

## Specification Status: Released

### BENEFITS

- Silicon ESD device in an EIA-0201 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 – 4pF (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: 0.60mm x 0.30mm (typ)
- Low package height: 0.30mm (typ)

### APPLICATIONS

- Cellular phones and portable electronics
- Digital cameras and camcorders
- USB 2.0 and computer I/O ports
- Keypads, pushbuttons, low voltage DC lines, speakers, headphones, microphones
- Applications requiring high ESD performance

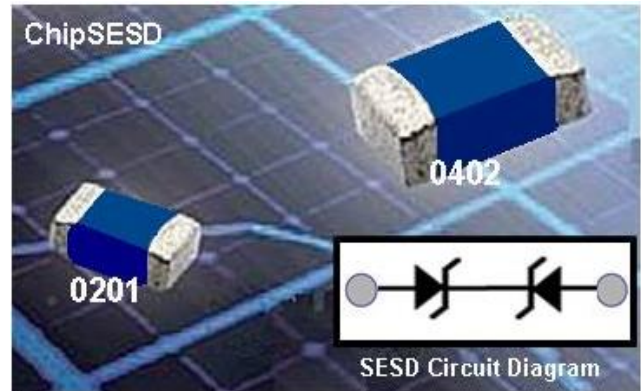
**RoHS Compliant ELV Compliant Halogen Free \***

Directive 2000/53/EC  
Compliant

Directive 2002/95/EC  
Compliant



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



### PART NUMBERING

### MATERIALS INFORMATION

|                  |      |      |      |   |      |   |     |                   |
|------------------|------|------|------|---|------|---|-----|-------------------|
| Series           | SESD | 0201 | P1BN | - | 0400 | - | 090 | Breakdown Voltage |
| EIA Size         |      |      |      |   |      |   |     | 9.0V (min)        |
| Package Type     |      |      |      |   |      |   |     | Input Capacitance |
| P - Packaged SMD |      |      |      |   |      |   |     | 4.0 pF (typ)      |
| 1 - one channel  |      |      |      |   |      |   |     | N - No Common pin |
|                  |      |      |      |   |      |   |     | B - Bidirectional |

# ChipSESD

## Silicon ESD Protector

### Overvoltage Protection Device

PRODUCT: SESD0201P1BN-0400-090

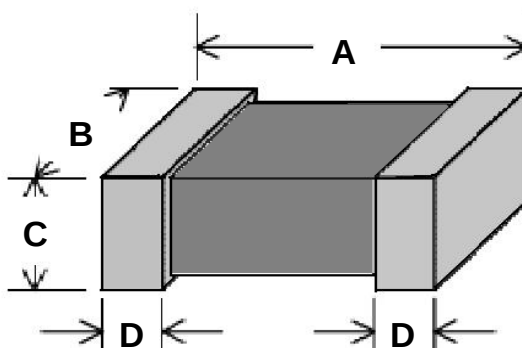
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| Device Characteristics @ T = 25°C                              | Min         | Typ        | Max        | Unit    |
|----------------------------------------------------------------|-------------|------------|------------|---------|
| Input Capacitance @ $V_i = 0V$ , $f = 1MHz$                    | --          | 4.0        | 5.0        | 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        | $\mu A$ |
| Clamping Voltage @ $I_{pp}=2A$ , $t_p=(8/20\mu s)$             | --          | $\pm 10.0$ | $\pm 12.0$ | V       |
| ESD contact discharge per IEC61000-4-2 standard <sup>(1)</sup> | --          | --         | $\pm 10$   | kV      |
| ESD air discharge per IEC61000-4-2 standard                    | --          | --         | $\pm 16$   | kV      |
| Operating ( $T_{junction}$ ) and Storage Temperature Range     | -40 to +125 |            |            | °C      |

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

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

## DEVICE DIMENSIONS

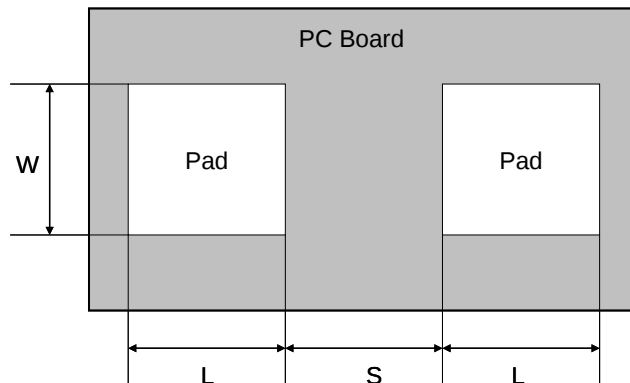


*Drawing Not To Scale*

| Typical | A               | B               | C               | D               |
|---------|-----------------|-----------------|-----------------|-----------------|
| mm      | $0.60 \pm 0.05$ | $0.30 \pm 0.05$ | $0.30 \pm 0.05$ | $0.21 \pm 0.07$ |
| mils*   | $23.62 \pm 2.0$ | $11.81 \pm 2.0$ | $11.81 \pm 2.0$ | $8.27 \pm 2.8$  |

