

1-Line Bi-directional TVS Diode

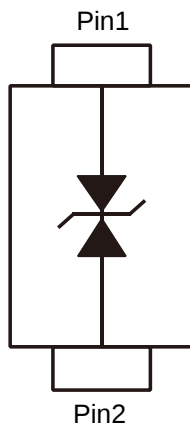
Description

The PESDU1581D1F 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 lines. The PESDU1581D1F complies with the IEC 61000-4-2 (ESD) standard with $\pm 30\text{kV}$ and air $\pm 30\text{kV}$ contact discharge. It is assembled into a SOD-123FL lead-free package. The small size and high ESD protection make PESDU1581D1F an ideal choice to protect cellphone, digital cameras, audio players and many other portable applications.

Features

- Protects one data or power line
- Ultra low leakage: nA level
- operating voltage: 15V
- Ultra low clamping voltage
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC 61000-4-5 (Lightning) 250A (8/20 μs)
- RoHS Compliant

Pin Configuration



Circuit and Pin Schematic

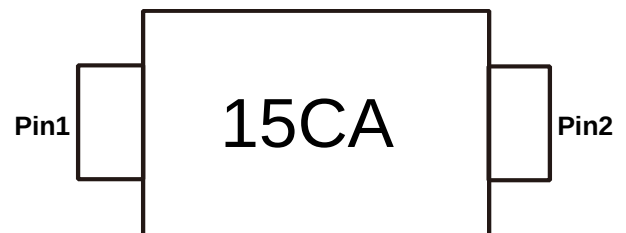
Mechanical Characteristics

- Package: SOD-123FL
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below

Applications

- Fast-charge battery chargers
- Power management system
- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals

Marking Information



15CA = Device Marking Code

Ordering Information

Part Number	Shipping	Real Size
PESDU1581D1F	3000/Tape & Reel	7 inch

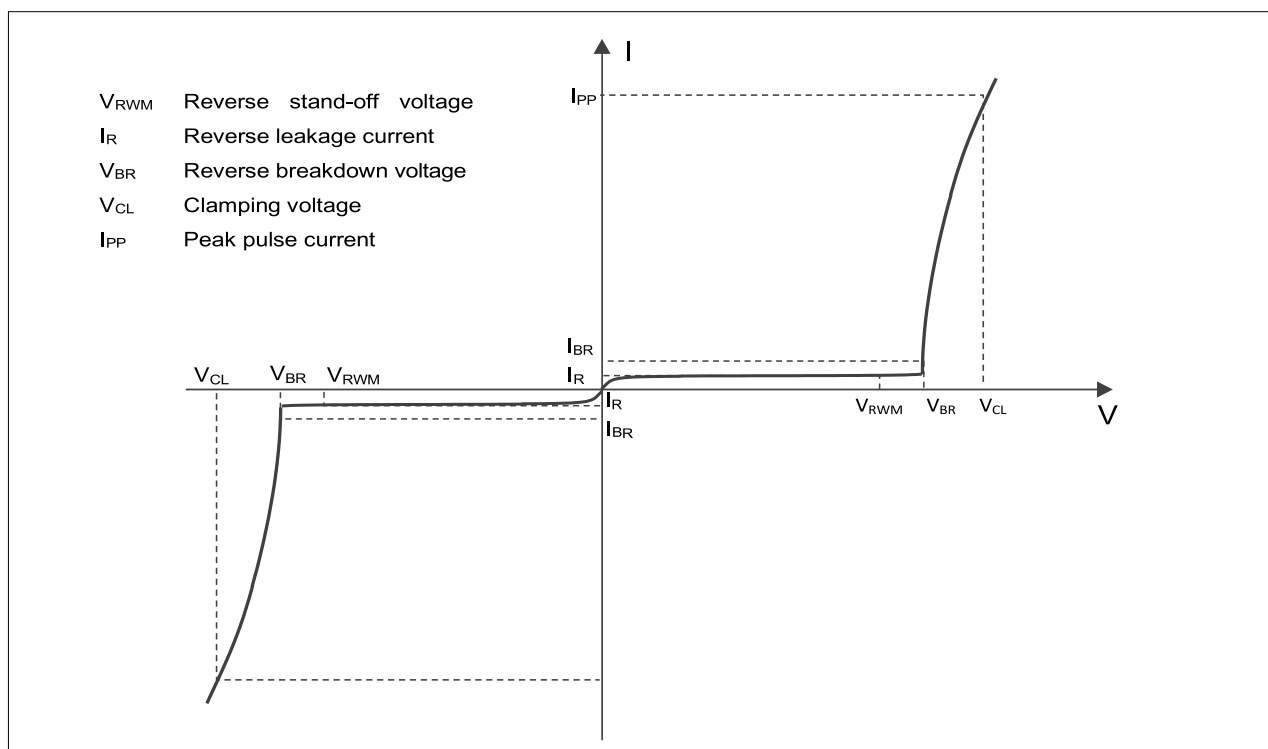
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	P_{PK}	7500	W
Peak Pulse Current (8/20 μs)	I_{PP}	250	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_J	$-40 \sim +125$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

