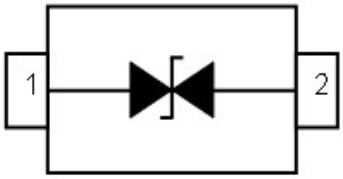
DESCRIPTION

The ESD5B5.0ST1G Series is designed to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size and bi−directional design, it is ideal for use in cellular phones, MP3 players, and portable applications that require audio line protection.



Features

- Low Capacitance 32 pF
- Low Clamping Voltage
- Small Body Outline Dimensions: nom 0.063″ x 0.032″ (1.6x0.8 mm)
- Low Body Height: nom 0.024″ (0.6 mm)
- Reverse Working (Stand−off) Voltage: 5.0 V
- Peak Power up to 50 W @ 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
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- This is a Pb−Free Device

Mechanical Characteristics

CASE: Void-free, transfer-molded, thermosetting plastic Epoxy Meets UL 94 V−0
LEAD FINISH: 100% Matte Sn (Tin)
MOUNTING POSITION: Any
QUALIFIED MAX REFLOW TEMPERATURE: 260°C Device Meets MSL 1 Requirements

MAXIMUM RATINGS

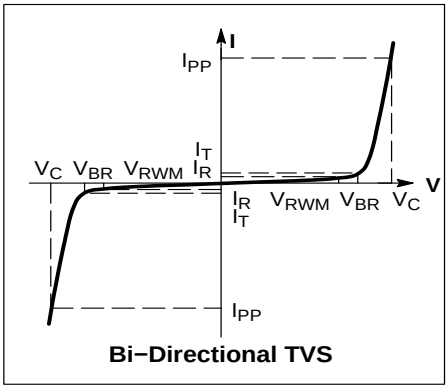
Rating	Symbol	Value	Unit
IEC 61000−4−2 (ESD) Contact Air		±30 ±30	kV
ESD Voltage Per Human Body Model Per Machine Model		16 400	kV V
Peak Power (Figure 1) Per 8 x 20 μs Waveform Peak Power (Figure 2)Per 10 x 1000 μs Waveform	P_{PK}	50 10	W
Total Power Dissipation on FR−5 Board (Note 1) @ T_A = 25°C	P_D	200	mW
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C
Lead Solder Temperature − Maximum (10 Second Duration)	T_L	260	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.
1. FR−5 = 1.0 x 0.75 x 0.62 in.

ELECTRICAL CHARACTERISTICS

(T_A = 25°C unless otherwise noted)

Symbol	Parameter
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current



ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 0.9 V Max. @ I_F = 10 mA for all types)

Device*	V_{RWM} (V)	I_R (μA) @ V_{RWM}	V_{BR} (V) @ I_T (Note 2)		I_T	C (pF) @ V_R = 0 V, f = 1 MHz	V_C
	Max	Max	Min	Max	mA	Typ	Per IEC61000−4−2 (Note 3)
ESD5B5.0ST1G	5.0	1.0	5.8	7.8	1.0	32	Figures 1 and 2 See Below

*Other voltages available upon request.

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

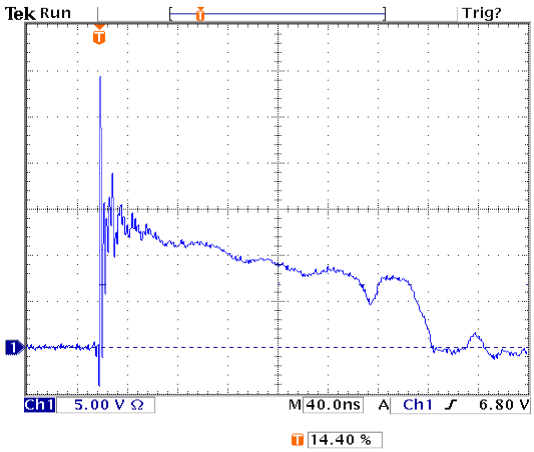


Figure 1. ESD Clamping Voltage Screenshot Positive 8 kV Contact per IEC 61000−4−2

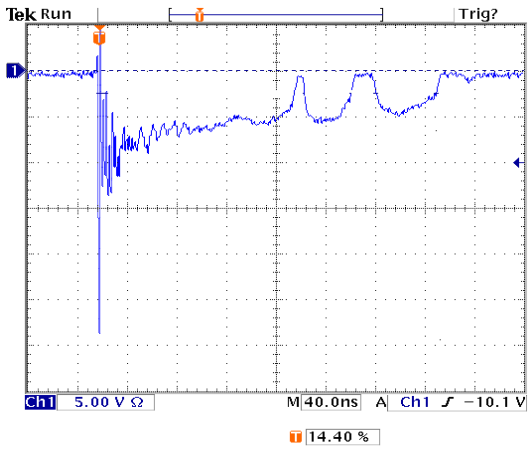
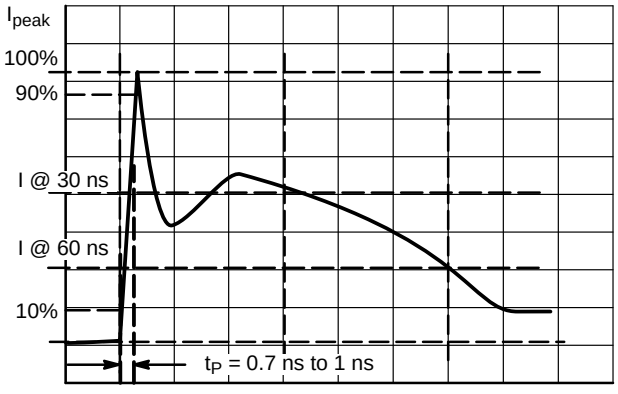


Figure 2. ESD Clamping Voltage Screenshot Negative 8 kV Contact per IEC 61000−4−2

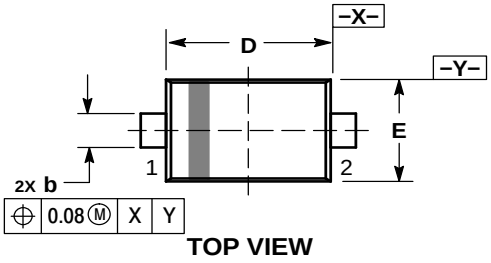
IEC 61000−4−2 Spec.

Level	Test Voltage (kV)	First Peak Current (A)	Current at 30 ns (A)	Current at 60 ns (A)
1	2	7.5	4	2
2	4	15	8	4
3	6	22.5	12	6
4	8	30	16	8

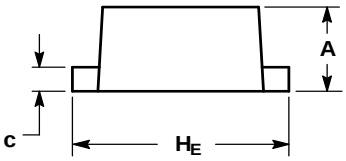
IEC61000−4−2 Waveform



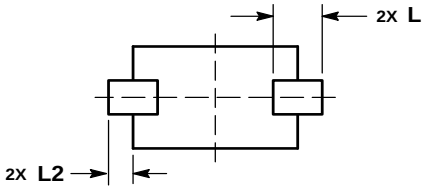
SOD-523 PACKAGE OUTLINE DIMENSIONS



TOP VIEW



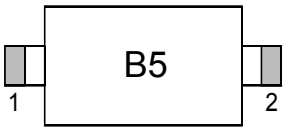
SIDE VIEW



BOTTOM VIEW

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

Marking



Ordering information

Order code	Package	Baseqty	Delivery mode
ESD5B5.0ST1G	SOD-523	3000	Tape and reel