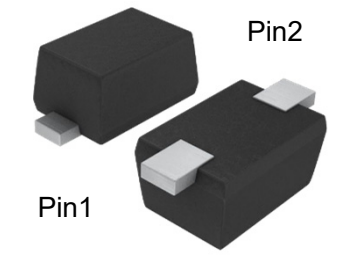


## Description

The PESDNC5D24VU ESD protector is designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebook computers, and PDAs. They feature large cross-sectional area junctions for conducting high transient currents, offer desirable electrical characteristics for board level protection, such as fast response time, lower operating voltage, lower clamping voltage and no device degradation when compared to MLVs.

The PESDNC5D24VU protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. It gives designer the flexibility to protect one unidirectional line in applications where arrays are not practical.



SOD-523

## Feature

- 650W peak pulse power per line ( $t_p = 8/20\mu s$ )
- SOD-523 package
- Replacement for MLV(0603)
- Unidirectional configurations
- Response time is typically  $< 1$  ns
- Protect one I/O or power line
- Low clamping voltage
- RoHS compliant
- Transient protection for data lines to IEC 61000-4-2(ESD)  $\pm 30KV$ (air),  $\pm 30KV$ (contact);



Circuit Diagram

## Applications

- Cell phone handsets and accessories
- Personal digital assistants (PDAs)
- Notebooks, desktops, and servers
- Digital cameras
- Peripherals
- MP3 players

## Mechanical Characteristics

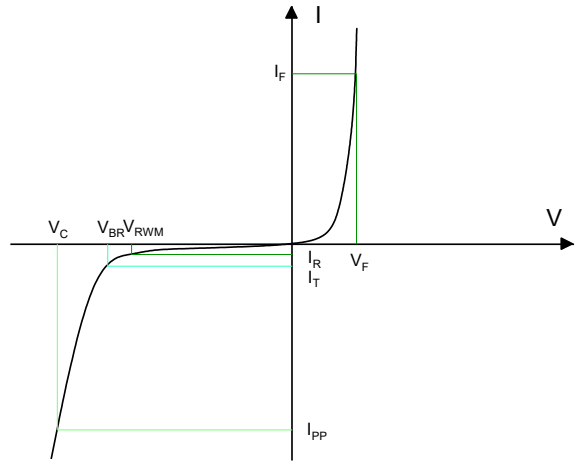
- Lead finish: 100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature: 260°C
- Pure tin plating: 7 ~ 17  $\mu m$
- Pin flatness:  $\leq 3$ mil



Marking (Top View)

## Electronics Parameter

Symbol	Parameter
$V_{RWM}$	Peak Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$P_{PP}$	Peak Pulse Power
$C_J$	Junction Capacitance
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



## Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	$V_{RWM}$	-	-	-	24	V
Breakdown Voltage	$V_{BR}$	$I_t = 1\text{mA}$	26	28	30	V
Reverse Leakage Current	$I_R$	$V_{RWM} = 24\text{V}$	-	-	1.0	$\mu\text{A}$
Clamping Voltage	$V_C$	$I_{PP} = 20\text{A}, t_p = 8/20\mu\text{s}$	-	32.5	35	V
Junction Capacitance	$C_J$	$V_R = 0\text{V}, f = 1\text{MHz}$	-	40	60	pF

## Absolute maximum rating@25°C

Rating	Symbol	Value	Units
Peak Pulse Power ( $t_p = 8/20\mu\text{s}$ )	$P_{PP}$	650	W
Peak Pulse Current ( $t_p = 8/20\mu\text{s}$ )	$I_{PP}$	20	A
Lead Soldering Temperature	$T_L$	260 (10 sec)	°C
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	°C
ESD Protection-Contact Discharge	$V_{ESD}$	$\pm 30$	kV
ESD Protection-Air Discharge	$V_{ESD}$	$\pm 30$	kV

