

1-Line Ultra Small Bi-directional TVS Diode

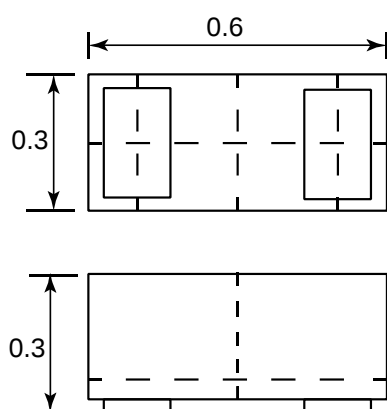
Description

PESDU1221P0 is a bi-directional TVS (Transient Voltage Suppressor). It has been specifically designed to protect sensitive electronic components which are connected to low speed data lines and control lines from over-stress caused by ESD (Electrostatic Discharge) and Lightning . PESDU1221P0 may be used to provide ESD protection up to $\pm 30\text{kV}$ (air and contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to $6\text{A}(8/20\mu\text{s})$ according to IEC61000-4-5 . PESDU1221P0 is available in DFN0603-2 package. Standard products are Pb-free and Halogen-free.

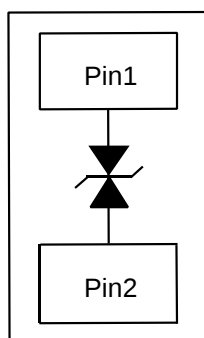
Features

- Ultra small package: $0.6 \times 0.3 \times 0.3\text{mm}$
- Operating voltage: 12V
- 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) $5.5\text{A}(8/20\mu\text{s})$
- RoHS Compliant

Dimensions and Pin Configuration



Package Dimensions



Circuit and Pin Schematic

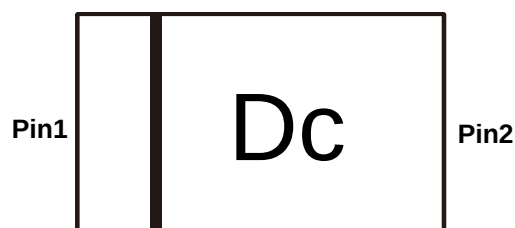
Mechanical Characteristics

- Package: DFN0603-2 ($0.6 \times 0.3 \times 0.3\text{mm}$)
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 1 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, USB 2.0, LCD Displays

Marking Information



DC = Device Marking Code

Ordering Information

Part Number	Shipping	Reel Size
PESDU1221P0	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 μs)	P_{PK}	110	W
Peak Pulse Current (8/20 μs)	I_{PP}	5.5	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	$^{\circ}\text{C}$
Junction Temperature	T_J	125	$^{\circ}\text{C}$
Operating Temperature Range	T_{OP}	$-40 \sim +125$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

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	14		V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			0.5	μA	$V_{RWM} = 12\text{V}$
Clamping voltage ¹⁾	V_{CL}		21.0		V	$I_{PP} = 16\text{A}$, $t_p = 100\text{ns}$
Dynamic resistance ¹⁾	R_{DYN}		0.35		Ω	
Clamping voltage ²⁾	V_{CL}		21.0		V	$V_{ESD} = 8\text{kV}$
Clamping Voltage ³⁾	V_C		15	16	V	$I_{PP} = 1\text{A}$ (8/20 μs pulse)
Clamping Voltage ³⁾	V_C		17	20	V	$I_{PP} = 5.5\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		10		pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

