

**1-Line Ultra Low Capacitance Bi-directional TVS Diode**

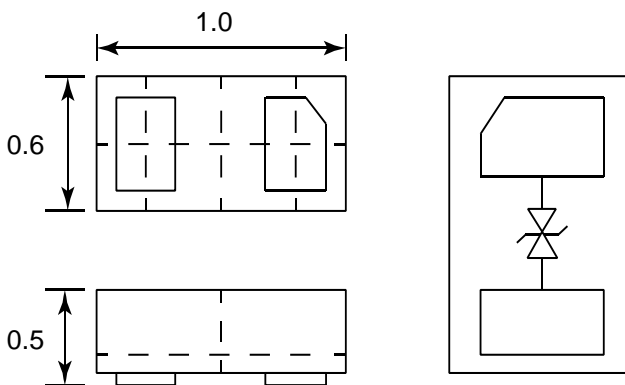
**Description**

The PESDR1261P1 is a bi-directional TVS diode, 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 PESDR1261P1 has an ultra-low capacitance with a typical value at 0.6pF, and complies with the IEC 61000-4-2 (ESD) with ±15kV air and ±10kV contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make PESDR1261P1 an ideal choice to protect cell phone, digital visual interfaces and other high speed ports.

**Features**

- Ultra small package: 1.0x0.6x0.5mm
- Ultra low capacitance: 0.6pF typical
- Ultra low leakage: nA level
- Operating voltage: 12V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test  
Air discharge: ±15kV  
Contact discharge: ±10kV
  - IEC 61000-4-5 (Lightning) 4A (8/20µs)
- RoHS Compliant

**Dimensions and Pin Configuration**



Package Dimensions      Circuit and Pin Schematic

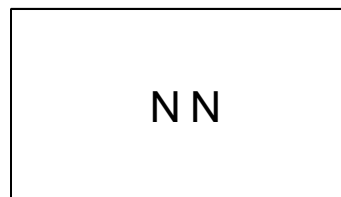
**Mechanical Characteristics**

- Package: DFN1006-2 (1.0x0.6x0.5mm)
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Marking Information: See Below

**Applications**

- Cellular Handsets & Accessories
- Personal Digital Assistants (PDAs)
- Notebooks & Handhelds
- Portable Instrumentation
- Digital Cameras
- MP3 Players

**Marking Information**



NN = Device Marking Code

**Ordering Information**

| Part Number | Shipping          | Reel Size |
|-------------|-------------------|-----------|
| PESDR1261P1 | 10000/Tape & Reel | 7 inch    |

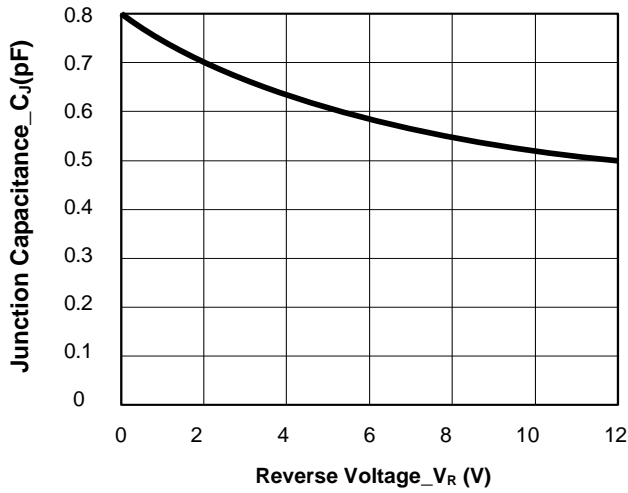
**Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)**

| Parameter  | Symbol           | Value       | Unit |
|--|------------------|-------------|------|
| Peak Pulse Power (8/20μs)                                      | P <sub>PK</sub>  | 140         | W    |
| Peak Pulse Current (8/20μs)                                    | I <sub>PP</sub>  | 4           | A    |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | V <sub>ESD</sub> | ±15<br>±10  | kV   |
| Operating Temperature Range                                    | T <sub>OP</sub>  | -55 to +125 | °C   |
| Storage Temperature Range                                      | T <sub>STG</sub> | -55 to +150 | °C   |

