

## Product Summary

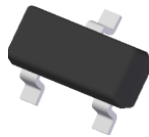
|                |                |             |
|----------------|----------------|-------------|
| $V_{BR}$ (Min) | $I_{PP}$ (Max) | $I_R$ (Max) |
| 26.2V          | 8A             | 100nA       |

## Description and Applications

This new generation TVS is designed to meet the stringent requirements of Automotive Applications and to protect sensitive electronics from the damage due to ESD. The combination of small size and high ESD surge capability makes it ideal to protect LIN and CAN transceiver from ESD, EMI and other harmful transient voltage events for use in:

- Industrial Control Network
- Automotive Networks

SOT23



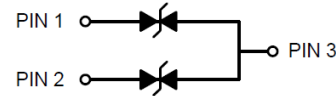
Bottom View

## Features and Benefits

- 350W Peak Power Dissipation per Line (8/20 $\mu$ s Waveform)
- Provides ESD Protection per IEC 61000-4-2 Standard: Air  $\pm$ 30kV, Contact  $\pm$ 30kV
- 2 Channels of ESD Protection
- Low Channel Input Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

## 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)



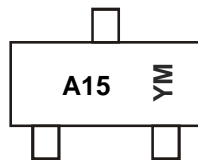
Device Schematic

## Ordering Information (Note 5)

| Part Number  | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|--------------|------------|---------|--------------------|-----------------|-------------------|
| DUP2105SOQ-7 | Automotive | A15     | 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/product-compliance-definitions/>.
  5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



A15 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: E = 2017)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|------|------|------|------|------|------|------|------|
| Code | E    | F    | G    | H    | I    | J    | K    |

| 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>          | 350   | W    | 8/20μs, per Figure 1   |
| Peak Pulse Current                 | I <sub>PP</sub>          | 8     | A    | 8/20μs, per Figure 1   |
| ESD Protection – Contact Discharge | V <sub>ESD_Contact</sub> | ±30   | kV   | IEC 61000-4-2 Standard |
| ESD Protection – Air Discharge     | V <sub>ESD_Air</sub>     | ±30   | kV   | IEC 61000-4-2 Standard |

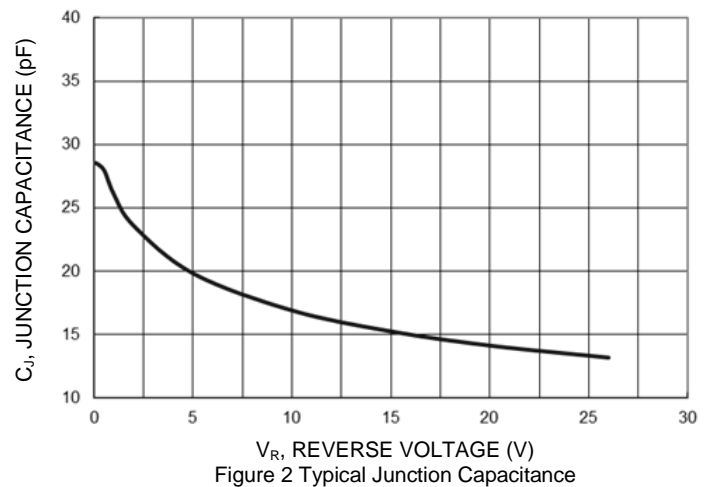
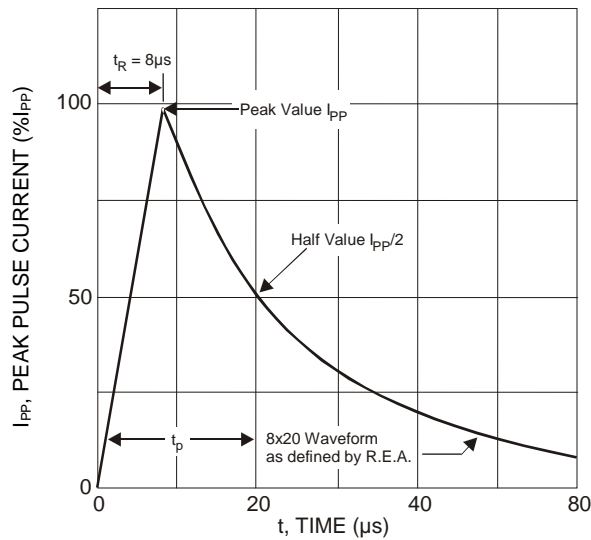
**Thermal Characteristics**

| Characteristic                                   | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Package Power Dissipation (Note 6)               | P <sub>D</sub>                    | 300         | mW   |
| Thermal Resistance, Junction to Ambient (Note 6) | R <sub>θJA</sub>                  | 417         | °C/W |
| Operating and Storage Temperature Range          | T <sub>J</sub> , 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 Standoff Voltage              | V <sub>RWM</sub> | —    | —   | 24  | V    | —   |
| Channel Leakage Current (Note 7)      | I <sub>RM</sub>  | —    | 10  | 100 | nA   | V <sub>RWM</sub> = 24V                                  |
| Clamping Voltage, Positive Transients | V <sub>CL</sub>  | —    | —   | 40  | V    | I <sub>PP</sub> = 5A, t <sub>p</sub> = 8/20μS, Figure 1 |
|                                       |                  | —    | —   | 44  |      | I <sub>PP</sub> = 8A, t <sub>p</sub> = 8/20μS, Figure 1 |
| Breakdown Voltage                     | V <sub>BR</sub>  | 26.2 | —   | 32  | V    | I <sub>R</sub> = 1mA                                    |
| Differential Resistance               | R <sub>DIF</sub> | —    | 0.4 | —   | Ω    | I <sub>R</sub> = 1A, t <sub>p</sub> = 8/20μS            |
| Channel Input Capacitance             | C <sub>T</sub>   | —    | —   | 30  | pF   | V <sub>R</sub> = 0V, f = 1MHz                           |

- Notes:
- Device mounted on FR-4 PCB pad layout (2oz copper) as shown in Diodes Incorporated's package outline PDFs, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
  - Short duration pulse test used to minimize self-heating effect.



