

# 1-Line Bi-directional TVS Diode

## Features

- Ultra low leakage: nA level
- Operating voltage: 15V
- Low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 15\text{kV}$
    - Contact discharge:  $\pm 8\text{kV}$
  - IEC61000-4-4 (EFT) 40A (5/50ns)
  - IEC61000-4-5 (Lightning) 6A (8/20 $\mu\text{s}$ )
- RoHS Compliant
- AEC-Q101 qualified

## Applications

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Networking and Telecom
- Serial and Parallel Ports
- Peripherals

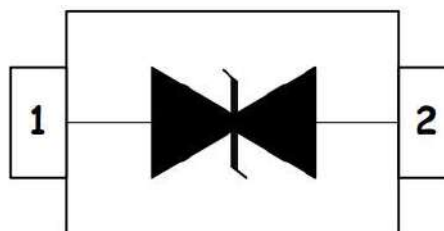
## Mechanical Characteristics

- Package: SOD-323
- Lead Finish: Lead Free
- UL Flammability Classification Rating 94V-0
- Quantity Per Reel: 3,000 pcs
- Reel Size: 7 inch
- Device Marking: 2J

## Dimensions SOD-323



## Pin Configuration



## Absolute Maximum Ratings (T<sub>amb</sub>=25°C unless otherwise specified)

| Parameter                              | Symbol           | Value       | Unit |
|----------------------------------------|------------------|-------------|------|
| Peak Pulse Power (8/20 $\mu\text{s}$ ) | P <sub>pp</sub>  | 180         | W    |
| ESD per IEC 61000-4-2 (Air)            | V <sub>ESD</sub> | $\pm 15$    | kV   |
| ESD per IEC 61000-4-2 (Contact)        |                  | $\pm 8$     |      |
| Operating Temperature Range            | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range              | T <sub>STJ</sub> | -55 to +150 | °C   |

## Electrical Characteristics (TA=25°C unless otherwise specified)

| Parameter               | Symbol    | Test Condition                       | Min  | Typ | Max | Unit    |
|-------------------------|-----------|--------------------------------------|------|-----|-----|---------|
| Reverse Working Voltage | $V_{RWM}$ |                                      |      |     | 15  | V       |
| Breakdown Voltage       | $V_{BR}$  | $I_T = 1mA$                          | 16.7 |     |     | V       |
| Reverse Leakage Current | $I_R$     | $V_{RWM} = 15V$                      |      |     | 1   | $\mu A$ |
| Clamping Voltage        | $V_C$     | $I_{PP} = 1A$ (8 x 20 $\mu s$ pulse) |      |     | 24  | V       |
| Clamping Voltage        | $V_C$     | $I_{PP} = 6A$ (8 x 20 $\mu s$ pulse) |      |     | 30  | V       |
| Junction Capacitance    | $C_J$     | $V_R = 0V, f = 1MHz$                 |      | 45  |     | pF      |

