

## 1-Line Bi-directional TVS Diode

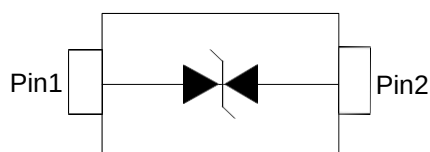
### Description

The PESDU1211D5N is designed to protect voltage sensitive components from ESD and transient voltage events. The PESDU1211D5N complies with the IEC 61000-4-2 (ESD) standard with  $\pm 30\text{kV}$  air and  $\pm 30\text{kV}$  contact discharge. Excellent clamping capability, low leakage, and fast response time make these parts ideal for ESD protection on designs where board space is at a premium.

### Features

- Reverse stand-off voltage: 12V Max
- Low leakage current: nA level
- Low Clamping Voltage
- Response time is typically  $< 1\text{ ns}$
- 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) 9.0A (8/20 $\mu\text{s}$ )
- RoHS Compliant

### Schematic and Pin Configuration



Graphic symbol

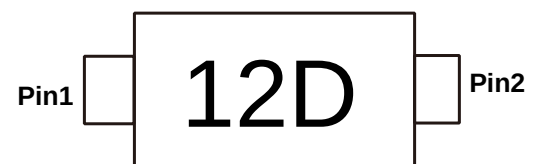
### Mechanical Characteristics

- Package: SOD-523
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below

### Applications

- Cellular phones
- Portable devices
- Digital Cameras
- Power supplies

### Marking Information



**12D** = Device Marking Code

### Ordering Information

| Part Number  | Shipping         | Reel Size |
|--------------|------------------|-----------|
| PESDU1211D5N | 3000/Tape & Reel | 7 inch    |

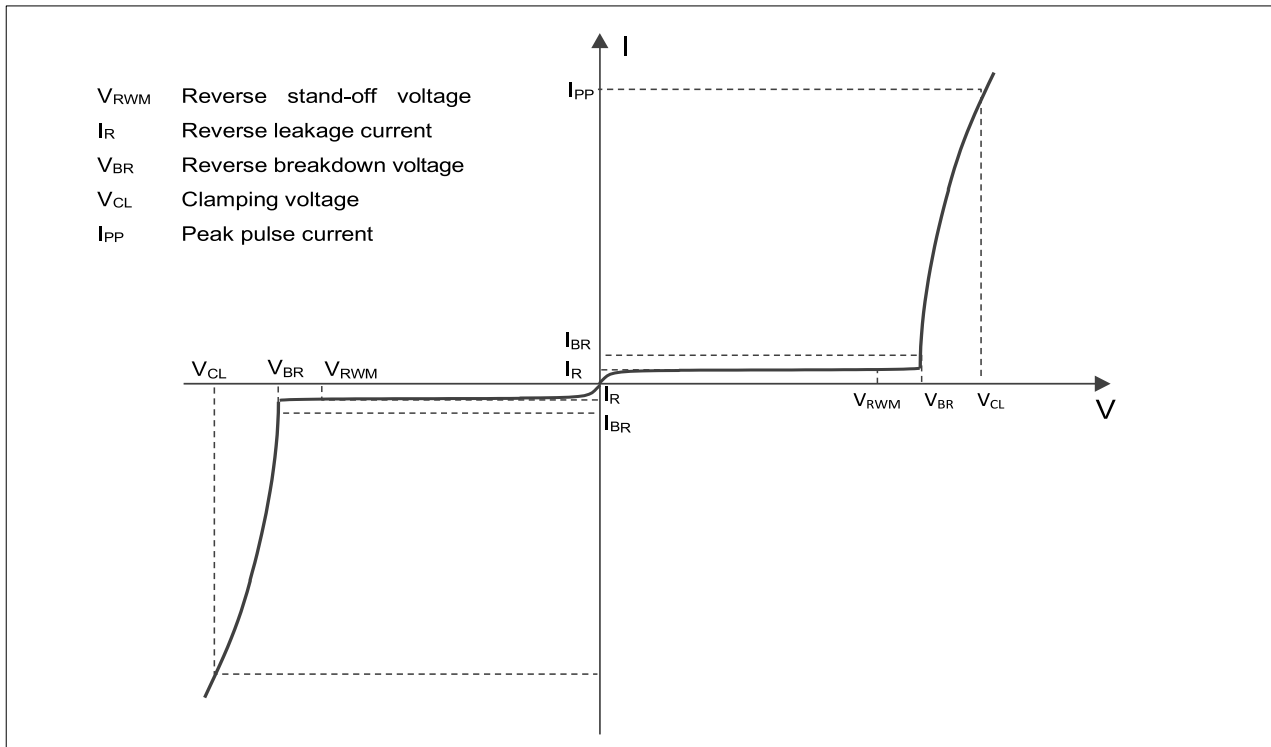
**Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

