

Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

The UBD32C05L01 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. 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.

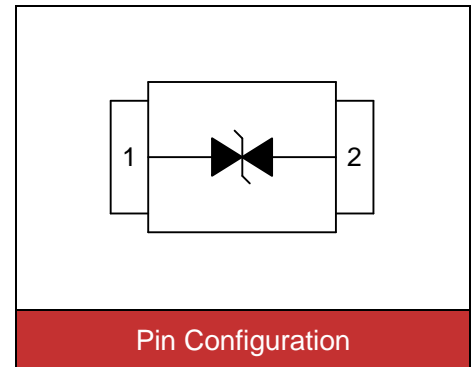


Contact : ±8kV
Air : ±15kV



Features

- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- SOD-323 surface mount package
- Protects one I/O line
- 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
- AEC-Q101 qualified
- Marking: 35



Applications

- | | |
|---|---|
| <ul style="list-style-type: none"> ● High-speed data lines ● Microprocessor based equipment ● LAN / WAN equipment ● Desktops PC and servers | <ul style="list-style-type: none"> ● Notebook, Laptop and Palmtop computers ● Portable instrumentation ● Peripherals ● Universal serial bus (USB) port protection |
|---|---|

Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse current (tp=8/20µs waveform)	I _{PP}	3	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			V
Reverse leakage current	I_R	$V_R=5\text{V}$			1	μA
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=1\text{A}$			11	V
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=3\text{A}$			20	V
Off state junction capacitance	C_J	0Vdc, f=1MHz		0.4		pF

