

Features

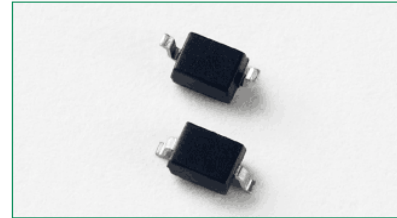
- Ultra low capacitance: 0.5pF typical
- Ultra low leakage: nA level
- Low operating voltage: 5V
- Low clamping voltage
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: ±30kV
Contact discharge: ±25kV
 - IEC61000-4-4 (EFT) 40A (5/50ns)
 - IEC61000-4-5 (Lightning) 6A (8/20µs)
- RoHS Compliant

Description

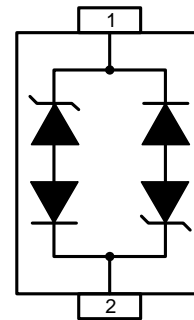
The ESD0510LG1 is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The ESD0510LG1 has an ultra-low capacitance with a typical value at 0.5pF, and complies with the IEC 61000-4-2 (ESD) standard with ±15kV air and ±8kV contact discharge. It is assembled into a SOD-323 leadfree package. The small size, ultra-low capacitance and high ESD surge protection make ESD0510LG1 an ideal choice to protect cell phone, digital video interfaces and other high speed ports.

Mechanical Characteristics

- Package: SOD-323
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram



Dimensions and Pin Configuration



Applications

- Cellular Handsets and Accessories
- Display Ports
- MDDI Ports
- USB Ports
- Digital Video Interface (DVI)
- PCI Express and Serial SATA Ports

Part Number Code

| | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| E | S | D | 0 | 5 | 1 | 1 | L | 1 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

| | |
|--------------|---------------------------------------|
| Product Type | |
| ESD | TSK Electrostatic suppressor ESD Type |

| | |
|-----------------------------|------|
| Reverse Working Voltage (V) | |
| 3V3 | 3.3V |
| 05 | 5V |
| 16 | 16V |

| | |
|------|--------|
| Line | |
| 1 | 1-Line |
| 2 | 2-Line |
| 3 | 3-Line |

| | |
|------------------|--------|
| Capacitance Type | |
| L | Low |
| X | Normal |

| | |
|-------------|-----|
| directional | |
| 0 | Bi |
| 1 | Uni |

| | |
|------|---------|
| Size | |
| 1 | O201 |
| 2 | O402 |
| 3 | DFN0603 |
| 4 | DFN1006 |

★ Code 4 to 9 is optional

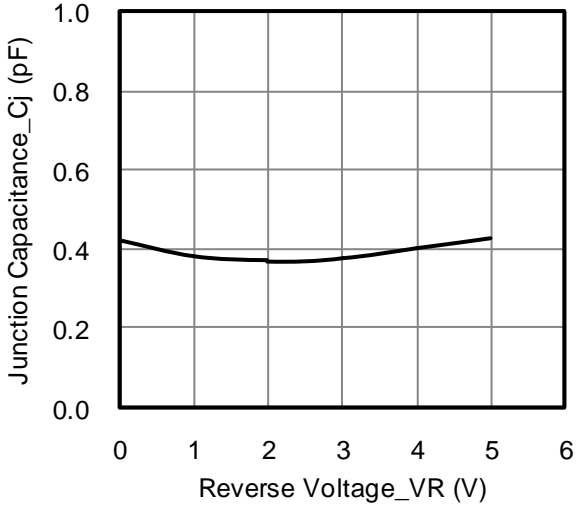
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|------------------------------------------|------------------|-------------|--------------------|
| Peak Pulse Power (8/20 μs) | Ppk | 150 | W |
| Peak Pulse Current (8/20 μs) | I _{PP} | 6 | A |
| ESD per IEC 61000-4-2 (Air) | V _{ESD} | ± 30 | kV |
| ESD per IEC 61000-4-2 (Contact) | | ± 25 | |
| Operating Temperature Range | T _J | -55 to +125 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T _{stg} | -55 to +150 | $^{\circ}\text{C}$ |

