

1-Line Bi-directional TVS Diode

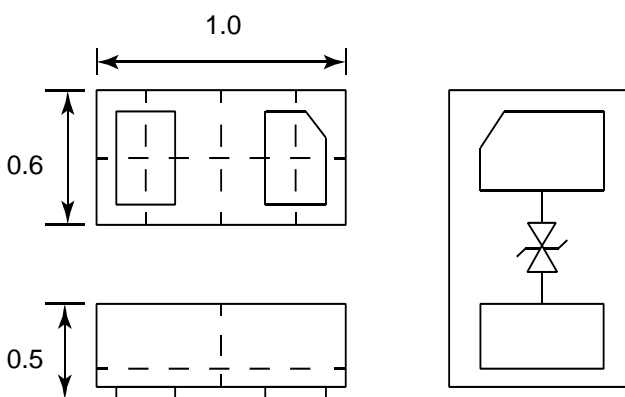
Description

The PESDU1561P1 is a 15V 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 PESDU1561P1 complies with the IEC 61000-4-2 (ESD) with $\pm 25\text{kV}$ air and $\pm 25\text{kV}$ contact discharge. It is assembled into an ultra-small lead-free DFN1006-2 package. The small size and high ESD surge protection make PESDU1561P1 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Features

- Protects one data or power line
- Ultra low leakage: nA level
- Operating voltage: 15V
- Low clamping voltage
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 25\text{kV}$
 - Contact discharge: $\pm 25\text{kV}$
 - IEC 61000-4-5 (Lightning) 5A (8/20 μs)
- RoHS Compliant

Dimensions and Pin Configuration



Package Dimensions

Circuit and Pin Schematic

Mechanical Characteristics

- Package: DFN1006-2 (1.0x0.6x0.5mm)
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Marking Information: See Below

Applications

- Cellular Handsets & Accessories
- Personal Digital Assistants (PDAs)
- Notebooks & Handhelds
- Portable Instrumentation
- Digital Cameras
- MP3 Players

Marking Information



DE = Device Marking Code

Ordering Information

Part Number	Shipping	Reel Size
PESDU1561P1	10000/Tape & Reel	7 inch

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P _{PK}	200	W
Peak Pulse Current (8/20μs)	I _{PP}	5	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V _{ESD}	±25 ±25	kV
Operating Temperature Range	T _{OP}	-55 to +125	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C

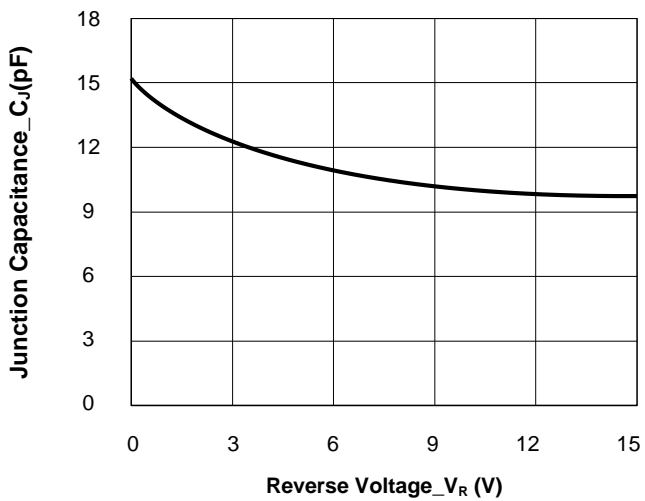
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			15	V	
Breakdown Voltage	V _{BR}	16.7			V	I _T = 1mA
Reverse Leakage Current	I _R			500	nA	V _{RWM} = 15V
Clamping Voltage	V _C		30	40	V	I _{PP} = 5A (8/20μs pulse)
Dynamic Resistance ^{1,2}	R _{DYN}		0.65		Ω	TLP=0.2/100ns
ESD Clamping Voltage ¹	V _C		24.5		V	I _{PP} = 4A, tp = 0.2/100ns (TLP)
ESD Clamping Voltage ¹	V _C		32.0		V	I _{PP} = 16A, tp = 0.2/100ns (TLP)
Junction Capacitance	C _J		15	20	pF	V _R = 0V, f = 1MHz

