

2-Line Low Capacitance TVS Array

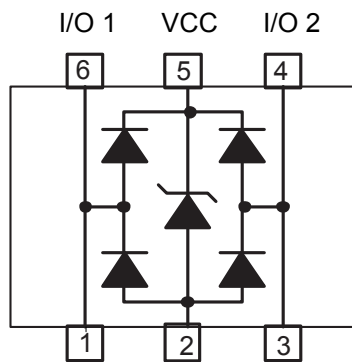
Description

The EPL0552S2 is a low capacitance TVS array, 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 EPL0552S2 has an ultra-low capacitance with a typical value at 0.4pF, and complies with the IEC 61000-4-2 (ESD) standard with ±30kV air and ±25kV contact discharge. It is assembled into a 6-pin lead-free SOT23-6 package. The low capacitance array make it ideal for four high speed data and transmission line. This device is optimized for ESD protection of portable electronics.

Mechanical Characteristics

- Package: SOT23-6
- Lead Finish: Matte Tin
- UL Flammability Classification Rating 94V-0
- Case Material: “Green” Molding Compound
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Dimensions and Pin Configuration



Circuit and Pin Schematic

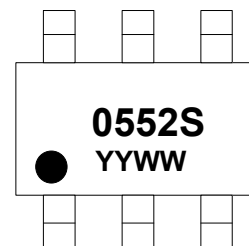
Features

- Ultra low capacitance: 0.4pF typical (I/O to I/O)
- Ultra low leakage: nA level
- Low operating voltage: 5V
- Low clamping voltage
- 2 data lines and one power line protects
- Complies with following standards:
- IEC 61000-4-2 (ESD) immunity test
 - Air discharge: ±30kV
 - Contact discharge: ±25kV
 - IEC61000-4-4 (EFT) 40A (5/50ns)
 - IEC61000-4-5 (Lightning) : 5A(8/20µs)
- ROHS Compliant
- AEC-Q101 qualified (Automotive grade with suffix "Q".)
- Expsemi electronics

Applications

- USB 2.0 Ports
- Digital video interface(DVI)
- Monitor and Flat Panel Displays
- Gigabit Ethernet

Marking Information



0552S = Device Marking Code

YYWW=Date Code

Dot denotes Pin1

Ordering Information

| Part Number | Marking | Packaging | Reel Size |
|-------------|---------|------------------|-----------|
| EPL0552S2 | 0552S | 3000/Tape & Reel | 7 inch |

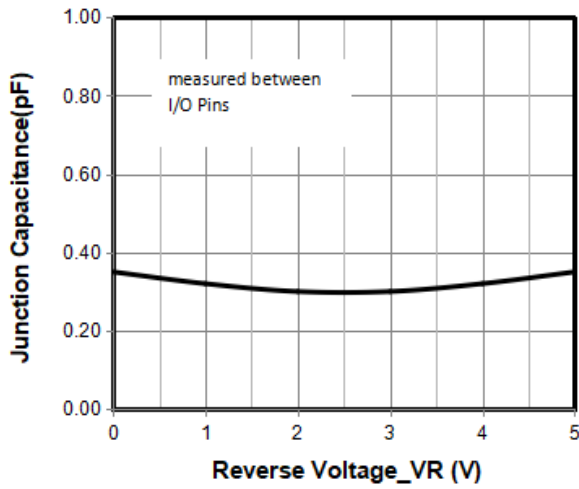
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|--|------------------|----------------------|--------------------|
| Peak Pulse Power ($t_p=8/20\mu\text{s}$) | PPP | 100 | W |
| Peak Pulse Current ($t_p=8/20\mu\text{s}$) | IPP | 5 | A |
| ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact) | VESD | ± 30 ± 25 | kV |
| Operating Temperature Range | T_J | -55 to +125 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T_{stg} | -55 to +150 | $^{\circ}\text{C}$ |

