

## 1-Line Uni-directional TVS Diode

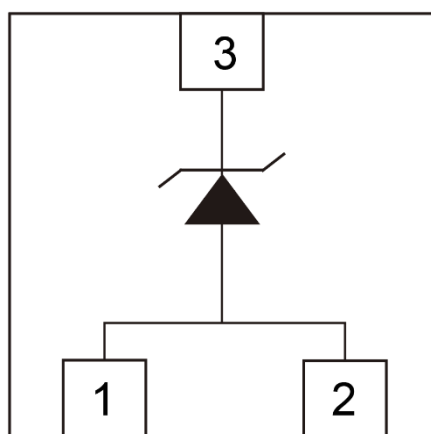
### Description

The PESDU1551P4-3 is a high power TVS, to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive lines. The PESDU1551P4-3 complies with the IEC 61000-4-2 (ESD) standard with  $\pm 30\text{kV}$  air and  $\pm 30\text{kV}$  contact discharge. It is assembled into a 3-pin DFN2020-3 lead-free package. Each device will protect one line. The combination of small size, and high surge capability makes them ideal for use in applications such as cell phones, LCD displays, USB and other interfaces.

### Features

- 7000W peak pulse power (8/20 $\mu\text{s}$ )
- operating voltage: 15V
- low clamping voltage
- One power line protects
- 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) 200A (8/20 $\mu\text{s}$ )
- RoHS Compliant

### Dimensions and Pin Configuration



**Circuit Diagram**

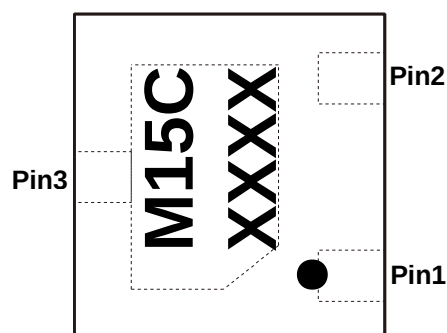
### Mechanical Characteristics

- Package: DFN2020-3
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below
- RoHS Compliant

### Applications

- I/O Interfaces
- Power lines
- Automotive and Telecommunication
- Computer & Consumer Electronics
- Industrial Electronics
- Microcontroller Input Protection

### Marking Information



M15C XXXX = Device Making Code

### Ordering Information

| Part Number   | Shipping         | Reel Size |
|---------------|------------------|-----------|
| PESDU1551P4-3 | 3000/Tape & Reel | 7 inch    |

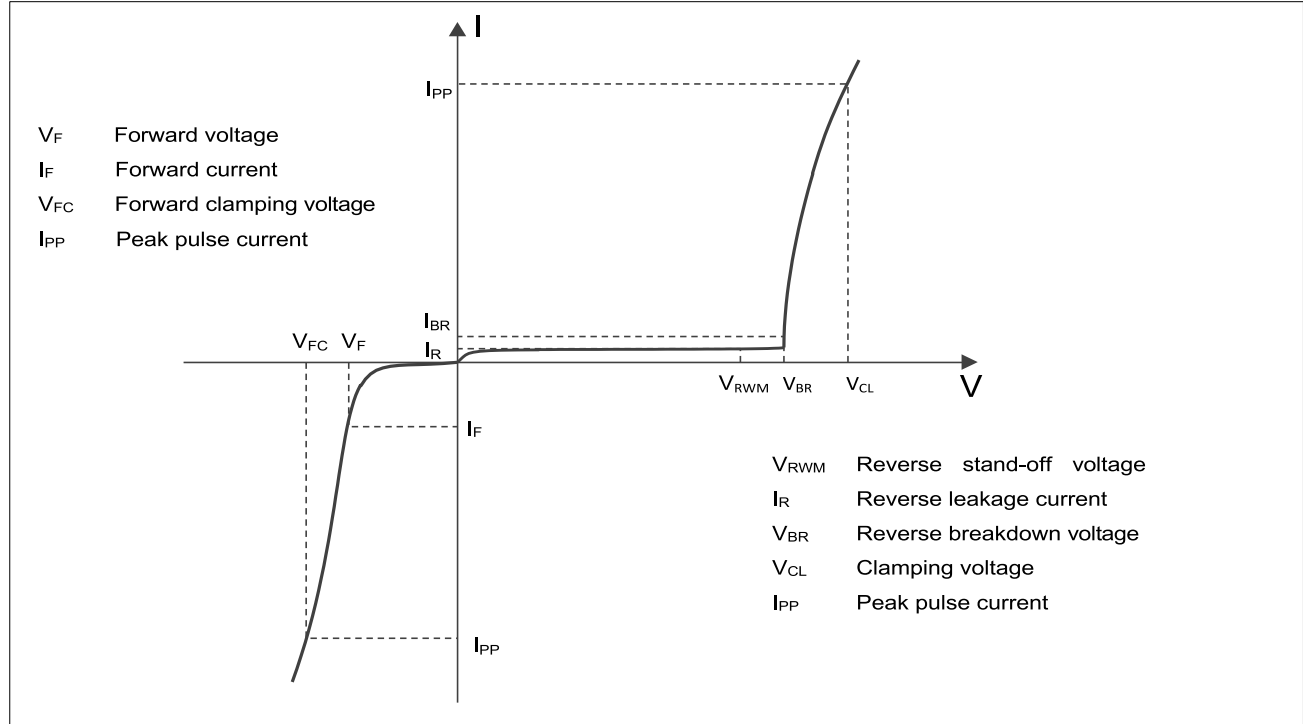
**Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)**

