

Small Signal Diode



Features

- ↪ Meet IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- ↪ Meet IEC61000-4-4 (EFT) rating. 40A (5/50ns)
- ↪ Protects two directional I/O lines
- ↪ Working Voltage : 5V
- ↪ Pb free version, RoHS compliant, and Halogen free

Mechanical Data

- ↪ Case :SOT-143 package, molded plastic
- ↪ Terminal: Matte tin plated, lead free.
- ↪ High temperature soldering guaranteed: 260°C/10s
- ↪ Molding Compound Flammability Rating : UL 94V-0
- ↪ Weight : 10mg (approximately)
- ↪ Marking Code : SL3

Applications

- ↪ USB Power & Data Line Protection
- ↪ I²C Bus Protection
- ↪ Video Line Protection
- ↪ Microcontroller Input Protectionns
- ↪ T1/E1 secondary IC side Protection
- ↪ ISDN S/T Interface
- ↪ WAN/LAN Equipment
- ↪ Ethernet 10BaseT

Ordering Information

Part No.	Package	Packing	Packing Code	Marking
TESDB5V0A	SOT-143	3K / 7" Reel	RBG	SL3

Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Maximum Ratings

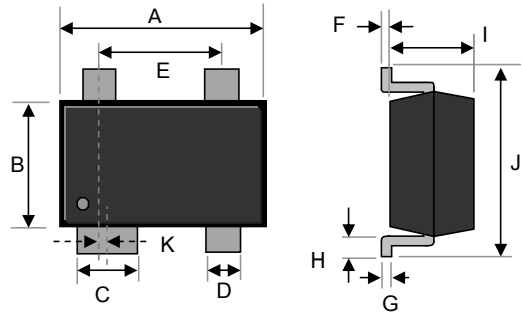
Type Number	Symbol	Value	Units
Peak Pulse Power (tp=8/20µs waveform)	P _{PP}	200	W
Peak Pulse Current (tp = 8/20µs)	I _{PP}	10	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V _{ESD}	±15 ± 8	KV
Junction Temperature Range	T _J	-55 to + 150	°C
Storage Temperature Range	T _{STG}	-55 to + 150	°C

Electrical Characteristics

Type Number	Symbol	Min	Max	Units
Reverse Stand-Off Voltage	V _{RWM}	-	5	V
Reverse Breakdown Voltage	V _(BR)	6	-	V
Reverse Leakage Current	I _R	-	5	µA
Clamping Voltage	V _C	I _{PP} = 1A	9.8	V
		I _{PP} = 3A	17	
Junction Capacitance	C _J	3 (Typ.)		pF

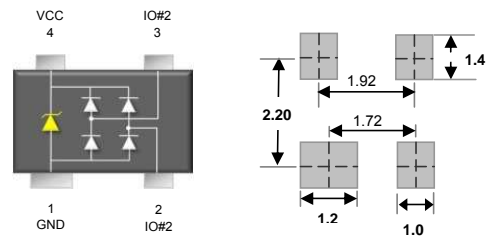
Notes: 1. The suggested land pattern dimensions have been provided for reference only, as actual pad layouts may vary depending on application.

SOT-143



Dimensions	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	2.800	3.040	0.110	0.120
B	1.200	1.400	0.047	0.055
C	0.760	0.940	0.030	0.037
D	0.300	0.510	0.012	0.020
E	2.100	2.640	0.083	0.104
F	0.013	0.015	0.001	0.001
G	0.080	0.200	0.003	0.008
H	0.400	0.600	0.016	0.024
I	0.750	1.070	0.030	0.042
J	2.100	2.640	0.083	0.104
K	0.2 (BSC)		0.008(BSC)	

Pin Configuration & PAD Layout



Unit : mm

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Rating and Characteristic Curves

