

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.

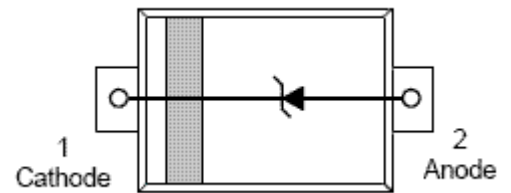
Applications

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

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 μ 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.

XESD5Z2.5 SERIES



SOD-523

ORDERING INFORMATION

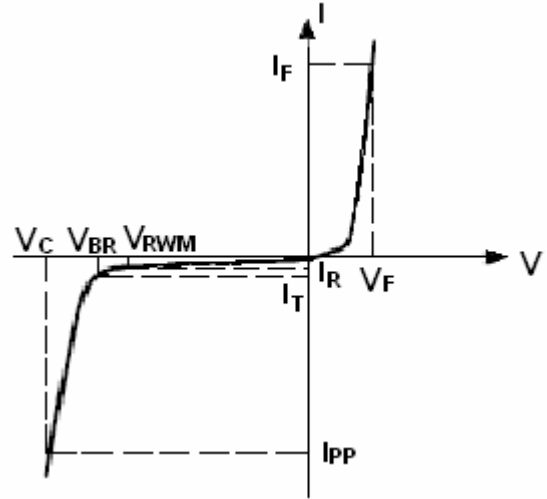
| Device | Package | Shipping |
|------------------|---------|------------------|
| XESD5Z2.5 SERIES | SOD-523 | 3000/Tape & Reel |

Absolute Ratings (T_{amb}=25°C)

| Symbol | Parameter | Value | Units |
|------------------|---|-------------|-------|
| P _{PP} | Peak Pulse Power (t _p = 8/20 μ s) | 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 | ± 15 | KV |
| | IEC61000-4-4 (EFT) contact discharge | ± 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. $V_F = 0.9V$ at $I_F = 10mA$

| Device | Device Marking | V_{RWM} (V) | $I_R(\mu A)$ @ 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.

