

## 1-Line Bi-directional ESD Protection Diode

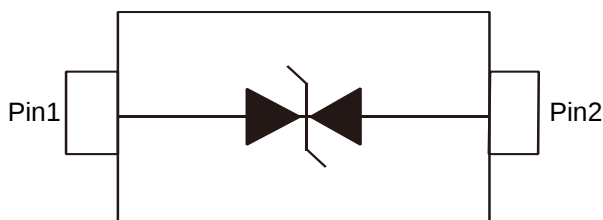
### Description

These surge protection diodes are designed for applications requiring transient over voltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment and other applications. These devices are ideal for situations where board space is at a premium.

### Features

- Bi-directional ESD protection of one line
- Reverse stand-off voltage: 5.0V Max
- Low leakage current: nA Level
- Response time is typically < 1 ns
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 30\text{kV}$
    - Contact discharge:  $\pm 30\text{kV}$
  - IEC 61000-4-5 (Lightning) 40A (8/20 $\mu\text{s}$ )
- RoHS Compliant

### Schematic and Pin Configuration



SOD-323 (Top View)

Circuit Schematic

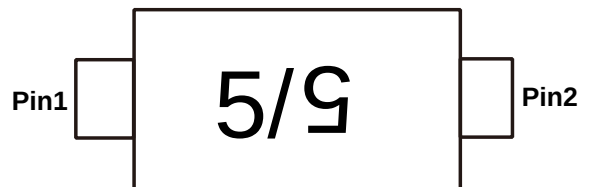
### Mechanical Characteristics

- Package: SOD-323
- Level 1 moisture sensitivity per J-STD-020
- Case Material: “Green” Molding Compound
- Lead Finish: Matte Tin
- We declare that the material of product compliance with RoHS requirements and Halogen Free

### Applications

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA'S)
- Wireless Systems
- Notebooks, Desktops, and Servers

### Marking Information



5 / S = Device Marking Code

### Ordering Information

| Part Number | Shipping         | Reel Size |
|-------------|------------------|-----------|
| PSD05C      | 3000/Tape & Reel | 7 inch    |

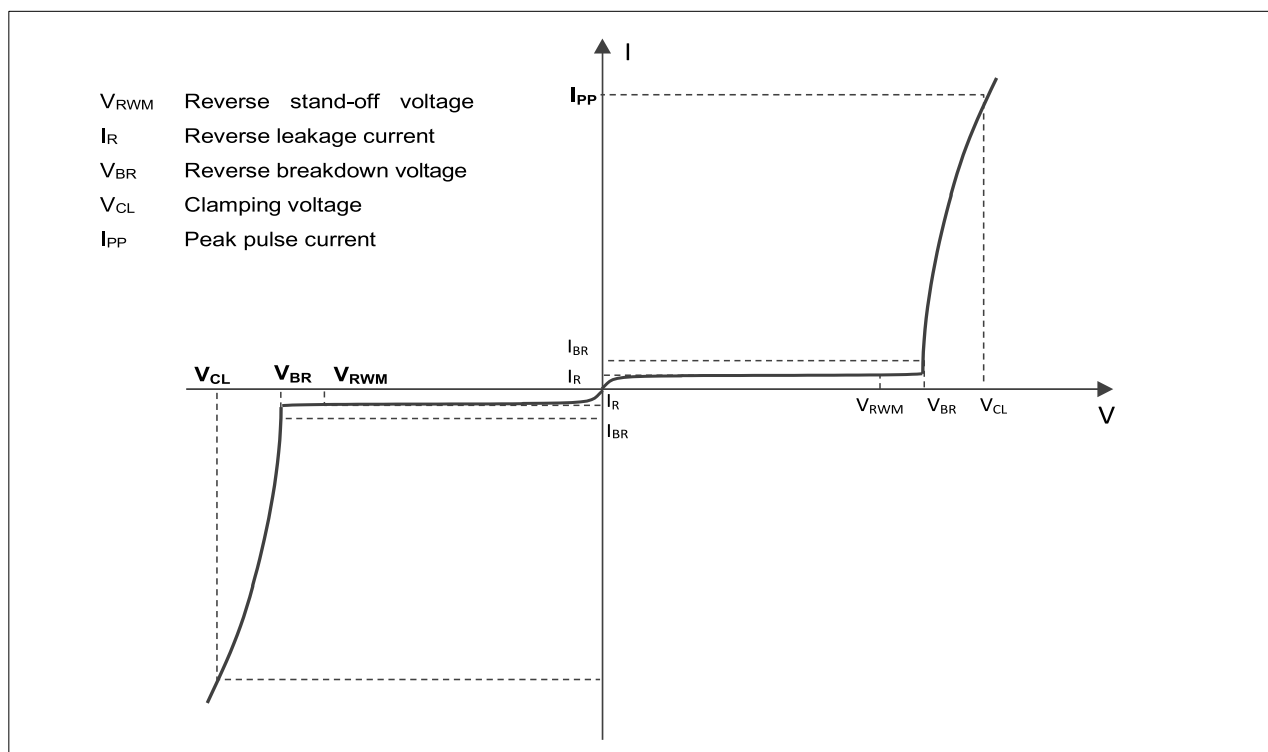
**Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

