

**2 CHANNEL LOW CAPACITANCE BI-DIRECTIONAL TVS ARRAY**
**Features**

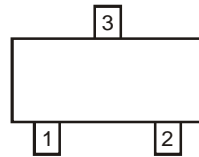
- Provides ESD Protection per IEC 61000-4-2 Standard:  
Air – ±30kV, Contact – ±30kV
- 2 Channels of Bi-Directional ESD Protection
- Low Channel Input Capacitance
- Typically Used at Portable Electronics, Cellular Handsets and Communication Systems
- **Lead Free/RoHS Compliant (Note 1)**
- **“Green” Device (Note 2)**

**Mechanical Data**

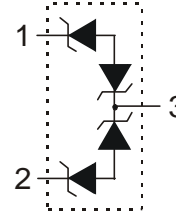
- Case: SOT323
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Weight: 0.006 grams (approximate)



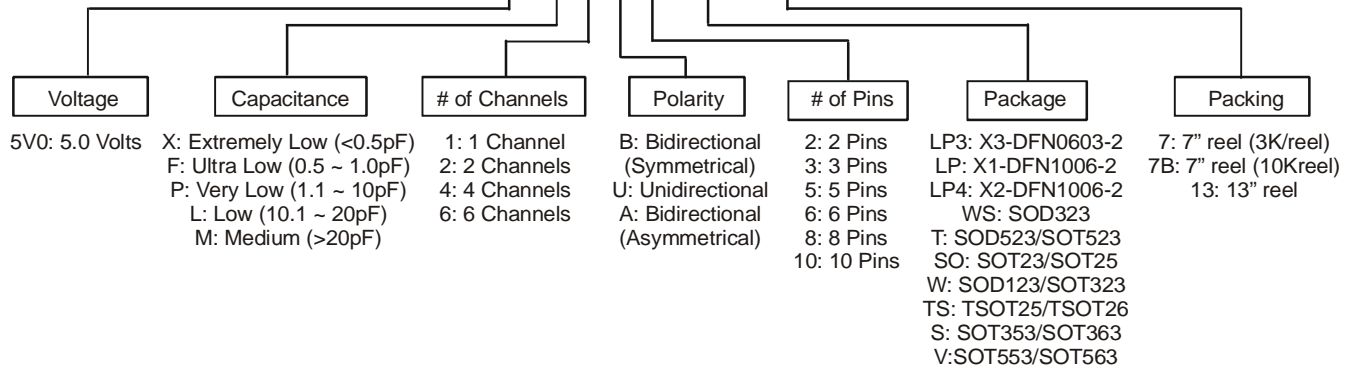
Top View



Pin Configuration

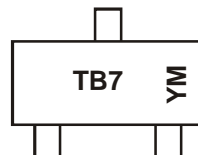


Device Schematic

**Ordering Information (Note 3)**
**D 5V0 L X B X XXX- XX**


| Part Number | Case   | Packaging        |
|-------------|--------|------------------|
| D5V0L2B3W-7 | SOT323 | 3000/Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. No purposely added lead. Halogen and Antimony free.
  2. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
  3. For packaging details, go to our website at <http://www.diodes.com>.

**Marking Information**


TB7 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: Z = 2012)  
 M = Month (ex: 9 = September)

## Date Code Key

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------|------|------|------|------|------|------|------|
| Code | Y    | Z    | A    | B    | C    | D    | E    |

| 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 Power Dissipation       | P <sub>PP</sub>          | 84    | W    | 8/20μs, Per Fig. 1     |
| Peak Pulse Current                 | I <sub>PP</sub>          | 6     | A    | 8/20μs, Per Fig. 1     |
| ESD Protection – Contact Discharge | V <sub>ESD_Contact</sub> | ±30   | kV   | Standard IEC 61000-4-2 |
| ESD Protection – Air Discharge     | V <sub>ESD_Air</sub>     | ±30   | kV   | Standard IEC 61000-4-2 |