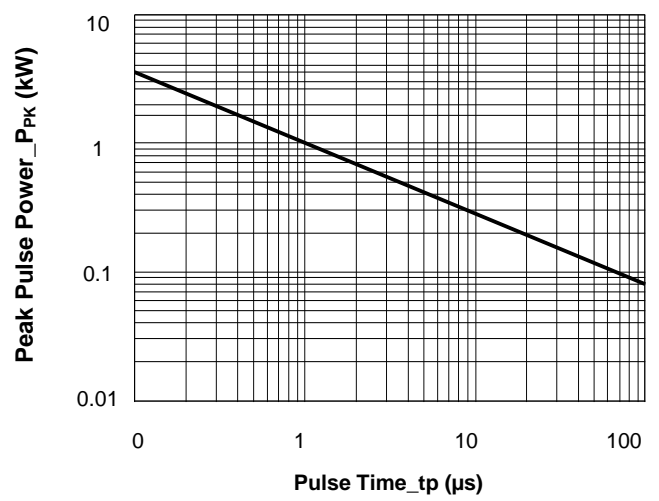
Notes: 1、TLP Setting: tp=100ns, tr=0.2ns, I_{TLP} and V_{TLP} sample window: t1=70ns to t2=90ns.

2、Dynamic resistance calculated from I_{PP}=4A to I_{PP}=16A using "Best Fit".

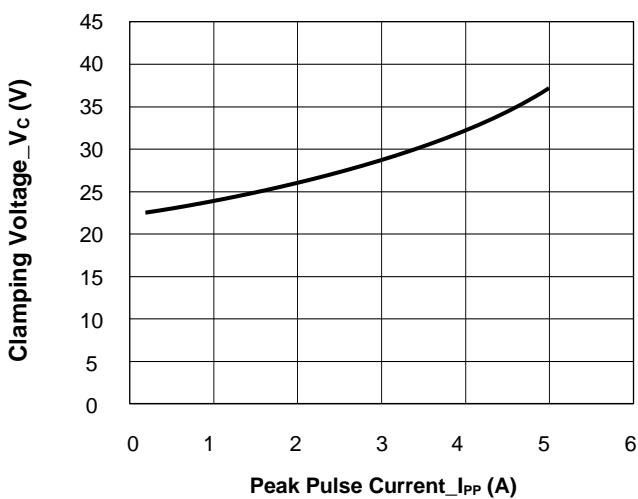
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



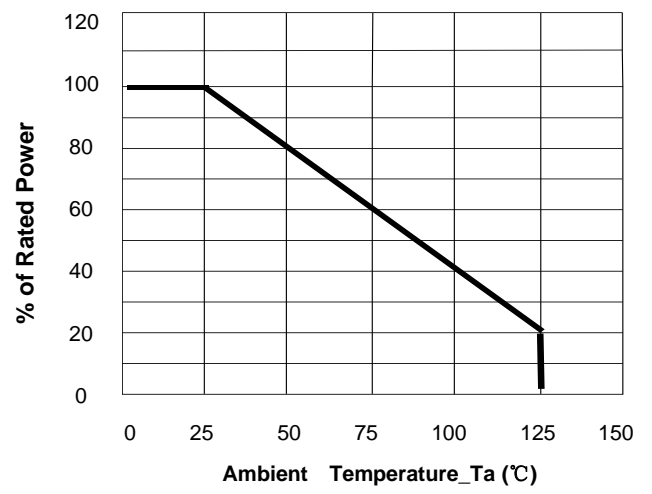
Junction Capacitance vs. Reverse Voltage



