

Surface Mount TVS For ESD Protection Diode

Pb Lead(Pb)-Free

General Description:

The ESD9DXX Series is designed to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space is at a premium.

Applications:

- *Cellular phones audio
- *MP3 players
- *Digital cameras
- *Portable applications
- *mobile telephone

Features:

- *Small Body Outline Dimensions: 0.039" x 0.024" (1.0 mm x 0.60 mm)
- *Low Body Height: 0.017" (0.43 mm) Max
- *Stand-off Voltage: 3.3 V – 5.0 V
- *Low Leakage
- *Response Time is Typically < 1 ns
- *ESD Rating of Class 3 (> 16 kV) per Human Body Model
- *IEC61000-4-2 Level 4 ESD Protection
- *These are Pb-Free Devices

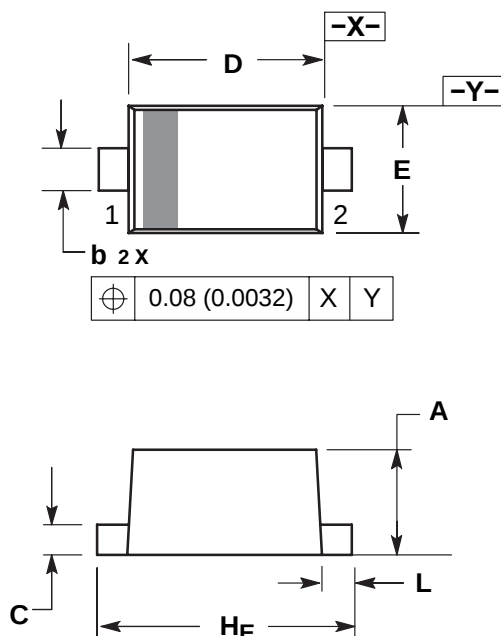
**TRANSIENT VOLTAGE
SUPPRESSORS
100 WATTS
3.3-5.0 VOLTS**



SOD-923

SOD-923 Outline Dimensions

Unit:mm



MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.36	0.40	0.43
b	0.15	0.20	0.25
c	0.07	0.12	0.17
D	0.75	0.80	0.85
E	0.55	0.60	0.65
HE	0.95	1.00	1.05
L	0.05	0.10	0.15

Maximum Ratings($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Characteristic	Symbol	Value	Unit
Peak Power Dissipation ($t_p=8/20\ \mu\text{s}$)	P_{PP}	100	W
Total Power Dissipation on FR-5 Board (Note1) @ $T_A=25^{\circ}\text{C}$	PD	150	mW
IEC61000-4-2(ESD) air discharge contact discharge		± 15 ± 8	KV
ESD Voltage Per Human Body Model		16	KV
Lead Solder Temperature -Maximum (10 second Duration)	T_L	260	$^{\circ}\text{C}$
Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^{\circ}\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Rating are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR-5 = $1.0 \times 0.75 \times 0.62$ in.

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted, $V_F=0.9\text{V}$ Max. @ $I_F=10\text{mA}$ for all types)

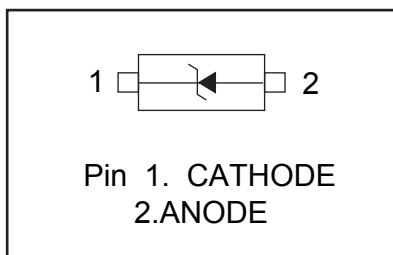
Device	Marking	V_{RWM} (V) Max	I_R (μA) @ V_{RWM} Max	V_{BR} (V) @ I_T (Note 2) Min	I_T (mA)	I_{PP} (Note 3) (A) Typ	V_C (V)(Note 3) @ Max I_P Max	P_{pk} (W) ($8 \times 20\ \mu\text{s}$) Max	C (pF) Typ
ESD9D3.3	E	3.3	2.5	5.0	1.0	9.8	10.4	102	80
ESD9D5.0	G	5.0	1.0	6.2	1.0	8.7	12.3	107	65

Over voltage available upon request.

2. V_{BR} is measured with a pulse test current I_T at an ambient temperature of 25°C .

3. Surge current waveform per Figure.

Equivalent Circuit Diagram



Typical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter
I _{PP}	Maximum Reverse Peak Pulse Current
V _C	Clamping Voltage @ I _{PP}
V _{RWM}	Working Peak Reverse Voltage
I _R	Maximum Reverse Leakage Current @ V _{RWM}
V _{BR}	Breakdown Voltage @ I _T
I _T	Test Current
I _F	Forward Current
V _F	Forward Voltage @ I _F
P _{PK}	Peak Power Dissipation
C	Max. Capacitance @ V _R = 0 and f = 1 MHz

