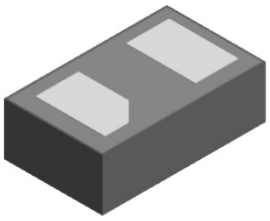
Prisemi®

PTVSHC2EN20V5

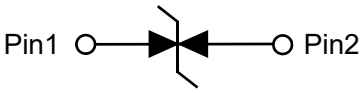
Transient Voltage Suppressor

Description

The PTVSHC2EN20V5 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 PTVSHC2EN20V5 protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events.



DFN1610-2L(Bottom View)



Circuit Diagram

Feature

- 1400W peak pulse power per line (t_P = 8/20μs)
- DFN1610-2L package
- Protect one I/O or power line
- Low clamping voltage
- RoHS compliant
- Transient protection for data lines to
  IEC 61000-4-2(ESD) ±30kV(air), ± 30kV(contact);
  IEC 61000-4-4 (EFT) 40A (5/50ns);
  IEC 61000-4-5 (Lightning) 40A (8/20us, Pin1-Pin2);
  45A (8/20us, Pin2-Pin1)

Marking (Top View)

Applications

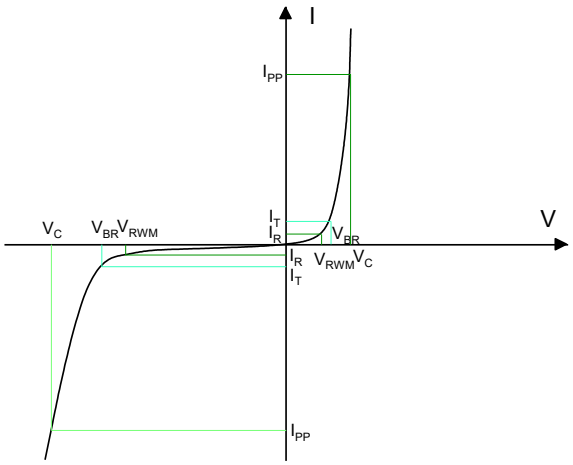
- Cell phone handsets and accessories
- Personal digital assistants (PDA's)
- Notebooks, desktops, and servers
- Portable instrumentation
- Cordless phones
- Digital cameras
- Peripherals
- MP4 players

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_{TRIG}	Reverse trigger Current
V_{HOLD}	Reverse holding voltage
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
Peak Reverse Working Voltage	V_{RWM}	Pin 1 to Pin 2	-	-	20	V
		Pin 2 to Pin 1	-	-	5.0	V
Breakdown Voltage	V_{BR}	I_t = 1mA , Pin 1 to Pin 2	22	-	25	V
		I_t = 1mA , Pin 2 to Pin 1	5.5	-	8.5	V
Reverse Leakage Current	I_R	V_{RWM} = 20V , Pin 1 to Pin 2	-	-	1	μA
		V_{RWM} = 5V , Pin 2 to Pin 1	-	-	1	μA
Clamping Voltage	V_C	I_{PP} = 40A , t_P = 8/20μs , Pin 1 to Pin 2	-	34	37	V
		I_{PP} = 45A , t_P = 8/20μs , Pin 2 to Pin 1	-	13	15	V
Junction Capacitance	C_J	V_R = 0V,f = 1MHz	-	100	150	pF

Absolute maximum rating@25℃

Rating	Symbol	Value	Units
Peak Pulse Power (t_P = 8/20μs , Pin 1 to Pin 2)	P_{PP}	1400	W
Peak Pulse Power (t_P = 8/20μs , Pin 2 to Pin 1)	P_{PP}	600	W
Peak Pulse Current (t_P = 8/20μs , Pin 1 to Pin 2)	I_{PP}	40	A
Peak Pulse Current (t_P = 8/20μs , Pin 2 to Pin 1)	I_{PP}	45	A
Lead Soldering Temperature	T_L	260 (10 sec)	℃
Junction and Storage Temperature Range	T_J,T_{STG}	-55~150	℃

