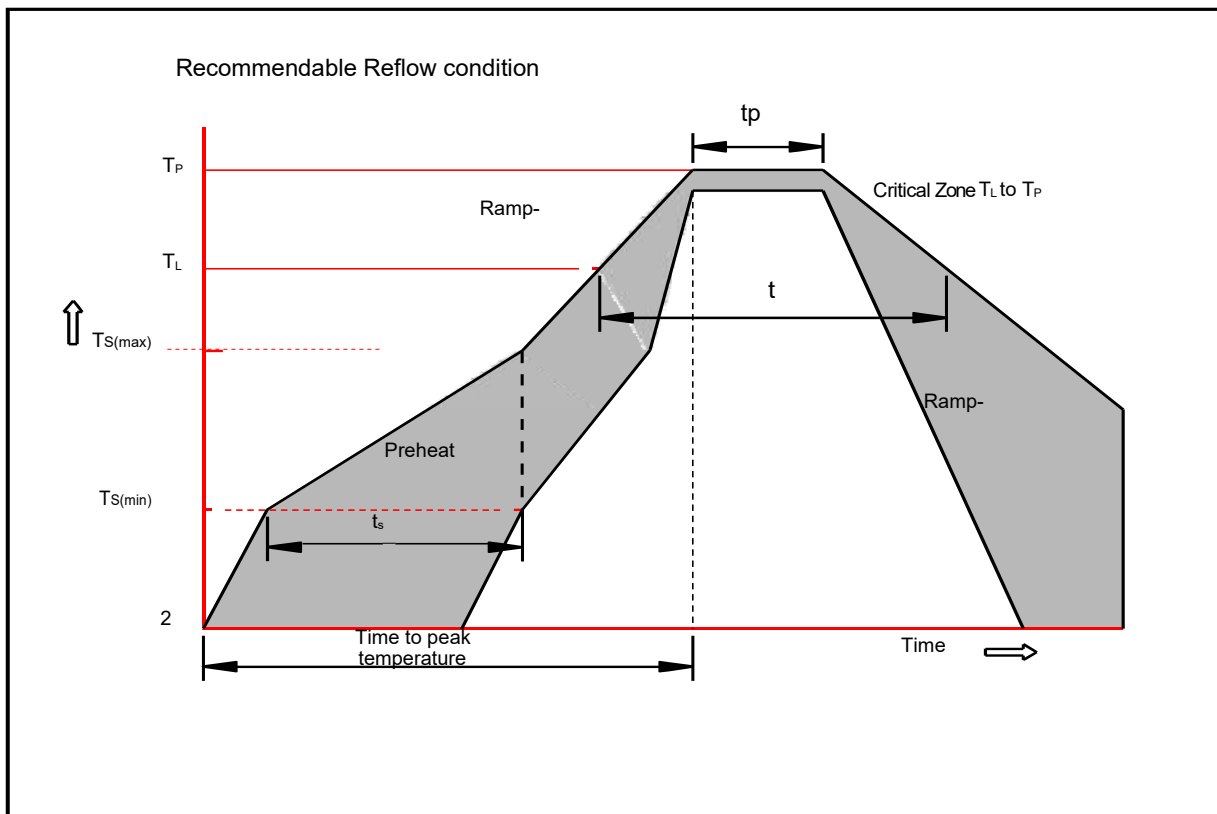
Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

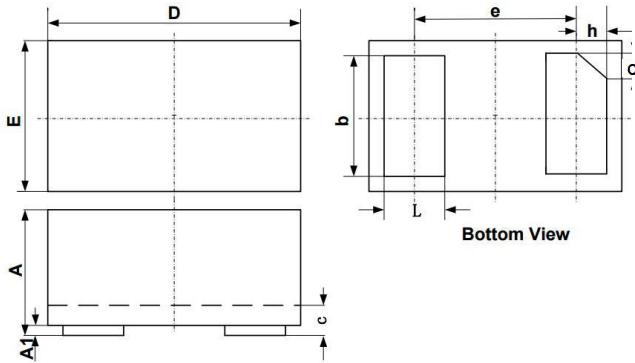
8 kV Contact per IEC61000-4-2

Soldering Parameter

Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) ( $t_s$ )	60-180 secs.
Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ ) (Liquid us)	+217°C
	-Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_p$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_P$ )		8 min. Max
Do not exceed		+260°C

