

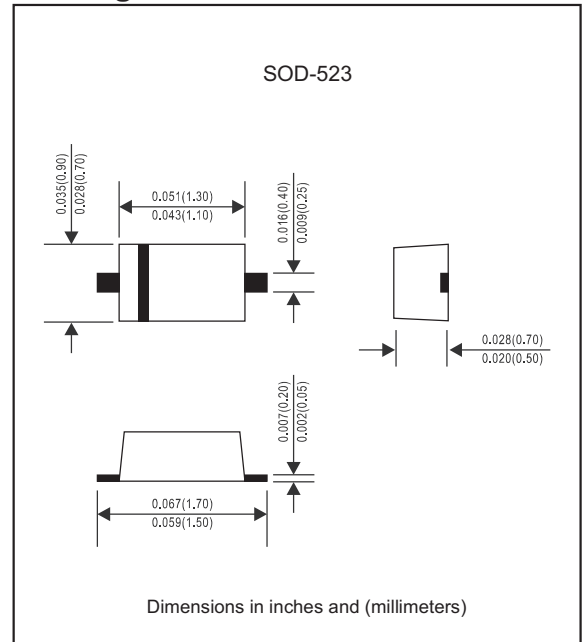
### Features

- Stand-off voltage: 5.0V
- Small body outline dimensions
- Low body height
- Peak power up to 200 watts @ 8 x 20us pulse
- Low leakage current
- Response time is typically < 1 ns
- Provide transient protection:  
IEC 61000-4-2 (ESD) level 4  
IEC 61000-4-4 (EFT) 40A (5/50ns)  
IEC 61000-4-5 (Surge) (8/20us)
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen free parts, ex.ESD5Z5.0C-H-Q1
- Suffix "-Q1" for AEC-Q101

### Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-523
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any

### Package outline



### Applications

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

### Maximum ratings (at $T_A=25^\circ\text{C}$ unless otherwise noted)

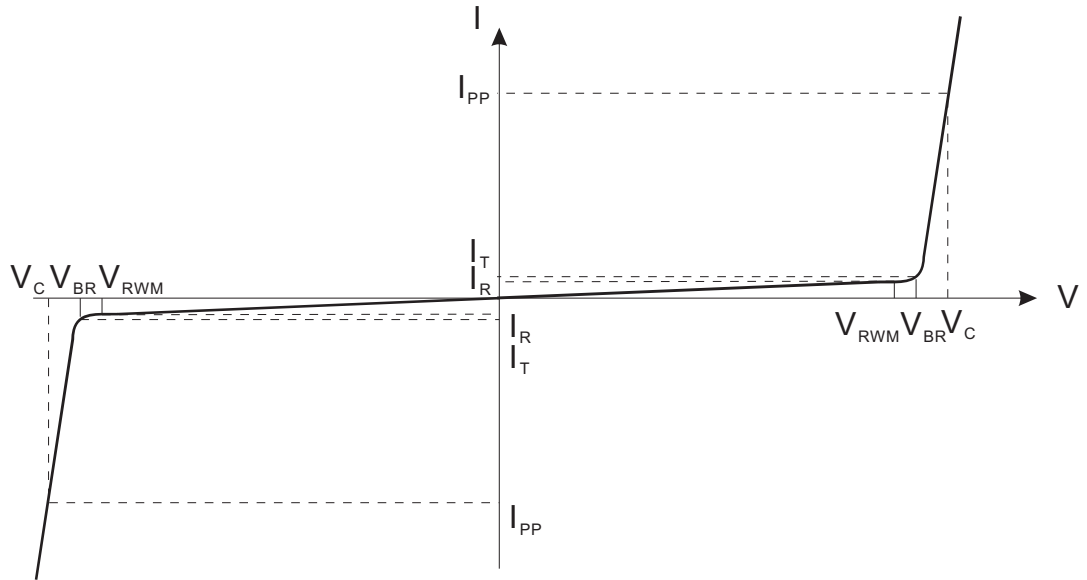
PARAMETER	CONDITIONS	Symbol	Value	UNIT
ESD Voltage	Per human body model	$E_{SD}$	16	kV
Electrostatic discharge	IEC61000-4-2 air discharge IEC61000-4-2 contact discharge	$E_{SD}$	$\pm 15$ $\pm 8$	kV
Electrostatic discharge	IEC61000-4-4	$E_{FT}$	40	A
Total power dissipation	on FR-5 board, @ $T_A = 25^\circ\text{C}$	$P_D$	150	mW
Thermal resistance	Junction to ambient	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$
Lead solder temperature -maximum		$T_L$	260(10s)	$^\circ\text{C}$
Maximum junction temperature		$T_J$	+125	$^\circ\text{C}$
Storage temperature range		$T_{STG}$	-55 to +150	$^\circ\text{C}$
Operating temperature range		$T_{OP}$	-40 to +125	$^\circ\text{C}$

