Prisemi®

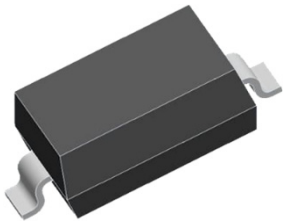
PESDLC3D5VBI

ESD Protector

Description

The PESDLC3D5VBI is a low capacitance transient voltage suppressors for high speed data interface that designed to protect sensitive electronics from damage or latch-up due to ESD lightning, and other voltage induced transient events. .

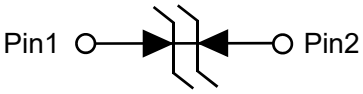
All pins are rated to withstand 30kV ESD pulses using the IEC61000-4-2 air discharge method, which can meet the requirement of level 4.



SOD-323(Top View)

Feature

- 200W peak pulse power per line (t_P = 8/20μs)
- Protects one I/O or power line(bidirectional)
- Low clamping voltage
- Working voltages: 5V
- Low leakage current
- Transient protection for data lines to
  IEC 61000-4-2(ESD) ±30kV(air), ± 30kV(contact);
  IEC 61000-4-4 (EFT) 40A (5/50ηs)



Circuit Diagram

Applications

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants(PDA's)
- Notebooks , Desktops , and Servers
- Portable Instrumentation
- Peripherals
- USB Interface

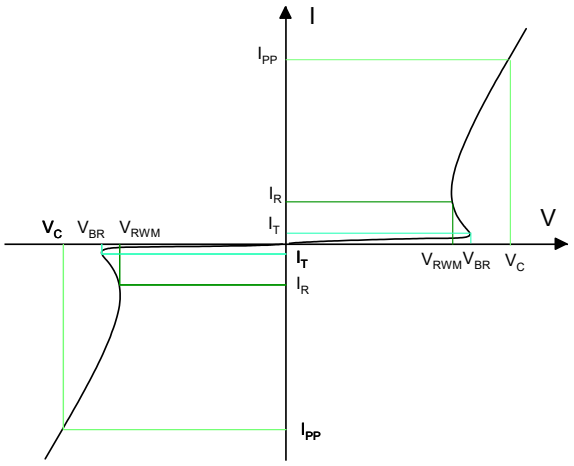
Marking (Top View)

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
- Device meets MSL 1 requirements

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
Peak Reverse Working Voltage	V_{RWM}	-	-	-	5.0	V
Breakdown Voltage	V_{BR}	I_t = 1mA	5.5	-	9.0	V
Reverse Leakage Current	I_R	V_{RWM} = 5V	-	-	1.0	μA
Clamping Voltage[1)]	V_C	TLP = 16A, t_p = 100ns	-	9.5	-	V
Dynamic resistance[1)]	R_{DYN}	-	-	0.2	-	Ω
Clamping Voltage[2)]	V_C	I_{PP} = 20A,t_P = 8/20μs	-	10	13	V
Junction Capacitance	C_J	V_R = 0V,f = 1MHz	-	1.0	1.5	pF

Notes:
1. TLP parameter: Z_0=50Ω, t_p=100ns, t_r=2ns, averaging window from 70ns to 90ns. R_{DYN} is calculated from 4A to 16A.
2. Non-repetitive current pulse, according to IEC61000-4-5.

Absolute maximum rating@25℃

Rating	Symbol	Value	Units
Peak Pulse Power (t_P = 8/20μs)	P_{PP}	200	W
Peak Pulse Current (t_P = 8/20μs)	I_{PP}	20	A
Lead Soldering Temperature	T_L	260 (10 sec)	℃
Junction and Storage Temperature Range	T_J,T_{STG}	-55~+150	℃
ESD Protection-Contact Discharge	V_{ESD}	±30	kV
ESD Protection-Air Discharge	V_{ESD}	±30	kV

