

**Description**

The UL2508P8 is a low capacitance high power TVS, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The UL2508P8 complies with the IEC 61000-4-2 (ESD) standard with  $\pm 30\text{kV}$  air and  $\pm 30\text{kV}$  contact discharge. It is assembled into a 8-pin SOP-8 lead-free package. Each device will protect two line pairs high-speed lines. The combination of small size, low capacitance, and high surge capability makes them ideal for use in applications such as Gigabit Ethernet, telecommunication lines, and LVDS interfaces.

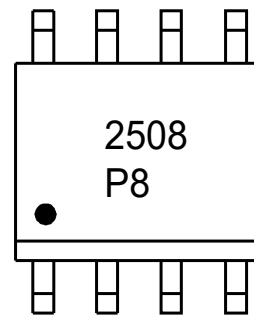
**Features**

- ◆ Low capacitance: 3pF typical
- ◆ Ultra low leakage: nA level
- ◆ Operating voltage: 2.5V
- ◆ Ultra low clamping voltage
- ◆ Protects up to eight lines
- ◆ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test  
Air discharge:  $\pm 30\text{kV}$   
Contact discharge:  $\pm 30\text{kV}$
  - IEC 61000-4-5 (Lightning) 40A (8/20 $\mu\text{s}$ )
- ◆ RoHS Compliant

**Mechanical Characteristics**

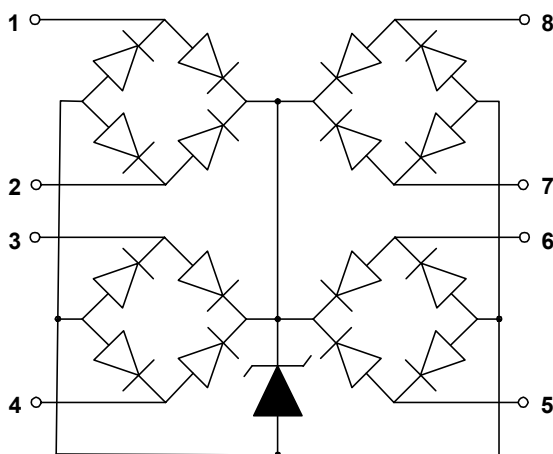
- ◆ Package: SOP-8
- ◆ Case Material: “Green” Molding Compound.
- ◆ Moisture Sensitivity: Level 3 per J-STD-020
- ◆ Terminal Connections: See Diagram Below
- ◆ Marking Information: See Below

**Marking Information**



2508 P8= Device Marking Code  
Dot denotes pin1

**Dimensions and Pin Configuration**



**Applications**

- ◆ LVDS Interfaces
- ◆ 10/100/1000 Ethernet
- ◆ Notebooks, Desktops, Servers
- ◆ Networking Equipment
- ◆ Switching Systems
- ◆ Audio/Video Inputs

**Ordering Information**

| Part Number | Marking | Packaging        | Reel Size |
|-------------|---------|------------------|-----------|
| UL2508P8    | 2508 P8 | 2500/Tape & Reel | 13 inch   |

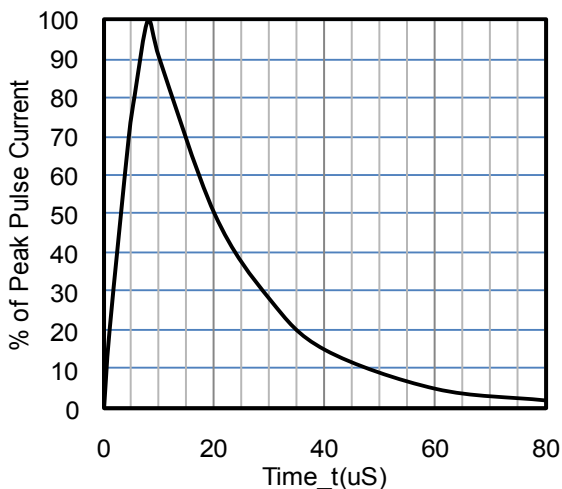
**Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

| Parameter                               | Symbol | Value       | Unit               |
|---|--------|-------------|--------------------|
| Peak Pulse Power(8/20 $\mu\text{s}$ )   | Ppk    | 1000        | W                  |
| Peak Pulse Current(8/20 $\mu\text{s}$ ) | Ipp    | 40          | A                  |
| ESD per IEC 61000-4-2 (Air)             | VESD   | $\pm 30$    | kV                 |
| ESD per IEC 61000-4-2 (Contact)         |        | $\pm 30$    |                    |
| Operating Temperature Range             | TJ     | -55 to +125 | $^{\circ}\text{C}$ |
| Storage Temperature Range               | Tstg   | -55 to +125 | $^{\circ}\text{C}$ |

