308 Constitution Drive
Menlo Park, CA USA
www.circuitprotection.com

ChipSESD

Silicon ESD Protector

Overvoltage Protection Device

Circuit Protection Products

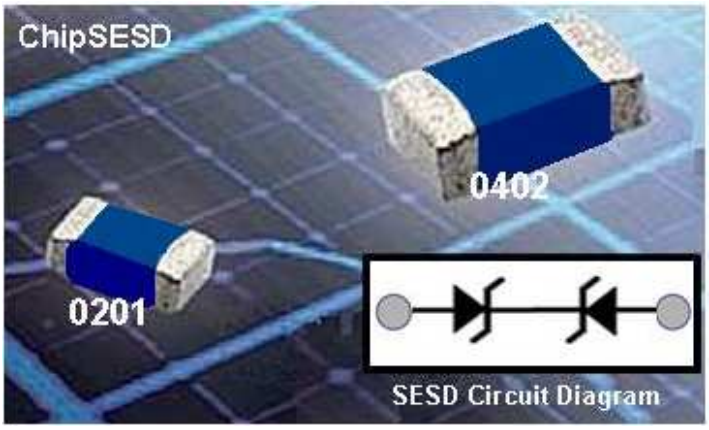
PRODUCT: SESD0402P1BN-0450-090

DOCUMENT: SCD27764
REV LETTER: B
REV DATE: MAY 14, 2011

Specification Status: Released

BENEFITS

- Silicon ESD device in an EIA-0402 size rectangular passive component SMT package
- Standard PCB assembly and rework processes
- Bi-directional operation allows placement on PCB without orientation constraint
- Appropriate for ESD protection in space-constrained portable electronics and mobile handsets
- Suitable for +5V operating voltage applications
- Helps protect electronic circuits against damage from Electrostatic Discharge (ESD) events
- Assist equipment to pass IEC61000-4-2, level 4 testing
- RoHS compliant and Halogen Free



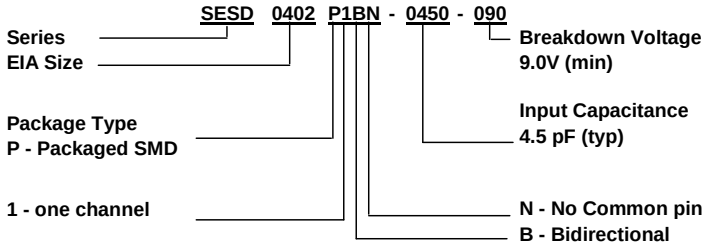
FEATURES

- Input capacitance – 4.5pF (typ)
- Low leakage current – 1.0µA (max)
- Low working reverse voltage – 6.0V (max)
- ESD maximum rating per IEC61000-4-2 standard
  - o ± 10kV contact discharge(1)
  - o ± 16kV air discharge
- Capable of withstanding numerous ESD strikes
- Small package size: 1.10mm x 0.50mm (typ)
- Low package height: 0.50mm (typ)

APPLICATIONS

- Cellular phones and portable electronics
- Digital cameras and camcorders
- USB 2.0 and computer I/O ports
- Notebooks, set top boxes, motherboards
- Applications requiring high ESD performance

PART NUMBERING



MATERIALS INFORMATION

RoHS Compliant **ELV Compliant** **Halogen Free ***

Directive 2000/53/EC Compliant

Directive 2002/95/EC Compliant

HF

* Halogen Free refers to: Br≤900ppm, Cl≤900ppm, Br+Cl≤1500ppm
Terminal finish: 100% Matte Tin (Sn)

Device Characteristics @ T = 25°C	Min	Typ	Max	Unit
Input Capacitance @ V_r = 0V, f = 1MHz	--	4.5	5.5	pF
Working Reverse Voltage (peak) - V_{RWM}	--	--	6.0	V
Breakdown Voltage – V_{br} @ I_t = 1mA(2)	9.0	11.0	--	V
Leakage current @ V_{RWM} = 6.0V	--	--	1.0	µA
Clamping Voltage @ Ipp=2A, tp=(8/20µs)	--	±10.0	±12.0	V
ESD contact discharge per IEC61000-4-2 standard (1)	--	--	±10	kV
ESD air discharge per IEC61000-4-2 standard	--	--	±16	kV
Operating ($T_{junction}$) and Storage Temperature Range	-40 to +125			˚C

(1) 10kV @ 50 ± pulses under IEC61000-4-2; 8kV @ 1,000 pulses under IEC61000-4-2

(2) V_{br} is measured at test current I_t

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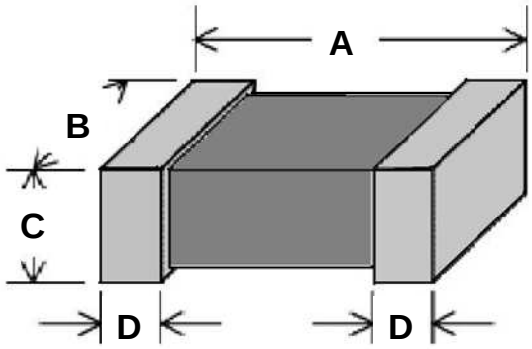
DEVICE DIMENSIONS

