

# ChipSESD

## Silicon ESD Protector

### Overvoltage Protection Device

Circuit Protection Products

## Specification Status: Released

### BENEFITS

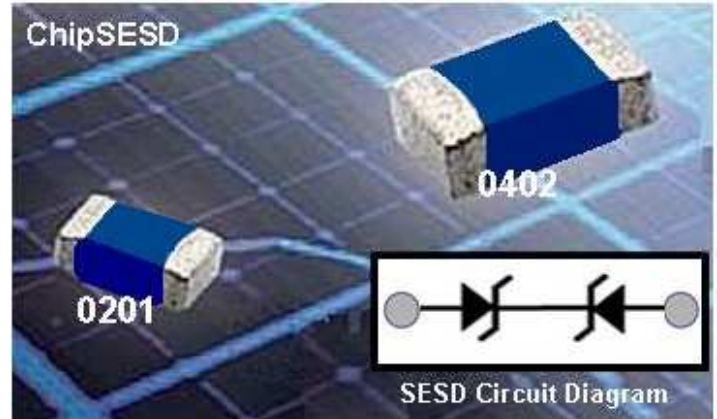
- Silicon ESD device in an EIA-0402 size rectangular passive component SMT package
- Standard PCB assembly and rework processes
- Bi-directional operation allows placement on PCB without orientation constraint
- Appropriate for ESD protection in space-constrained portable electronics and mobile handsets
- 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

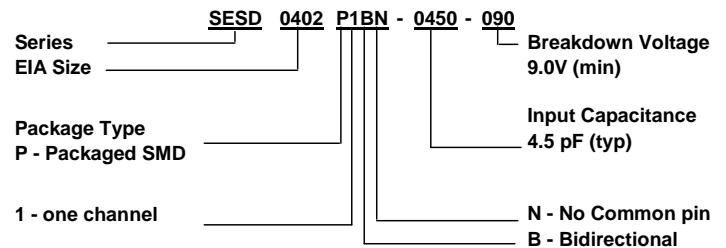
- Input capacitance – 4.5pF (typ)
- Low leakage current – 1.0µA (max)
- Low working reverse voltage – 6.0V (max)
- ESD maximum rating per IEC61000-4-2 standard
  - ± 10kV contact discharge<sup>(1)</sup>
  - ± 16kV air discharge
- Capable of withstanding numerous ESD strikes
- Small package size: 1.10mm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



\* 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 - $V_{br}$ @ $I_r = 1mA^{(2)}$	9.0	11.0	--	V
Leakage current @ $V_{RWM} = 6.0V$	--	--	1.0	µA
Clamping Voltage @ $I_{pp}=2A, t_p=(8/20\mu s)$	--	±10.0	±12.0	V
ESD contact discharge per IEC61000-4-2 standard <sup>(1)</sup>	--	--	±10	kV
ESD air discharge per IEC61000-4-2 standard	--	--	±16	kV
Operating ( $T_{junction}$ ) and Storage Temperature Range	-40 to +125			°C

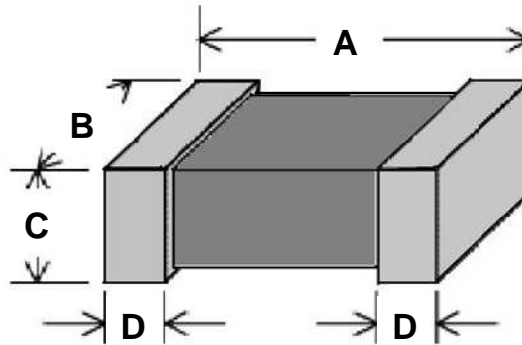
<sup>(1)</sup> 10kV @ 50 ± pulses under IEC61000-4-2; 8kV @ 1,000 pulses under IEC61000-4-2

<sup>(2)</sup>  $V_{br}$  is measured at test current  $I_r$

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**DEVICE DIMENSIONS**

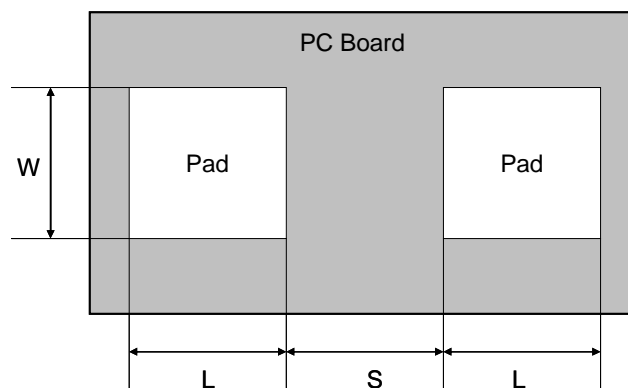


*Drawings Not To Scale*

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  $\mu\text{m}$
- Recommended rework procedure:
  - Soldering iron tip temperature should be less than 350°C
  - Apply iron tip to solder for less than 5 seconds
  - Do not apply solder iron tip to the body of this product directly

