



**THE DATASHEET OF  
DESD5V0U1BA-7**



## Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Contact  $\pm 10\text{kV}$
- 1 Channel of ESD Protection
- High Peak Pulse Current per IEC 61000-4-5 Standard
- Low Channel Input Capacitance
- Typically used in Cellular Handsets, Portable Electronics, Communication Systems, Computers and Peripherals
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

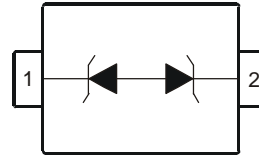
## Mechanical Data

- Case: SOD323
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead-Free Plating). Solderable per MIL-STD-202, Method 208<sup>(3)</sup>
- Weight: 0.004 grams (Approximate)

SOD323



Top View



Device Schematic

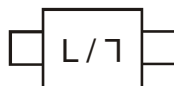
## Ordering Information (Note 4)

| Product       | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|---------------|------------|---------|--------------------|-----------------|-------------------|
| DESD5V0U1BA-7 | Standard   | L / 7   | 7                  | 8               | 3,000/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information

SOD323



L / 7 = Product Type Marking Code

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                     | Symbol                   | Value | Unit | Conditions             |
|------------------------------------|--------------------------|-------|------|------------------------|
| Peak Pulse Current                 | I <sub>PP</sub>          | 3     | A    | 8/20μs, per Figure 3   |
| ESD Protection – Contact Discharge | V <sub>ESD_Contact</sub> | ±10   | kV   | IEC 61000-4-2 Standard |

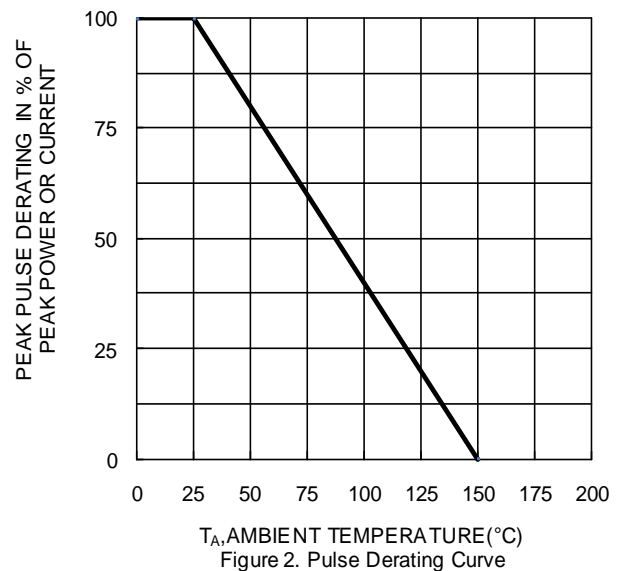
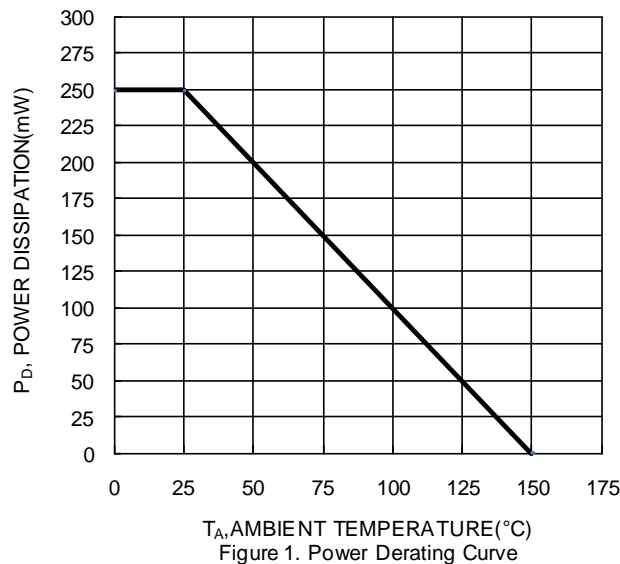
**Thermal Characteristics**

| Characteristic                                   | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Package Power Dissipation (Note 5)               | P <sub>D</sub>                    | 250         | mW   |
| Thermal Resistance, Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 500         | °C/W |
| Operating and Storage Temperature Range          | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                   | Symbol           | Min | Typ | Max | Unit | Test Conditions                               |
|----------------------------------|------------------|-----|-----|-----|------|---|
| Reverse Standoff Voltage         | V <sub>RWM</sub> | -   | -   | 5   | V    | -   |
| Channel Leakage Current (Note 6) | I <sub>RM</sub>  | -   | 5   | 100 | nA   | V <sub>RWM</sub> = 5V                         |
| Clamping Voltage                 | V <sub>CL</sub>  | -   | 7.2 | -   | V    | I <sub>PP</sub> = 3A, t <sub>p</sub> = 8/20μs |
| Breakdown Voltage                | V <sub>BR</sub>  | 5.5 | 7   | 9.5 | V    | I <sub>R</sub> = 5mA                          |
| Differential Resistance          | R <sub>DIF</sub> | -   | -   | 100 | Ω    | I <sub>R</sub> = 1mA                          |
| Dynamic Impedance                | R <sub>dyn</sub> | -   | 0.3 | -   | Ω    | TLP, 20A, t <sub>p</sub> = 100 ns             |
| Channel Input Capacitance        | C <sub>T</sub>   | -   | 2.9 | -   | pF   | V <sub>R</sub> = 0V, f = 1MHz                 |
|                                  |                  | -   | 1.9 | -   |      | V <sub>R</sub> = 5V, f = 1MHz                 |

