

### Features

- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 20\text{kV}$
    - Contact discharge:  $\pm 20\text{kV}$
  - IEC61000-4-4 (EFT) 40A (5/50ns)
  - IEC61000-4-5 (Lightning) 5A/10A (8/20 $\mu\text{s}$ )
- RoHS Compliant

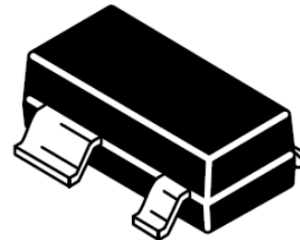
### Applications

- USB Ports
- SIM Ports
- Smart Phones
- Wireless Systems
- Set-top box and digital TV
- Digital video interface (DVI)
- Ethernet 10/100/1000 Base T

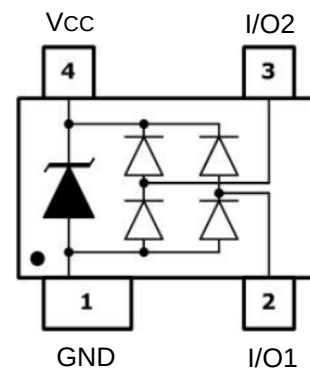
### Mechanical Characteristics

- Package: SOT-143
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Quantity Per Reel: 3000pcs
- Reel Size: 7 inch
- Device Marking: U5V0

### Dimensions SOT-143



### Pin Configuration



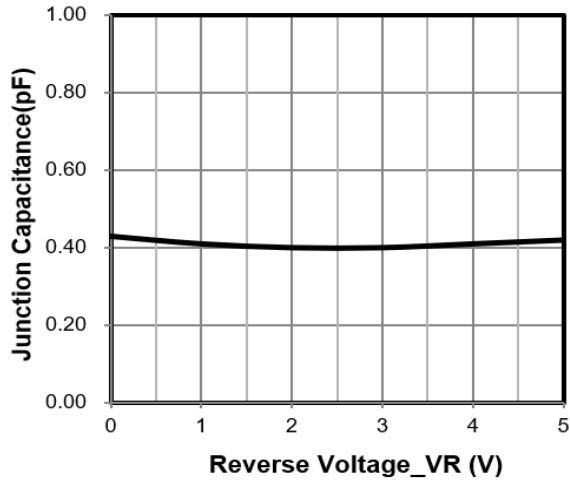
### Absolute Maximum Ratings (T<sub>amb</sub>=25°C unless otherwise specified)

| Parameter                              | Symbol           | Value       | Unit |
|----------------------------------------|------------------|-------------|------|
| Peak Pulse Power (8/20 $\mu\text{s}$ ) | P <sub>pp</sub>  | 150         | W    |
| ESD per IEC 61000-4-2 (Air)            | V <sub>ESD</sub> | $\pm 20$    | kV   |
| ESD per IEC 61000-4-2 (Contact)        |                  | $\pm 20$    |      |
| Operating Temperature Range            | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range              | T <sub>STJ</sub> | -55 to +150 | °C   |

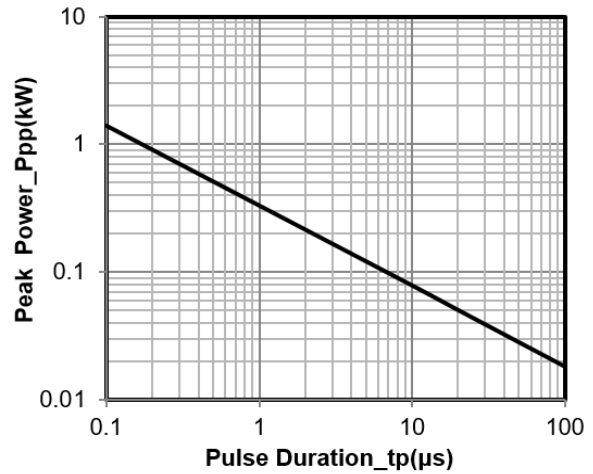
## Electrical Characteristics (TA=25°C unless otherwise specified)

