

1-Line Bi-directional TVS Diode

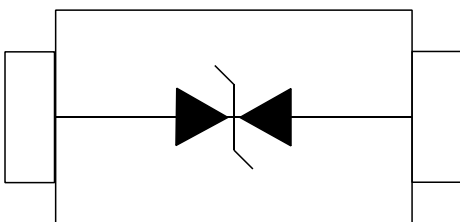
Description

The PESDU4581D3H is a bi-directional high power 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 data and power line. The PESDU4581D3H complies with the IEC 61000-4-2 (ESD) with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into an ultra-small lead -free SOD-323 package. The small size and high ESD surge protection make PESDU4581D3H an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Features

- Small SOD-323 package
- Protects one data or power line
- Operating Voltage: 4.5V
- High peak pulse current capability
- Ultra low clamping voltage
- 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) 160A (8/20 μs)
- RoHS Compliant

Dimensions and Pin Configuration



Circuit Diagram

Mechanical Characteristics

- Package: SOD-323
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- Mobile Phones and Accessories
- Battery Protection
- Power Supply Protection
- Hand Held Portable Applications
- Peripherals

Marking Information



48D = Device Marking Code

Ordering Information

| Part Number | Packaging | Reel Size |
|--------------|------------------|-----------|
| PESDU4581D3H | 3000/Tape & Reel | 7 inch |

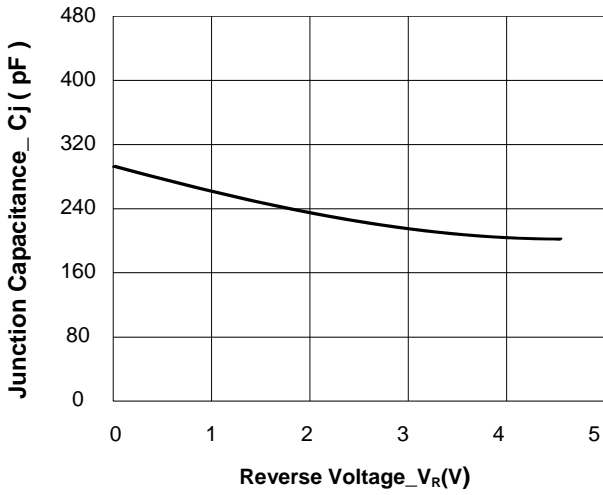
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|--|-----------|-------------|--------------------|
| Peak Pulse Power (8/20 μs) | P_{PK} | 2700 | W |
| Peak Pulse Current (8/20 μs) | I_{PP} | 160 | A |
| ESD per IEC 61000-4-2 (Air) | V_{ESD} | ± 30 | kV |
| ESD per IEC 61000-4-2 (Contact) | | ± 30 | kV |
| Operating Temperature Range | T_J | -55 to +125 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T_{stg} | -55 to +150 | $^{\circ}\text{C}$ |

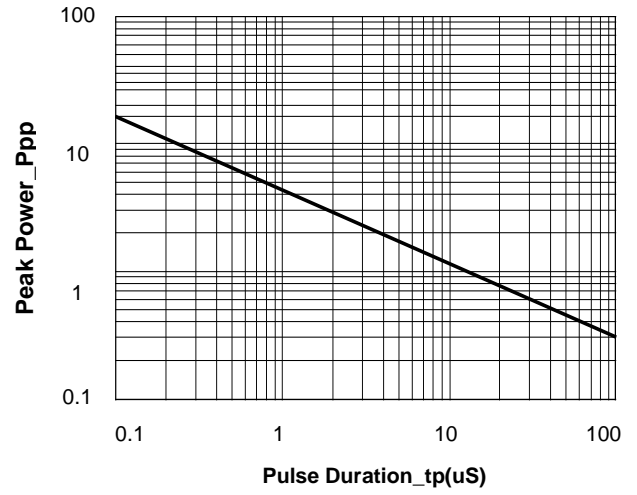
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|-----------|-----|-----|-----|---------------|---|
| Reverse Working Voltage | V_{RWM} | | | 4.5 | V | |
| Breakdown Voltage | V_{BR} | 4.7 | | | V | $I_T = 1\text{mA}$ |
| Reverse Leakage Current | I_R | | | 1.0 | μA | $V_{RWM} = 4.5\text{V}$ |
| Clamping Voltage | V_C | | | 7.5 | V | $I_{PP} = 20\text{A}$ (8 x 20 μs pulse) |
| Clamping Voltage | V_C | | | 17 | V | $I_{PP} = 160\text{A}$ (8 x 20 μs pulse) |
| Junction Capacitance | C_J | | | 300 | pF | $V_R = 0\text{V}$, $f = 1\text{MHz}$ |

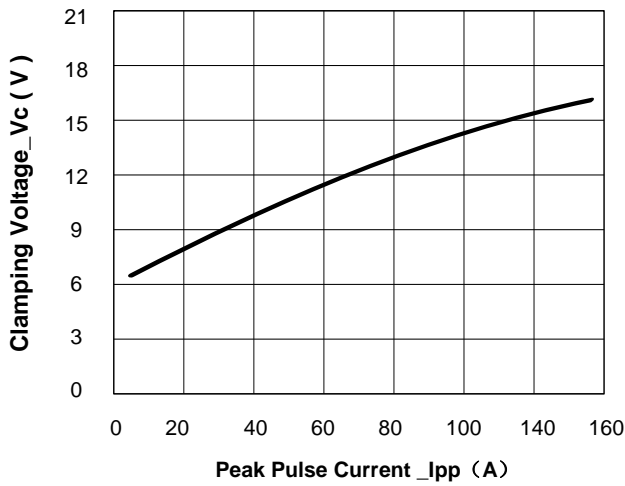
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



