PESDALC23T12VU

Low Capacitance TVS Array

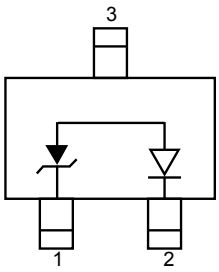
Description

The PESDALC23T12VU is designed to protect sensitive electronics from damage or latch-up due to ESD, lightning, and other voltage-induced transient events. It is available with operating voltages of 12V.

TVS diodes are solid-state devices designed specifically for transient suppression.

It offer desirable characteristics for board level protection including fast response time, low operating and clamping voltage, and no device degradation. The PESDALC23T12VU feature a low capacitance, fast switching compensation diode in series with a standard TVS diode. This effectively reduces the overall capacitance of the device to less than 5pF making it an integrated, low capacitance solution for use on high-speed interfaces.

The PESDALC23T12VU may be used to meet the immunity requirements of IEC 61000-4-2, level 4.



Feature

- 300W peak pulse power (t_P = 8/20μs)
- SOT-23 package
- Working voltage: 12V
- Low clamping voltage
- Low capacitance
- RoHS Compliant Transient Protection for High Speed Data Lines to IEC61000-4-2(ESD)±15kV(air),±8kV(Contact)

Applications

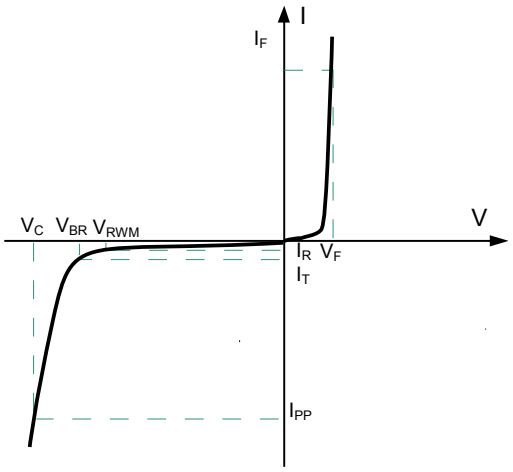
- Cellular handsets and accessories
- Portable electronics
- LAN/WAN equipment
- High speed data lines
- Fire wire

Mechanical Characteristics

- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260℃
- Device meets MSL 1 requirements
- 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@(unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				12	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA	15.0		18.5	V
Reverse Leakage Current	I_R	V_{RWM} =12V, T=25℃			1	μA
Clamping Voltage	V_C	I_{PP} = 1A, t_P = 8/20μs			18.8	V
Clamping Voltage	V_C	I_{PP}=5A, t_P = 8/20μs			22.0	V
Junction Capacitance	C_J	V_R=0V, f = 1MHz		3		pF

Absolute maximum rating@25℃

Rating	Symbol	Value	Units
Peak Pulse Power (t_p=8/20μs)	P_{pp}	300	W
Operating Temperature	T_J	-55 to +150	℃
Storage Temperature	T_{STG}	-55 to +150	℃