| Parameter                       | Symbol           | Value      | Unit |
|---------------------------------|------------------|------------|------|
| Peak Pulse Power (8/20μs)       | P <sub>PK</sub>  | 7000       | W    |
| Peak Pulse Current (8/20μs)     | I <sub>PP</sub>  | 200        | A    |
| ESD per IEC 61000-4-2 (Air)     | V <sub>ESD</sub> | ±30        | kV   |
| ESD per IEC 61000-4-2 (Contact) |                  | ±30        | kV   |
| Lead temperature                | T <sub>L</sub>   | 260        | °C   |
| Junction Temperature            | T <sub>J</sub>   | 125        | °C   |
| Operating Temperature Range     | T <sub>OP</sub>  | -40 ~ +125 | °C   |
| Storage Temperature Range       | T <sub>STG</sub> | -55 ~ +150 | °C   |

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

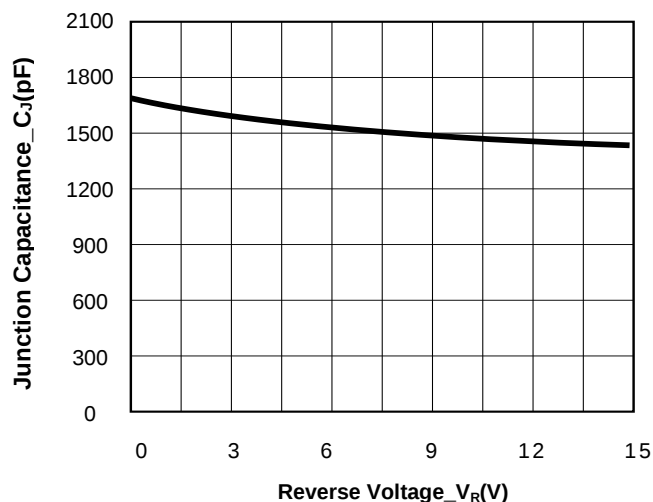
| Parameter               | Symbol           | Min. | Typ. | Max. | Unit | Test Condition                        |
|-------------------------|------------------|------|------|------|------|---------------------------------------|
| Reverse Working Voltage | V <sub>RWM</sub> |      |      | 15   | V    |                                       |
| Breakdown Voltage       | V <sub>BR</sub>  | 16.7 | 18.2 |      | V    | I <sub>T</sub> = 1mA                  |
| Reverse Leakage Current | I <sub>R</sub>   |      |      | 1    | μA   | V <sub>RWM</sub> = 15V                |
| Clamping Voltage        | V <sub>C</sub>   |      | 21   | 22   | V    | I <sub>PP</sub> = 50A (8/20μs pulse)  |
| Clamping Voltage        | V <sub>C</sub>   |      | 32   | 35   | V    | I <sub>PP</sub> = 200A (8/20μs pulse) |
| Junction Capacitance    | C <sub>J</sub>   |      | 1700 |      | pF   | V <sub>R</sub> = 0V, f =1MHz          |