- Notes:
- Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes, Inc. suggested pad layout AP02001, which can be found on our website at <http://www.diodes.com>.
  - Short duration pulse test used to minimize self-heating effect.



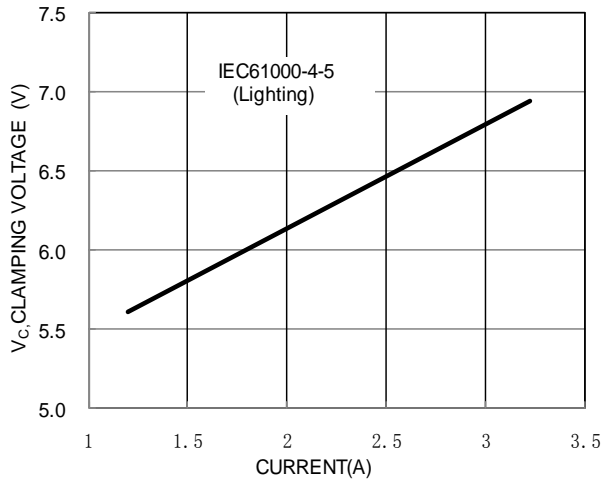


Figure 3. Clamping Voltage Characteristic

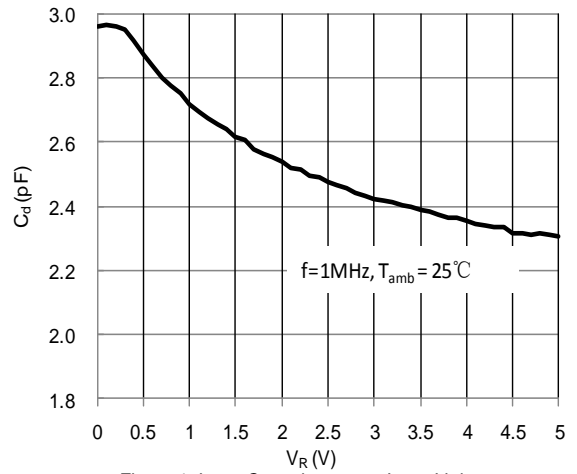


Figure 4. Input Capacitance vs. Input Voltage

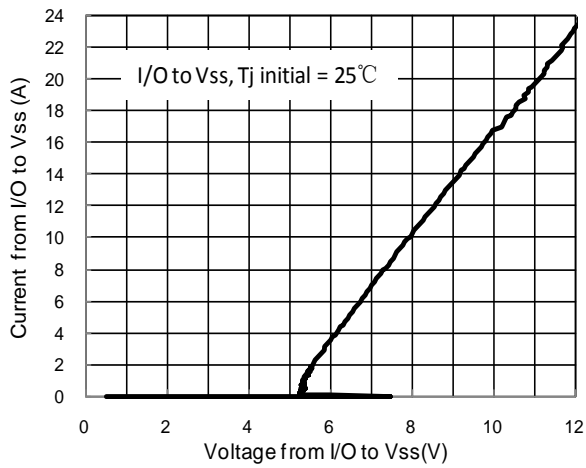


Figure 5. Current vs. Voltage

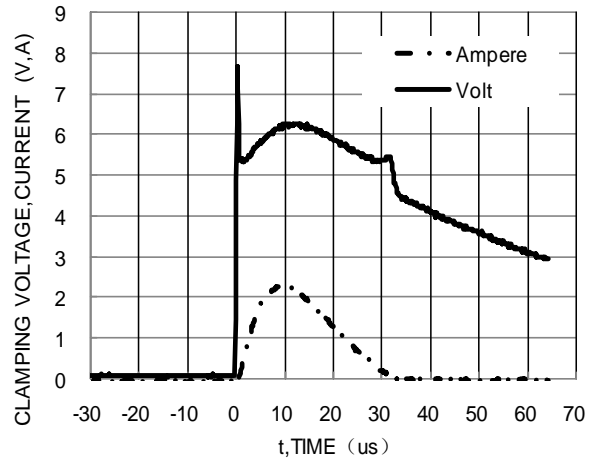


Figure 6. Waveform of Clamping Voltage, Current vs. Time(8/20us, I/O to Vss)