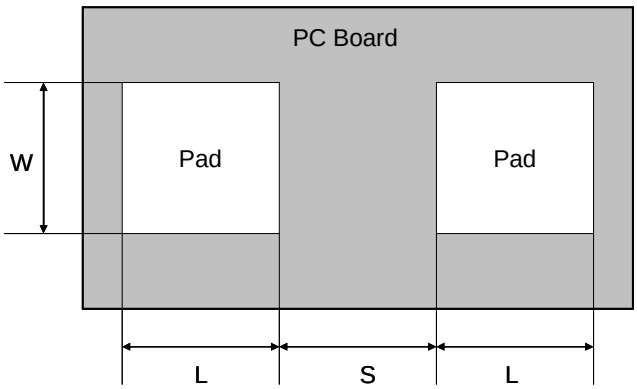


Drawings Not To Scale

Typical	A	B	C	D
mm	1.10 ± 0.1	0.50 ± 0.1	0.50 ± 0.1	0.25 ± 0.15
mils*	43.31 ± 4.0	19.69 ± 4.0	19.69 ± 4.0	9.84 ± 6.0

* Round off approximation

RECOMMENDED LANDING PATTERN:



Typical	L	S	W
mm	0.61 ± 0.05	0.52 ± 0.05	0.50 ± 0.05
mils*	24.0 ± 2.0	21.0 ± 2.0	20.0 ± 2.0

* Round off approximation

- Recommended solder thickness: 150 to 200 um
- Recommended rework procedure:
  - Soldering iron tip temperature should be less than 350^{o}C
  - Apply iron tip to solder for less than 5 seconds
  - Do not apply solder iron tip to the body of this product directly

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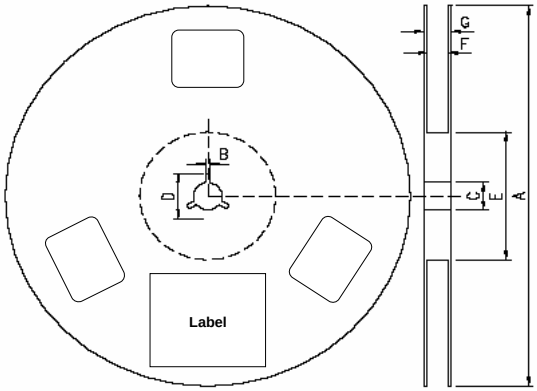
PACKAGING

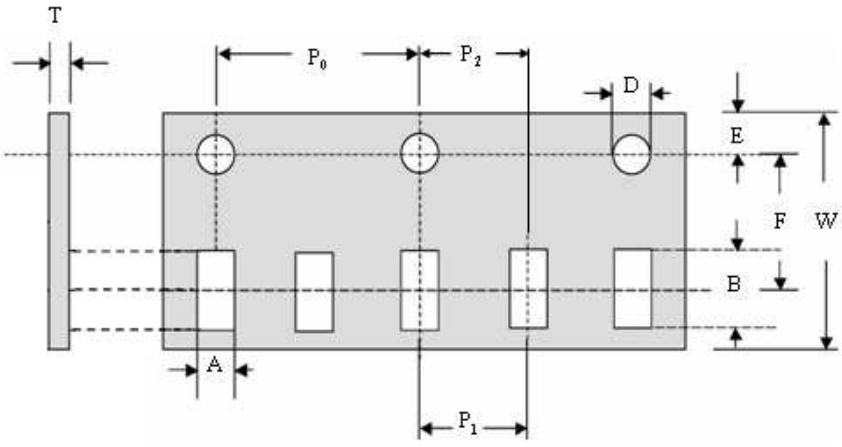
Packaging	Tape & Reel	Standard Box
SESD0402P1BN-0450-090	10,000	50,000

REEL DIMENSIONS



Dimension	A	B	C	D	E	F	G
(mm)	178.0 ± 2.0	2.0 ± 0.5	13.0 ± 0.5	21.0 ± 0.8	62.0 ± 1.5	9 .0 ± 0.5	13.0 ± 1.0

CARRIER TAPE DIMENSIONS



Dimension	A	B	D	E	F	W
(mm)	0.58 ± 0.03	1.20 ± 0.03	1.55 ± 0.05	1.75 ± 0.05	3.5 ± 0 .05	8.0 ± 0.1

