

### Features

- Low operating voltage: 24V
- Peak Pulse Power (8/20 $\mu$ s):1700W
- Ultra low leakage: nA level
- Low clamping voltage
- -IEC 61000-4-2 (ESD) immunity test  
Air discharge:  $\pm 30$ kV  
Contact discharge:  $\pm 30$ kV
- -IEC61000-4-4 (EFT) 40A (5/50ns)
- 3-pin leadless package
- These are Pb-Free Devices
- Response Time is Typically < 1 ns

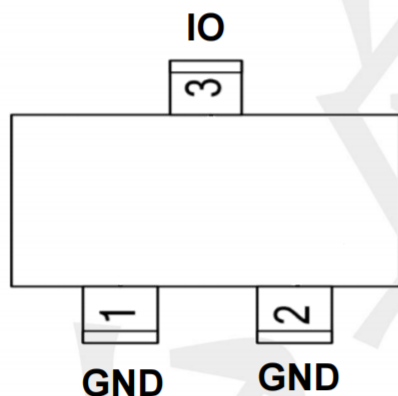
### Mechanical Characteristics

- Package: SOT-23
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound
- Terminal Connections: See Diagram Below
- -IEC 61000-4-2 (ESD) immunity test

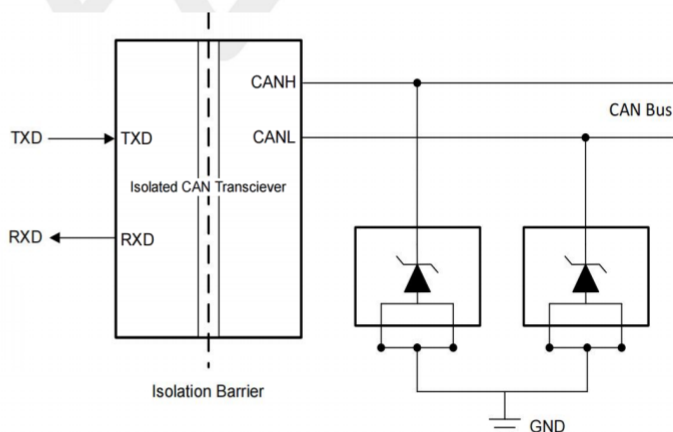
### Applications

- Industrial sensors
- PLC I/O modules
- Controller area network (CAN)
- 24-V power lines or digital inputs or output lines

### Pin configuration



### Functional Block Diagram



### Pin function

| Pin Number | Pin Name | Pin Function                                                                                                                    |
|------------|----------|---------------------------------------------------------------------------------------------------------------------------------|
| 1,2        | GND      | Connect to ground. To achieve the rated performance, connect pin 1 and 2 together on the PCB as close to the device as possible |
| 3          | IO       | Surge and ESD protected IO                                                                                                      |

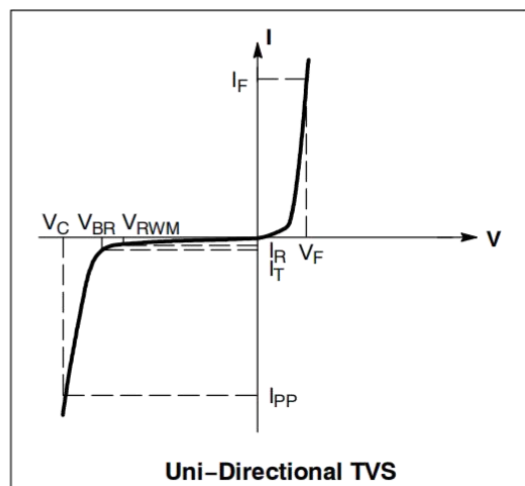
### Absolute Maximum Ratings (Tamb=25°C unless otherwise specified)

| Parameter                                                      | Symbol | Value       | Unit |
|----------------------------------------------------------------|--------|-------------|------|
| Peak Pulse Power (8/20μs)                                      | Ppk    | 1700        | W    |
| Peak Pulse Current (8/20μs)                                    | Ipp    | 30          | A    |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | VESD   | ±30<br>±30  | KV   |
| Operating Temperature Range                                    | TJ     | -55 to +125 | °C   |
| Storage Temperature Range                                      | Tstg   | -55 to +150 | °C   |

