

■ Transient Voltage Suppressors for ESD Protection

■ General Description

The ESD3Z5.0CM 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

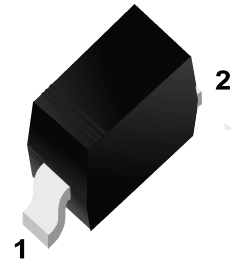
- Cellular phones
- Portable devices
- Digital cameras
- Power supplies
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

■ Features

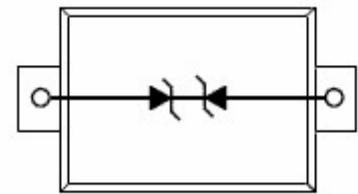
- Small Body Outline Dimensions
- Low Body Height
- Peak Power up to 200 Watts @ 8 x 20  $\mu$ s Pulse
- Low Leakage current
- Response Time is Typically < 1 ns
- ESD Rating of Class 3 (> 16 kV) per Human Body Model
- IEC61000-4-2 Level 4 ESD Protection
- IEC61000-4-4 Level 4 EFT Protection

**Absolute Ratings (T<sub>amb</sub>=25°C )**

Symbol	Parameter	Value	Units	
P <sub>PP</sub>	Peak Pulse Power (t <sub>p</sub> = 8/20 $\mu$ s)	200	W	
T <sub>L</sub>	Maximum lead temperature for soldering during 10s	260	°C	
T <sub>stg</sub>	Storage Temperature Range	-55 to +155	°C	
T <sub>op</sub>	Operating Temperature Range	-40 to +125	°C	
T <sub>j</sub>	Maximum junction temperature	150	°C	
	IEC61000-4-2 (ESD)	air discharge contact discharge	$\pm 15$ $\pm 8$	KV
	IEC61000-4-4 (EFT)		40	A
	ESD Voltage	Per Human Body Model	16	KV

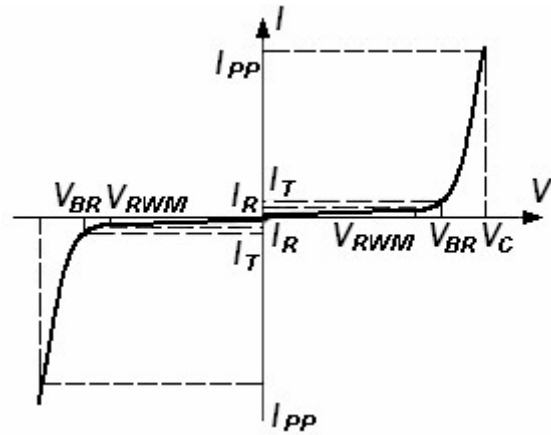


■ Simplified outline(SOD-323)



