

Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

The UDD32C08L01 of transient voltage suppressors are designed to protect low voltage, state-of-the-art CMOS semiconductors from transients caused by electrostatic discharge (ESD), cable discharge events (CDE), lightning and other induced voltage surges. The device is constructed using EPD process technology. The EPD process provides low standoff voltages with significant reductions in leakage currents and capacitance over silicon avalanche diode processes. The device features integrated low capacitance compensation diodes that reduce the typical capacitance to 1.0pF per line. This combined with low leakage current, means signal integrity is preserved in high-speed applications such as 10/100/1000 Ethernet. The device may be used to protect two high-speed line pairs. The "flow-thru" design minimizes trace inductance and reduces voltage overshoot associated with ESD events. The low clamping voltage of the device minimizes the stress on the protected IC. The device TVS diodes will meet the surge requirements of IEC61000-4-2, Level 4.

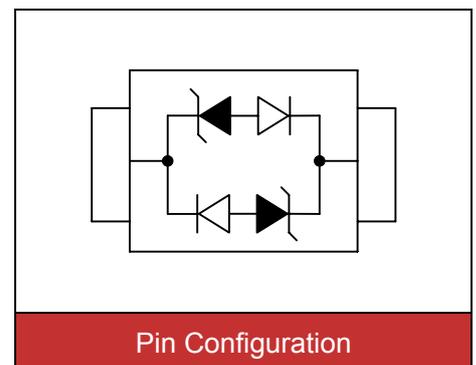


Contact : $\pm 8\text{kV}$
Air : $\pm 15\text{kV}$



Features

- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- SOD-323 surface mount package
- Protects one I/O line
- Peak power dissipation of 200W under 8/20 μs waveform
- Working voltage: 8V
- 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 $^{\circ}\text{C}$
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: BC



Applications

- High-speed data lines
- Microprocessor based equipment
- LAN / WAN equipment
- Desktops PC and servers
- Notebook, Laptop and Palmtop computers
- Portable instrumentation
- Peripherals
- Universal serial bus (USB) port protection

Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20μs waveform)	P _{PP}	200	W
Peak pulse current (tp=8/20μs waveform)	I _{PP}	10	A
ESD voltage (Contact discharge)	V _{ESD}	±8	kV
ESD voltage (Air discharge)		±15	
Lead soldering temperature	T _L	260	°C
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}				8	V
Reverse breakdown voltage	V _{BR}	I _{BR} =1mA	8.5			V
Reverse leakage current	I _R	V _R =8V			1	μA
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =1A			13	V
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =10A			24	V
Off state junction capacitance	C _J	0Vdc, f=1MHz		1		pF

