

1-Line Bi-directional TVS Diode

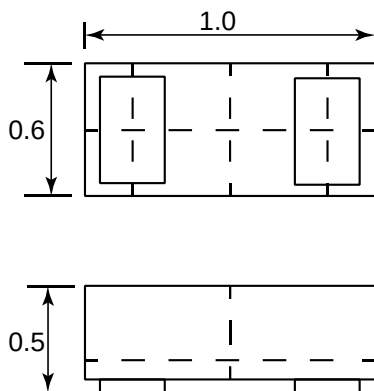
Description

The PESDU1581P1 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 PESDU1581P1 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 PESDU1581P1 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

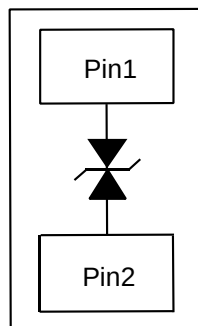
Features

- Protects one data or power line
- Operating voltage: 15V
- 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) 22A (8/20 μs)
- RoHS Compliant

Dimensions and Pin Configuration



Package Dimensions



Circuit and Pin Schematic

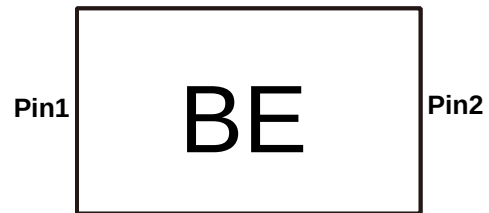
Mechanical Characteristics

- Package: DFN1006-2 (1.0 $\times$ 0.6 $\times$ 0.5mm)
- 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
- Peripherals
- Audio Players
- Keypads, Side Keys, LCD Displays

Marking Information



BE = Device Marking Code

Ordering Information

Part Number	Shipping	Reel Size
PESDU1581P1	10000/Tape & Reel	7 inch

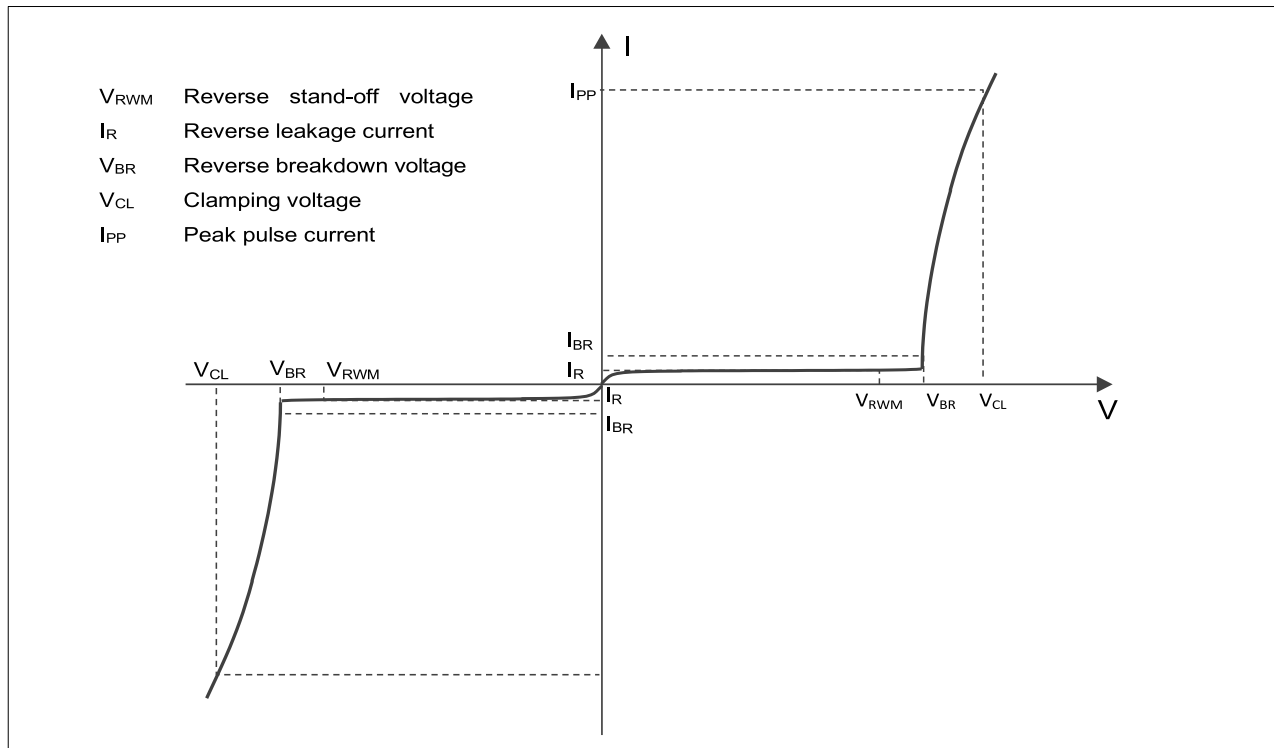
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P _{PK}	570	W
Peak Pulse Current (8/20μs)	I _{PP}	22	A
ESD per IEC 61000-4-2 (Air)	V _{ESD}	±30	kV
ESD per IEC 61000-4-2 (Contact)		±30	
Lead temperature	T _L	260	°C
Junction Temperature	T _J	125	°C
Operating Temperature Range	T _{OP}	-40 ~ +125	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