**Electrical characteristics ( $T_A = 25^{\circ}\text{C}$ , unless otherwise noted)**

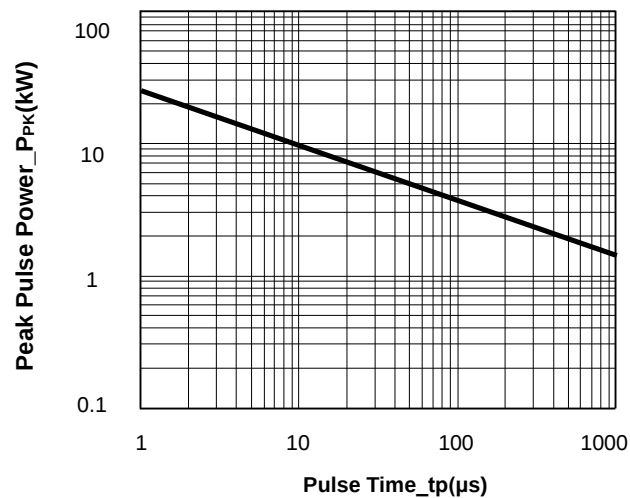


Definitions of electrical characteristics

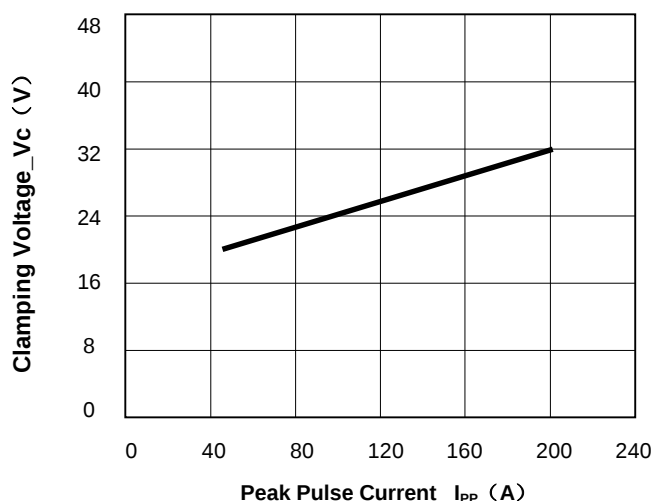
**Typical Performance Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise Specified)**



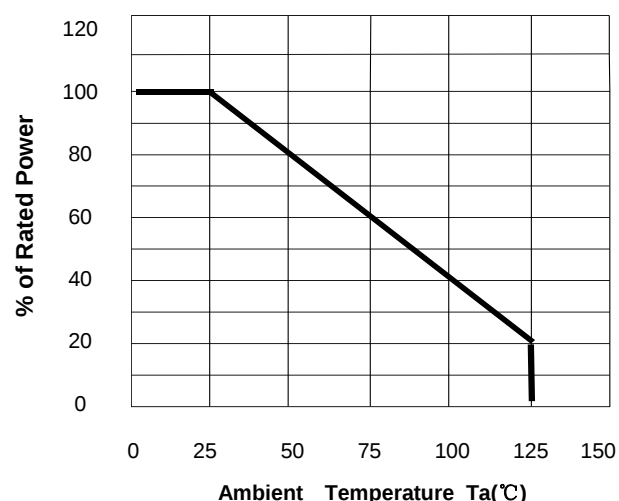
**Junction Capacitance vs. Reverse Voltage**