Typical Characteristics Curves

Figure 1. Power Derating Curve

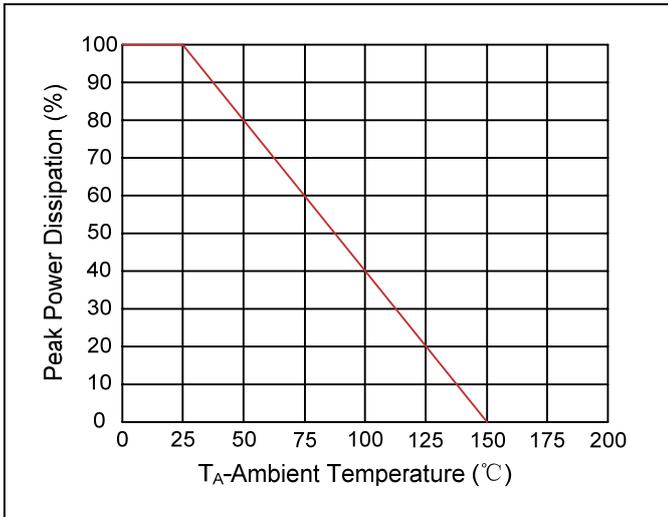


Figure 2. Pulse Waveform

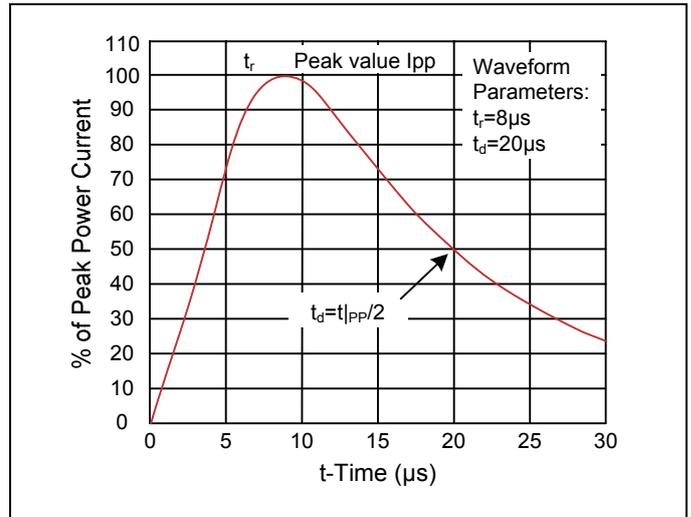


Figure 3. Non-Repetitive Peak Pulse vs Pulse Time

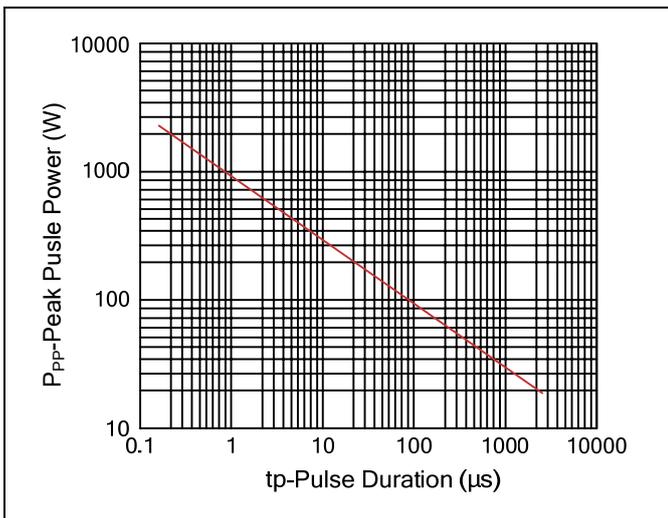


Figure 4. Normalized Capacitance vs. Reverse Voltage

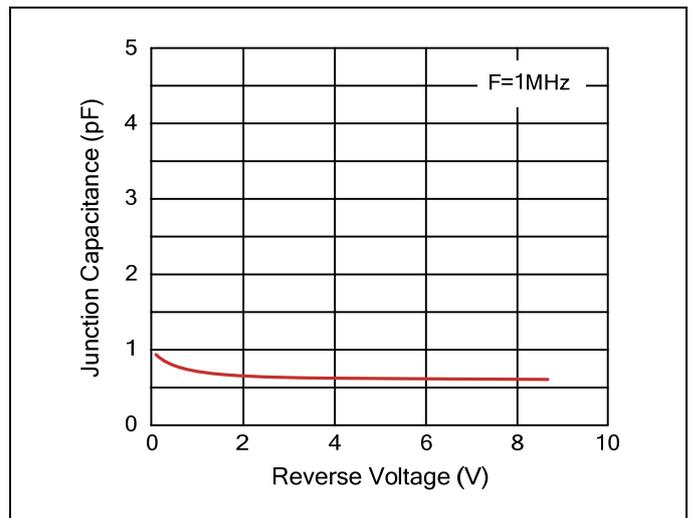


Figure 5. ESD Clamping (8kV Contact IEC61000-4-2)