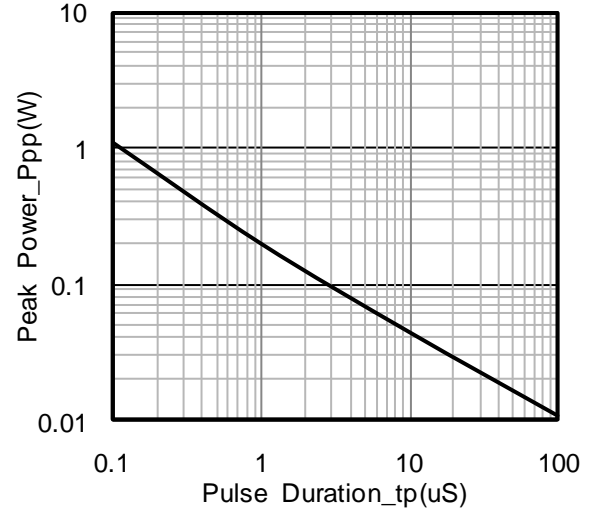
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|------------------|-----|-----|-----|---------------|---------------------------------------------------|
| Reverse Working Voltage | V _{RWM} | | | 5 | V | |
| Breakdown Voltage | V _{BR} | 6 | | | V | I _T = 1mA |
| Reverse Leakage Current | I _R | | | 0.5 | μA | V _{RWM} = 5V |
| Clamping Voltage | V _C | | | 15 | V | I _{PP} = 1A (8 x 20 μs pulse) |
| Clamping Voltage | V _C | | | 25 | V | I _{PP} = 6A (8 x 20 μs pulse) |
| Junction Capacitance | C _J | | 0.5 | 0.8 | pF | V _R = 0V, f = 1MHz |

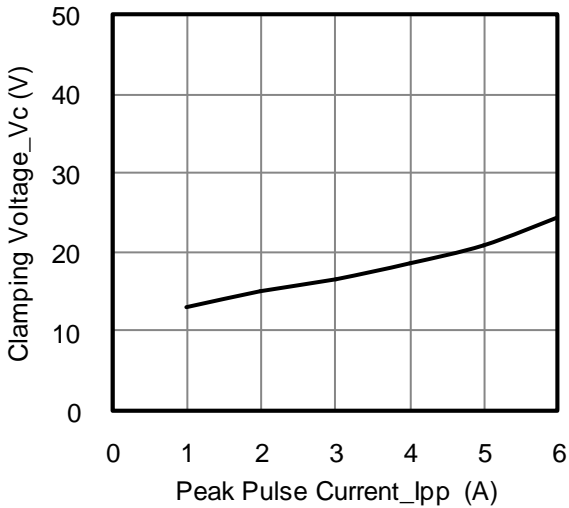
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



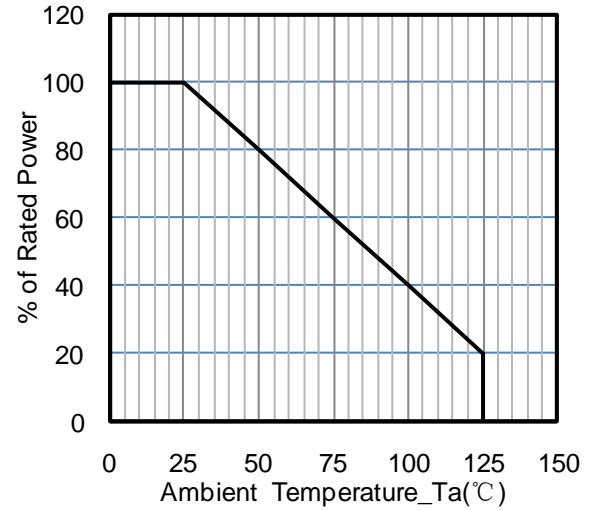
Junction Capacitance vs. Reverse Voltage