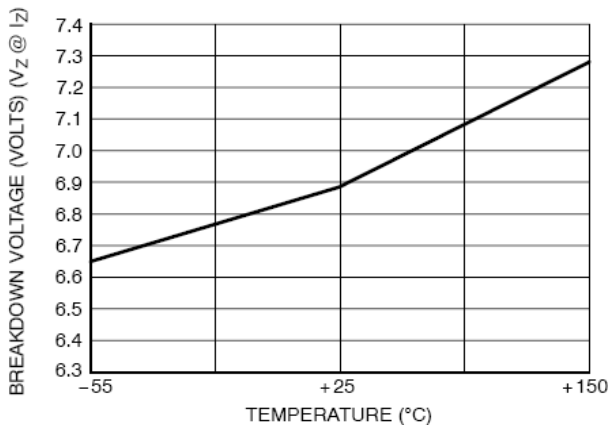
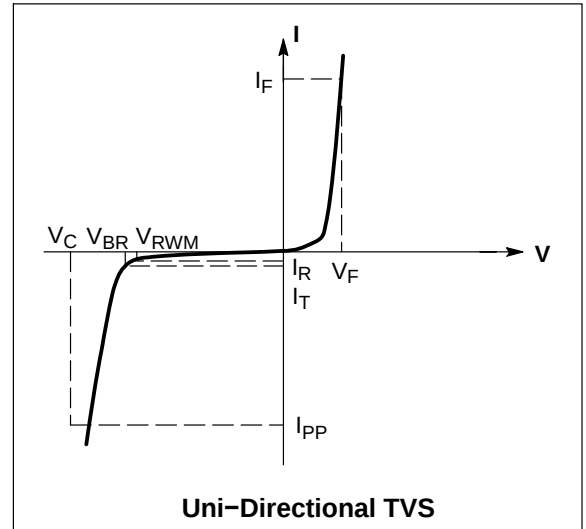


Figure 1. Typical Breakdown Voltage versus Temperature

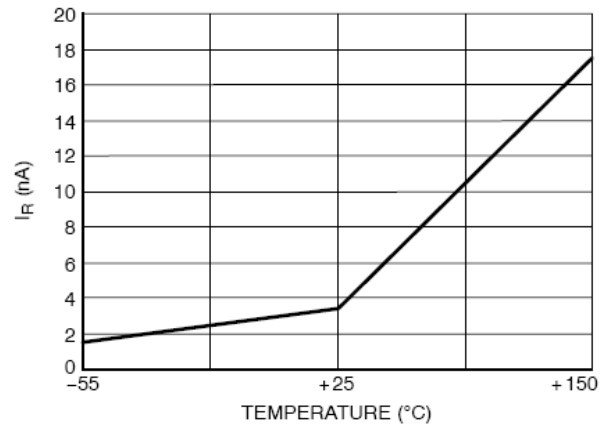


Figure 2. Typical Leakage Current versus Temperature

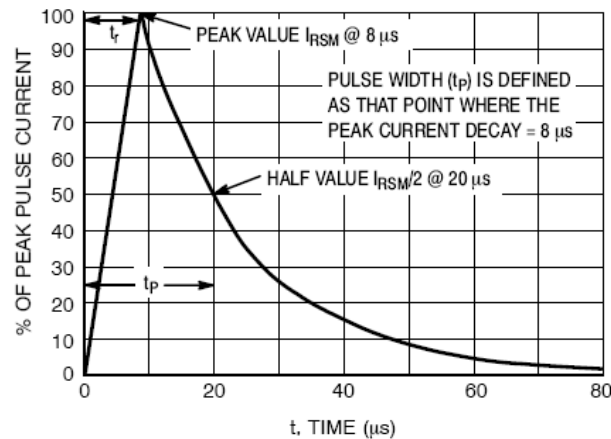


Figure 3. 8*20 μs Pulse Waveform

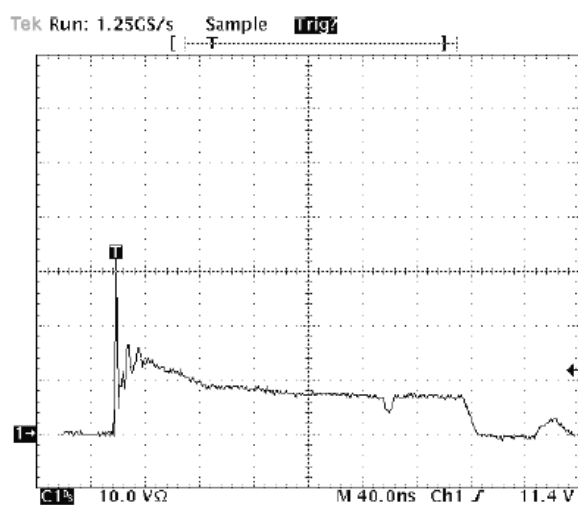


Figure 4. Positive 8kV contact per IEC 61000-4-2-ESD9D5.0

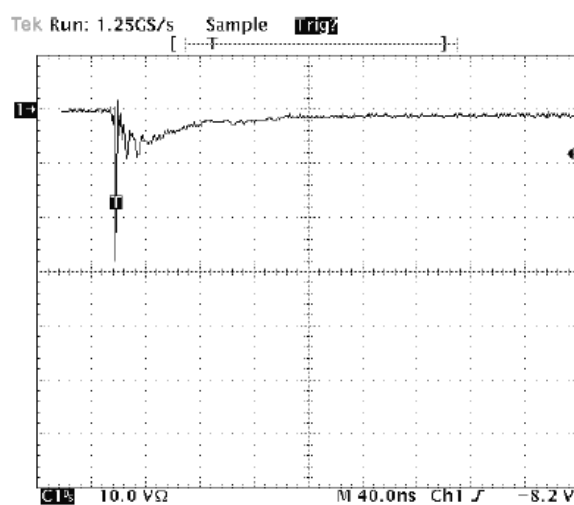


Fig 5. Negative 8kV contact per IEC 61000-4-2-ESD9D5.0