



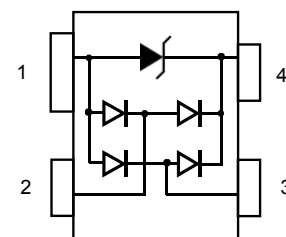
## Discription

The PRTR5V0U2X is a 2-channel ultra low capacitance rail clamp ESD protection diodes array. Each channel consists of a pair of ESD diodes that steer positive or negative ESD current to either the positive or negative rail. A zener diode is integrated in to the array between the positive and negative supply rails. In the typical applications, the negative rail pin (assigned as GND) is connected with system ground. The Positive ESD current is steered to the ground through an ESD diode and Zener diode and the positive ESD voltage is clamped to the zener voltage.



Pin 1

SOT-143



Circuit Diagram

## Features

- 350 W Peak Power per Line ( $t_p = 8/20\mu s$ )
- SOT-143 package
- ESD Protection > 15 kV
- Unidirectional configurations
- Protects 2 I/O Ports & Power Supply
- Low Capacitance: 4 pF
- Low clamping voltage
- RoHS Compliant in Lead-Free Versions
- Transient protection for data lines to IEC 61000-4-2(ESD)  
 $\pm 15KV$ (air)  $\pm 8KV$ (contact); IEC 61000-4-4 (EFT) 40A (5/50ns)

## Ordering information

| Product ID | Pack    | Qty(PCS) |
|------------|---------|----------|
| PRTR5V0U2X | SOT-143 | 3000     |

## Absolute Ratings ( $T_{amb}=25^{\circ}C$ )

| Symbol    | Parameter                                         | Value                              | Units                     |
|-----------|---------------------------------------------------|------------------------------------|---------------------------|
| $P_{PP}$  | Peak Pulse Power ( $t_p = 8/20\mu s$ )            | 350                                | W                         |
| $T_L$     | Maximum lead temperature for soldering during 10s | 260                                | $^{\circ}C$               |
| $T_{stg}$ | Storage Temperature Range                         | -55 to +150                        | $^{\circ}C$               |
| $T_{op}$  | Operating Temperature Range                       | -40 to +125                        | $^{\circ}C$               |
| $T_j$     | Maximum junction temperature                      | 150                                | $^{\circ}C$               |
|           | IEC61000-4-2 (ESD)                                | air discharge<br>contact discharge | $\pm 15$<br>$\pm 8$<br>KV |



## Electrical Characteristics

| Parameter                      | Symbol    | Conditions                       | Min. | Typ. | Max. | Units   |
|--------------------------------|-----------|----------------------------------|------|------|------|---------|
| Reverse Stand-off Voltage      | $V_{RWM}$ |                                  |      |      | 5    | V       |
| Reverse Breakdown Voltage      | $V_{BR}$  | $I_t = 1mA$                      | 6    |      | 8.5  | V       |
| Reverse Leakage Current        | $I_R$     | $V_{RWM} = 5.0V, T = 25^\circ C$ |      |      | 1    | $\mu A$ |
| Clamping Voltage               | $V_C$     | $I_{PP} = 1A, t_P = 8/20\mu s$   |      |      | 12.5 | V       |
| Clamping Voltage               | $V_C$     | $I_{PP} = 5A, t_P = 8/20\mu s$   |      |      | 24.0 | V       |
| Capacitance Between IO and GND | $C_J$     | $V_R = 0V, f = 1MHz$             |      | 5.0  |      | pF      |
| Capacitance Between IO and I/O | $C_J$     | $V_R = 0V, f = 1MHz$             |      | 1.5  |      | pF      |