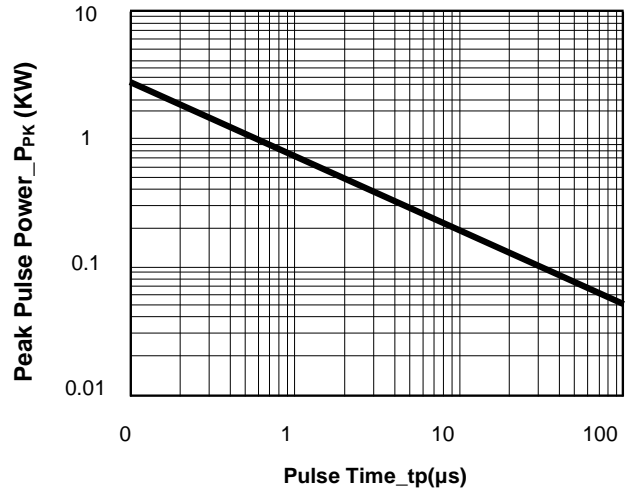
**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)**

| Parameter               | Symbol           | Min  | Typ | Max | Unit | Test Condition                      |
|-------------------------|------------------|------|-----|-----|------|-------------------------------------|
| Reverse Working Voltage | V <sub>RWM</sub> |      |     | 12  | V    |                                     |
| Breakdown Voltage       | V <sub>BR</sub>  | 13.3 |     |     | V    | I <sub>T</sub> = 1mA                |
| Reverse Leakage Current | I <sub>R</sub>   |      |     | 200 | nA   | V <sub>RWM</sub> = 12V              |
| Clamping Voltage        | V <sub>C</sub>   |      | 22  | 25  | V    | I <sub>PP</sub> = 1A (8/20μs pulse) |
| Clamping Voltage        | V <sub>C</sub>   |      | 32  | 35  | V    | I <sub>PP</sub> = 4A (8/20μs pulse) |
| Junction Capacitance    | C <sub>J</sub>   |      | 0.6 | 0.8 | pF   | V <sub>R</sub> = 0V, f = 1MHz       |

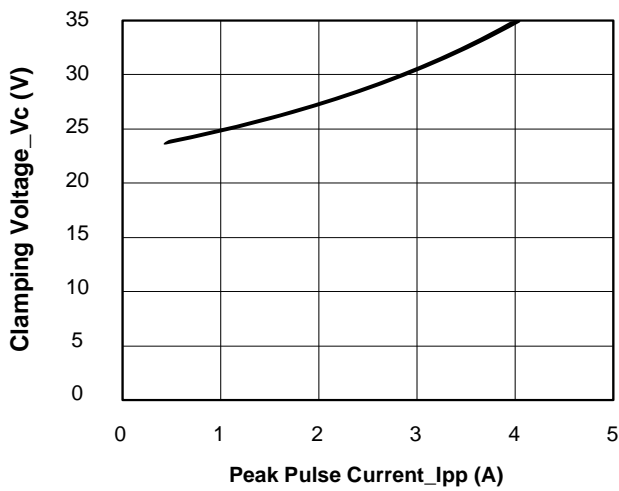
**Typical Performance Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise Specified)**



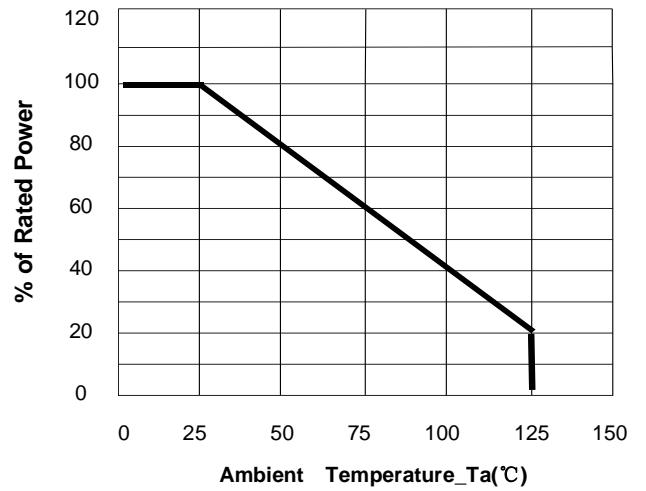
**Junction Capacitance vs. Reverse Voltage**