Typical Characteristics

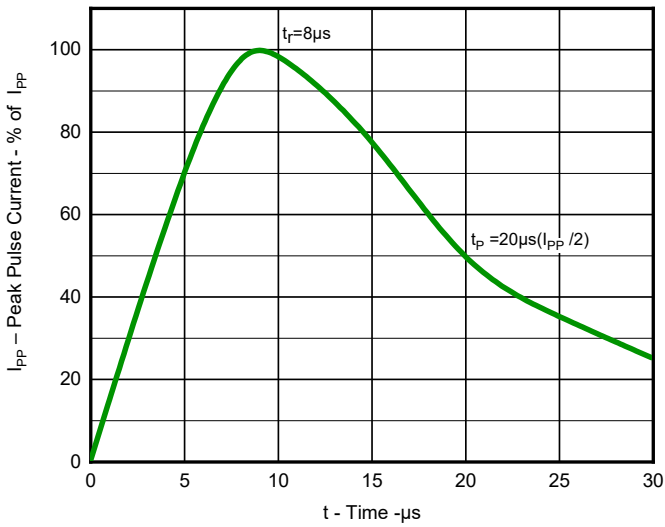


Fig 1. Pulse Waveform(8/20µs)

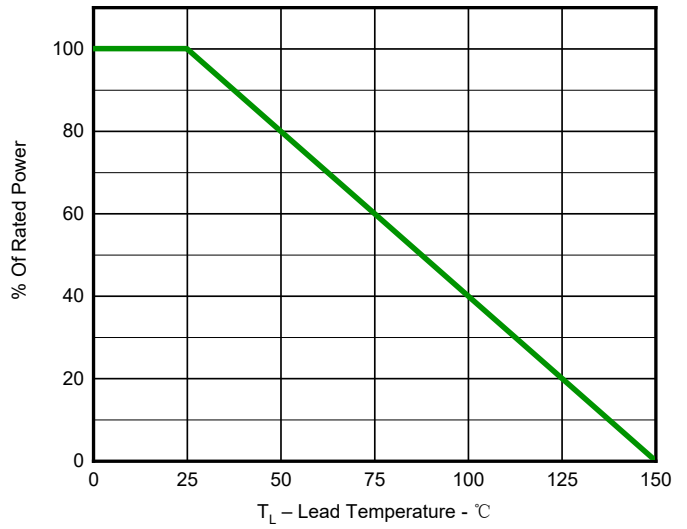


Fig 2. Power Derating Curve

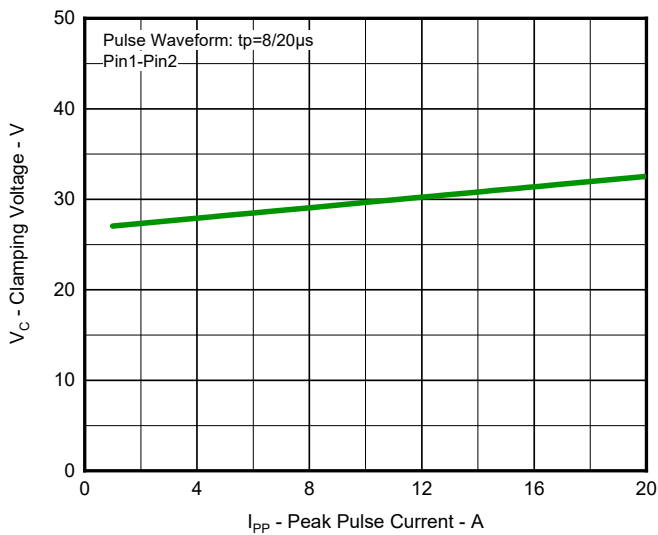


Fig 3. Clamping Voltage vs. Peak Pulse Current

