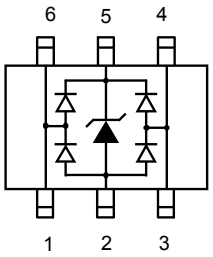
PESDALC236T5V4

Low Capacitance TVS Array

Description

The PESDALC236T5V4 is monolithic Application Specific Devices Dedicated to ESD protection of high speed interfaces such as USB2.0, Ethernet links and Video lines.

The very low line capacitance secures a high level of signal integrity without compromising in protection sensitive chips against the most stringent characterized ESD strikes. All pins are rated to withstand 15kV ESD pulses using the IEC 61000-4-2 contact discharge method, which can meet the requirement of level 4.



Feature

- 2 data lines protection
- Protects V_{BUS}
- Very low capacitance:3.5pF max
- Very low leakage current:1μA max
- SOT-23-6L packages
- RoHS Compliant

Applications

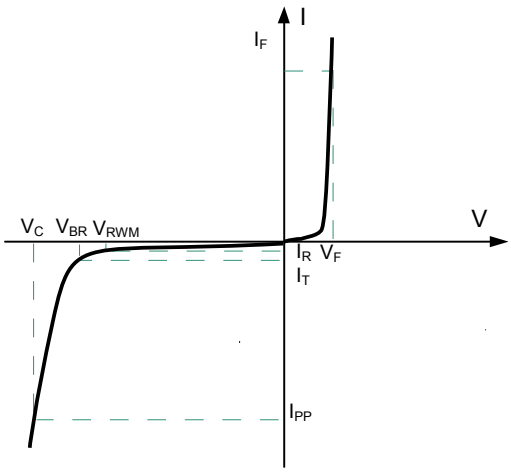
- USB 2.0 ports at 480Mbps (high speed) and USB OTG ports
- Backwards compatible with USB1.1 low and full speed
- Ethernet port :10/100Mb/s
- SIM card protection
- Video line protection
- Portable and mobile electronics

Mechanical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA	6			V
Reverse Leakage Current	I_R	V_{RWM} =5.0V, T=25℃			1	μA
Forward voltage	V_F	I_F=10mA			1.1	V
Clamping Voltage	V_C	I_{PP} = 1A, t_P = 8/20μs			12	V
Clamping Voltage	V_C	I_{PP}=5A, t_P = 8/20μs			17	V
Capacitance Between IO and GND	C_J	V_R=0V, f = 1MHz		2.5	3.5	pF
Capacitance Between IO and I/O	C_J	V_R=0V, f = 1MHz		1.2	1.7	pF

Absolute maximum rating@25℃

Rating	Symbol	Value	Units
Peak Pulse Power (t_p=8/20μs)	P_{pp}	150	W
Maximum junction Temperature	T_J	125	℃
Storage Temperature	T_{STG}	-55 to +150	℃
Lead solder temperature(10 seconds duration)	T_L	260	℃

Typical Characteristics

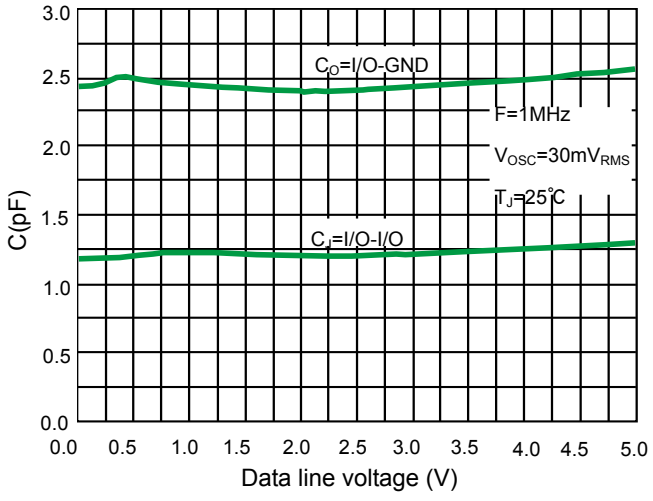


Fig1.Capacitance versus line voltage (typical values)