Typical Characteristics Curves

Figure 1. Power Derating Curve

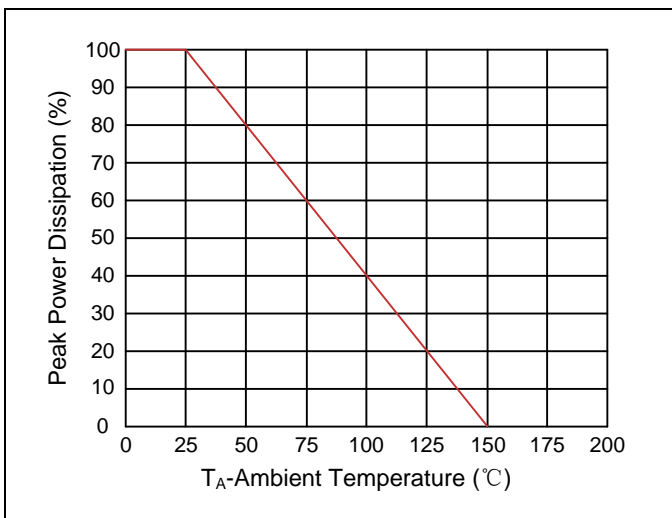


Figure 2. Pulse Waveform

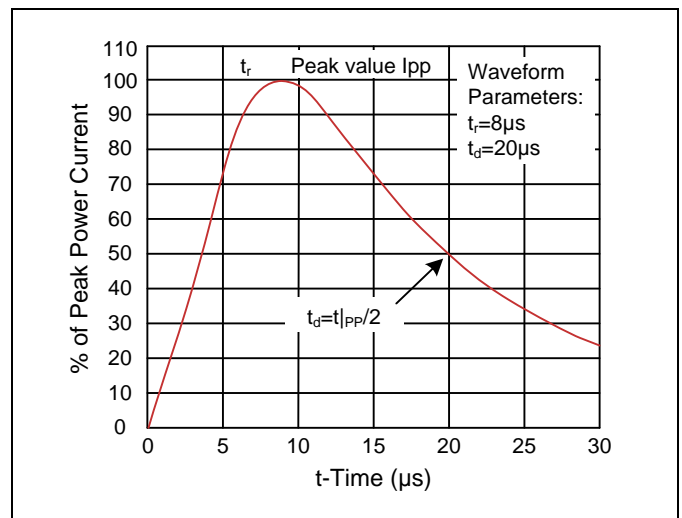


Figure 3. Normalized Capacitance vs. Reverse Voltage

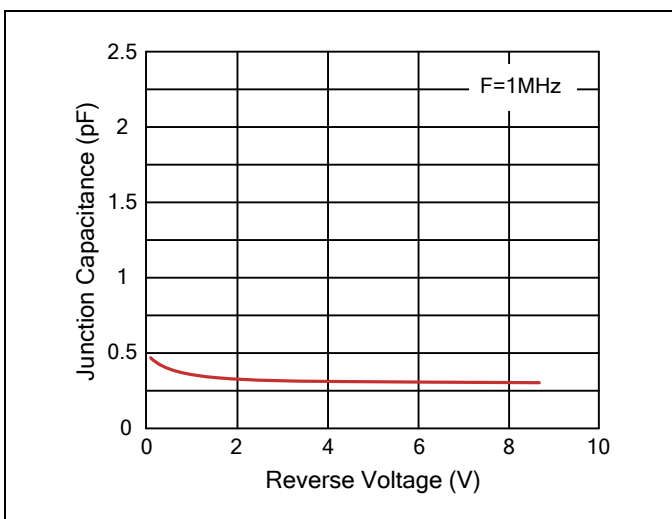
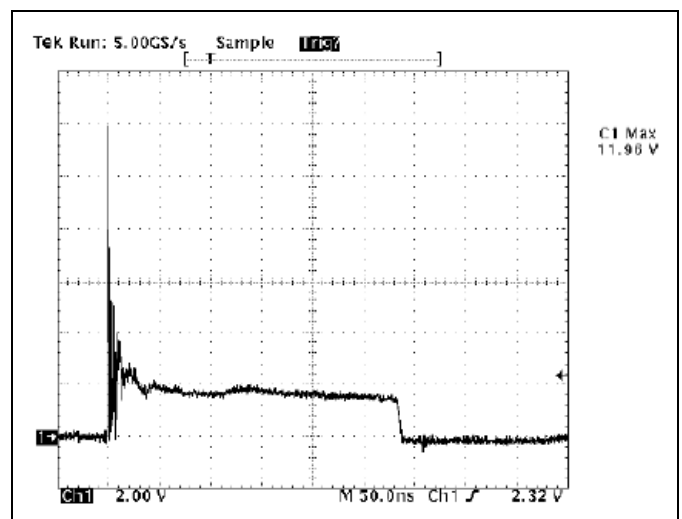
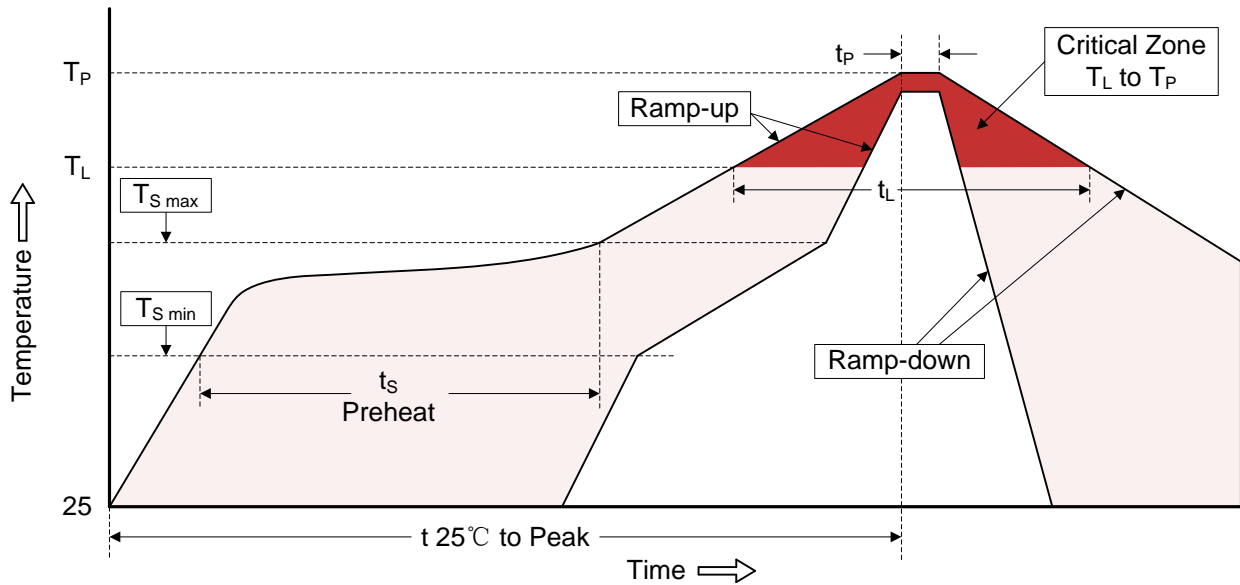