| Parameter                                | Symbol           | Value      | Unit               |
|------------------------------------------|------------------|------------|--------------------|
| Peak Pulse Power (8/20 $\mu\text{s}$ )   | P <sub>pk</sub>  | 162        | W                  |
| Peak Pulse Current (8/20 $\mu\text{s}$ ) | I <sub>PP</sub>  | 9          | A                  |
| ESD per IEC 61000-4-2 (Air)              | V <sub>ESD</sub> | $\pm 30$   | kV                 |
| ESD per IEC 61000-4-2 (Contact)          |                  | $\pm 30$   |                    |
| Lead temperature                         | T <sub>L</sub>   | 260        | $^{\circ}\text{C}$ |
| Junction Temperature                     | T <sub>J</sub>   | 125        | $^{\circ}\text{C}$ |
| Operating Temperature Range              | T <sub>OP</sub>  | -40 ~ +125 | $^{\circ}\text{C}$ |
| Storage Temperature Range                | T <sub>STG</sub> | -55 ~ +150 | $^{\circ}\text{C}$ |

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

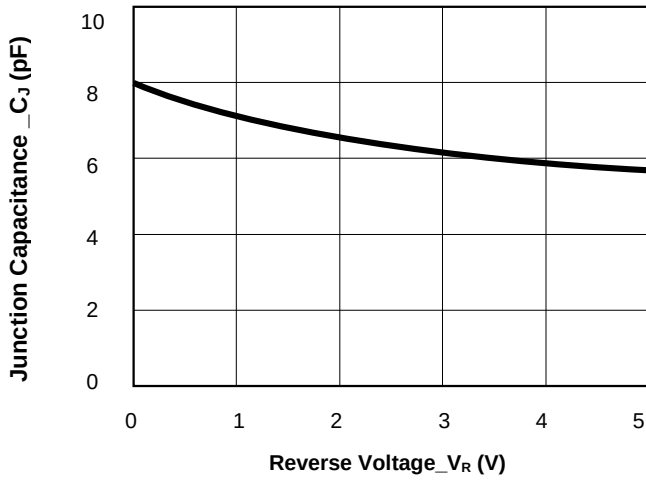
| Parameter               | Symbol           | Min. | Typ. | Max. | Unit | Test Condition                                    |
|-------------------------|------------------|------|------|------|------|---------------------------------------------------|
| Reverse Working Voltage | V <sub>RWM</sub> |      |      | 12   | V    |                                                   |
| Breakdown Voltage       | V <sub>BR</sub>  | 13   |      | 16   | 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>   |      |      | 15   | V    | I <sub>PP</sub> = 1.0A (8/20 $\mu\text{s}$ pulse) |
| Clamping Voltage        | V <sub>C</sub>   |      |      | 18   | V    | I <sub>PP</sub> = 9.0A (8/20 $\mu\text{s}$ pulse) |
| Junction Capacitance    | C <sub>J</sub>   |      | 8    | 10   | pF   | V <sub>R</sub> = 0V, f = 1MHz                     |

