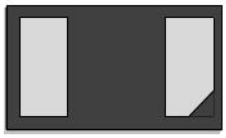
Description

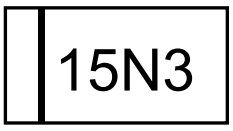
The PTVSHC2EN15V3 Transient Voltage Suppressor is designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebook computers, and PDA's. They feature large cross-sectional area junctions for conducting high transient currents, offer desirable electrical characteristics for board level protection, such as fast response time, lower operating voltage, lower clamping voltage and no device degradation when compared to MLVs. The PTVSHC2EN15V3 protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events.



DFN1610-2L(Bottom View)

Feature

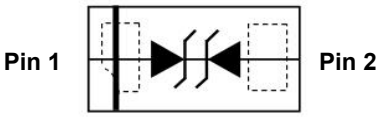
- 2000W peak pulse power per line (t_P = 8/20μs)
- DFN1610-2L package
- Response time is typically < 1 ns
- Protect one I/O or power line
- Low clamping Voltage
- Transient protection for data lines to IEC 61000-4-2(ESD) ±30KV(air), ±30KV(contact); IEC 61000-4-4 (EFT) 40A (5/50ns)



Marking (Top View)

Applications

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



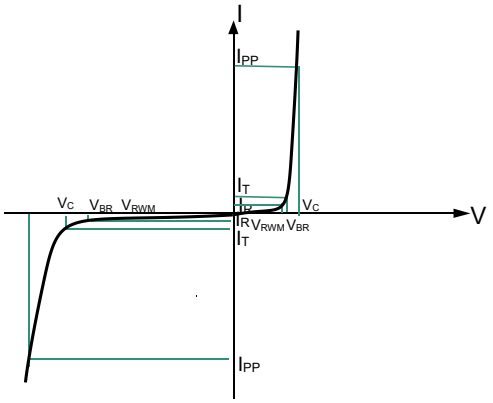
Circuit Diagram

Mechanical Characteristics

- Lead finish:100% matte Sn(Tin)
- Qualified max reflow temperature:260℃
- Pure tin plating: 7 ~ 17 um
- Pin flatness：≤3mil
- Device meets MSL 3 requirements
- RoHS compliant

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



Electrical characteristics per line@25℃(unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse Working Voltage	V_{RWM}	Pin1 to Pin2	-	-	15.0	V
Reverse Breakdown Voltage	V_{BR}	Pin1 to Pin2, I_T=1mA	16.5	-	20.5	V
Reverse Current	I_R	Pin1 to Pin2, V_{RWM}=15V	-	-	1.0	μA
Clamping Voltage	V_C	Pin1 to Pin2, I_{PP}=30A,T_P=8/20μs	22	24	26	V
Clamping Voltage	V_C	Pin1 to Pin2, I_{PP}=75A, T_P=8/20μs	28	31	34	V
Reverse Working Voltage	V_{RWM}	Pin2 to Pin1	-	-	3.3	V
Reverse Breakdown Voltage	V_{BR}	Pin2 to Pin1, I_T=1mA	3.4	-	5	V
Reverse Current	I_R	Pin2 to Pin1, V_{RWM}=3.3V	-	-	5.0	μA
Clamping Voltage	V_C	Pin2 to Pin1, I_{PP}=30A,T_P=8/20μs	5	7	9	V
Clamping Voltage	V_C	Pin2 to Pin1, I_{PP}=75A,T_P=8/20μs	9	11	13	V
Junction Capacitance	C_J	V_R=0V f = 1MHz	-	90	-	pF

Absolute maximum rating@25℃

Rating	Symbol	Value	Unit
Peak Pulse Power (t_P = 8/20μS,Pin1 to Pin2)	P_{pp}	2000	W
Peak Pulse Power (t_P = 8/20μS,Pin2 to Pin1)	P_{PP}	650	W
Peak Pulse Current (t_p=8/20μS)	I_{PP}	75	A
Operating Temperature	T_J	-55 to +150	℃
Storage Temperature	T_{STG}	-55 to +150	℃

