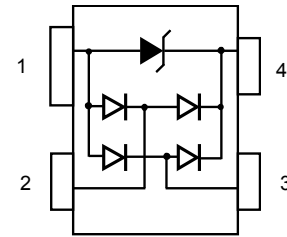


Description

The PESDALC143T5VU is low capacitance transient voltage suppressor 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 15kV ESD pulses using the IEC61000-4-2 air discharge method, which can meet the requirement of level 4.



Feature

- 350 W Peak Power per Line (tp = 8/20μs)
- SOT-143 package
- ESD Protection > 15 kV
- Unidirectional configurations
- Protects 2 I/O Ports & Power Supply
- Low Capacitance: 4 pF
- Low clamping voltage
- RoHS Compliant in Lead-Free Versions
- Transient protection for data lines to IEC 61000-4-2(ESD) ±15KV(air) ±8KV(contact); IEC 61000-4-4 (EFT) 40A (5/50ns)

Applications

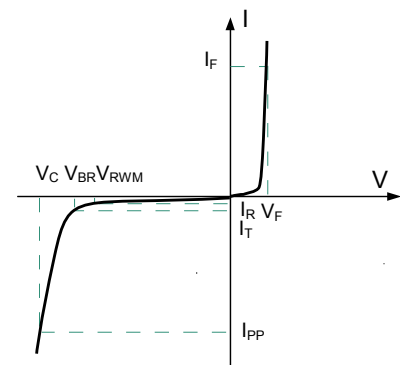
- Ethernet - 10/100 Base T
- Fire wire
- Wireless communications
- USB interface

Mechanical Characteristics

- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260°C
- 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} | | | | 5 | V |
| Reverse Breakdown Voltage | V_{BR} | $I_t = 1mA$ | 6 | | 8.5 | V |
| Reverse Leakage Current | I_R | $V_{RWM} = 5.0V, T = 25^{\circ}C$ | | | 1 | μA |
| Clamping Voltage | V_C | $I_{PP} = 1A, t_p = 8/20\mu s$ | | | 12.5 | V |
| Clamping Voltage | V_C | $I_{PP} = 5A, t_p = 8/20\mu s$ | | | 24.0 | V |
| Capacitance Between IO and GND | C_J | $V_R = 0V, f = 1MHz$ | | 3.0 | | pF |
| Capacitance Between IO and I/O | C_J | $V_R = 0V, f = 1MHz$ | | 1.5 | | pF |

Absolute maximum rating@25°C

| Rating | Symbol | Value | Units |
|--|-----------|-------------|-------------|
| Peak Pulse Power ($t_p = 8/20\mu s$) | P_{pp} | 350 | W |
| Peak Pulse Power ($t_p = 8/20\mu s$) | I_{pp} | 9 | A |
| Operating Temperature | T_J | -55 to +150 | $^{\circ}C$ |
| Storage Temperature | T_{STG} | -55 to +150 | $^{\circ}C$ |