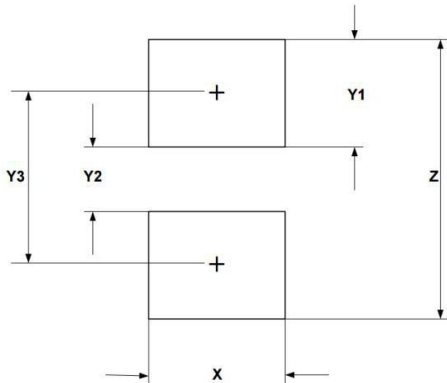


Package Mechanical Data



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.45	0.50	0.55	0.018	0.020	0.022
c	0.12	0.15	0.18	0.005	0.006	0.007
D	0.95	1.00	1.05	0.037	0.039	0.041
e	0.65 BSC			0.026 BSC		
E	0.55	0.60	0.65	0.022	0.024	0.026
L	0.20	0.25	0.30	0.008	0.010	0.012
h	0.07	0.12	0.17	0.003	0.005	0.007

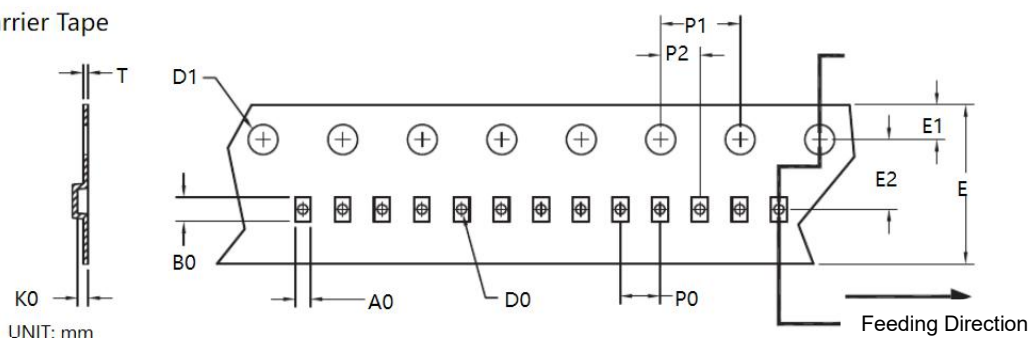
Suggested Land pattern of PCB design



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.60	0.024
Y1	0.50	0.020
Y2	0.30	0.012
Y3	0.80	0.032
Z	1.30	0.052

Tape and Reel Information

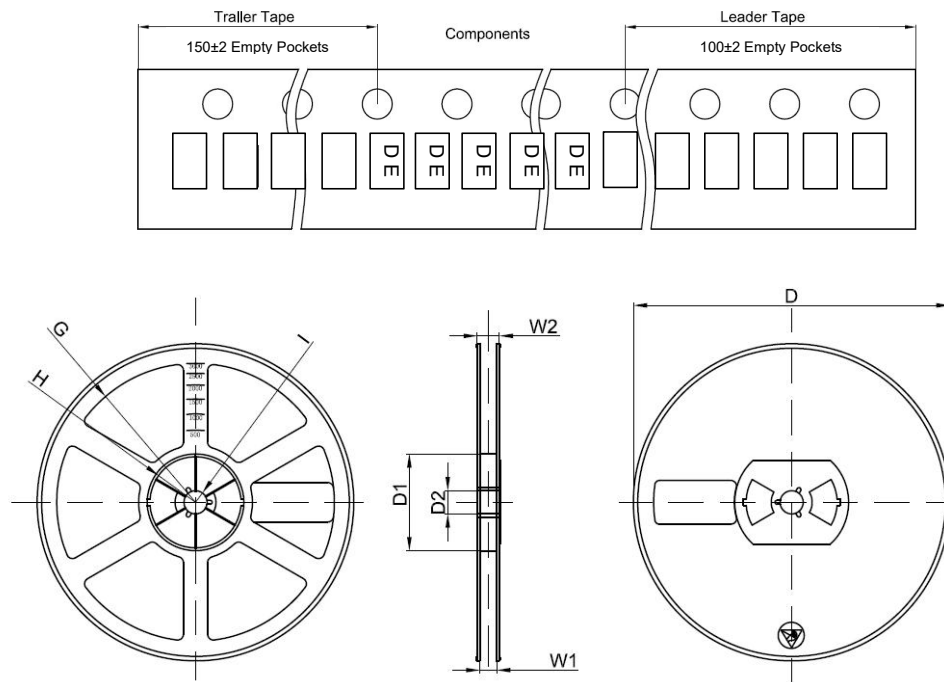
Carrier Tape



Dimensions are in millimeter

Package type	A0	B0	D0	P0	P1	P2	P	E	E1	E2	D1	K0	T	Q'ty
DFN1006-2/3L	0.7	1.1	0.5	2.0	4.0	2.0	4.0	8.0	1.75	3.50	2.0	0.60	0.25	10000

### DFN1006 Traller, Leader and Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"D1a	178	54.40	13.00	78	25.60	6.50	14.40	12.30

### Contact Information

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### Revision History

Release Date	Revision	Comments
2017-8-17	A	New Release
2021-11-13	B	Add Body Mark, Tape and Reel information