**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 @ $I_T$

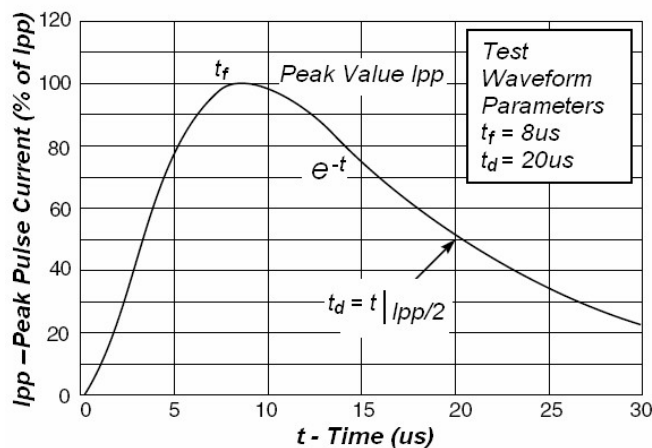


**Electrical Characteristics** Ratings at 25°C ambient temperature unless otherwise specified. VF = 0.9V at IF = 10mA

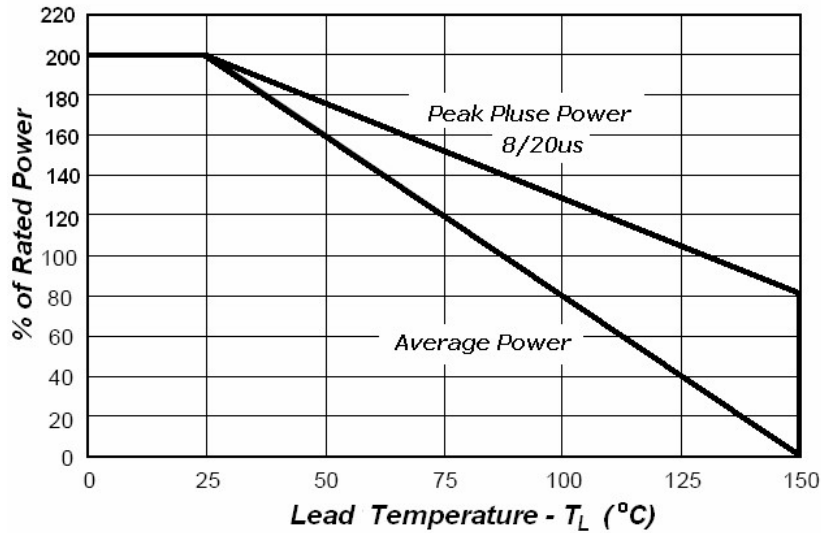
Device	$V_{RWM}$ (V)	$I_R$ (uA) @ $V_{RWM}$	$V_{BR}$ (V)@ $I_T$ (Note 1)	$I_T$	$V_C$ (V) @ $I_{PP}=5 A^*$	$V_C$ (V) @ Max $I_{PP}^*$	$I_{PP}$ (A)*	$P_{PK}$ (W)*	C (pF)
	Max	Max	Min	mA	Typ	Max	Max	Max	Typ
ESD3Z5.0CM	5.0	1	5.6	1.0	11.6	18.6	9.4	174	25

\*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**



**Fig2. Power Derating**

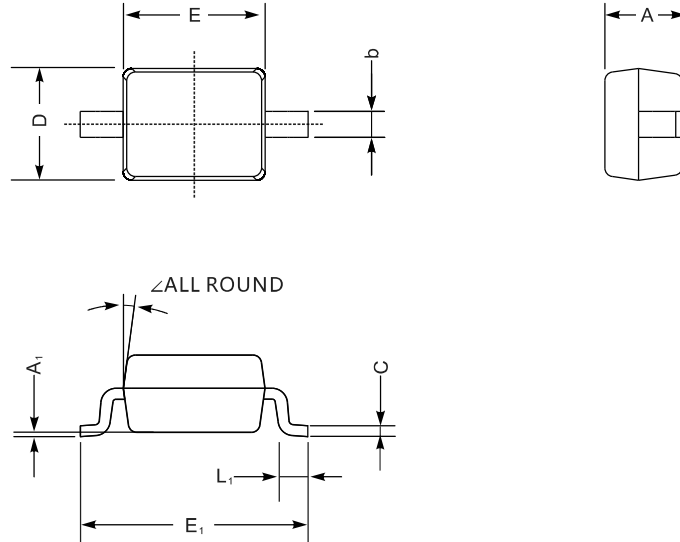
### Application Note

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 offers the best choice for minimal lead inductance. They serve as parallel protection elements, connected between the signal lines 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 LESD3Z5.0CMT1G is the ideal board level protection of ESD sensitive semiconductor components.

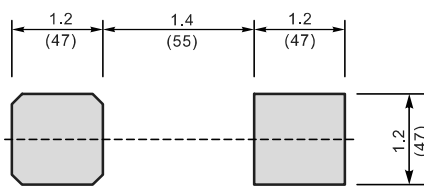
The tiny SOD-323 package allows design flexibility in the design of high density boards where the space saving is at a premium. This enables to shorten the routing and contributes to hardening against ESD.

**Package Outline      SOD-323**  
**Plastic surface mounted package; 2 leads**



UNIT		A	C	D	E	E <sub>1</sub>	b	L <sub>1</sub>	A <sub>1</sub>	∠
mm	max	1.1	0.15	1.4	1.8	2.75	0.4	0.45	0.2	9°
	min	0.8	0.08	1.2	1.4	2.55	0.25	0.2	—	
mil	max	43	5.9	55	70	108	16	16	8	
	min	32	3.1	47	63	100	9.8	7.9	—	

**The recommended mounting pad size**



Unit:  $\frac{\text{mm}}{\text{mil}}$

**Summary of Packing Options**

Package	Packing Description	Packing Quantity	Industry Standard
SOD-323	Tape/Reel, 7" reel	3000	EIA-481-1