

## 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 $\mu\text{s}$ )
- ✧ Meet IEC61000-4-5 (Lightning) rating. 12A (8/20 $\mu\text{s}$ )
- ✧ 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.

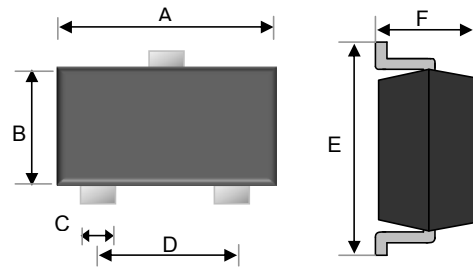
#### Maximum Ratings

Type Number	Symbol	Value	Units
Peak Pulse Power (tp=8/20 $\mu\text{s}$ waveform)	P <sub>PP</sub>	300	W
Peak Pulse Current (tp = 8/20 $\mu\text{s}$ )	I <sub>PP</sub>	5	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V <sub>ESD</sub>	$\pm 15$ $\pm 8$	kV
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to + 150	°C

#### Electrical Characteristics

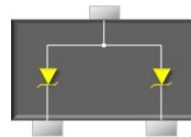
Type Number	Symbol	Min	Max	Units
Reverse Stand-Off Voltage	V <sub>RWM</sub>	-	5	V
Reverse Breakdown Voltage	V <sub>(BR)</sub>	6	-	V
Reverse Leakage Current	I <sub>R</sub>	-	10	$\mu\text{A}$
Clamping Voltage	V <sub>C</sub>	-	9.8	V
		-	15	
Junction Capacitance	C <sub>J</sub>	350(Typ.)		pF

### 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

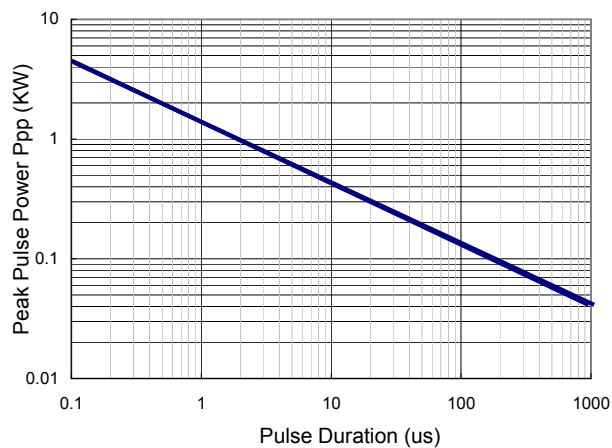
### Pin Configuration



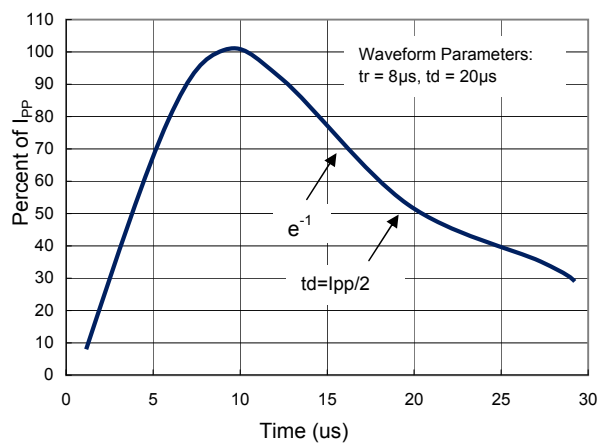
## Small Signal Diode

### Rating and Characteristic Curves

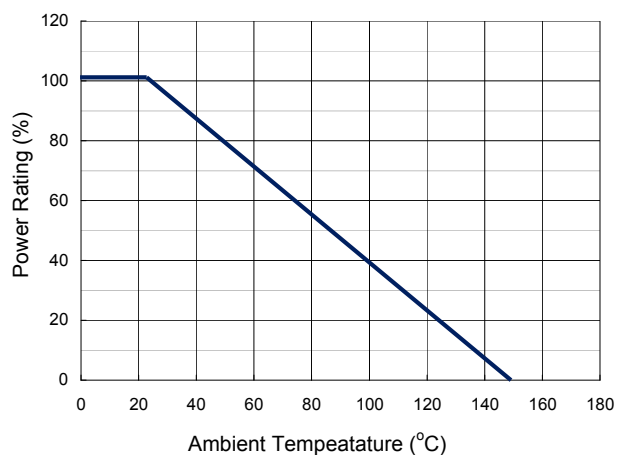
**FIG 1 Non-Repetitive Peak Pulse Power vs. Pulse Time**