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

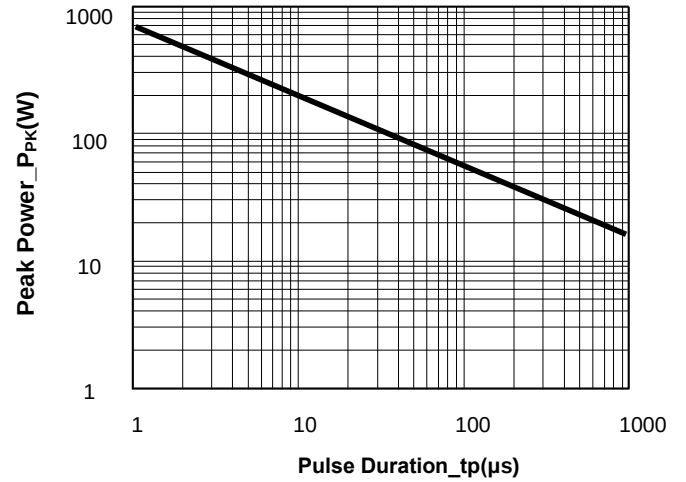


Definitions of electrical characteristics

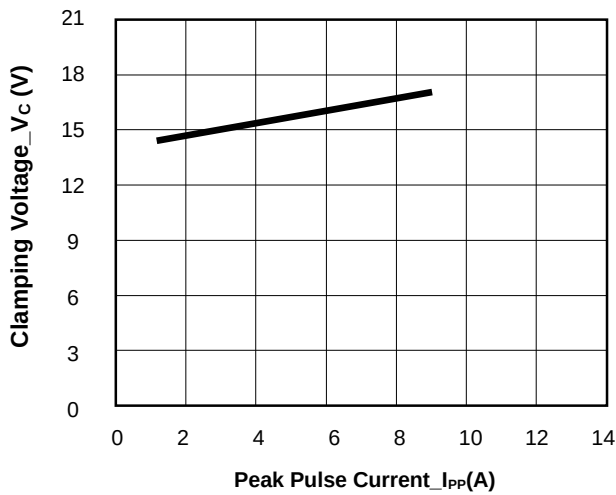
**Typical Performance Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise Specified)**



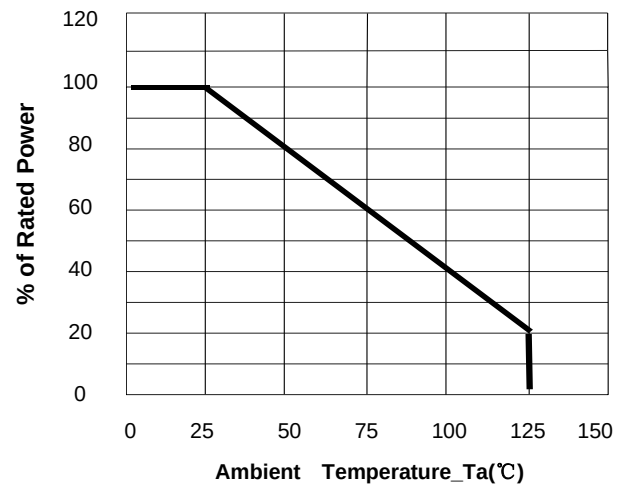
**Junction Capacitance vs. Reverse Voltage**



