

ElectroStatic Discharged Protection Devices (ESD) Data Sheet

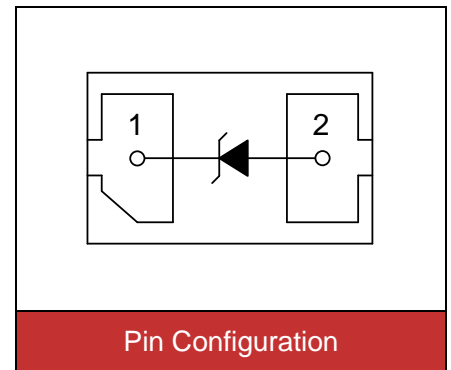
Description

The UAD8A05L01 includes back-to-back TVS diodes fabricated in a proprietary silicon avalanche technology to provide protection for electronic equipment that may experience destructive electrostatic discharge (ESD). These robust diodes can safely absorb repetitive ESD strikes up to the maximum level specified in the IEC61000-4-2 international standard without performance degradation. The back-to-back configuration provides symmetrical ESD protection for data lines when AC signals are present.



Features

- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- SOD882 surface mount package
- Working voltage: 5V
- Low leakage current
- Low operating and clamping voltages
- Lead Free/RoHS compliant
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- AEC-Q101 qualified
- Marking: U5



Applications

- USB 3.0/USB 2.0
- MHL/MIPI/MDDI
- HDMI, Video Port, eSATA
- Set Top Boxes, Game Consoles
- Smart Phones
- External Storage
- Ultrabooks, Notebooks
- Tablets, eReaders

Maximum Ratings

| Rating | Symbol | Value | Unit |
|---------------------------------------|-----------------------------------|----------|------|
| Peak pulse current (tp=8/20µs) | I _{PP} | 4 | A |
| ESD voltage (Contact discharge) | V _{ESD} | ±8 | kV |
| ESD voltage (Air discharge) | | ±15 | |
| Storage & operating temperature range | T _{STG} , T _J | -55~+150 | °C |

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

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|--|-----------|---------------------|------|------|------|---------------|
| Reverse stand-off voltage | V_{RWM} | | | | 5 | V |
| Reverse breakdown voltage | V_{BR} | $I_{BR}=1\text{mA}$ | 6 | | 8.5 | V |
| Reverse leakage current | I_R | $V_R=5\text{V}$ | | | 1 | μA |
| Clamping voltage ($t_p=8/20\mu\text{s}$) | V_C | $I_{PP}=1\text{A}$ | | | 9.8 | V |
| Clamping voltage ($t_p=8/20\mu\text{s}$) | V_C | $I_{PP}=4\text{A}$ | | | 15 | V |
| Clamping voltage TLP (Note1) | V_C | 16A | | 24 | | V |
| Off state junction capacitance | C_J | 0Vdc, f=1MHz | | 0.6 | | pF |

Note1. Electrostatic Discharge Sensitivity Testing using Transmission Line Pulse(TLP) Model, See Figure 4.