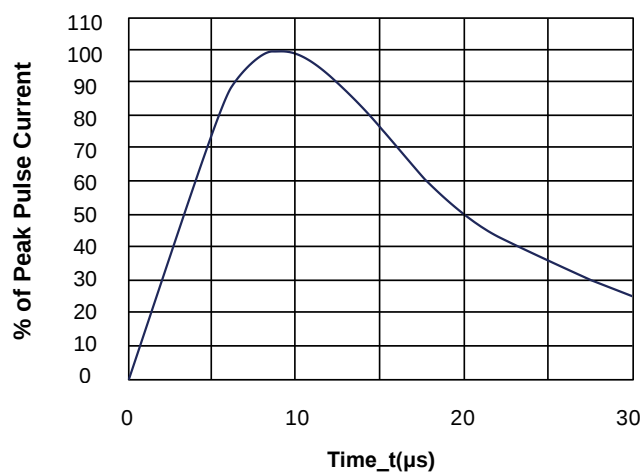
**Peak Pulse Power vs. Pulse Time**



**Clamping Voltage vs. Peak Pulse Current**

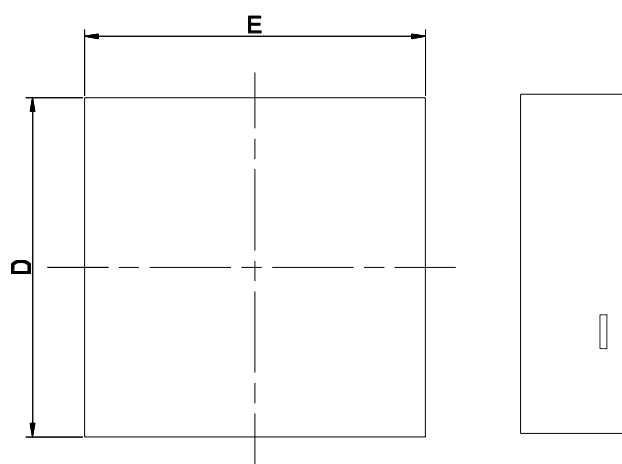


**Power Derating Curve**

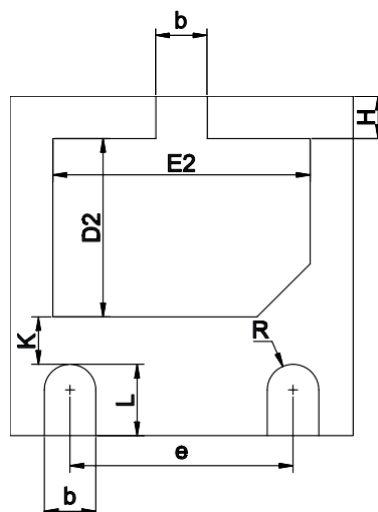


**8/20 $\mu\text{s}$  Pulse Waveform**

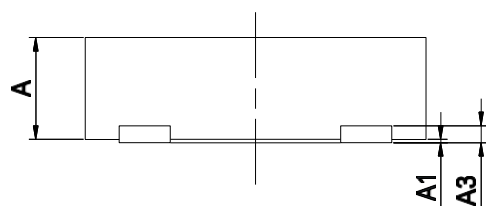
**DFN2020-3 Package Outline Drawing**



**Top View**

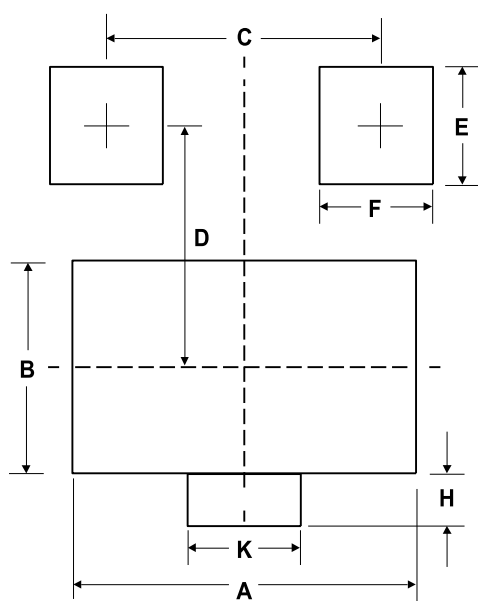


**Bottom View**



**Side View**

**Suggested Land Pattern**

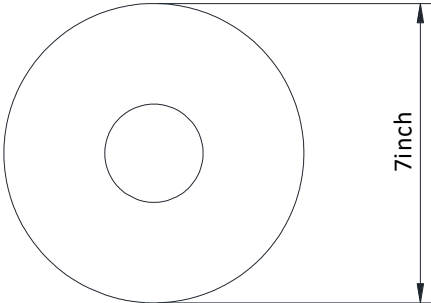


| Symbol | Dimensions In Millimeters |      |      |
|--------|---------------------------|------|------|
|        | Min.                      | Typ. | Max  |
| A      | 0.50                      | 0.55 | 0.60 |
| A1     | 0.00                      | 0.02 | 0.05 |
| A3     | 0.10 REF.                 |      |      |
| b      | 0.25                      | 0.30 | 0.35 |
