Electrostatic Discharged Protection Devices (ESD) Data Sheet

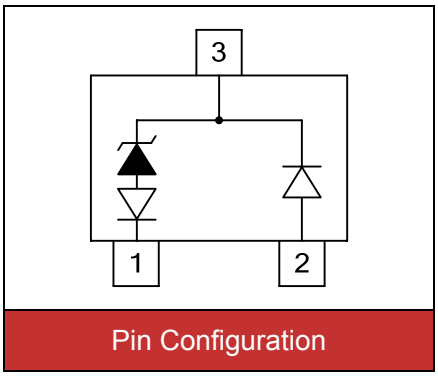
Description

The UDT23A2.8L01 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 provides low stand off voltages with significant reductions in leakage currents and capacitance over silicon avalanche diode processes. It features integrated low capacitance compensation diodes that reduce the typical capacitance 2.5pF per line.
This combined with low leakage current, means signal integrity preserved in high-speed supplications such as 10/100 Ethernet.

Contact : ±8kV
Air : ±15kV

Features

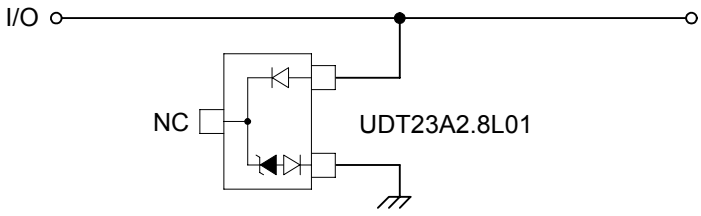
- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- SOT-23 surface mount package
- Protects one line
- Working voltage: 2.8V
- low capacitance
- Low leakage current
- Low operating and clamping voltages
- Solid-state silicon avalanche technology
- Lead Free/RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270℃
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: B SZ4



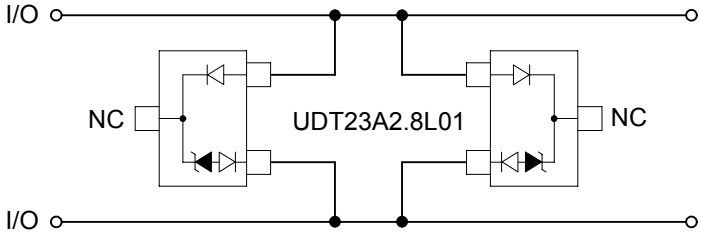
Pin Configuration

Applications

- 10/100 Ethernet
- WAN/LAN Equipment
- High current switching systems
- Desktops, servers and notebook
- Instrumentation
- Analog inputs
- Base stations
- High-speed data line protection



Unidirectional Protection



Bidirectional Protection

Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20μs waveform)	P_{PP}	400	W
ESD voltage (Contact discharge)	V_{ESD}	±8	kV
ESD voltage (Air discharge)		±15	
Storage & operating temperature range	T_{STG} ,T_J	-55~+150	℃

Electrical Characteristics (T_J=25℃)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				2.8	V
Reverse breakdown voltage	V_{BR}	I_{BR}=1mA	3			V
Reverse leakage current	I_R	V_R=2.8V			5	μA
Clamping voltage (tp=8/20μs)	V_C	I_{PP}=2A			5.5	V
Clamping voltage (tp=8/20μs)	V_C	I_{PP}=5A			8.5	V
Off state junction capacitance	C_J	0Vdc,f=1MHz Between I/O pins and GND		2.5	5	pF