Typical Characteristics

Fig 1. Pulse Waveform

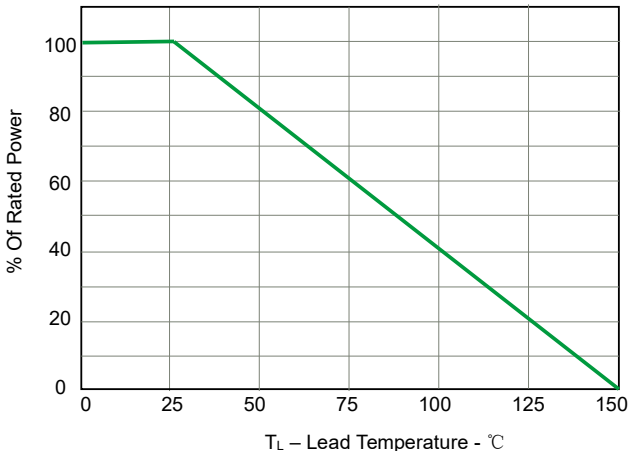


Fig 2. Power Derating Curve

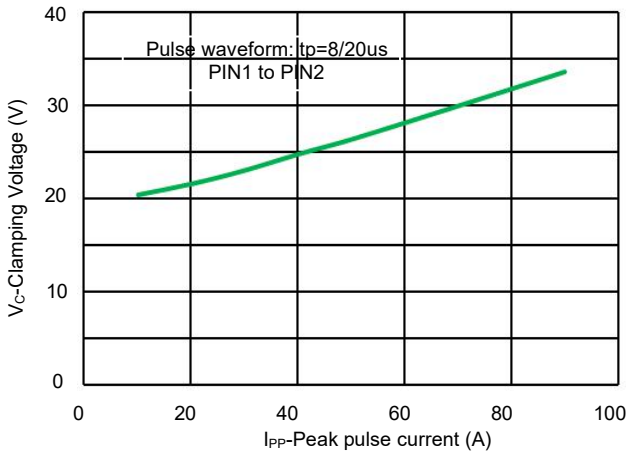


Fig 3. Clamping voltage vs. Peak pulse current