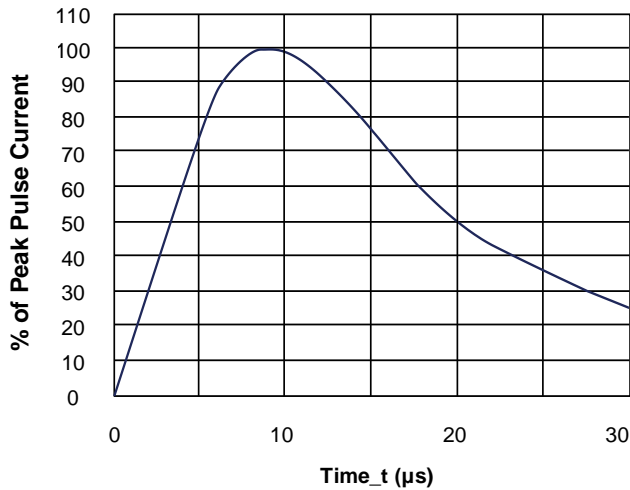
**Peak Pulse Power vs. Pulse Time**



**Clamping Voltage vs. Peak Pulse Current**

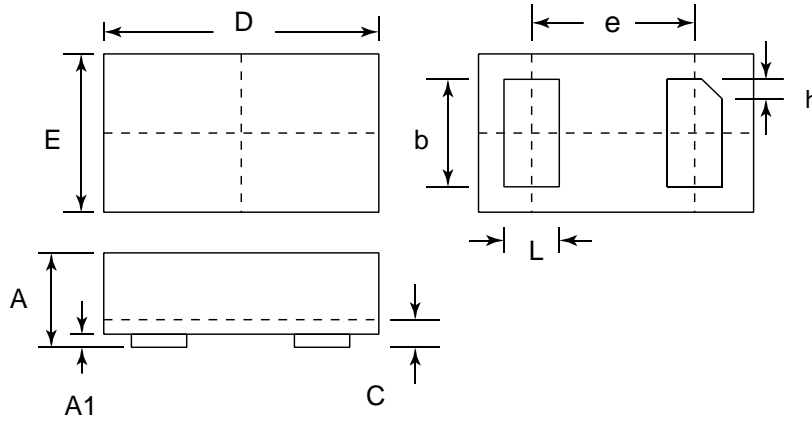


**Power Derating Curve**



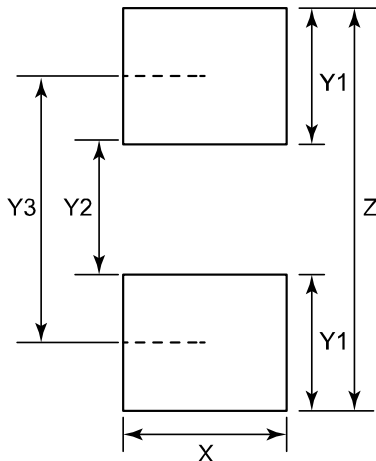
**8/20 $\mu\text{s}$  Pulse Waveform**

**DFN1006-2 Package Outline Drawing**



| SYM | DIMENSIONS  |      |      |           |       |       |
|-----|-------------|------|------|-----------|-------|-------|
|     | MILLIMETERS |      |      | INCHES    |       |       |
|     | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A   | 0.45        | 0.50 | 0.55 | 0.018     | 0.020 | 0.022 |
| A1  | 0.00        | 0.02 | 0.05 | 0.000     | 0.001 | 0.002 |
| b   | 0.45        | 0.50 | 0.55 | 0.018     | 0.020 | 0.022 |
| c   | 0.12        | 0.15 | 0.18 | 0.005     | 0.006 | 0.007 |
| D   | 0.95        | 1.00 | 1.05 | 0.037     | 0.039 | 0.041 |
| e   | 0.65 BSC    |      |      | 0.026 BSC |       |       |
| E   | 0.55        | 0.60 | 0.65 | 0.022     | 0.024 | 0.026 |
| L   | 0.20        | 0.25 | 0.30 | 0.008     | 0.010 | 0.012 |
| h   | 0.07        | 0.12 | 0.17 | 0.003     | 0.005 | 0.007 |

**Suggested Land Pattern**



| SYM | DIMENSIONS  |        |
|-----|-------------|--------|
|     | MILLIMETERS | INCHES |
| X   | 0.60        | 0.024  |
| Y1  | 0.50        | 0.020  |
| Y2  | 0.30        | 0.012  |
| Y3  | 0.80        | 0.032  |
| Z   | 1.30        | 0.052  |