

Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

The UDD32C03L01-HT is an ultra low capacitance TVS array designed to protect the gigabit network hundred meters transport port . It has been specifically Designed to protect sensitive components which is connected to data an transmission lines from overvoltage caused by electrostatic discharge (ESD),cable discharge events (CDE) and lightning. The unique design incorporates surge rated, low capacitance steering diodes and a TVS diode in a single package. During transient conditions, the steering diodes direct the transient current to ground. The internal TVS diode clamps the transient voltage to a safe level. The ultra low capacitance array configuration allows the user to protect up to the high speed data lines. This device is in a signal package, RoHS/WEEE compliant, SOD-323 package. It measures 2.5×1.25×1.0mm. This device may be used to meet the immunity requirements of IEC61000-4-2 (ESD), IEC61000-4-4 (EFT) and IEC61000-4-5 (Surge).

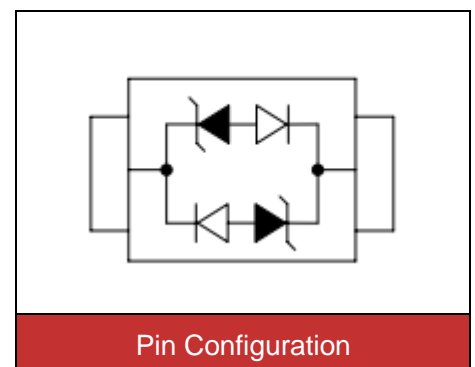


Contact : $\pm 30\text{kV}$
Air : $\pm 30\text{kV}$



Features

- Protect the gigabit network hundred meters transport port
- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- SOD-323 surface mount package
- Protects one I/O line
- Peak power dissipation of 220W under 8/20 μs waveform
- Working voltage: 3.3V
- Low leakage current
- Low operating and clamping voltages
- Solid-state silicon avalanche technology
- Lead Free/RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270°C
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking:AC



Applications

- USB 2.0 and USB 3.0 interface
- 10/100/1000 Ethernet
- Personal digital assistants (PDA)
- Serial ATA protection
- Digital visual interface (DVI)
- Wireless system devices
- Handhelds and notebooks
- Digital cameras
- RF interface

Maximum Ratings

| Rating | Symbol | Value | Unit |
|---------------------------------------|----------------|----------|------|
| ESD voltage (Contact discharge) | V_{ESD} | ± 30 | kV |
| ESD voltage (Air discharge) | | ± 30 | |
| Storage & operating temperature range | T_{STG}, T_J | -55~+150 | °C |

Electrical Characteristics ($T_A=25^\circ\text{C}$)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|--|-----------|---------------------|------|------|------|---------------|
| Reverse stand-off voltage | V_{RWM} | | | | 3.3 | V |
| Reverse breakdown voltage | V_{BR} | $I_{BR}=1\text{mA}$ | 4 | | | V |
| Reverse leakage current | I_R | $V_R=3.3\text{V}$ | | | 1 | μA |
| Clamping voltage ($t_p=8/20\mu\text{s}$) | V_C | $I_{PP}=15\text{A}$ | | 15 | | V |
| Peak pulse current ($t_p=8/20\mu\text{s}$) | I_{PP} | | | | 15 | A |
| Off state junction capacitance | C_J | 0Vdc, f=1MHz | | 0.8 | | pF |

