

## 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 $\mu\text{s}$ )
- ✧ Protects one bidirectional I/O line
- ✧ Working Voltage : 5V
- ✧ Pb free version, RoHS compliant, and Halogen free

### Mechanical Data

- ✧ Case : SOD-523F flat lead small outline plastic package
- ✧ Terminal: Matte tin plated, lead free., solderable per MIL-STD-202, Method 208 guaranteed
- ✧ High temperature soldering guaranteed: 260°C/10s
- ✧ Mounting position: Any
- ✧ Weight : 2 mg (approximately)
- ✧ Marking Code : DT

### Applications

- ✧ Cell Phone Handsets and Accessories
- ✧ Notebooks, Desktops, and Servers
- ✧ Keypads, Side Keys, USB 2.0, LCD Displays
- ✧ Portable Instrumentation
- ✧ Microprocessor based equipment

### Ordering Information

Part No.	Package	Packing	Packing Code	Marking
TESDD5V0	SOD-523F	3K / 7" Reel	RKG	DT

### Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

#### Maximum Ratings

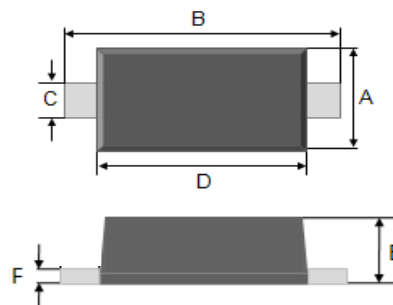
Type Number	Symbol	Value	Units
Peak Pulse Power (tp=8/20 $\mu\text{s}$ waveform)	P <sub>PP</sub>	100	W
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V <sub>ESD</sub>	$\pm 15$ $\pm 8$	KV
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to + 150	°C

#### Electrical Characteristics

Type Number	Symbol	Min	Max	Units
Reverse Stand-Off Voltage	V <sub>RWM</sub>	-	5	V
Reverse Breakdown Voltage I <sub>R</sub> = 1mA	V <sub>(BR)</sub>	6	-	V
Reverse Leakage Current V <sub>R</sub> = 5V	I <sub>R</sub>	-	1	$\mu\text{A}$
Clamping Voltage I <sub>PP</sub> = 1A I <sub>PP</sub> = 3A	V <sub>C</sub>	-	9.8	V
		-	15	
Junction Capacitance V <sub>R</sub> =0V, f=1.0MHz	C <sub>J</sub>	13 (Typ.)		pF

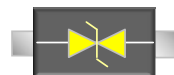
Notes: 1. The suggested land pattern dimensions have been provided for reference only, as actual pad layouts may vary depending on application.

#### SOD-523F

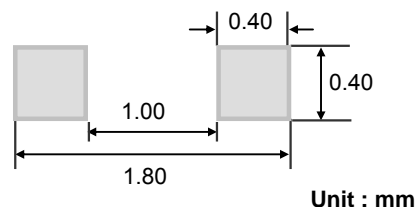


Dimensions	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	0.70	0.90	0.028	0.035
B	1.50	1.70	0.059	0.067
C	0.25	0.35	0.010	0.014
D	1.10	1.30	0.043	0.051
E	0.60	0.70	0.024	0.028
F	0.10	0.14	0.004	0.006

