

## 1-Line Bi-directional TVS Diode

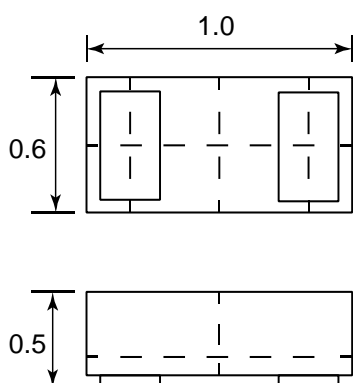
### Description

The PESDU0521P1 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 data and power line. The PESDU0521P1 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 1.0x0.6x0.5mm lead-free DFN package. The small size and high ESD protection make PESDU0521P1 an ideal choice to protect cellphone, digital cameras, audio players and many other portable applications.

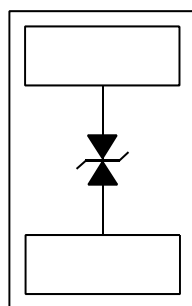
### Features

- Ultra small package: 1.0x0.6mm
- Protects one data or power line
- Ultra low leakage: nA level
- Low operating voltage: 5V
- Low clamping voltage
- 2-pin leadless package
- 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) 8.5A (8/20 $\mu\text{s}$ )
- RoHS Compliant

### Dimensions and Pin Configuration



Package Dimensions



Circuit and Pin Schematic

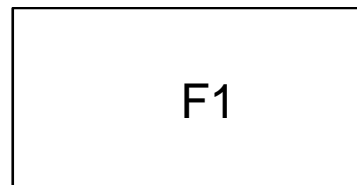
### Mechanical Characteristics

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

### Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players
- Keypads, Side Keys, LCD Displays

### Marking Information



F1 = Device Marking Code

### Ordering Information

Part Number	Shipping	Reel Size
PESDU0521P1	10000/Tape & Reel	7 inch

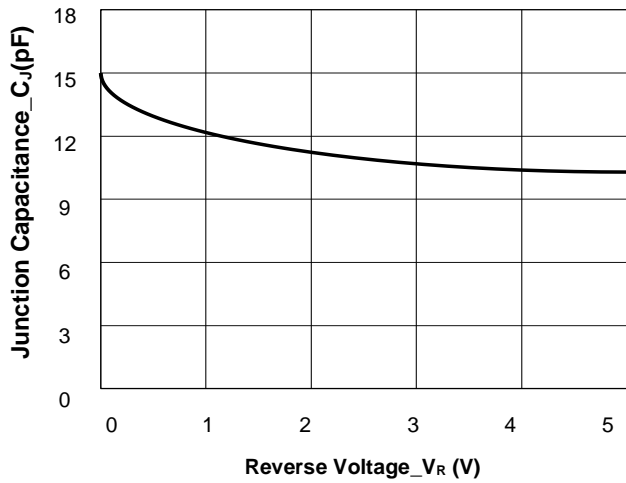
**Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 $\mu\text{s}$ )	$P_{PK}$	110	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	$I_{PP}$	8.5	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	$V_{ESD}$	$\pm 30$ $\pm 30$	kV
Operating Temperature Range	$T_{OP}$	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^{\circ}\text{C}$

