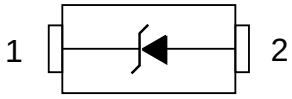
Description

The PESDHC3D12VU ESD protector is designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebook computers, and PDA's. 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 PESDHC3D12VU protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. The PESDHC3D12VU is available in a SOD-323 package with working voltages of 12 volt.



Feature

- 500W peak pulse power per line (t_P = 8/20μs)
- Replacement for MLV(0805)
- Unidirectional configurations
- Response Time is Typically < 1 ns
- Protect one I/O or power line
- Low clamping voltage

Applications

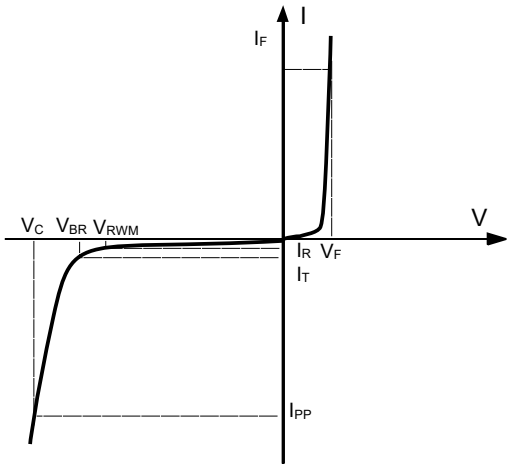
- Cell phone handsets and accessories
- Personal digital assistants (PDA's)
- Notebooks, desktops, and servers
- Portable instrumentation
- Cordless phones
- Digital cameras
- Peripherals
- MP3 players

Mechanical Characteristics

- Lead finish:100% matte Sn(Tin) Mounting
- position: Any
- Qualified max reflow temperature:260℃
- Pure tin plating: 7 ~ 17 um
- Pin flatness：≤3mil

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℃(unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Working Voltage	V_{RWM}				12	V
Breakdown Voltage	V_{BR}	I_t=1mA	13.5			V
Reverse Leakage Current	I_R	V_{RWM} =12V			1	μA
Forward Voltage	V_F	I_F =10mA		0.8		V
Clamping Voltage	V_C	I_{PP}=5A t_P = 8/20μS			19.0	V
Clamping Voltage	V_C	I_{PP}=20A t_P = 8/20μS			27.0	V
Junction Capacitance	C_j	V_R=2.5V f = 1MHz		100		pF

Absolute maximum rating@25℃

Rating	Symbol	Value	Units
Unidirectional Peak Pulse Power (t_p=8/20μS)	P_{pp}	500	W
Maximum Peak Pulse Current (t_P = 8/20μS)	I_{pp}	20	A
Lead Soldering Temperature	T_L	260 (10 sec)	℃
Operating Temperature	T_J	-55 to +125	℃
Storage Temperature	T_{STG}	-55 to +150	℃

