

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 (5/50 μs)
- ✧ 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

Mechanical Data

- ✧ Case :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 : 0.008gram (approximately)
- ✧ Marking Code : M05

Applications

- ✧ Cell Phone Handsets and Accessories
- ✧ Microprocessor based equipment
- ✧ Industrial Controls
- ✧ Notebooks, Desktops, and Servers
- ✧ Set-Top Box

Ordering Information

Part No.	Package	Packing	Packing Code	Marking
TESDF5V0AU	SOT-23	3K / 7" Reel	RFG	M05

Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

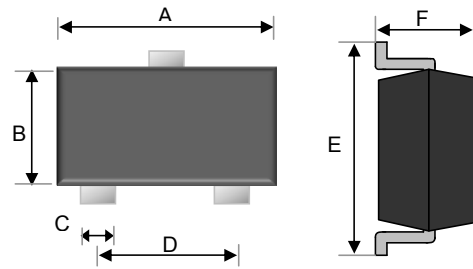
Maximum Ratings

Type Number	Symbol	Value	Units
Peak Pulse Power (tp=8/20 μs waveform)	P _{PP}	300	W
Peak Pulse Current (tp = 8/20 μs)	I _{PP}	5	A
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

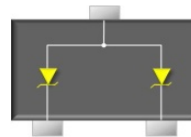
Type Number	Symbol	Min	Max	Units
Reverse Stand-Off Voltage	V _{RWM}	-	5	V
Reverse Breakdown Voltage	V _(BR)	6	-	V
Reverse Leakage Current	I _R	-	10	μA
Clamping Voltage	V _C	I _{PP} = 1A	9.8	V
		I _{PP} = 5A	15	
Junction Capacitance	C _J	V _R =0V, f=1.0MHz 350(Typ.)		pF