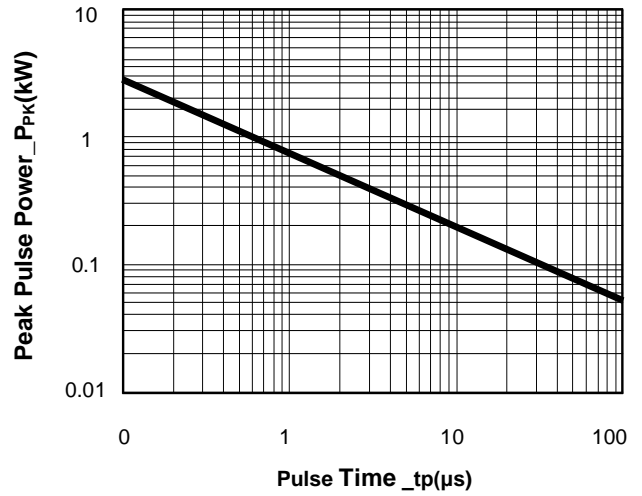
**Electrical Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	$V_{RWM}$			5	V	
Breakdown Voltage	$V_{BR}$	5.6			V	$I_T = 1\text{mA}$
Reverse Leakage Current	$I_R$			0.1	$\mu\text{A}$	$V_{RWM} = 5\text{V}$
Clamping Voltage	$V_C$		7	9	V	$I_{PP} = 1\text{A}$ (8/20 $\mu\text{s}$ pulse)
Clamping Voltage	$V_C$		10	13	V	$I_{PP} = 8.5\text{A}$ (8/20 $\mu\text{s}$ pulse)
Junction Capacitance	$C_J$		15	18	pF	$V_R = 0.2\text{V}$ , $f = 1\text{MHz}$

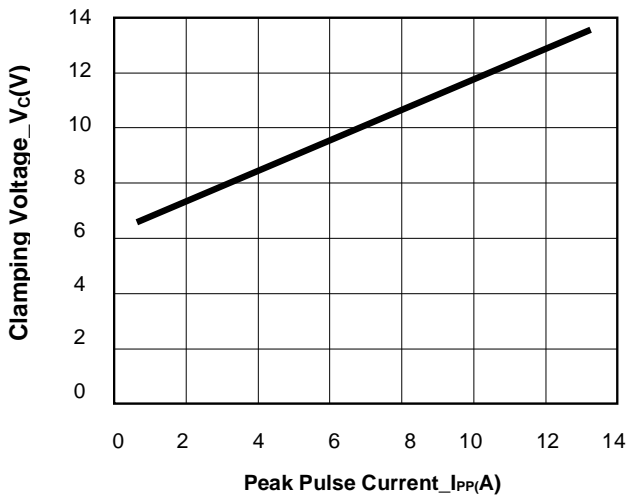
**Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)**



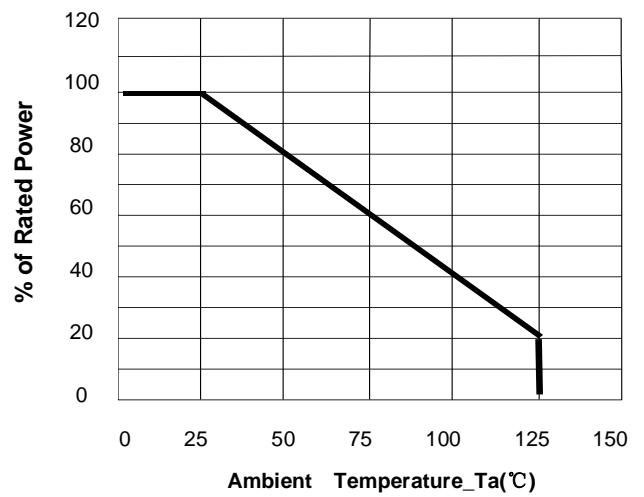
**Junction Capacitance vs. Reverse Voltage**



