

## Features

- ◆ Supports USB 3.0 data rates (5 Gbps)
- ◆ Ultra low capacitance: 0.4pF typical I/O to GND
- ◆ Ultra low leakage: nA level
- ◆ Low operating voltage: 5.5V
- ◆ Uni-directional TVS Diode Array
- ◆ Low clamping voltage
- ◆ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test  
Air discharge: ±20kV  
Contact discharge: ±18kV
  - IEC61000-4-5 (Lightning) 3.3A (8/20 μs)
  - IEC61000-4-4 (EFT) 40A (5/50ns)
- ◆ ROHS Compliant

## Ordering Information

| Part Number     | Qty per Reel | Reel Size |
|-----------------|--------------|-----------|
| TPD2E009DRTR-TP | 8000         | 7"        |

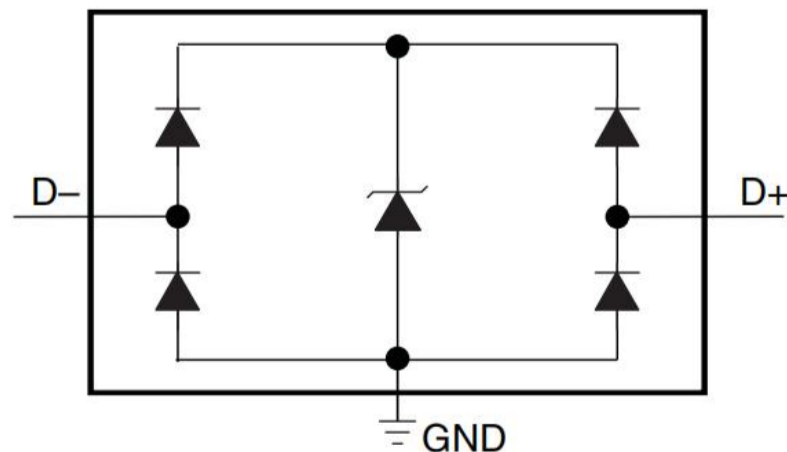
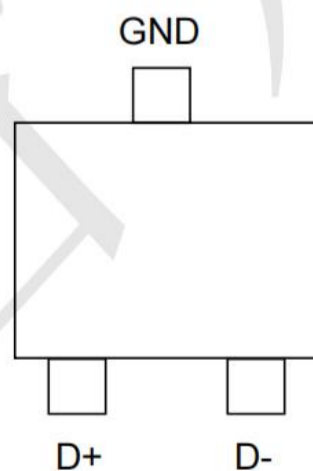
## Mechanical Characteristics

- Package: SOT-723
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Shipping Qty : 8000pcs/7Inch Tape & Reel

## Applications

- Notebooks
- Set-top boxes
- DVD players
- Media players
- Portable computers

## Dimensions and Pin Configuration



**Marking: L6 □**

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

| Parameter  | Symbol           | Value       | Unit |
|--|------------------|-------------|------|
| Peak Pulse Power (8/20μs)                                    | P <sub>pk</sub>  | 50          | W    |
| ESD per IEC61000-4-2 (Air)<br>ESD per IEC61000-4-2 (Contact) | V <sub>ESD</sub> | ±20<br>±18  | kV   |
| Operating Temperature Range                                  | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range                                    | T <sub>stg</sub> | -55 to +150 | °C   |

**Electrical Characteristics** (T<sub>A</sub>=25°C unless otherwise specified)

| Parameter                            | Symbol            | Min | Typ | Max  | Unit | Test Condition                               |
|--------------------------------------|-------------------|-----|-----|------|------|--|
| Reverse Working Voltage              | V <sub>RWM</sub>  |     |     | 5.5  | V    |  |
| Breakdown Voltage                    | V <sub>BR</sub>   | 7   |     |      | V    | I <sub>T</sub> =1mA                          |
| Leakage Current                      | I <sub>Leak</sub> |     |     | 100  | nA   | V <sub>RWM</sub> =2.5V                       |
| Dynamic resistance                   | R <sub>DYN</sub>  |     | 0.6 |      | Ω    | any I/O pin to GND                           |
| Clamping Voltage (I/O-GND)           | V <sub>C</sub>    |     |     | 13   | V    | I <sub>PP</sub> =1A, T <sub>p</sub> =8/20 μs |
| Clamping Voltage (I/O-GND)           | V <sub>C</sub>    |     |     | 18   | V    | I <sub>PP</sub> =3A, T <sub>p</sub> =8/20 μs |
| Junction Capacitance<br>(I/O to GND) | C <sub>J</sub>    |     | 0.4 |      | pF   | V <sub>R</sub> =0V, f=1MHz,                  |
| Junction Capacitance<br>(I/O to I/O) | C <sub>J</sub>    |     | 0.2 | 0.35 | pF   | V <sub>R</sub> =0V, f=1MHz,                  |

**Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)**

Fig1. 8/20 $\mu\text{s}$  Pulse Waveform

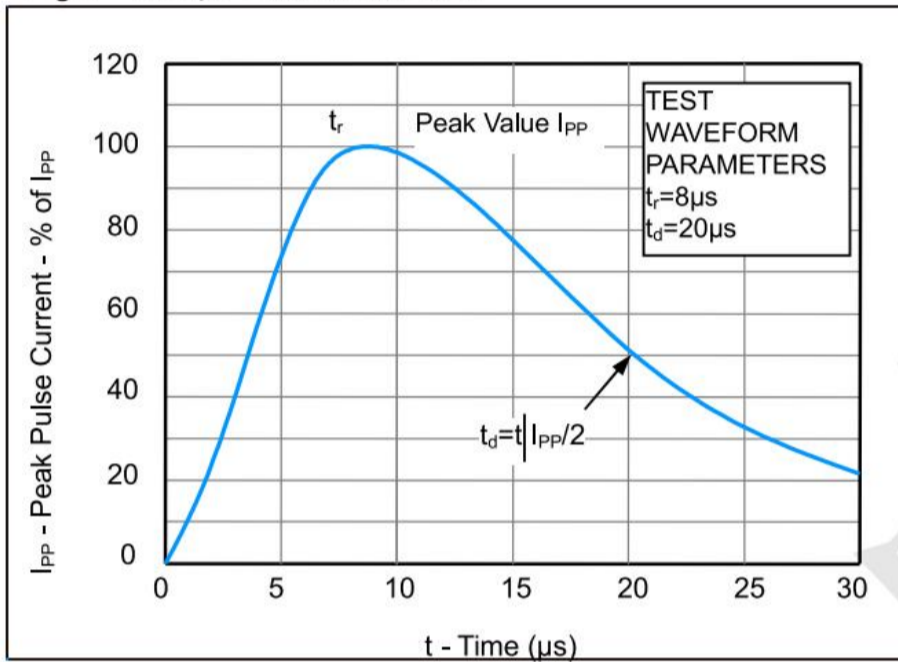


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

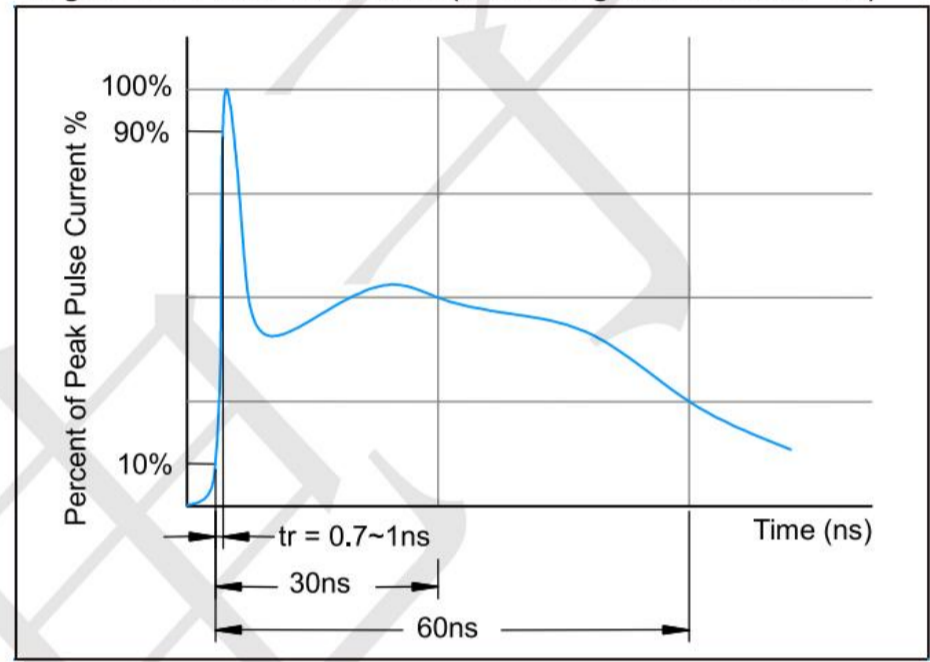
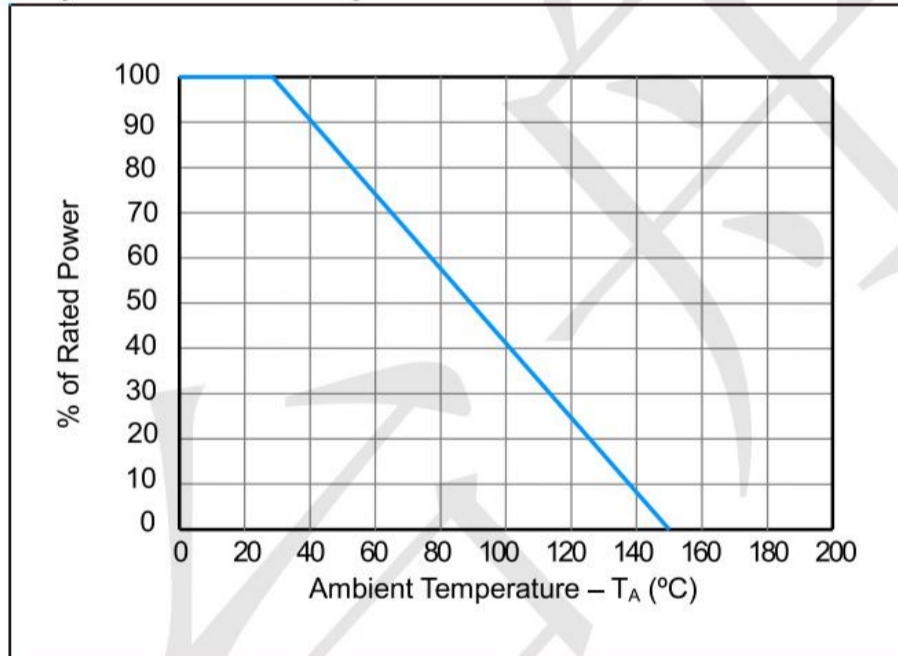
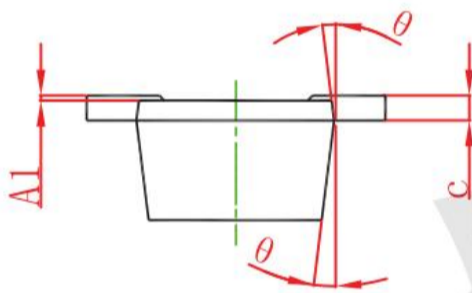
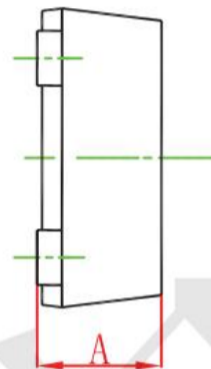
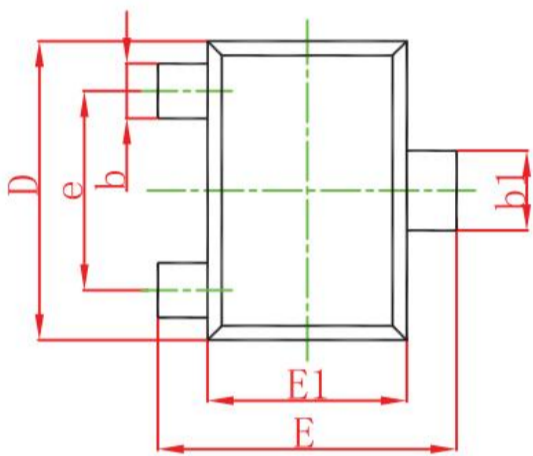


Fig3. Power Derating Curve



**SOT-723 Package Outline Dimensions**



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.430                     | 0.500 | 0.017                | 0.020 |
| A1     | 0.000                     | 0.050 | 0.000                | 0.002 |
| b      | 0.170                     | 0.270 | 0.007                | 0.011 |
| b1     | 0.270                     | 0.370 | 0.011                | 0.015 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 1.150                     | 1.250 | 0.045                | 0.049 |
| E      | 1.150                     | 1.250 | 0.045                | 0.049 |
| E1     | 0.750                     | 0.850 | 0.030                | 0.033 |
| e      | 0.800TYP.                 |       | 0.031TYP.            |       |
| θ      | 7° REF.                   |       | 7° REF.              |       |

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