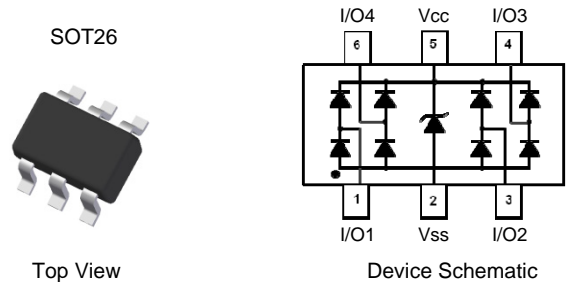


**4 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY**
**Features**

- Low Clamping Voltage, I/O to V<sub>SS</sub>
- Typical 9V at 10A 100ns, TLP
- Typical 7.7V at 6A 8µs/20µs
- IEC 61000-4-2 (ESD): Air – +27/-19kV, Contact – ±16kV
- IEC 61000-4-4 (EFT): Level-4
- IEC 61000-4-5 (Lightning): ±6A
- 4 Channels of ESD protection
- Low Channel Input Capacitance of 0.65pF Typical
- TLP Dynamic Resistance: 0.25Ω
- Typically Used for High Speed Ports such as USB 2.0, IEEE1394, HDMI, Laptop and Personal Computers, Flat Panel Displays, Video Graphics Displays, SIM Ports
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

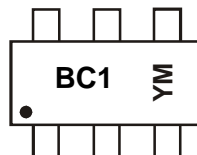
**Mechanical Data**

- Case: SOT26
- 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 Copper leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 **Ⓔ3**
- Weight: 0.016 grams (approximate)


**Ordering Information (Note 4)**

| Product       | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|---------------|------------|---------|--------------------|-----------------|-------------------|
| DT1042-04SO-7 | Standard   | BC1     | 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**


BC1 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: A = 2013)  
 M = Month (ex: 9 = September)

## Date Code Key

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------|------|------|------|------|------|------|
| Code | A    | B    | C    | D    | E    | F    |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

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

| Characteristic  | Symbol               | Value       | Unit | Conditions                       |
|---|----------------------|-------------|------|----------------------------------|
| Peak Pulse Current, per IEC 61000-4-5                 | I <sub>PP_I/O</sub>  | ±6          | A    | I/O to V <sub>SS</sub> , 8/20 μs |
| Peak Pulse Power, per IEC 61000-4-5                   | P <sub>PP_I/O</sub>  | 55          | W    | I/O to V <sub>SS</sub> , 8/20 μs |
| Operating Voltage (DC)                                | V <sub>DC</sub>      | 5.5         | V    | I/O to V <sub>SS</sub>           |
| ESD Protection – Contact Discharge, per IEC 61000-4-2 | V <sub>ESD_I/O</sub> | ±16         | kV   | I/O to V <sub>SS</sub>           |
| ESD Protection – Air Discharge, per IEC 61000-4-2     | V <sub>ESD_I/O</sub> | +27/-19     | kV   | I/O to V <sub>SS</sub>           |
| Operating Temperature                                 | T <sub>OP</sub>      | -55 to +85  | °C   | —                                |
| Storage Temperature                                   | T <sub>STG</sub>     | -55 to +150 | °C   | —                                |

**Thermal Characteristics**

| Characteristic   | Symbol           | Value | Unit |
|--|------------------|-------|------|
| Power Dissipation Typical (Note 5)                       | P <sub>D</sub>   | 300   | mW   |
| Thermal Resistance, Junction to Ambient Typical (Note 5) | R <sub>θJA</sub> | 417   | °C/W |