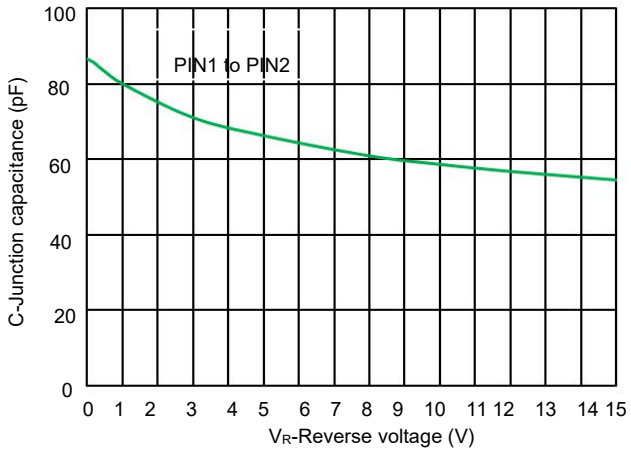


Fig 4. Capacitance vs. Reveres voltage

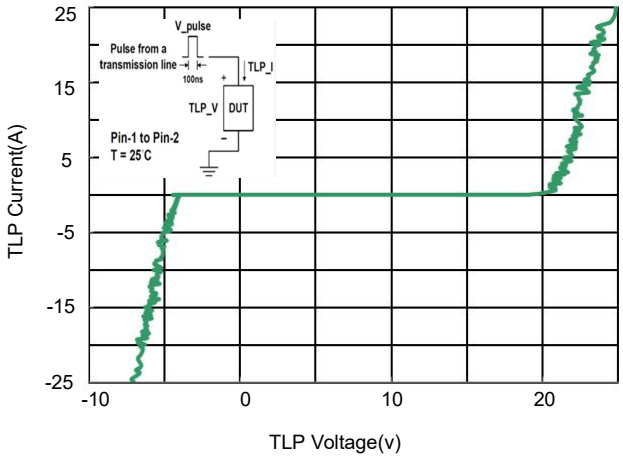


Fig 5. TLP Measurement

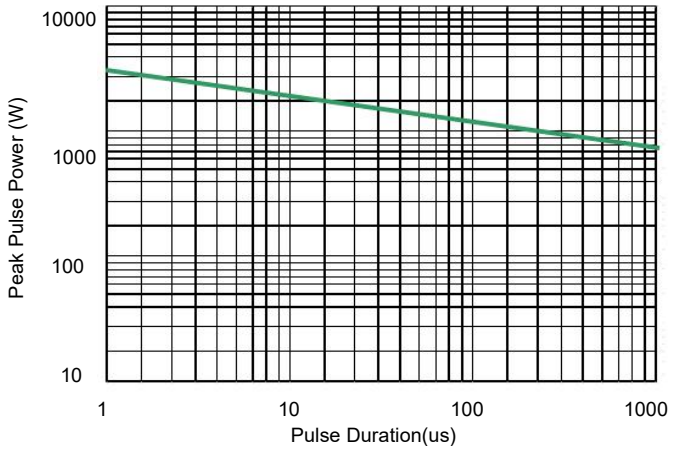
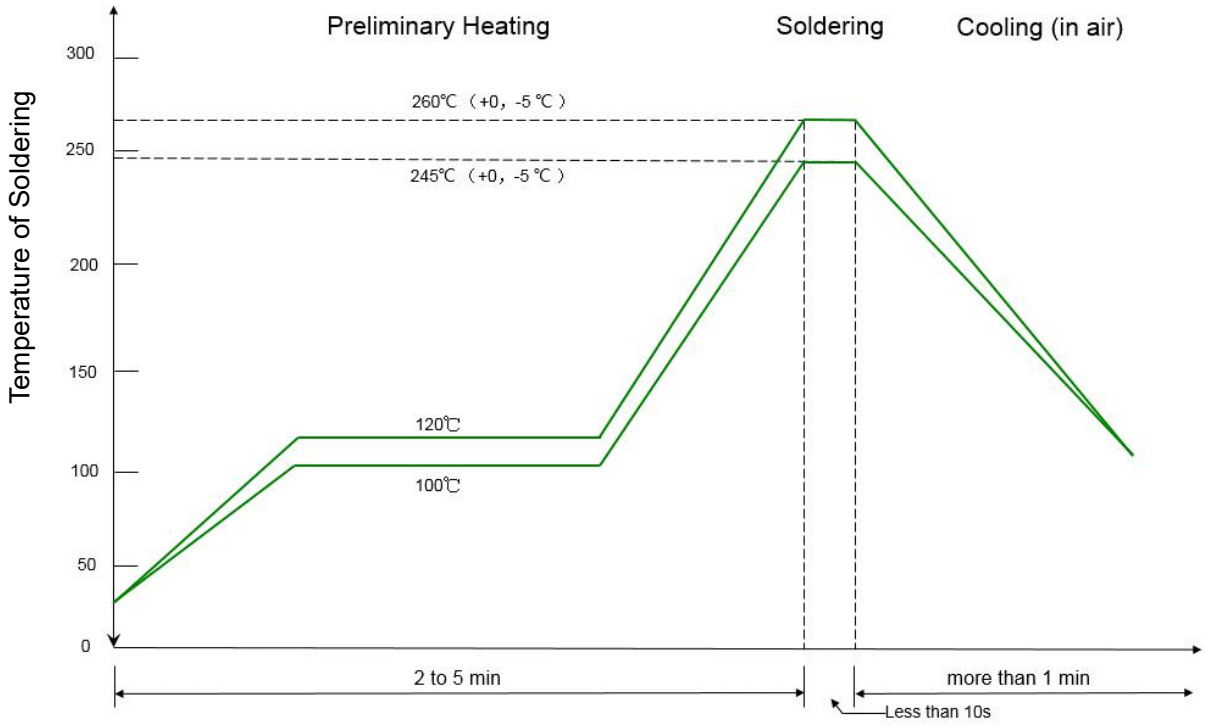


