

### Small Signal Product

#### Features

- ◇ Meet IEC61000-4-2 (ESD)  $\pm 15\text{kV}$  (air),  $\pm 8\text{kV}$  (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

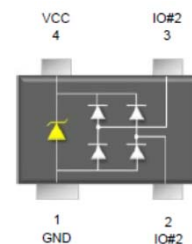
#### Mechanical Data

- ◇ Case : SOT-143 package, molded plastic
- ◇ Terminal : Matte tin plated, lead free
- ◇ High temperature soldering guaranteed :  $260^{\circ}\text{C}/10\text{s}$
- ◇ Molding compound flammability Rating : UL 94V-0
- ◇ Weight : 10 mg (approximately)

#### Applications

- ◇ USB Power & Data Line Protection
- ◇ I<sup>2</sup>C Bus Protection
- ◇ Video Line Protection
- ◇ Microcontroller Input Protections
- ◇ T1/E1 Secondary IC Side Protection
- ◇ ISDN S/T Interface
- ◇ WAN/LAN Equipment
- ◇ Ethernet 10BaseT

#### SOT-143



#### Ordering Information

Part No.	Package	Packing	Packing code	Packing code (Green)	Marking	Manufacture code
TESDB5V0A	SOT-143	3K / 7" Reel	-	RBG	SL3	

Note : Detail please see "Ordering Information(detail, example)" below.

#### Maximum Ratings and Electrical Characteristics

Rating at 25 °C ambient temperature unless otherwise specified.

##### Maximum Ratings

Parameter	Symbol	Value	Units
Peak Pulse Power (tp=8/20μs waveform)	P <sub>PP</sub>	125	W
Thermal Resistance form Junction to Ambient	R <sub>thJA</sub>	625	°C/W
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	± 15	KV
ESD per IEC 61000-4-2 (Contact)		± 8	
Junction Temperature Range	T <sub>J</sub>	-55 to +150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

##### Electrical Characteristics

Parameter	Symbol	Min	Max	Units
Reverse Stand-Off Voltage	V <sub>RWM</sub>	-	5	V
Reverse Breakdown Voltage	V <sub>(BR)</sub>	6	-	V
Reverse Leakage Current	I <sub>R</sub>	-	1	μA
Clamping Voltage	V <sub>C</sub>	-	9.8	V
		-	10	
Junction Capacitance	C <sub>J</sub>	2		pF

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RATINGS AND CHARACTERISTIC CURVES