Typical Characteristics

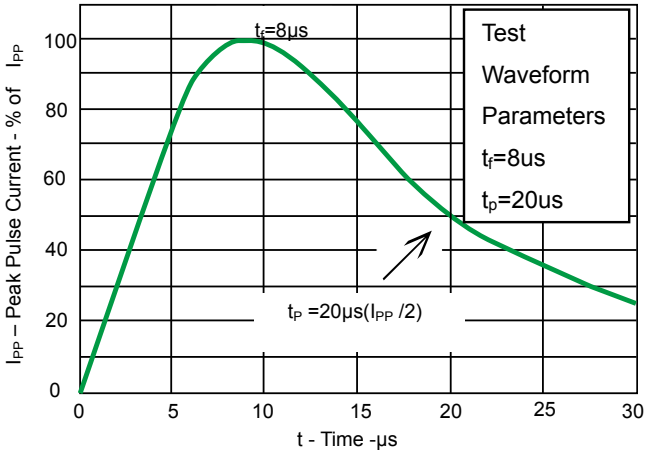


Fig 1.Pulse Waveform

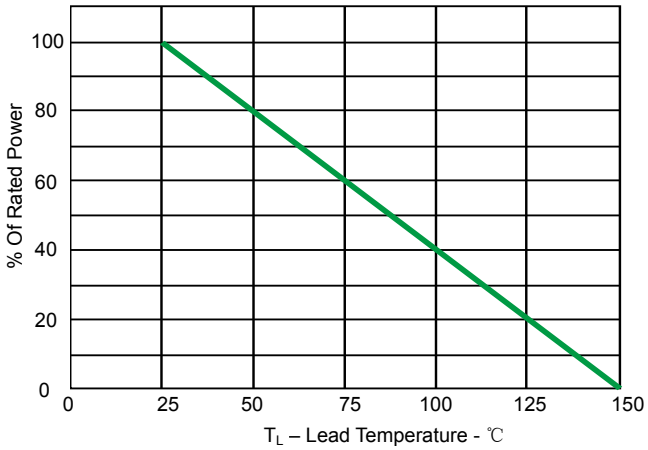


Fig 2.Power Derating Curve

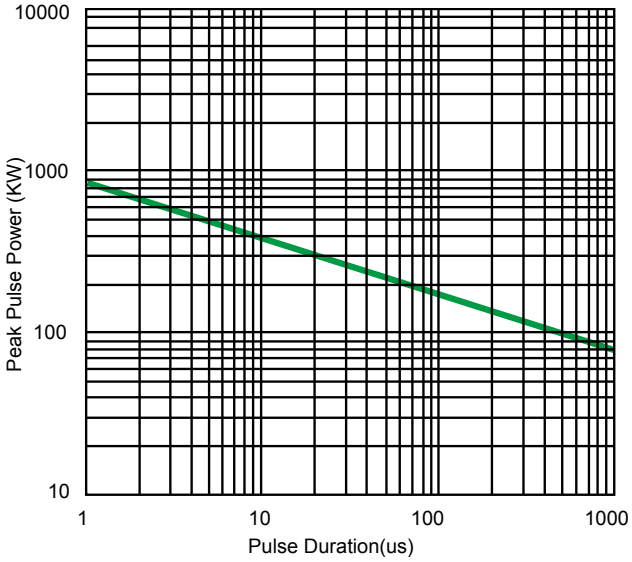
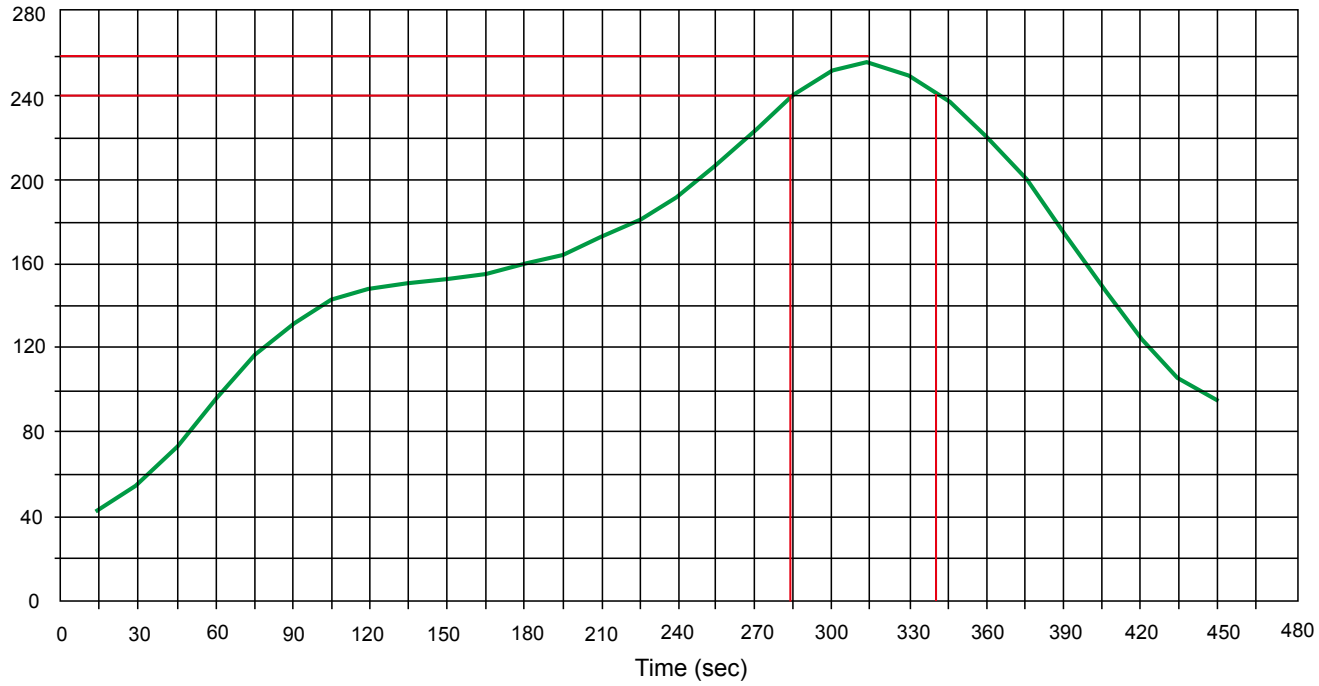


