

**1-Line Bi-directional 2.5V ESD Protection Diode**

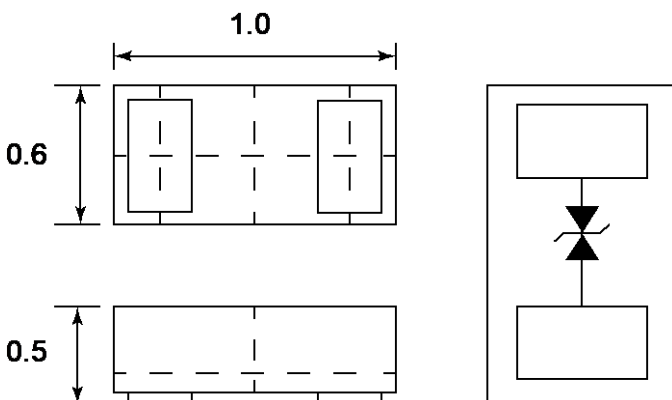
**Description**

The PESDU2581P1 is a 2.5V bi-directional ESD protection diode, to provide fast response time and ultra low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data line. The PESDU2581P1 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 an ultra-small 1.0x0.6x 0.5mm DFN lead-free package. The small size and high ESD surge protection make PESDU2581P1 an ideal choice to protect cellphone, digital cameras, audio players and many other portable applications.

**Features**

- Protects one data line
- Ultra low leakage: nA level
- Ultra low operating voltage: 2.5V
- 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) 28A (8/20 $\mu\text{s}$ )
- RoHS Compliant

**Dimensions and Pin Configuration**



Package Dimensions      Circuit and Pin Schematic

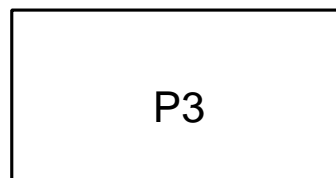
**Mechanical Characteristics**

- Package: DFN1006-2 (1.0x0.6x0.5mm)
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below

**Applications**

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

**Marking Information**



P3 = Device Marking Code

**Ordering Information**

Part Number	Shipping	Reel Size
PESDU2581P1	10000/Tape & Reel	7 inch

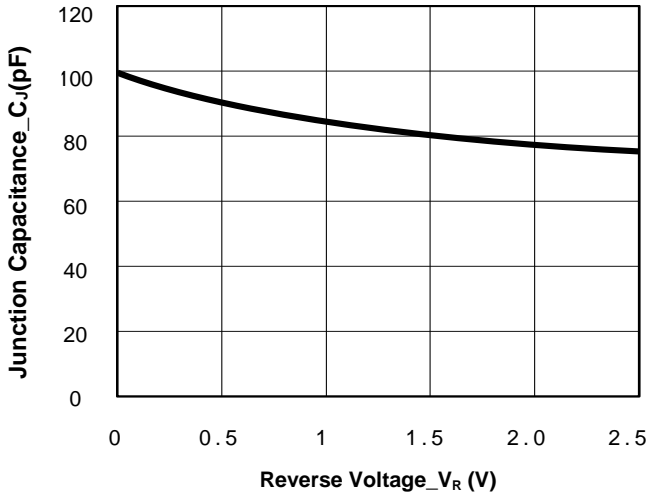
**Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 $\mu\text{s}$ )	Ppk	308	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	I <sub>PP</sub>	28	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	$^{\circ}\text{C}$
Operating Temperature Range	T <sub>OP</sub>	-40 ~ +85	$^{\circ}\text{C}$
Storage Temperature Range	T <sub>STG</sub>	-55 ~ +150	$^{\circ}\text{C}$