Typical Characteristics

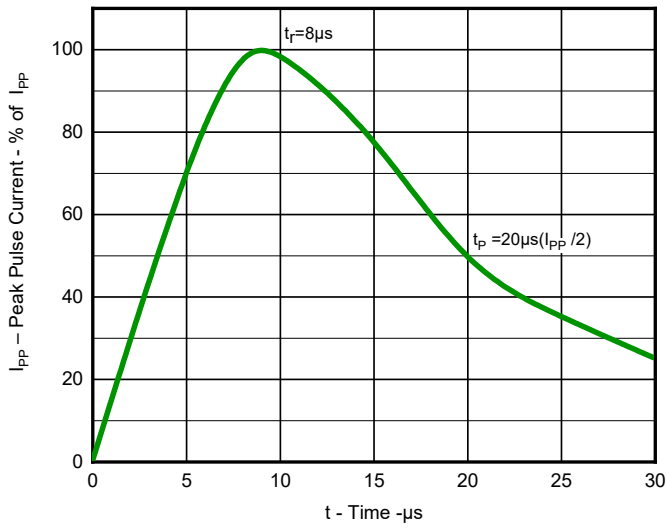


Fig 1.Pulse Waveform(8/20μs)

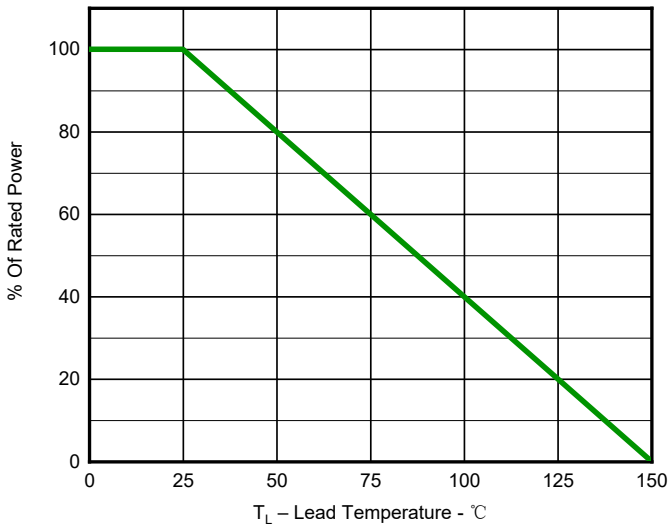


Fig 2.Power Derating Curve

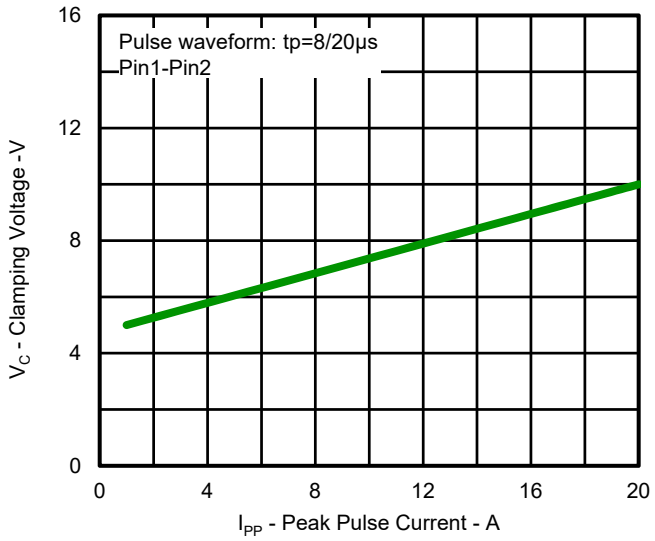


Fig.3 Clamping Voltage vs. Peak Pulse Current

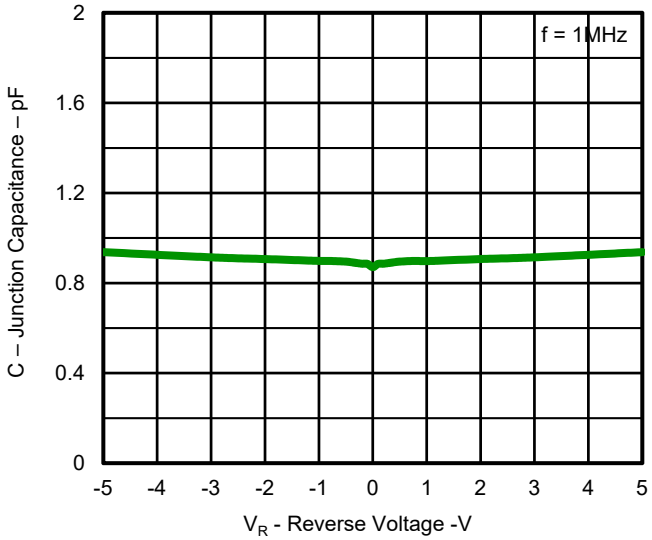