| D      | 1.90                      | 2.00 | 2.10 |
| E      | 1.90                      | 2.00 | 2.10 |
| D2     | 0.95                      | 1.05 | 1.15 |
| E2     | 1.40                      | 1.50 | 1.60 |
| e      | 1.20                      | 1.30 | 1.40 |
| H      | 0.20                      | 0.25 | 0.30 |
| K      | 0.20                      | 0.30 | 0.40 |
| L      | 0.35                      | 0.40 | 0.45 |
| R      | 0.13                      | -    | -    |

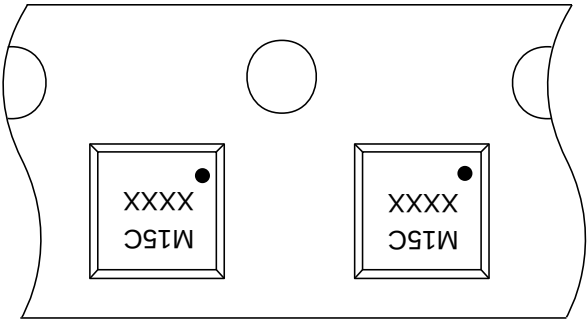
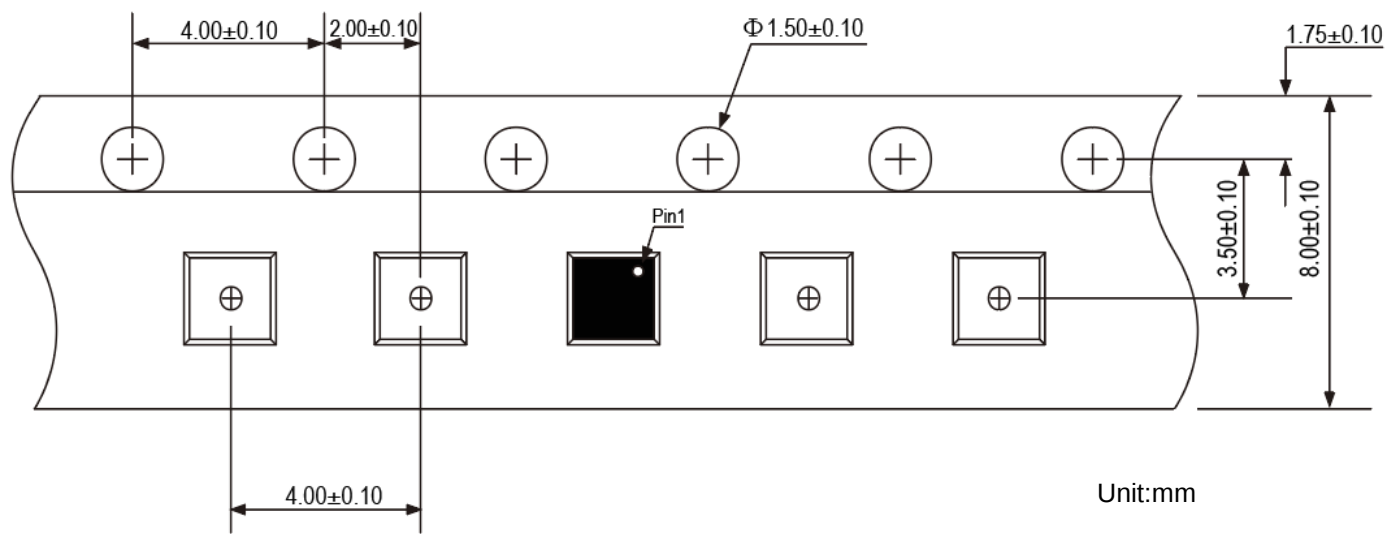
| SYM | MILLIMETERS |
|-----|-------------|
| A   | 1.60        |
| B   | 1.10        |
| C   | 1.30        |
| D   | 1.05        |
| E   | 0.50        |
| F   | 0.40        |
| K   | 0.40        |
| H   | 0.25        |

TAPE AND REEL INFORMATION

Reel Dimensions



Tape Dimensions



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