

Features

- 350W peak pulse power (8/20µs)
- Ultra low capacitance: 2pF typical
- Ultra low leakage: nA level
- Low operating voltage: 12V
- Low clamping voltage
- Protects one power line or data line
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: ±30kV
Contact discharge: ±30kV
 - IEC61000-4-4 (EFT) 40A (5/50ns)
 - IEC61000-4-5 (Lightning) 12A (8/20µs)
- RoHS Compliant

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

Applications

- USB Ports
- Smart Phones
- Wireless Systems
- Ethernet 10/100/1000 Base T

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 |

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

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

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

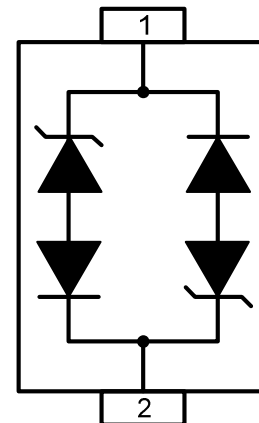
★ Code 4 to 9 is optional

Description

The ESD1210LG is a 12V 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 ESD1210LG has a low capacitance with a typical value at 2pF, and complies with the IEC 61000-4-2 (ESD) standard with ±15kV air and ±8kV contact discharge. It is assembled into a lead-free SOD-323 package. The small size, low capacitance and high ESD surge protection make ESD1210LG an ideal choice to protect cell phone, wireless systems, and communication equipments.



Dimensions and Pin Configuration



Circuit and Pin Schematic

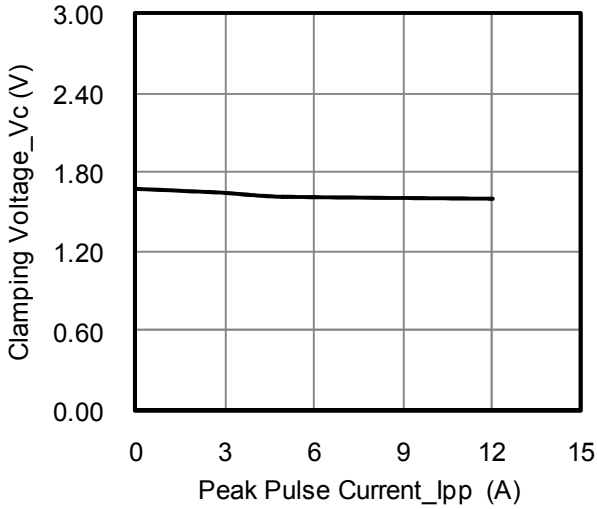
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|--|------------------|-------------|--------------------|
| Peak Pulse Power (8/20 μs) | Ppk | 350 | W |
| Peak Pulse Current (8/20 μs) | I _{PP} | 12 | A |
| ESD per IEC 61000-4-2 (Air) | V _{ESD} | ± 30 | kV |
| ESD per IEC 61000-4-2 (Contact) | | ± 30 | |
| Operating Temperature Range | T _J | -40 to +85 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T _{stg} | -55 to +150 | $^{\circ}\text{C}$ |

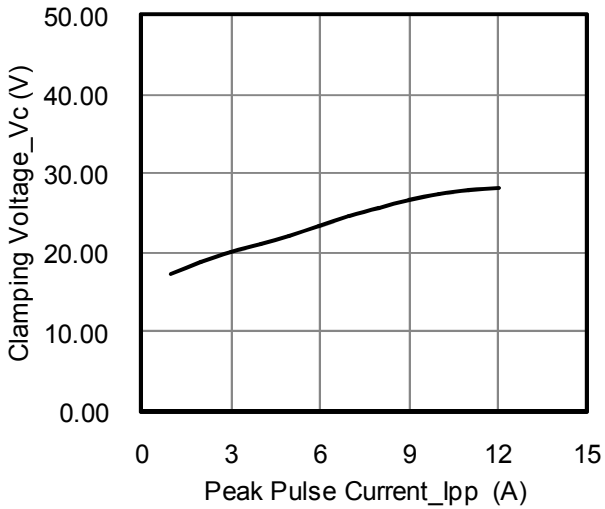
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|------------------|------|-----|------|---------------|--|
| Reverse Working Voltage | V _{RWM} | | | 12 | V | |
| Breakdown Voltage | V _{BR} | 13.3 | | 17.8 | V | I _T = 1mA |
| Reverse Leakage Current | I _R | | | 0.2 | μA | V _{RWM} = 12V |
| Clamping Voltage | V _C | | | 18 | V | I _{PP} = 1A (8 x 20 μs pulse) |
| Clamping Voltage | V _C | | | 29 | V | I _{PP} = 12A (8 x 20 μs pulse) |
| Junction Capacitance | C _J | | 2 | | pF | V _R = 0V, f = 1MHz |

