

## Features

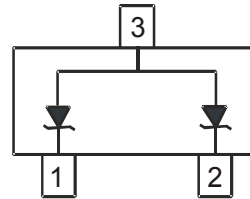
- Provides ESD Protection per IEC 61000-4-2 Standard:  
Air – ±30kV, Contact – ±30kV
- 230W Peak Power Dissipation
- Typically Used to Protect LIN and CAN Transceiver from ESD and other Harmful Transient Voltage Events
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**



Top View

## Mechanical Data

- Case: SOT23
- 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: 0.009 grams (Approximate)



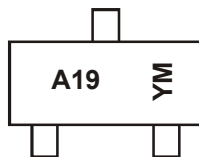
Device Schematic

## Ordering Information (Note 4)

| Product       | Compliance | Marking | Reel size(inches) | Tape width(mm) | Quantity per reel |
|---------------|------------|---------|-------------------|----------------|-------------------|
| DESD24VS2SO-7 | AEC-Q101   | A19     | 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



A19 = 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 | 2019 |
|------|------|------|------|------|------|------|------|
| Code | A    | B    | C    | D    | E    | F    | G    |

| 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>          | 230   | W    | 8/20μs, Per in Figure 3     |
| Peak Pulse Current                 | I <sub>PP</sub>          | 5     | A    | 8/20μs, Per in Figure 3     |
| 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      |
| ESD Protection – Human Body Model  | V <sub>ESD_HBM</sub>     | ±16   | kV   | MIL-STD-883                 |
| Electrical Fast Transient Current  | I <sub>EFT</sub>         | 80    | A    | Standard IEC 61000-4-4(EFT) |

**Thermal Characteristics**

| Characteristic                                   | Symbol           | Value       | Unit |
|--|------------------|-------------|------|
| Package Power Dissipation (Note 5)               | P <sub>D</sub>   | 300         | mW   |
| Thermal Resistance, Junction to Ambient (Note 5) | R <sub>θJA</sub> | 417         | °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> | —   | —   | 24  | V    | —   |
| Breakdown Voltage                | V <sub>BR</sub>  | 26  | —   | 32  | V    | I <sub>R</sub> = 1.0mA                                  |
| Reverse Leakage Current (Note 6) | I <sub>R</sub>   | —   | —   | 10  | nA   | V <sub>RWM</sub> = 24V                                  |
| Clamping Voltage (Note 7)        | V <sub>CL</sub>  | —   | —   | 34  | V    | I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20μs           |
|                                  |                  | —   | —   | 41  | V    | I <sub>PP</sub> = 5A, t <sub>p</sub> = 8/20μs           |
| Differential Resistance          | R <sub>DIF</sub> | —   | 1   | —   | Ω    | I <sub>R</sub> = 1.0A, t <sub>p</sub> = 8/20μs          |
| Channel Input Capacitance        | C <sub>T</sub>   | —   | 42  | 52  | pF   | V <sub>IN</sub> = 0V, f = 1MHz, Pin 1 or Pin 2 to Pin 3 |
|                                  |                  | —   | 21  | 28  | pF   | V <sub>IN</sub> = 0V, f = 1MHz, between Pin 1 and Pin 2 |

- 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.
  - Measured from pin 1 or pin 2 to pin 3; Non-repetitive current pulse per Figure 1.

