

**1-Line Bi-directional TVS Diode**

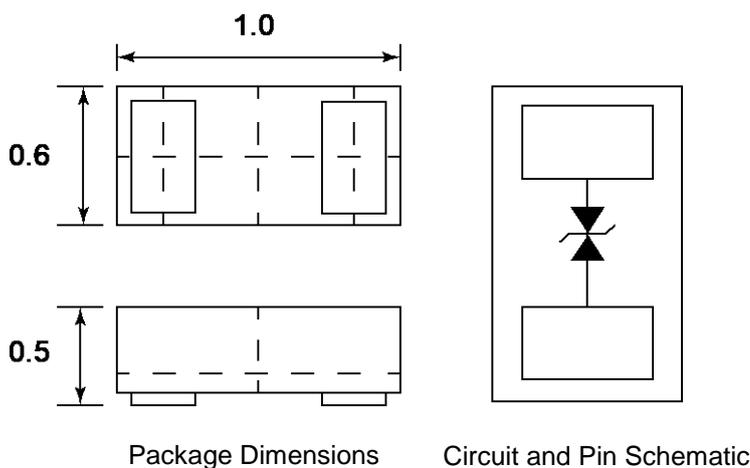
**Description**

The PESDU1261P1 is a 12V bi-directional TVS diode, 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 PESDU1261P1 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 lead-free DFN1006-2 package. The small size and high ESD protection make PESDU1261P1 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

**Features**

- Protects one data or power line
- Operating voltage: 12V
- 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) 4A (8/20 $\mu\text{s}$ )
- RoHS Compliant

**Dimensions and Pin Configuration**



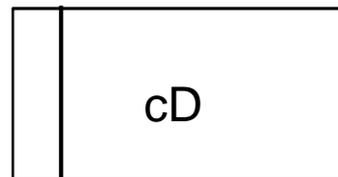
**Mechanical Characteristics**

- 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 & Accessories
- Personal Digital Assistants
- Notebooks & Handhelds
- Portable Instrumentation
- Digital Cameras

**Marking Information**



cD = Device Marking Code

**Ordering Information**

Part Number	Shipping	Reel Size
PESDU1261P1	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 $\mu\text{s}$ )	$P_{PK}$	100	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	$I_{PP}$	4	A
ESD per IEC 61000-4-2 (Air)	$V_{ESD}$	$\pm 30$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 30$	
Lead temperature	$T_L$	260	$^{\circ}\text{C}$
Operating Temperature Range	$T_{OP}$	-40 ~ +85	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-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	$V_{RWM}$			12	V	
Breakdown Voltage	$V_{BR}$	13.8	15.5		V	$I_T = 1\text{mA}$
Reverse Leakage Current	$I_R$			0.1	$\mu\text{A}$	$V_{RWM} = 12\text{V}$
Clamping voltage <sup>1)</sup>	$V_{CL}$		22.0		V	$I_{PP} = 16\text{A}$ , $t_p = 100\text{ns}$
Dynamic resistance <sup>1)</sup>	$R_{DYN}$		0.35		$\Omega$	
Clamping voltage <sup>2)</sup>	$V_{CL}$		22.0		V	$V_{ESD} = 8\text{kV}$
Clamping Voltage <sup>3)</sup>	$V_C$			17	V	$I_{PP} = 1\text{A}$ (8/20 $\mu\text{s}$ pulse)
Clamping Voltage <sup>3)</sup>	$V_C$			25	V	$I_{PP} = 4\text{A}$ (8/20 $\mu\text{s}$ pulse)
Junction Capacitance	$C_J$		12		pF	$V_R = 0\text{V}$ , $f = 1\text{MHz}$

