Transient Voltage Suppressors for ESD Protection

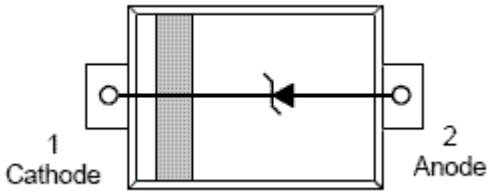
General Description

The XESD5Z2.5 Series is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium.

XESD5Z2.5 SERIES

Applications

- Cellular phones
- Portable devices
- Digital cameras
- Power supplies



SOD–523

Features

- Small Body Outline Dimensions
- Low Body Height
- Stand−off Voltage: 2.5 V − 15 V
- Peak Power up to 200 Watts @ 8 x 20 _s Pulse
- 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
- IEC61000−4−4 Level 4 EFT Protection
- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

ORDERING INFORMATION

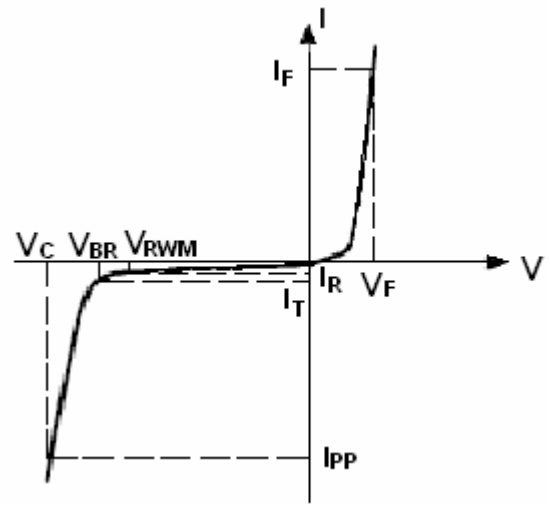
Device	Package	Shipping
XESD5Z2.5 SERIES	SOD−523	3000/Tape & Reel

Absolute Ratings (T_{amb}=25°C)

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (t_p = 8/20μs)	200	W
T_L	Maximum lead temperature for soldering during 10s	260	°C
T_{stg}	Storage Temperature Range	-55 to +150	°C
T_{op}	Operating Temperature Range	-40 to +125	°C
T_j	Maximum junction temperature	150	°C
	IEC61000-4-2 (ESD) air discharge contact discharge	±15 ±8	KV
	IEC61000-4-4 (EFT)	40	A
	ESD Voltage Per Human Body Model	16	KV

Electrical Parameter

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}
I_T	Test Current
V_{BR}	Breakdown Voltage @ I_T
I_F	Forward Current
V_F	Forward Voltage @ I_F



Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.VF = 0.9V at IF = 10mA

Device	Device Marking	V_{RWM} (V)	I_R(uA) @ V_{RWM}	V_{BR} (V)@ I_T (Note 1)	I_T	V_C (V) @ I_{PP}=5 A*	V_C (V) @ Max I_{PP}*	I_{PP} (A)*	P_{PK} (W)*	C (pF)
		Max	Max	Min	mA	Typ	Max	Max	Max	Typ
XESD5Z2.5	ZD	2.5	6.0	4.0	1.0	6.5	10.9	11.0	120	145
XESD5Z3.3	ZE	3.3	1.0	5.0	1.0	8.4	14.1	11.2	158	105
XESD5Z5.0	ZF	5.0	1.0	6.2	1.0	11.6	18.6	9.4	174	80
XESD5Z6.0	ZG	6.0	1.0	6.8	1.0	12.4	20.5	8.8	181	70
XESD5Z7.0	ZH	7.0	1.0	7.5	1.0	13.5	22.7	8.8	200	65
XESD5Z12	ZM	12	1.0	13.5	1.0	17	25	9.6	240	55
XESD5Z15	ZN	15	1.0	16.5	1.0	22	26	10	260	65

*Surge current waveform per Figure 1.