Typical Characteristics

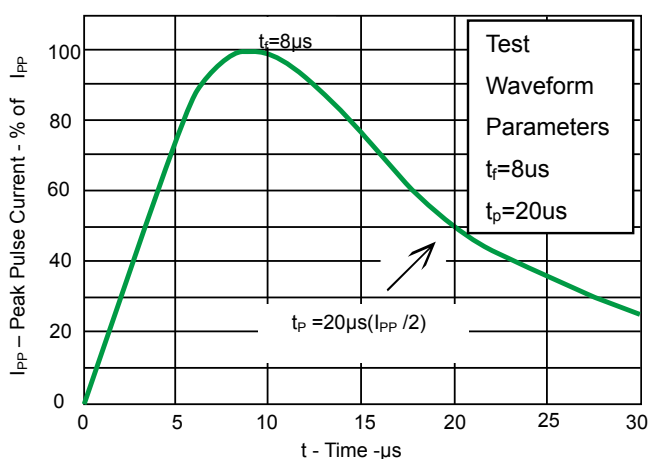


Fig 1.Pulse Waveform

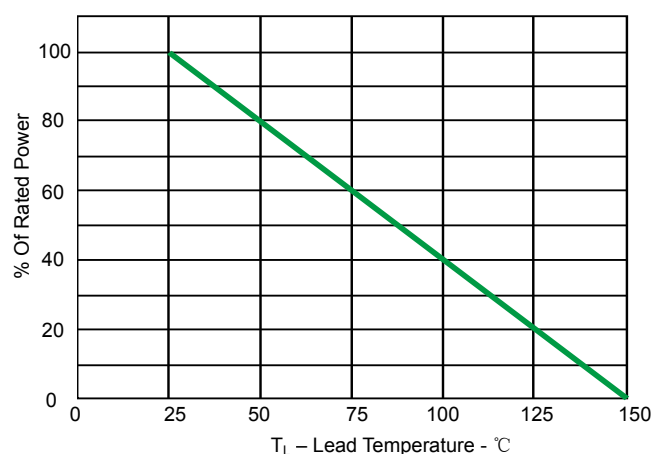


Fig 2.Power Derating Curve

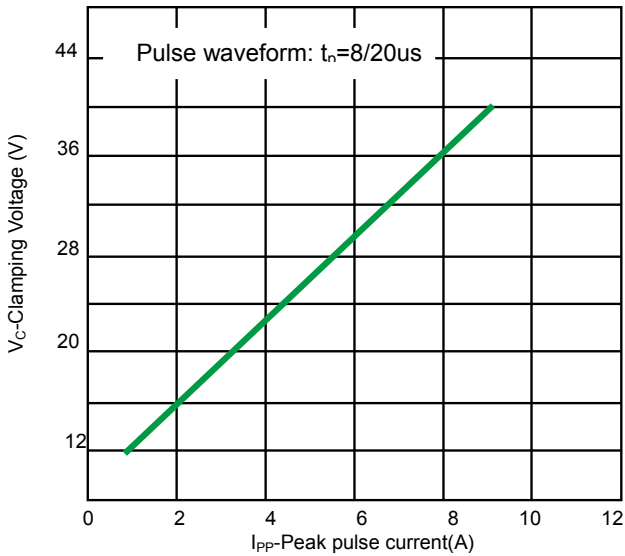


Fig 3. Clamping voltage vs. Peak pulse current

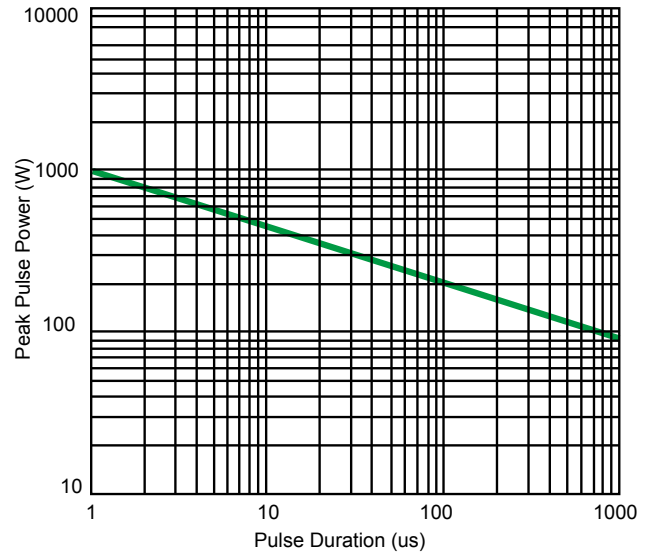
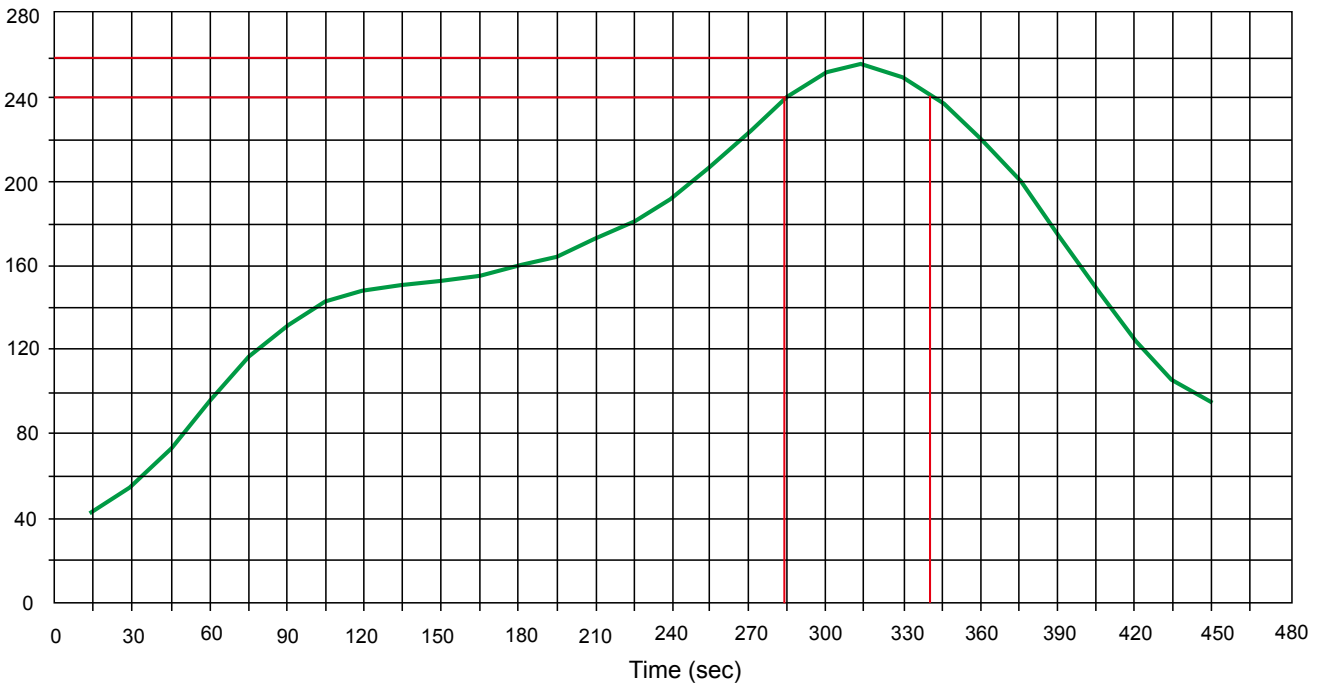


