



# THE DATASHEET OF UAD8C05L01-TIP



# DATA SHEET

**ELECTROSTATIC DISCHARGE  
PROTECTION DEVICES**

**INDUSTRIAL / CONSUMER**

UAD8C05L01

RoHS compliant & Halogen free



Product specification—July 04, 2023 V.3



## Electrostatic Discharged Protection Devices (ESD) Data Sheet

### Description

The UAD8C05L01 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.



Contact :  $\pm 20\text{kV}$   
Air :  $\pm 20\text{kV}$

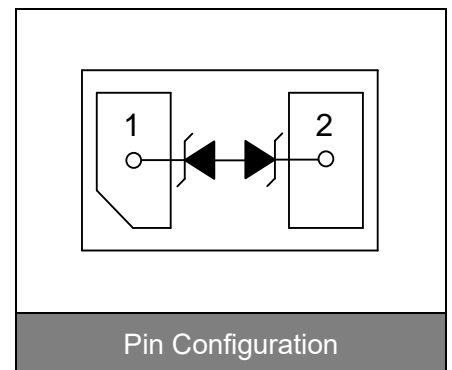


### Features

- IEC61000-4-2 ESD 20KV Air, 20KV 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
- Marking: B1

### 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               |
|---------------------------------------|--------------------------------|----------|--------------------|
| ESD voltage (Contact discharge)       | $V_{\text{ESD}}$               | $\pm 20$ | kV                 |
| ESD voltage (Air discharge)           |                                | $\pm 20$ |                    |
| Storage & operating temperature range | $T_{\text{STG}}, T_{\text{J}}$ | -55~+150 | $^{\circ}\text{C}$ |

**Electrical Characteristics (T<sub>J</sub>=25°C)**

| Parameter                      | Symbol           | Condition            | Min. | Typ. | Max. | Unit |
|--------------------------------|------------------|----------------------|------|------|------|------|
| Reverse stand-off voltage      | V <sub>RWM</sub> |                      |      |      | 5    | V    |
| Reverse breakdown voltage      | V <sub>BR</sub>  | I <sub>BR</sub> =1mA | 7    |      |      | V    |
| Reverse leakage current        | I <sub>R</sub>   | V <sub>R</sub> =5V   |      |      | 1    | μA   |
| Clamping voltage (tp=8/20μs)   | V <sub>C</sub>   | I <sub>PP</sub> =1A  |      | 13   |      | V    |
| Clamping voltage (tp=8/20μs)   | V <sub>C</sub>   | I <sub>PP</sub> =3A  |      | 20   |      | V    |
| Peak pulse current (tp=8/20μs) | I <sub>PP</sub>  |                      |      |      | 3    | A    |
| Off state junction capacitance | C <sub>J</sub>   | 0Vdc, f=1MHz         |      | 0.4  |      | pF   |