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

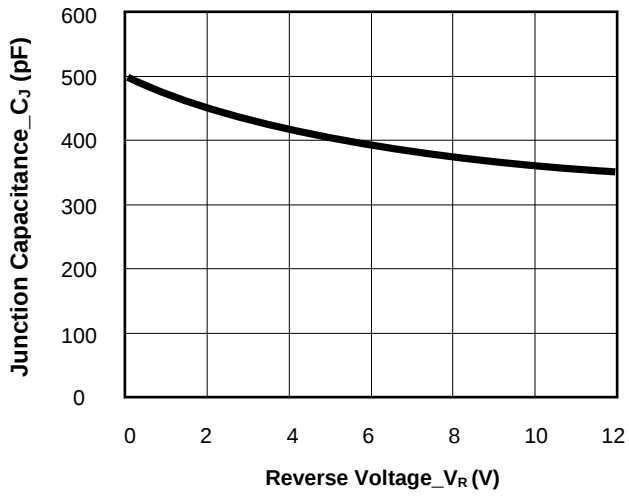
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			15	V	
Breakdown Voltage	V_{BR}	15.5			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			1	μA	$V_{RWM} = 15\text{V}$
Clamping Voltage	V_C			21	V	$I_{PP} = 50\text{A}$ (8/20 μs pulse)
Clamping Voltage	V_C			30	V	$I_{PP} = 250\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		500		pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

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

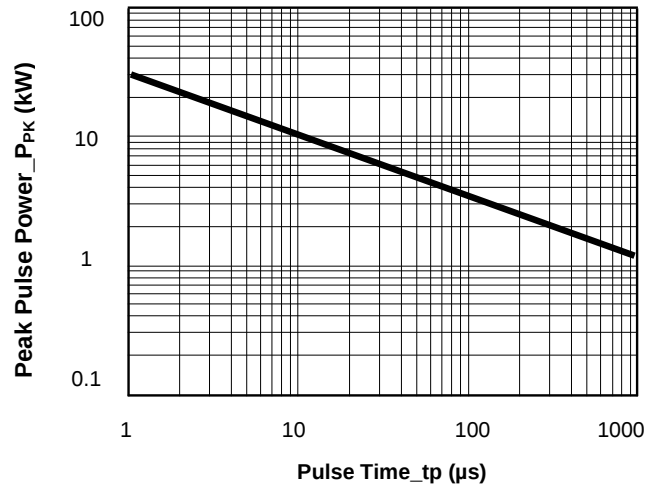


Definitions of electrical characteristics

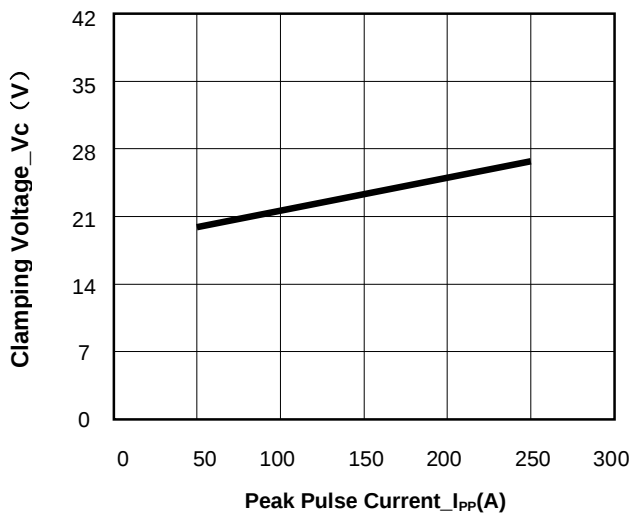
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