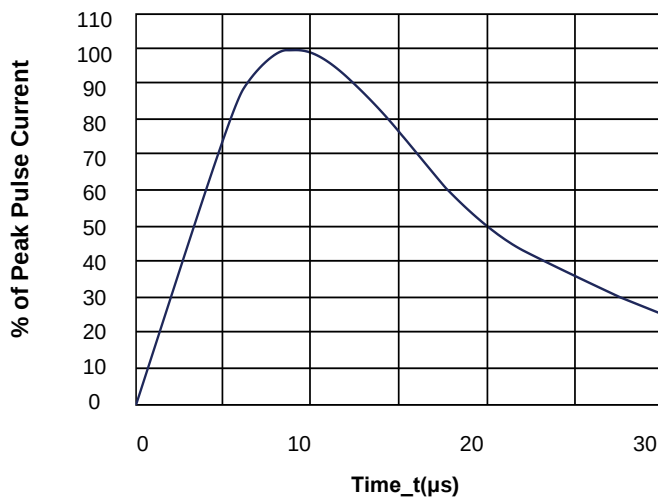
**Peak Pulse Power vs. Pulse Time**



**Clamping Voltage vs. Peak Pulse Current**

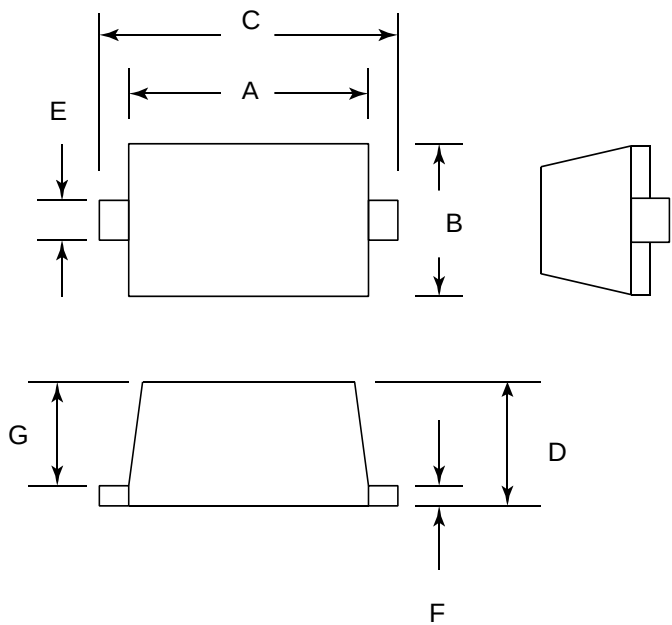


**Power Derating Curve**



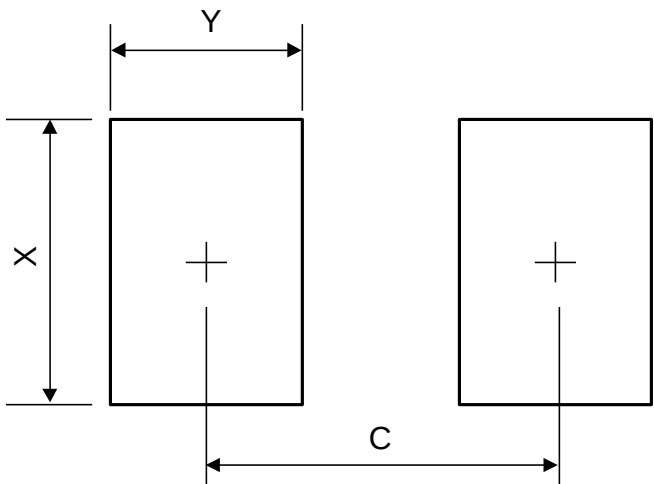
**8/20 $\mu\text{s}$  Pulse Waveform**

**SOD523 Package Outline Drawing**



| SYM | DIMENSIONS  |       |        |       |
|-----|-------------|-------|--------|-------|
|     | MILLIMETERS |       | INCHES |       |
|     | MIN         | MAX   | MIN    | MAX   |
| A   | 1.10        | 1.30  | 0.043  | 0.051 |
| B   | 0.70        | 0.90. | 0.028  | 0.035 |
| C   | 1.50        | 1.70  | 0.059  | 0.067 |
| D   | 0.50        | 0.70  | 0.020  | 0.028 |
| E   | 0.25        | 0.35  | 0.010  | 0.014 |
| F   | 0.10        | 0.20  | 0.004  | 0.008 |
| G   | 0.40        | 0.50  | 0.016  | 0.020 |