Typical Characteristics Curves

Figure 1. Power Derating Curve

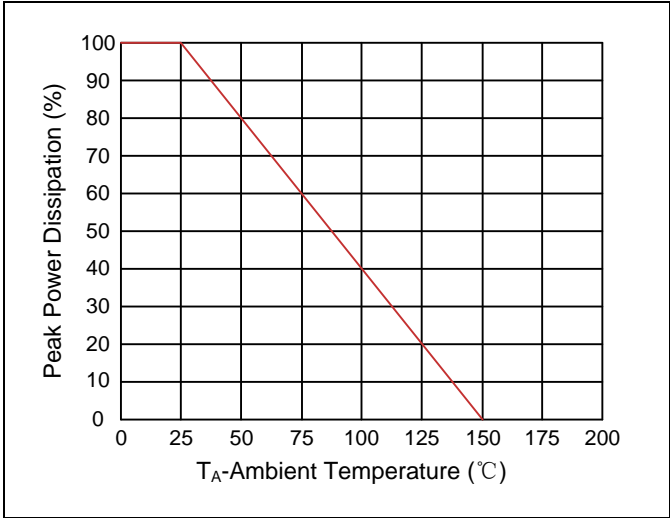


Figure 2. Pulse Waveform

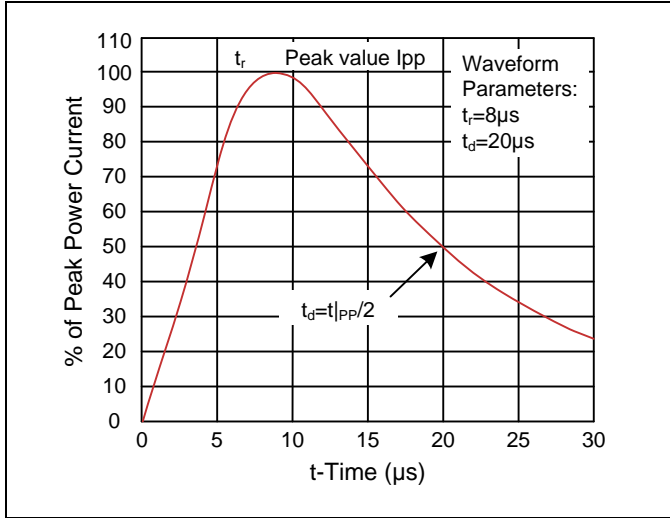


Figure 4. Clamping Voltage vs. Peak Pulse Current

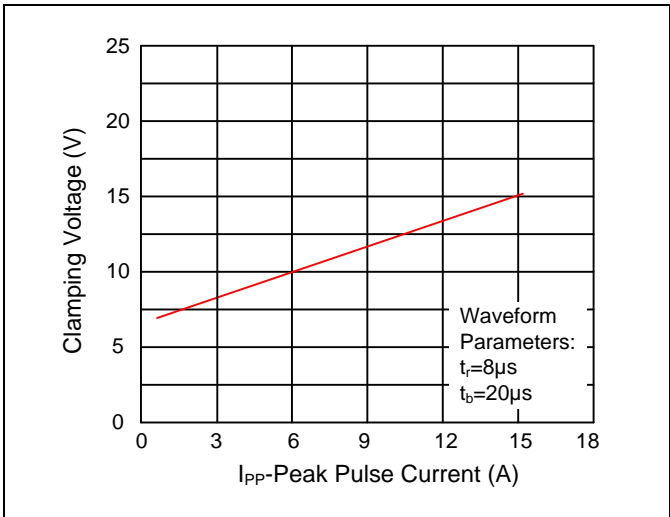
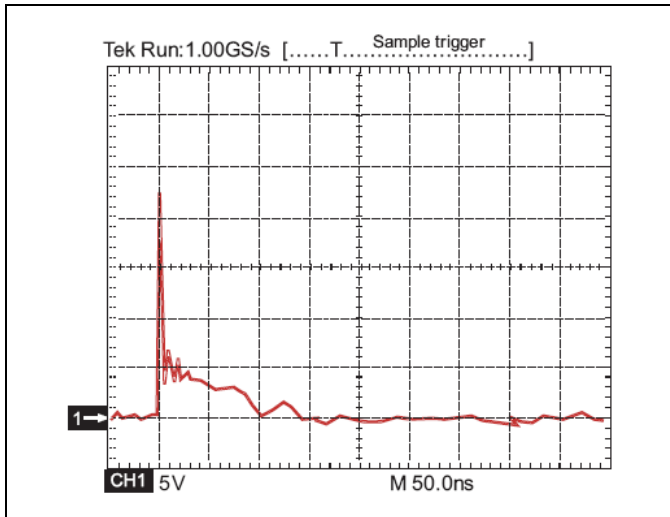
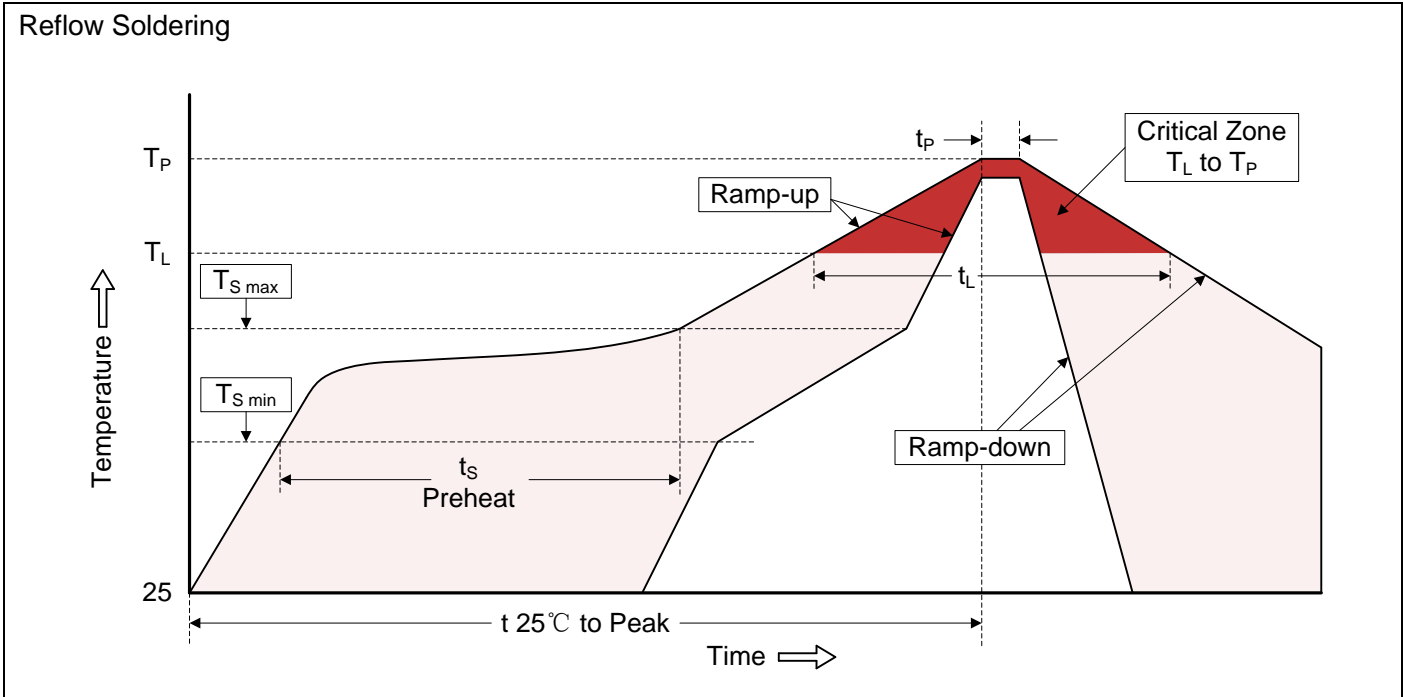