| Parameter                                | Symbol    | Value           | Unit               |
|------------------------------------------|-----------|-----------------|--------------------|
| Peak Pulse Power (8/20 $\mu\text{s}$ )   | $P_{PK}$  | 560             | W                  |
| Peak Pulse Current (8/20 $\mu\text{s}$ ) | $I_{PP}$  | 40              | A                  |
| ESD per IEC 61000-4-2 (Air)              | $V_{ESD}$ | $\pm 30$        | kV                 |
| ESD per IEC 61000-4-2 (Contact)          |           | $\pm 30$        | kV                 |
| Lead temperature                         | $T_L$     | 260             | $^{\circ}\text{C}$ |
| Junction Temperature                     | $T_J$     | 125             | $^{\circ}\text{C}$ |
| Operating Temperature Range              | $T_{OP}$  | $-40 \sim +125$ | $^{\circ}\text{C}$ |
| Storage Temperature Range                | $T_{STG}$ | $-55 \sim +150$ | $^{\circ}\text{C}$ |

**Electrical Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

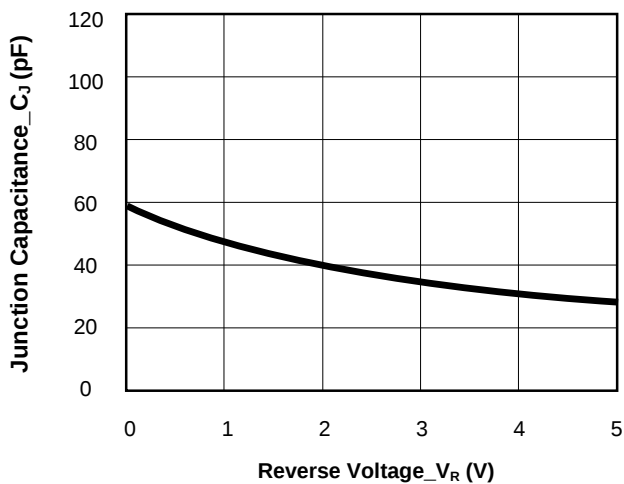
| Parameter                 | Symbol    | Min. | Typ. | Max. | Unit | Test Condition                                   |
|---------------------------|-----------|------|------|------|------|--------------------------------------------------|
| Reverse Working Voltage   | $V_{RWM}$ |      |      | 5.0  | V    |                                                  |
| Reverse Breakdown Voltage | $V_{BR}$  | 5.5  |      | 8.5  | V    | $I_T = 1\text{mA}$                               |
| Reverse Leakage Current   | $I_R$     |      |      | 200  | nA   | $V_{RWM} = 5.0\text{ V}$                         |
| Clamping Voltage          | $V_C$     |      |      | 8.5  | V    | $I_{PP} = 10\text{A}$ (8/20 $\mu\text{s}$ pulse) |
| Clamping Voltage          | $V_C$     |      |      | 14   | V    | $I_{PP} = 40\text{A}$ (8/20 $\mu\text{s}$ pulse) |
| Junction Capacitance      | $C_J$     |      | 60   | 80   | pF   | $V_R = 0\text{V}$ , $f = 1\text{MHz}$            |