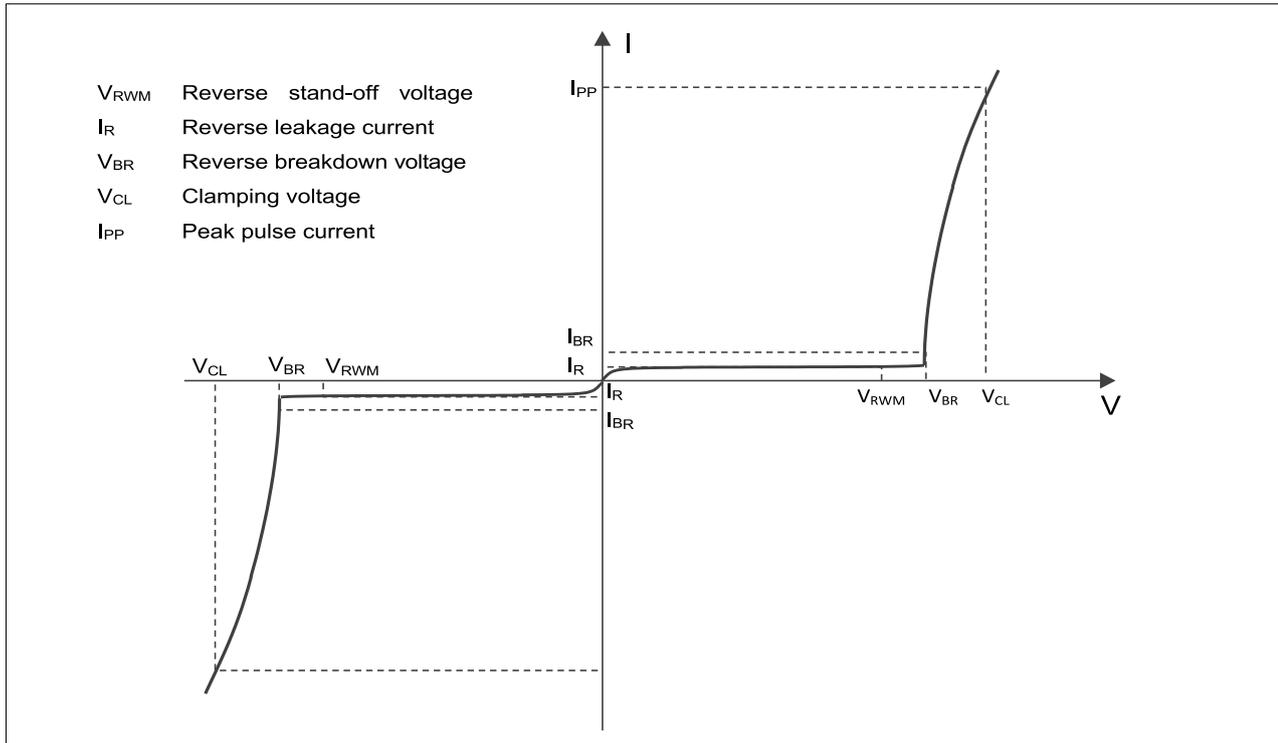
Notes:

1) TLP parameter:  $Z_0 = 50\Omega$ ,  $t_p = 100\text{ns}$ ,  $t_r = 2\text{ns}$ , averaging window from 60ns to 80ns.  $R_{DYN}$  is calculated from 4A to 16A.

2) Contact discharge mode, according to IEC61000-4-2.

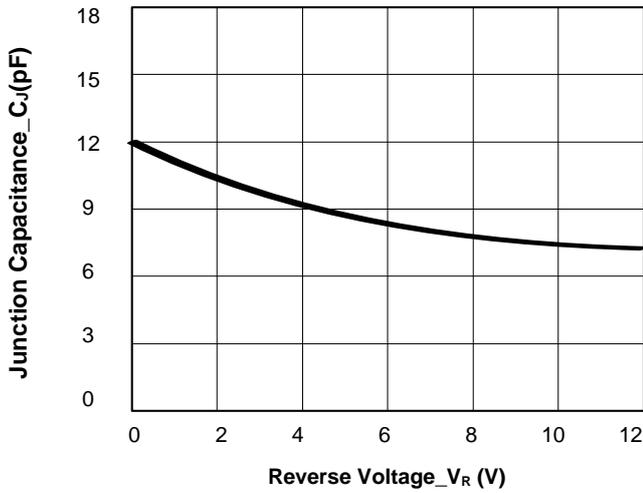
3) Non-repetitive current pulse, according to IEC61000-4-5.