Figure 4. ESD Clamping (8kV Contact IEC61000-4-2)



Recommended Soldering Conditions



Recommended Condition

| Profile Feature | Pb-Free Assembly |
|---|----------------------------------|
| Average ramp-up rate (T_L to T_P) | 3°C/second max. |
| Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_s) | 150°C 200°C 60-180 seconds |
| $T_{S\ max}$ to T_L -Ramp-up Rate | 3°C/second max. |
| Time maintained above: -Temperature (T_L) -Time (t_L) | 217°C 60-150 seconds |
| Peak Temperature (T_P) | 260°C |
| Time within 5°C of actual Peak Temperature (t_P) | 20-40 seconds |
| Ramp-down Rate | 6°C/second max. |
| Time 25°C to Peak Temperature | 8 minutes max. |

Dimensions (SOD-323)

| <p>Recommended Soldering Pad Layout</p> | Dimension | | | | |
|---|-----------|-------------|-------|--------|-------|
| | Symbol | Millimeters | | Inches | |
| | | Min. | Max. | Min. | Max. |
| | A | 0.80 | 1.10 | 0.031 | 0.043 |
| B | 0.00 | 0.10 | 0.000 | 0.004 | |
| C | 0.20 | - | 0.008 | - | |
| D | 0.11 | 0.20 | 0.004 | 0.008 | |
| E | 1.15 | 1.35 | 0.045 | 0.053 | |
| F | 0.25 | 0.35 | 0.010 | 0.014 | |
| G | 1.60 | 1.80 | 0.063 | 0.071 | |
| H | 2.40 | 2.70 | 0.094 | 0.102 | |

Packaging

| <p>Tape</p> | Symbol | Dimension (mm) |
|-------------|-------------------|----------------|
| | W | 8.00±0.30 |
| | P0 | 4.00±0.10 |
| | P1 | 4.00±0.10 |
| | P2 | 2.00±0.10 |
| | D0 | Φ1.55±0.10 |
| | D1 | Φ1.00±0.05 |
| | E | 1.75±0.10 |
| | F | 3.50±0.10 |
| | A | 1.48±0.10 |
| | A0 | 0.80±0.10 |
| | B | 3.00±0.10 |
| | B0 | 1.80±0.10 |
| | K | 1.05±0.10 |
| | t | 0.25±0.05 |
| <p>Reel</p> | D | Φ178.0±2.0 |
| | D2 | Φ13.0 |
| | W1 | 9.5 |
| | Quantity: 3000PCS | |