Typical Characteristics Curves

Figure 1. Pulse Waveform

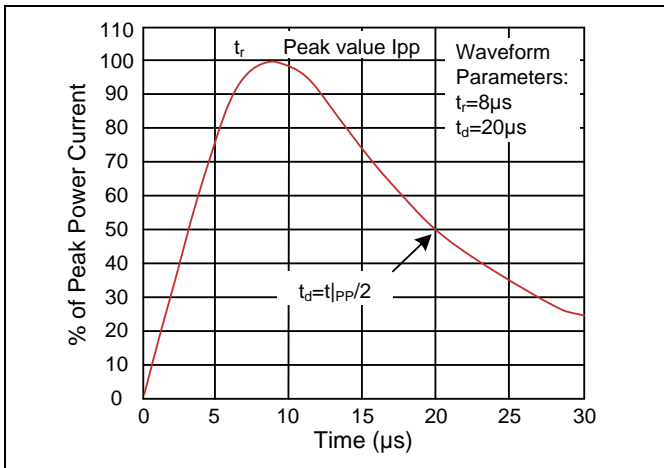


Figure 2. Clamping Voltage vs. Peak Pulse Current

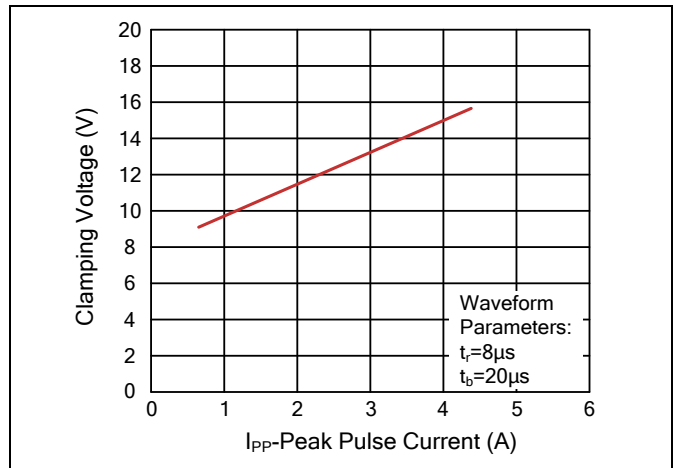


Figure 3. Capacitance vs. Reverse Voltage

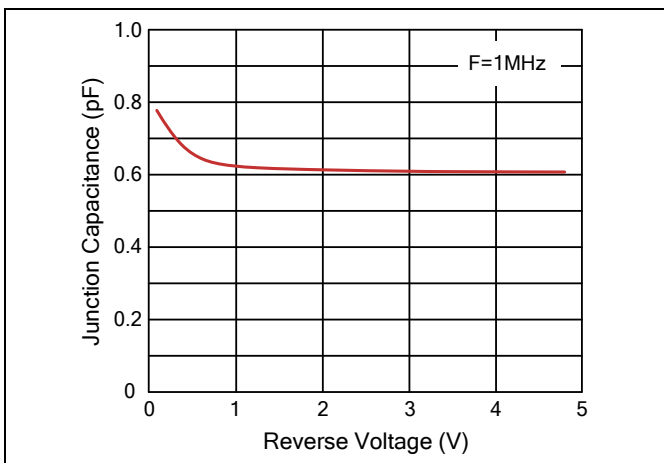
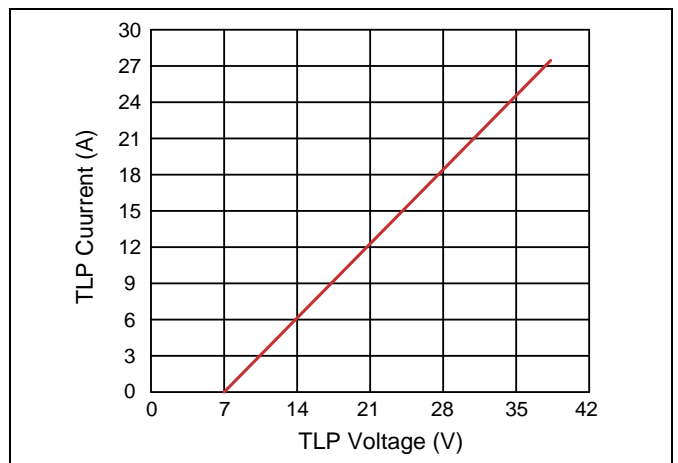
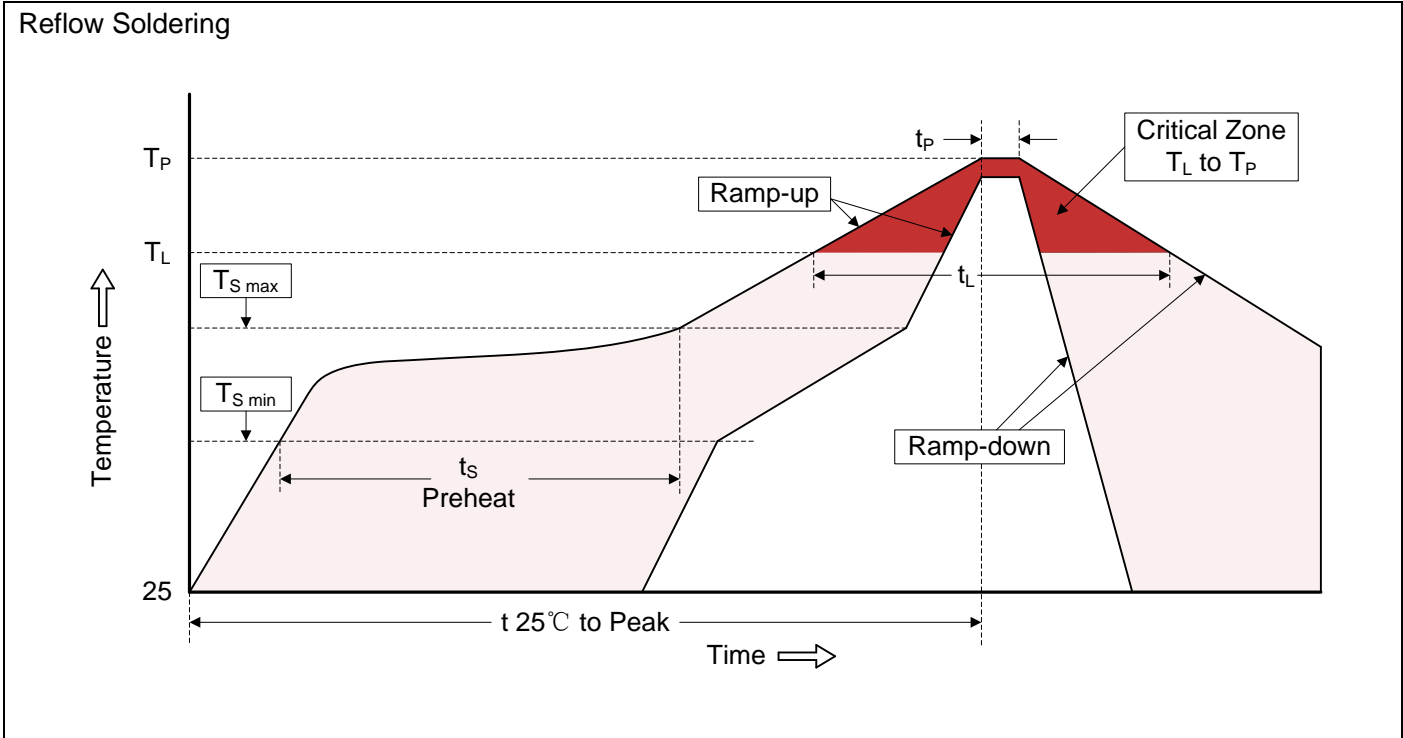