Fig 6. Non-Repetitive Peak Pulse Power vs Pulse time

Solder Reflow Recommendation



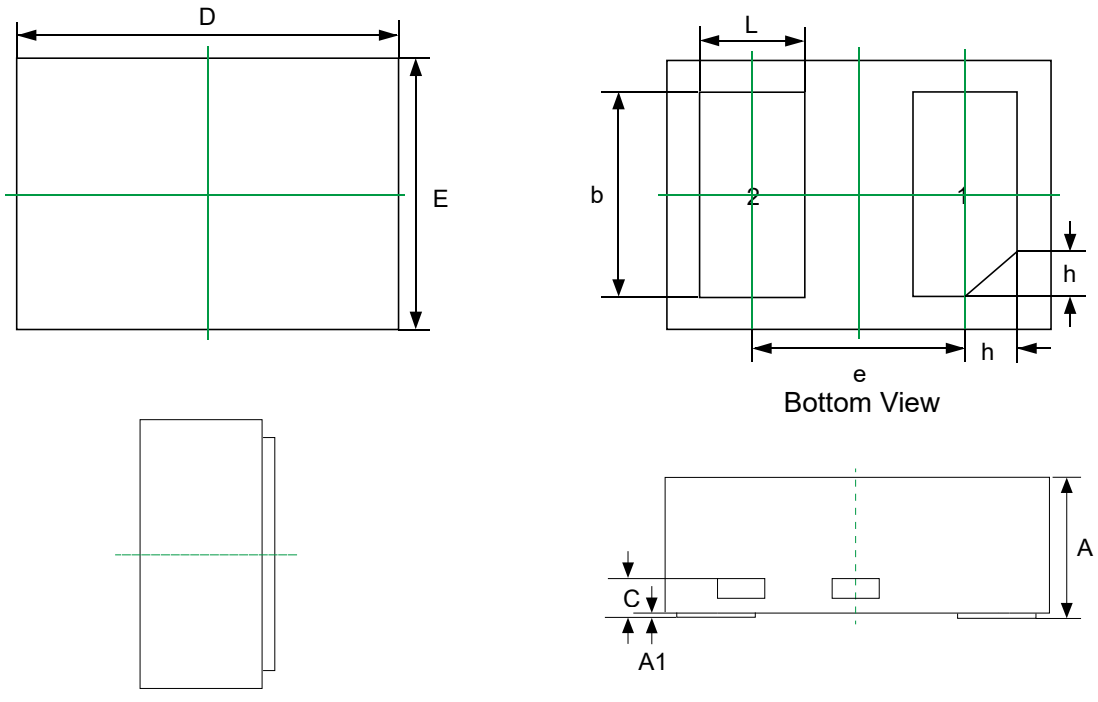
Remark: Pb free for 260℃; Pb for 245℃.

PCB Design

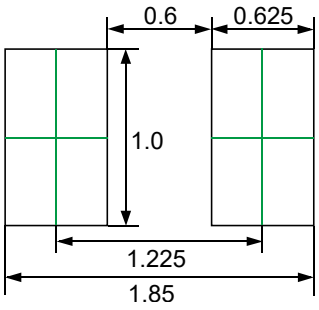
For TVS diodes a low-ohmic and low-inductive path to chassis earth is absolutely mandatory in order to achieve good ESD protection. Novices in the area of ESD protection should take following suggestions to heart:

- 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.