**Typical Characteristics Curves**

Figure 1. Capacitance vs. Bias Voltage

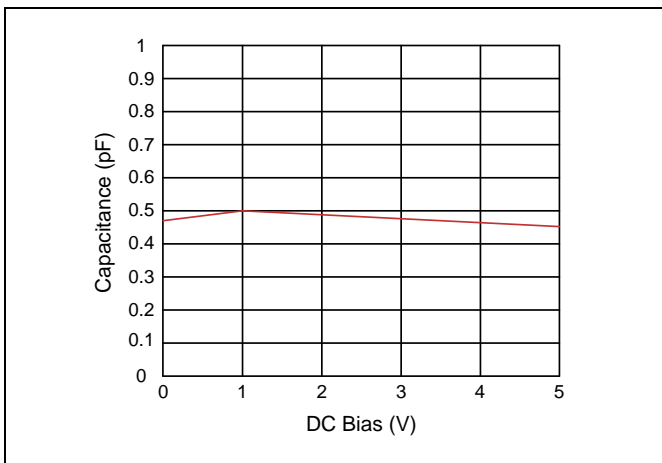


Figure 2. Insertion Loss (S21) I/O to GND

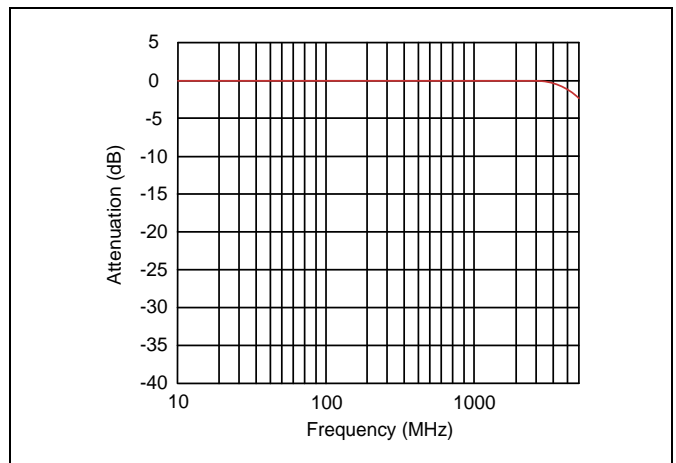


Figure 3. Pulse Waveform

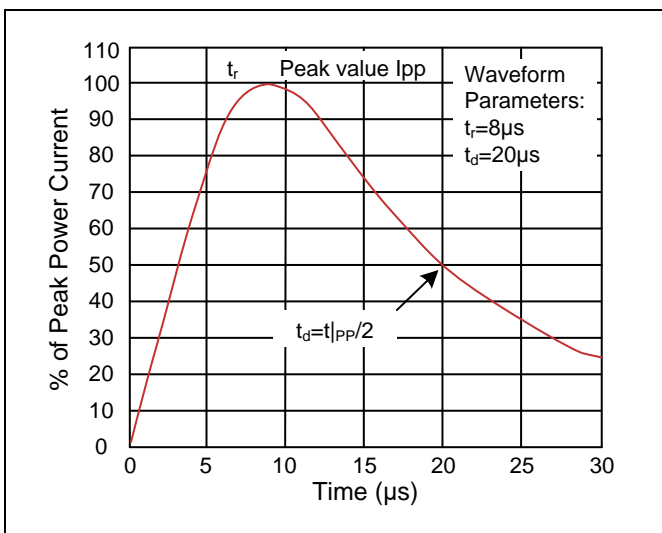
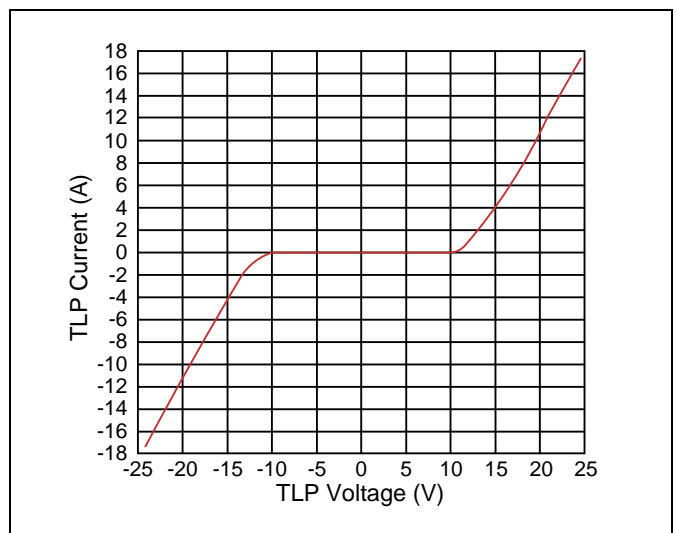
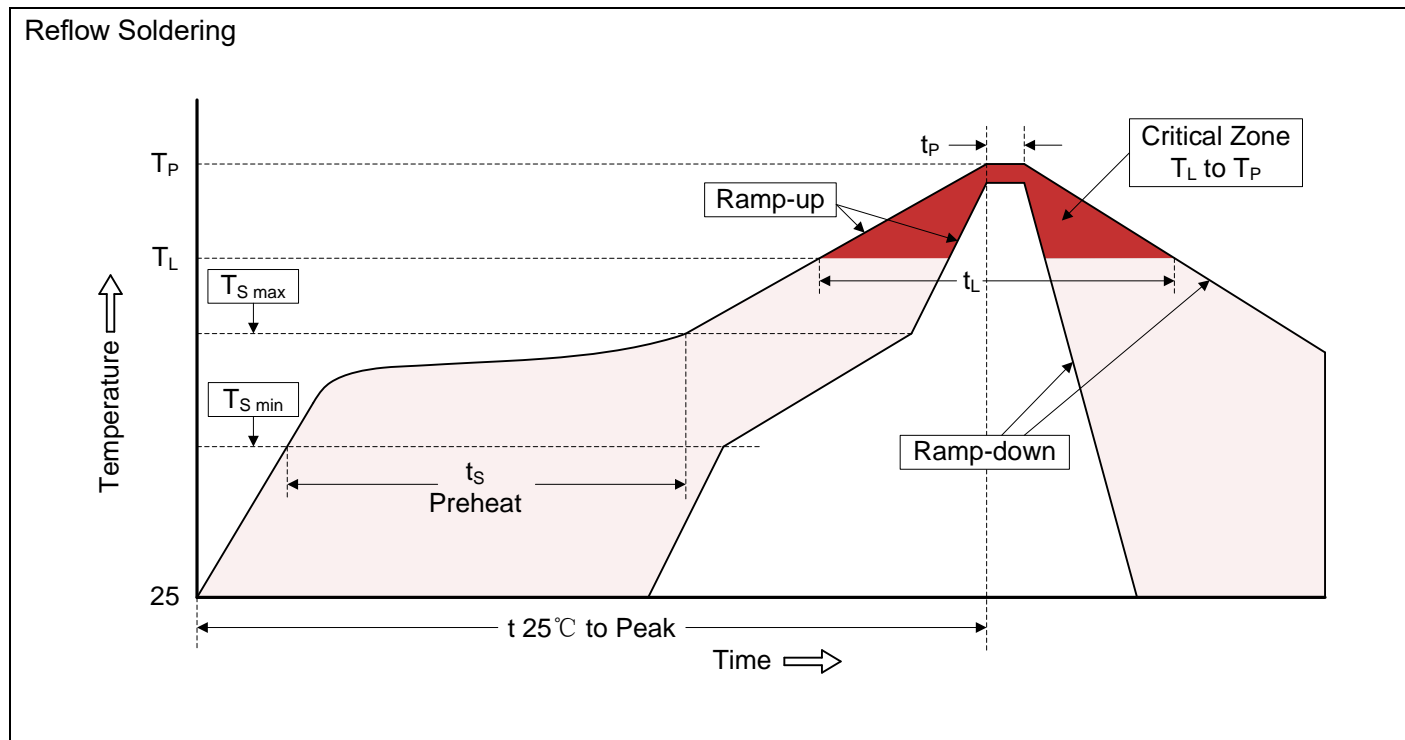