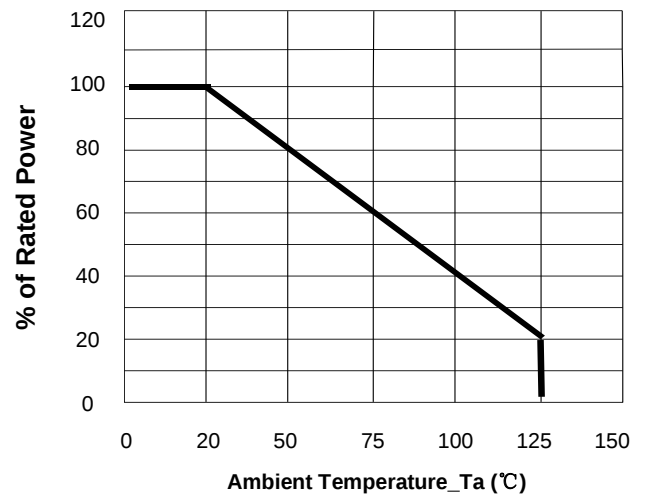
Junction Capacitance vs. Reverse Voltage



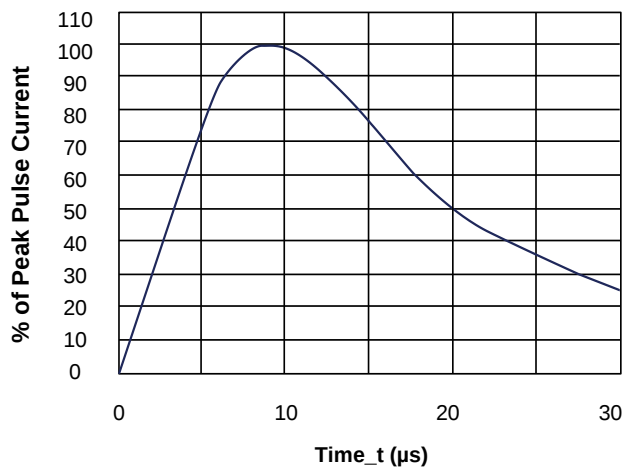
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current

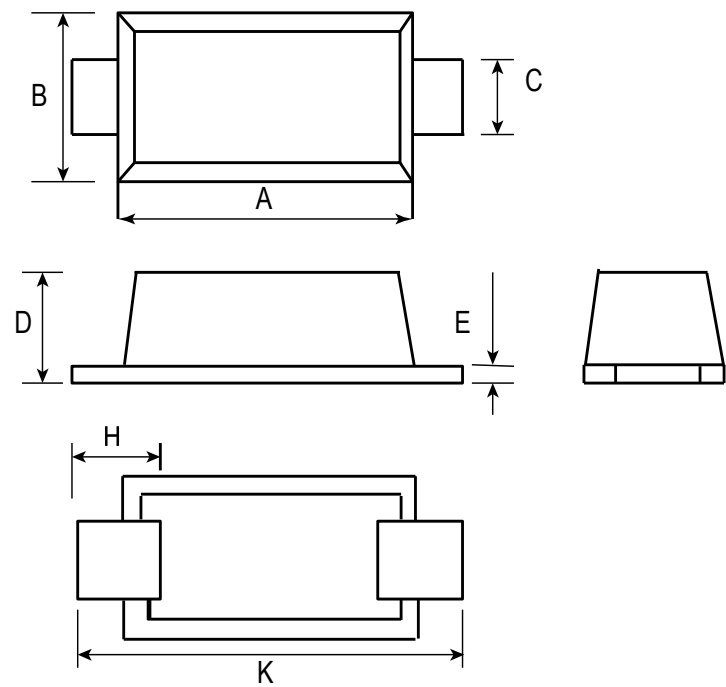


Power Derating Curve



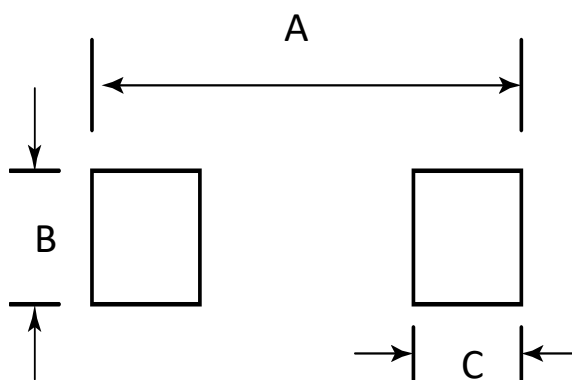
8/20 μs Pulse Waveform

SOD-123FL Package Outline Drawing



DIM	Millimeters		
	Min	Nom	Max
A	2.50	2.70	2.90
B	1.40	1.70	2.00
C	0.50	0.80	1.10
D			1.03
E	0.10	0.20	0.30
H	0.35		0.85
K	3.50		3.90