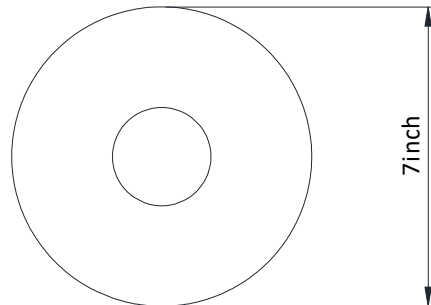
**Suggested Land Pattern**



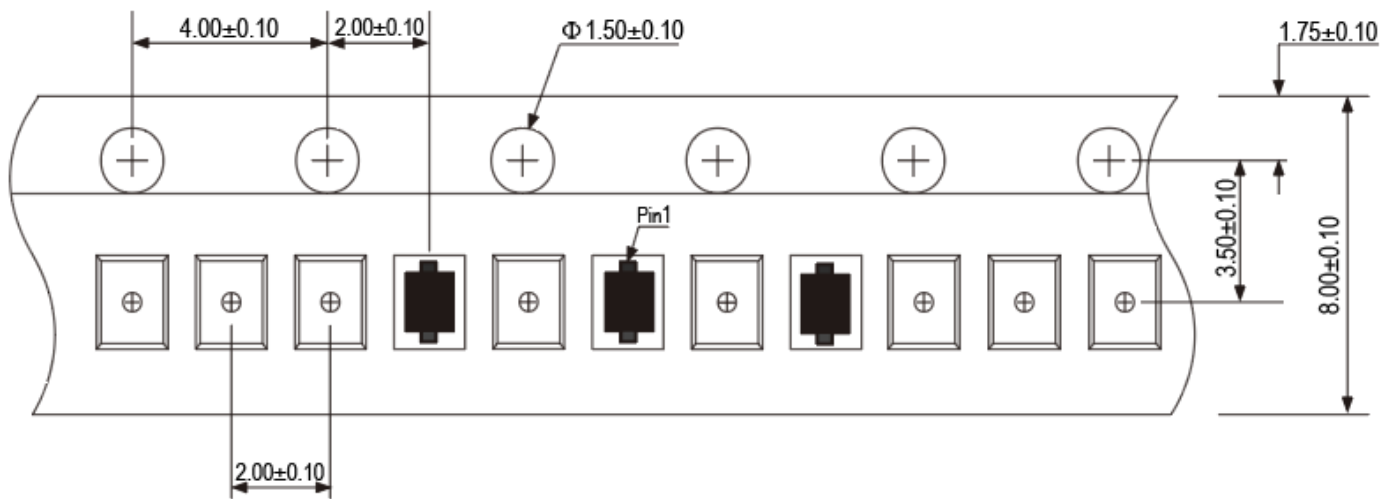
| SYM | DIMENSIONS  |        |
|-----|-------------|--------|
|     | MILLIMETERS | INCHES |
| C   | 1.42        | 0.056  |
| X   | 0.70        | 0.028  |
| Y   | 0.60        | 0.024  |

## TAPE AND REEL INFORMATION

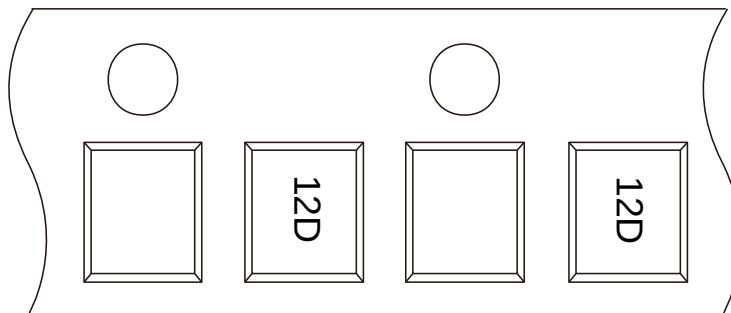
Reel Dimensions



Tape Dimensions



Unit:mm



➔  
User Direction of Feed

## IMPORTANT NOTICE

The information given in this document is believed to be accurate and reliable but shall in no event be regarded as a guarantee of conditions or characteristics. PN-Silicon assumes no responsibility for any errors in this document, or for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of PN-Silicon.

The product listed in this document are designed to be used with ordinary electronic equipment or devices and are not authorized to used with equipment or devices which require an extremely high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, aerospace machinery, nuclear-reactor controllers, automotive and other safety device.)

The  logo is a registered trademark of PN-Silicon co., ltd which reserves the right to make changes to the product or this document at any time without notice. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. PN-Silicon makes no warranty, representation or guarantee, express or implied, regarding the suitability of its products for any particular purpose. All rights reserved.