

Features

- ◆ Ultra low capacitance: 0.3pF typical (I/O to I/O)
- ◆ Ultra low leakage: nA level
- ◆ Low operating voltage: 5V
- ◆ Low clamping voltage
- ◆ Up to 4 data lines and one power line protects
- ◆ Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 25\text{kV}$
 - IEC61000-4-4 (EFT) 40A (5/50ns)
 - IEC61000-4-5 (Lightning) : 3A(8/20 μs)
- ◆ ROHS Compliant

Ordering Information

| Part Number | Qty per Reel | Reel Size |
|--------------|--------------|-----------|
| TPAZC099-04S | 3000 | 7" |

Mechanical Characteristics

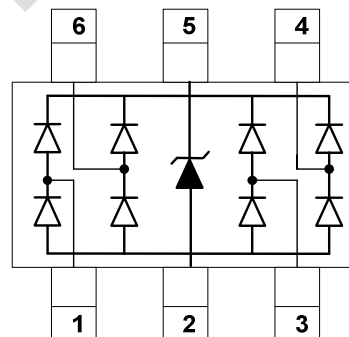
- ◆ Package: SOT23-6
- ◆ Lead Finish: Matte Tin
- ◆ Case Material: "Green" Molding Compound.
- ◆ UL Flammability Classification Rating 94V-0
- ◆ Moisture Sensitivity: Level 3 per J-STD-020



Applications

- ◆ USB 2.0 and USB 3.0 Ports
- ◆ USB OTG
- ◆ Digital video interface(DVI)
- ◆ Monitor and Flat Panel Displays
- ◆ PCI Express and Serial SATA Ports
- ◆ Gigabit Ethernet
- ◆ IEEE 1394 firewire ports
- ◆ Consumer products (STB, DVD, DSC, DVC...)

Dimensions and Pin Configuration



Circuit and Pin Schematic

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

| Parameter | Symbol | Value | Unit |
|--|--------|-------------|------|
| Peak Pulse Power (tp=8/20μs) | PPP | 60 | W |
| Peak Pulse Current (tp=8/20μs) | IPP | 3 | A |
| ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact) | VESD | ±30 ±25 | 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 | | | 5 | V | Any I/O pin to ground |
| Breakdown Voltage | VBR | 6 | | | V | IT = 1mA, any I/O pin to ground |
| Reverse Leakage Current | IR | | | 0.5 | μA | VRWM = 5V, any I/O pin to ground |
| Clamping Voltage | VC | | | 15 | V | IPP = 1A (8 x 20μs pulse) any I/O pin to ground |
| Clamping Voltage | VC | | | 20 | V | IPP = 3A (8 x 20μs pulse) any I/O pin to ground |
| Junction Capacitance | CJ | | 0.3 | 0.4 | pF | VR = 0V, f = 1MHz, between I/O pins |
| Junction Capacitance | CJ | | | 0.8 | pF | VR = 0V, f = 1MHz, any I/O pin to ground |