### Pin Configuration



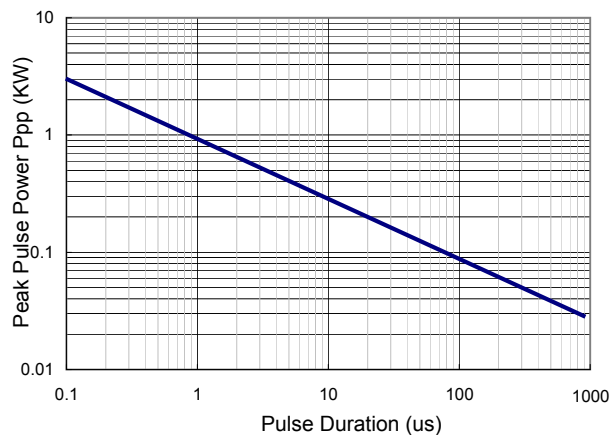
### Suggested PAD Layout



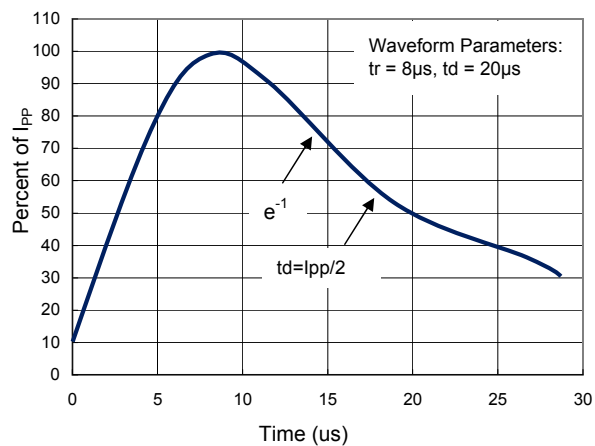
## Small Signal Diode

### Rating and Characteristic Curves

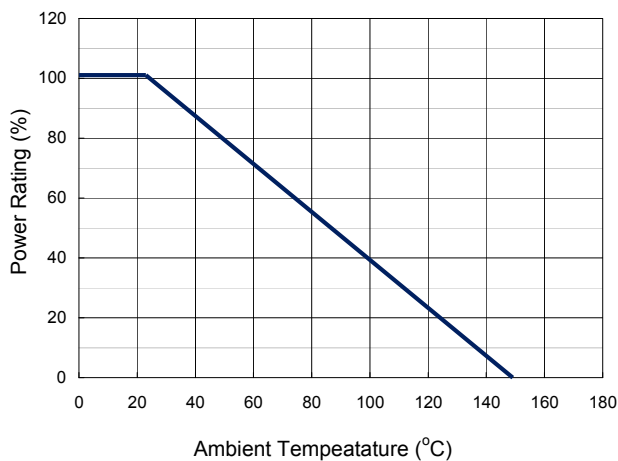
**FIG 1 Non-Repetitive Peak Pulse Power vs. Pulse Time**



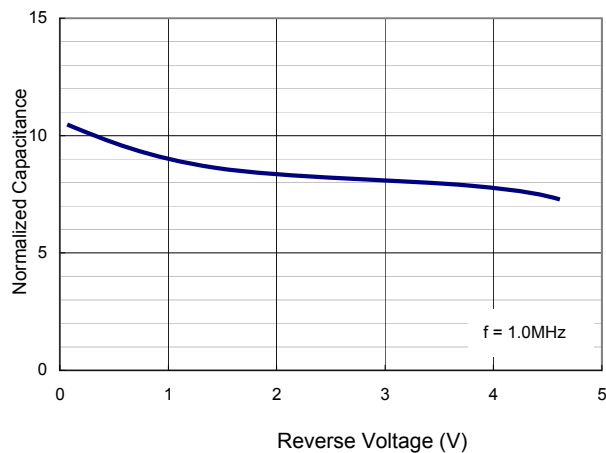
**FIG 2 Pulse Waveform**



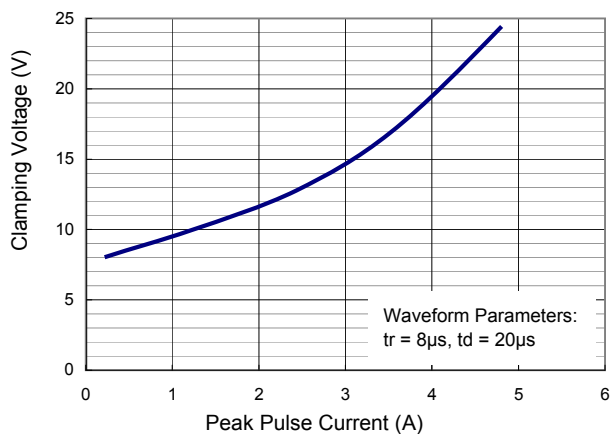
**FIG 3 Admissible Power Dissipation Curve**