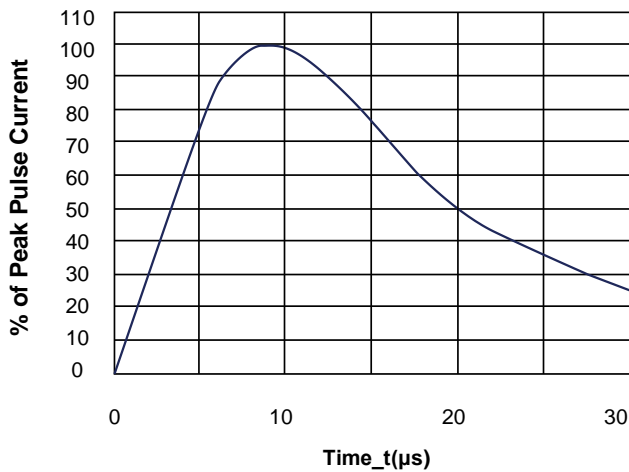
**Peak Pulse Power vs. Pulse Time**



**Clamping Voltage vs. Peak Pulse Current**

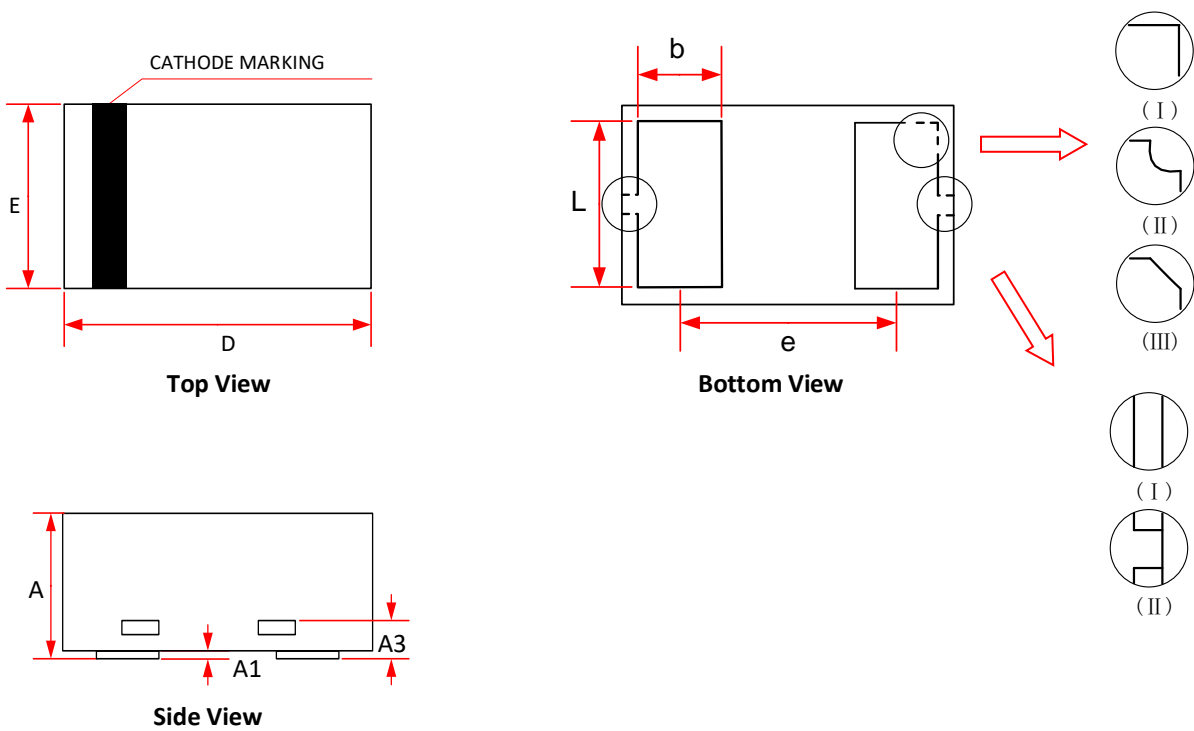


**Power Derating Curve**



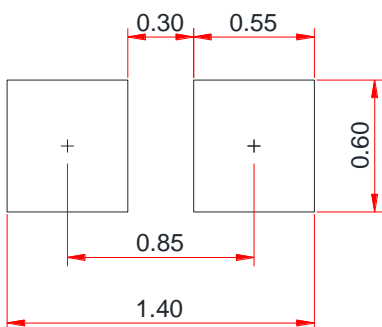
**8/20μs Pulse Waveform**

**DFN1006-2 Package Outline Drawing**



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.340	0.450	0.540
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.