Figure 4. ESD Clamping (8kV Contact IEC61000-4-2)



Recommended Soldering Conditions

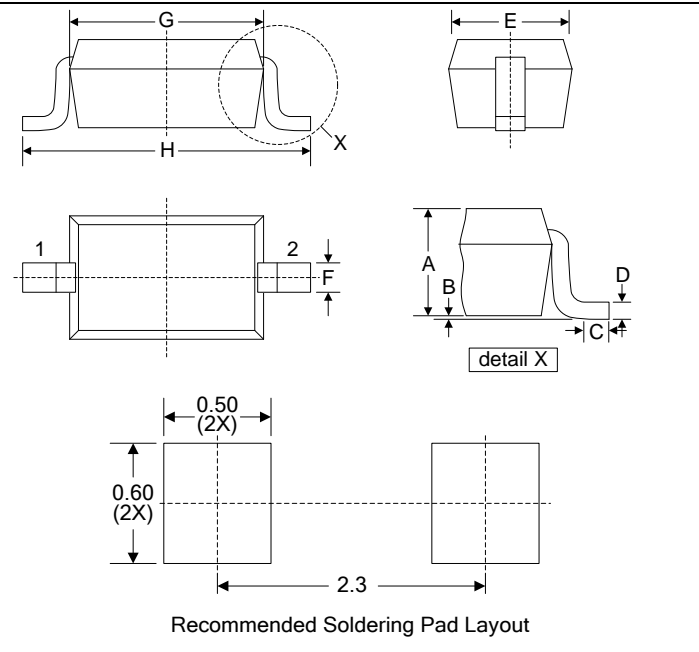
Reflow Soldering



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.

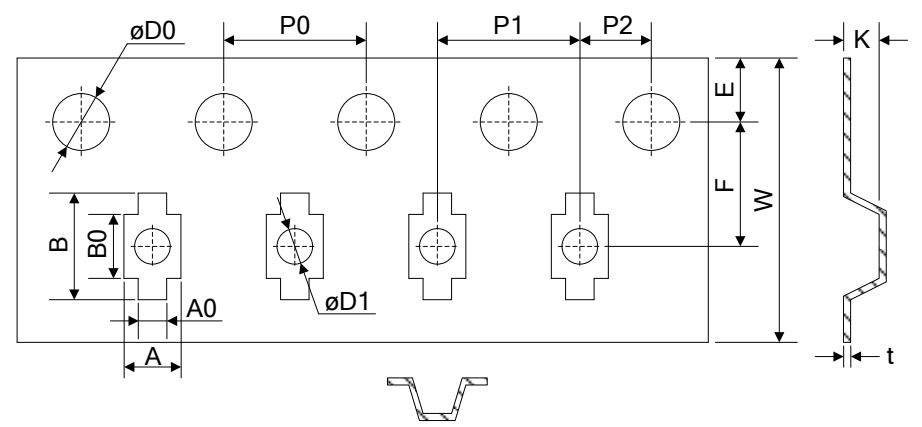
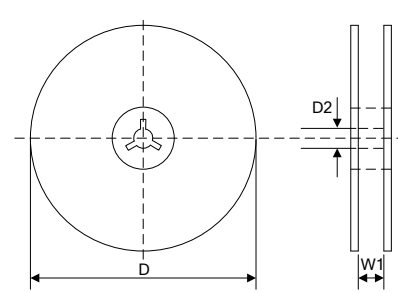
Dimensions (SOD-323)



Symbol	Dimension			
	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	0.10	0.25	0.004	0.010
E	1.15	1.35	0.045	0.053
F	0.25	0.40	0.010	0.016
G	1.60	1.80	0.063	0.071
H	2.30	2.70	0.091	0.106

Recommended Soldering Pad Layout

Packaging

Tape		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
Reel		D	Φ178.0±2.0
		D2	Φ13.0
		W1	9.5
		Quantity: 3000PCS	