**Electrical characteristics ( $T_A = 25^\circ\text{C}$ , unless otherwise noted)**

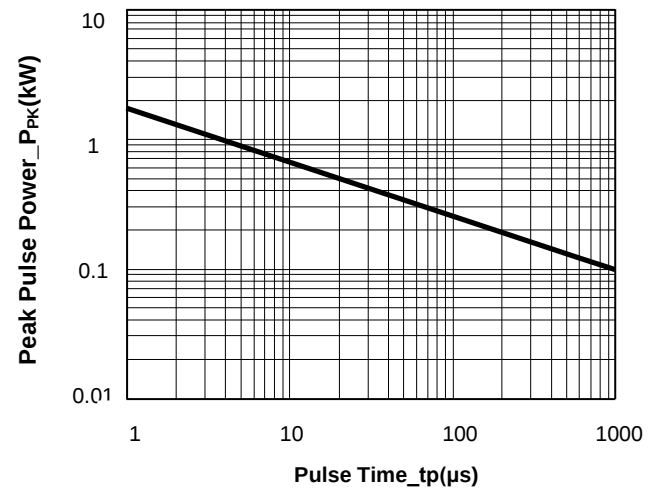


Definitions of electrical characteristics

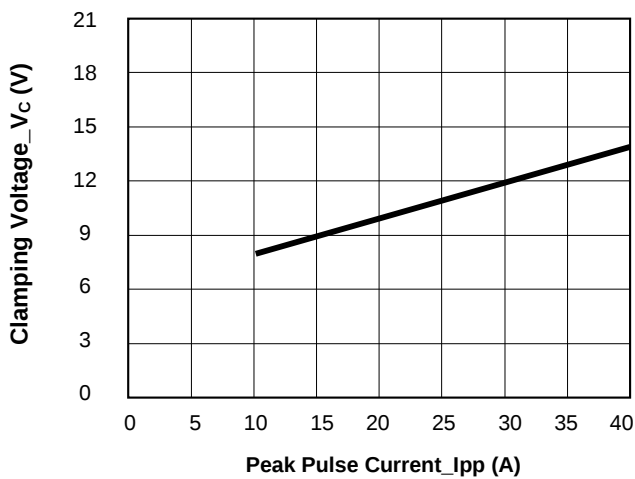
**Typical Performance Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise Specified)**



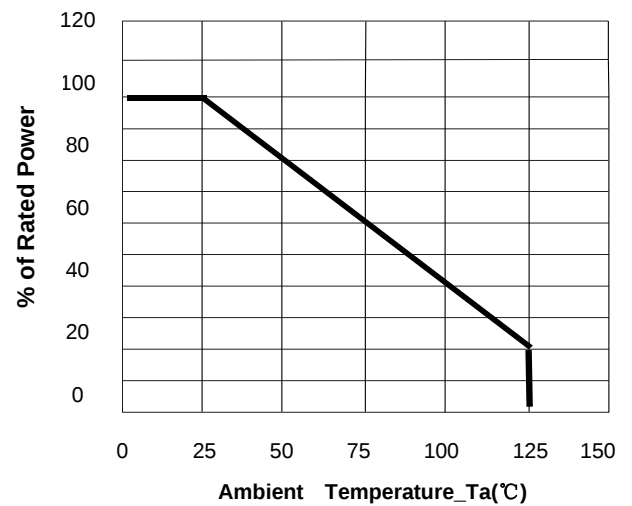
**Junction Capacitance vs. Reverse Voltage**