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

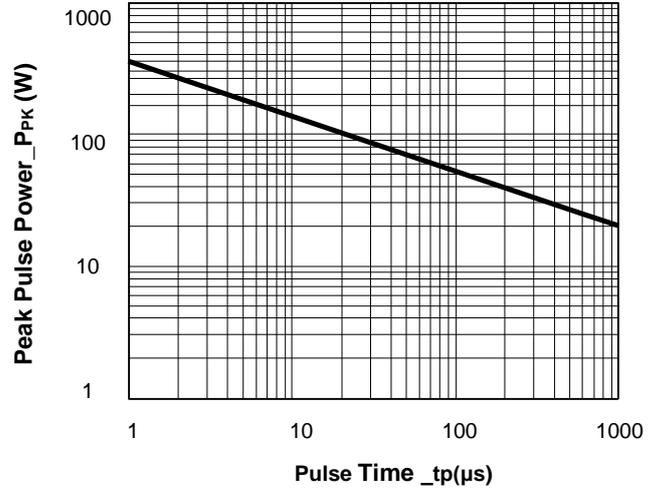


Definitions of electrical characteristics

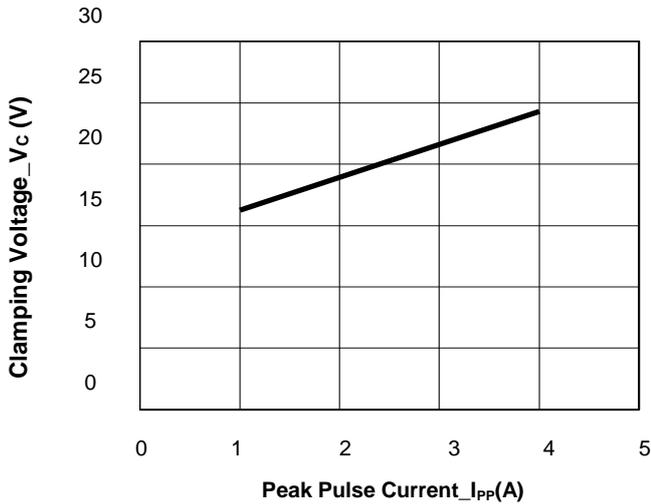
**Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)**



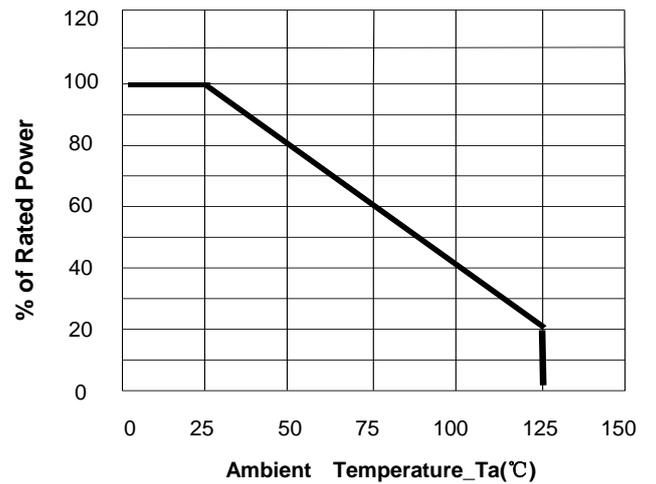
**Junction Capacitance vs. Reverse Voltage**