Figure 4. Transmission Line Pulsing (TLP)



Recommended Soldering Conditions



Recommended Conditions

| 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 (SOD882)

| Symbol | Dimension (mm) | | | |
|--------|----------------|------|-----------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 0.95 | 1.05 | 0.037 | 0.041 |
| B | 0.55 | 0.65 | 0.022 | 0.026 |
| C | 0.32 | 0.55 | 0.013 | 0.022 |
| D | 0.65 BSC | | 0.026 BSC | |
| E | 0.20 | 0.30 | 0.008 | 0.012 |
| F | 0.45 | 0.55 | 0.018 | 0.022 |

The technical drawings show the component from four perspectives: Top View (dimensions A, B), Side View (dimension C), Bottom View (dimensions D, E, F), and Recommended Soldering Pad Layout (dimensions 0.30, 0.55, 0.60, 1.40). The soldering pad layout shows two pads with a total width of 1.40 mm and individual pad widths of 0.30 mm and 0.55 mm, with a pad height of 0.60 mm.

Packaging

| Tape | Symbol | Dimension (mm) |
|--------------------|------------|----------------|
| | W | 8.00±0.30 |
| P0 | 4.00±0.10 | |
| P1 | 2.00±0.10 | |
| P2 | 2.00±0.10 | |
| D0 | Φ1.55±0.10 | |
| D1 | Φ0.40±0.05 | |
| E | 1.75±0.10 | |
| F | 3.50±0.10 | |
| A | 0.75±0.10 | |
| B | 1.15±0.10 | |
| K | 0.60±0.05 | |
| t | 0.20±0.05 | |
| Reel | D | Φ178.0±2.0 |
| D2 | Φ13.00. | |
| W1 | 9.50 | |
| Quantity: 10000PCS | | |

The carrier tape drawing shows dimensions W, P0, P1, P2, D0, D1, E, F, A, B, K, and t. The reel drawing shows dimensions D, D2, and W1.