

Small Signal Diode



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)
- ✧ Meet IEC61000-4-5 (Lightning) rating. 12A (8/20 μs)
- ✧ Protects two directional I/O lines
- ✧ Working Voltage : 5V
- ✧ Pb free version, RoHS compliant, and Halogen free
- ✧ Low leakage current

Mechanical Data

- ✧ Case : JEDEC SOT-23 standard package, molded plastic
- ✧ Terminal: Matte tin plated, lead free., solderable per MIL-STD-202, Method 202 guaranteed
- ✧ High temperature soldering guaranteed: 260°C/10s
- ✧ Weight : 8mg (appo.)
- ✧ Marking Code : Y D05

Applications

- ✧ USB Power & Data Line Protection
- ✧ Ethernet 10BaseT
- ✧ T1/E1 secondary IC Side Protection
- ✧ ISDN S/T Interface
- ✧ WAN/LAN Equipment

Ordering Information

Part No.	Package	Packing	Packing Code	Marking
TESDA5V0A	SOT-23	3K / 7" Reel	RFG	Y D05

Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Maximum Ratings

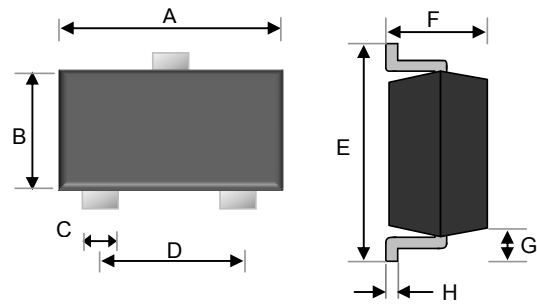
Type Number	Symbol	Value	Units
Peak Pulse Power (tp=8/20 μs waveform)	P _{PP}	350	W
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V _{ESD}	± 15 ± 8	KV
Junction and Storage Temperature Range	T _J , T _{STG}	-55 to + 150	°C

Electrical Characteristics

Type Number	Symbol	Min	Max	Units
Reverse Stand-Off Voltage	V _{RWM}	-	5	V
Reverse Breakdown Voltage I _R = 1mA	V _(BR)	6	-	V
Reverse Leakage Current V _R = 5V	I _R	-	1	μA
Clamping Voltage I _{PP} = 1A I _{PP} = 5A	V _C	-	9.8 12	V
Junction Capacitance V _R =0V, f=1.0MHz	C _J	1 (Typ.)		pF

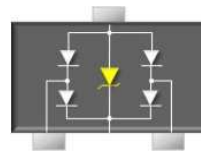
Notes: 1. The suggested land pattern dimensions have been provided for reference only, as actual pad layouts may vary depending on application.

SOT-23

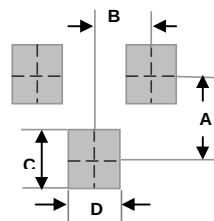


Dimensions	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	2.80	3.00	0.110	0.118
B	1.20	1.40	0.047	0.055
C	0.30	0.50	0.012	0.020
D	1.80	2.00	0.071	0.079
E	2.25	2.55	0.089	0.100
F	0.90	1.20	0.035	0.047
G	0.550 REF		0.022 REF	
H	0.08	0.19	0.003	0.01

Pin Configuration



Suggested PAD Layout



Dimensions	Value (in mm)
A	2.00
B	0.95
C	0.90
D	0.80

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Rating and Characteristic Curves