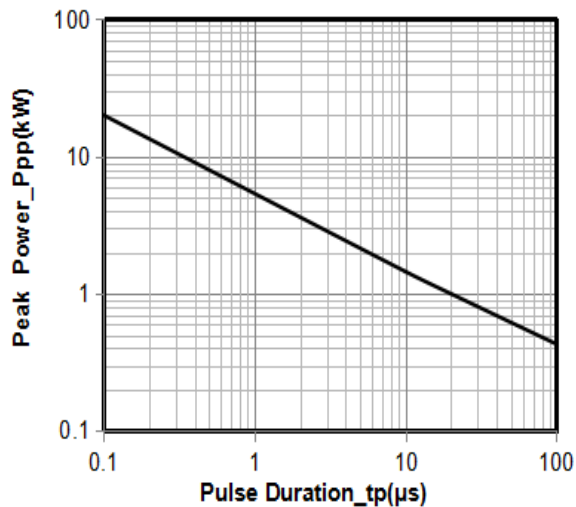
**Electrical Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

| Parameter               | Symbol | Min | Typ | Max | Unit          | Test Condition   |
|-------------------------|--------|-----|-----|-----|---------------|--|
| Reverse Working Voltage | VRWM   |     |     | 2.5 | V             |  |
| Punch-Through Voltage   | VPT    | 3.0 |     |     | V             | IT = 2 $\mu\text{A}$   |
| Snap-Back Voltage       | VSB    | 3.0 |     |     | V             | ISB = 50mA   |
| Reverse Leakage Current | IR     |     |     | 0.1 | $\mu\text{A}$ | VRWM = 2.5V  |
| Clamping Voltage        | VC     |     |     | 7   | V             | I <sub>PP</sub> = 1A (8 x 20 $\mu\text{s}$ pulse), I/O to I/O  |
| Clamping Voltage        | VC     |     |     | 13  | V             | I <sub>PP</sub> = 10A (8 x 20 $\mu\text{s}$ pulse), I/O to I/O   |
| Clamping Voltage        | VC     |     |     | 24  | V             | I <sub>PP</sub> = 25A (8 x 20 $\mu\text{s}$ pulse), I/O to I/O   |
| Clamping Voltage        | VC     |     |     | 25  | V             | I <sub>PP</sub> = 40A (8 x 20 $\mu\text{s}$ pulse), line to line ( two I/O pins connected together on each line) |
| Junction Capacitance    | CJ     |     |     | 3.0 | pF            | VR = 0V, f = 1MHz, between I/O pins  |
| Junction Capacitance    | CJ     |     |     | 3.0 | pF            | VR = 0V, f = 1MHz, any line to line  |

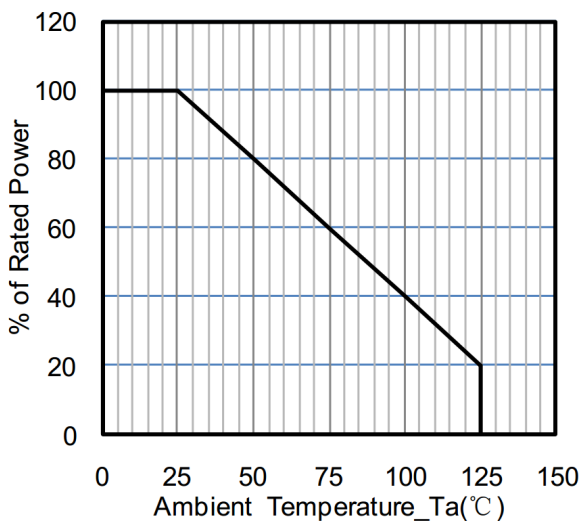
**Typical Performance Characteristics (TA=25°C unless otherwise Specified)**