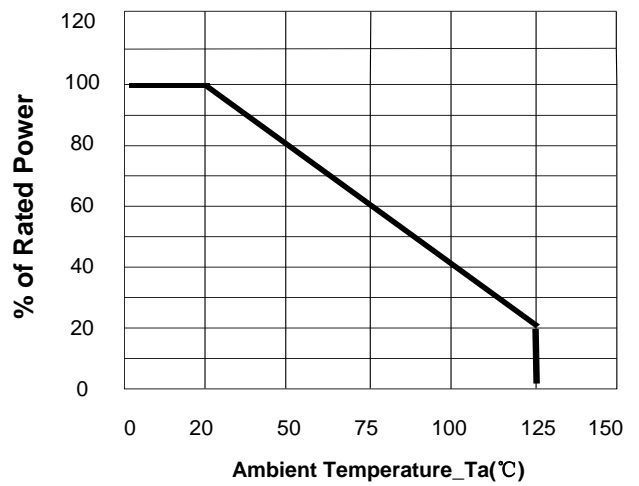
Junction Capacitance vs. Reverse Voltage



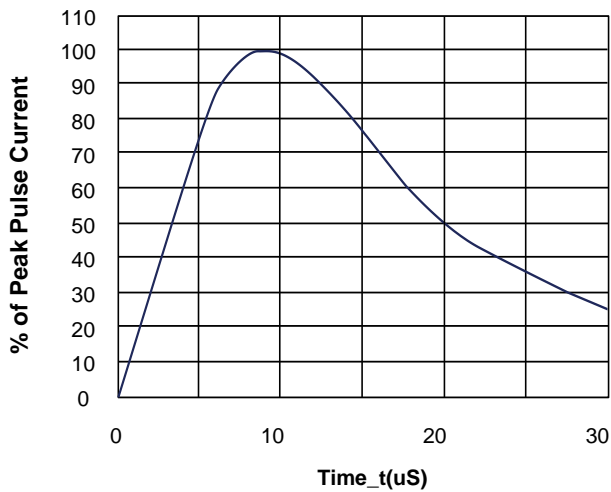
Peak Pulse Power vs. Pulse Time



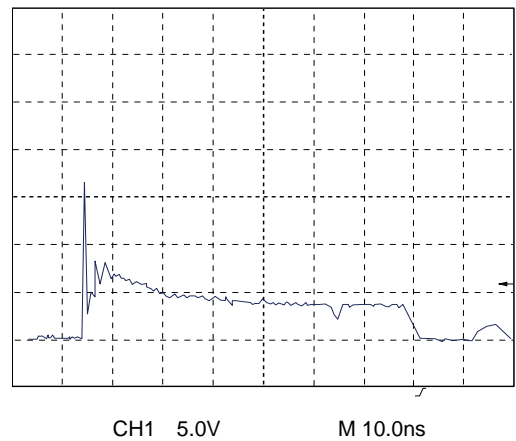
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve

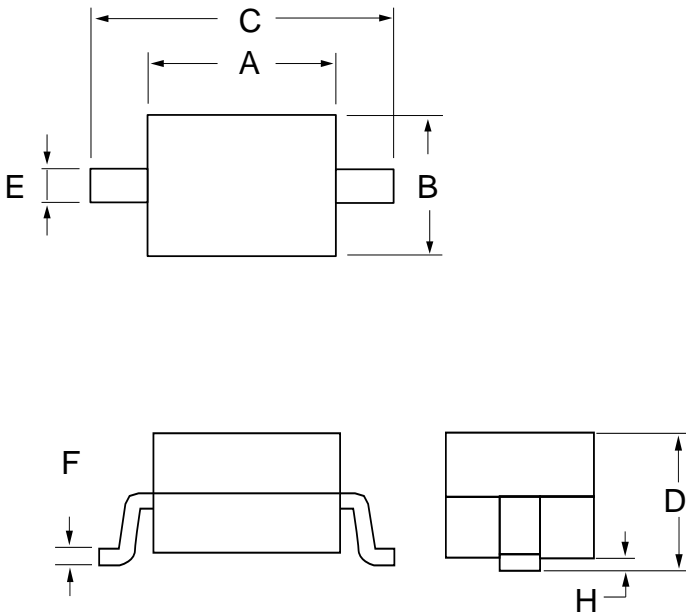


8 X 20uS Pulse Waveform



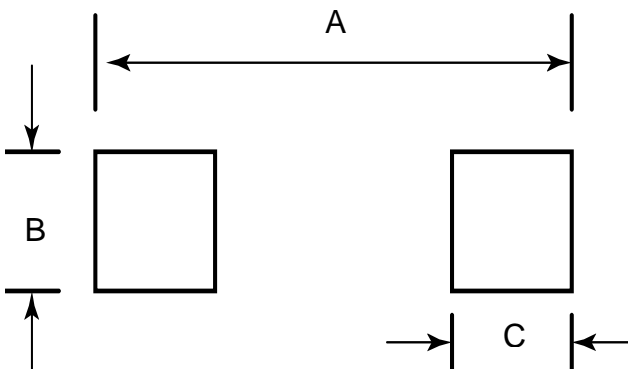
**ESD Clamping Voltage
8 kV Contact per IEC61000-4-2**

SOD-323 Package Outline Drawing



| SYM | DIMENSIONS | | | | |
|-----|-------------|------|------|--------|-------|
| | MILLIMETERS | | | INCHES | |
| | MIN | NOM | MAX | MIN | MAX |
| A | 1.50 | 1.65 | 1.80 | 0.060 | 0.071 |
| B | 1.20 | 1.30 | 1.40 | 0.045 | 0.054 |
| C | 2.30 | 2.50 | 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 |