Fig.4 Capacitance vs. Reveres Voltage

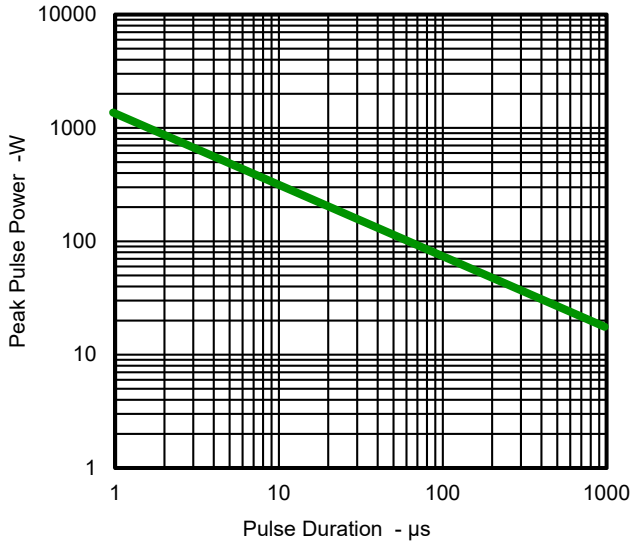


Fig.5 Non-Repetitive Peak Pulse Power vs. Pulse Time

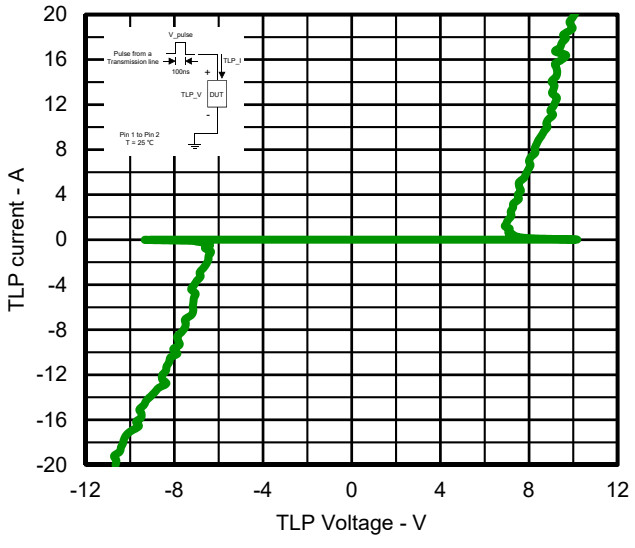
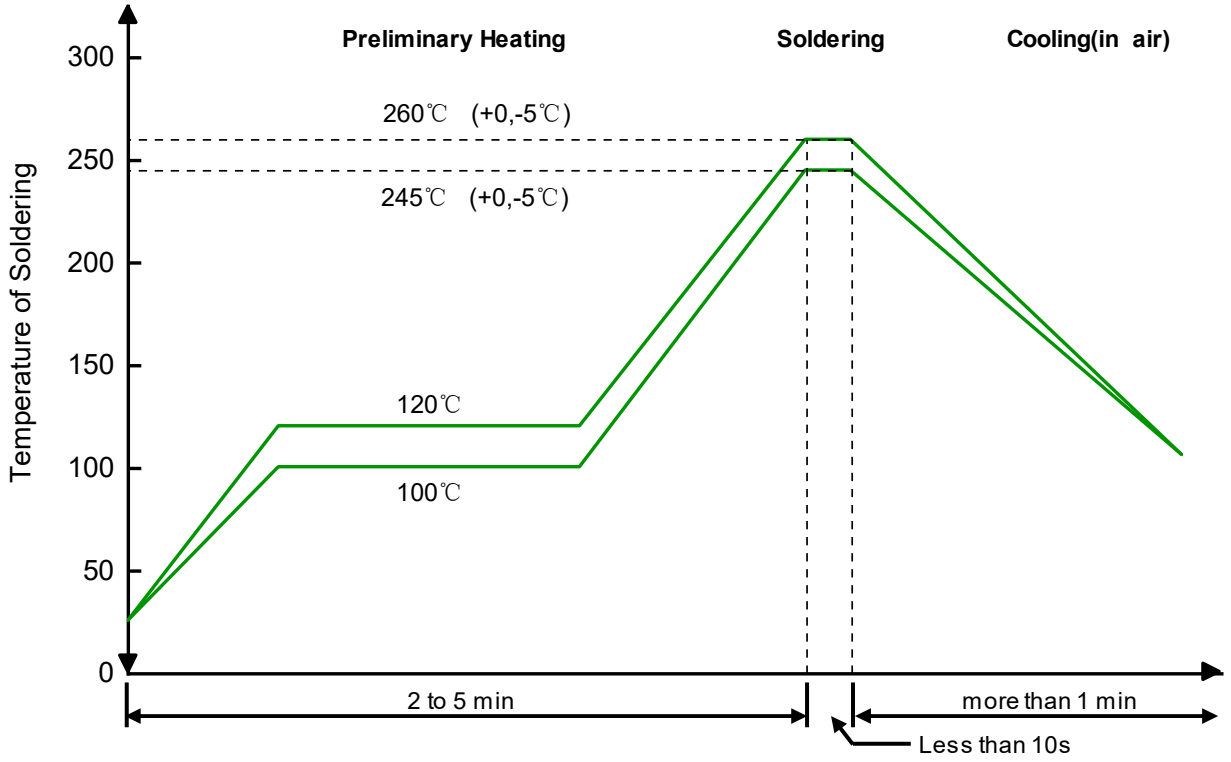


Fig.6 TLP Measurement

Solder Reflow Recommendation