**Thermal Characteristics**

| Characteristic                                   | Symbol           | Value       | Unit |
|--|------------------|-------------|------|
| Package Power Dissipation (Note 5)               | P <sub>D</sub>   | 200         | mW   |
| Thermal Resistance, Junction to Ambient (Note 5) | R <sub>θJA</sub> | 625         | °C/W |
| Operating Junction Temperature Range             | T <sub>J</sub>   | -65 to +150 | °C   |
| Storage Temperature Range                        | 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 Working Voltage          | V <sub>RWM</sub> | -   | -    | 5.0  | V    | -   |
| Breakdown Voltage                | V <sub>BR</sub>  | 6   | 7    | 8    | V    | I <sub>R</sub> = 1.0mA                                |
| Reverse Leakage Current (Note 6) | I <sub>R</sub>   | -   | 10   | 100  | nA   | V <sub>RWM</sub> = 5V                                 |
| Clamping Voltage (Note 4)        | V <sub>CL</sub>  | -   | 7.0  | 9.0  | V    | I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20μs         |
|                                  |                  | -   | 8.7  | 10.7 | V    | I <sub>PP</sub> = 3A, t <sub>p</sub> = 8/20μs         |
|                                  |                  | -   | 10.5 | 12.0 | V    | I <sub>PP</sub> = 5A, t <sub>p</sub> = 8/20μs         |
|                                  |                  | -   | 11.5 | 14.0 | V    | I <sub>PP</sub> = 6A, t <sub>p</sub> = 8/20μs         |
| Differential Resistance          | R <sub>DIF</sub> | -   | 0.2  | -    | Ω    | I <sub>R</sub> = 1.0A, t <sub>p</sub> = 8/20μs        |
| Channel Input Capacitance        | C <sub>T</sub>   | -   | 15   | 20   | pF   | V <sub>IN</sub> = 0 V, f = 1MHz<br>(Channel to Pin 3) |

- Notes:
4. Measured from pin 1 to 3 or pin 2 to 3; Non-repetitive current pulse per Fig. 1.
  5. 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>.
  6. Short duration pulse test used to minimize self-heating effect.

