

DATA SHEET

**ELECTROSTATIC DISCHARGE
PROTECTION DEVICES**

INDUSTRIAL / CONSUMER

UAD33A05L06

RoHS compliant & Halogen free



Product specification— March 27, 2021 V.2



Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

UAD33A05L06 is a ultra low capacitance TVS array designed to protect high speed data interfaces. It has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from over-voltage caused by electrostatic discharge (ESD), cable discharge events (CDE), and electrical fast transients (EFT). It may be used to meet the ESD immunity requirements of IEC61000-4-2. It is designed for easy PCB layout by allowing the traces to run straight through the device. The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, UDI, Display Port™, MDDI, Serial ATA and Infiniband circuits.

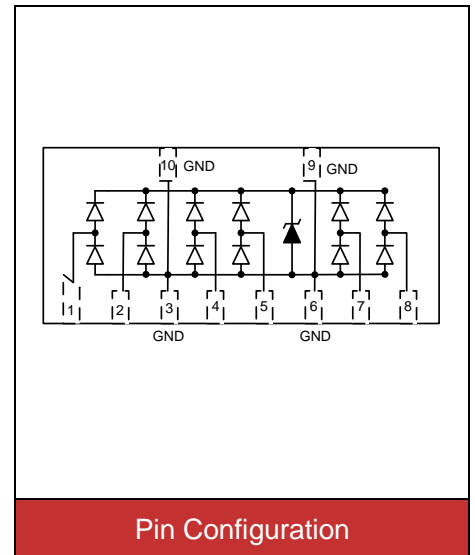


Contact : ±10kV
Air : ±10kV



Features

- IEC61000-4-2 ESD 10kV Air, 10kV contact compliance
- DFN3310 (3.3×1.0×0.5mm) surface mount package
- Protects Six I/O lines
- Working voltage: 5V
- 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: B X56



Applications

- High Definition Multimedia Interface (HDMI 1.4)
- MDDI Ports
- Digital Visual Interface (DVI)
- PCI Express
- Unified Display Interface (UDI)
- Serial ATA
- Display Port Interface

Maximum Ratings

Rating	Symbol	Value	Unit
ESD voltage (Contact discharge)	V_{ESD}	±10	kV
ESD voltage (Air discharge)		±10	
Storage & operating temperature range	T_{STG}, T_J	-55~+150	°C

Electrical Characteristics (T_J=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V _{RWM}				5	V
Reverse breakdown voltage	V _{BR}	I _{BR} =1mA	6			V
Reverse leakage current	I _R	V _R =5V Each I/O pin			1	μA
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =2A		10		V
Peak Pulse Current (tp=8/20μs)	I _{PP}				2	A
Off state junction capacitance	C _J	0Vdc, f=1MHz I/O pin to GND		0.4		pF
		0Vdc, f=1MHz Between I/O pins		0.2		pF