## Characteristic Curves

Fig1. 8/20 $\mu s$  Pulse Waveform

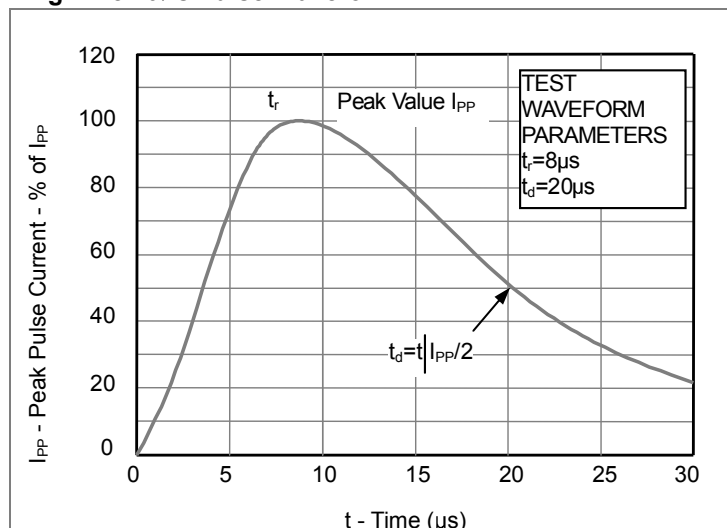


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

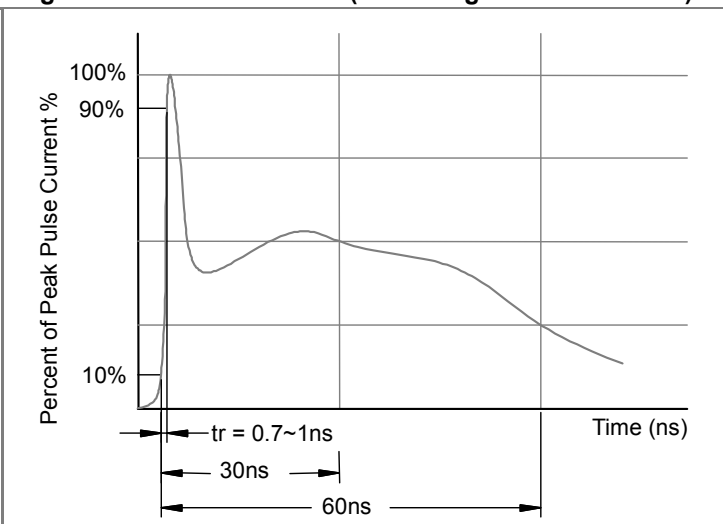
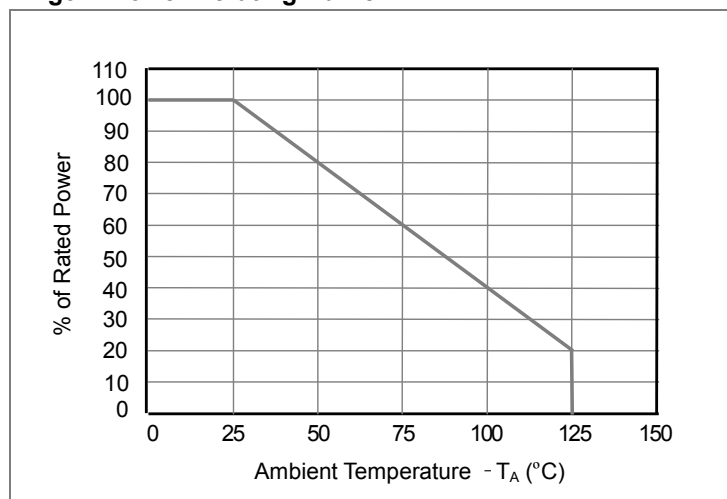
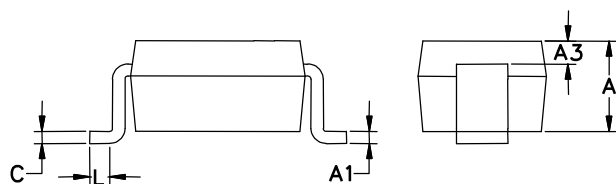
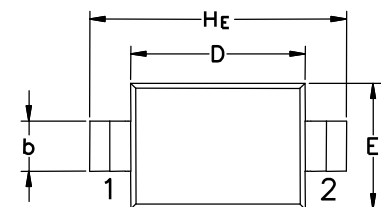


Fig3. Power Derating Curve

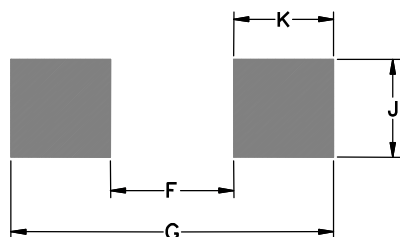


### SOD-323 Package Outline & Dimensions



| Symbol         | Millimeters |      |       | Inches    |       |       |
|----------------|-------------|------|-------|-----------|-------|-------|
|                | Min.        | Nom. | Max.  | Min.      | Nom.  | Max.  |
| A              | 0.80        | 0.90 | 1.00  | 0.031     | 0.035 | 0.040 |
| A1             | 0.00        | 0.05 | 0.10  | 0.000     | 0.002 | 0.004 |
| A3             | 0.15 REF    |      |       | 0.006 REF |       |       |
| b              | 0.25        | 0.32 | 0.40  | 0.010     | 0.012 | 0.016 |
| C              | 0.089       | 0.12 | 0.177 | 0.003     | 0.005 | 0.007 |
| D              | 1.60        | 1.70 | 1.80  | 0.062     | 0.066 | 0.070 |
| E              | 1.15        | 1.25 | 1.35  | 0.045     | 0.049 | 0.053 |
| L              | 0.08        |      |       | 0.003     |       |       |
| H <sub>E</sub> | 2.30        | 2.50 | 2.70  | 0.090     | 0.098 | 0.105 |

### Soldering Footprint



| Symbol | Millimeters | Inches |
|--------|-------------|--------|
| F      | 1.60        | 0.063  |
| G      | 2.85        | 0.112  |
| J      | 0.83        | 0.033  |
| K      | 0.63        | 0.025  |