

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

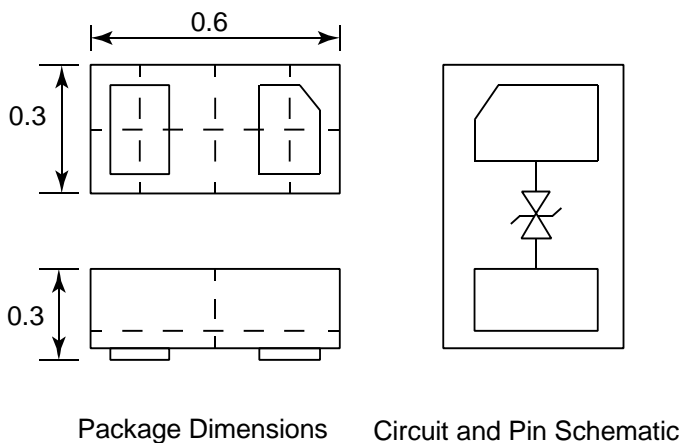
**Description**

The PESDU1221P0 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. The PESDU1221P0 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 0.6x0.3x0.3mm lead free DFN package. The ultra-small size and high ESD protection make PESDU1221P0 an ideal choice to replace 0201 size multilayer varistors (MLVs) and protect cell phone, digital cameras, audio players and many other portable applications.

**Features**

- Ultra small package: 0.6x0.3x0.3mm
- 150 Watts Peak Pulse Power per Line (  $t_p = 8/20\mu\text{s}$  )
- Protects one data line
- Ultra low leakage: nA level
- Working voltage: 12V
- Low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2(ESD) immunity test  
Air discharge:  $\pm 30\text{kV}$   
Contact discharge:  $\pm 30\text{kV}$
  - IEC61000-4-4 (EFT) 40A (5/50ns)
  - IEC61000-4-5 (Lightning) 5.5A (8/20 $\mu\text{s}$ )
- RoHS Compliant

**Dimensions and Pin Configuration**



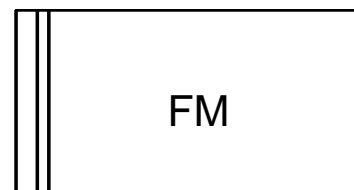
**Mechanical Characteristics**

- Package: DFN0603-2 (0.6x0.3x0.3mm)
- Lead Finish: NiPdAu
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Marking Information: See Below

**Applications**

- Cellular handsets and accessories
- Portable electronics
- Communication systems
- Computers and peripherals

**Marking Information**



**F** = Specific Device Code  
**M** =Month Code

**Ordering Information**

Part Number	Shipping	Reel Size
PESDU1221P0	15000/Tape & Reel	7 inch

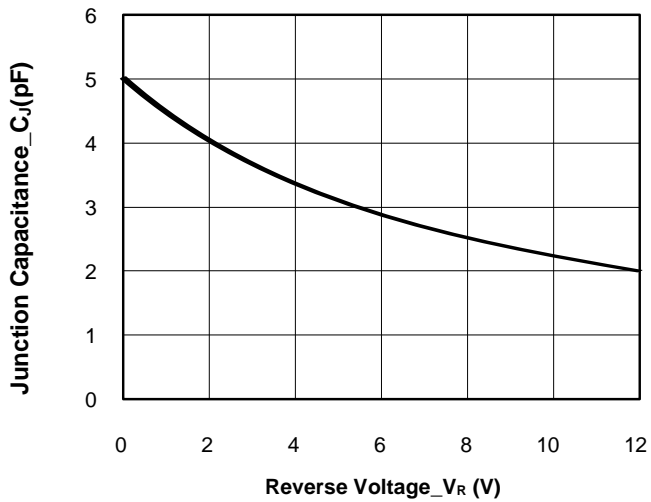
**Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P <sub>PK</sub>	150	W
Peak Pulse Current (8/20μs)	I <sub>PP</sub>	5.5	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V <sub>ESD</sub>	±30 ±30	kV
Operating Temperature Range	T <sub>OP</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>SGT</sub>	-55 to +150	°C

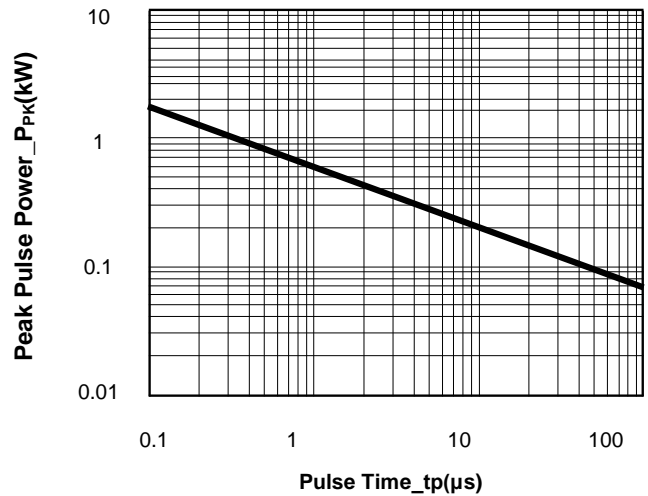
**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>			12	V	
Breakdown Voltage	V <sub>BR</sub>	13.4			V	I <sub>T</sub> = 1mA
Reverse Leakage Current	I <sub>R</sub>			200	nA	V <sub>RWM</sub> = 12V
Clamping Voltage	V <sub>C</sub>		17	20	V	I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20 μs
Clamping Voltage	V <sub>C</sub>		23	26	V	I <sub>PP</sub> = 5.5A, t <sub>p</sub> = 8/20 μs
Junction Capacitance	C <sub>J</sub>		3.5	5	pF	V <sub>R</sub> = 0V, f = 1MHz