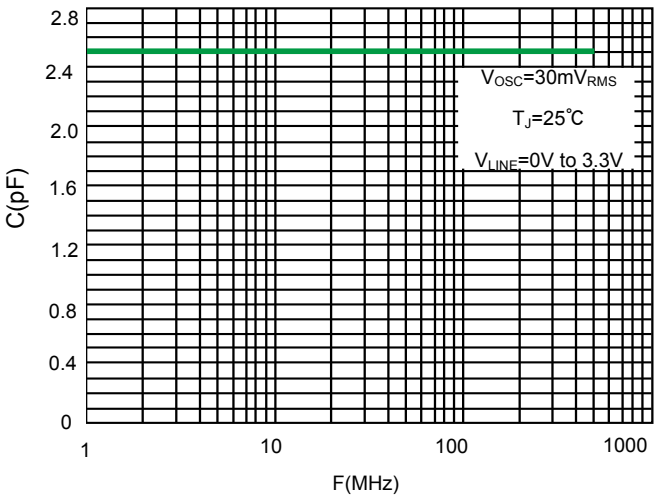


Fig2. Line capacitance versus frequency (typical values)

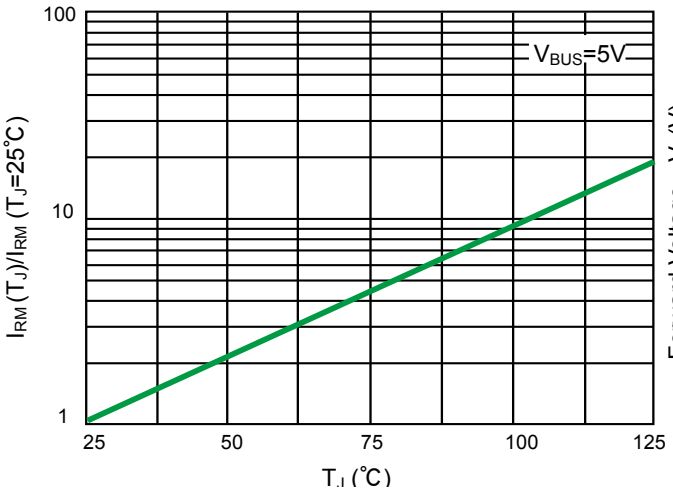


Fig 3.Relative variation of leakage current versus junction Temperature (typical values)

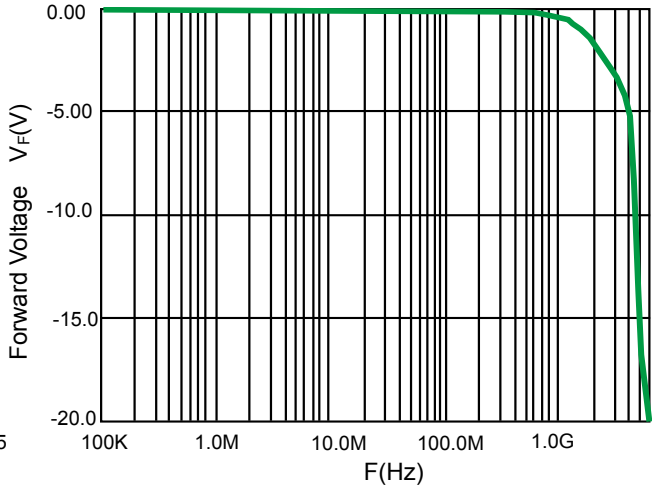
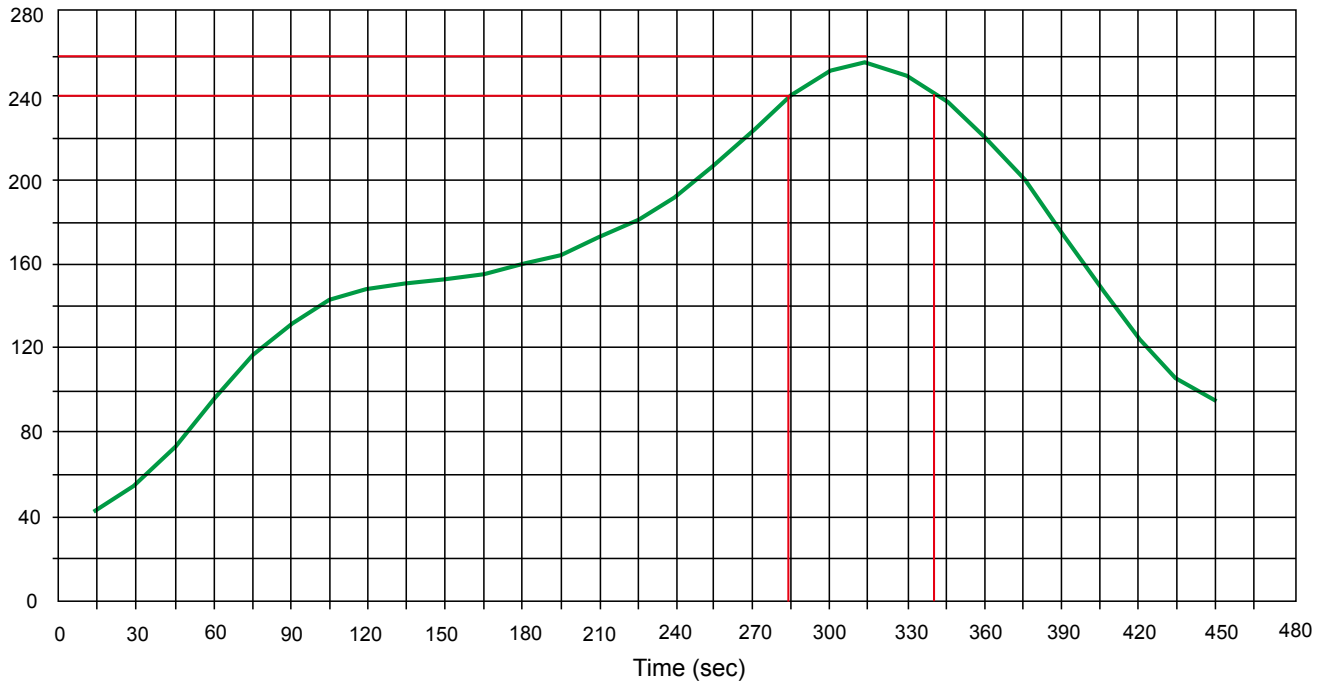