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

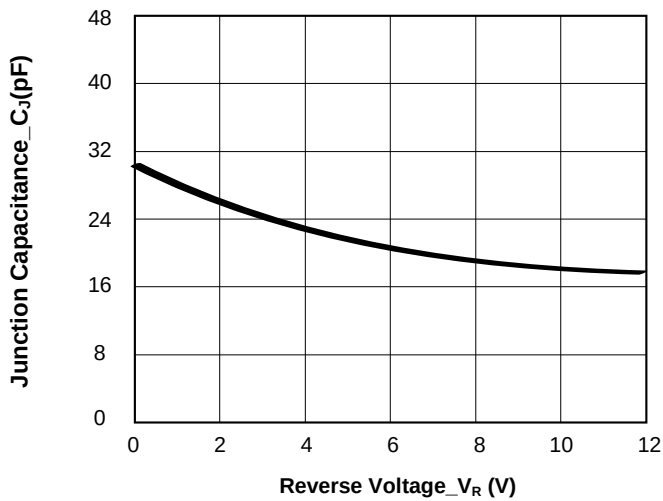
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			15	V	
Breakdown Voltage	V _{BR}	16			V	I _T = 1mA
Reverse Leakage Current	I _R			0.2	μA	V _{RWM} = 15V
Clamping Voltage	V _C		17	20	V	I _{PP} = 1A (8/20μs pulse)
Clamping Voltage	V _C		23	26	V	I _{PP} = 22A (8/20μs pulse)
Junction Capacitance	C _J		30	40	pF	V _R = 0V, f = 1MHz