# ChipSESD

## Silicon ESD Protector

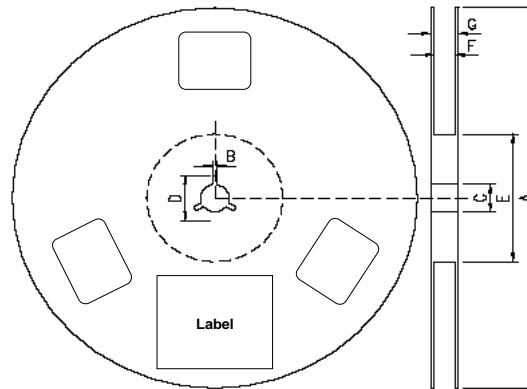
### Overvoltage Protection Device

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## PACKAGING

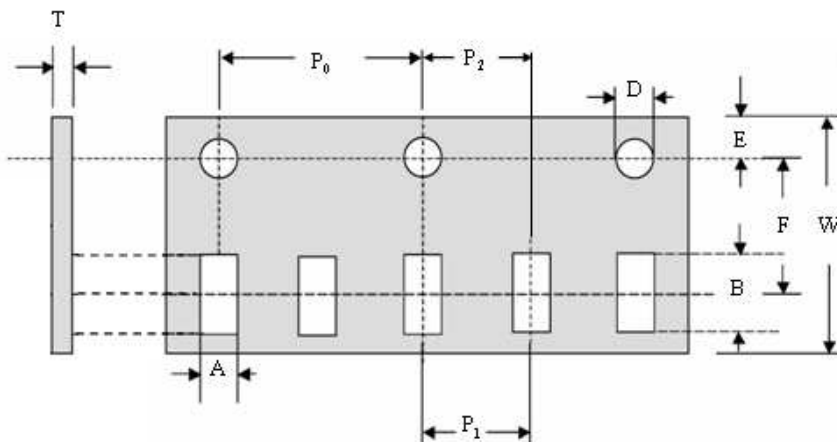
Packaging	Tape & Reel	Standard Box
SESD0402P1BN-0450-090	10,000	50,000

## 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



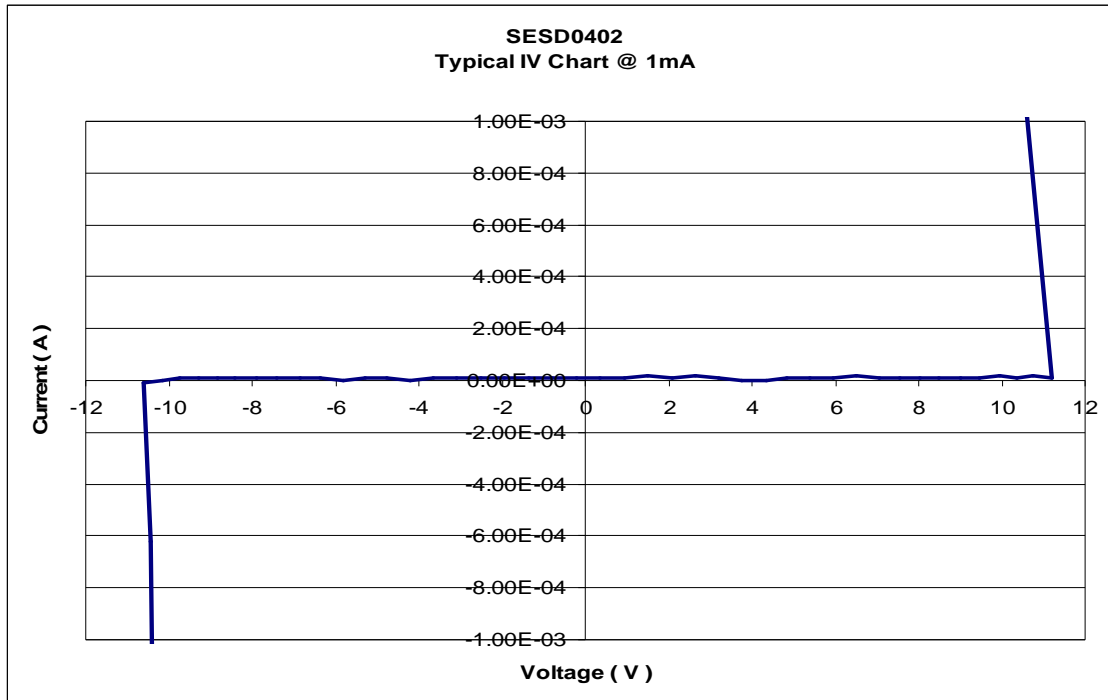
Dimension	A	B	D	E	F	W
(mm)	0.58 ± 0.03	1.20 ± 0.03	1.55 ± 0.05	1.75 ± 0.05	3.5 ± 0.05	8.0 ± 0.1

Dimension	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	T
(mm)	4.0 ± 0.1	2.0 ± 0.05	2.0 ± 0.05	0.60 ± 0.03