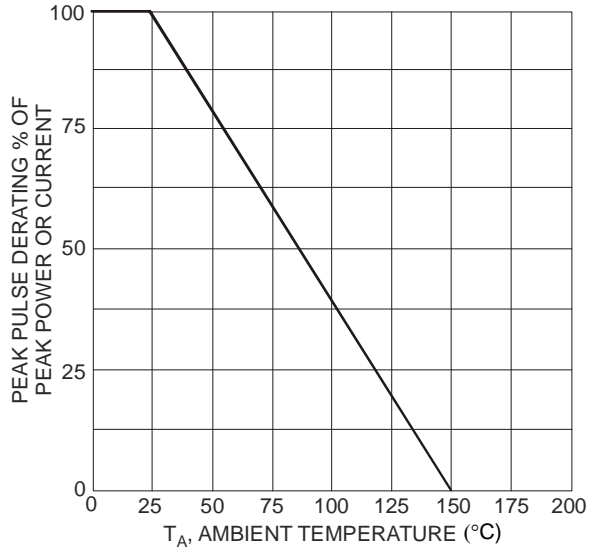


Figure 3 Power Dissipation vs. Ambient Temperature

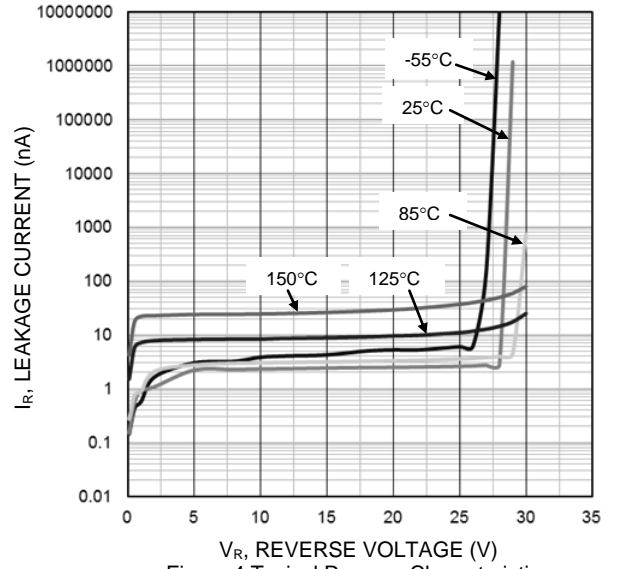
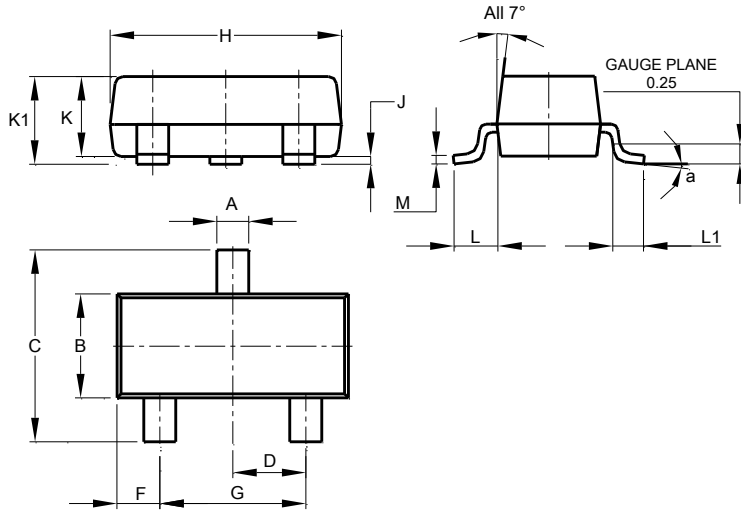


Figure 4 Typical Reverse Characteristics

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT23**

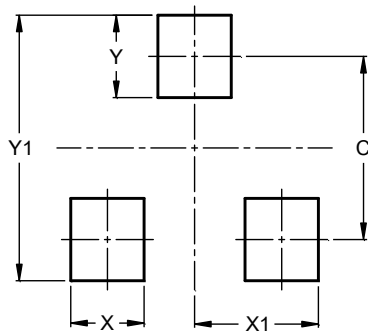


| SOT23                |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 0.37  | 0.51  | 0.40  |
| B                    | 1.20  | 1.40  | 1.30  |
| C                    | 2.30  | 2.50  | 2.40  |
| D                    | 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                    | 0.890 | 1.00  | 0.975 |
| K1                   | 0.903 | 1.10  | 1.025 |
| L                    | 0.45  | 0.61  | 0.55  |
| L1                   | 0.25  | 0.55  | 0.40  |
| M                    | 0.085 | 0.150 | 0.110 |
| a                    | 0°    | 8°    | --    |
| All Dimensions in mm |       |       |       |

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT23**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 2.0           |
| X          | 0.8           |
| X1         | 1.35          |
| Y          | 0.9           |
| Y1         | 2.9           |

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