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

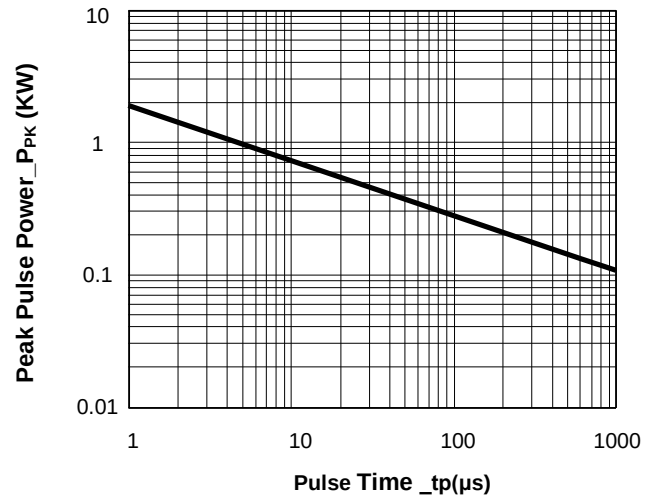


Definitions of electrical characteristics

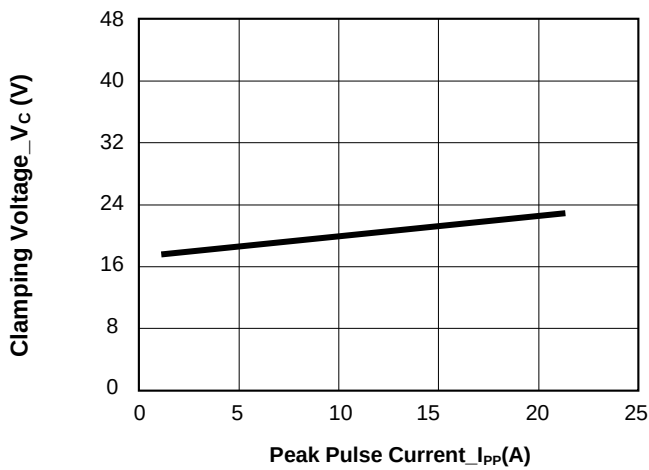
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



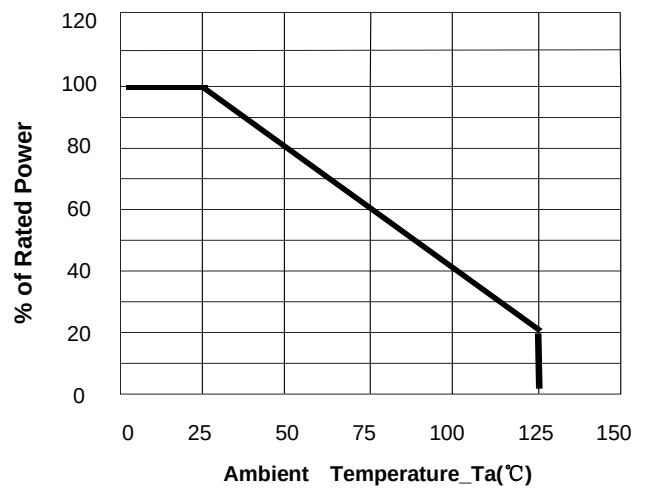
Junction Capacitance vs. Reverse Voltage



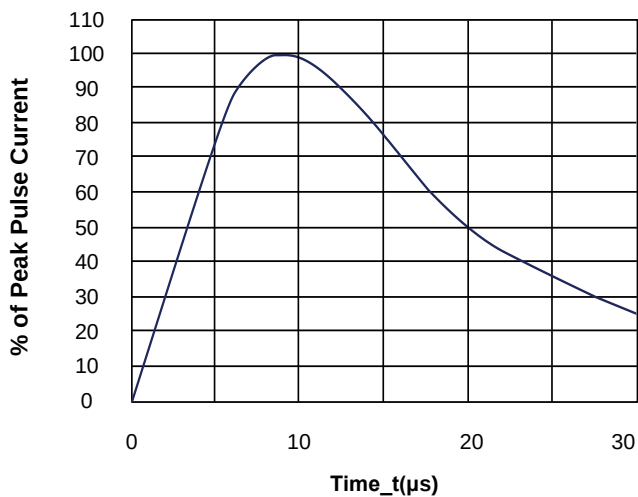
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current