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	0.043

Pin Configuration



Small Signal Diode

Rating and Characteristic Curves

FIG 1 Non-Repetitive Peak Pulse Power vs. Pulse Time

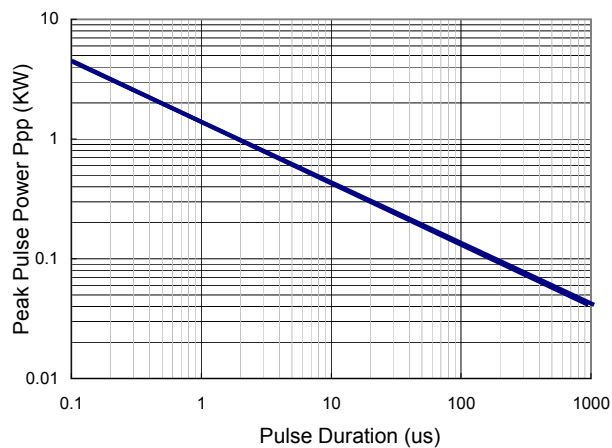


FIG 2 Pulse Waveform

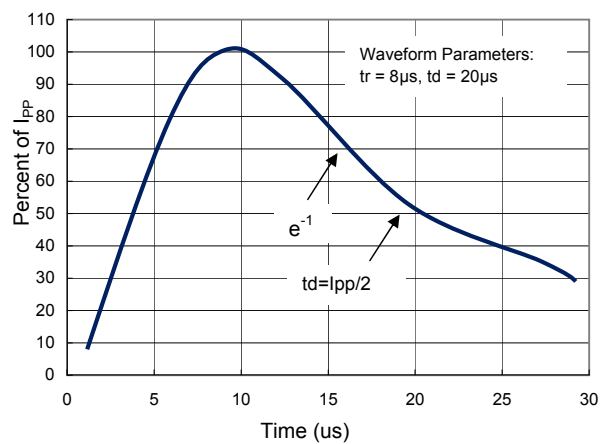


FIG 3 Admissible Power Dissipation Curve

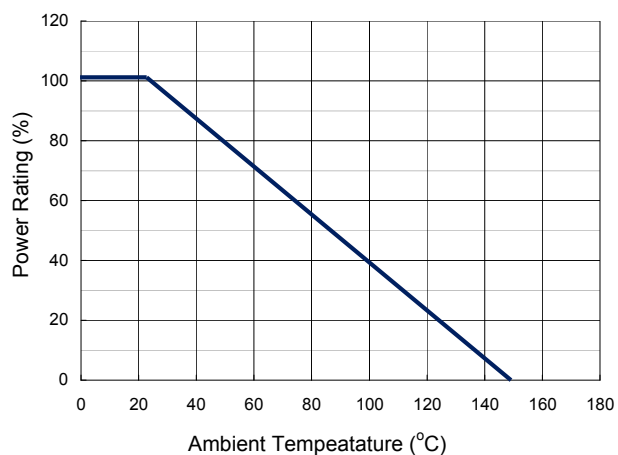


FIG 4 Typical Junction Capacitance

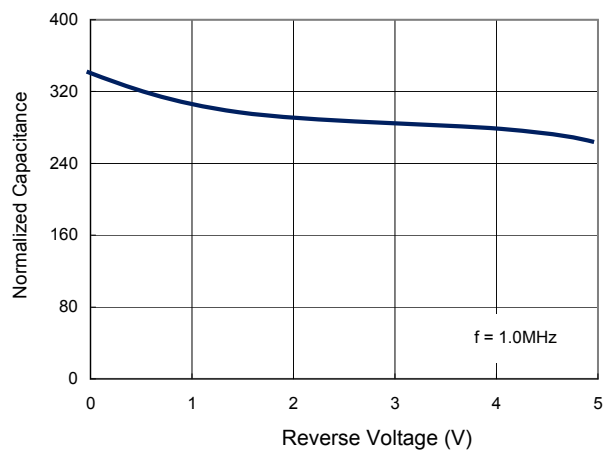
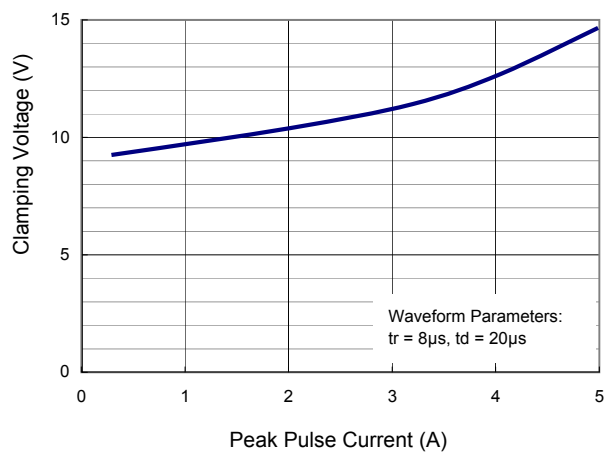


FIG 5 Clamping Voltage vs. Peak Pulse Current



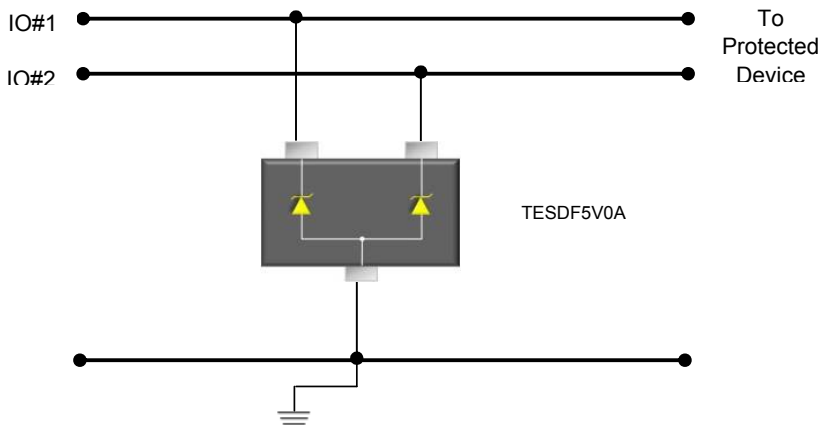
Small Signal Diode

Applications Information

- ✧ Designed for the Uni-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 300 Watts peak Ppp per line for an 8/20 ms waveform.

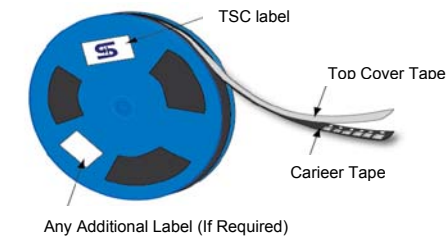
Circuit Board Layout Recommendations

- ✧ 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

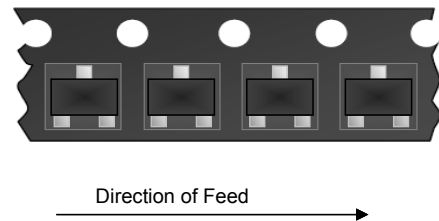
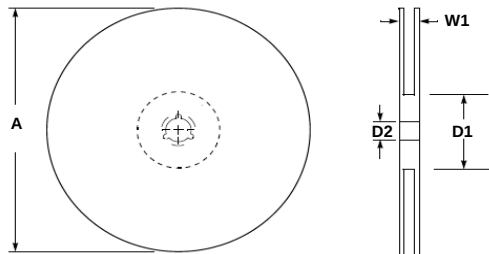
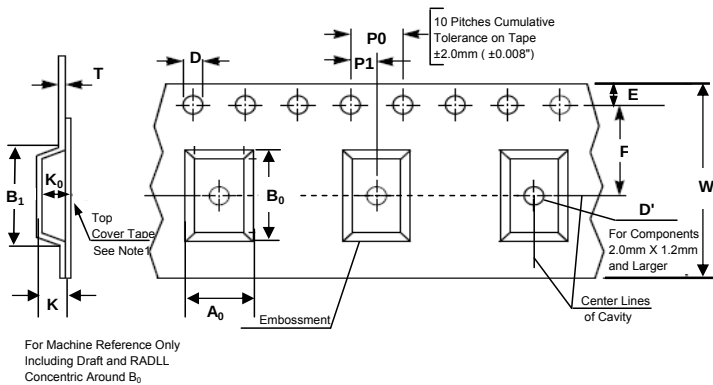


Small Signal Diode

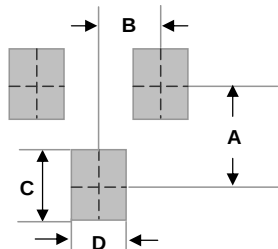
Tape & Reel specification



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.



Suggested PAD Layout



Dimensions	Unit (inch)	Unit (mm)
A	0.079	2.00
B	0.037	0.95
C	0.035	0.90
D	0.031	0.80

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.

Note 3: The suggested land pattern dimensions have been provided for reference only, as actual pad layouts may vary depending on application.