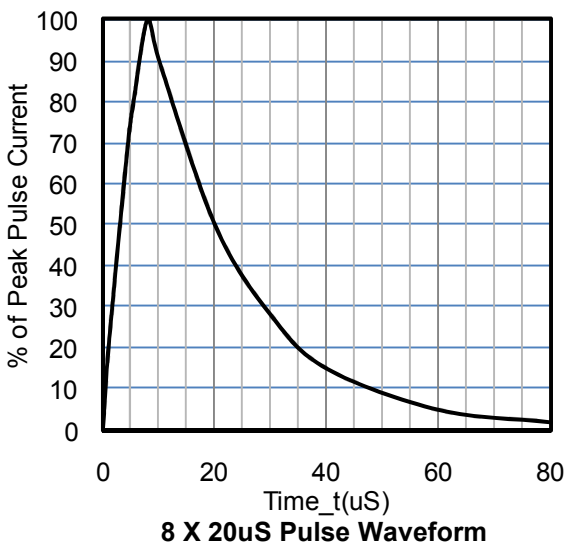
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



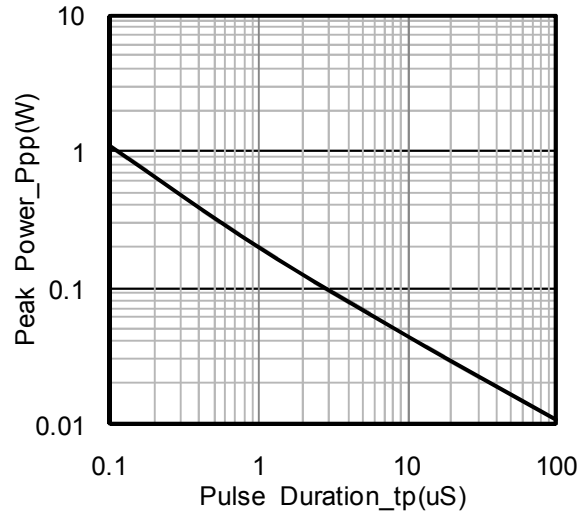
Junction Capacitance vs. Reverse Voltage



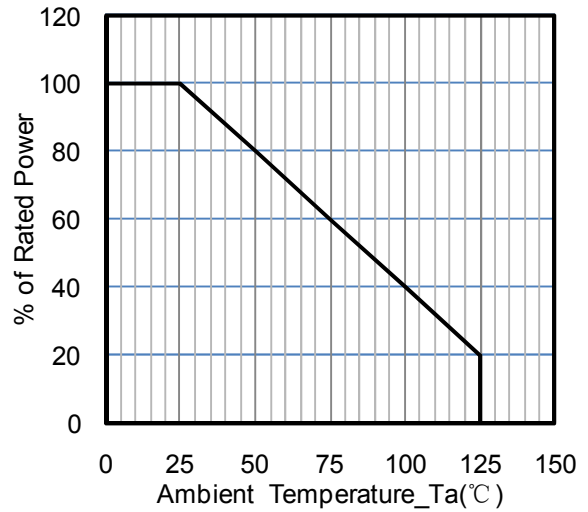
Clamping Voltage vs. Peak Pulse Current



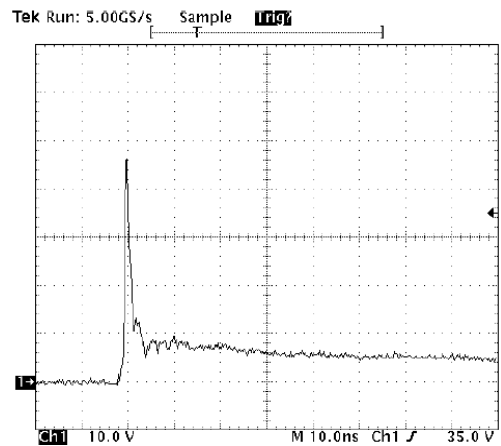
8 X 20uS Pulse Waveform



Peak Pulse Power vs. Pulse Time



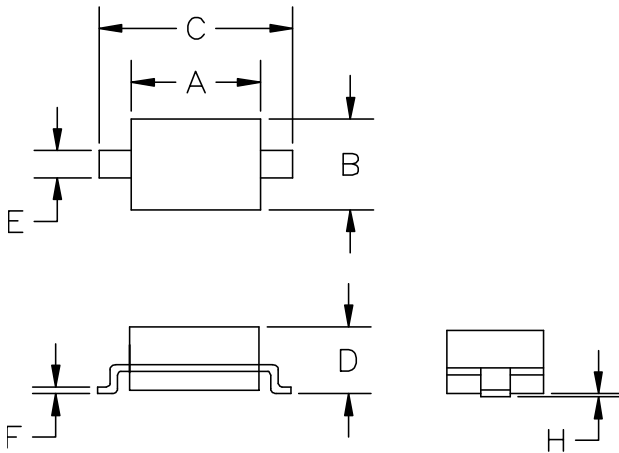
Power Derating Curve



ESD Clamping Voltage

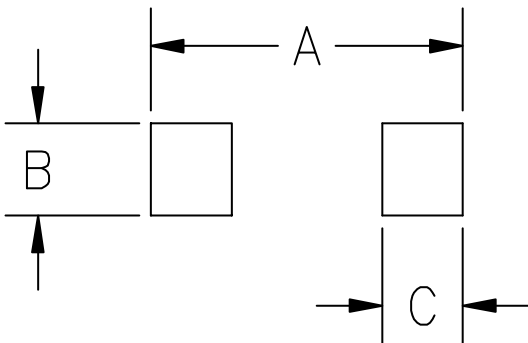
8 kV Contact per IEC61000-4-2

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 |
|-------------|------------------|-----------|
| ESD1210LG | 3000/Tape & Reel | 7 inch |