FIG 1. Admissible Power Dissipation Curve

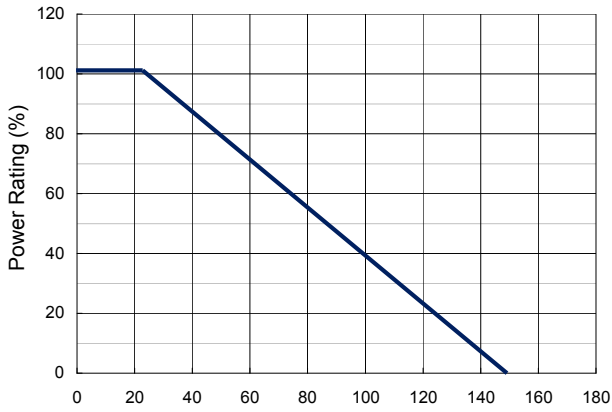


FIG 2. Pulse Waveform

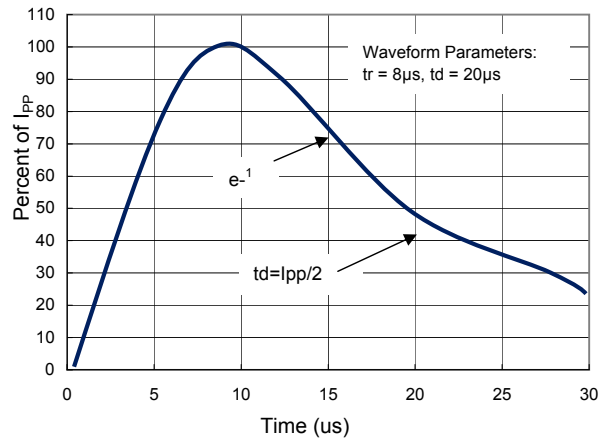


FIG 3. Clamping Voltage vs. Peak Pulse Current

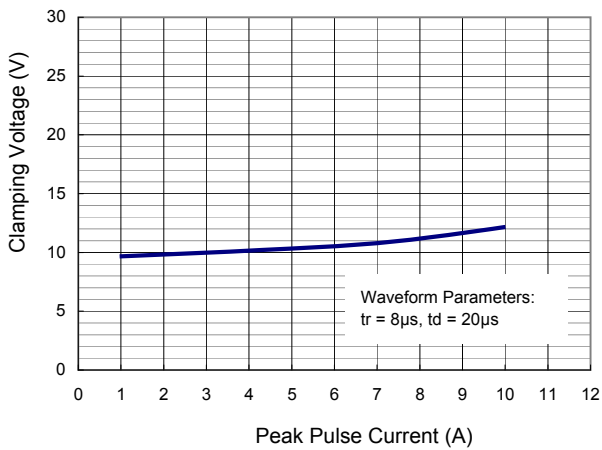
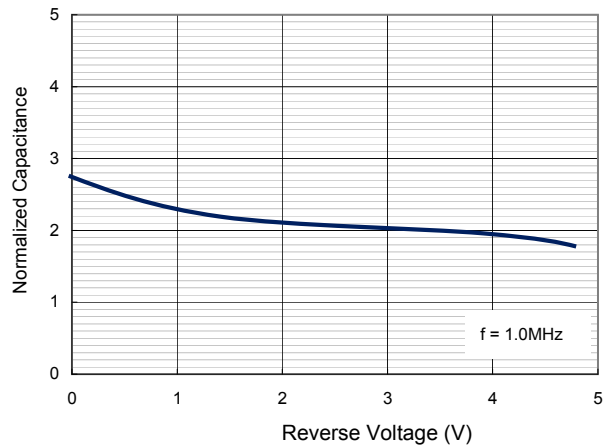


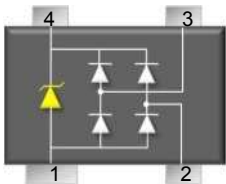
FIG 4. Typical Junction Capacitance



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Applications Information

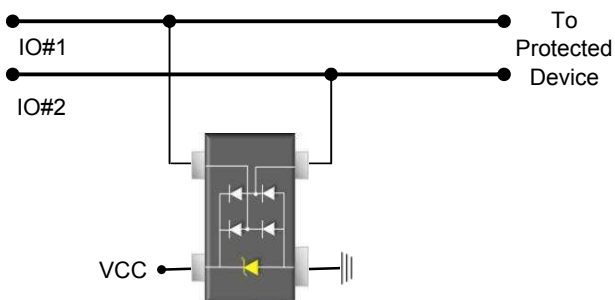
- ◇ Designed for the protect two data lines from transient over-voltages by clamping them to a fixed reference.
- ◇ Data lines are connected at pins 2 and 3.
- ◇ The negative reference (REF1) is connected at pin 1 and which should be connected directly to a ground plane on the board for best results.
- ◇ The positive reference (REF2) is connected at pin 4.