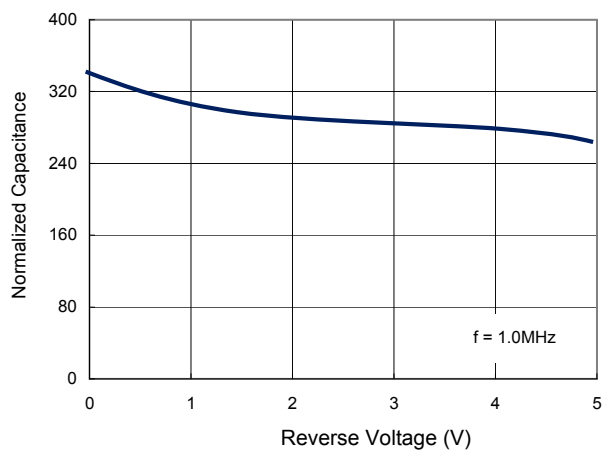
**FIG 2 Pulse Waveform**



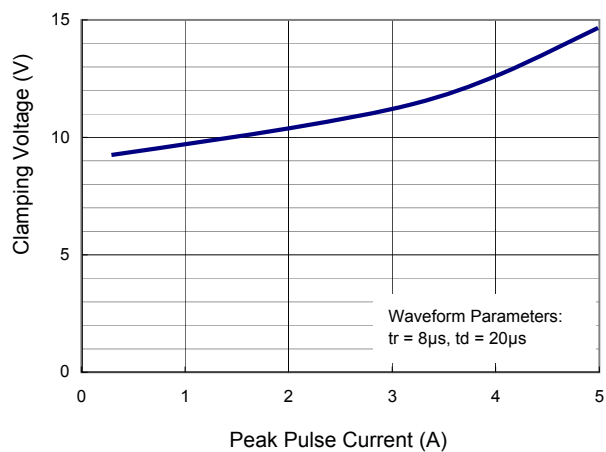
**FIG 3 Admissible Power Dissipation Curve**



**FIG 4 Typical Junction Capacitance**



**FIG 5 Clamping Voltage vs. Peak Pulse Current**



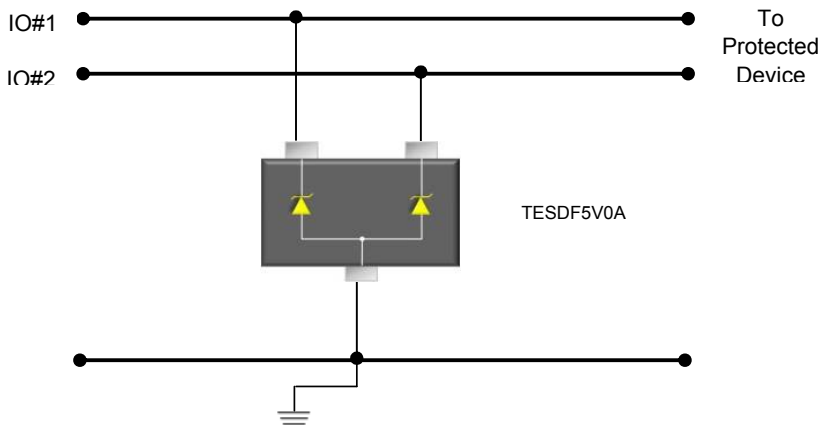
## Small Signal Diode

### 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

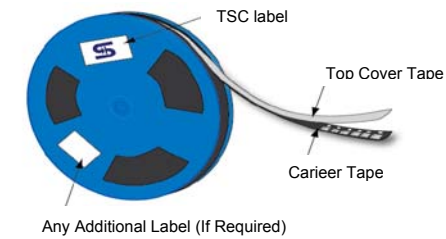
- ✧ Place the ESD protection array as close to the input terminal or connector as possible
- ✧ Keep parallel signal paths to a minimum
- ✧ Minimize all printed-circuit board conductive loops including power and group loops
- ✧ Avoid using shared transient return paths to a common ground point
- ✧ Ground 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



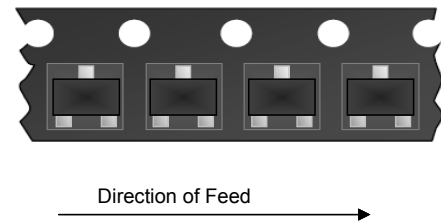
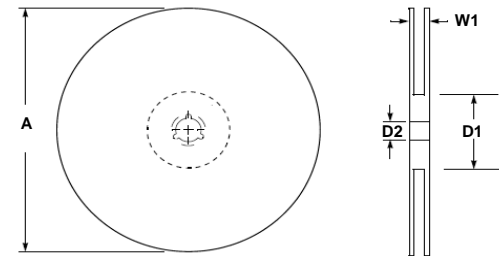
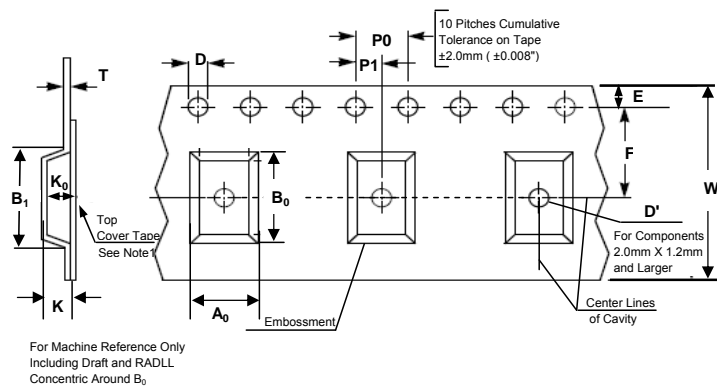
## Small Signal Diode

## TESDF5V0AU ESD Protection Array

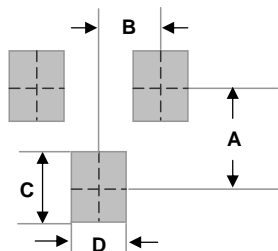
### Tape & Reel specification



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: 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 4.2 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.