Fig. 1 Admissible Power Dissipation Curve

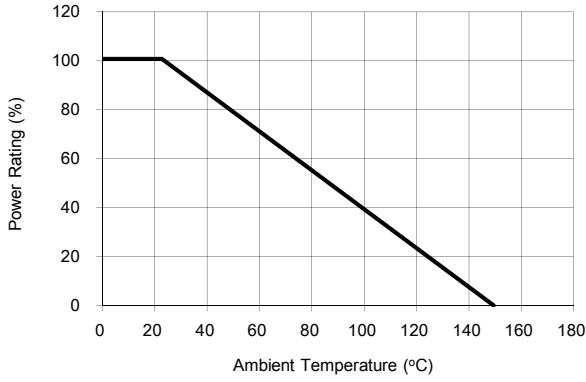


Fig. 2 Pulse Waveform

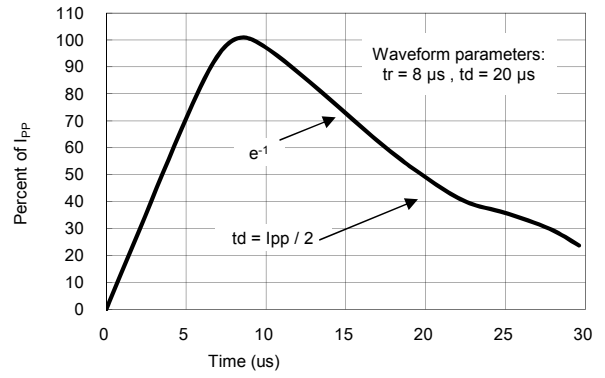


Fig. 3 Clamping Voltage VS. Peak Pulse Current

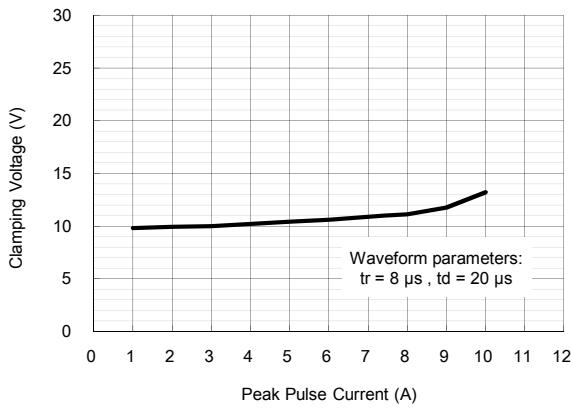
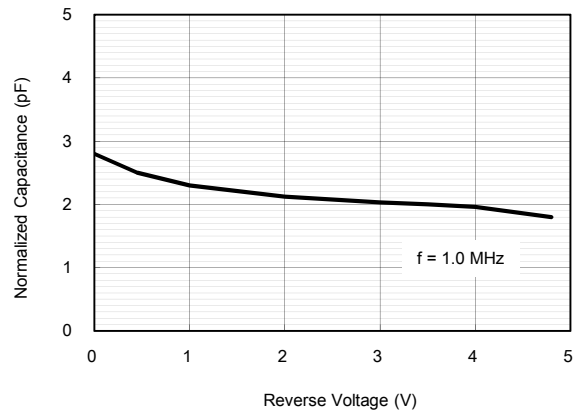


Fig. 4 Typical Junction Capacitance



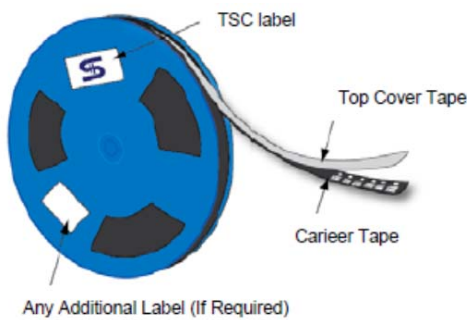
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### Ordering information (Detail, example)

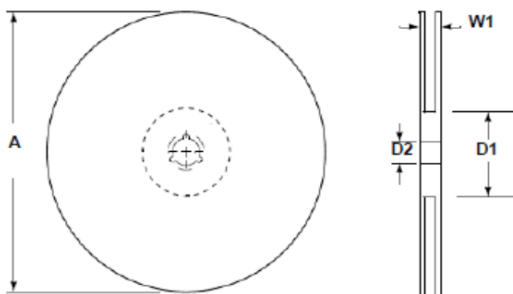
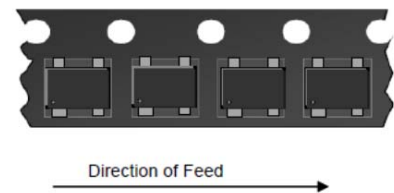
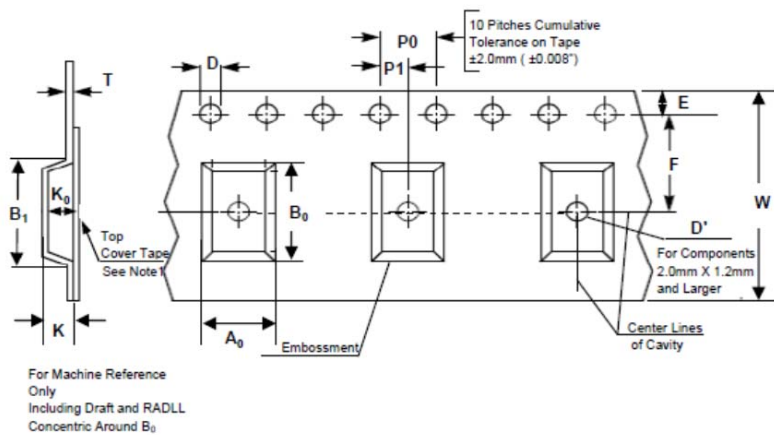
Part No.	Package	Packing	Packing code	Packing code (Green)	Marking	Manufacture code
TESDB5V0A	SOT-143	3K / 7" Reel	-	RBG	U5V0	(Note)
TESDB5V0A	SOT-143	3K / 7" Reel	-	RBG	U5V0	M0
TESDB5V0A	SOT-143	3K / 7" Reel	-	RBG	U5V0	

Note : Manufacture special control, if empty means no special control requirement.