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

PCB Design

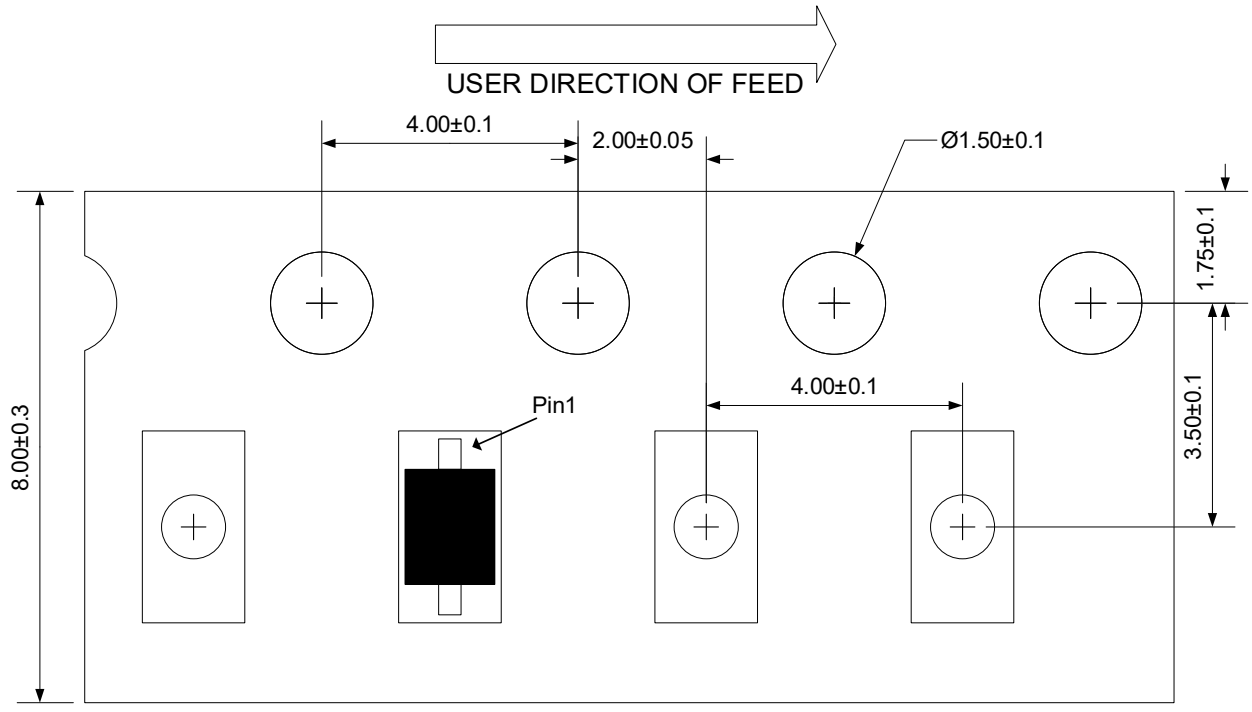
For TVS diodes a low-ohmic and low-inductive path to chassis earth is absolutely mandatory in order to achieve good ESD protection. Novices in the area of ESD protection should take following suggestions to heart:

- 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.

Ordering information

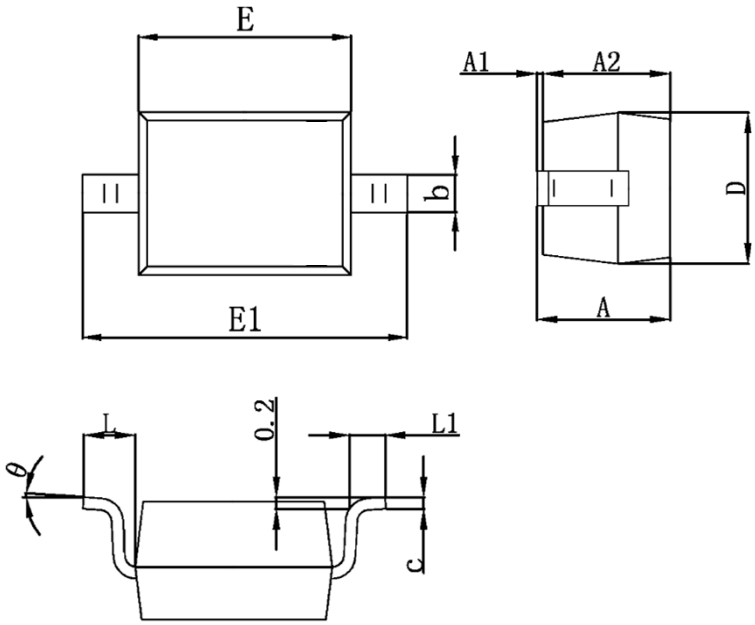
Package	Reel	Shipping
SOD-323	7"	3000 / Tape & Reel

Load with information

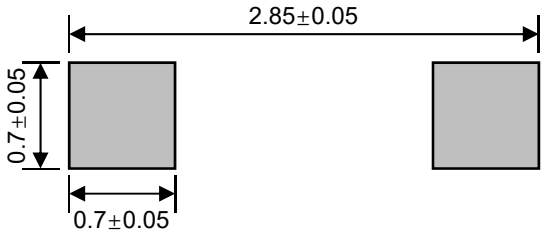


Unit:mm

Product dimension (SOD-323)



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.80	1.10	0.031	0.043
A1	0.00	0.10	0.000	0.004
A2	0.80	1.00	0.031	0.039
b	0.25	0.40	0.010	0.016
c	0.08	0.18	0.003	0.007
D	1.15	1.45	0.045	0.057
E	1.55	1.90	0.061	0.075
E1	2.30	2.75	0.091	0.108
L	0.475 Ref.		0.019 Ref.	
L1	0.15	0.40	0.006	0.016
θ	0°	8°	0°	8°



Unit: mm

Suggested PCB Layout

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