Typical Characteristics Curves

Figure 1. Capacitance vs. Bias Voltage

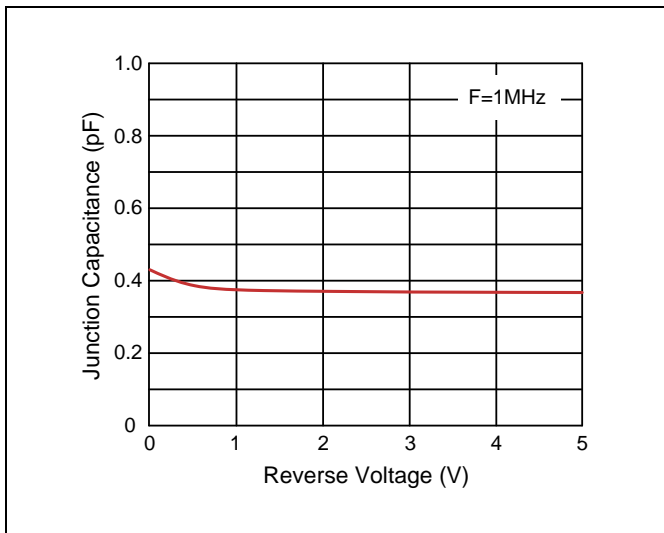


Figure 2. Insertion Loss (S21) I/O to GND

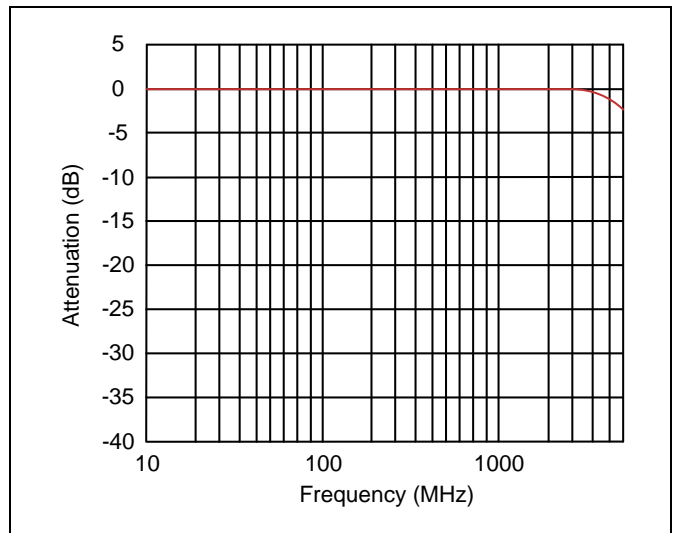


Figure 3. Pulse Waveform

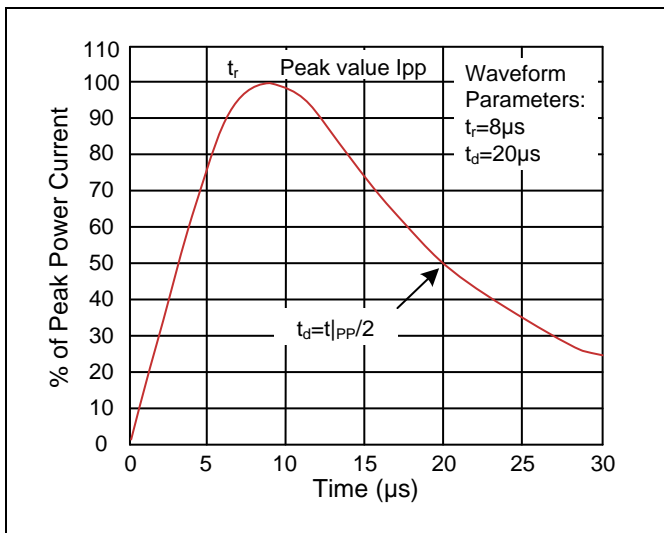
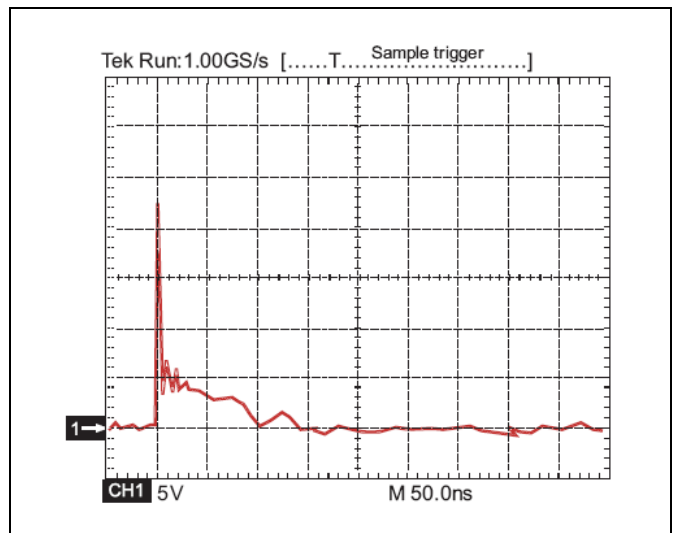
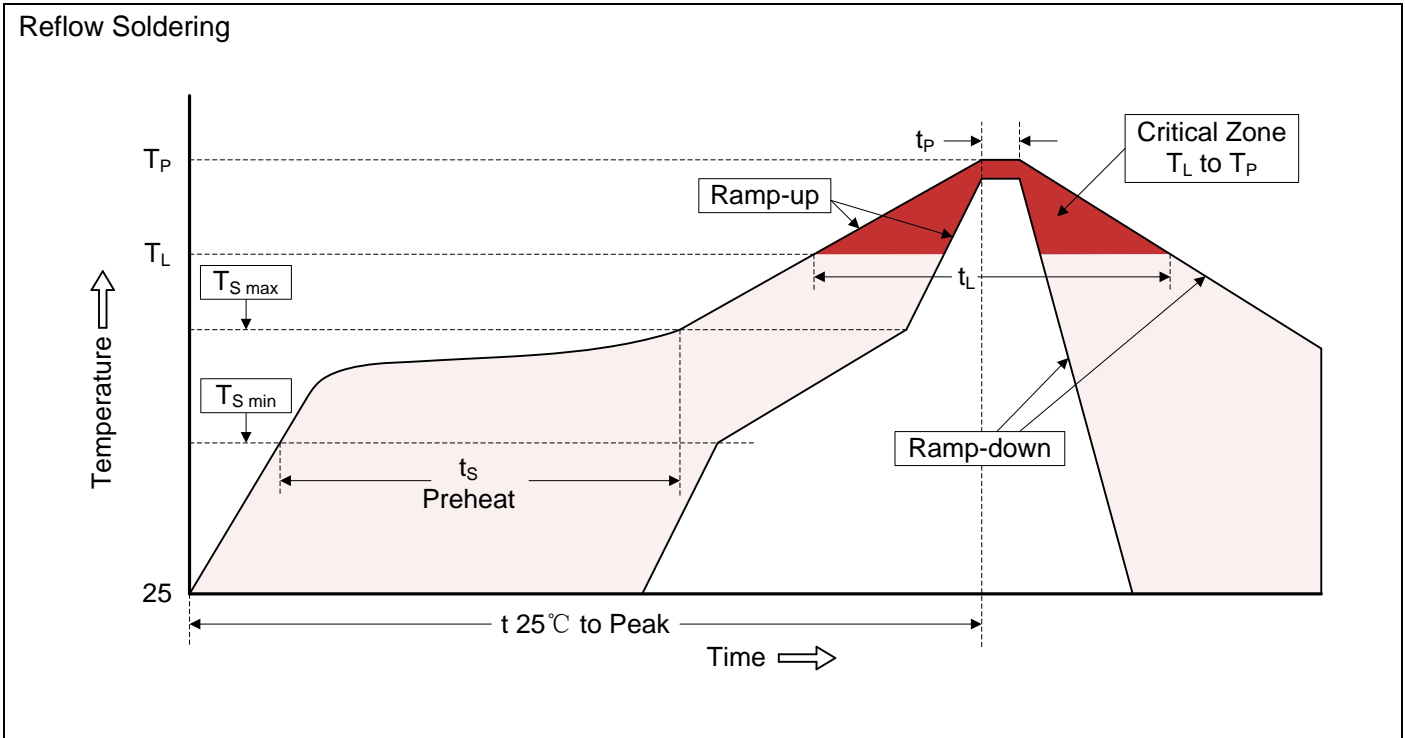