Note 1: I/O pins are Pin 1, 3, 4 and 6

PROTECTION PRODUCTS
Typical characteristics

Fig1. 8/20μs Pulse Waveform

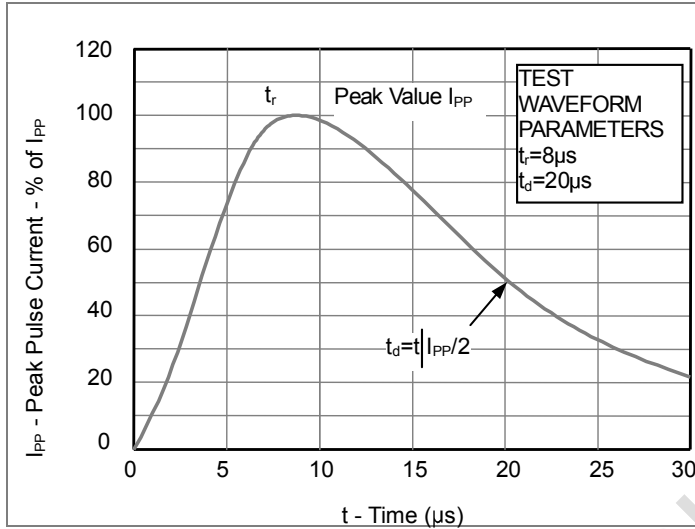


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

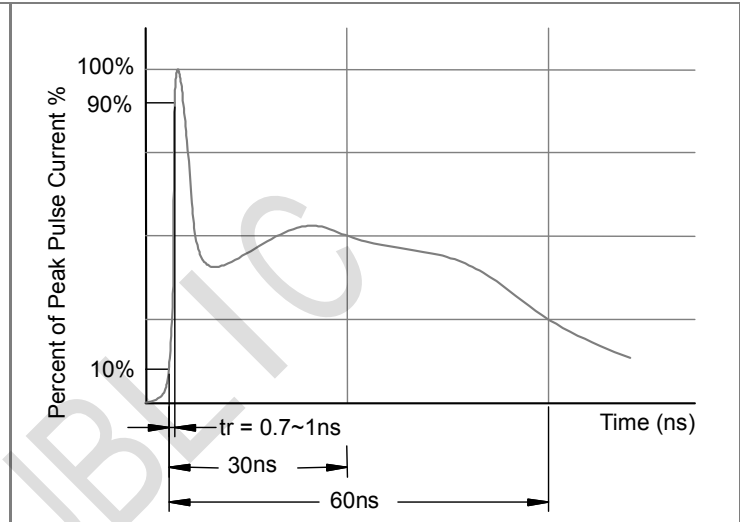
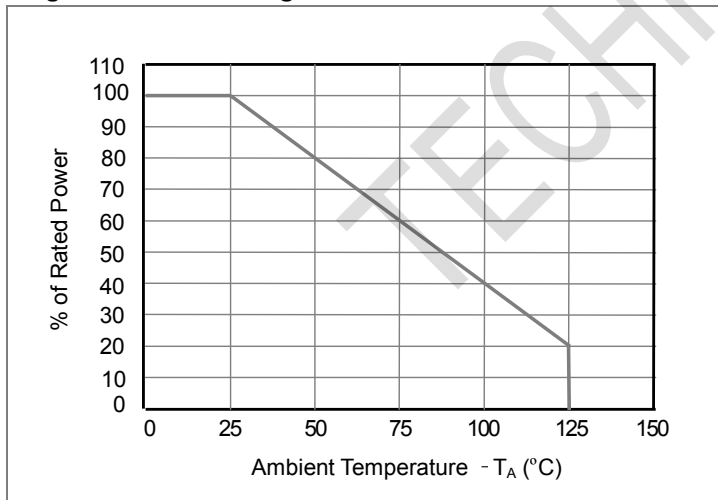
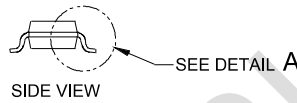
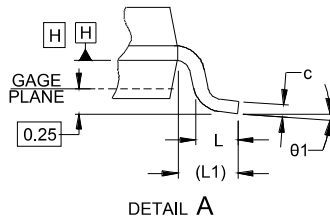
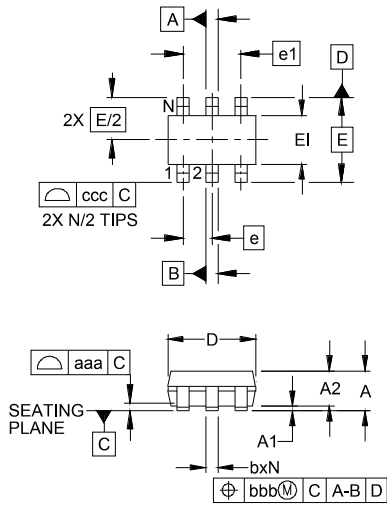


Fig3. Power Derating Curve

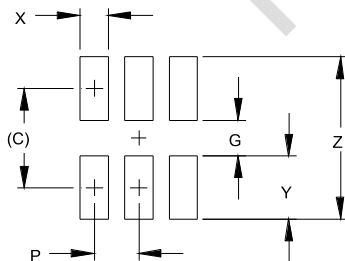


Outline Drawing - SOT23-6



| DIM | INCHES | | | MILLIMETERS | | |
|---------|----------|------|------|-------------|------|------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | .035 | - | .057 | 0.90 | - | 1.45 |
| A1 | .000 | - | .006 | 0.00 | - | 0.15 |
| A2 | .035 | .045 | .051 | .90 | 1.15 | 1.30 |
| b | .010 | - | .020 | 0.25 | - | 0.50 |
| c | .003 | - | .009 | 0.08 | - | 0.22 |
| D | .110 | .114 | .118 | 2.80 | 2.90 | 3.00 |
| E1 | .060 | .063 | .069 | 1.50 | 1.60 | 1.75 |
| E | .110 BSC | | | 2.80 BSC | | |
| e | .037 BSC | | | 0.95 BSC | | |
| e1 | .075 BSC | | | 1.90 BSC | | |
| L | .012 | .018 | .024 | 0.30 | 0.45 | 0.60 |
| L1 | (0.024) | | | (0.60) | | |
| N | 6 | | | 6 | | |
| theta 1 | 0° | - | 10° | 0° | - | 10° |
| aaa | .004 | | | 0.10 | | |
| bbb | .008 | | | 0.20 | | |
| ccc | .008 | | | 0.20 | | |

Land Pattern - SOT23-6



| DIM | DIMENSIONS | |
|-----|------------|-------------|
| | INCHES | MILLIMETERS |
| C | (.098) | (2.50) |
| G | .055 | 1.40 |
| P | .037 | 0.95 |
| X | .024 | 0.60 |
| Y | .043 | 1.10 |
| Z | .141 | 3.60 |

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