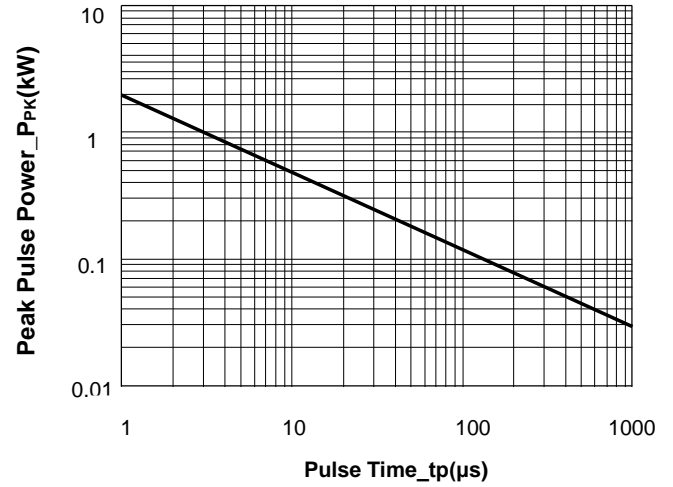
**Electrical Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>			2.5	V	
Reverse Breakdown Voltage	V <sub>BR</sub>	3.3				I <sub>T</sub> = 1mA
Reverse Leakage Current	I <sub>R</sub>			0.2	$\mu\text{A}$	V <sub>RWM</sub> = 2.5V
Clamping Voltage	V <sub>C</sub>			5	V	I <sub>PP</sub> = 1A (8/20 $\mu\text{s}$ pulse)
Clamping Voltage	V <sub>C</sub>			11	V	I <sub>PP</sub> = 28A (8/20 $\mu\text{s}$ pulse)
Junction Capacitance	C <sub>J</sub>			100	pF	V <sub>R</sub> = 0V, f = 1MHz

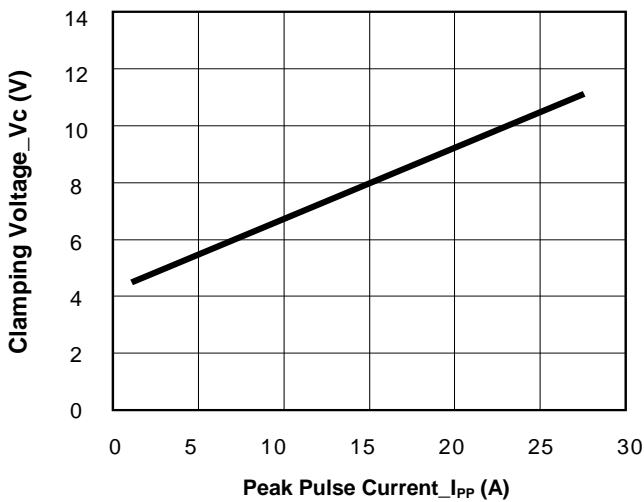
**Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)**



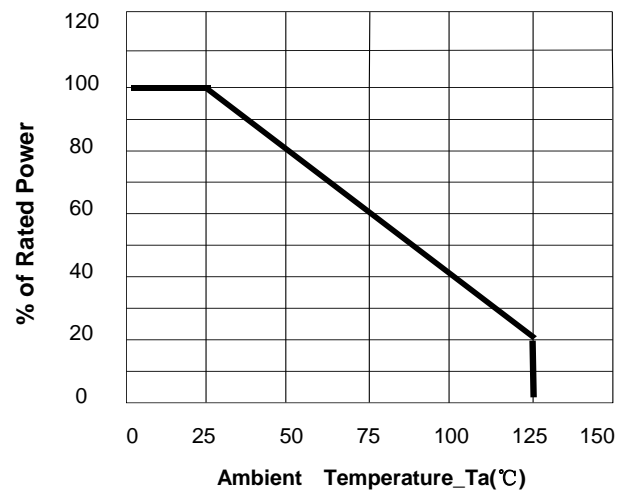
**Junction Capacitance vs. Reverse Voltage**