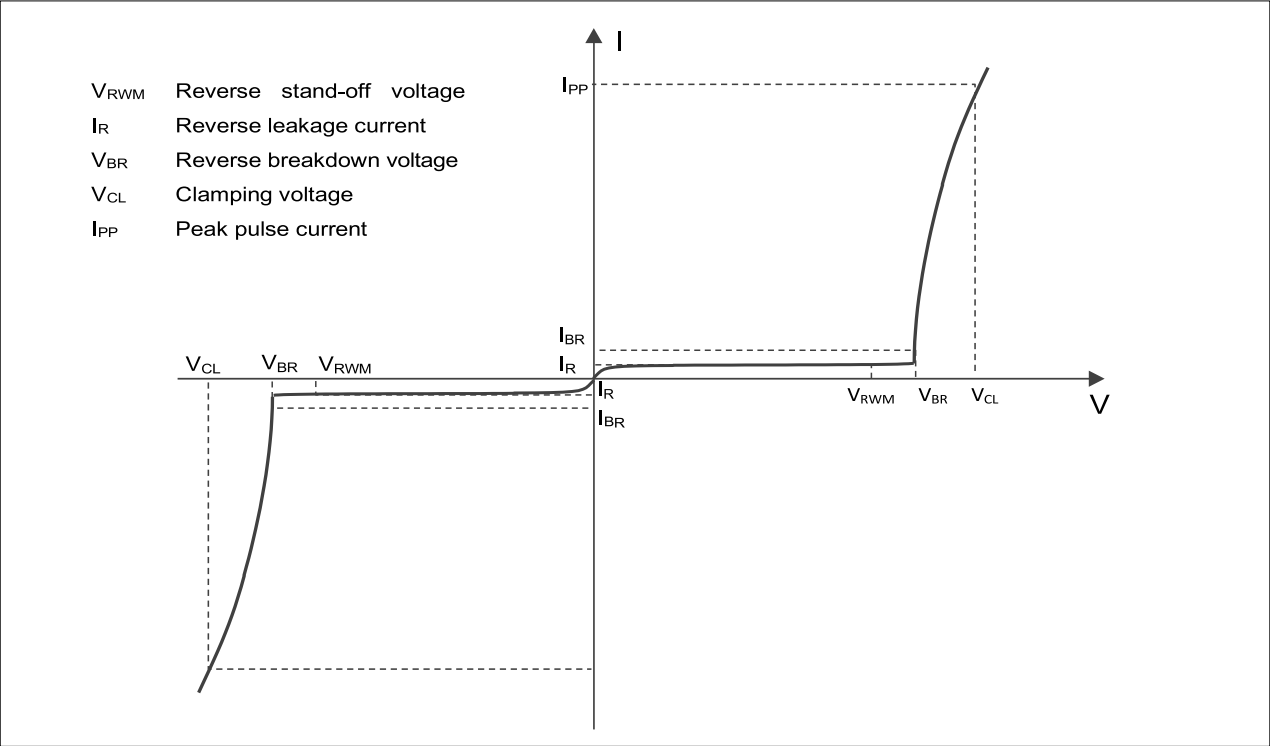
Notes:

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.

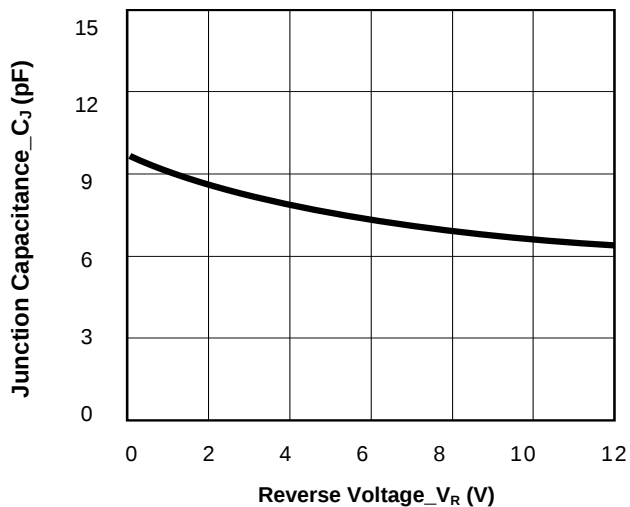
3) Non-repetitive current pulse, according to IEC61000-4-5.