Fig 4. Non Repetitive Peak Pulse Power vs. Pulse time

Solder Reflow Recommendation

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

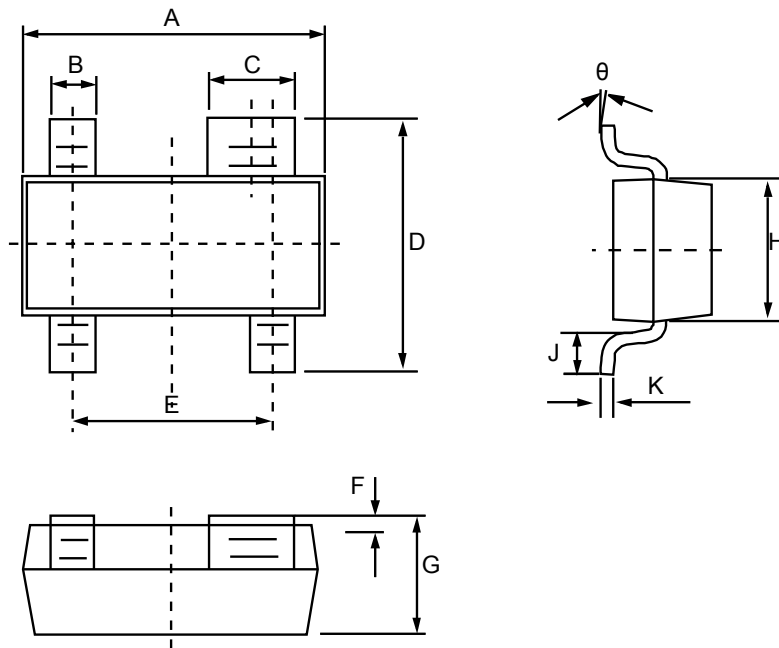


PCB Design

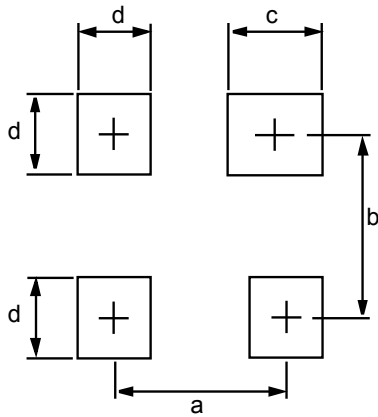
For TVS diodes a low-ohmic and low-inductive path to chassis earth is absolutely mandatory in order to achieve good ESD protection. Novices in the area of ESD protection should take following suggestions to heart:

- 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-143)



| Dim | Millimeters | | Inches | |
|-----|-------------|-------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 2.800 | 3.000 | 0.110 | 0.118 |
| B | 0.300 | 0.500 | 0.012 | 0.020 |
| C | 0.750 | 0.900 | 0.030 | 0.035 |
| D | 2.250 | 2.550 | 0.089 | 0.100 |
| E | 1.800 | 2.000 | 0.071 | 0.079 |
| F | 0.000 | 0.100 | 0.000 | 0.004 |
| G | 0.900 | 1.150 | 0.035 | 0.045 |
| H | 1.200 | 1.400 | 0.047 | 0.055 |
| J | 0.300 | 0.500 | 0.012 | 0.020 |
| K | 0.080 | 0.150 | 0.003 | 0.006 |
| θ | 0° | 8° | 0° | 8° |




| Dim | Millimeters | |
|-----|-------------|-----|
| | MIN | MAX |
| a | -- | 2.1 |
| b | -- | 1.9 |
| c | -- | 1.0 |
| d | -- | 0.6 |

Ordering information

| Device | Package | Shipping |
|----------------|-------------------|--------------------|
| PESDALC143T5VU | SOT-143 (Pb-Free) | 3000 / Tape & Reel |


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