

1-Line Bi-directional TVS Diode

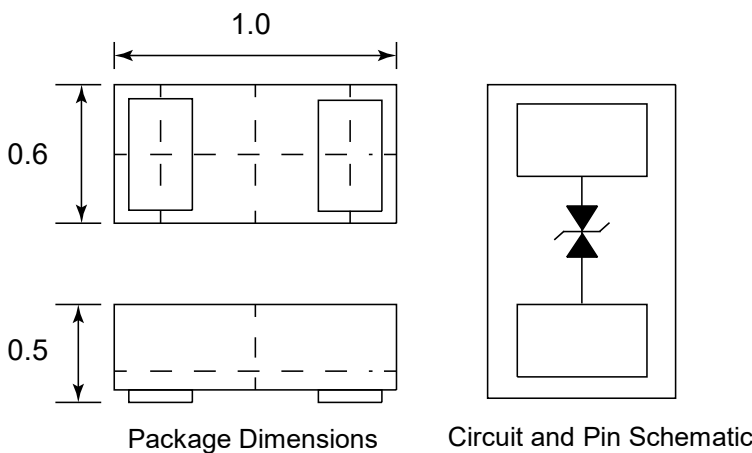
Description

The PESDU4581P1H 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 data and power line. The PESDU4581P1H 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 1.0x0.6x0.5mm lead-free DFN package. The small size and high ESD surge protection make PESDU4581P1H an ideal choice to protect cell phone, digital cameras, and many other portable applications.

Features

- Ultra small package: 1.0x0.6x0.5mm
- Protects one data or power line
- Ultra low leakage: nA level
- Operating voltage: 4.5V
- Low clamping voltage
- 2-pin leadless package
- 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 μs)
- RoHS Compliant

Dimensions and Pin Configuration



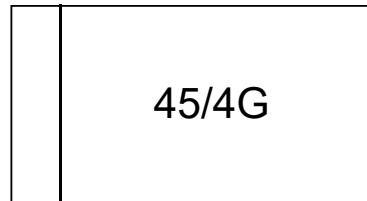
Mechanical Characteristics

- Package: DFN1006-2 (1.0x0.6x0.5mm)
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below

Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Keypads, Side Keys, LCD Displays

Marking Information



45/4G= Device Marking Code

Ordering Information

| Part Number | Packaging | Reel Size |
|--------------|-------------------|-----------|
| PESDU4581P1H | 10000/Tape & Reel | 7 inch |

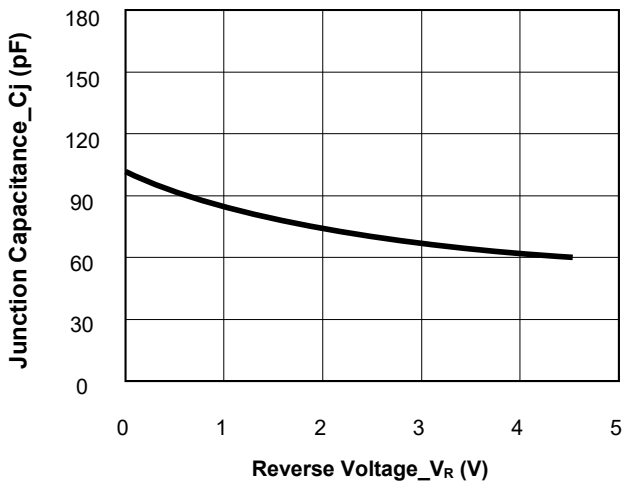
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|--|------------------|-------------|------|
| Peak Pulse Power (8/20μs) | P _{PK} | 400 | W |
| Peak Pulse Current (8/20μs) | I _{PP} | 40 | A |
| ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact) | V _{ESD} | ±30 ±30 | kV |
| Operating Temperature Range | T _{OP} | -55 to +125 | °C |
| Storage Temperature Range | T _{STG} | -55 to +150 | °C |