Typical Characteristics

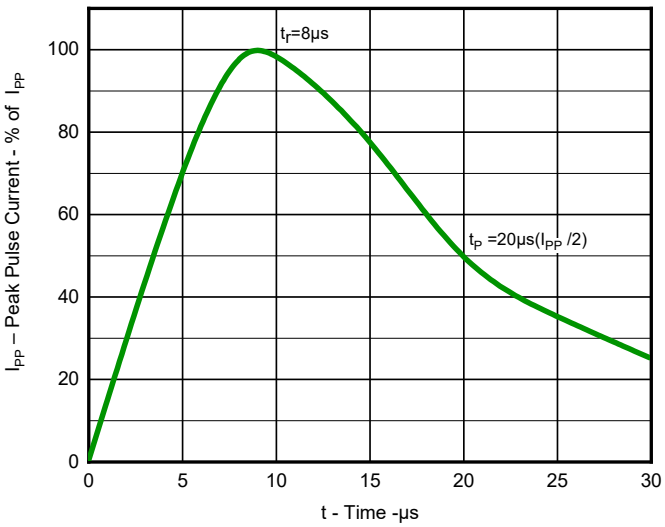


Fig 1.Pulse Waveform(8/20μs)

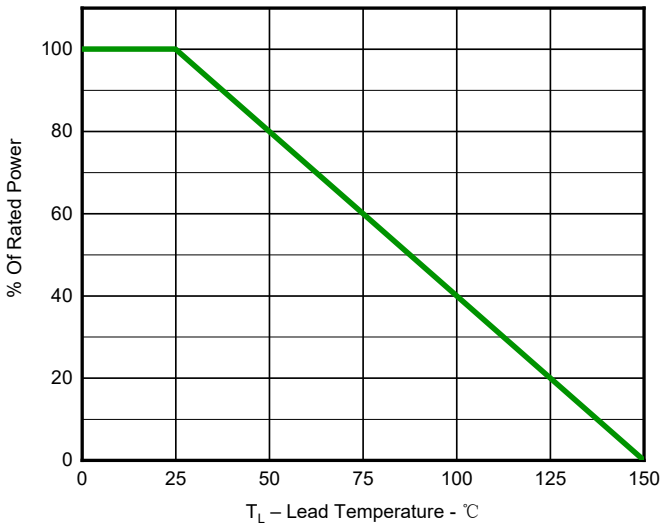


Fig 2.Power Derating Curve

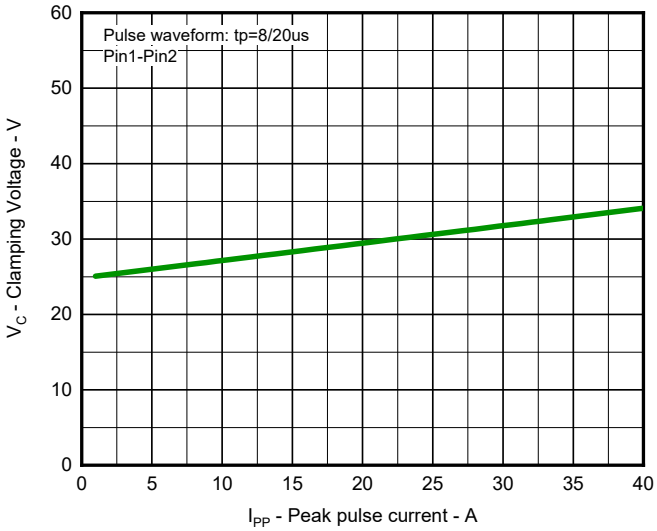