Figure 4. ESD Clamping (8kV Contact IEC61000-4-2)



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 (DFN3310)

Symbol	Dimension					
	Millimeters			Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	-	0.02	0.05	-	0.001	0.002
b	0.15	0.20	0.25	0.006	0.008	0.010
c	0.100	0.152	0.200	0.004	0.006	0.008
D	3.25	3.30	3.35	0.128	0.130	0.132
D2	0.30	0.35	0.40	0.012	0.014	0.016
D3	1.19BSC			0.005		
e	0.40BSC			0.016		
Nd	2.80BSC			0.110		
E	0.95	1.00	1.05	0.037	0.039	0.041
E2	0.45	0.50	0.55	0.018	0.020	0.022
L	0.20	0.25	0.30	0.008	0.010	0.012
L2	0.30	0.35	0.40	0.012	0.014	0.016
h	0.05	0.10	0.15	0.002	0.004	0.006

Packaging

Tape		Symbol	Dimension (mm)		
		W	12.00+0.30/-0.1		
		P0	4.00±0.10		
		P1	4.00±0.10		
		P2	2.00±0.10		
		D0	Φ1.55±0.05		
		D1	Φ1.00MIN		
		E	1.75±0.10		
		F	5.50±0.05		
		A0	1.25±0.10		
		B0	3.55±0.10		
		K0	0.65±0.05		
		T	0.30±0.05		
		Reel		D	Φ180±1.0
				B	Φ60
W1	12.8				
Quantity: 3000PCS					