### Electrical characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Part No.	$V_{RWM}$ (V) Max	$I_R$ ( $\mu\text{A}$ ) @ $V_{RWM}$ Max	$V_{BR}$ (V)@ $I_T$ (Note 2)		$I_T$ (mA)	$V_C$ (V)(Note 1) @ $I_{PP}=5.0\text{A}$ Max	$I_{PP}$ (Note 1) (A) Max	$V_C$ (V)(Note 1) @ Max $I_{PP}$ Max	$P_{PK}$ (W) (Note 1) Max	$C_j$ (pF) $V_R=0\text{V}$ and $f=1\text{MHz}$ Typ.
			Min.	Max						
ESD5Z5.0C-Q1	5.0	1.0	5.6	7.8	1.0	11.6	9.4	18.6	174	25

Note 1. Surge current waveform per Fig.1  
2.  $V_{BR}$  is measured with a pulse test current  $I_T$  at an ambient temperature of  $25^\circ\text{C}$ .

Typical characteristics (at  $T_A=25^\circ\text{C}$  unless otherwise noted)



Bi-Directional TVS

- $V_C$  : Clamping Voltage @  $I_{PP}$
- $I_{PP}$  : Maximum Reverse Peak Pulse Current
- $V_{RWM}$  : Maximum Working Peak Reverse voltage
- $I_R$  : Maximum Reverse Leakage Current @  $V_{RWM}$
- $V_{BR}$  : Breakdown voltage @  $I_T$
- $I_T$  : Test Current
- $C_J$  : Capacitance @  $V_R = 0V$  and  $f = 1\text{MHz}$

### Rating and characteristic curves (ESD5Z5.0C-Q1)

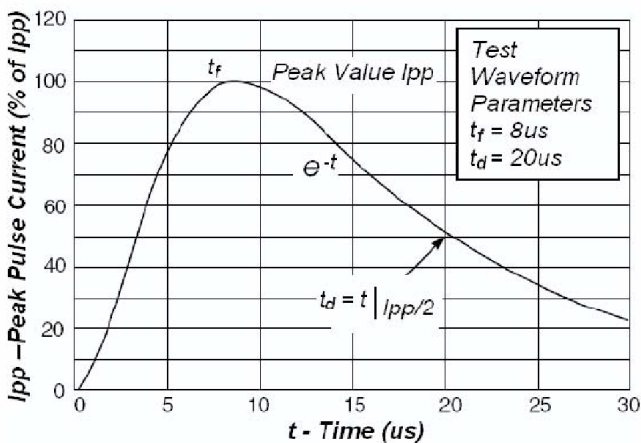


Fig1. Pulse Waveform

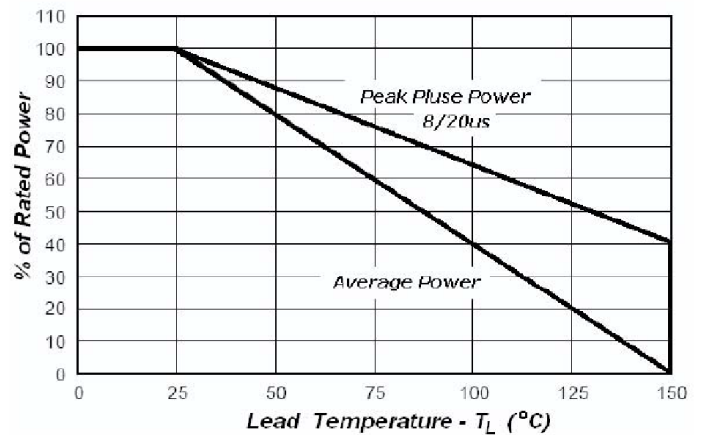



Fig2. Power Derating

### Application Note

Electrostatic discharge (ESD) is a major cause of failure in electronic system. 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 rise above the operating voltage of the device, the TVS becomes a low impedance path diverting the transient current to ground. The ESD5Z is the ideal board level protection of ESD sensitive semiconductor components.

The tiny SOD-523 package allows design flexibility in the design of high density boards where the space is at a premium. This enables to shorten the routing and contributes to hardening against ESD.

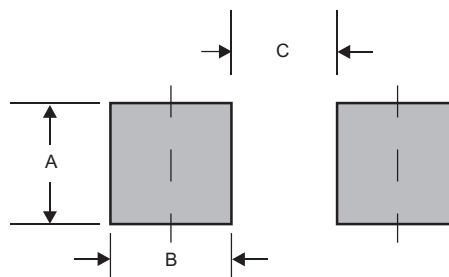
### Pinning information

Pin	Symbol
Bi-Directional	

### Marking

Type number	Marking code
ESD5Z5.0C-Q1	5C

### Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-523	0.032 (0.80)	0.024 (0.60)	0.044 (1.10)