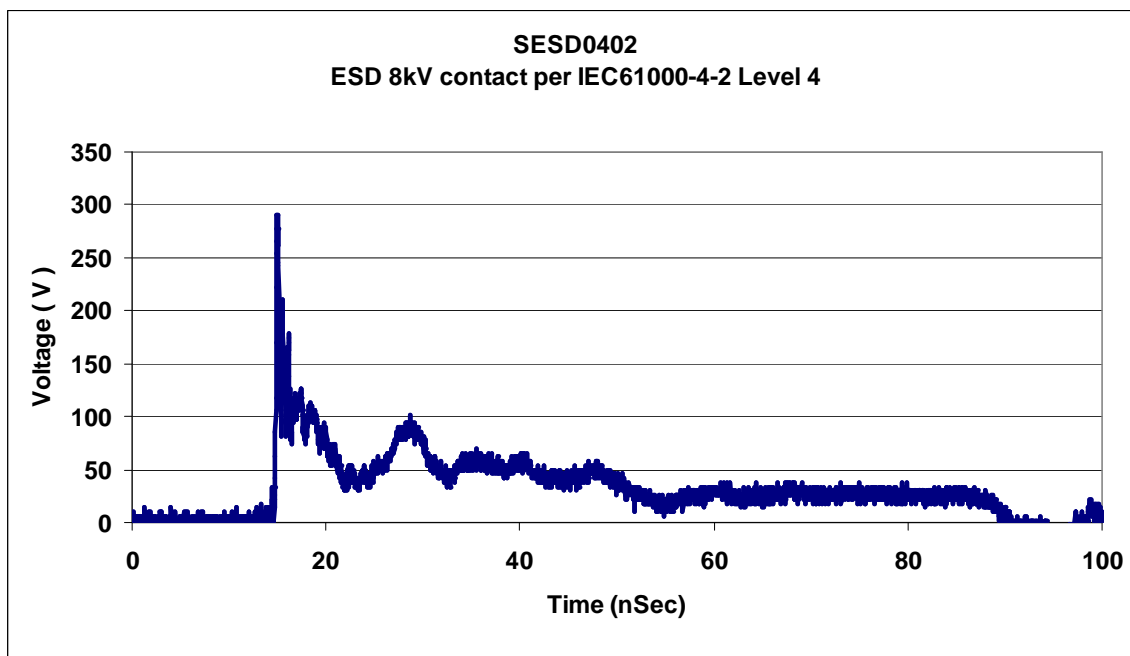
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**FIGURE 1: TYPICAL IV CURVE**

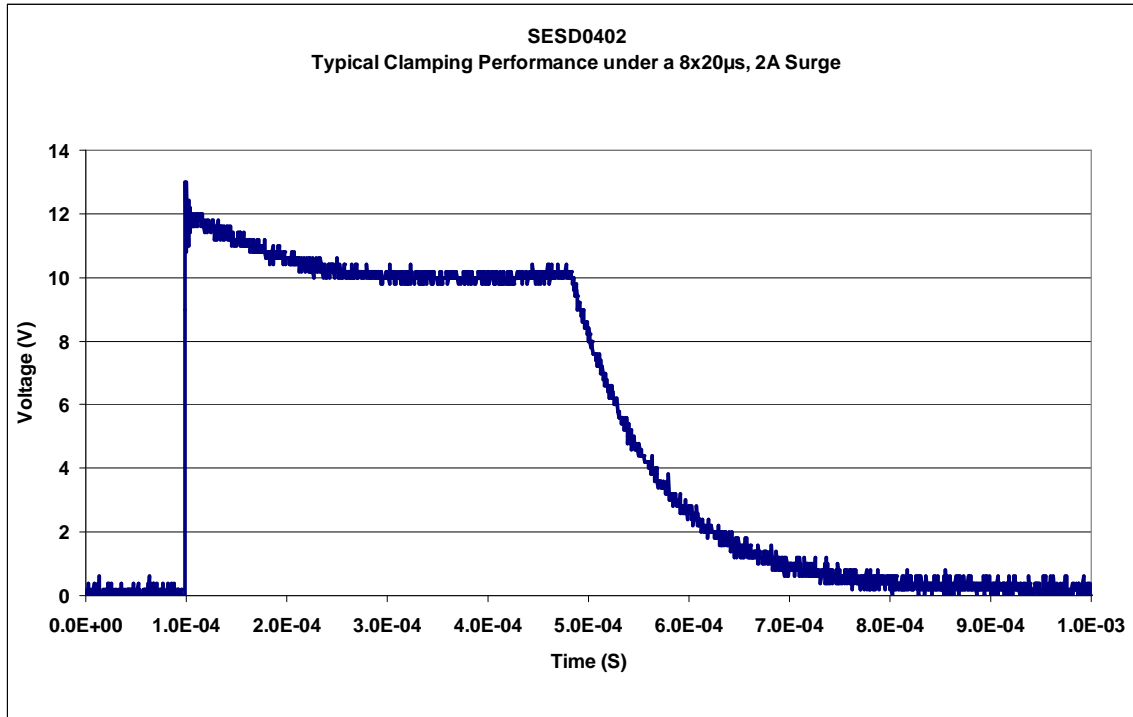


**FIGURE 2: ESD CLAMPING VOLTAGE – 8kV Contact**



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



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