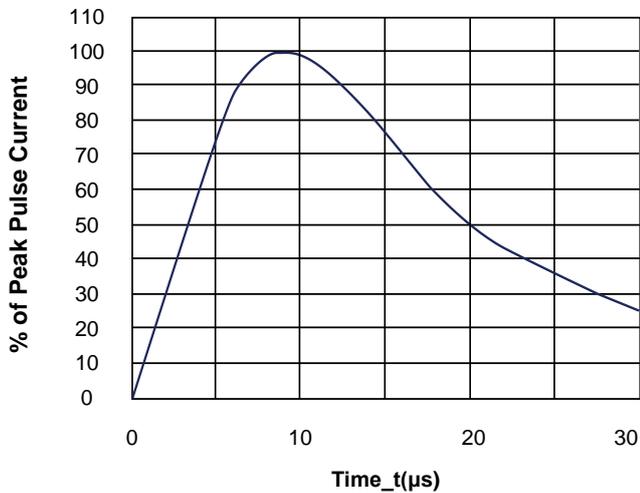
**Peak Pulse Power vs. Pulse Time**



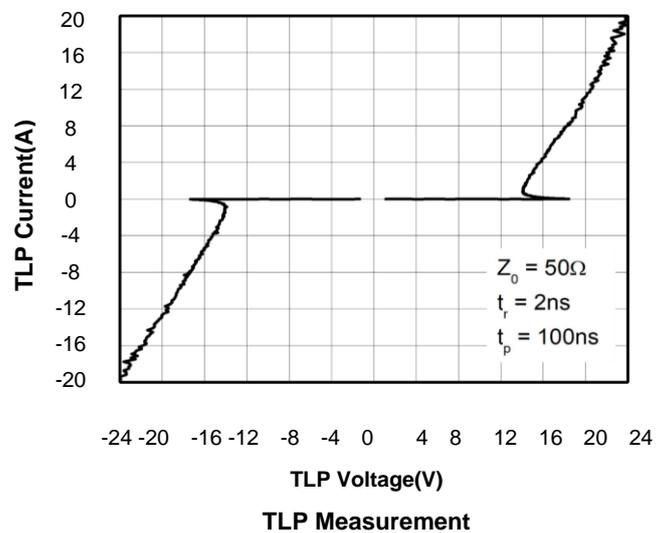
**Clamping Voltage vs. Peak Pulse Current**



**Power Derating Curve**

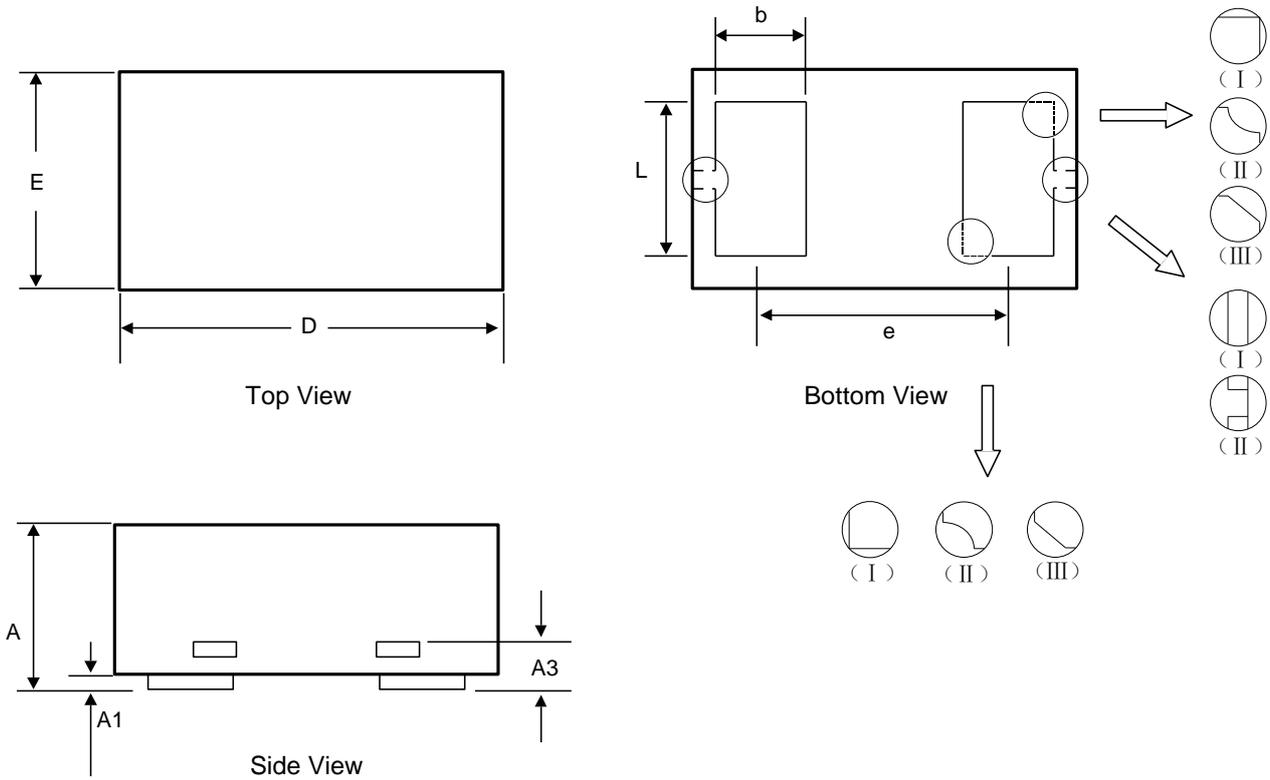


**8/20μs Pulse Waveform**



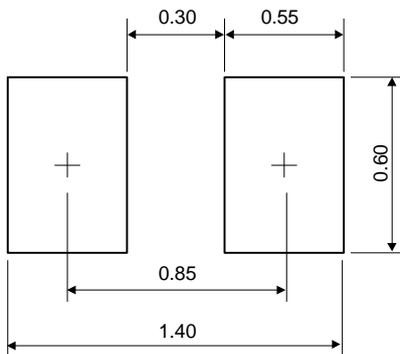
**TLP Measurement**

**DFN1006-2 Package Outline Drawing**



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.340	0.450	0.550
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)**

