

LOW CAPACITANCE BIDIRECTIONAL TVS DIODE
Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air $\pm 30\text{kV}$, Contact $\pm 30\text{kV}$
- 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
- **Lead Free/RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Notes 2 & 3)**

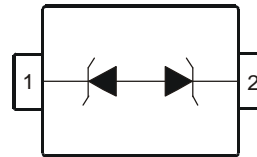
Mechanical Data

- Case: SOD523
- 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
- Weight: 0.001 grams (approximate)

SOD523



Top View



Device Schematic

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|------------------------|--------|------------------|
| DESD5V0S1BB-7 (Note 5) | SOD523 | 3000/Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. No purposely added lead.
 2. Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 3. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
 4. For packaging details, go to our website at <http://www.diodes.com>.
 5. Dispensed every other cavity of the carrier tape.

Marking Information


B / B = Product Type Marking Code

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit | Conditions |
|------------------------------------|--------------------|----------|------|---------------------------------|
| Peak Pulse Power Dissipation | P_{PP} | 130 | W | 8/20 μs , per Fig. 1 |
| Peak Pulse Current | I_{PP} | 12 | A | 8/20 μs , per Fig. 1 |
| ESD Protection – Contact Discharge | $V_{ESD_Contact}$ | ± 30 | kV | IEC 61000-4-2 Standard |
| ESD Protection – Air Discharge | V_{ESD_Air} | ± 30 | kV | IEC 61000-4-2 Standard |

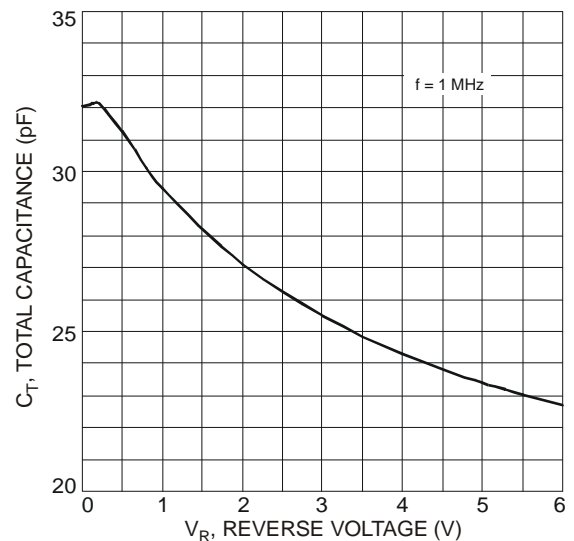
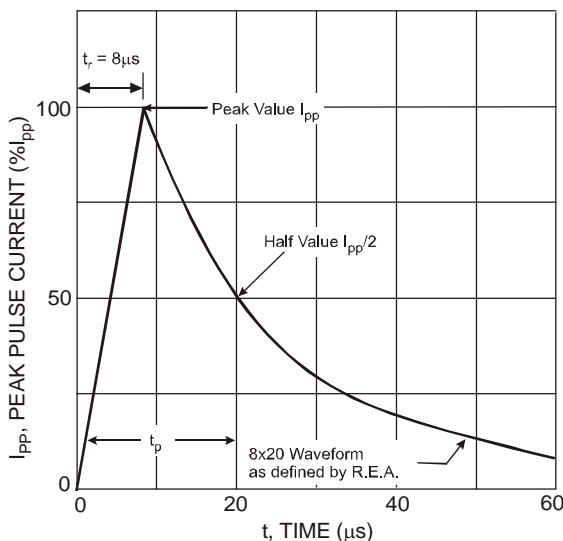
Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Package Power Dissipation (Note 6) | P_D | 150 | mW |
| Thermal Resistance, Junction to Ambient (Note 6) | $R_{\theta JA}$ | 833 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -65 to +150 | $^\circ\text{C}$ |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Conditions |
|----------------------------------|-----------|-----|-----|----------|----------|---|
| Reverse Standoff Voltage | V_{RWM} | - | - | 5 | V | - |
| Channel Leakage Current (Note 7) | I_{RM} | - | 5 | 100 | nA | $V_{RWM} = 5\text{V}$ |
| Clamping Voltage | V_{CL} | - | - | 10 14 | V | $I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$ $I_{PP} = 12\text{A}, t_p = 8/20\mu\text{s}$ |
| Breakdown Voltage | V_{BR} | 5.5 | - | 9.5 | V | $I_R = 1\text{mA}$ |
| Differential Resistance | R_{DIF} | - | 0.4 | - | Ω | $I_R = 10\text{A}, t_p = 8/20\mu\text{s}$ |
| Channel Input Capacitance | C_T | - | 35 | 45 | pF | $V_R = 0\text{V}, f = 1\text{MHz}$ |

- Notes:
6. 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>.
 7. Short duration pulse test used to minimize self-heating effect.