### Electrical Characteristics (TA=25°C unless otherwise specified)

| Parameter               | Symbol | Min | Typ | Max | Unit | Test Condition                     |
|-------------------------|--------|-----|-----|-----|------|------------------------------------|
| Reverse Working Voltage | VRWM   | --  | --  | 24  | V    |                                    |
| Breakdown Voltage       | VBR    | 26  | --  | --  | V    | IT= 1mA                            |
| Reverse Leakage Current | IR     | --  | --  | 1   | uA   | VRWM=24V                           |
| Forward Voltage         | VF     | --  | 0.7 | 1.2 | V    | IF = 1mA                           |
| Clamping Voltage        | VC     | --  | 36  | --  | V    | Ipp=1A(8x 20us pulse)              |
| Clamping Voltage        | VC     | --  | 42  | 55  | V    | Ipp=30A(8x 20us pulse)             |
| Junction Capacitance    | CJ     | --  | --  | 60  | pF   | VR =0V, f =1MHz,<br>Pin1,2 to Pin3 |

| Symbol | Parameter                              |
|--------|----------------------------------------|
| Ipp    | Maximum Reverse Peak Pulse Current     |
| VC     | Clamping Voltage @ Ipp                 |
| VRWM   | Working Peak Reverse Voltage           |
| IR     | Maximum Reverse Leakage Current @ VRWM |
| VBR    | Breakdown Voltage @ IT                 |
| IT     | Test Current                           |
| IF     | Forward Current                        |
| VF     | Forward Voltage @ IF                   |
| Ppk    | Peak Power Dissipation                 |
| C      | Capacitance @ VR = 0 and f = 1.0 MHz   |