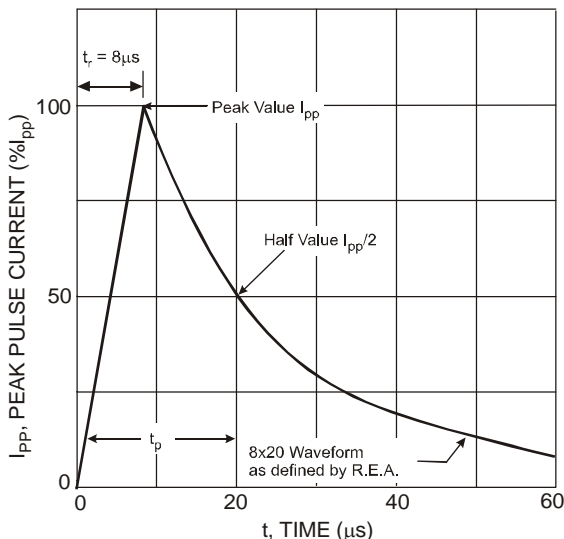


Fig. 1 Typical 8 x 20μs Pulse Waveform

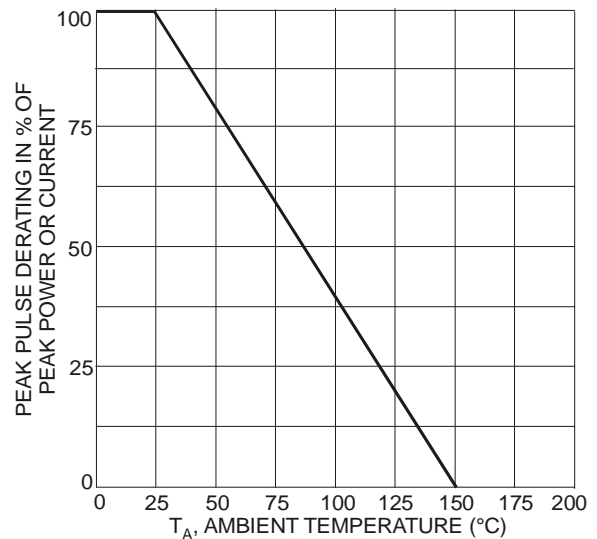


Fig. 2 Pulse Derating Curve

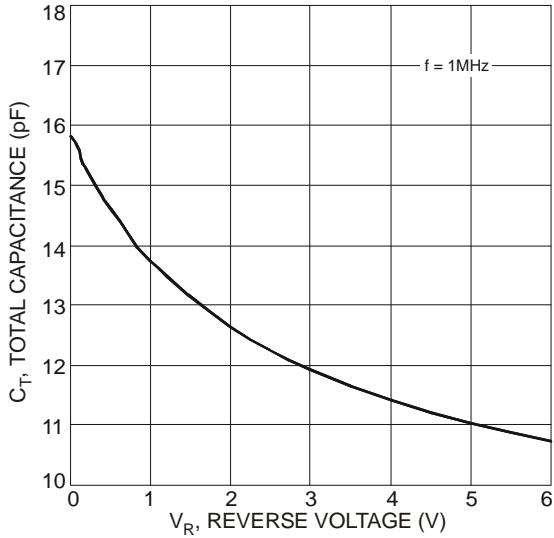


Fig. 3 Typical Total Capacitance vs. Reverse Voltage

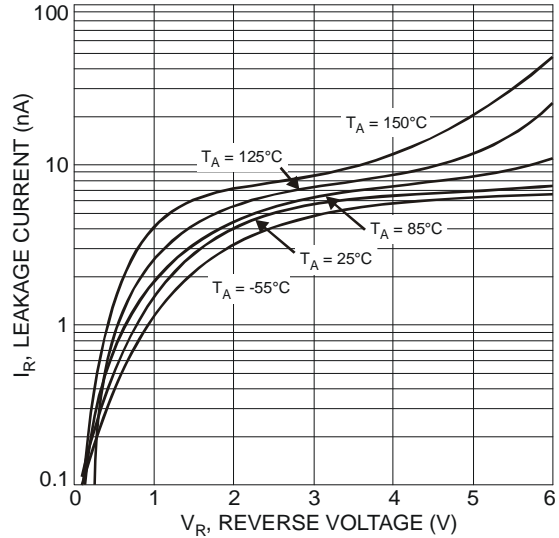
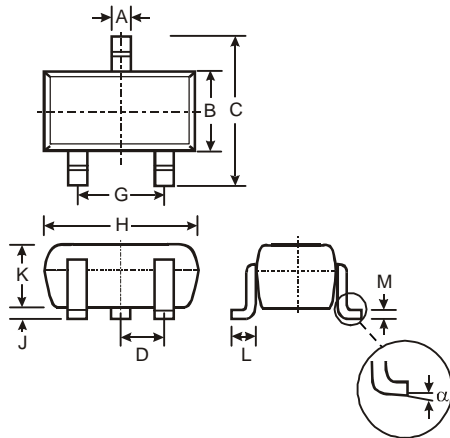


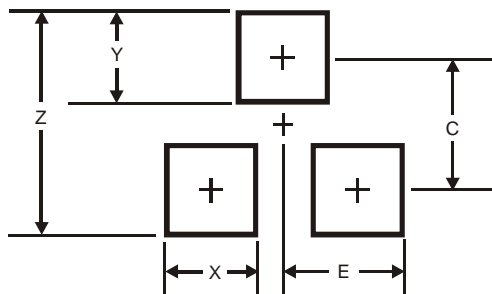
Fig. 4 Typical Reverse Characteristics

**Package Outline Dimensions**



| SOT323               |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.25 | 0.40 | 0.30 |
| B                    | 1.15 | 1.35 | 1.30 |
| C                    | 2.00 | 2.20 | 2.10 |
| D                    | -    | -    | 0.65 |
| G                    | 1.20 | 1.40 | 1.30 |
| H                    | 1.80 | 2.20 | 2.15 |
| J                    | 0.0  | 0.10 | 0.05 |
| K                    | 0.90 | 1.00 | 1.00 |
| L                    | 0.25 | 0.40 | 0.30 |
| M                    | 0.10 | 0.18 | 0.11 |
| $\alpha$             | 0°   | 8°   | -    |
| All Dimensions in mm |      |      |      |

**Suggested Pad Layout**



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 2.8           |
| X          | 0.7           |
| Y          | 0.9           |
| C          | 1.9           |
| E          | 1.0           |

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