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

| Characteristic                         | Symbol                     | Min  | Typ  | Max | Unit | Test Conditions  |
|--|----------------------------|------|------|-----|------|--|
| Reverse Working Voltage                | V <sub>RWM</sub>           | —    | —    | 5.0 | V    | V <sub>CC</sub> to V <sub>SS</sub>   |
| Reverse Current (Note 6)               | I <sub>R(VCC to VSS)</sub> | —    | —    | 1.0 | μA   | V <sub>R</sub> = V <sub>RWM</sub> = 5V, V <sub>CC</sub> to V <sub>SS</sub>   |
| Reverse Current (Note 6)               | I <sub>R(I/O to VSS)</sub> | —    | —    | 0.5 | μA   | V <sub>R</sub> = V <sub>RWM</sub> = 5V, any I/O to V <sub>SS</sub>   |
| Reverse Breakdown Voltage              | V <sub>BR</sub>            | 6.2  | —    | —   | V    | I <sub>R</sub> = 1mA, V <sub>CC</sub> to V <sub>SS</sub>   |
| Forward Clamping Voltage               | V <sub>F</sub>             | -1.0 | -0.8 | —   | V    | I <sub>F</sub> = -15mA, V <sub>CC</sub> to V <sub>SS</sub>   |
| Reverse Clamping Voltage(Note 7)       | V <sub>C_VCC</sub>         | —    | 6.3  | —   | V    | I <sub>PP</sub> = 9A, V <sub>CC</sub> to V <sub>SS</sub> , 8/20 μs   |
|  | V <sub>C_I/O</sub>         | —    | 7.7  | 9   | V    | I <sub>PP</sub> = 6A, I/O to V <sub>SS</sub> , 8/20 μs   |
| ESD Clamping Voltage                   | V <sub>ESD_VCC</sub>       | —    | 6.8  | —   | V    | TLP, 10A, tp = 100 ns, V <sub>CC</sub> to V <sub>SS</sub> , per Fig. 8   |
|  | V <sub>ESD_I/O</sub>       | —    | 9    | —   | V    | TLP, 10A, tp = 100 ns, I/O to V <sub>SS</sub> , per Fig. 8   |
| Dynamic Resistance                     | R <sub>DIF_VCC</sub>       | —    | 0.1  | —   | Ω    | TLP, 10A, tp = 100 ns, V <sub>CC</sub> to V <sub>SS</sub>  |
|  | R <sub>DIF_I/O</sub>       | —    | 0.25 | —   | Ω    | TLP, 10A, tp = 100 ns, I/O to V <sub>SS</sub>  |
| Channel Input Capacitance              | C <sub>I/O to VSS</sub>    | —    | 0.65 | 0.8 | pF   | V <sub>R</sub> = 2.5V, V <sub>CC</sub> = 5V, f = 1MHz  |
| Variation of Channel Input Capacitance | ΔC <sub>I/O</sub>          | —    | 0.02 | —   | pF   | V <sub>CC</sub> = 5V, V <sub>SS</sub> = 0V, I/O = 2.5V, f = 1MHz, T = +25°C, I/O <sub>x</sub> to V <sub>SS</sub> – I/O <sub>y</sub> to V <sub>SS</sub> |

- Notes:
- Device mounted on Polyimide 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.
  - Clamping voltage value is based on an 8x20μs peak pulse current (I<sub>pp</sub>) waveform.

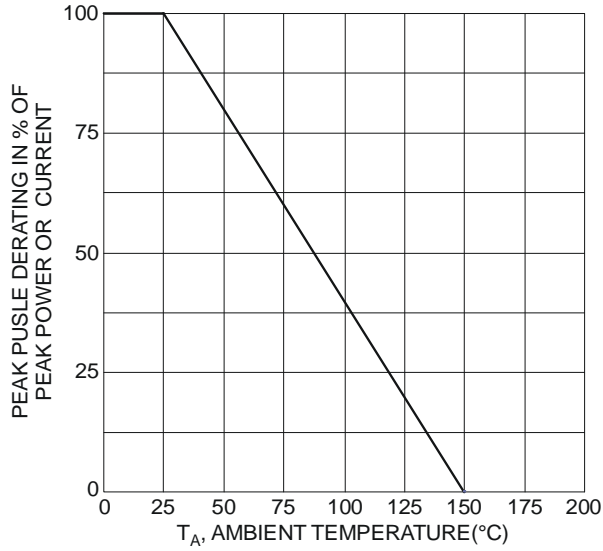


Figure 1 Pulse Derating Curve

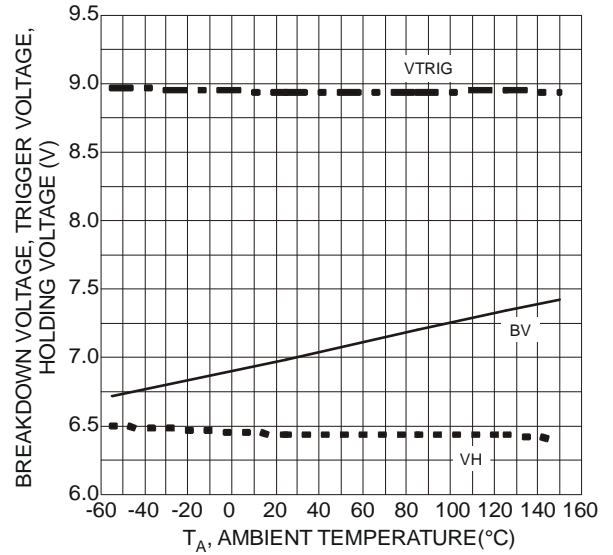


Figure 2 Breakdown Voltage, Trigger Voltage, Holding Voltage vs. Ambient Temperature

