

Features

- Low capacitance for high speed interfaces
- Ultra low leakage: nA level
- Low operating voltage: 3.3V
- Ultra low clamping voltage
- Protects two lines in common and differential mode
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-5 (Lightning) 55A (8/20 μs)
- RoHS Compliant

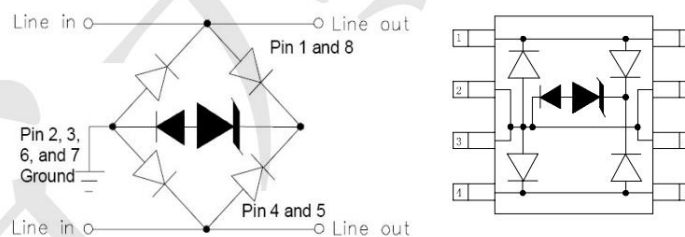
Mechanical Characteristics

- Package: SO-8
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Shipping Qty :2500pcs/7Inch Tape & Reel

Applications

- T1/E1 Line Cards
- T3/E3 and DS3 Interfaces
- STS-1 Interfaces
- 10/100/1000 BaseT Ethernet
- Set Top Box
- ISDN Interfaces
- Low Voltage Interfaces

Dimensions and Pin Configuration



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

| Parameter | Symbol | Value | Unit |
|--|------------------|-------------|------|
| Peak Pulse Power(8/20μs) | Ppk | 1500 | W |
| Peak Pulse Current(8/20μs) | I _{PP} | 55 | A |
| ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact) | V _{ESD} | ±30 ±30 | kV |
| Operating Temperature Range | T _J | -40 to +125 | °C |
| Storage Temperature Range | T _{stg} | -55 to +150 | °C |

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

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|------------------|-----|-----|-----|------|--|
| Reverse Working Voltage | V _{RWM} | | | 3.3 | V | |
| Punch-Through Voltage | V _P | 3.5 | | | V | I _T = 2μA |
| Snap-Back Voltage | V _{SB} | 2.8 | | | V | I _T = 50mA |
| Reverse Leakage Current | I _R | | | 0.5 | μA | V _{RWM} = 3.3V |
| Clamping Voltage | V _C | | | 7 | V | I _{PP} = 1A (8 x 20μs pulse), any I/O pin to ground |
| Clamping Voltage | V _C | | | 22 | V | I _{PP} = 50A (8 x 20μs pulse), between I/O pins |
| Clamping Voltage | V _C | | | 25 | V | I _{PP} = 55A (8 x 20μs pulse), any I/O pin to ground |
| Junction Capacitance | C _J | | 3 | 5 | pF | V _R = 0V, f = 1MHz, between I/O pins and ground |
| Junction Capacitance | C _J | | 1.5 | 2.5 | pF | V _R = 0V, f = 1MHz, between I/O pins |

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

Fig1. 8/20 μs Pulse Waveform

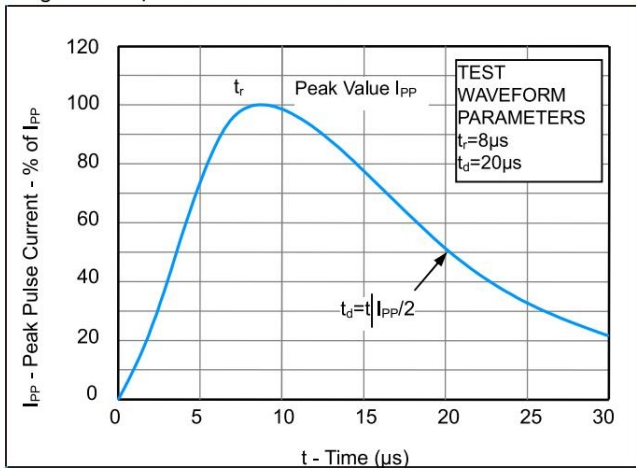


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

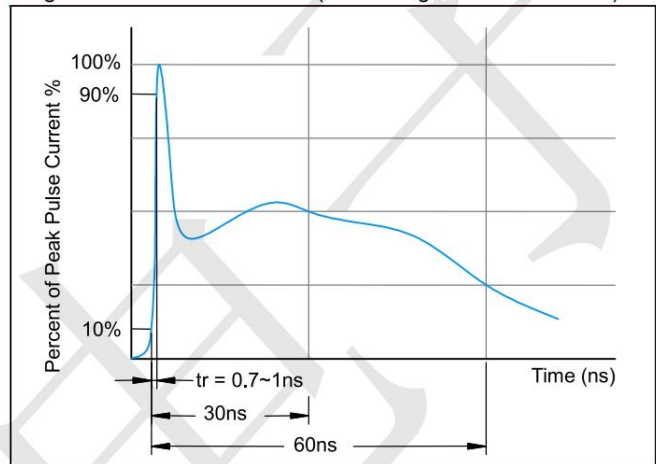
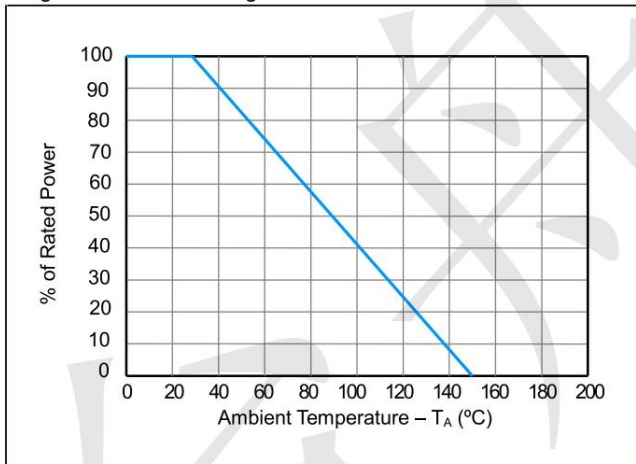
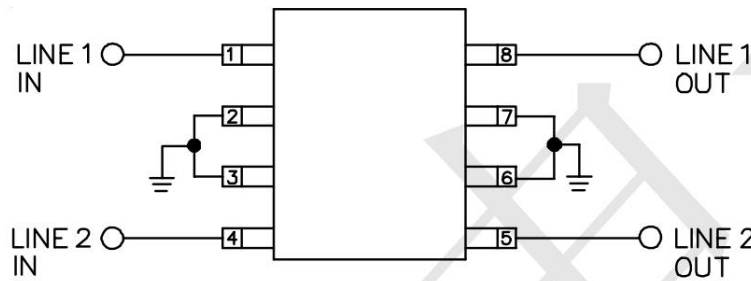