Typical Characteristics

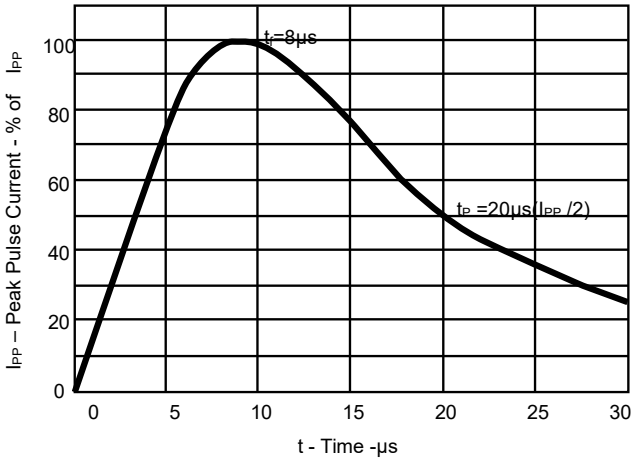


Fig 1.Pulse Waveform

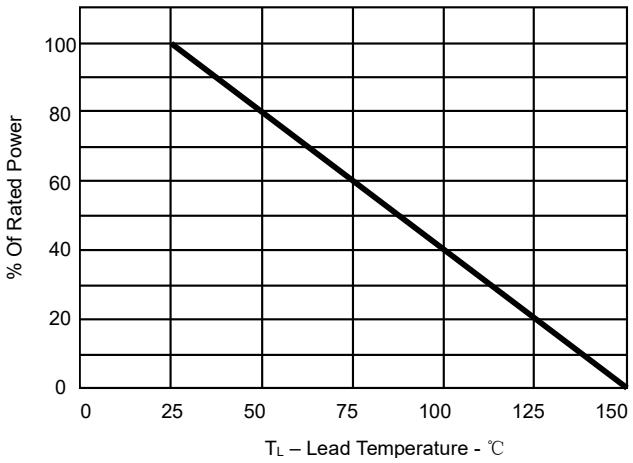


Fig 2.Power Derating Curve

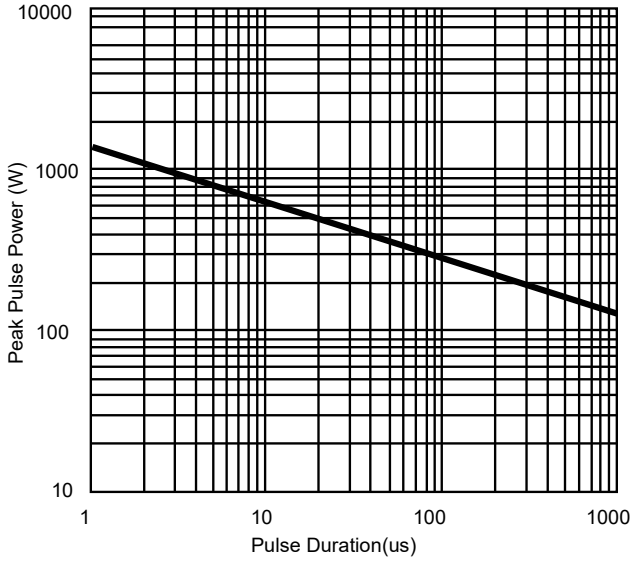


Fig 3. Non Repetitive Peak Pulse Power vs. Pulse time

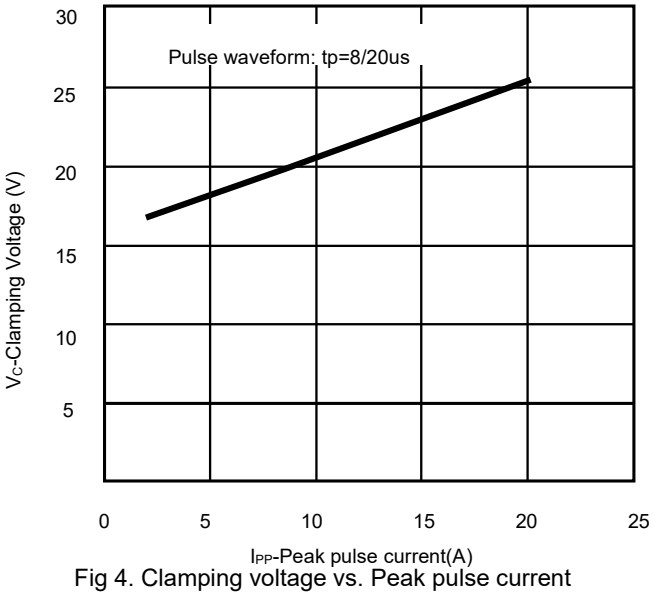
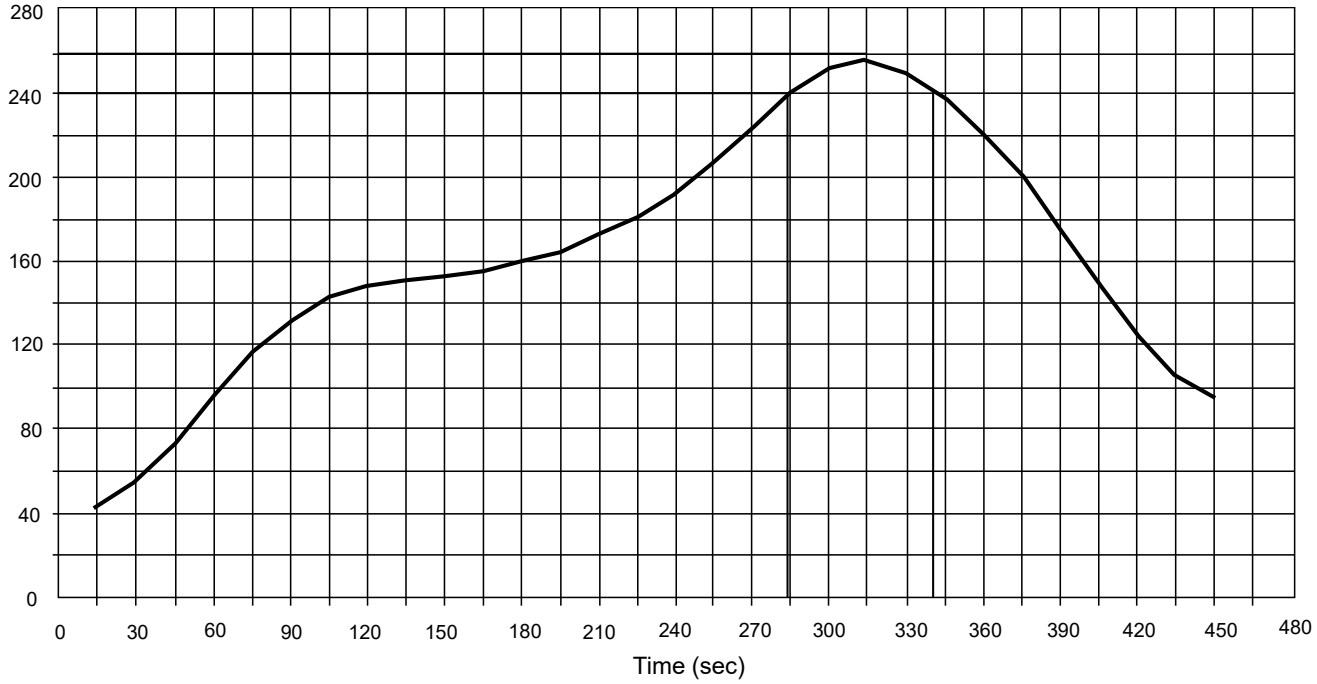