1. V_{BR} is measured with a pluse test current I_T at an ambient temperature of 25℃.

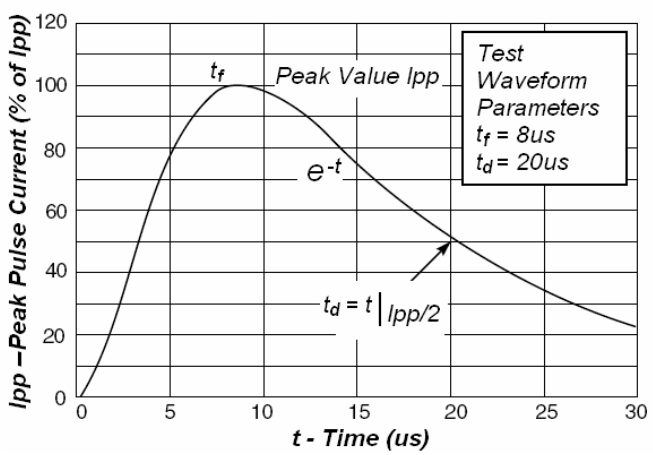


Fig1. Pulse Waveform

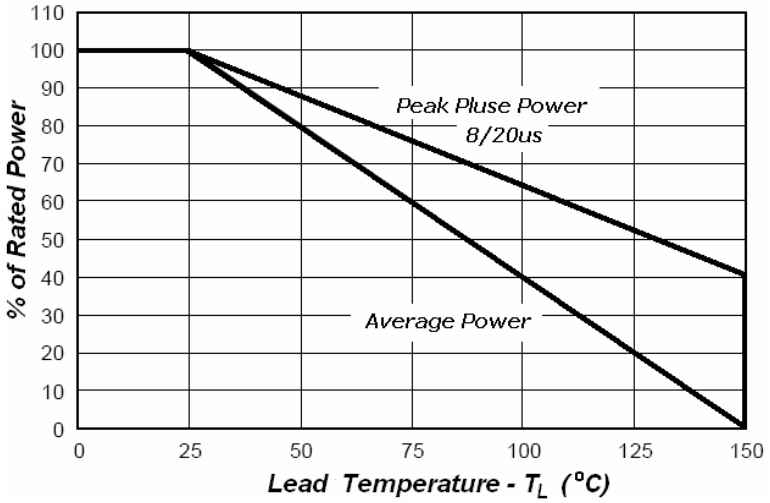


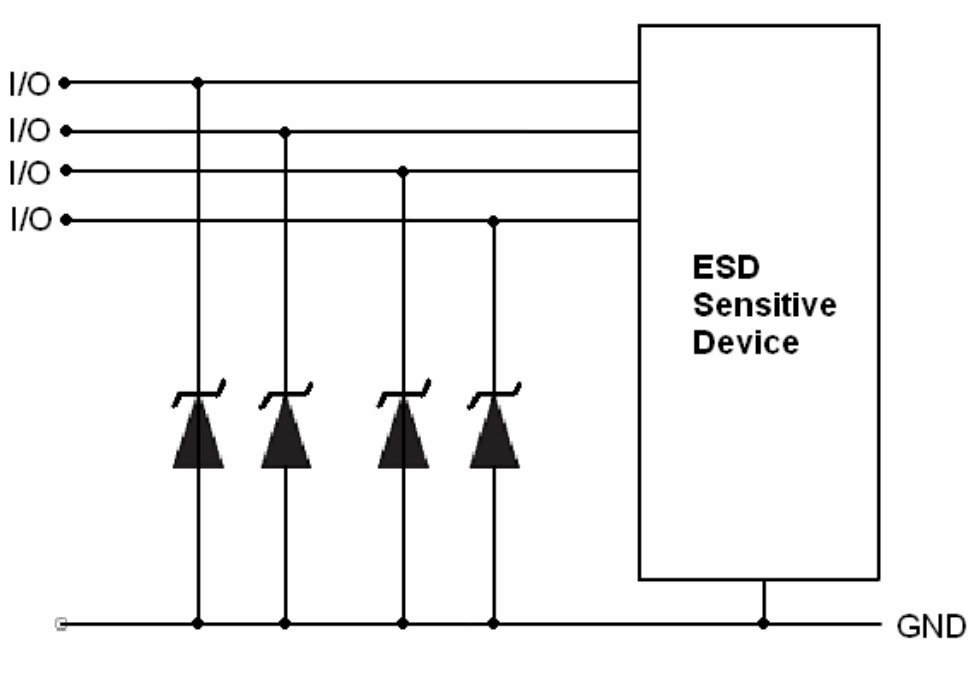
Fig3.Power Derating

Application Note

Electrostatic discharge (ESD) is a major cause of failure in electronic systems. Transient Voltage Suppressors (TVS) are an ideal choice for ESD protection. They are capable of clamping the incoming transient to a low enough level such that damage to the protected semiconductor is prevented.

Surface mount TVS offer the best choice for minimal lead inductance. They serve as parallel protection elements, connected between the signal line to ground. As the transient rises above the operating voltage of the device, the TVS becomes a low impedance path diverting the transient current to ground. The XESD5Z2.5 is the ideal board evel protection of ESD sensitive semiconductor components.

The tiny SOD523 package allows design flexibility in the design of high density boards where the space saving is at a premium. This enables to shorten the routing and contributes to hardening againt ESD.



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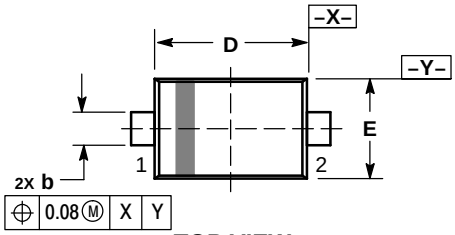
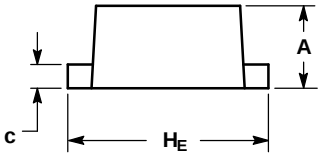


TOP VIEW

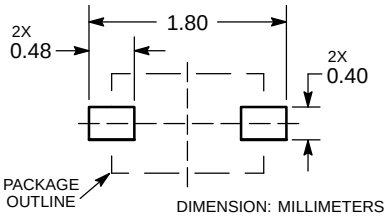


SIDE VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

	MILLIMETERS		
DIM	MIN	NOM	MAX
A	0.50	0.60	0.70
b	0.25	0.30	0.35
c	0.07	0.14	0.20
D	1.10	1.20	1.30
E	0.70	0.80	0.90
HE	1.50	1.60	1.70
L	0.30 REF		
L2	0.15	0.20	0.25

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSION: MILLIMETERS