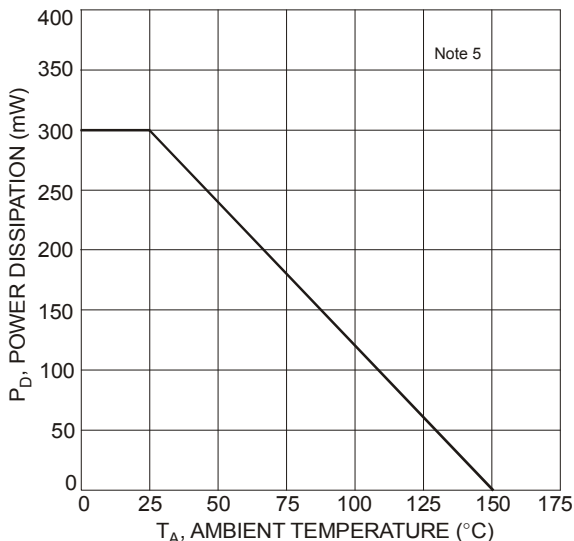


Figure 1 Power Derating Curve

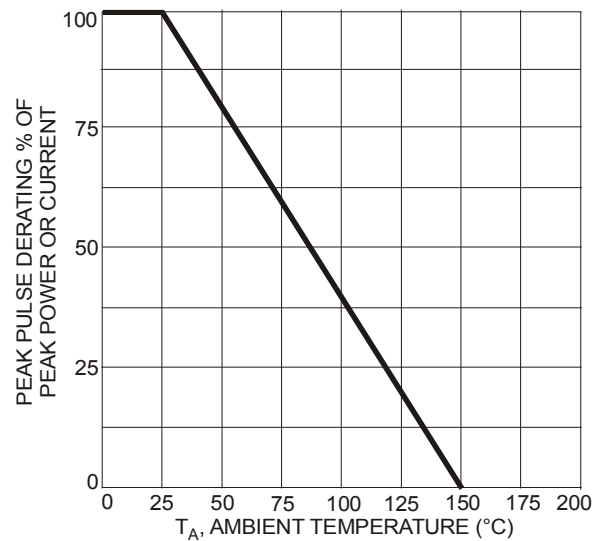


Figure 2 Pulse Derating Curve

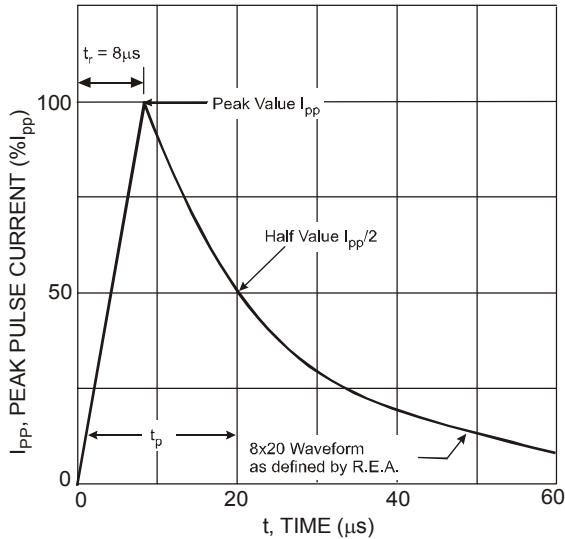


Figure 3 Typical 8 x 20µs Pulse Waveform

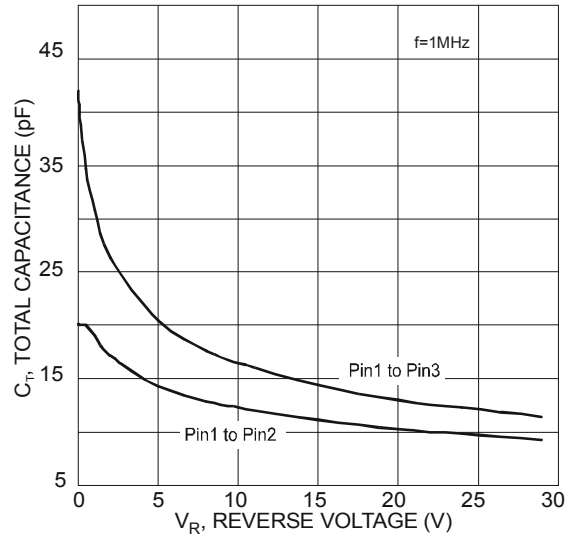


Figure 4 Typical Total Capacitance vs. Reverse Voltage

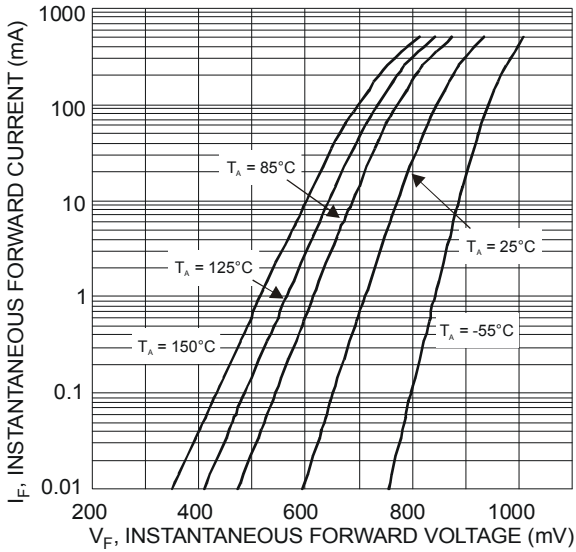


Figure 5 Typical Forward Characteristics

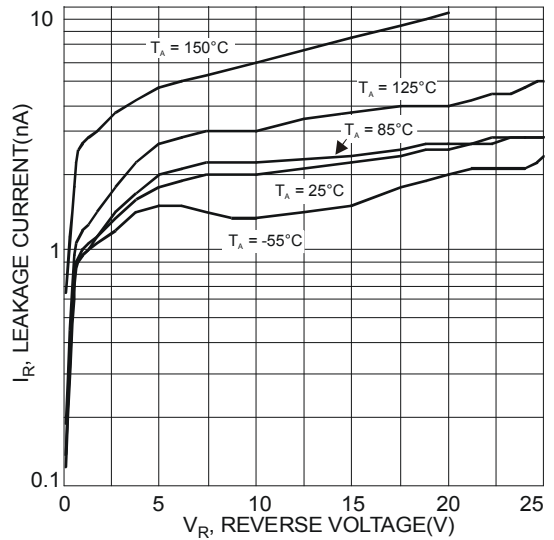
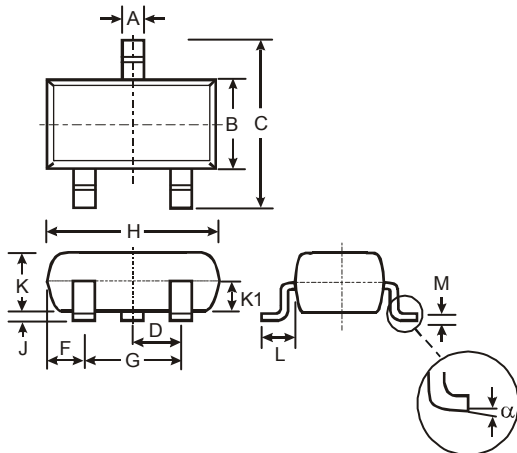


Figure 6 Typical Reverse Characteristics

## Package Outline Dimensions

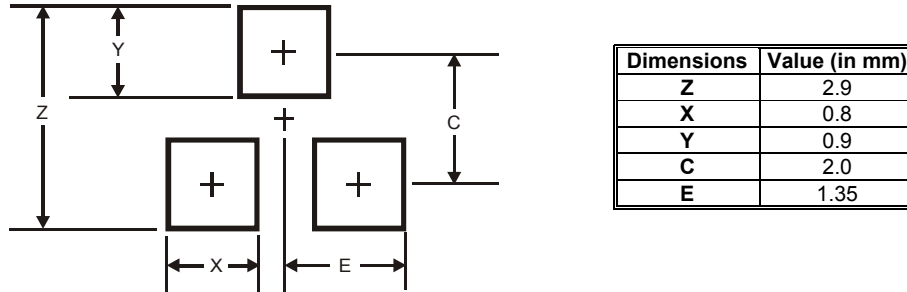
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| SOT23                       |       |      |       |
|-----------------------------|-------|------|-------|
| Dim                         | Min   | Max  | Typ   |
| A                           | 0.37  | 0.51 | 0.40  |
| B                           | 1.20  | 1.40 | 1.30  |
| C                           | 2.30  | 2.50 | 2.40  |
| D                           | 0.89  | 1.03 | 0.915 |
| F                           | 0.45  | 0.60 | 0.535 |
| G                           | 1.78  | 2.05 | 1.83  |
| H                           | 2.80  | 3.00 | 2.90  |
| J                           | 0.013 | 0.10 | 0.05  |
| K                           | 0.903 | 1.10 | 1.00  |
| K1                          | -     | -    | 0.400 |
| L                           | 0.45  | 0.61 | 0.55  |
| M                           | 0.085 | 0.18 | 0.11  |
| α                           | 0°    | 8°   | -     |
| <b>All Dimensions in mm</b> |       |      |       |

## Suggested Pad Layout

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



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