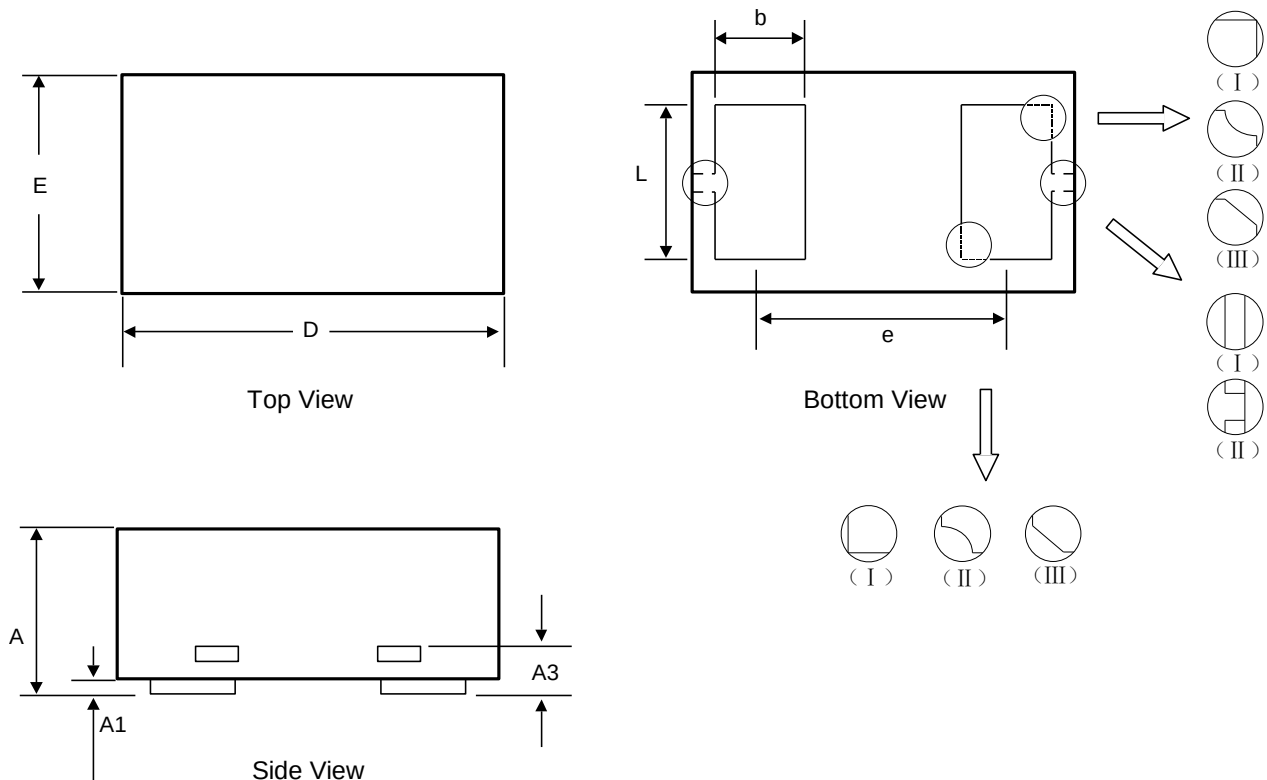


Power Derating Curve



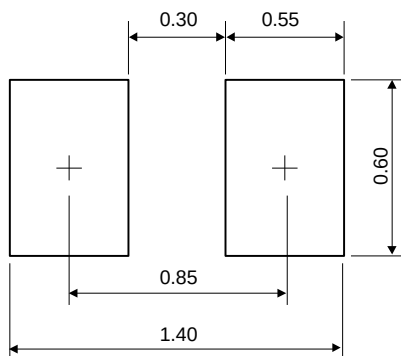
8/20 μs Pulse Waveform

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		

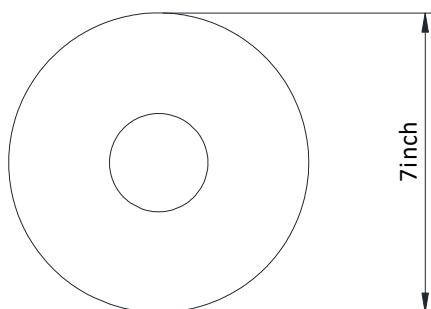
Recommended PCB Layout (Unit: mm)



Notes:

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

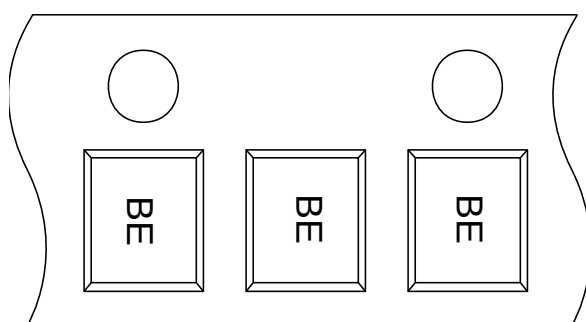
Reel Dimensions



Technical drawing of a 12-pin connector. The drawing shows a top view of the connector with dimensions and labels. The dimensions are:

- Pin pitch: 2.00 ± 0.10
- Pin diameter: $\Phi 1.50 \pm 0.10$
- Pin 1 location: Pin 1
- Pin 12 location: Pin 12
- Pin 12 diameter: 1.75 ± 0.10
- Pin 12 height: 3.50 ± 0.10
- Pin 12 width: 8.00 ± 0.10

Unit:mm



User Direction of Feed

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