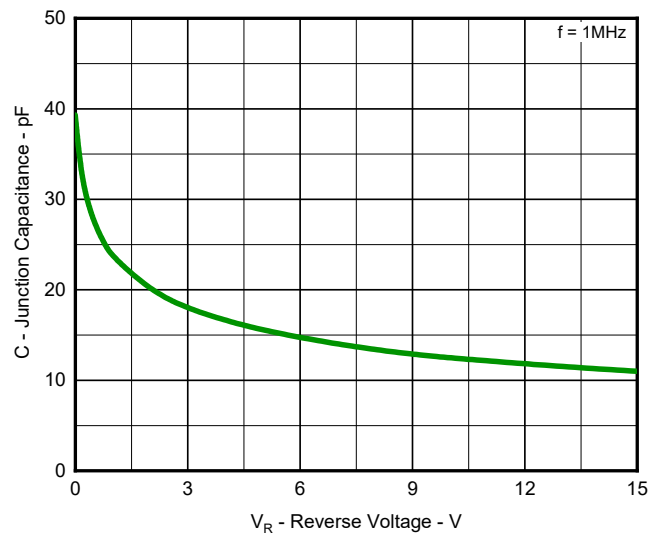


Fig 4. Capacitance vs. Reverse Voltage

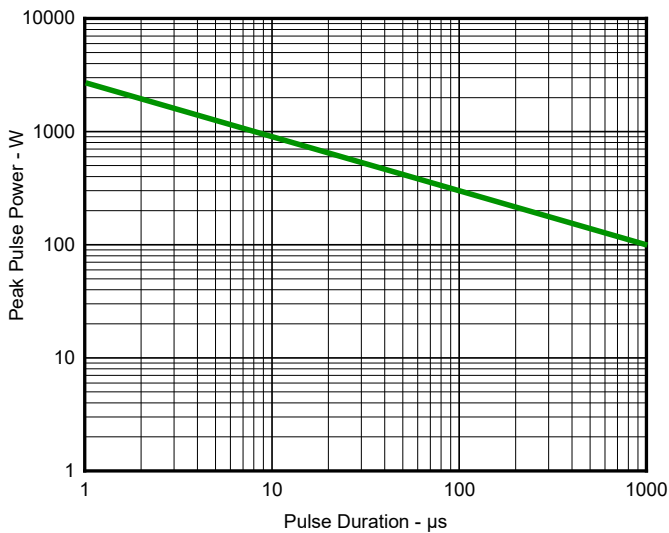


Fig 5. Non Repetitive Peak Pulse Power vs. Pulse Time

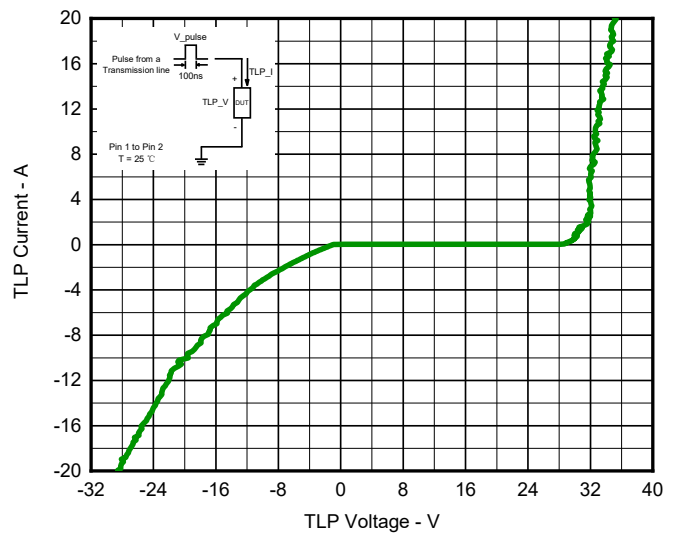
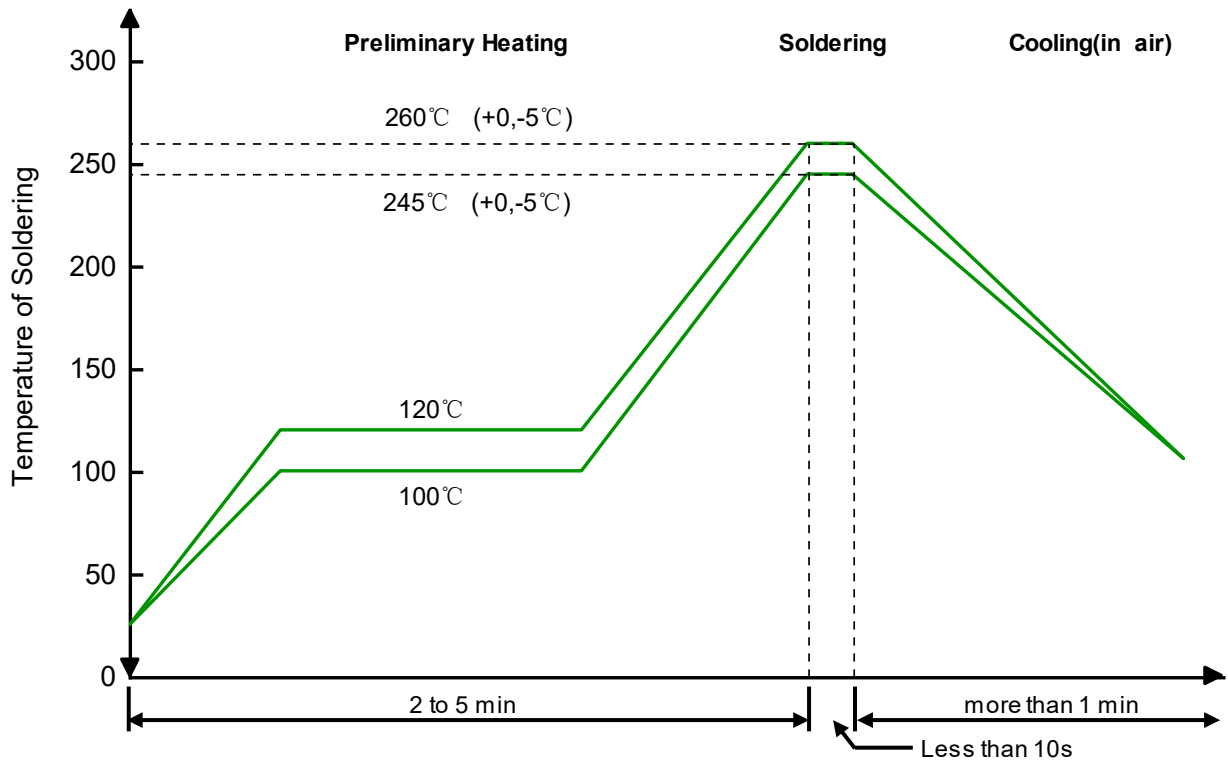