## Characteristic Curves

Fig1. 8/20 $\mu$ s Pulse Waveform

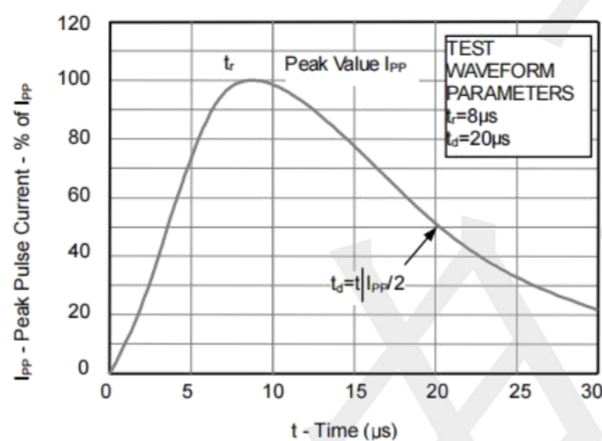


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

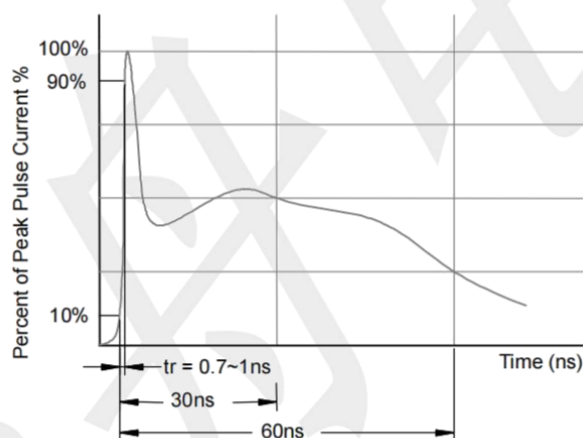
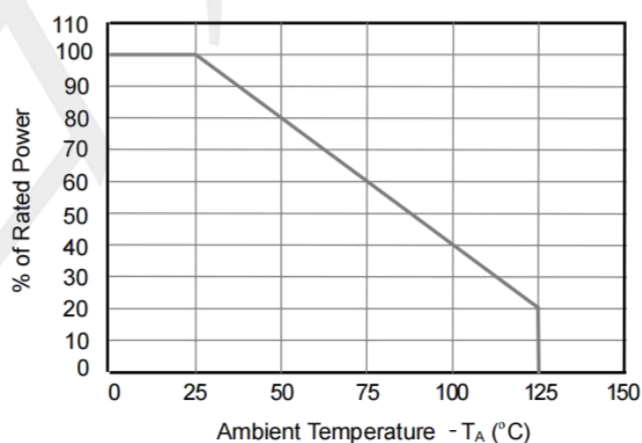
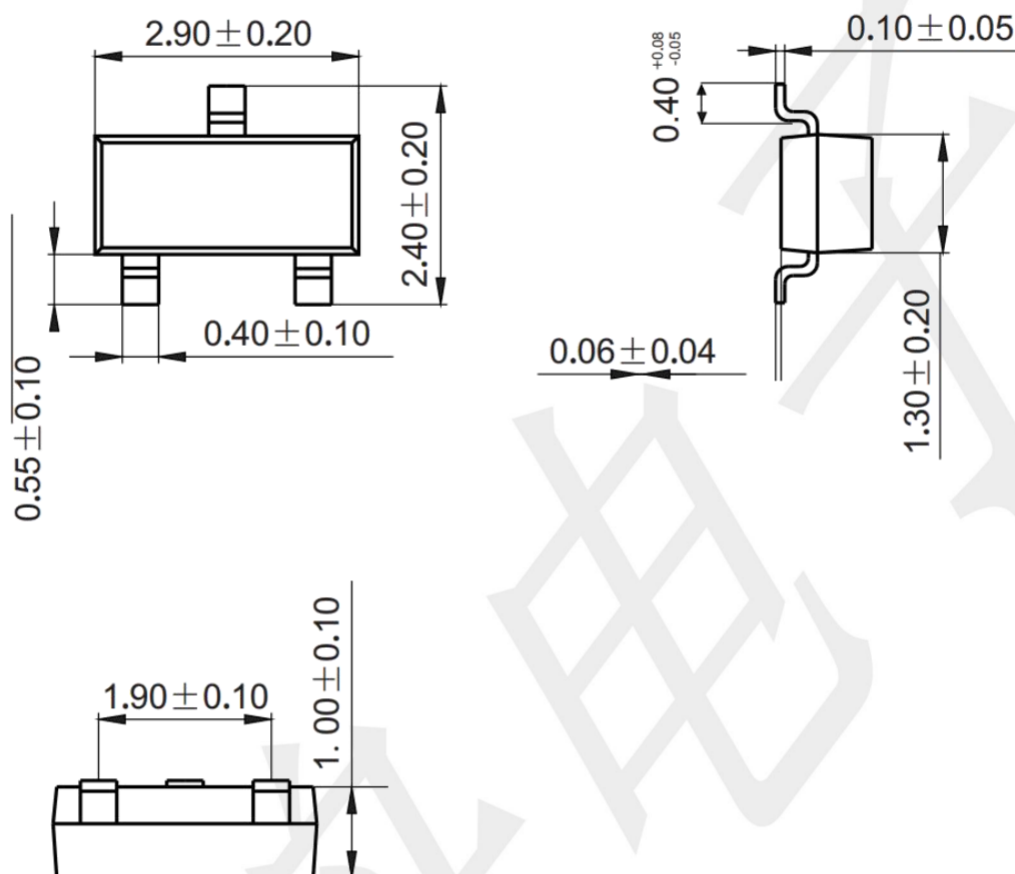


Fig3. Power Derating Curve



## Package Outline Dimensions (unit: mm)

### SOT-23



## Mounting Pad Layout (unit: mm)