\* Round off approximation

## RECOMMENDED LANDING PATTERN:



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|       | L               | S               | W               |
|-------|-----------------|-----------------|-----------------|
| mm    | $0.28 \pm 0.01$ | $0.19 \pm 0.01$ | $0.30 \pm 0.01$ |
| mils* | $11.0 \pm 0.4$  | $7.5 \pm 0.4$   | $11.8 \pm 0.4$  |

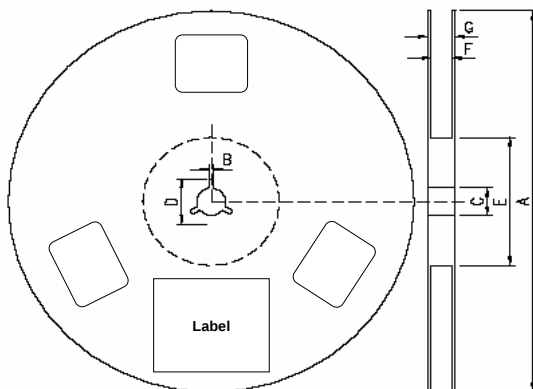
\* Round off approximation

- 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

## PACKAGING

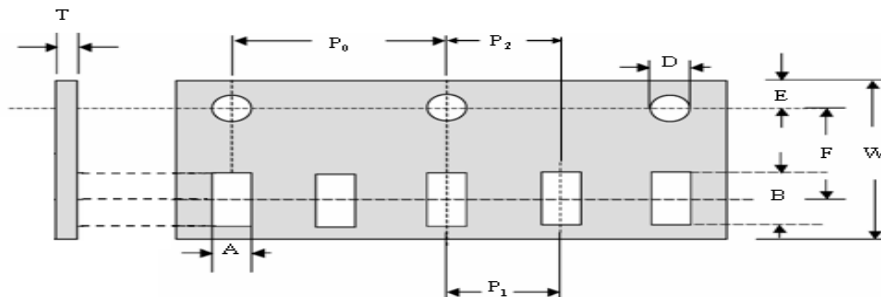
| Packaging             | Tape & Reel | Standard Box |
|-----------------------|-------------|--------------|
| SESD0201P1BN-0400-090 | 15,000      | 75,000       |

## REEL DIMENSIONS



| Dimension | A               | B             | C              | D              | E              | F             | G              |
|-----------|-----------------|---------------|----------------|----------------|----------------|---------------|----------------|
| (mm)      | $178.0 \pm 2.0$ | $2.0 \pm 0.5$ | $13.0 \pm 0.5$ | $21.0 \pm 0.8$ | $62.0 \pm 1.5$ | $9.0 \pm 0.5$ | $13.0 \pm 1.0$ |