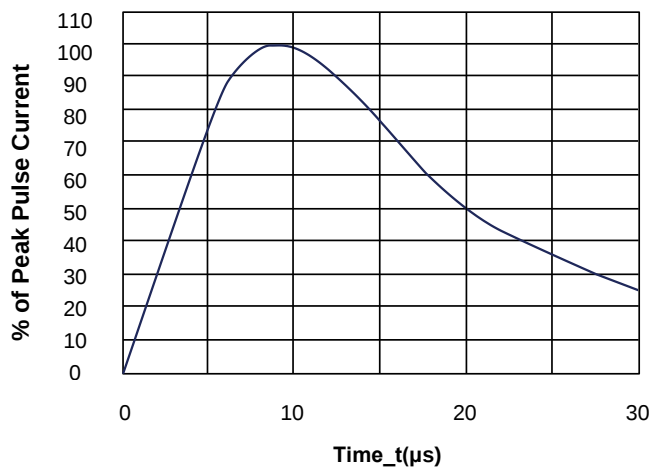
**Peak Pulse Power vs. Pulse Time**



**Clamping Voltage vs. Peak Pulse Current**

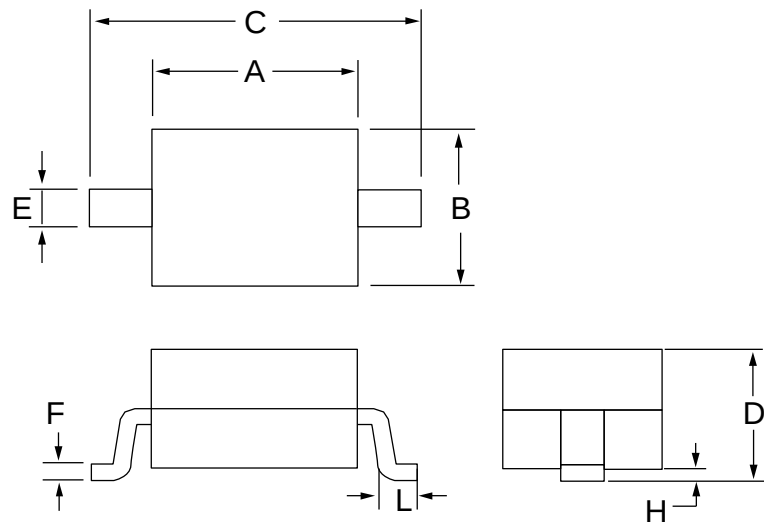


**Power Derating Curve**



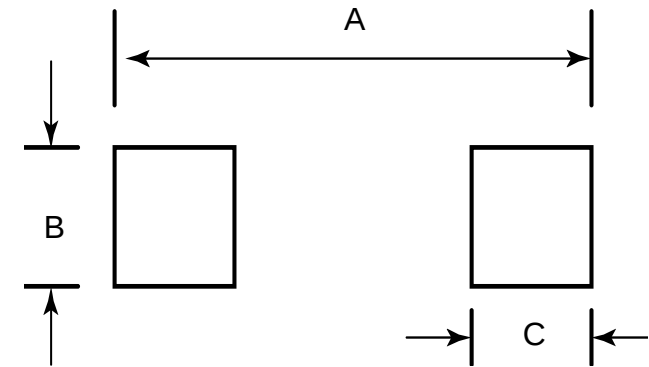
**8/20 $\mu\text{s}$  Pulse Waveform**

SOD-323 Package Outline Drawing



| SYM | DIMENSIONS  |      |      |        |       |
|-----|-------------|------|------|--------|-------|
|     | MILLIMETERS |      |      | INCHES |       |
|     | MIN         | NOM  | MAX  | MIN    | MAX   |
| A   | 1.50        | 1.65 | 1.80 | 0.060  | 0.071 |
| B   | 1.20        | 1.30 | 1.40 | 0.045  | 0.054 |
| C   | 2.30        | 2.50 | 2.70 | 0.090  | 0.107 |
| D   | -           |      | 1.10 | -      | 0.043 |
| E   | 0.30        |      | 0.40 | 0.012  | 0.016 |
| F   | 0.10        |      | 0.25 | 0.004  | 0.010 |
| L   | 0.20        |      | 0.40 | 0.008  | 0.016 |
| H   | -           |      | 0.10 | -      | 0.004 |