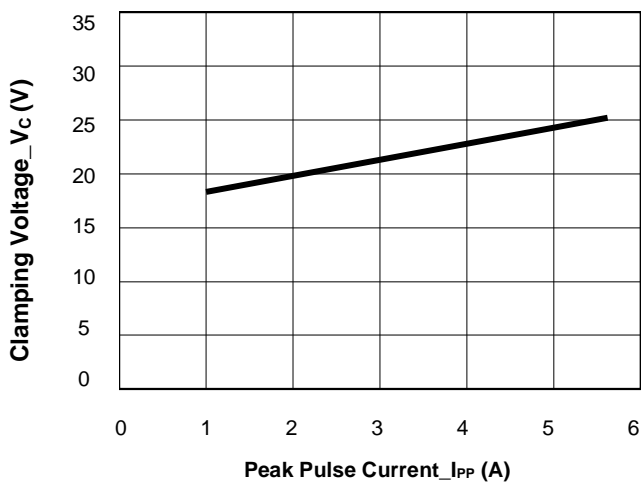
**Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)**



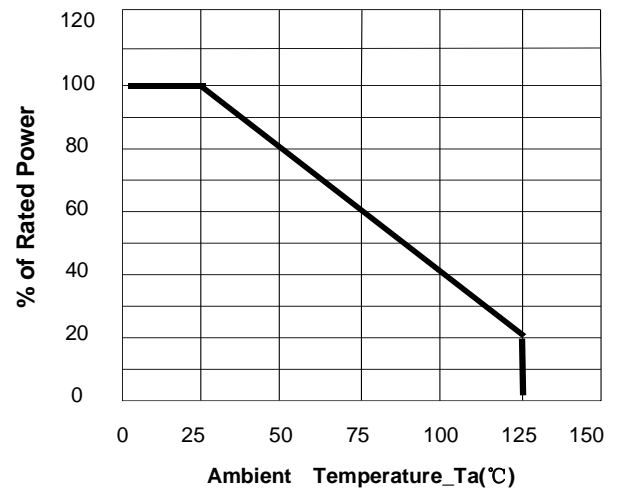
**Junction Capacitance vs. Reverse Voltage**



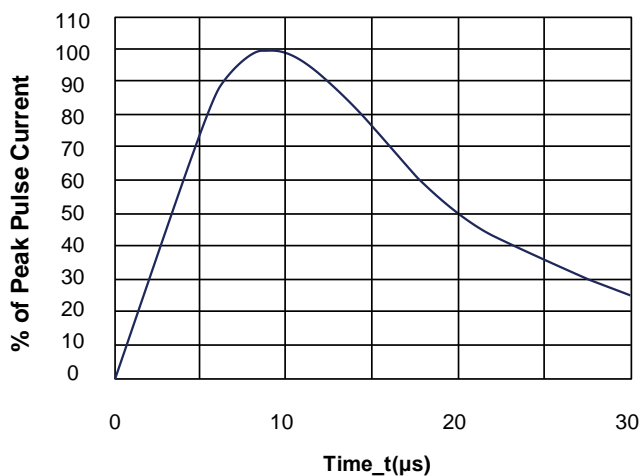
**Peak Pulse Power vs. Pulse Time**



**Clamping Voltage vs. Peak Pulse Current**

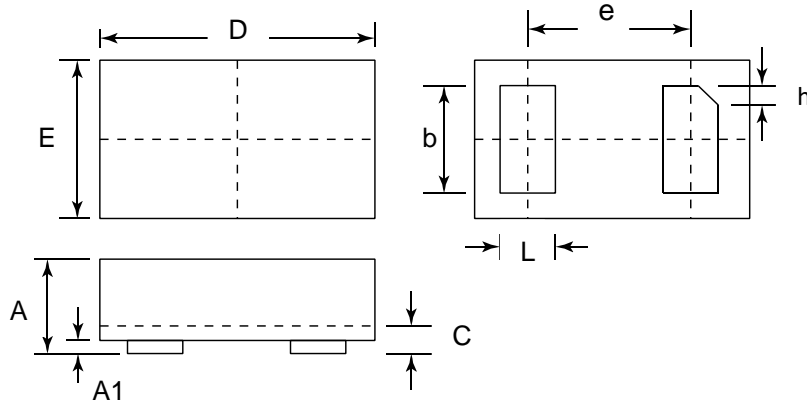


**Power Derating Curve**



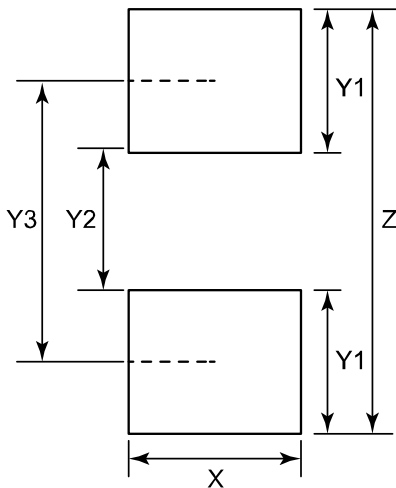
**8/20 μs Pulse Waveform**

**DFN0603-2 Package Outline Drawing**



SYM	DIMENSIONS		
	MILLIMETERS		
	MIN	NOM	MAX
A	0.230		0.330
A1		0.020	0.050
b	0.215	0.245	0.275
c	0.120	0.150	0.180
D	0.550	0.600	0.650
e	0.355 BSC		
E	0.250	0.300	0.350
L	0.160	0.190	0.220
h	0.079 BSC		

**Suggested Land Pattern**



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.30	0.30
Y1	0.25	0.010
Y2	0.15	0.006
Y3	0.40	0.016
Z	0.65	0.026