Fig 6. TLP Measurement

Solder Reflow Recommendation



Remark: Pb free for 260°C; Pb for 245°C.

## PCB Design

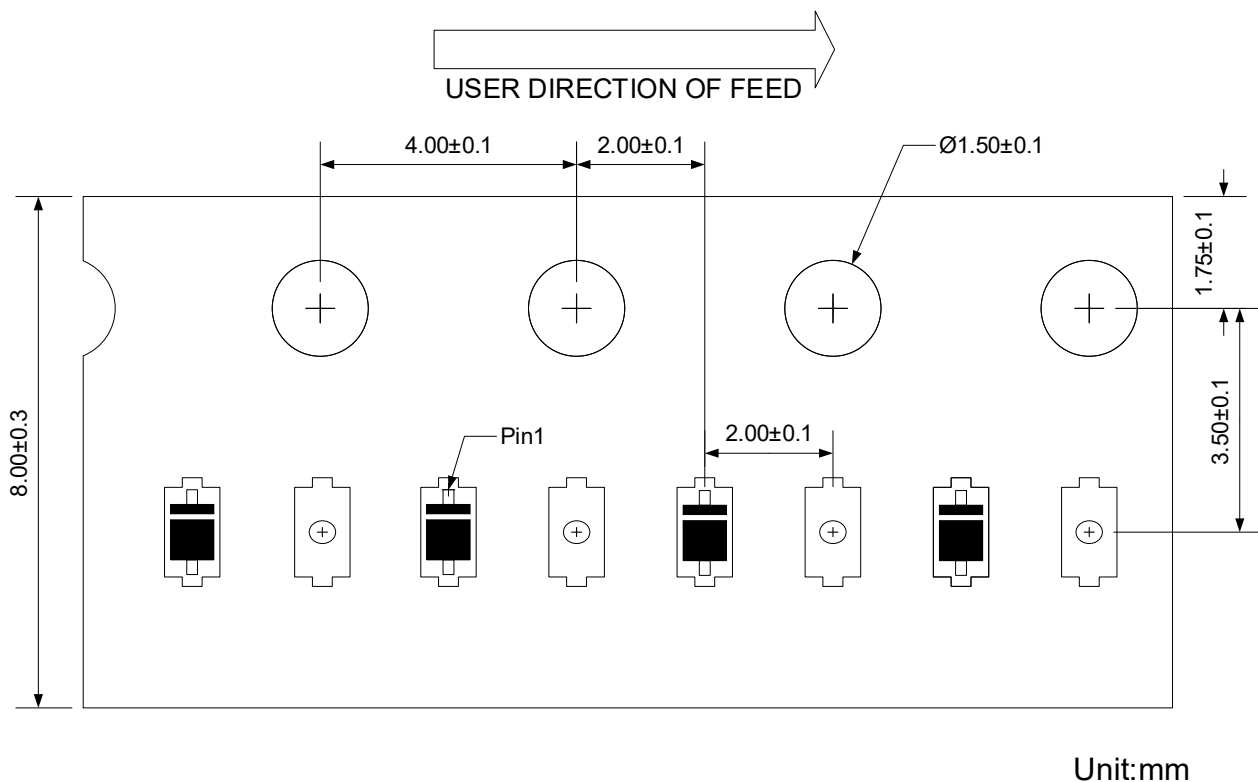
For TVS diodes a low-ohmic and low-inductive path to chassis earth is absolutely mandatory in order to achieve good ESD protection. Novices in the area of ESD protection should take following suggestions to heart:

- Do not use stubs, but place the cathode of the TVS diode directly on the signal trace.
- Do not make false economies and save copper for the ground connection.
- Place via holes to ground as close as possible to the anode of the TVS diode.
- Use as many via holes as possible for the ground connection.
- Keep the length of via holes in mind! The longer the more inductance they will have.

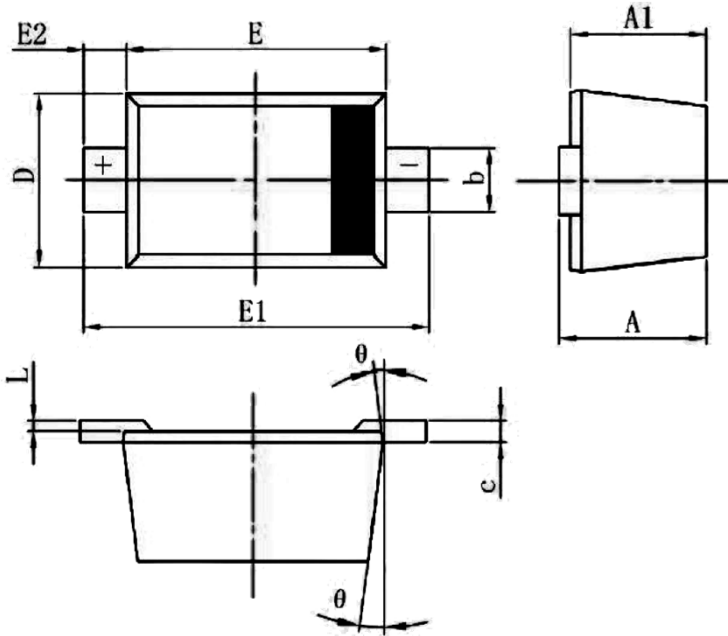
## Ordering information

Device	Package	Reel	Shipping
PESDNC5D24VU	SOD-523	7"	3000 / Tape & Reel

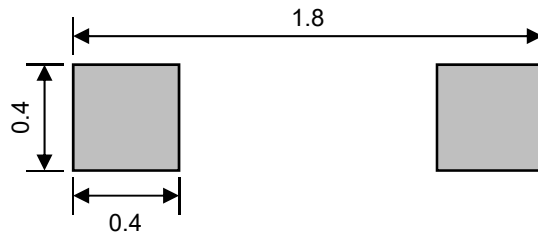
## Load with information



Product Dimension (SOD-523)




Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.51	0.77	0.020	0.030
A1	0.50	0.70	0.020	0.028
b	0.25	0.35	0.010	0.014
c	0.08	0.15	0.003	0.006
D	0.75	0.85	0.030	0.033
E	1.10	1.30	0.043	0.051
E1	1.50	1.70	0.059	0.067
E2	0.20 Ref.		0.008 Ref.	
L	0.01	0.07	0.000	0.003
theta	7°		7°	



Unit: mm

Suggested PCB Layout


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