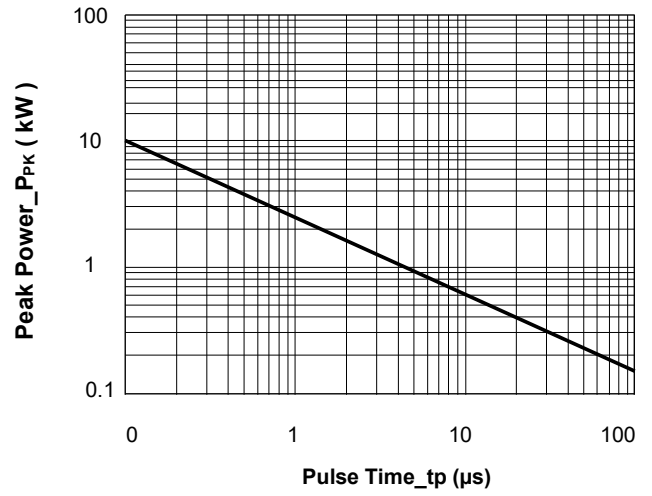
Electrical Characteristics (T_A=25°C unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|------------------|-----|-----|-----|------|---------------------------------------|
| Reverse Working Voltage | V _{RWM} | | | 4.5 | V | |
| Breakdown Voltage | V _{BR} | 4.8 | | | V | I _T = 1mA |
| Reverse Leakage Current | I _R | | | 0.2 | μA | V _{RWM} = 4.5V |
| Clamping Voltage | V _C | | | 6.5 | V | I _{PP} = 1A (8/20μs pulse) |
| Clamping Voltage | V _C | | | 10 | V | I _{PP} = 40A(8/20μs pulse) |
| Junction Capacitance | C _J | | 100 | | pF | V _R = 0V, f = 1MHz |

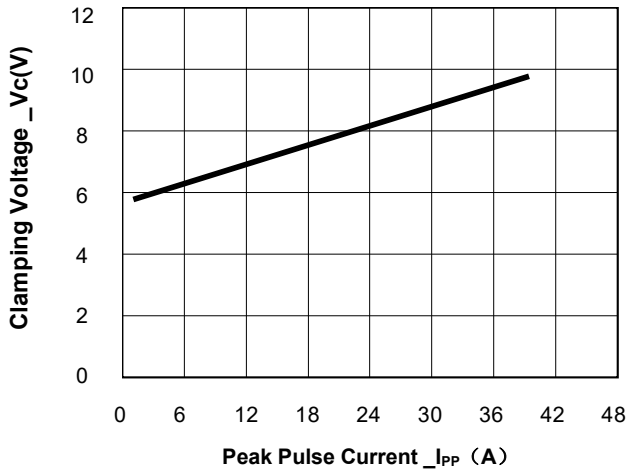
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



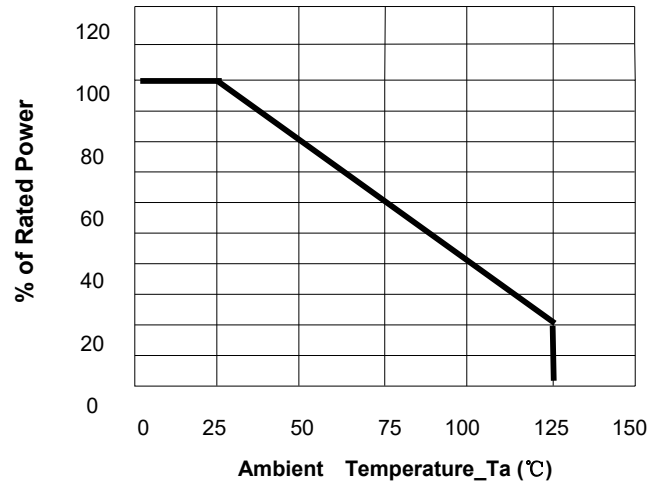
Junction Capacitance vs. Reverse Voltage