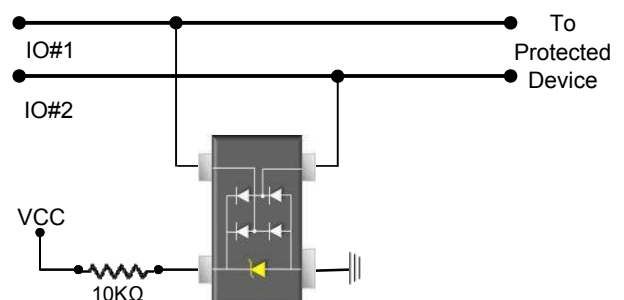
Pin	Definition
2, 3	I/O Lines
1	Ground
4	VCC

Typical Application

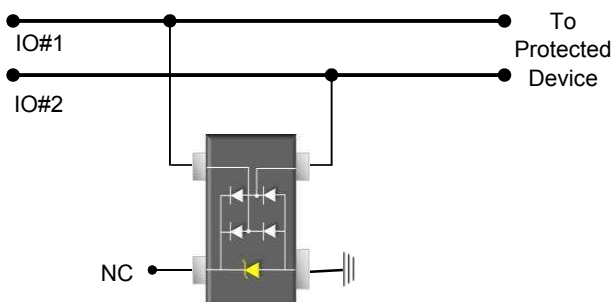
Schematic Diagram for Gigabit Ethernet ESD Protection



◇ Data Line and Power Supply Protection Using VCC



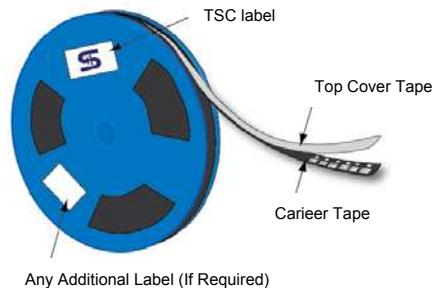
◇ Data Line Protection with Bias and Power Supply Isolation Resistor



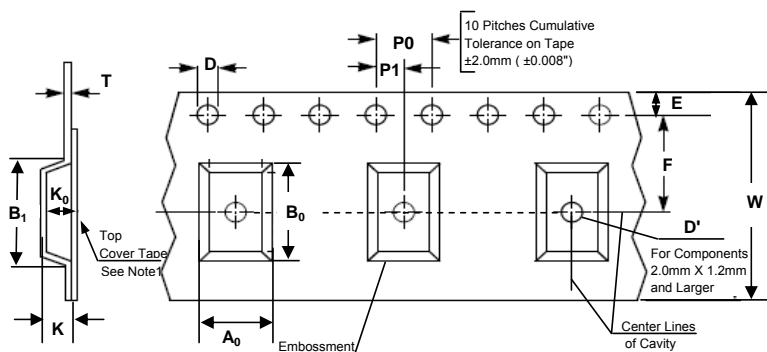
◇ Data Line Protection Using Internal ESD Diode

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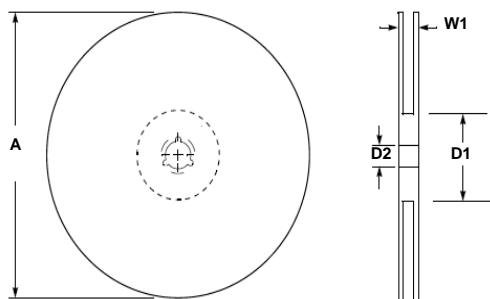
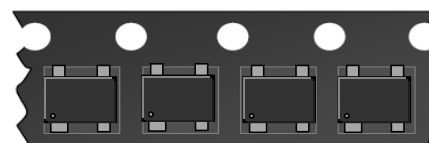
Carrier & Reel specification



Item	Symbol	Dimension(mm)
Carrier depth	K	1.22 Max.
Sprocket hole	D	1.50 +0.10
Reel outside diameter	A	180 ± 1
Reel inner diameter	D1	50 Min.
Feed hole width	D2	13.0 ± 0.5
Sprocket hole position	E	1.75 ± 0.10
Sprocket hole pitch	P0	4.00 ± 0.10
Embossment center	P1	2.00 ± 0.10
Overall tape thickness	T	0.6 Max.
Tape width	W	8.30 Max.
Reel width	W1	14.4 Max.



For Machine Reference Only
Including Draft and RADLL
Concentric Around B₀



Note 1: A₀, B₀, and K₀ are determined by component size. The clearance between the components and the cavity must be within 0.05 mm min. to 0.5 mm max. The component cannot rotate more than 10° within the determined cavity.

Note 2: If B₁ exceeds 4.2 mm(0.165") for 8 mm embossed tape, the tape may not feed through all tape feeders.