

Transient Voltage Suppressors

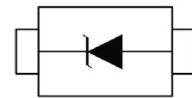
Features

IEC61000-4-2 Level 4 ESD protection
 IEC61000-4-4 Level 4 EFT Protection
 ESD Rating of Class 3(>16kV) per Human Body Model
 240 Watts Peak Pulse Power per (tp=8/20us)
 Low clamping voltage
 Stand-off voltages: 2.5V to 12V
 Low leakage current
 Response Time is Typically <1ns
 AEC-Q101 qualified (Automotive grade with suffix " Q".)



Mechanical Data

SOD-523 Package
 Flammability Rating: UL 94V-0
 High temperature soldering guaranteed: 260°C/10s
 Device Meets MSL 1 Requirements



ABSOLUTE MAXIMUM RATING

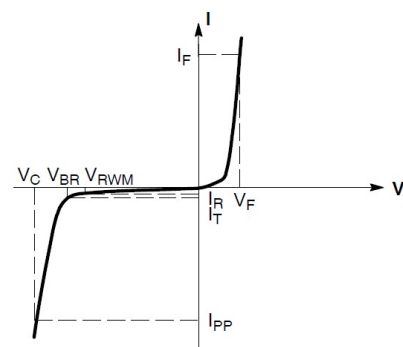
Parameters	Symbol	Value	Unit
ESD per IEC61000-4-2(Air)	V _{ESD}	± 30	kV
ESD per IEC61000-4-2(Contact)			
IEC 61000-4-4(EFT)		40	A
ESD Voltage	Per Human Body Model Per Machine Model	16	kV
		400	v
Total Power Dissipation on FR-5 Board (note 1)@Ta=25°C	P _{PP}	200	W
Operating temperature	T _{OPT}	-55-+150	°C
Storage temperature range	T _{STG}	-55-+150	°C
Lead Soldering temperature-Maximum (10 second Duration)	T _L	260(10 sec.)	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. FR-5=1.0 x 0.75 x 0.62 in.

Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified).

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 @ VR=0 and f=1MHZ



Uni-Directional TVS

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	DEVICE MARKING	VRWM (V) (max.)	IR(μA) @VRWM (max.)	VBR(V) @IT(note2) (min.)	IT (mA)	Vc@5A (V) (Typ.)	Vc (V) (max.) (@A)	Ppk (W) (max.)	C (pF) (Typ.)
ESD5Z2.5	ZD	2.5	6.0	4.0	1.0	6.5	10.9 11.0	120	145
ESD5Z3.3	ZE	3.3	0.05	5.0	1.0	8.4	14.1 11.2	158	105
ESD5Z5.0	ZF	5.0	0.05	6.2	1.0	11.6	18.6 9.4	174	80
ESD5Z6.0	ZG	6.0	0.01	6.8	1.0	12.4	20.5 8.8	181	70
ESD5Z7.0	ZH	7.0	0.01	7.5	1.0	13.5	22.7 8.8	200	65
ESD5Z12	ZM	12	0.01	14.1	1.0	17	25 9.6	240	55

Surge current waveform per Figure 1.

2. VBR is measured with a pulse test current I_T at an ambient temperature of 25°C

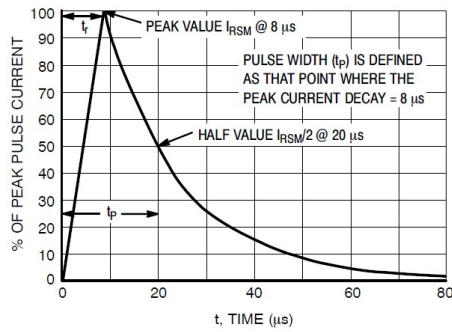


Figure 1. 8 x 20 μs Pulse Waveform

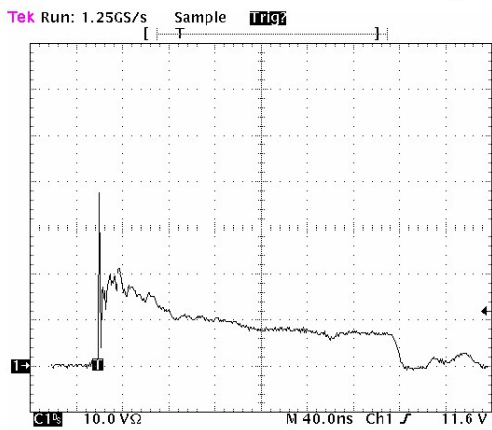


Figure 2. Positive 8 kV contact per IEC 6100-4-2 - ESD5Z5.0T1G

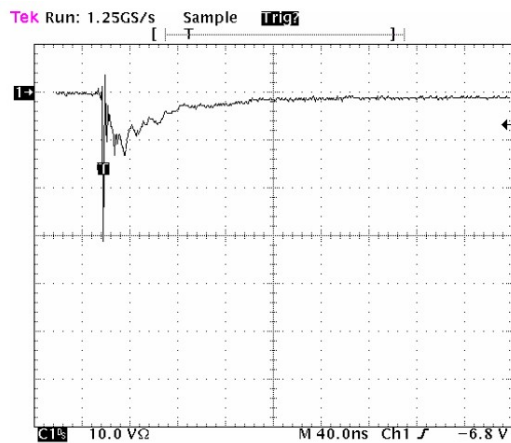
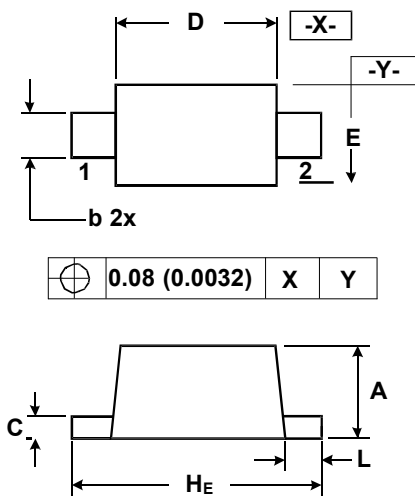


Figure 3. Negative 8 kV contact per IEC 6100-4-2 - ESD5Z5.0T1G

Outline Drawing – SOD523



DIMENSIONS

SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.50	0.70	0.020	0.028
b	0.25	0.35	0.010	0.014
C	0.07	0.20	0.0028	0.0079
D	1.10	1.30	0.043	0.051
E	0.70	0.90	0.028	0.035
H_E	1.50	1.70	0.059	0.067
L	0.15	0.25	0.006	0.010

Ordering information

Order code	Package	Base qty	Delivery mode
ESD5ZXX	SOD523	3000	Tape and reel