Fig.4 Frequency response

Solder Reflow Recommendation

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

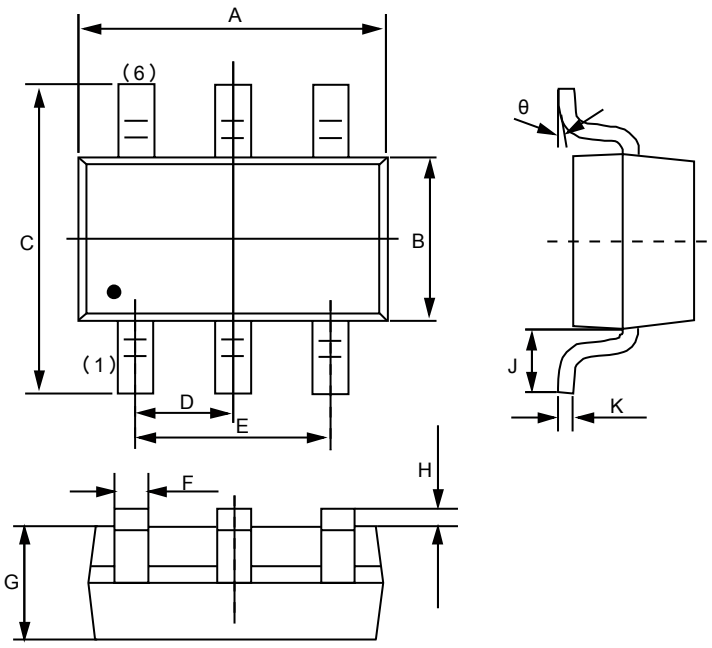


PCB Design

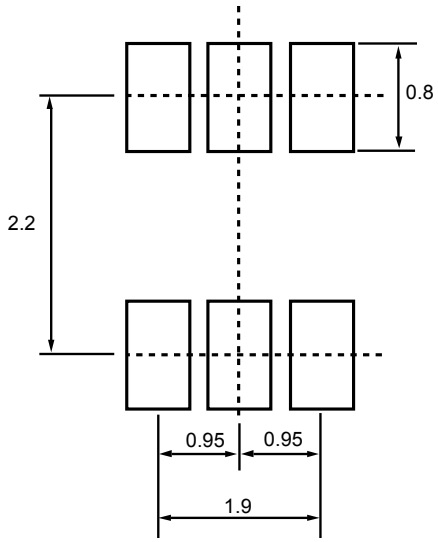
For TVS diodes a low-ohmic and low-inductive path to chassis earth is absolutely mandatory in order to achieve good ESD protection. Novices in the area of ESD protection should take following suggestions to heart:

- 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-23-6L)



Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.820	3.020	0.111	0.119
B	1.500	1.700	0.059	0.067
C	2.650	2.950	0.104	0.116
D	0.950（BSC）		0.037（BSC）	
E	1.800	2.000	0.071	0.079
F	0.300	0.500	0.012	0.020
G	1.050	1.150	0.041	0.045
H	0.000	0.100	0.000	0.004
J	0.45	0.60	0.0180	0.0236
K	0.100	0.200	0.004	0.008
θ	0°	8°	0°	8°



Unit:mm

Ordering information

Device	Package	Shipping
PESDALC236T5V4	SOT23-6L (Pb-Free)	3000 / Tape & Reel

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