

# T2V5S5 / T3V3S5 / T5V0S5 / T12S5

UNIDIRECTIONAL SURFACE MOUNT TVS

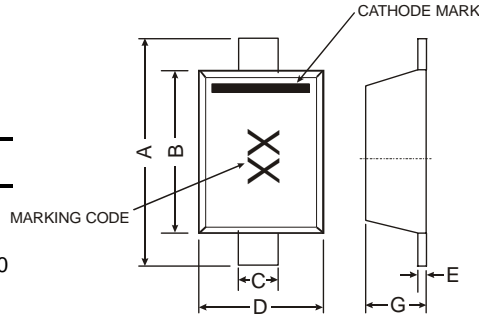
NEW PRODUCT

## Features

- Ideally Suited for ESD Protection
- Ultra-Small Surface Mount Package
- Excellent Clamping Capability, Fast Response Time
- Low Capacitance
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**

## Mechanical Data

- Case: SOD-523
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: Cathode Band
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Marking & Type Code Information: See Electrical Specifications Table
- Ordering Information: See Page 2
- Weight: 0.001 grams (approximate)



| SOD-523              |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 1.50 | 1.70 |
| B                    | 1.10 | 1.30 |
| C                    | 0.25 | 0.35 |
| D                    | 0.70 | 0.90 |
| E                    | 0.10 | 0.20 |
| G                    | 0.55 | 0.65 |
| All Dimensions in mm |      |      |

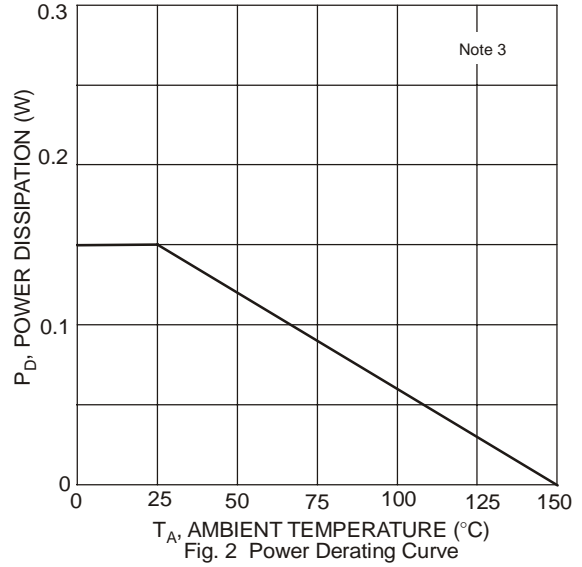
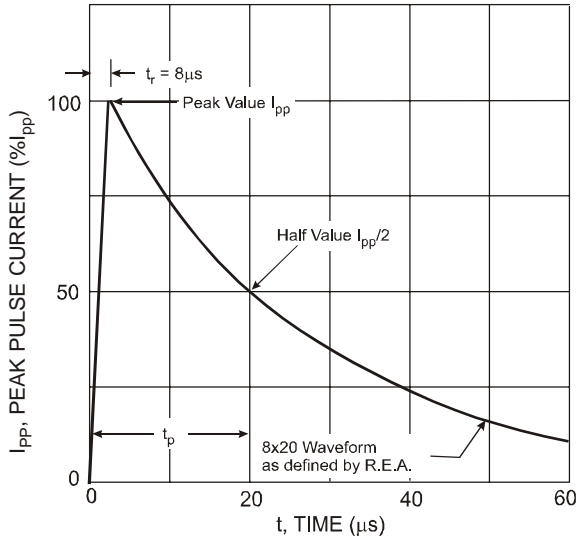
## Maximum Ratings @T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                                       | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Forward Voltage @ I <sub>F</sub> = 10mA              | V <sub>F</sub>                    | 0.9         | V    |
| Power Dissipation (Note 3) (See figure 2)            | P <sub>d</sub>                    | 150         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 3) | R <sub>θJA</sub>                  | 833         | °C/W |
| Operating and Storage Temperature Range              | T <sub>j</sub> , T <sub>STG</sub> | -65 to +150 | °C   |
| ESD Rating   | Human Body Model                  | 8           | kV   |
|  | Machine Model                     | 400         | V    |
|  | IEC61000-4-2 Air Discharge        | 30          | kV   |
|  | IEC61000-4-2 Contact Discharge    | 30          | kV   |

## Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

| Part Number | Reverse Standoff Voltage | Min. Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub> | Test Current        | Max. Reverse Leakage @ V <sub>RWM</sub> (Note 4) | Typ. Clamping Voltage @ I <sub>PP</sub> = 5A (t <sub>p</sub> = 8 x 20 μs) (See figure 1) | Max. Clamping Voltage V <sub>c</sub> @ I <sub>PP</sub> (t <sub>p</sub> = 8 x 20 μs) (See Figure 1) |                     | Max. Clamping Voltage V <sub>c</sub> @ I <sub>PP</sub> (t <sub>p</sub> = 8 x 20 μs) (See Figure 1) |                     | Peak Power Dissipation (See Figure 1) | Typical Total Capacitance V <sub>R</sub> = 0V f = 1MHz | Marking Code |
|-------------|--------------------------|---|---------------------|--|--|--|---------------------|--|---------------------|---------------------------------------|--|--------------|
|             | V <sub>RWM</sub> (V)     | Min (V)   | I <sub>T</sub> (mA) | I <sub>R</sub> (μA)                              | V <sub>c</sub> (V)   | V <sub>c</sub> (V)   | I <sub>PP</sub> (A) | V <sub>c</sub> (V)   | I <sub>PP</sub> (A) | P <sub>PK</sub> (W)                   | C <sub>T</sub> (pF)                                    |              |
| T2V5S5      | 2.5                      | 4.0   | 1.0                 | 12   | 6.5  | 8.1  | 8.9                 | -  | -                   | 70                                    | 110  | EB           |
| T3V3S5      | 3.3                      | 5.0   | 1.0                 | 4  | 8.4  | 14.1   | 11.2                | 16   | 16                  | 220                                   | 85   | ED           |
| T5V0S5      | 5.0                      | 6.2   | 1.0                 | 2  | 15   | 22   | 9.4                 | 27   | 15                  | 260                                   | 60   | EJ           |
| T12S5       | 12                       | 14.1  | 1.0                 | 0.8  | 19.7   | 25   | 9.6                 | 28   | 12                  | 300                                   | 60   | ES           |

- Notes:
1. No purposefully added lead.
  2. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  3. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  4. Short duration pulse test used to minimize self-heating effect.



## Ordering Information (Note 5)

| Device           | Packaging | Shipping         |
|------------------|-----------|------------------|
| (Type Number)-7* | SOD-523   | 3000/Tape & Reel |

\* Add "-7" to the appropriate type number in Table 1 above example: 2.5V TVS = T2V5S5-7.

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

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