### Tape & 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.

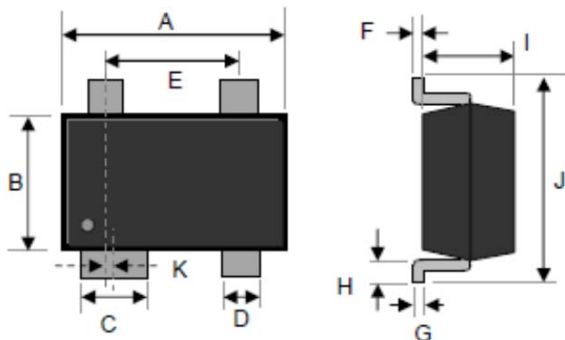


Note 1 : A<sub>0</sub>, B<sub>0</sub>, and K<sub>0</sub> are determined by component size. The clearance between the components and the cavity must be within 0.05 mm min. to 0.5 mm max. The component cannot rotate more than 10° within the determined cavity.

Note 2 : If B<sub>1</sub> exceeds 4.2mm(0.165") for 8 mm embossed tape, the tape may not feed through all tape feed

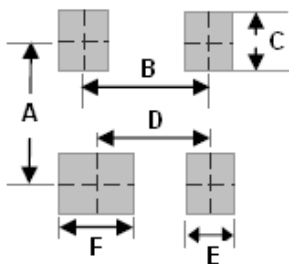
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### Dimensions



DIM.	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	0.750	0.940	0.030	0.037
D	0.300	0.510	0.012	0.020
E	1.800	2.640	0.071	0.104
F	0.000	0.100	0.000	0.004
G	0.080	0.200	0.003	0.008
H	0.300	0.600	0.012	0.024
I	0.750	1.150	0.030	0.045
J	2.100	2.640	0.083	0.104
K	0.2 TYP.		0.008 TYP.	

### Suggested PAD Layout

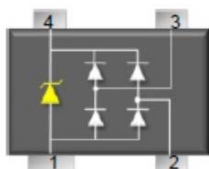


DIM.	Unit(mm)	Unit(inch)
	Typ.	Typ.
A	2.20	0.087
B	1.92	0.076
C	1.4	0.055
D	1.72	0.068
E	1.0	0.039
F	1.2	0.047

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

### Applications Information

- ◇ Designed for the protect tow data lines from transient over-voltages by clamping them to afixed 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

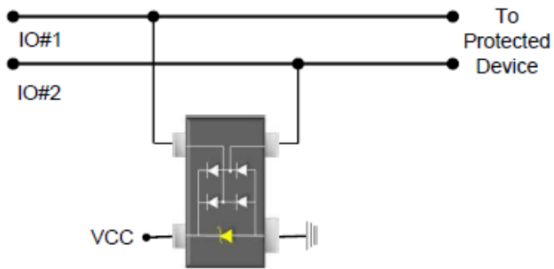


Pin	Definition
2, 3	I/O Lines
1	Ground
4	VCC

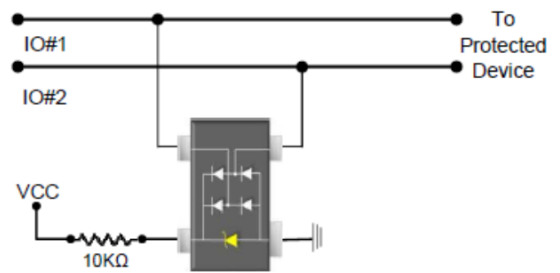
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Typical Application

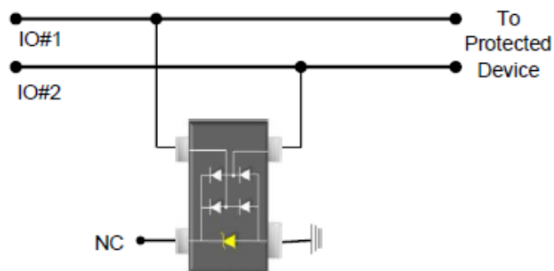
Schematic Diagram for Gigabit Ethernet ESD Protection



◇ 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