FIG 1 Admissible Power Dissipation Curve

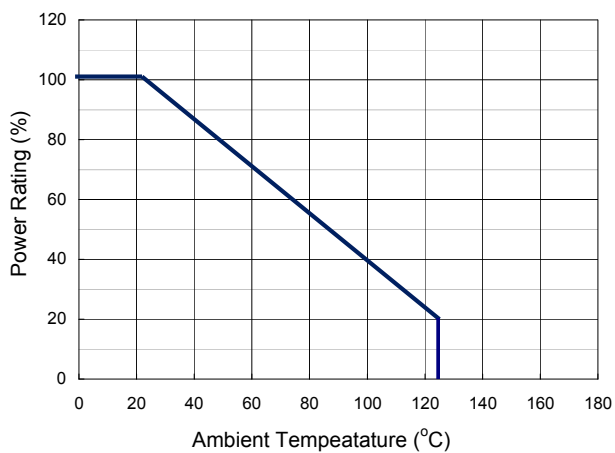


FIG 2 Pulse Waveform

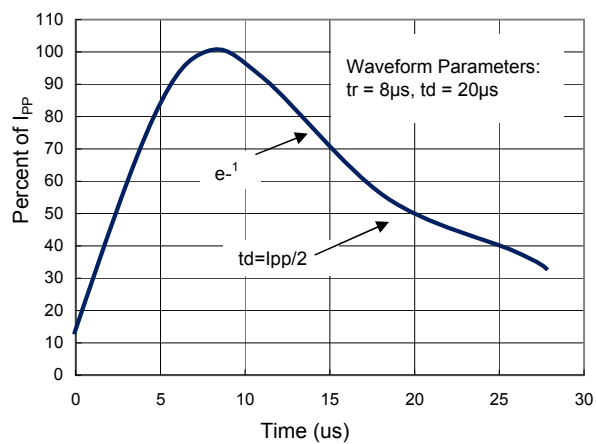


FIG 3 Clamping Voltage vs. Peak Pulse Current

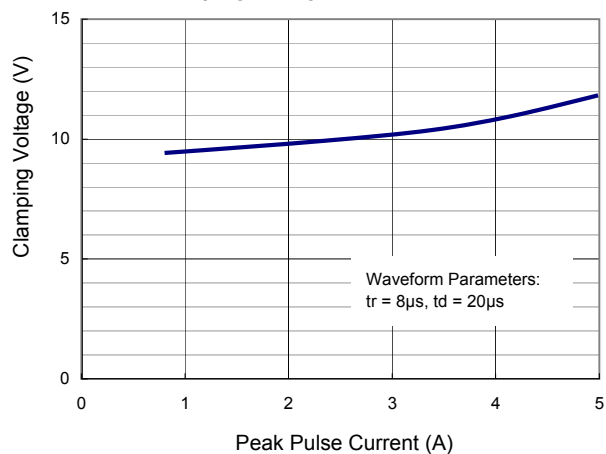
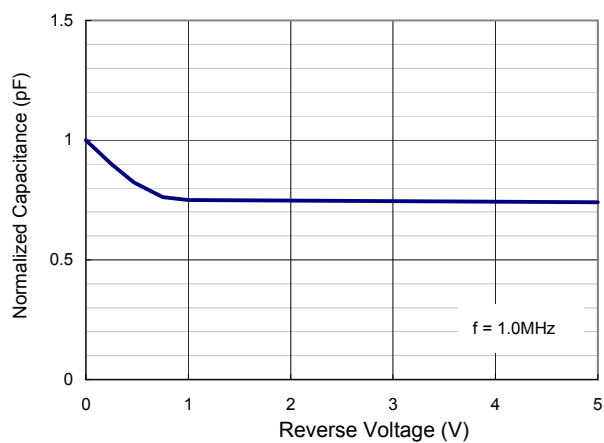


FIG 4 Typical Junction Capacitance



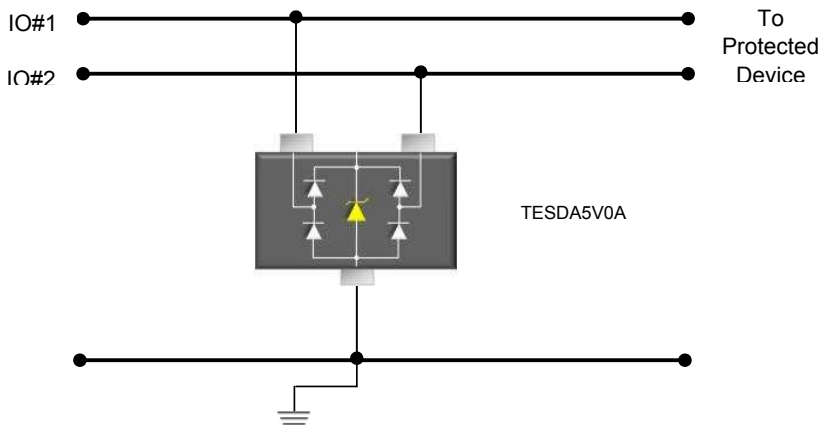
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Applications Information