| Parameter               | Symbol    | Test Condition                                                  | Min | Typ  | Max | Unit    |
|-------------------------|-----------|-----------------------------------------------------------------|-----|------|-----|---------|
| Reverse Working Voltage | $V_{RWM}$ |                                                                 |     |      | 5   | V       |
| Breakdown Voltage       | $V_{BR}$  | $I_T = 1mA$                                                     | 6   |      |     | V       |
| Reverse Leakage Current | $I_R$     | $V_{RWM} = 5V$                                                  |     |      | 0.1 | $\mu A$ |
| Clamping Voltage        | $V_C$     | $I_{PP} = 1A$ (8 x 20 $\mu s$ pulse)<br>I/O to GND & VCC to GND |     |      | 10  | V       |
| Clamping Voltage        | $V_C$     | $I_{PP} = 5A$ (8 x 20 $\mu s$ pulse)<br>I/O to GND              |     |      | 15  | V       |
| Clamping Voltage        | $V_C$     | $I_{PP} = 10A$ (8 x 20 $\mu s$ pulse)<br>VCC to GND             |     |      | 15  | V       |
| Junction Capacitance    | $C_J$     | $V_R = 0V$ , $f = 1MHz$<br>I/O to GND                           |     | 0.45 | 0.6 | pF      |
| Junction Capacitance    | $C_J$     | $V_R = 0V$ , $f = 1MHz$<br>I/O to I/O                           |     | 0.22 | 0.3 | pF      |

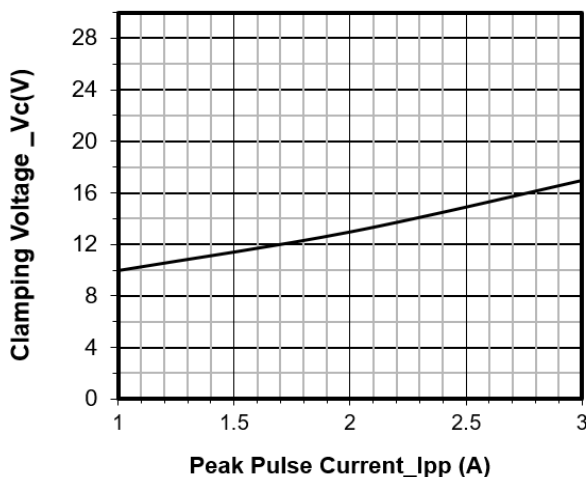
## Typical Performance Characteristics (TA=25°C unless otherwise specified)



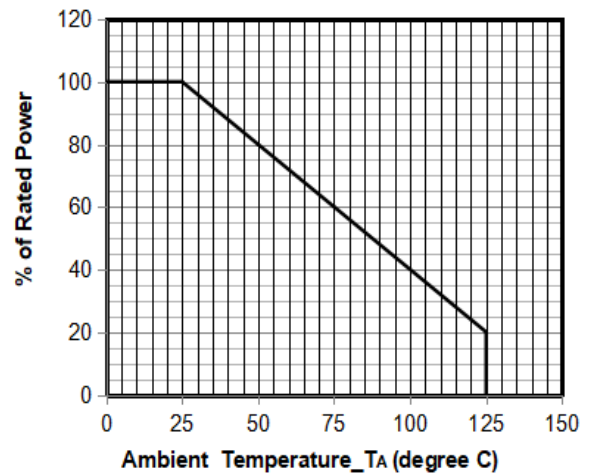
Junction Capacitance vs. Reverse Voltage



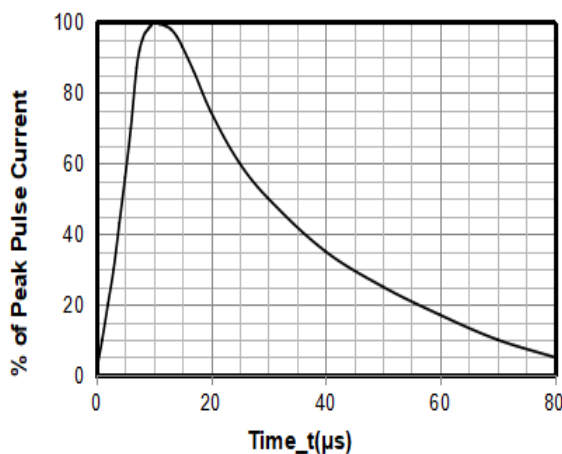
Peak Pulse Power vs. Pulse Time



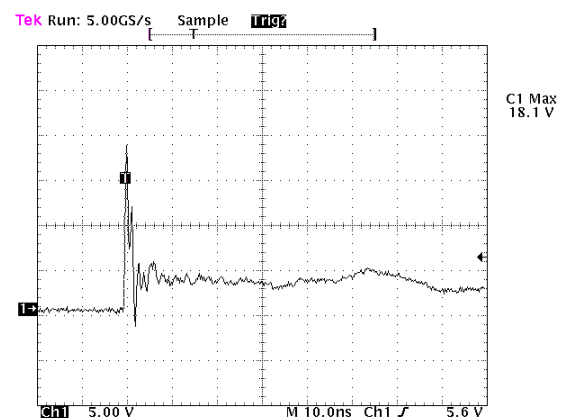
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