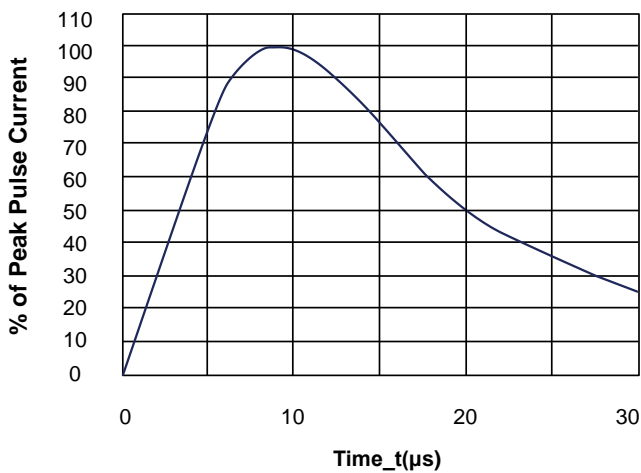
**Peak Pulse Power vs. Pulse Time**



**Clamping Voltage vs. Peak Pulse Current**

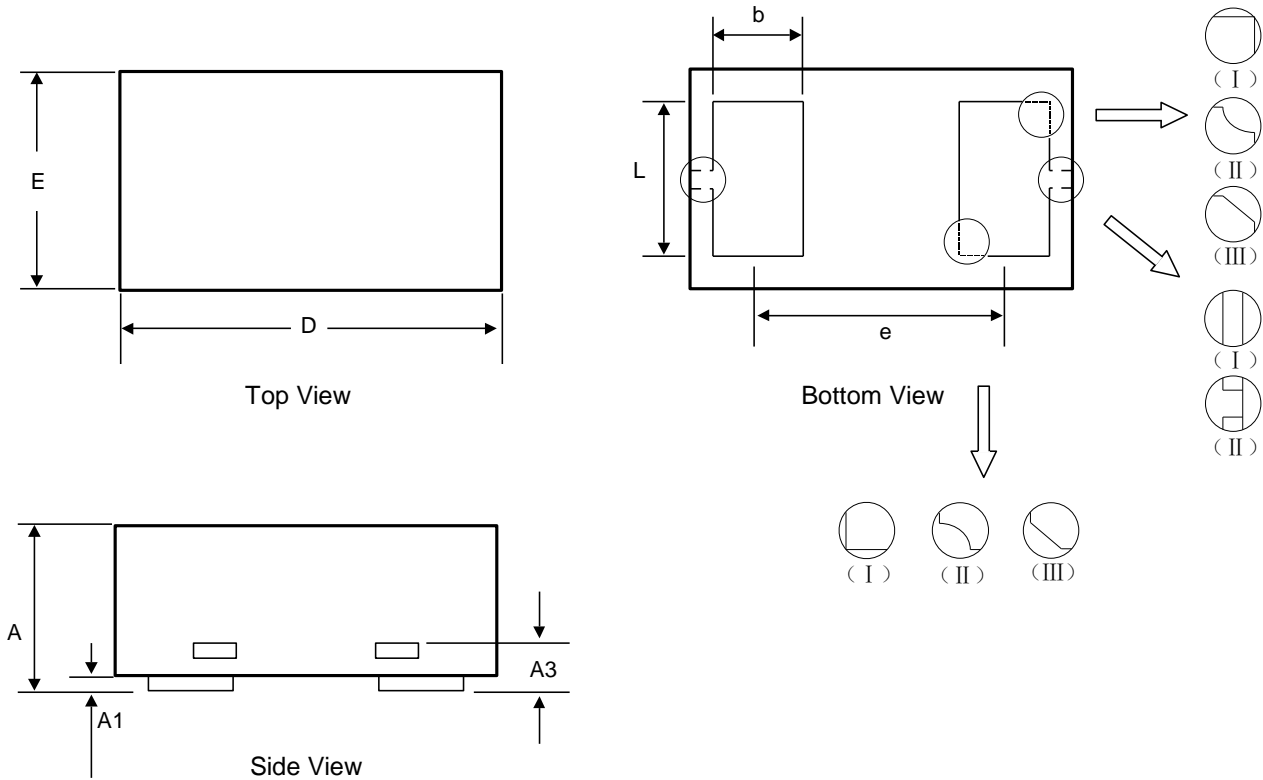


**Power Derating Curve**



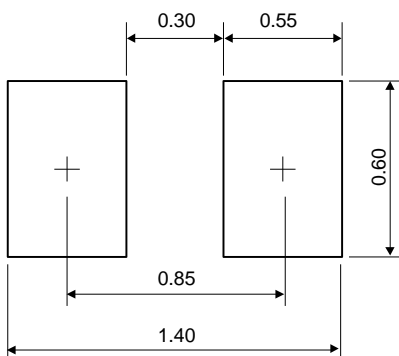
**8/20μs Pulse Waveform**

**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)**

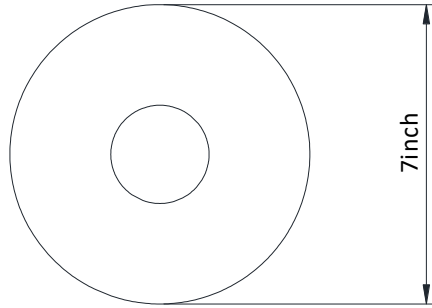