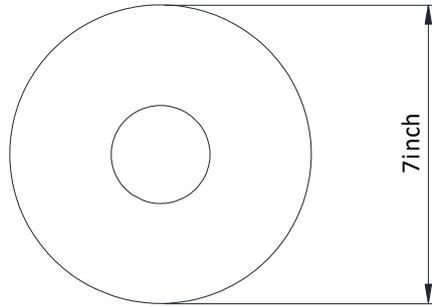


**Notes:**

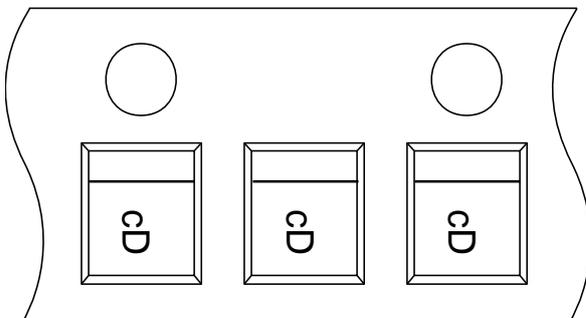
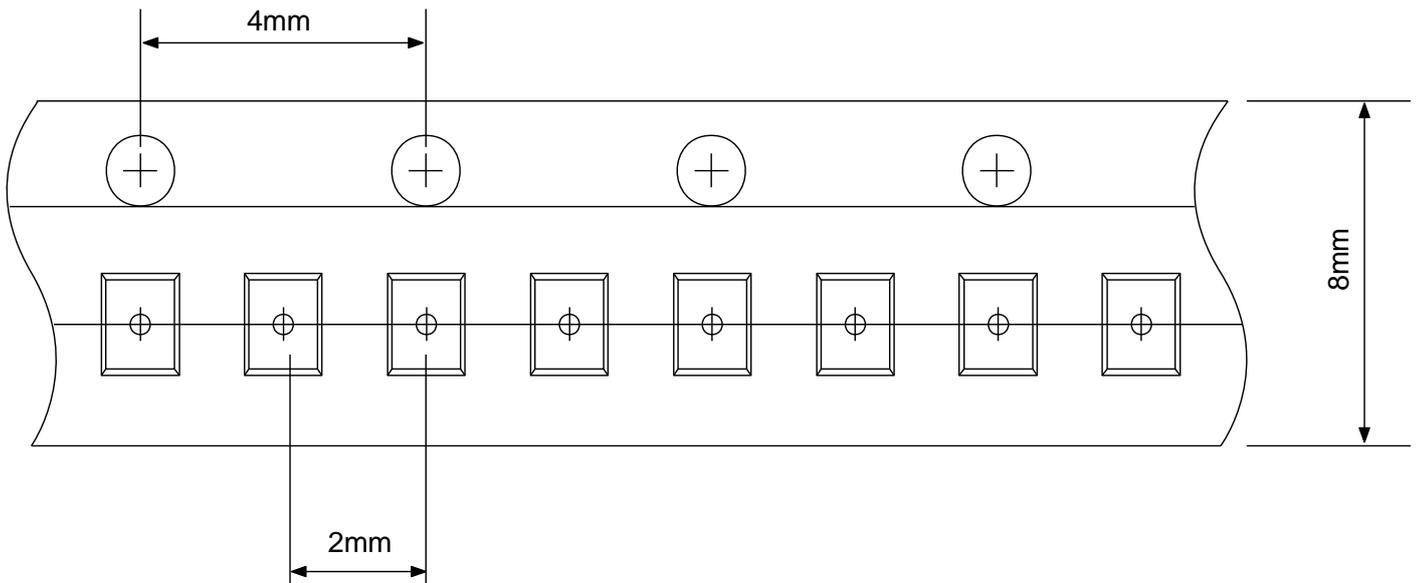
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

**TAPE AND REEL INFORMATION**

Reel Dimensions



Tape Dimensions



User Direction of Feed

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