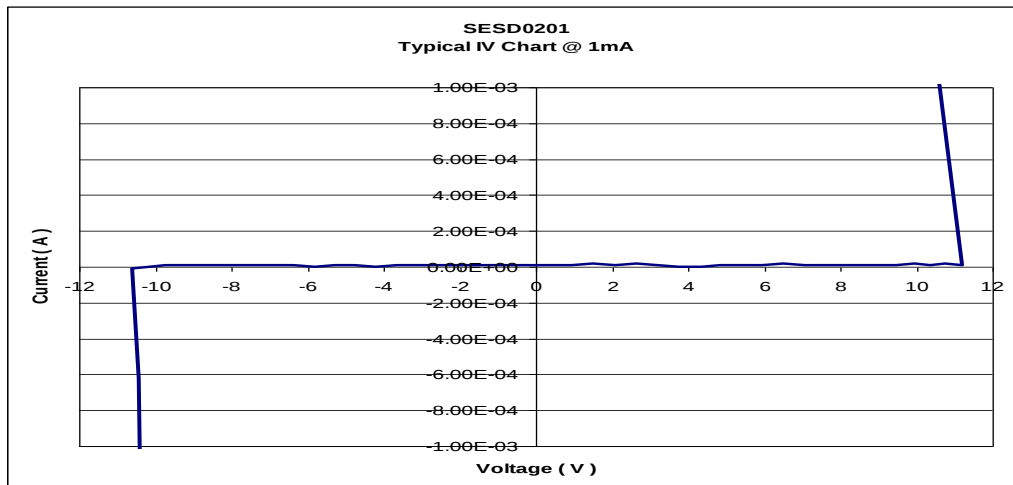
## CARRIER TAPE DIMENSIONS



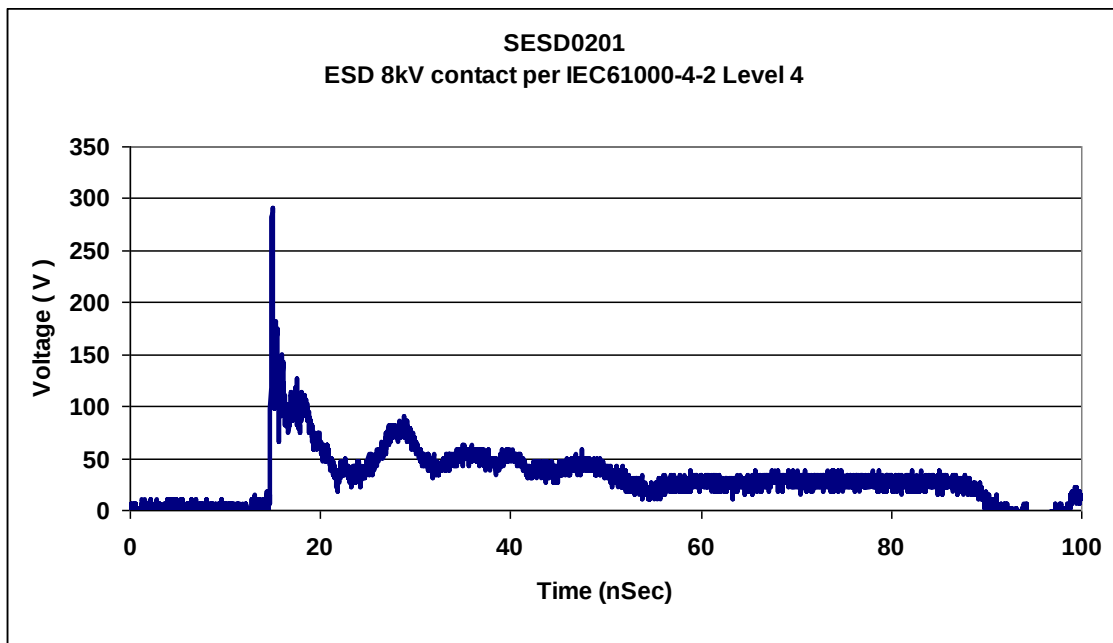
| Dimension | A           | B           | D           | E           | F          | W         |
|-----------|-------------|-------------|-------------|-------------|------------|-----------|
| (mm)      | 0.39 ± 0.03 | 0.69 ± 0.03 | 1.55 ± 0.05 | 1.75 ± 0.05 | 3.5 ± 0.05 | 8.0 ± 0.1 |

| 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     | 0.42 ± 0.03 |

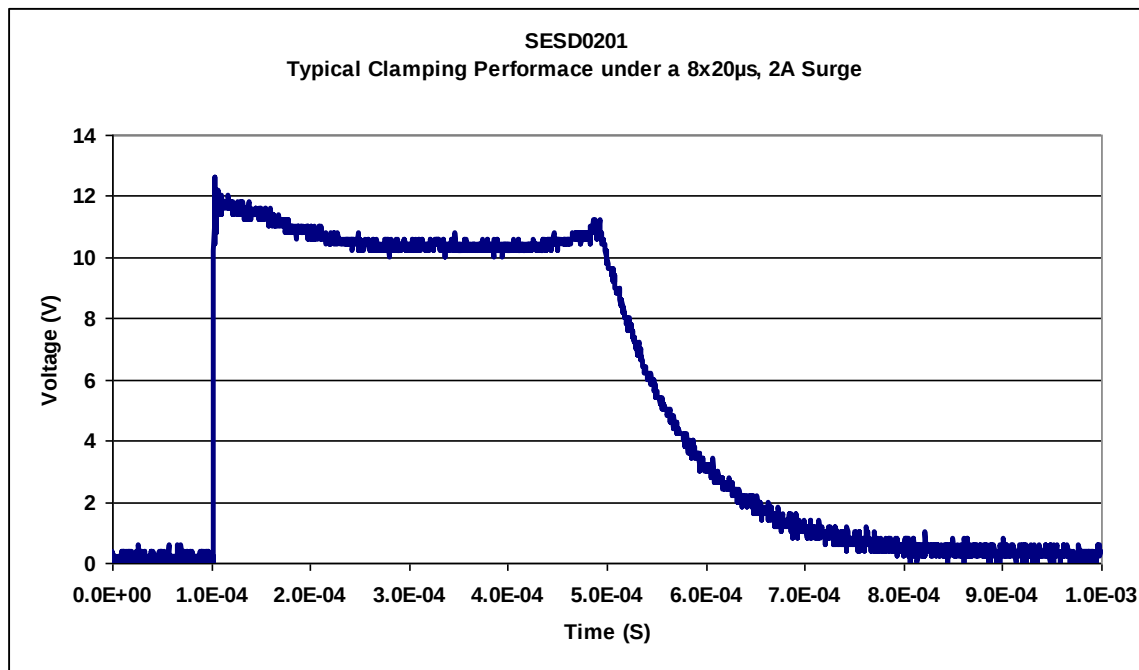
**FIGURE 1: TYPICAL IV CURVE**



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



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



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