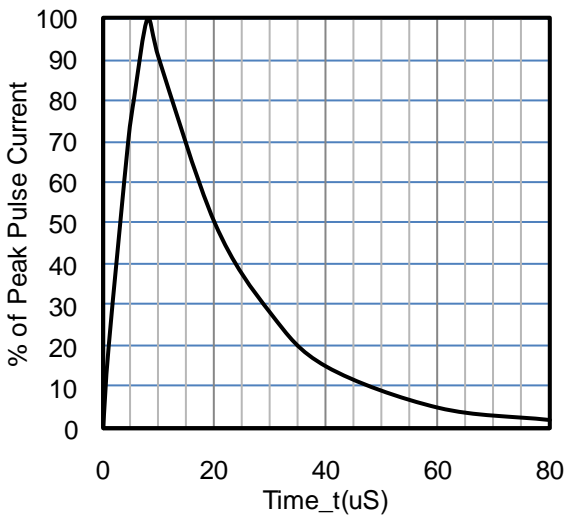
Peak Pulse Power vs. Pulse Time



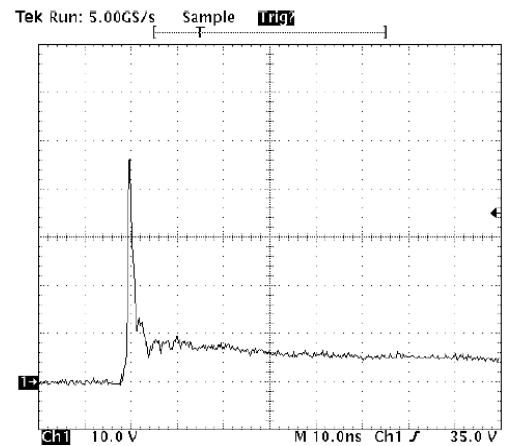
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



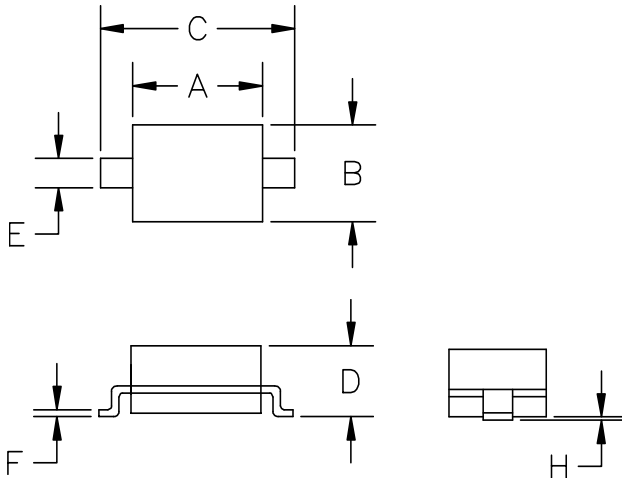
8 X 20uS Pulse Waveform



ESD Clamping Voltage

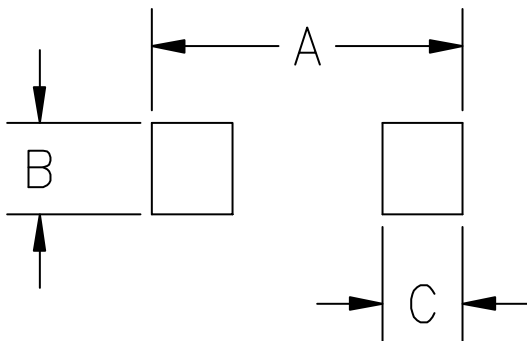
8 kV Contact per IEC61000-4-2

SOD-323 Package Outline Drawing



| SYM | DIMENSIONS | | | |
|-----|-------------|------|--------|-------|
| | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 1.50 | 1.80 | 0.060 | 0.071 |
| B | 1.20 | 1.40 | 0.045 | 0.054 |
| C | 2.30 | 2.70 | 0.090 | 0.107 |
| D | - | 1.10 | - | 0.043 |
| E | 0.30 | 0.40 | 0.012 | 0.016 |
| F | 0.10 | 0.25 | 0.004 | 0.010 |
| H | - | 0.10 | - | 0.004 |

Suggested Land Pattern



| SYM | DIMENSIONS | |
|-----|-------------|--------|
| | MILLIMETERS | INCHES |
| A | 3.15 | 0.120 |
| B | 0.80 | 0.031 |
| C | 0.80 | 0.031 |

Ordering Information

| Part Number | Packaging | Reel Size |
|-------------|------------------|-----------|
| ESD0510LG1 | 3000/Tape & Reel | 7 inch |