Electrical characteristics (T_A = 25°C, unless otherwise noted)

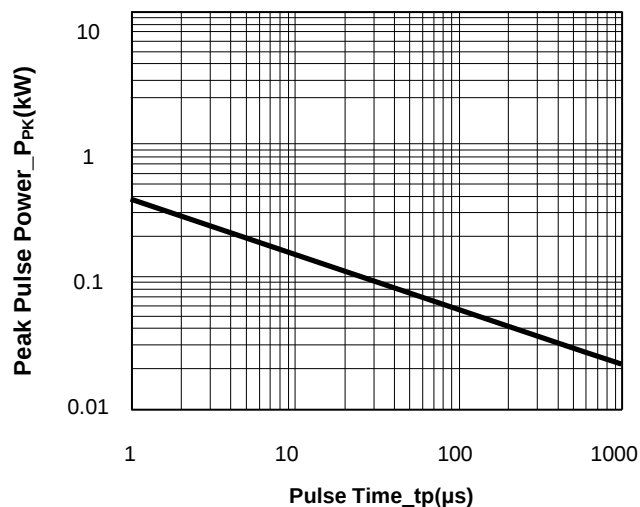


Definitions of electrical characteristics

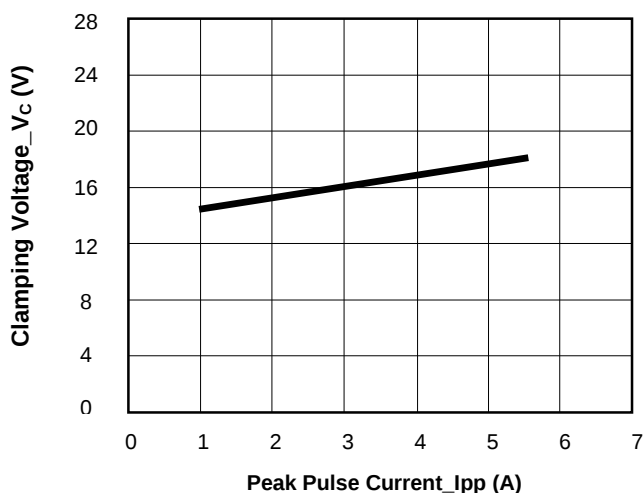
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



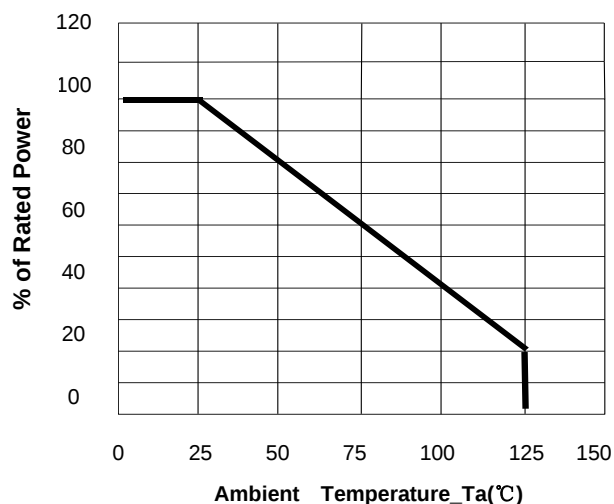
Junction Capacitance vs. Reverse Voltage