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

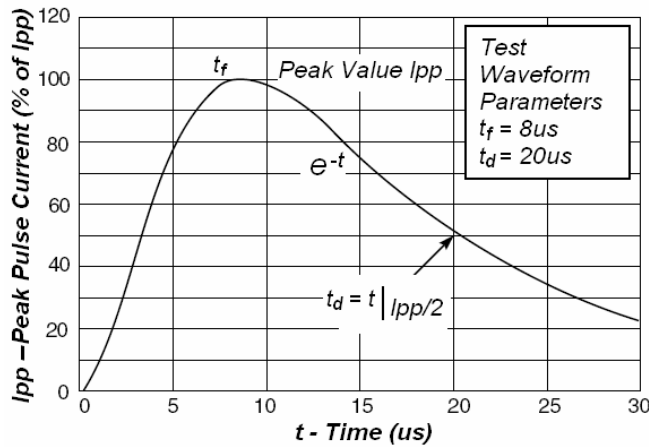


Fig1. Pulse Waveform

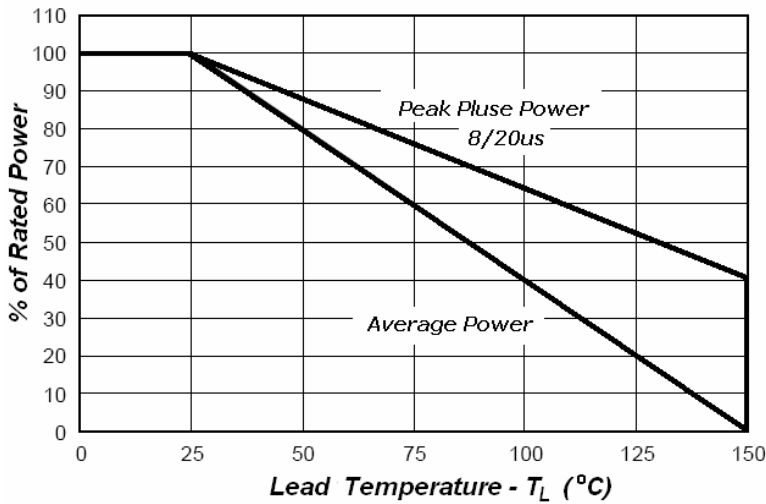


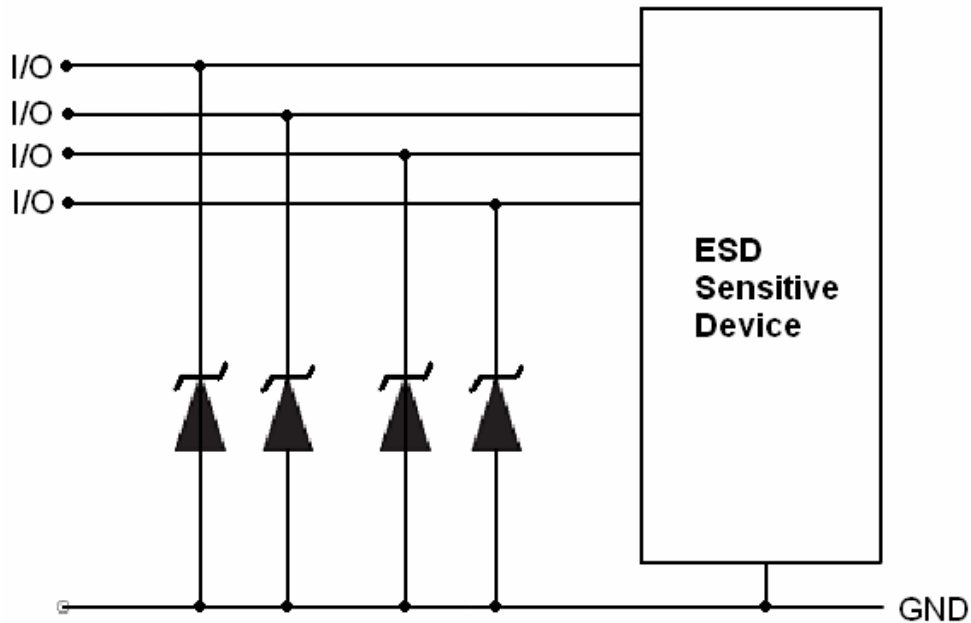
Fig3. Power Derating

Application Note

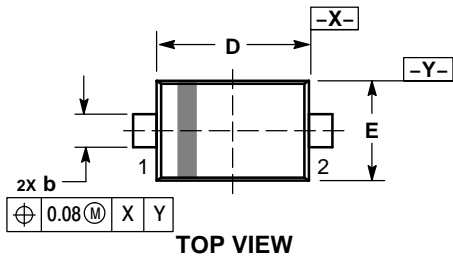
Electrostatic discharge (ESD) is a major cause of failure in electronic systems. Transient Voltage Suppressors (TVS) are an ideal choice for ESD protection. They are capable of clamping the incoming transient to a low enough level such that damage to the protected semiconductor is prevented.

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 level protection of ESD sensitive semiconductor components.

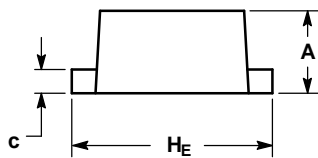
The tiny SOD523 package allows design flexibility in the design of high density boards where the space saving is at a premium. This enables to shorten the routing and contributes to hardening against ESD.



SC-79/SOD-523

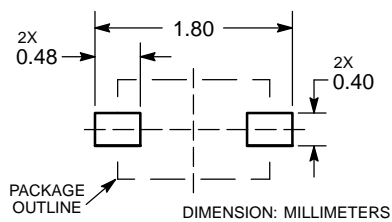


TOP VIEW



SIDE VIEW

RECOMMENDED SOLDERING FOOTPRINT*



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.

| DIM | MILLIMETERS | | |
|----------------------|-------------|------|------|
| | 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 |
| H_E | 1.50 | 1.60 | 1.70 |
| L | 0.30 REF | | |
| L2 | 0.15 | 0.20 | 0.25 |