- ✧ Designed for the bi-directional protection of 2 lines from the damage caused by Electro Static Discharge (ESD) and surge pulses
- ✧ Be used on lines where the signal polarities are above and below ground
- ✧ Provides a surge capability of 350 Watts peak Ppp per line for an 8/20 ms waveform.

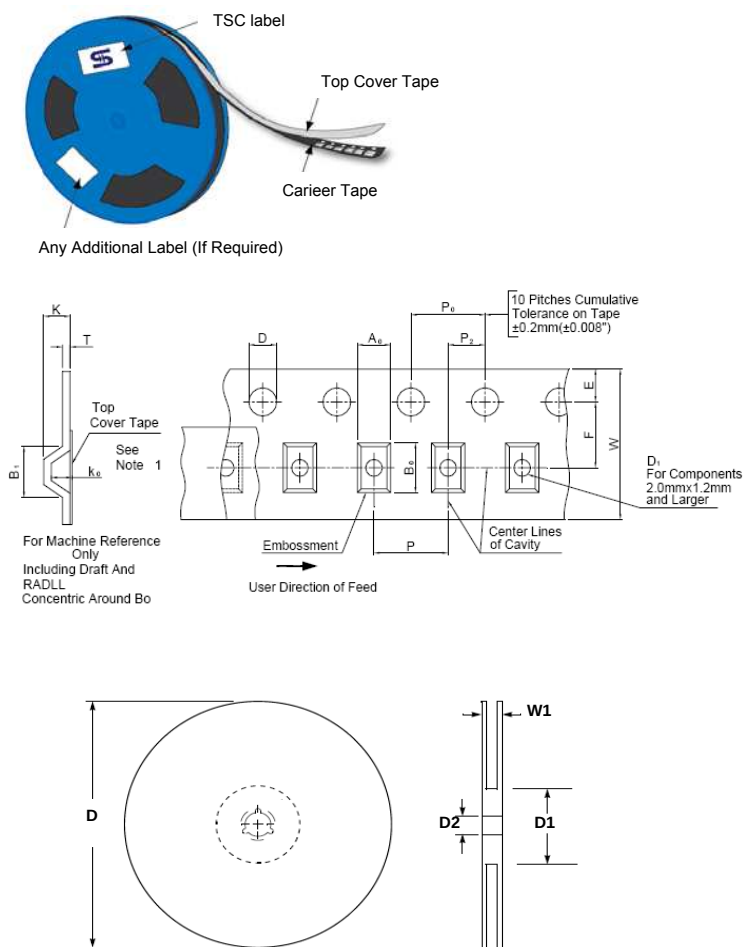
Circuit Board Layout Recommendations

- ✧ Place the ESD protection array as close to the input terminal or connector as possible
- ✧ Keep parallel signal paths to a minimum
- ✧ Minimize all printed-circuit board conductive loops including power and group loops
- ✧ Avoid using shared transient return paths to a common ground point
- ✧ Ground planes should be used. For multilayer printed-circuit boards, use ground vias
- ✧ Below picture is the typical application for bi-directional protection of two lines

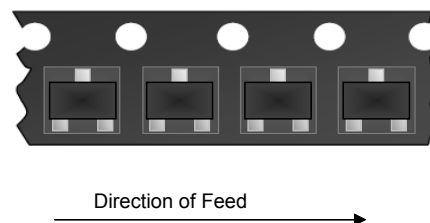


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Carrier & Reel specification



Item	Symbol	Dimension(mm)
Carrier depth	K	1.2 Max.
Sprocket hole	D	1.50 +0.10
Reel outside diameter	A	178 ± 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: 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.