Fig 3. Clamping voltage vs. Peak pulse current

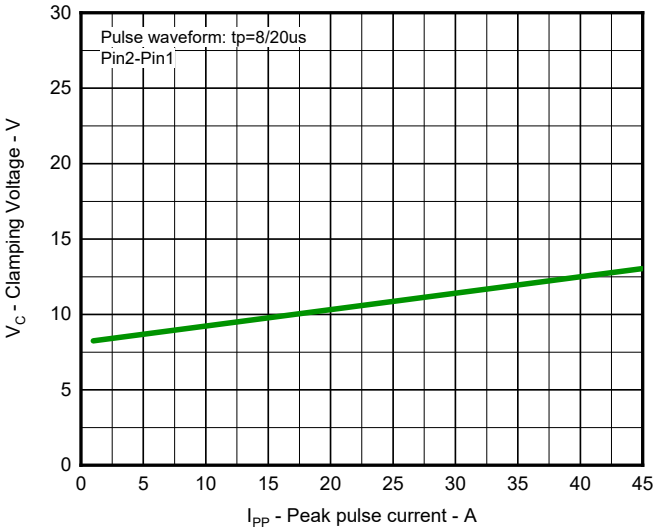


Fig 4. Clamping voltage vs. Peak pulse current

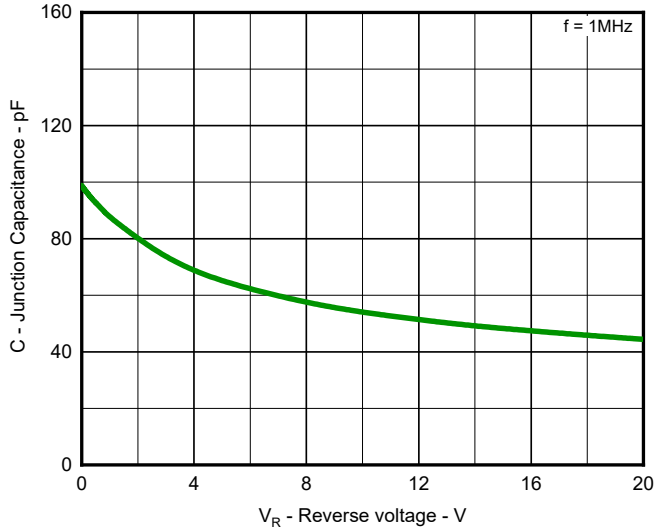