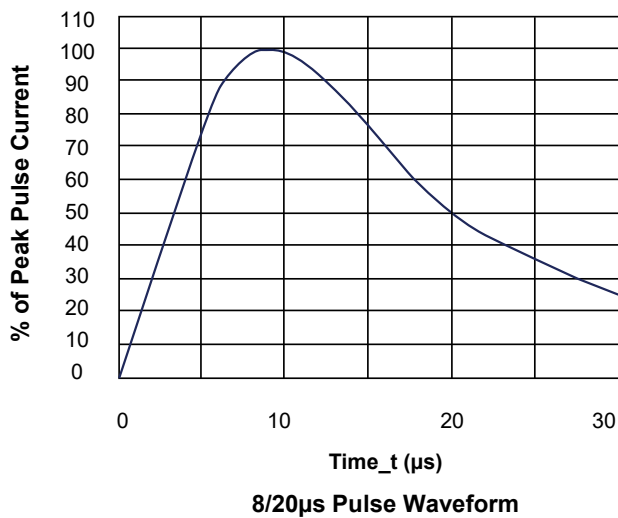
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current

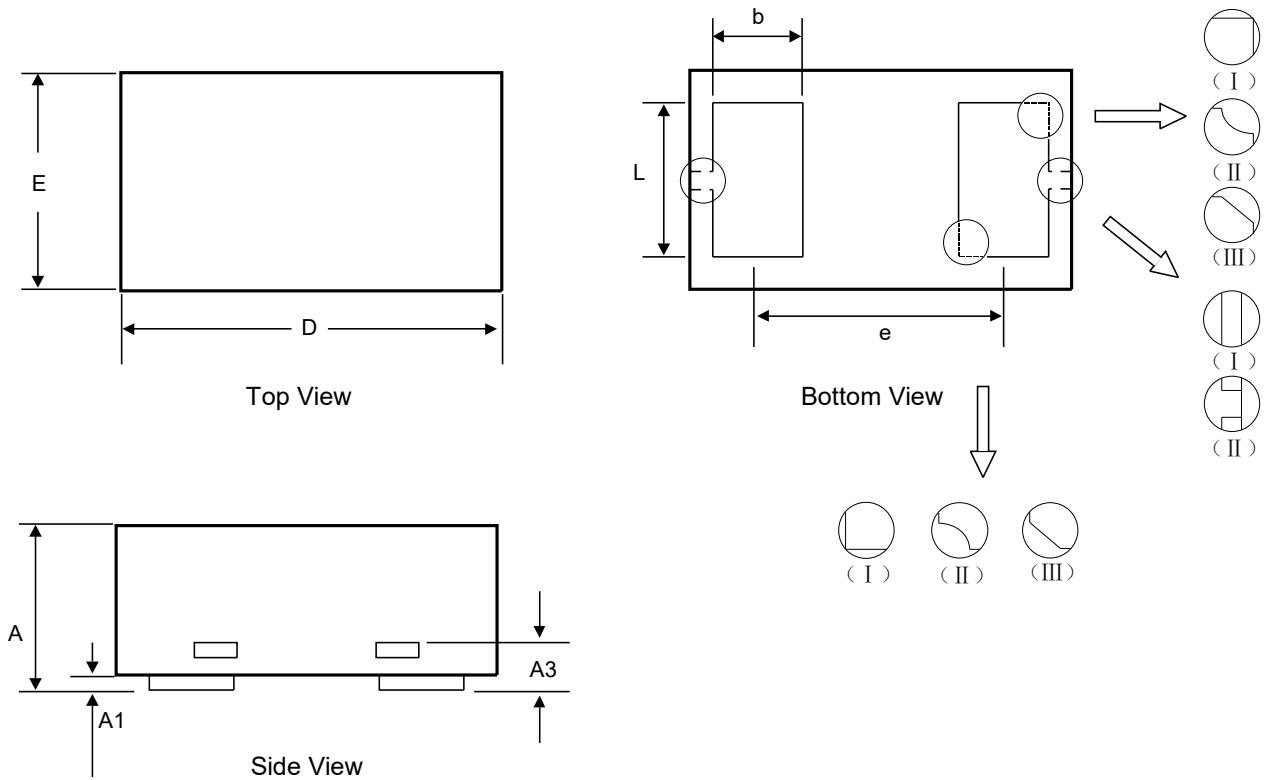


Power Derating Curve



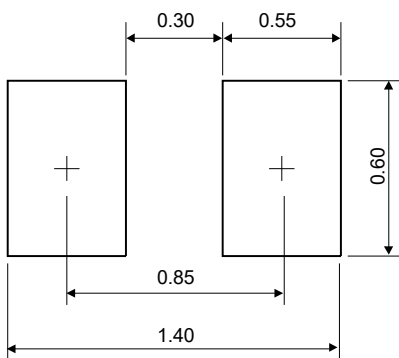
8/20μs Pulse Waveform

DFN1006-2 Package Outline Drawing



| Symbol | Dimensions in Millimeters | | |
|--------|---------------------------|-------|-------|
| | Min. | Typ. | Max. |
| A | 0.340 | 0.450 | 0.530 |
| A1 | 0.000 | 0.020 | 0.050 |