**FIG 4 Typical Junction Capacitance**



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



## Small Signal Diode

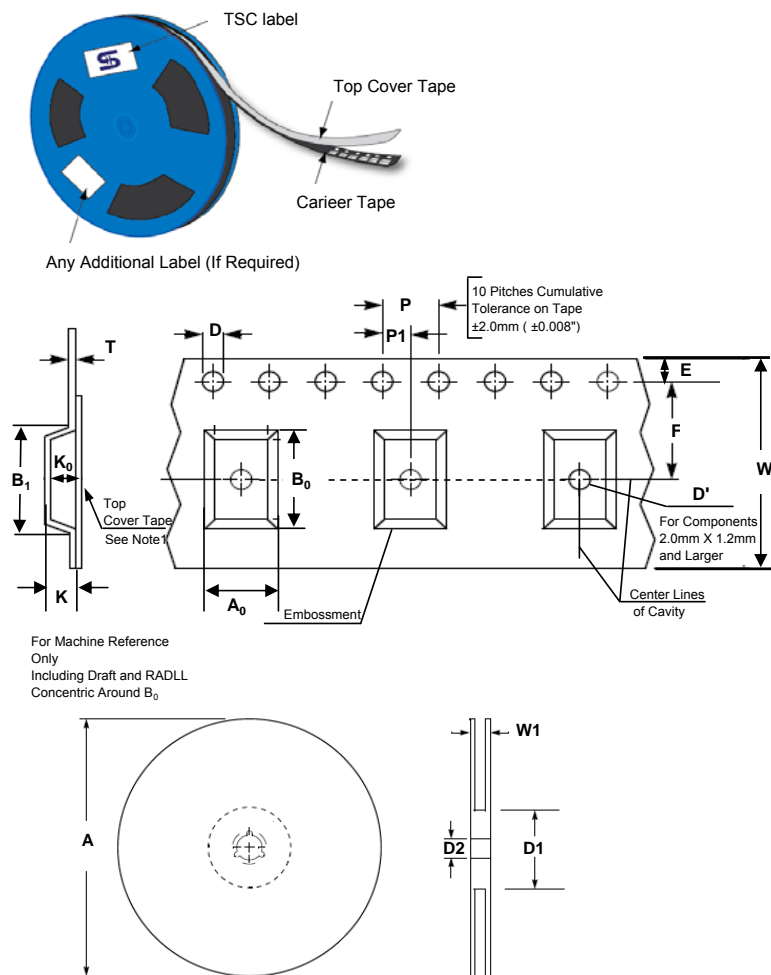
### Applications Information

- ✧ Designed to protect one data, I/O, or power supply line.
- ✧ Designed to protect sensitive electronics from damage or latch-up due to ESD
- ✧ Designed to replace multilayer varistors (MLVs) in portable applications
- ✧ Offers superior electrical characteristics such as lower clamping voltage and no device degradation when compared to MLVs
- ✧ The combination of small size and high ESD surge capability makes them ideal for use in portable applications.

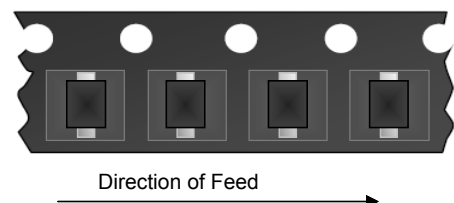
### Circuit Board Layout Recommendations

- Good circuit board layout is critical for the suppression of ESD induced transients.
- ✧ Place the ESD Protection Diode near the input terminals or connectors to restrict transient coupling.
  - ✧ Minimize the path length between the ESD Protection Diode and the protected line.
  - ✧ Minimize all conductive loops including power and ground loops.
  - ✧ The ESD transient return path to ground should be kept as short as possible.

### Tape & Reel specification



Item	Symbol	Dimension (mm)
Carrier depth	K	2.40 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
Punch hole position	F	3.50 ± 0.05
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 4.2 mm(0.165") for 8 mm embossed tape, the tape may not feed through all tape feeders.

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