Fig 5. Capacitance vs. Reveres voltage

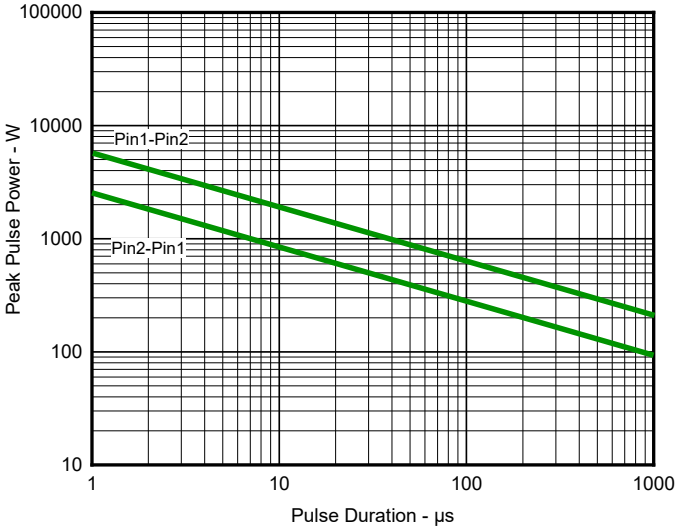


Fig 6. Non Repetitive Peak Pulse Power vs. Pulse time

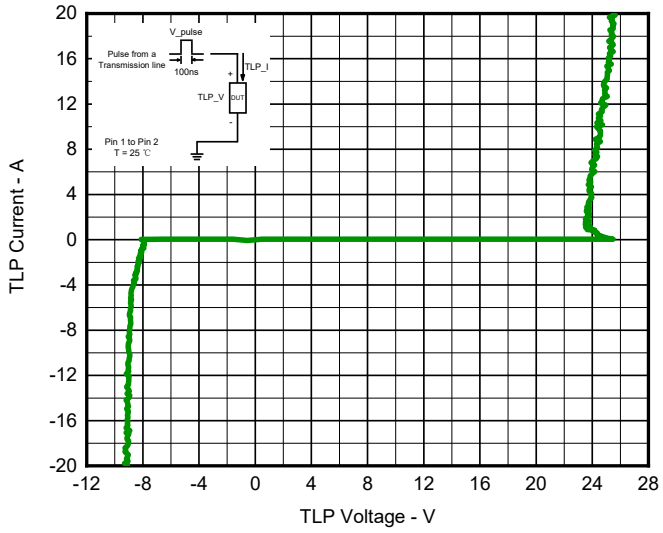
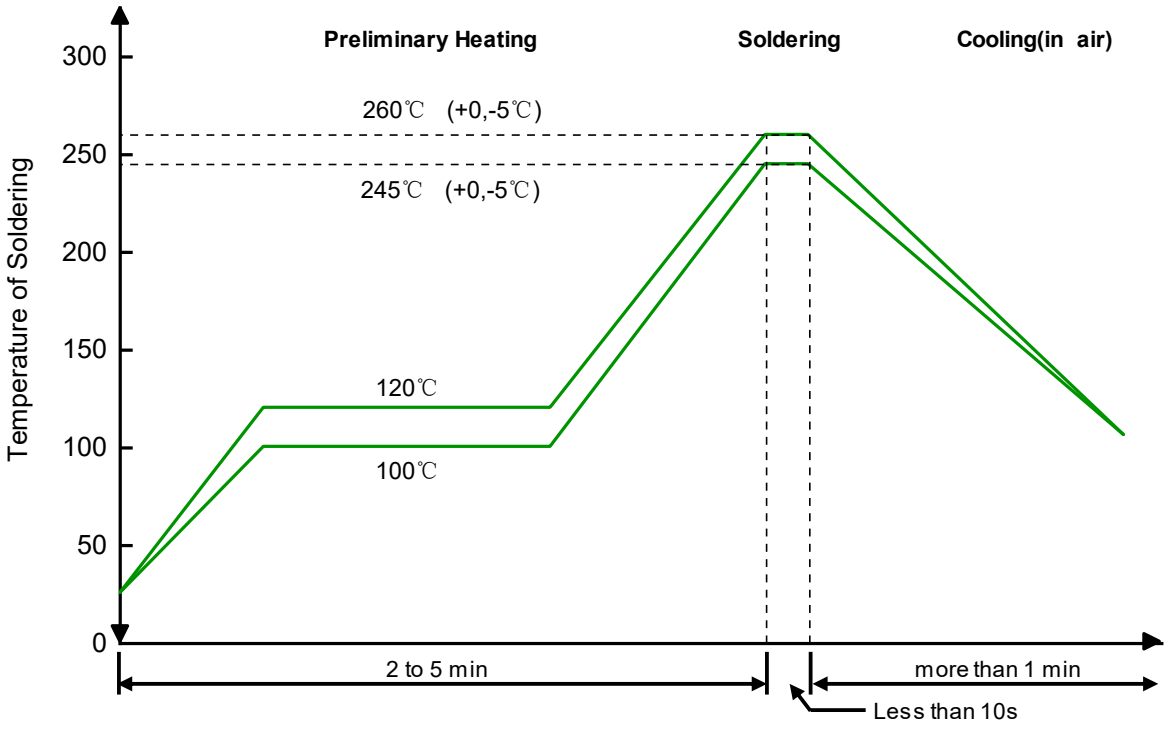