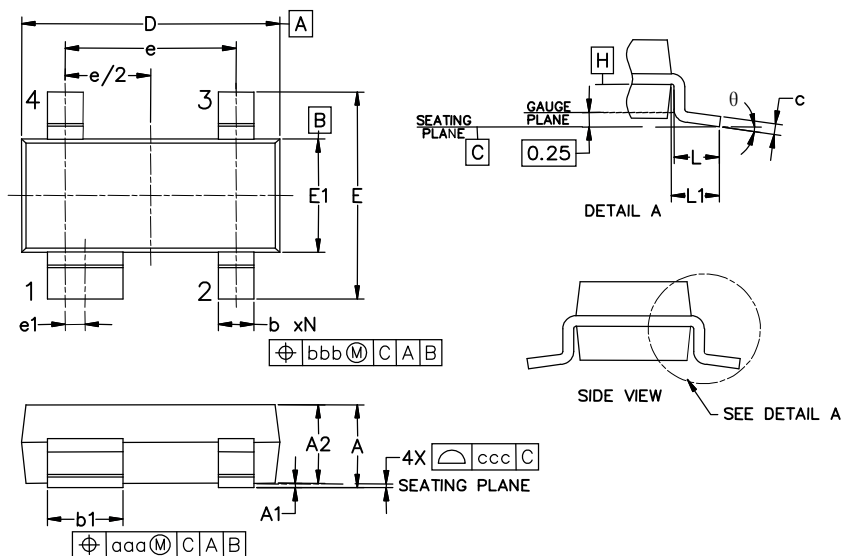


Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

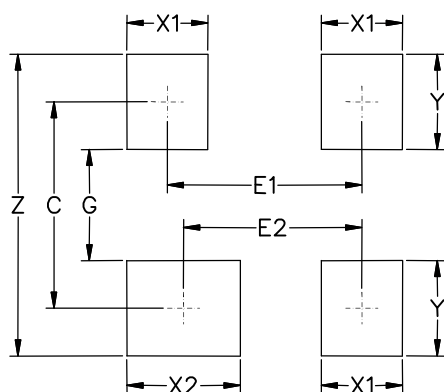
8 kV Contact per IEC61000-4-2

## SOT-143 Package Outline Drawing



| Symbol   | Inches  |       |       | Millimeters |      |      |
|----------|---------|-------|-------|-------------|------|------|
|          | Min.    | Nom.  | Max.  | Min.        | Nom. | Max. |
| A        | 0.031   | -     | 0.048 | 0.80        | -    | 1.22 |
| A1       | 0.000   | -     | 0.008 | 0.013       | -    | 0.15 |
| A2       | 0.020   | 0.035 | 0.042 | 0.75        | 0.90 | 1.07 |
| b        | 0.011   | -     | 0.020 | 0.30        | -    | 0.51 |
| b1       | 0.029   | -     | 0.037 | 0.76        | -    | 0.94 |
| c        | 0.003   | -     | 0.008 | 0.08        | -    | 0.20 |
| D        | 0.110   | 0.114 | 0.120 | 2.80        | 2.90 | 3.04 |
| E        | 0.082   | 0.093 | 0.104 | 2.10        | 2.37 | 2.64 |
| E1       | 0.047   | 0.051 | 0.055 | 1.20        | 1.30 | 1.40 |
| e        | 0.075   |       |       | 1.92 BSC    |      |      |
| e1       | 0.008   |       |       | 0.20 BSC    |      |      |
| L        | 0.015   | 0.020 | 0.024 | 0.40        | 0.50 | 0.60 |
| L1       | (0.021) |       |       | (0.54)      |      |      |
| N        | 4       |       |       | 4           |      |      |
| $\theta$ | 0°      | -     | 8°    | 0°          | -    | 8°   |
| aaa      | 0.006   |       |       | 0.15        |      |      |
| bbb      | 0.008   |       |       | 0.20        |      |      |
| ccc      | 0.004   |       |       | 0.10        |      |      |

## Suggested Land Pattern



| Symbol | Inches  | Millimeters |
|--------|---------|-------------|
| C      | (0.087) | (2.20)      |
| E1     | 0.076   | 1.92        |
| E2     | 0.068   | 1.72        |
| G      | 0.031   | 0.80        |
| X1     | 0.039   | 1.00        |
| X2     | 0.047   | 1.20        |
| Y      | 0.055   | 1.40        |
| Z      | 0.141   | 3.60        |

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