## Characteristic Curves

FIG1: Pulse Waveform

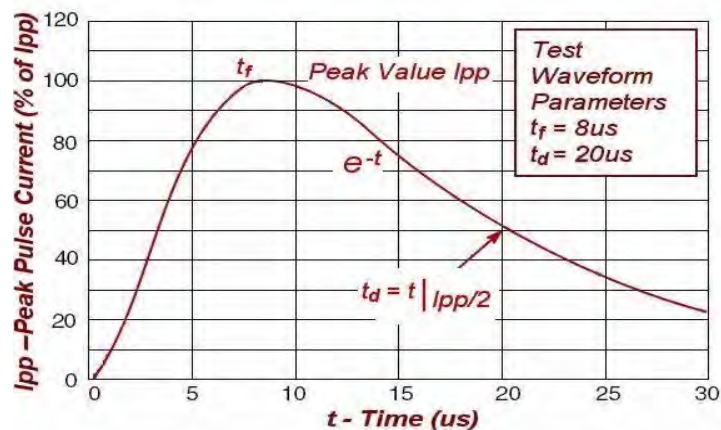
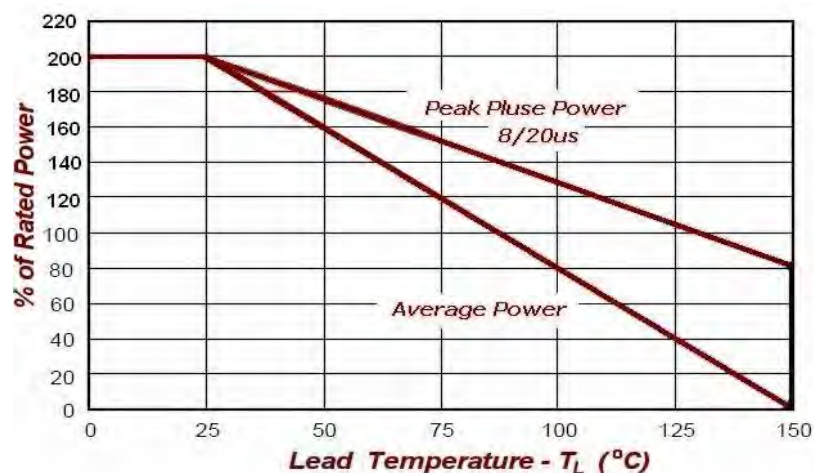
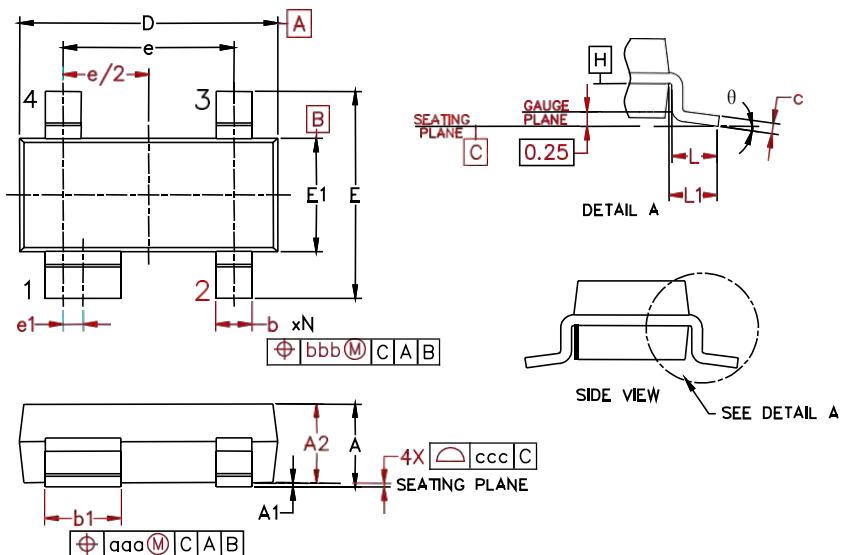


FIG2: Power Derating





## Package Mechanical Data



| 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           |      |      |
| θ      | 0°      | -     | 8°    | 0°          | -    | 8°   |
| aaa    | 0.006   |       |       | 0.15        |      |      |
| bbb    | 0.008   |       |       | 0.20        |      |      |
| ccc    | 0.004   |       |       | 0.10        |      |      |



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