Fig 3. Non Repetitive Peak Pulse Power vs. Pulse time

Solder Reflow Recommendation

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

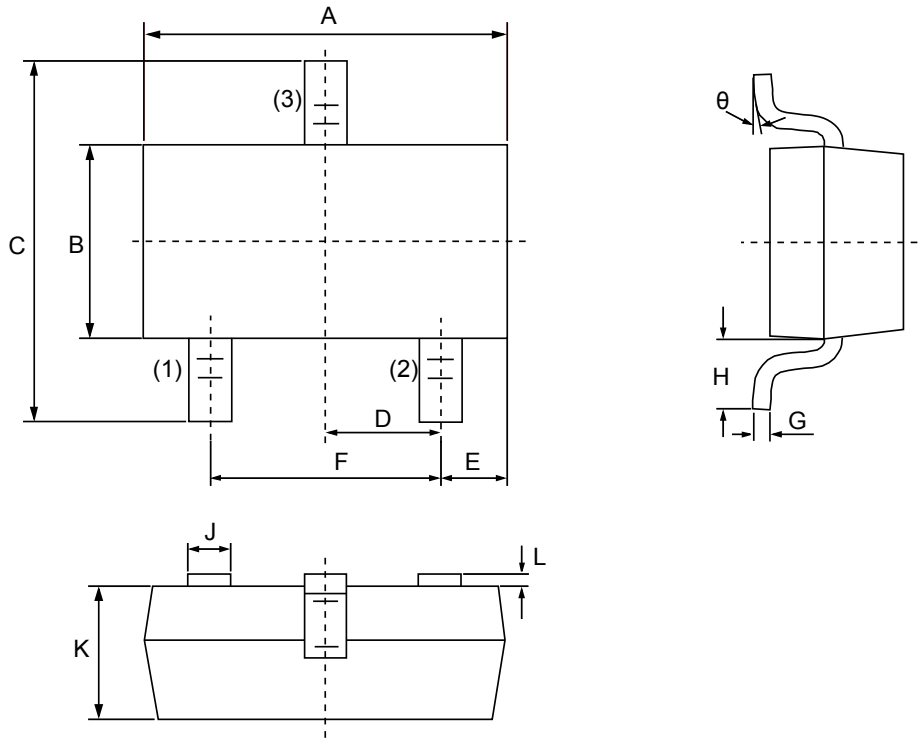


PCB Design

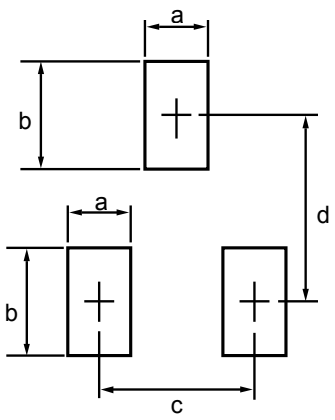
For TVS diodes a low-ohmic and low-inductive path to chassis earth is absolutely mandatory in order to achieve good ESD protection. Novices in the area of ESD protection should take following suggestions to heart:

- 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.

Product dimension(SOT-23)



Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	2.10	2.50	0.0830	0.0984
D	0.89	1.02	0.0350	0.0401
E	0.45	0.60	0.0177	0.0236
F	1.78	2.04	0.0701	0.0807
G	0.085	0.177	0.0034	0.0070
H	0.45	0.60	0.0180	0.0236
J	0.37	0.50	0.0150	0.0200
K	0.89	1.11	0.0350	0.0440
L	0.013	0.100	0.0005	0.0040
θ	0°	10°	0°	10°



Dim	Millimeters	
	MIN	MAX
a	--	0.7
b	--	1.2
c	--	2.04
d	--	2.2

Ordering information

Device	Package	Shipping
PESDALC23T12VU	SOT-23 (Pb-Free)	3000 / Tape & Reel

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