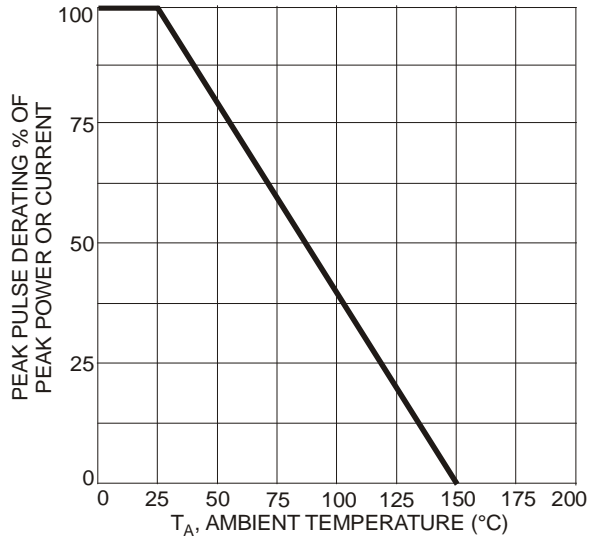


Fig. 3 Power Dissipation vs. Ambient Temperature

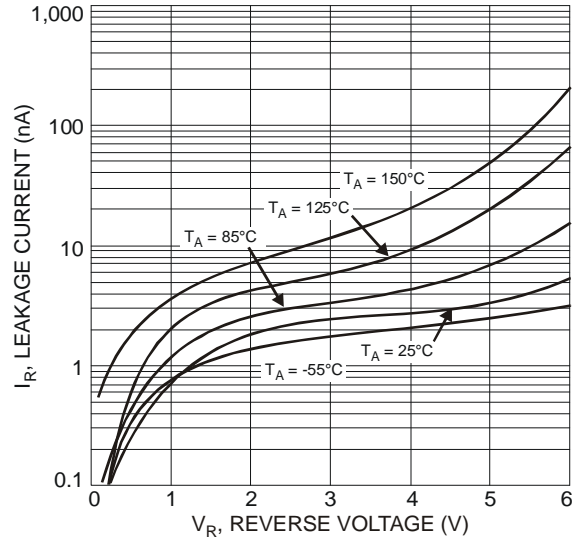
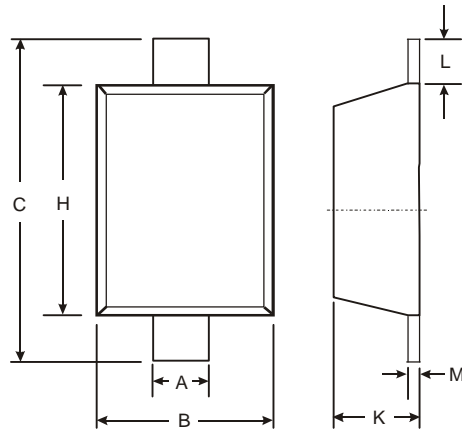


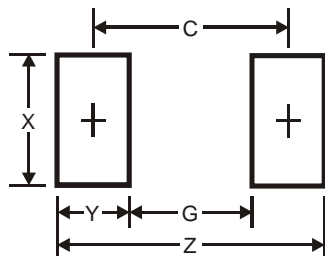
Fig. 4 Typical Reverse Characteristics

Package Outline Dimensions



| SOD523 | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 0.25 | 0.35 |
| B | 0.70 | 0.90 |
| C | 1.50 | 1.70 |
| H | 1.10 | 1.30 |
| K | 0.55 | 0.65 |
| L | 0.10 | 0.30 |
| M | 0.10 | 0.12 |
| All Dimensions in mm | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 2.3 |
| G | 1.1 |
| X | 0.8 |
| Y | 0.6 |
| C | 1.7 |

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