Product dimension (DFN1610-2L)



Dim	Millimeters	
	MIN	MAX
A	0.45	0.60
A1	--	0.05
b	0.75	0.85
c	0.10	0.20
D	1.55	1.65
e	1.10BSC	
E	0.95	1.05
L	0.35	0.45
h	0.15	0.25



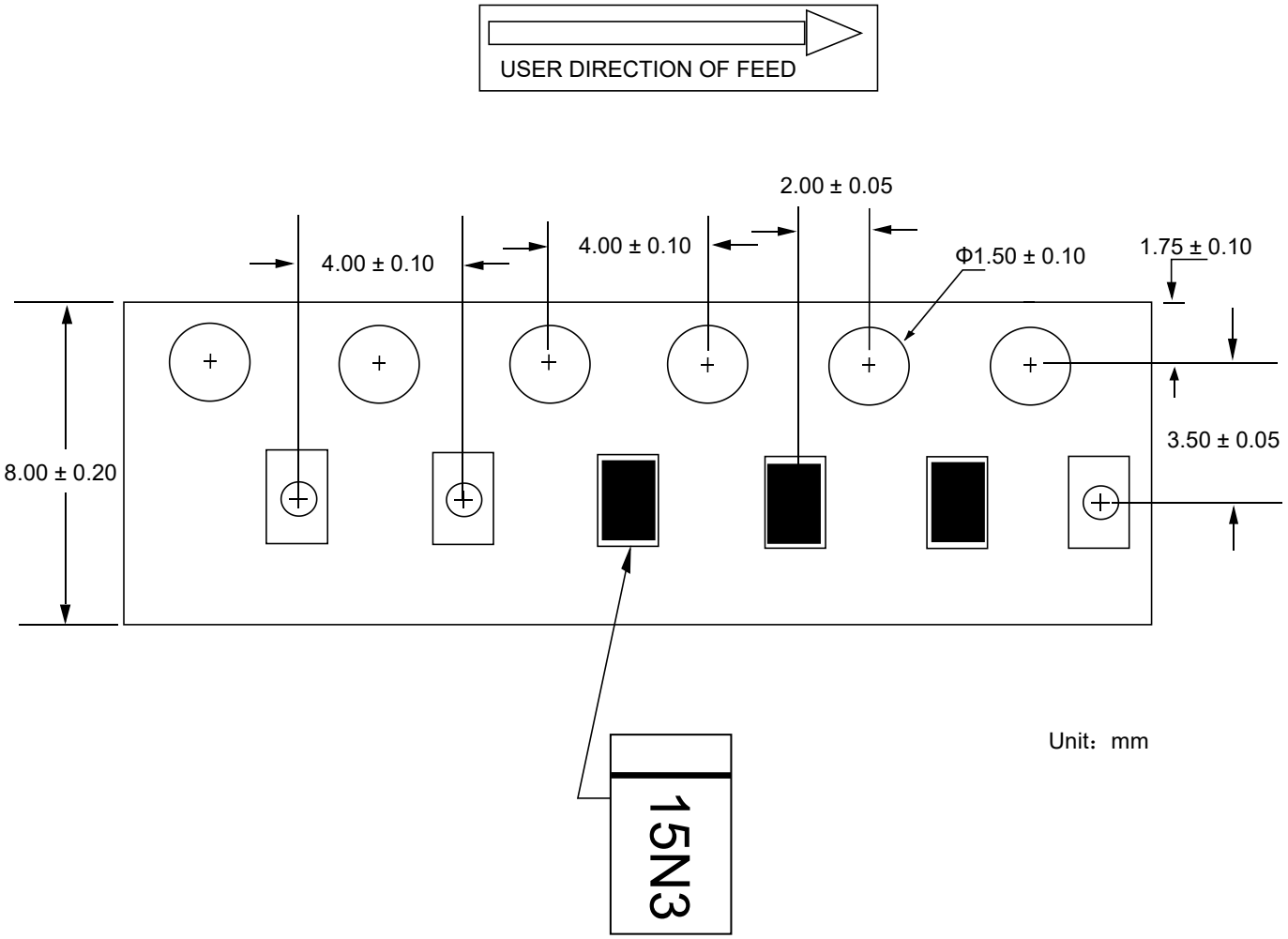
Recommended Soldering Pad

Unit: mm

Ordering information

Device	Package	MPQ
PTVSHC2EN15V3	DFN1610-2L (Pb-Free)	3000 / Tape & Reel

Load with information



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