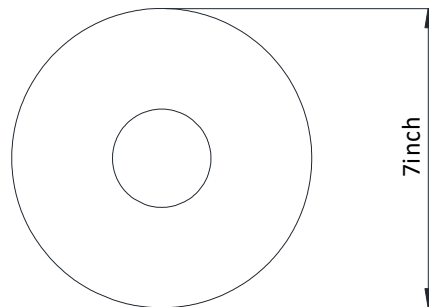
Suggested Land Pattern



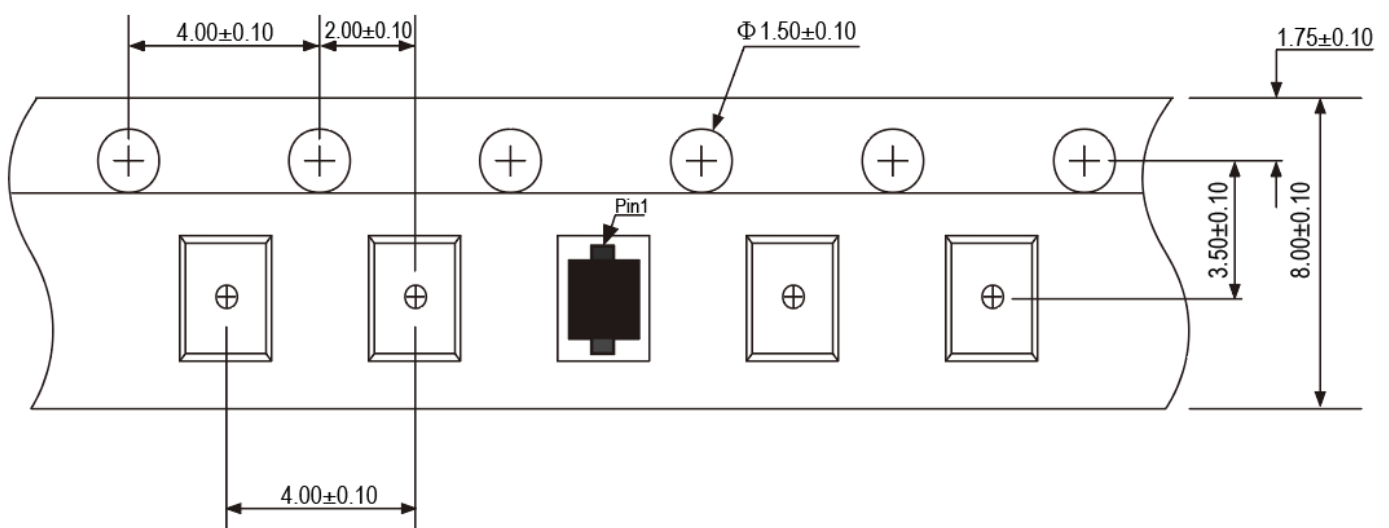
SYM	DIMENSIONS	
	MILLIMETERS	INCHES
A	4.19	0.165
B	1.20	0.048
C	0.90	0.036

TAPE AND REEL INFORMATION

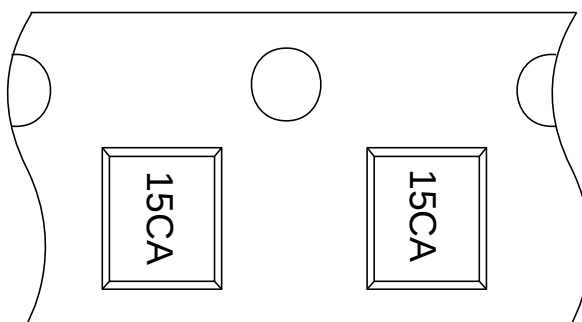
Reel Dimensions



Tape Dimensions



Unit:mm



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User Direction of Feed

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