Figure 4. Transmission Line Pulsing (TLP) Plot



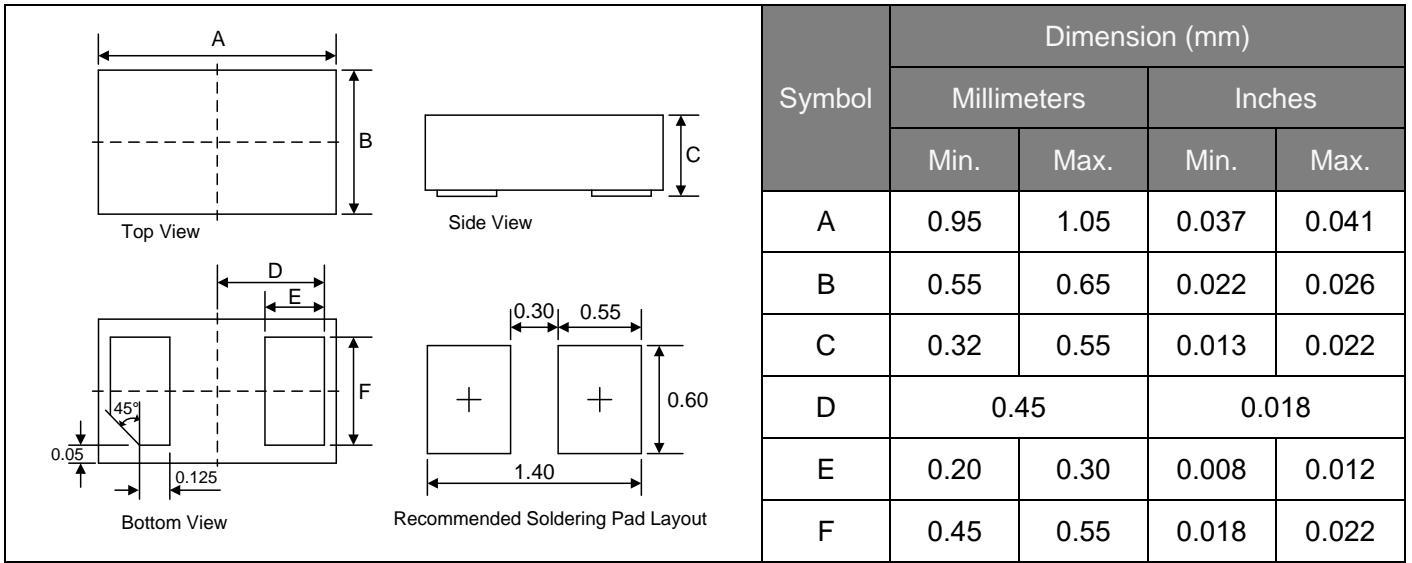
**Recommended Soldering Conditions**



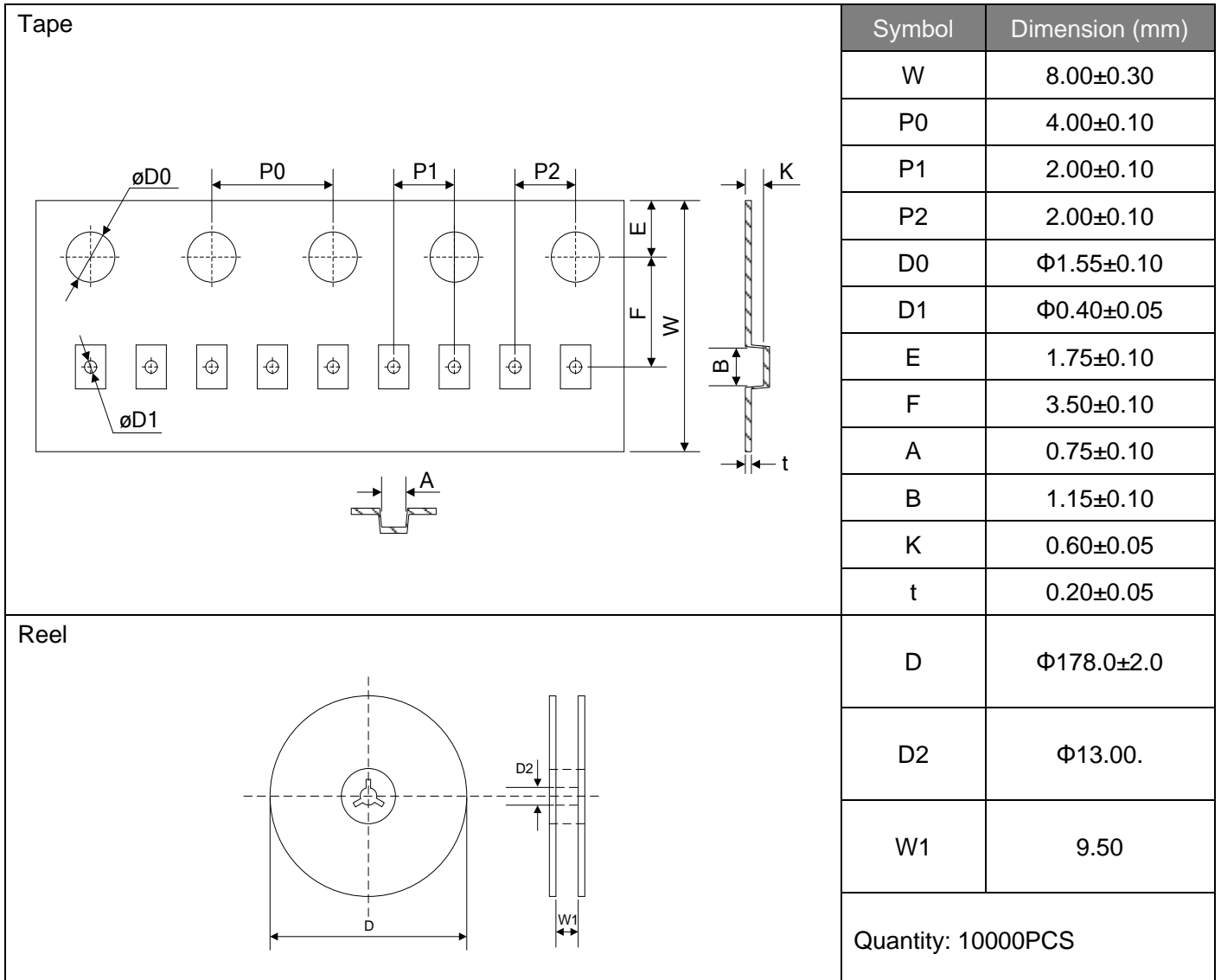
**Recommended Conditions**

| Profile Feature   | Pb-Free Assembly                 |
|---|----------------------------------|
| Average ramp-up rate ( $T_L$ to $T_P$ )   | 3°C/second max.                  |
| Preheat<br>-Temperature Min ( $T_{S\ min}$ )<br>-Temperature Max ( $T_{S\ max}$ )<br>-Time (min to max) ( $t_s$ ) | 150°C<br>200°C<br>60-180 seconds |
| $T_{S\ max}$ to $T_L$<br>-Ramp-up Rate  | 3°C/second max.                  |
| Time maintained above:<br>-Temperature ( $T_L$ )<br>-Time ( $t_L$ )   | 217°C<br>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)**



**Packaging**



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