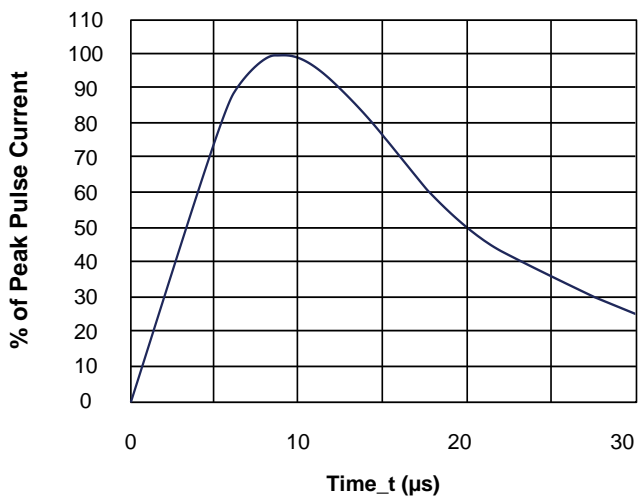
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current

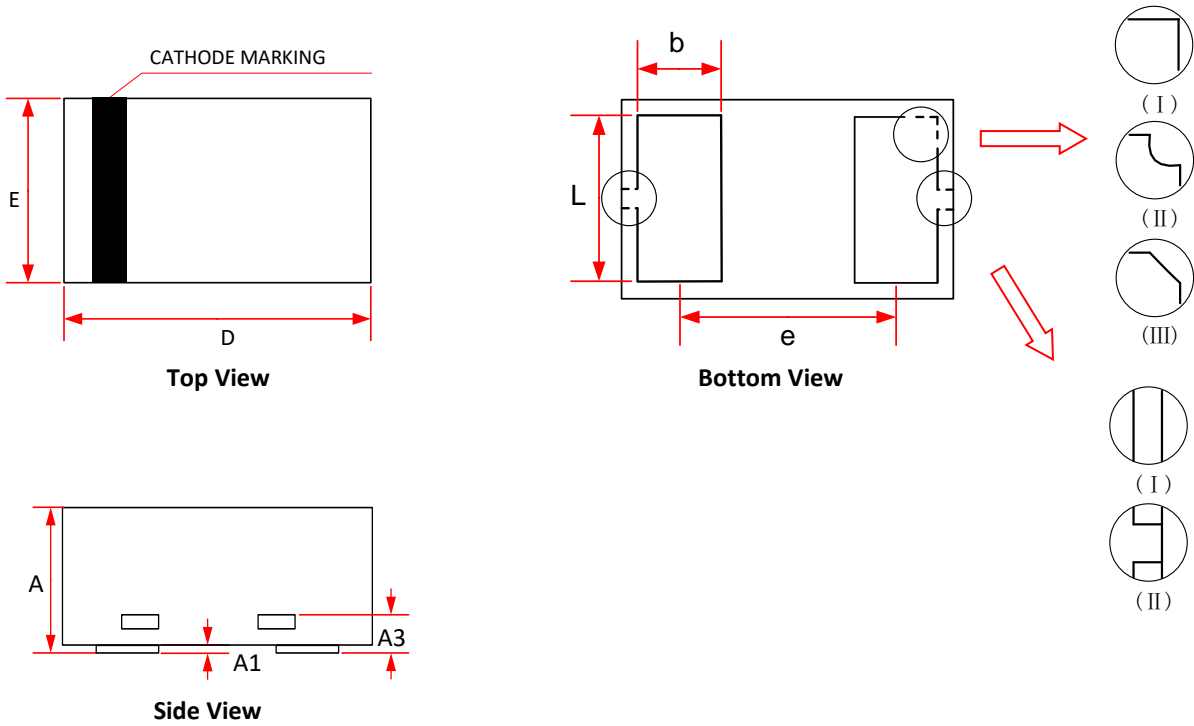


Power Derating Curve



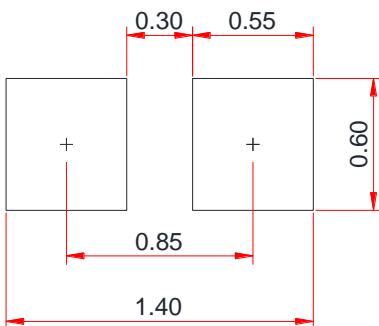
8/20μs Pulse Waveform

DFN1006-2 Package Outline Drawing



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