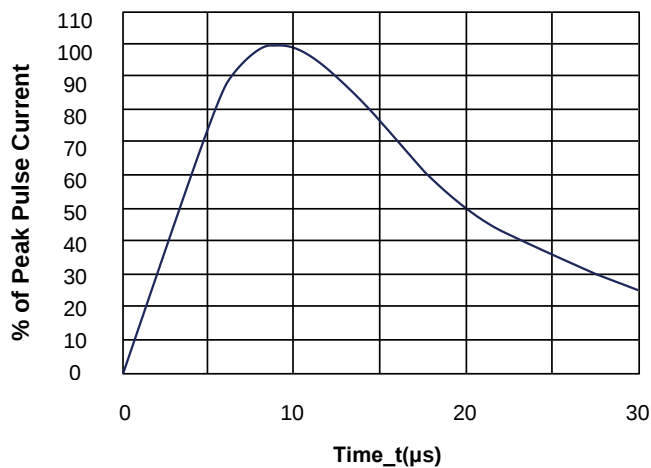
Peak Pulse Power vs. Pulse Time



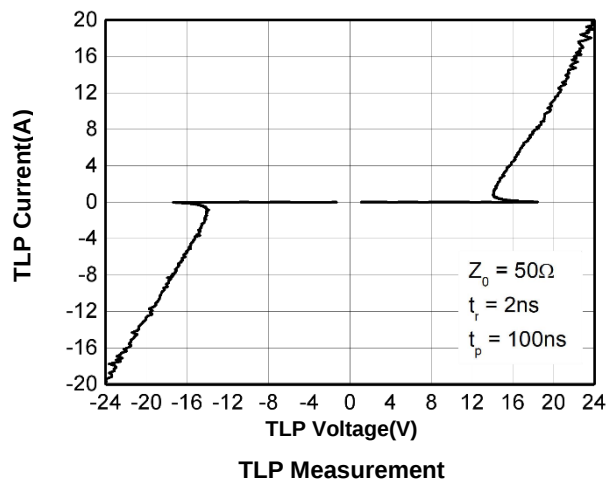
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve

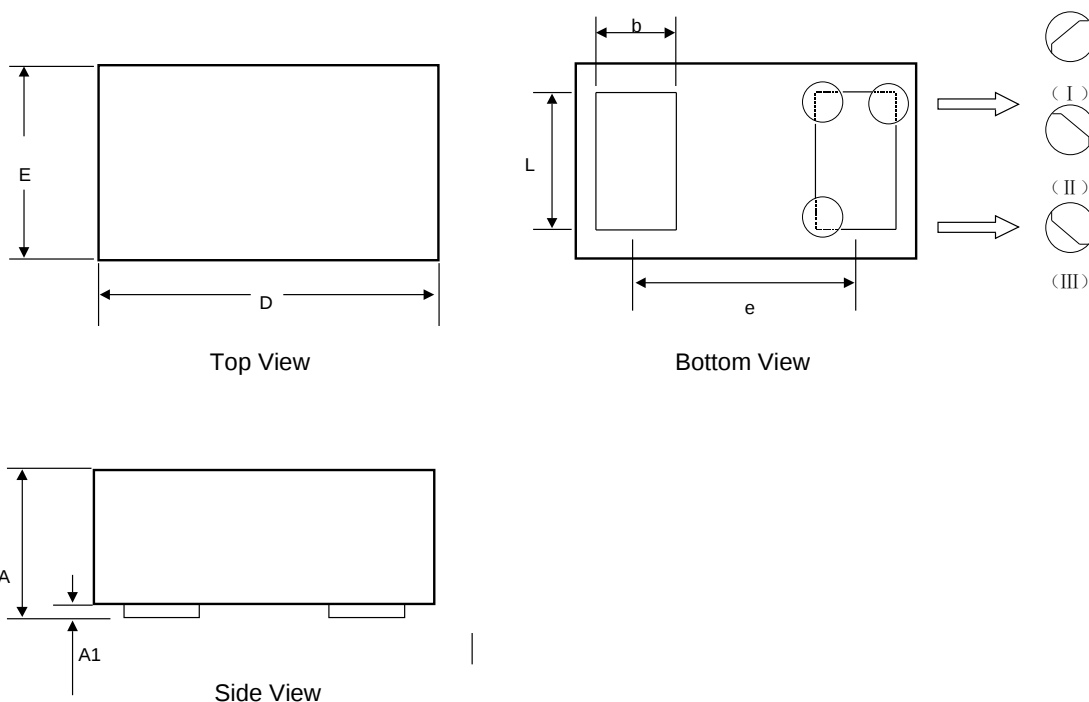


8/20μs Pulse Waveform



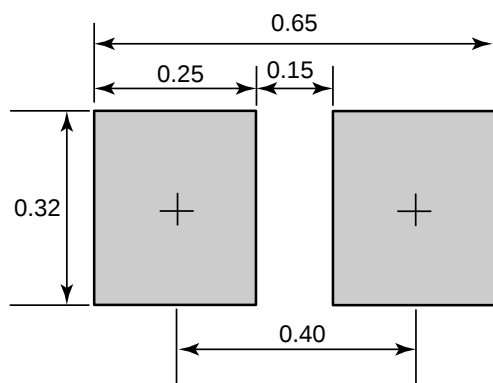
TLP Measurement

DFN0603-2 Package Outline Drawing



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.230	0.300	0.350
A1	0.000	-	0.050
D	0.550	0.600	0.670
E	0.250	0.300	0.370
b	0.160	0.190	0.230
L	0.215	0.245	0.275
e	0.360 BSC		