Fig3. Power Derating Curve

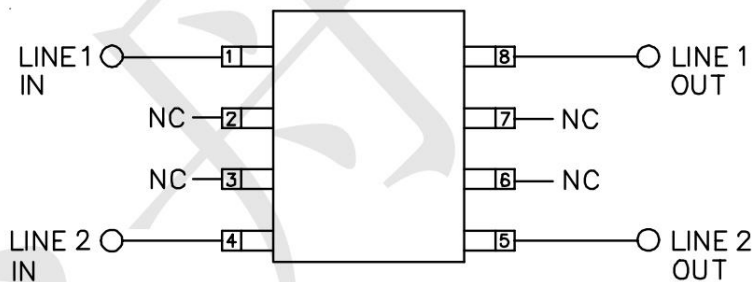


Typical Application

The LC03-3.3 is designed to protect two high speed data lines (one differential pair) from transient over - voltages which result from lightning and ESD. The device can be configured to protect in differential (Line to Line) and common (Line to Ground) mode. Data line inputs/outputs are connected at pins 1 to 8, and 4 to 5 as shown below. Pins 2, 3, 6, 7 are connected to ground. These pins should be connected directly to a ground plane on the board for the best results, the path length is kept as short as possible to minimize parasitic inductance. In applications where high common voltages are present, differential protection is achieved by leaving pins 2, 3, 6, and 7 not connected.

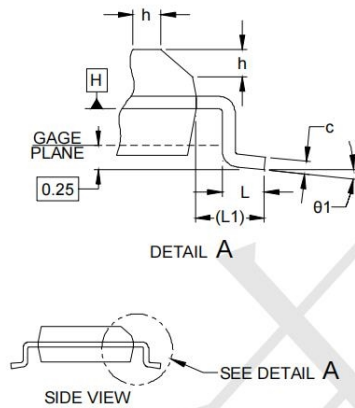
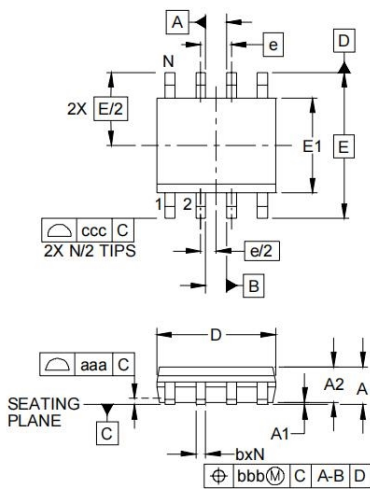


Connection for differential (Line to Line) and common mode protection (Line to Ground)



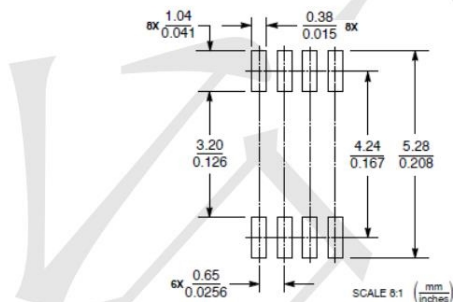
Connection for differential protection (Line to Line)

SOP-8 Package Outline Drawing (0402)



| DIM | INCHES | | MILLIMETERS | |
|------------|----------|-----------|-------------|-----------|
| | MIN | NOM MAX | MIN | NOM MAX |
| A | .053 | -.069 | 1.35 | - 1.75 |
| A1 | .004 | -.010 | 0.10 | - 0.25 |
| A2 | .049 | -.065 | 1.25 | - 1.65 |
| b | .012 | -.020 | 0.31 | - 0.51 |
| c | .007 | -.010 | 0.17 | - 0.25 |
| D | .189 | .193 .197 | 4.80 | 4.90 5.00 |
| E1 | .150 | .154 .157 | 3.80 | 3.90 4.00 |
| E | .236 BSC | | 6.00 BSC | |
| e | .050 BSC | | 1.27 BSC | |
| h | .010 | -.020 | 0.25 | - 0.50 |
| L | .016 | .028 .041 | 0.40 | 0.72 1.04 |
| L1 | (.041) | | (1.04) | |
| N | 8 | | 8 | |
| θ_1 | 0° | - 8° | 0° | - 8° |
| aaa | .004 | | 0.10 | |
| bbb | .010 | | 0.25 | |
| ccc | .008 | | 0.20 | |

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