Fig 4. Clamping voltage vs. Peak pulse current

Solder Reflow Recommendation

Peak Temp=257℃, Ramp Rate=0.802deg. ℃/sec

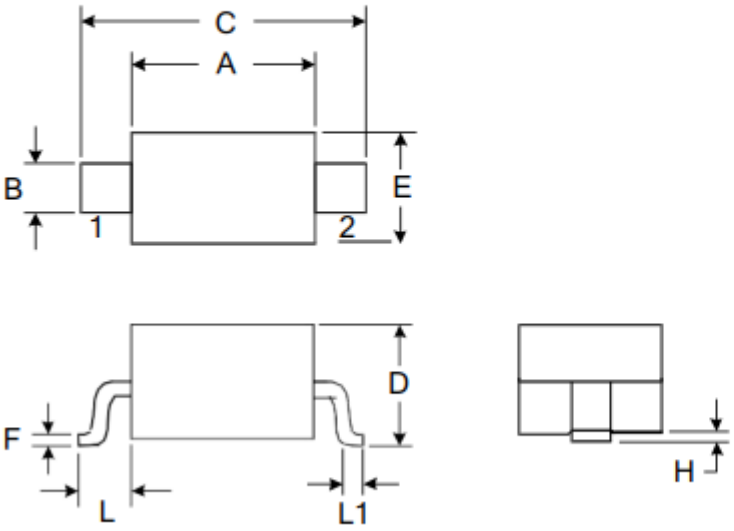


PCB Design

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:

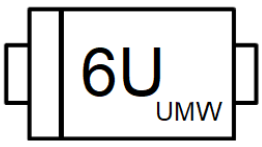
- Do not use stubs, but place the cathode of the TVS diode directly on the signal trace.
- Do not make false economies and save copper for the ground connection.
- Place via holes to ground as close as possible to the anode of the TVS diode.
- Use as many via holes as possible for the ground connection.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

Outline Drawing – SOD323



DIMENSIONS				
SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	1.600	1.800	0.063	0.071
B	0.250	0.350	0.010	0.014
C	2.500	2.700	0.098	0.106
D		1.000		0.039
E	1.200	1.400	0.047	0.055
F	0.080	0.150	0.003	0.006
L	0.475 REF		0.019REF	
L1	0.250	0.400	0.010	0.016
H	0.000	0.100	0.000	0.004

Marking



Ordering information

Order code	Package	Base qty	Delivery mode
UMW PESDHC3D12VU	SOD-323	3000	Tape and reel