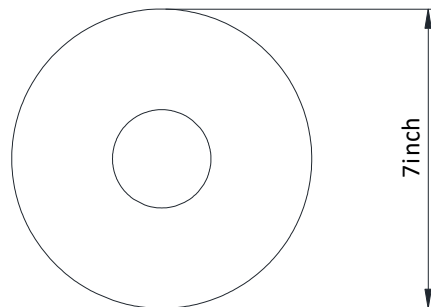
Suggested Land Pattern



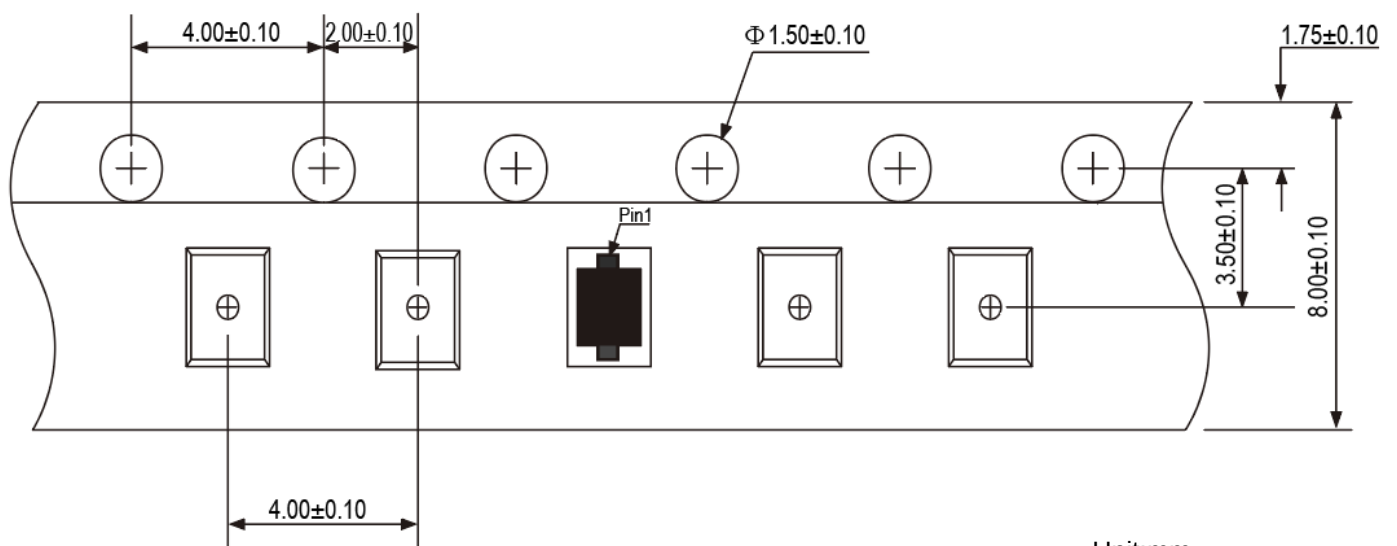
| SYM | DIMENSIONS  |        |
|-----|-------------|--------|
|     | MILLIMETERS | INCHES |
| A   | 3.15        | 0.120  |
| B   | 0.80        | 0.031  |
| C   | 0.80        | 0.031  |

**TAPE AND REEL INFORMATION**

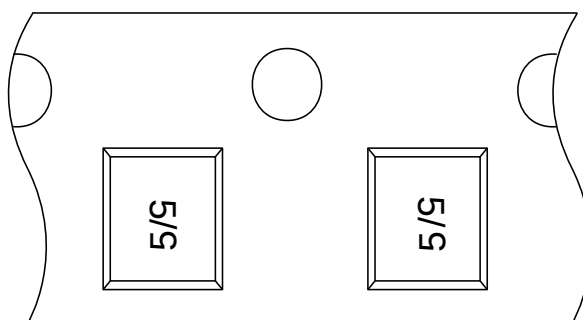
Reel Dimensions



Tape Dimensions



Unit:mm



User Direction of Feed

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