| A3 | 0.125 Ref. | | |
| D | 0.950 | 1.000 | 1.075 |
| E | 0.490 | 0.600 | 0.675 |
| b | 0.200 | 0.250 | 0.300 |
| L | 0.450 | 0.500 | 0.550 |
| e | 0.650 BSC | | |

Recommended PCB Layout (Unit: mm)

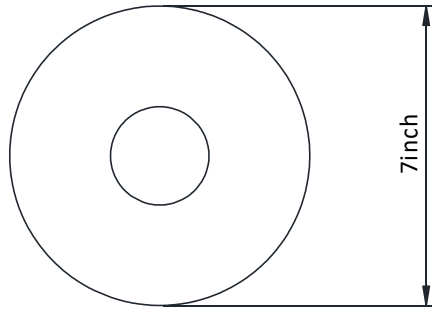


Notes:

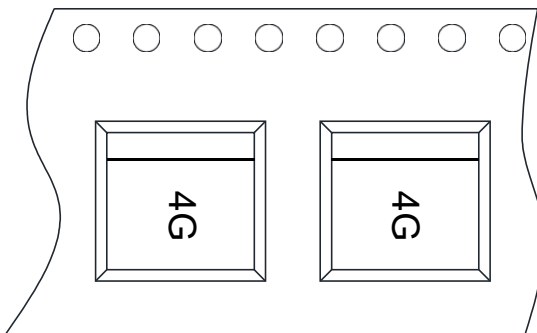
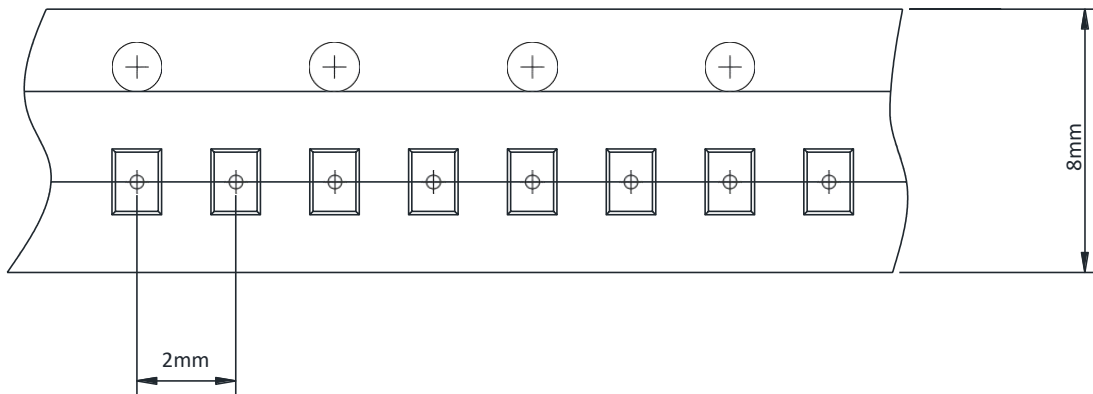
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

TAPE AND REEL INFORMATION

Reel Dimensions



Tape Dimensions



User Direction of Feed