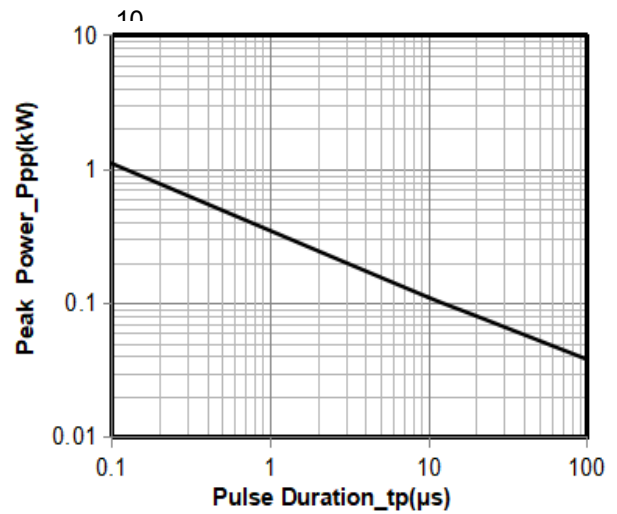
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|------------------|-----|-----|------|---------------|--|
| Reverse Working Voltage | V_{RWM} | | | 5 | V | |
| Breakdown Voltage | V_{BR} | 6 | | | V | $I_T = 1\text{mA}$ |
| Reverse Leakage Current | I_{R} | | | 0.15 | μA | $V_{\text{RWM}} = 5\text{V}$ |
| Clamping Voltage | V_{C} | | | 10 | V | $I_{\text{PP}} = 1\text{A}$ (8 x 20 μs pulse) |
| Clamping Voltage | V_{C} | | | 20 | V | $I_{\text{PP}} = 5\text{A}$ (8 x 20 μs pulse) |
| Junction Capacitance | C_{J} | | 0.6 | 0.8 | pF | $V_{\text{R}} = 0\text{V}$, $f = 1\text{MHz}$, any I/O pin to ground |
| Junction Capacitance | C_{J} | | 0.3 | 0.4 | pF | $V_{\text{R}} = 0\text{V}$, $f = 1\text{MHz}$, between I/O pins |

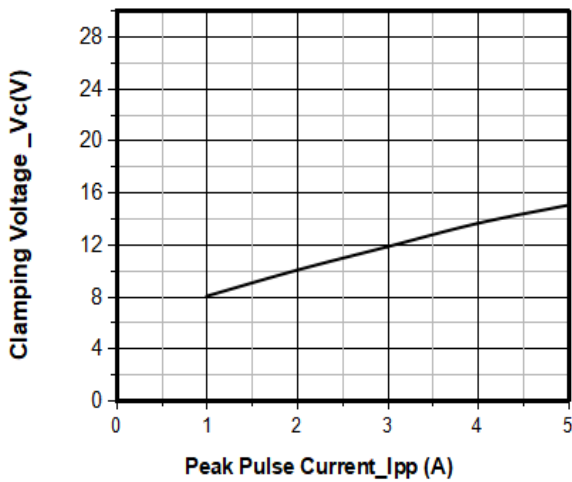
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



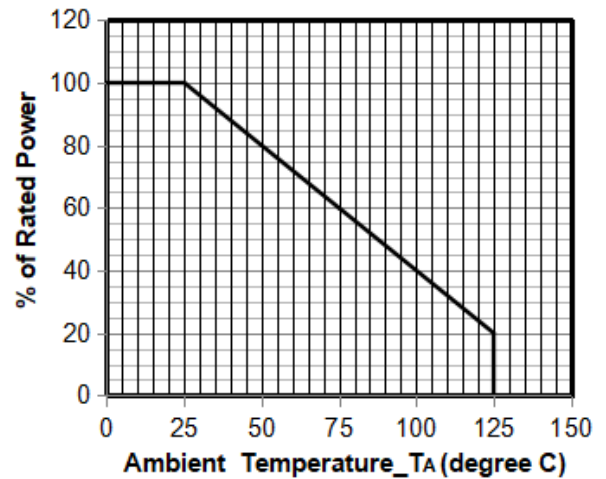
Junction Capacitance vs. Reverse Voltage