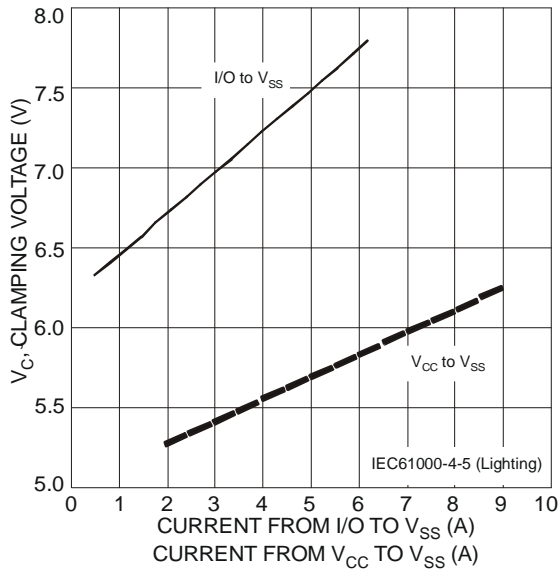


Figure 3 Clamping Voltage Characteristics

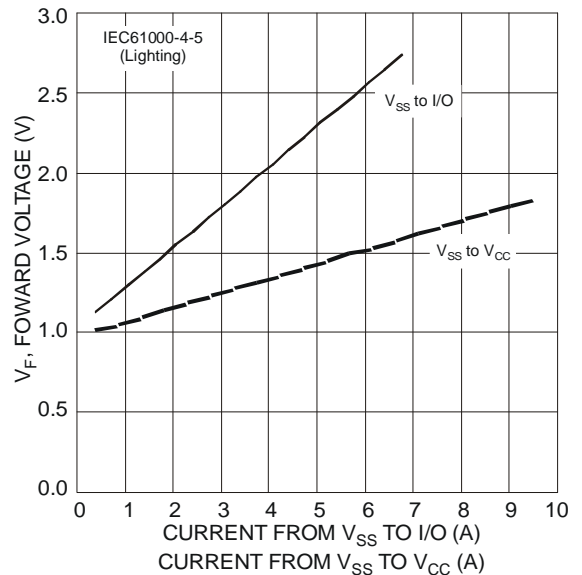


Figure 4 Forward Voltage Characteristics

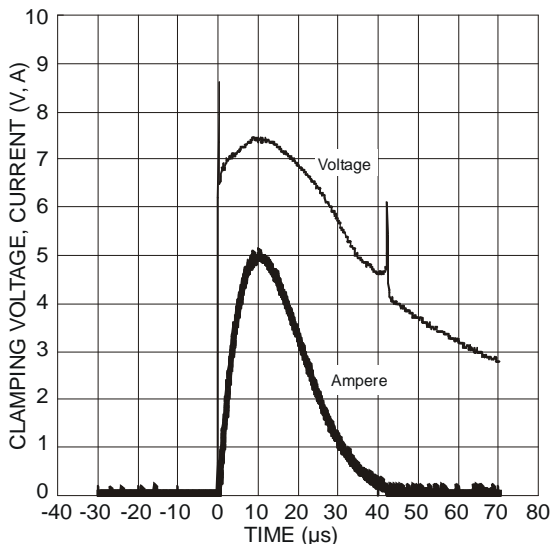


Figure 5 Waveform of Clamping Voltage, Current vs. Time (8/20µs, I/O to VSS)

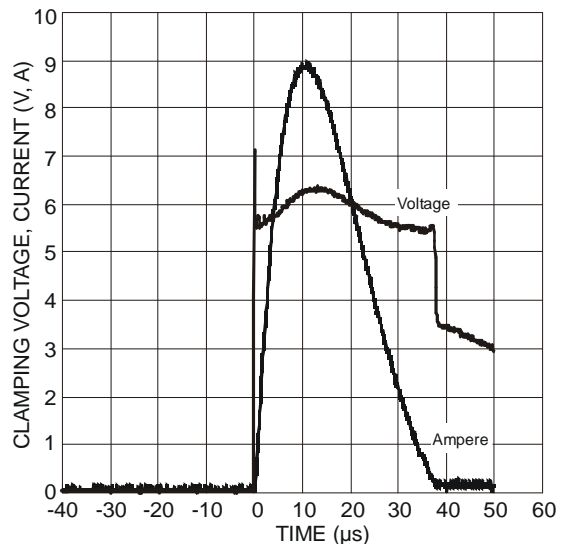


Figure 6 Waveform of Clamping Voltage, Current vs. Time (8/20µs, VCC to VSS)

