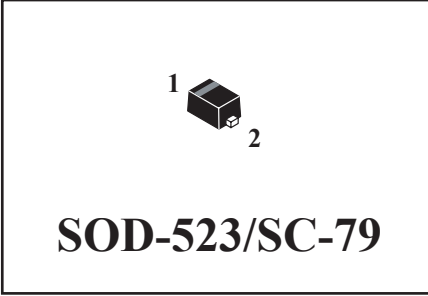


### Transient Voltage Suppressors for ESD Protection

 Lead(Pb)-Free

**TRANSIENT VOLTAGE  
SUPPRESSORS  
200 WATTS  
2.5-7.0 VOLTS**



#### Description:

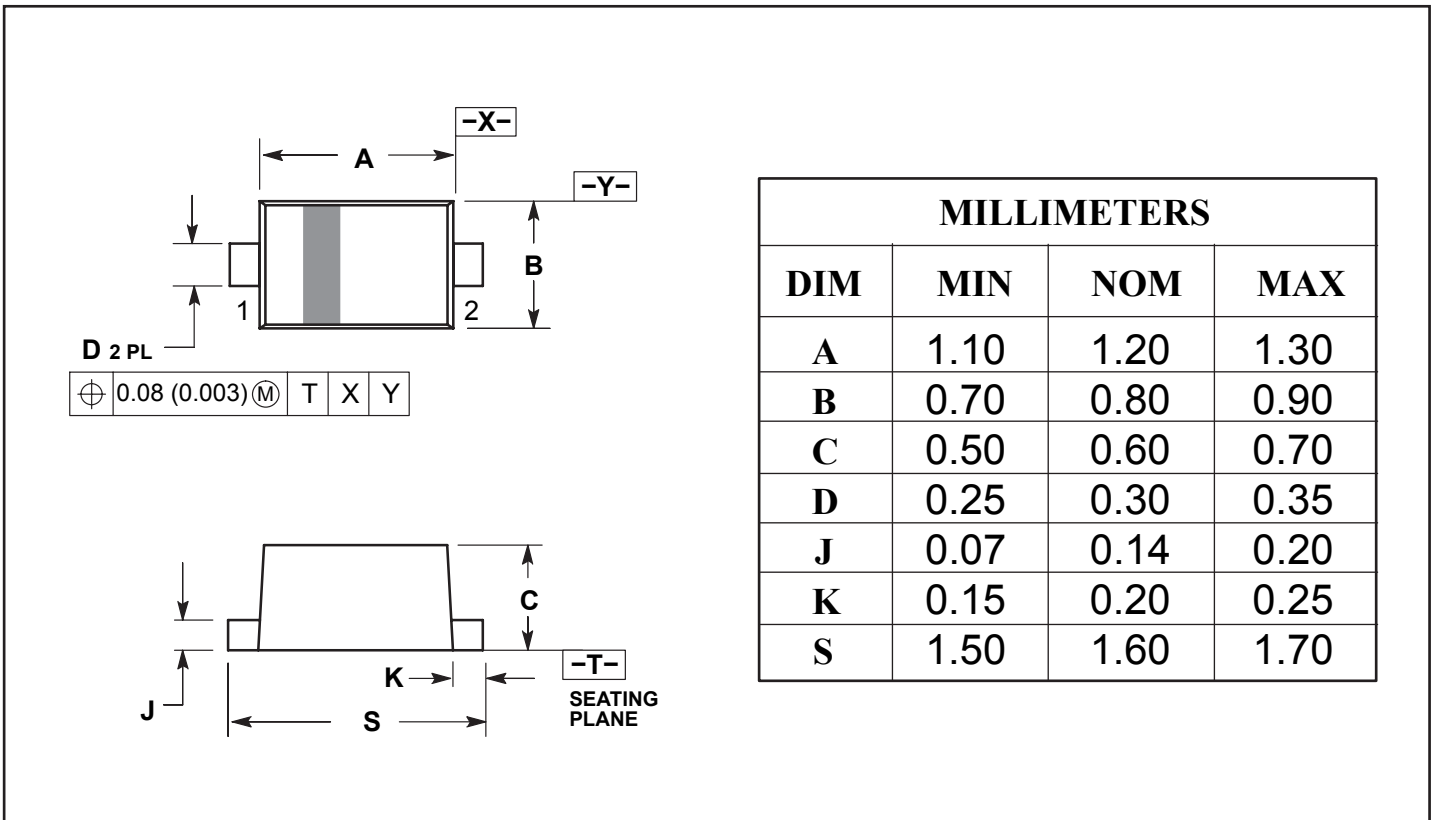
\* The ESD5Z Series is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium. Because of its small size, it is suited for use in cellular phones, portable devices, digital cameras, power supplies and many other portable applications.

#### Features:

- \* Stand-off Voltage: 2.5 V – 7.0 V
- \* Peak Power up to 200 Watts @ 8 x 20  $\mu$ 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

### SOD-523 Outline Dimensions

Unit:mm



## Maximum Ratings( $T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Characteristic	Symbol	Value	Unit
ESD Voltage Per Human Body Model Per Machine Model		16 400	kV V
Electrostatic discharge IEC61000-4-2 Air discharge IEC61000-4-2 ContactAir discharge		30 30	kV
Electrostatic discharge IEC61000-4-4		40	A
Total Power Dissipation on FR-5 Board <sup>1</sup> , @ $T_A = 25^{\circ}\text{C}$	$P_D$	100	mW
Lead Solder Temperature -Maximum	$T_L$	260(10s)	$^{\circ}\text{C}$
Junction Temperature Range	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^{\circ}\text{C}$

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.

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

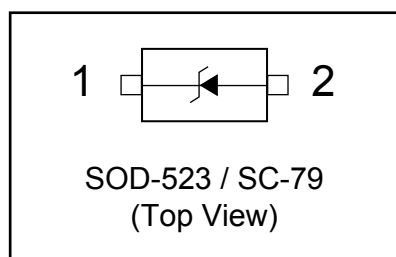
## Electrical Characteristics ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted, $V_F = 0.9\text{ V Max. @ } I_F = 10\text{ mA}$ for all types)

Device	Marking	$V_{RWM}$ (V)	$I_R$ ( $\mu\text{A}$ ) @ $V_{RWM}$	$V_{BR}$ (V) @ $I_T$ (Note 2)	$I_T$	$V_C$ (V)(Note 1) @ $I_{PP} = 5.0\text{ A}$	$V_C$ (V)(Note 1) @ Max $I_{PP}$	$I_{PP}$ (A) (Note 1)	$P_{pk}$ (W) (Note 1)	C (pF)
		Max	Max	Min	mA	Typ	Max	Max	Max	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

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  $25^{\circ}\text{C}$ .

## Equivalent Circuit Diagram



## Typical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Parameter
I <sub>PP</sub>	Maximum Reverse Peak Pulse Current
V <sub>C</sub>	Clamping Voltage @ I <sub>PP</sub>
V <sub>RWM</sub>	Working Peak Reverse Voltage
I <sub>R</sub>	Maximum Reverse Leakage Current @ V <sub>RWM</sub>
V <sub>BR</sub>	Breakdown Voltage @ I <sub>T</sub>
I <sub>T</sub>	Test Current
I <sub>F</sub>	Forward Current
V <sub>F</sub>	Forward Voltage @ I <sub>F</sub>
P <sub>pk</sub>	Peak Power Dissipation
C	Max. Capacitance @V <sub>R</sub> = 0 and f = 1 MHz