Dimension	P_0	P_1	P_2	T
(mm)	4.0 ± 0.1	2.0 ± 0.05	2.0 ± 0.05	0.60 ± 0.03

FIGURE 1: TYPICAL IV CURVE

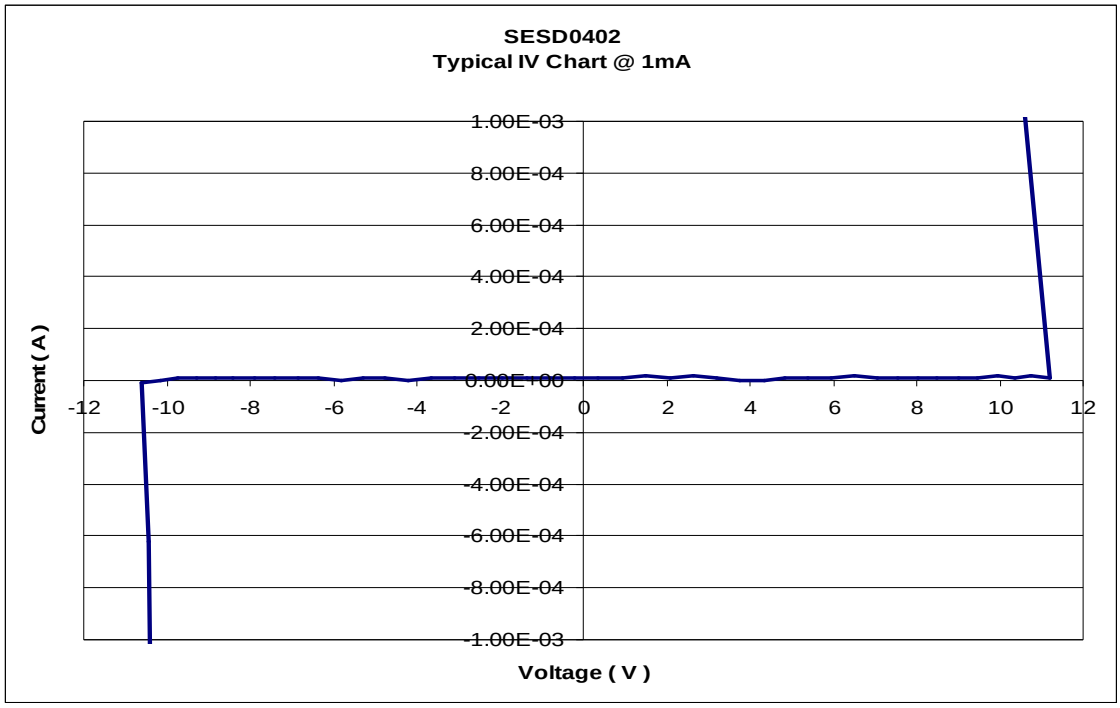


FIGURE 2: ESD CLAMPING VOLTAGE – 8kV Contact

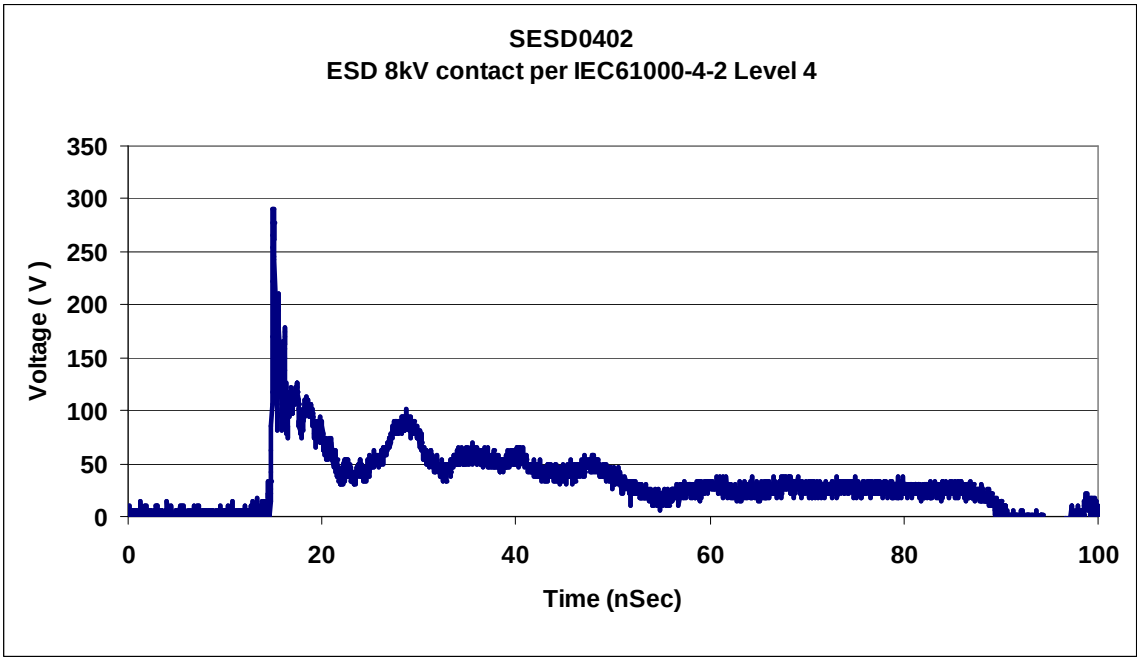


FIGURE 3: ESD CLAMPING VOLTAGE – 8x20µs, 2A Surge