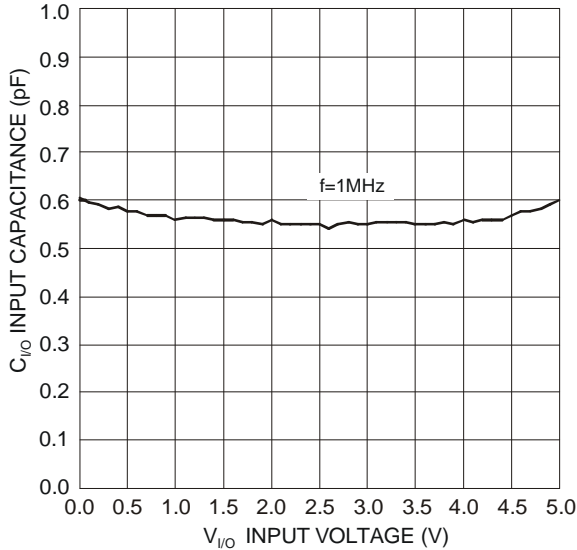


Figure 7 Input Capacitance vs. Input Voltage

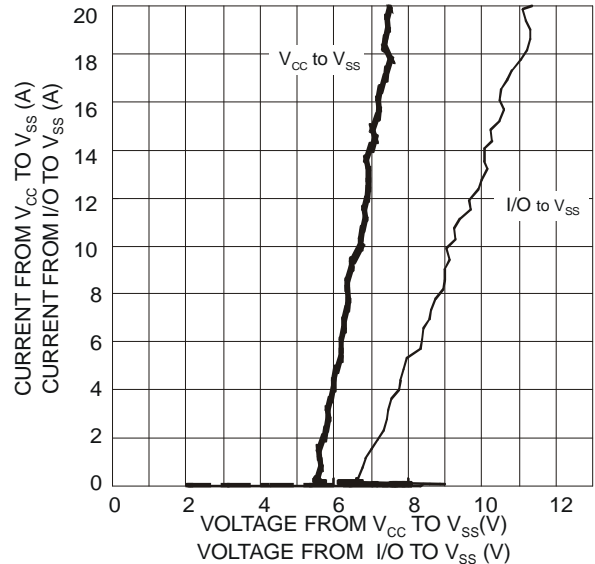
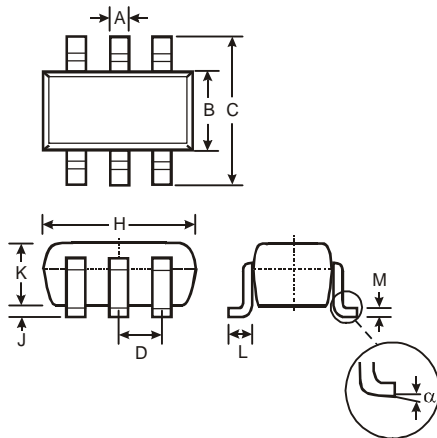


Figure 8. Current vs. Voltage

### Package Outline Dimensions

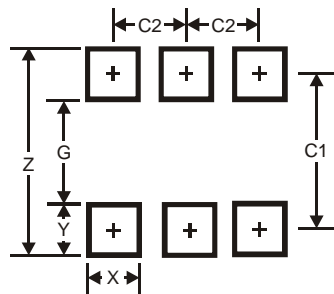
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| SOT26                |       |      |      |
|----------------------|-------|------|------|
| Dim                  | Min   | Max  | Typ  |
| A                    | 0.35  | 0.50 | 0.38 |
| B                    | 1.50  | 1.70 | 1.60 |
| C                    | 2.70  | 3.00 | 2.80 |
| D                    | —     | —    | 0.95 |
| H                    | 2.90  | 3.10 | 3.00 |
| J                    | 0.013 | 0.10 | 0.05 |
| K                    | 1.00  | 1.30 | 1.10 |
| L                    | 0.35  | 0.55 | 0.40 |
| M                    | 0.10  | 0.20 | 0.15 |
| $\alpha$             | 0°    | 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) |
|------------|---------------|
| Z          | 3.20          |
| G          | 1.60          |
| X          | 0.55          |
| Y          | 0.80          |
| C1         | 2.40          |
| C2         | 0.95          |

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