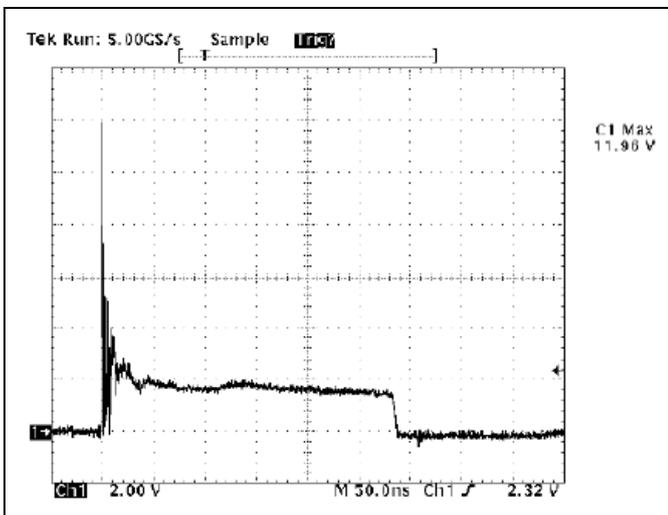
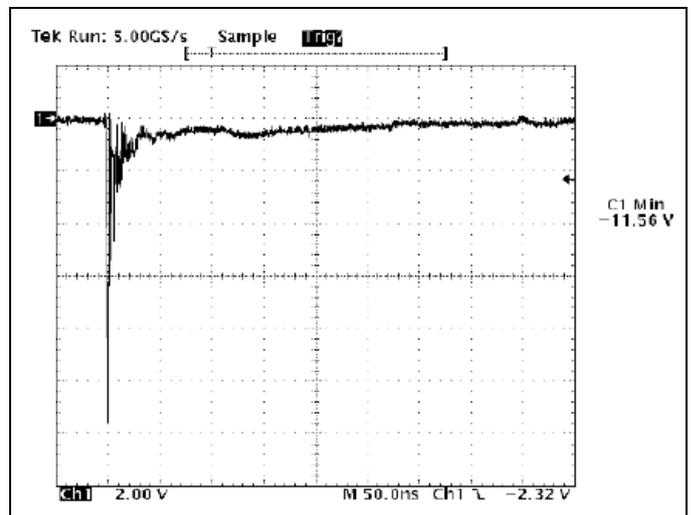
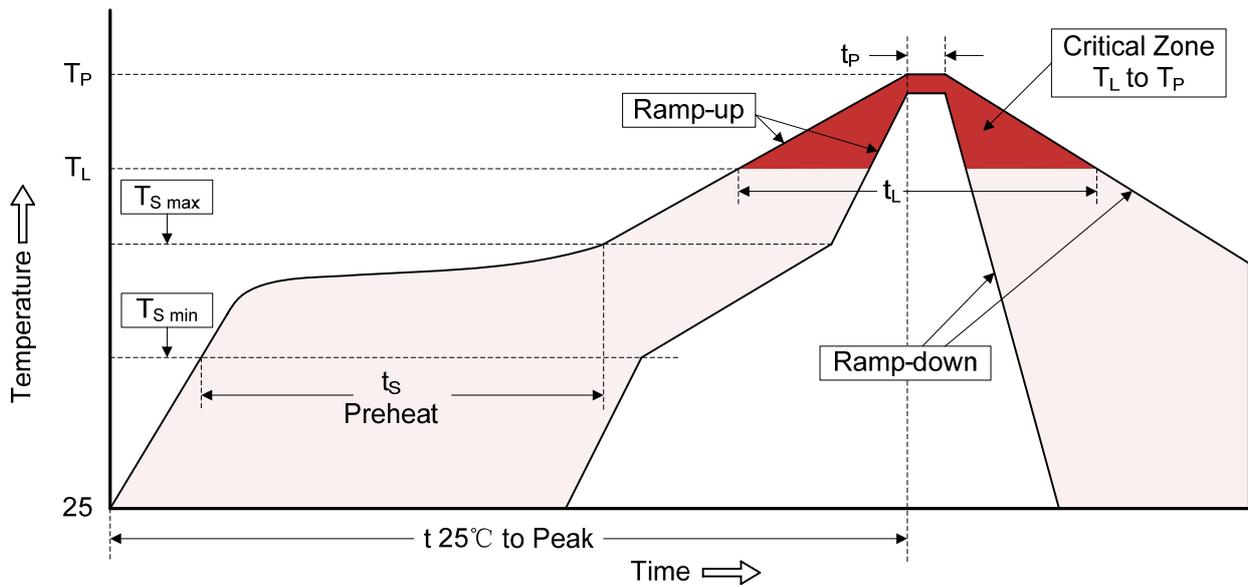


Figure 6. ESD Clamping (-8kV Contact IEC61000-4-2)



Recommended Soldering Conditions

Reflow Soldering



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)

	Dimension				
	Symbol	Millimeters		Inches	
		Min.	Max.	Min.	Max.
	A	0.80	1.10	0.031	0.043
B	-	0.10	-	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	-	0.35	-	0.014	
G	1.60	1.80	0.063	0.071	
H	2.40	2.60	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	