8 X 20 s Pulse Waveform

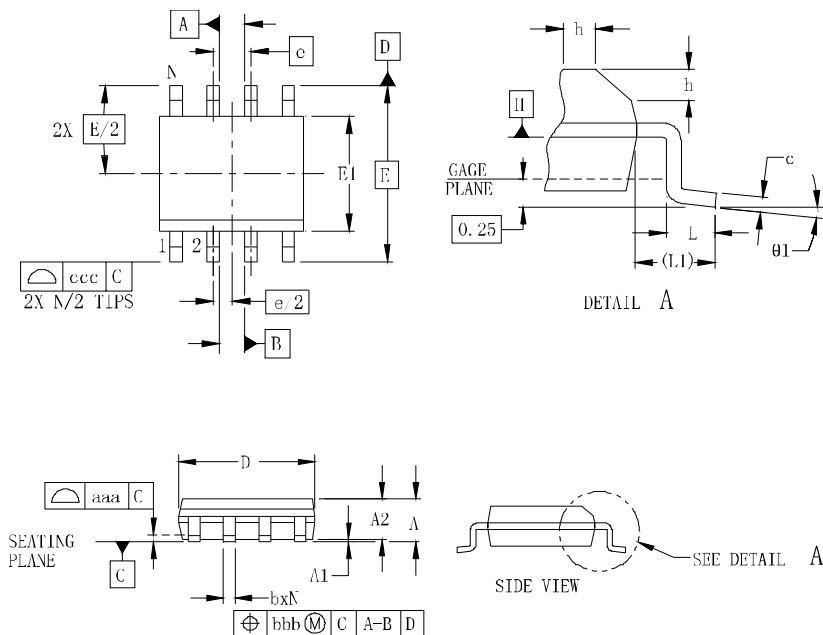


Peak Pulse Power vs. Pulse Time



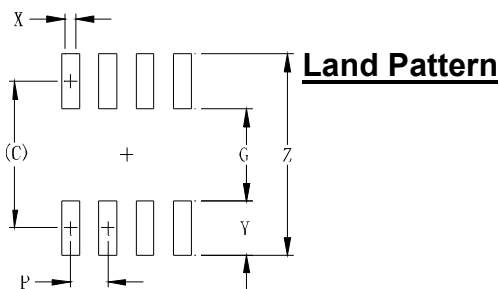
Power Derating Curve

### SO-8 Package Outline Drawing



| SYM    | DIMENSIONS  |      |      |           |       |       |
|--------|-------------|------|------|-----------|-------|-------|
|        | MILLIMETERS |      |      | INCHES    |       |       |
|        | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A      | 1.35        |      | 1.75 | 0.053     |       | 0.069 |
| A1     | 0.10        |      | 0.25 | 0.004     |       | 0.010 |
| A2     | 1.25        |      | 1.65 | 0.049     |       | 0.065 |
| b      | 0.31        |      | 0.51 | 0.012     |       | 0.020 |
| c      | 0.17        |      | 0.25 | 0.007     |       | 0.010 |
| D      | 4.80        | 4.90 | 5.00 | 0.189     | 0.193 | 0.197 |
| E      | 6.00 BSC    |      |      | 0.236 BSC |       |       |
| e      | 1.27 BSC    |      |      | 0.050 BSC |       |       |
| h      | 0.25        |      | 0.50 | 0.010     |       | 0.020 |
| L      | 0.40        | 0.72 | 1.04 | 0.016     | 0.028 | 0.041 |
| L1     | (1.04)      |      |      | (0.041)   |       |       |
| N      | 8           |      |      | 8         |       |       |
| theta1 | 0°          |      | 8°   | 0°        |       | 8°    |
| aaa    | 0.10        |      |      | 0.004     |       |       |
| bbb    | 0.25        |      |      | 0.010     |       |       |
| ccc    | 0.20        |      |      | 0.008     |       |       |

### Suggested



| SYM | DIMENSIONS  |        |
|-----|-------------|--------|
|     | MILLIMETERS | INCHES |
| C   | (5.20)      | 0.205  |
| G   | 3.00        | 0.118  |
| P   | 1.27        | 0.050  |
| X   | 0.60        | 0.024  |
| Y   | 2.20        | 0.087  |
| Z   | 7.40        | 0.291  |