Recommended PCB Layout (Unit: mm)

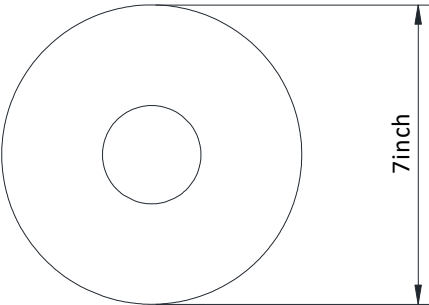


Notes:

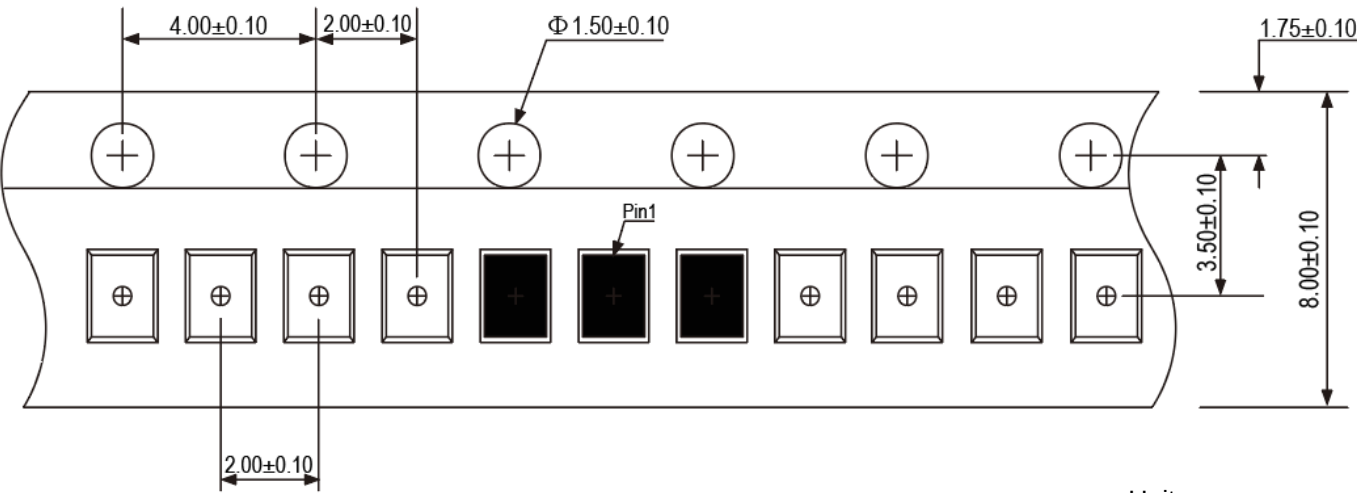
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

TAPE AND REEL INFORMATION

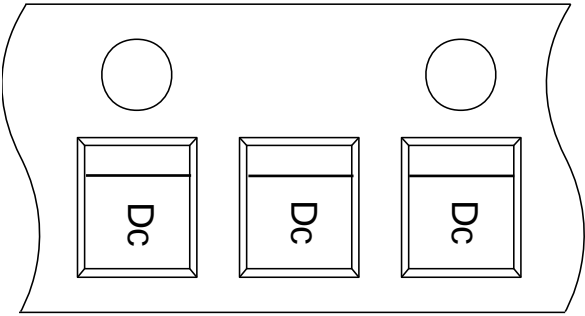
Reel Dimensions



Tape Dimensions



Unit:mm



User Direction of Feed

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