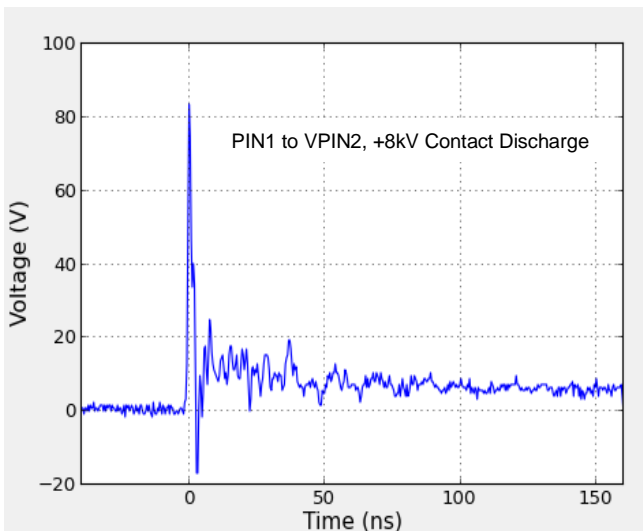


Figure 7 ESD Response to IEC 61000-4-2

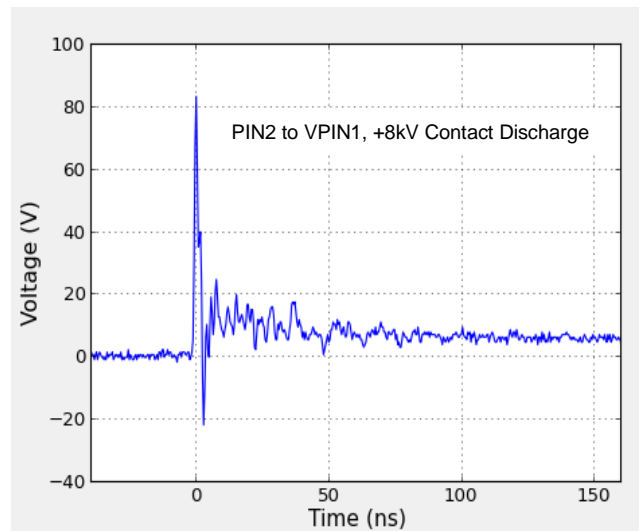
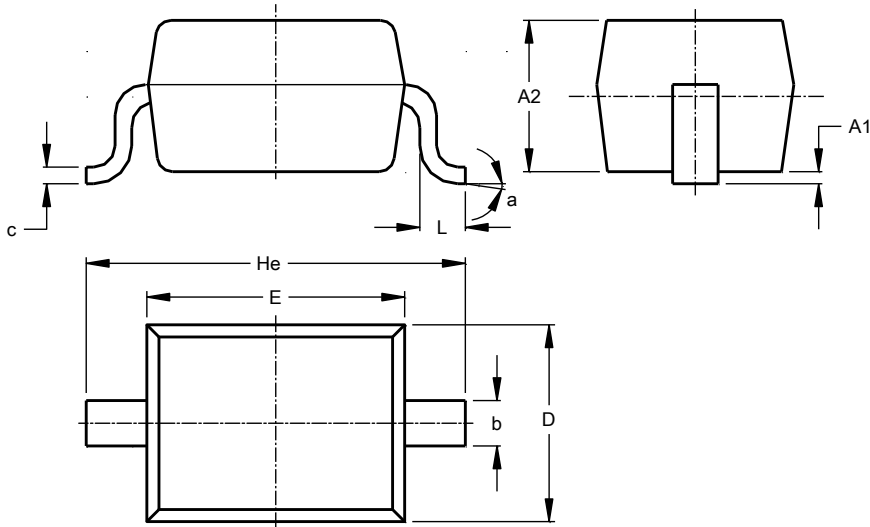


Figure 8 ESD Response to IEC 61000-4-2

**Package Outline Dimensions**

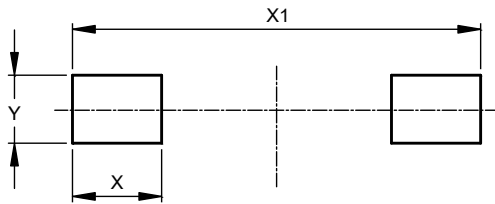
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| SOD323               |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A1                   | -    | 0.10 | 0.05 |
| A2                   | 1.00 | 1.10 | 1.05 |
| b                    | 0.25 | 0.35 | 0.30 |
| c                    | 0.10 | 0.15 | 0.11 |
| D                    | 1.20 | 1.40 | 1.30 |
| E                    | 1.60 | 1.80 | 1.70 |
| He                   | 2.30 | 2.70 | 2.50 |
| L                    | 0.20 | 0.40 | 0.30 |
| a                    | 8°   |      |      |
| All Dimensions in mm |      |      |      |

**Suggested Pad Layout**

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| X          | 0.590         |
| X1         | 2.700         |
| Y          | 0.450         |

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