Fig 7. TLP Measurement

Solder Reflow Recommendation

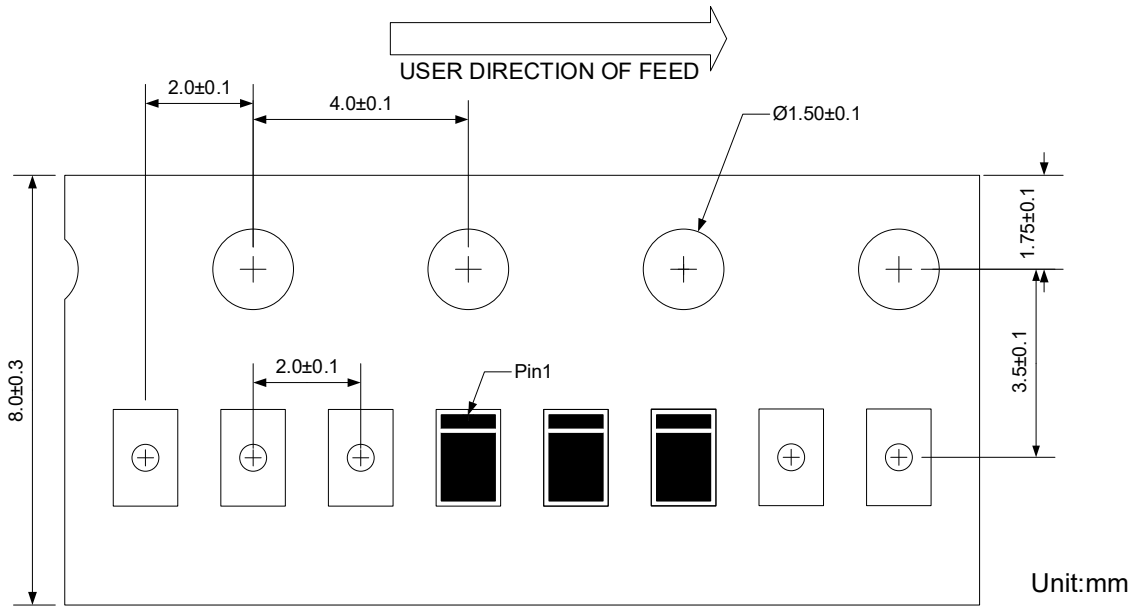


Remark: Pb free for 260℃; Pb for 245℃.

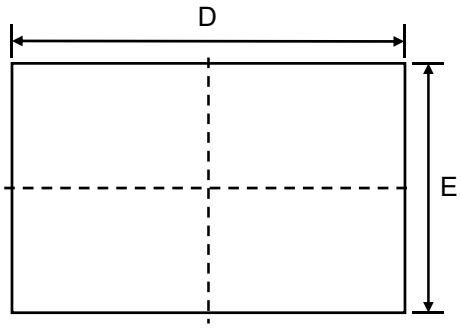
Ordering information

Device	Package	Reel	Shipping
PTVSHC2EN20V5	DFN1610-2L (Pb-Free)	7"	10000 / Tape & Reel

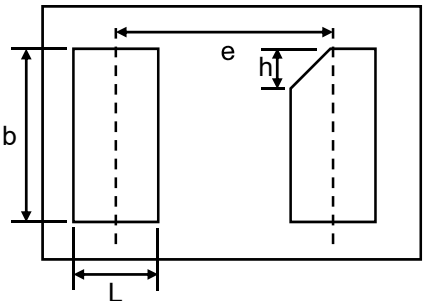
Load with information



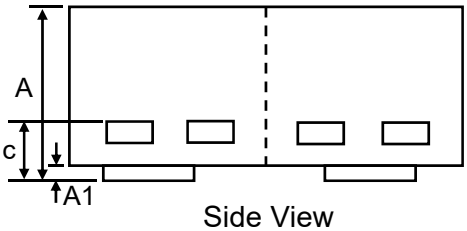
Product dimension (DFN1610-2L)



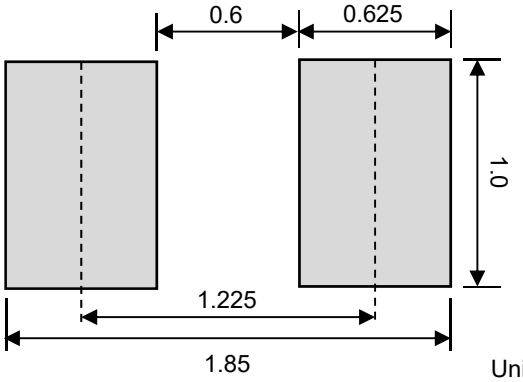
Top View



Bottom View



Side View



Suggested PCB Layout

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.40	0.60	0.016	0.024
A1	0.00	0.05	0.000	0.002
b	0.85	0.95	0.033	0.037
c	0.05	0.20	0.002	0.008
D	1.55	1.65	0.061	0.065
E	0.95	1.05	0.037	0.041
e	1.10 BSC		0.043 BSC	
L	0.35	0.45	0.014	0.018
h	0.15	0.25	0.006	0.010

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