**Notes:**

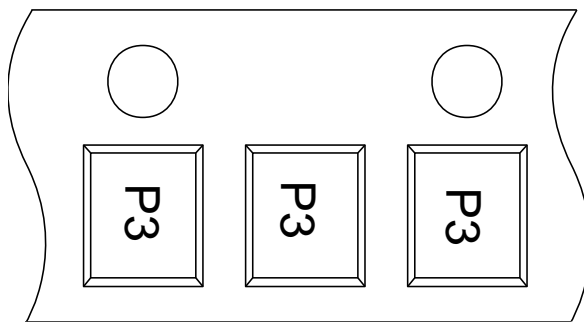
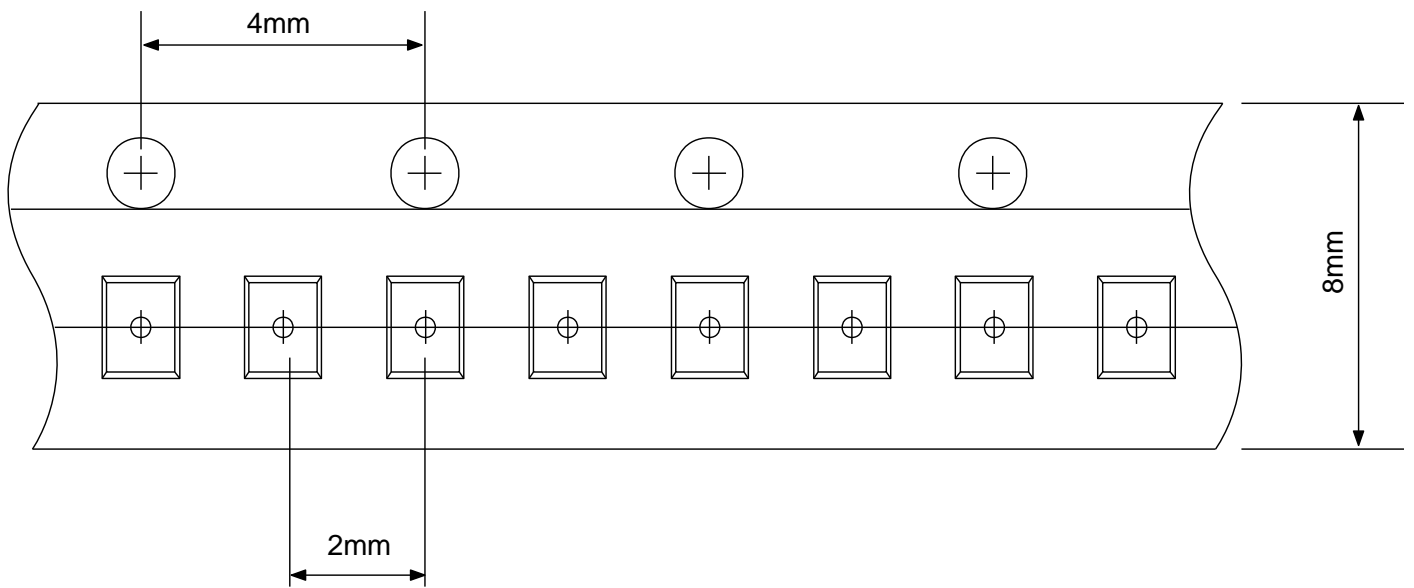
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

**TAPE AND REEL INFORMATION**

Reel Dimensions



Tape Dimensions




User Direction of Feed

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