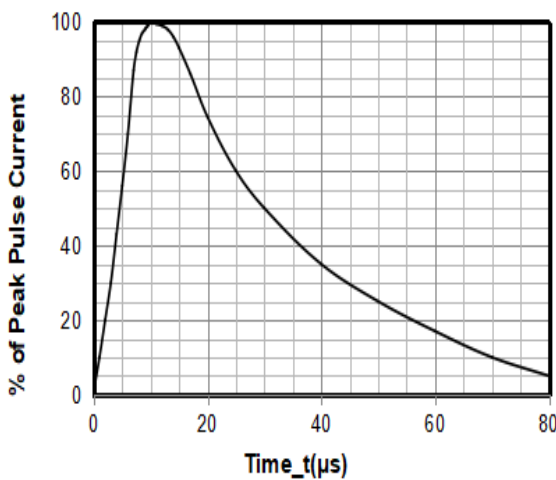
Peak Pulse Power vs. Pulse Time



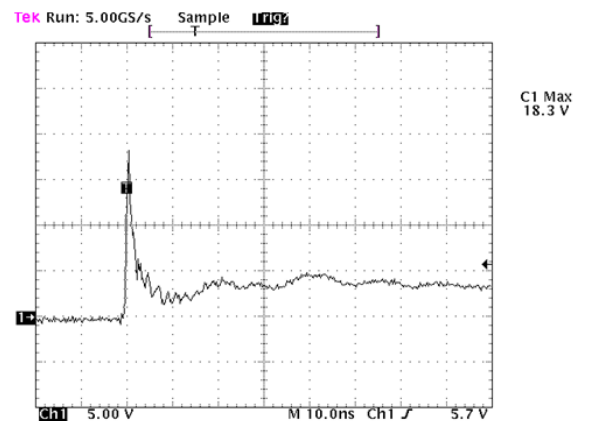
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

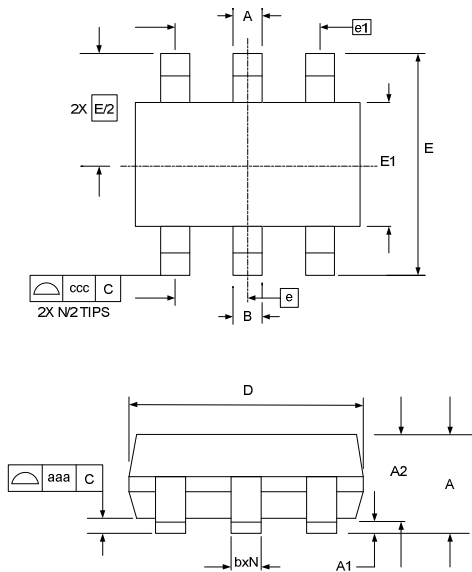


Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

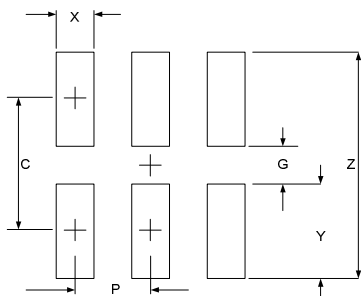
8 kV Contact per IEC61000-4-2

SOT23-6 Package Outline Drawing



| SYM | DIMENSIONS | | | | | |
|-----|-------------|------|------|-----------|-------|-------|
| | MILLIMETERS | | | INCHES | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.90 | | 1.45 | 0.035 | | 0.057 |
| A1 | 0.00 | | 0.15 | 0.000 | | 0.006 |
| A2 | 0.90 | 1.15 | 1.30 | 0.035 | 0.045 | 0.051 |
| b | 0.25 | | 0.50 | 0.010 | | 0.020 |
| c | 0.08 | | 0.22 | 0.003 | | 0.009 |
| D | 2.80 | 2.90 | 3.10 | 0.110 | 0.114 | 0.122 |
| E1 | 1.50 | 1.60 | 1.75 | 0.060 | 0.063 | 0.069 |
| E | 2.80 BSC | | | 0.110 BSC | | |
| e | 0.95 BSC | | | 0.037 BSC | | |
| e1 | 1.90 BSC | | | 0.075 BSC | | |
| N | 6 | | | 6 | | |
| aaa | 0.10 | | | 0.004 | | |
| ccc | 0.20 | | | 0.008 | | |

Suggested Land Pattern



| SYM | DIMENSIONS | |
|-----|-------------|--------|
| | MILLIMETERS | INCHES |
| C | 2.50 | 0.098 |
| G | 1.40 | 0.055 |
| P | 0.95 | 0.037 |
| X | 0.60 | 0.024 |
| Y | 1.10 | 0.043 |
| Z | 3.60 | 0.141 |