Typical Characteristics Curves

Figure 1. Power Derating Curve

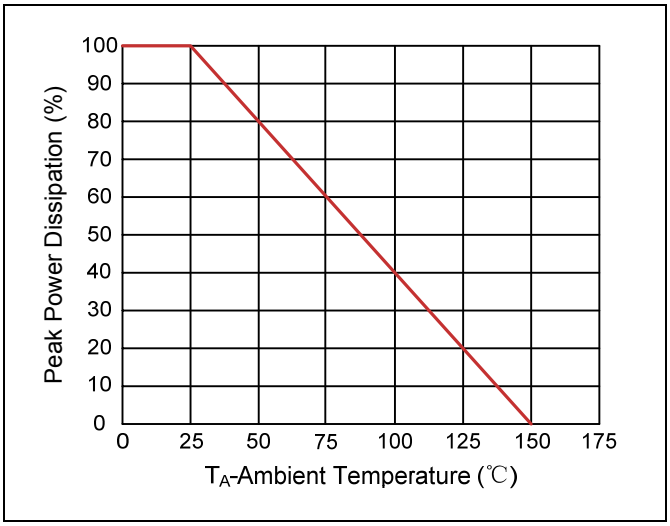


Figure 2. Pulse Waveforms

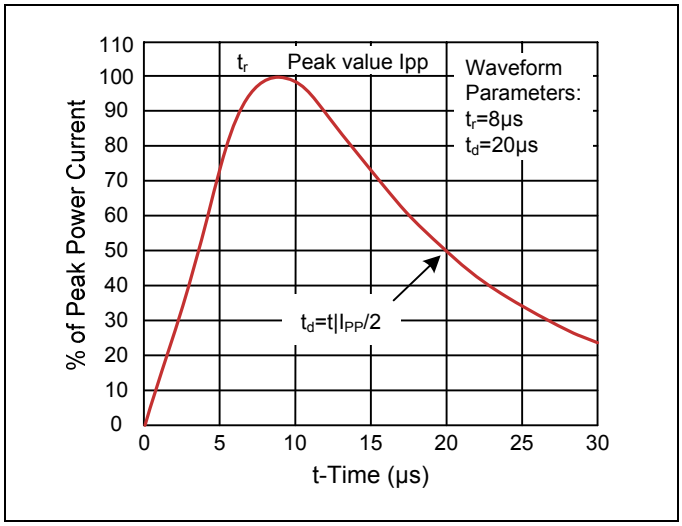


Figure 3. Non-Repetitive Peak Pulse vs. Pulse Time

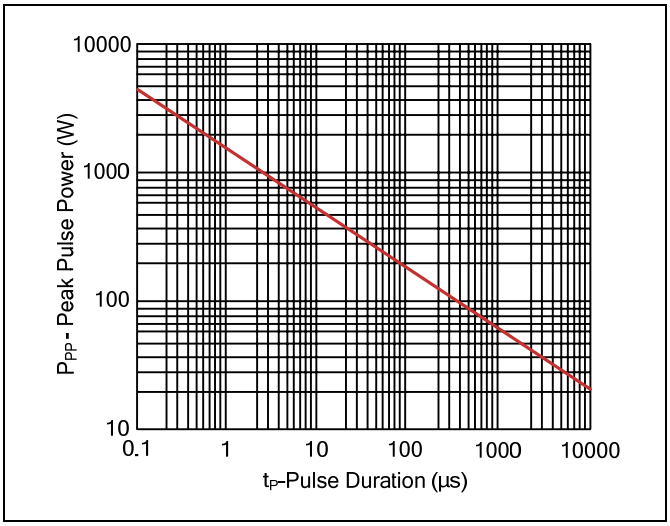


Figure 4. Capacitance vs. Reverse Voltage

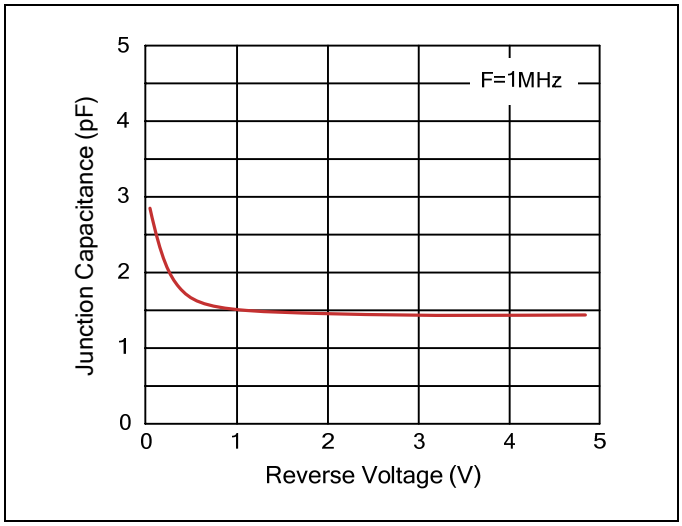
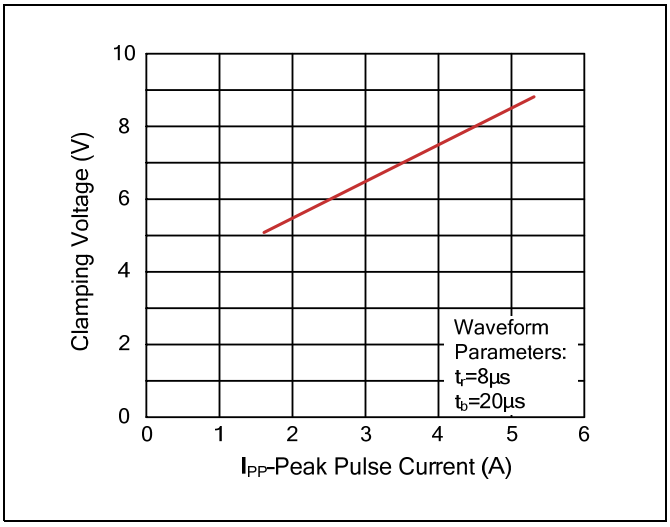
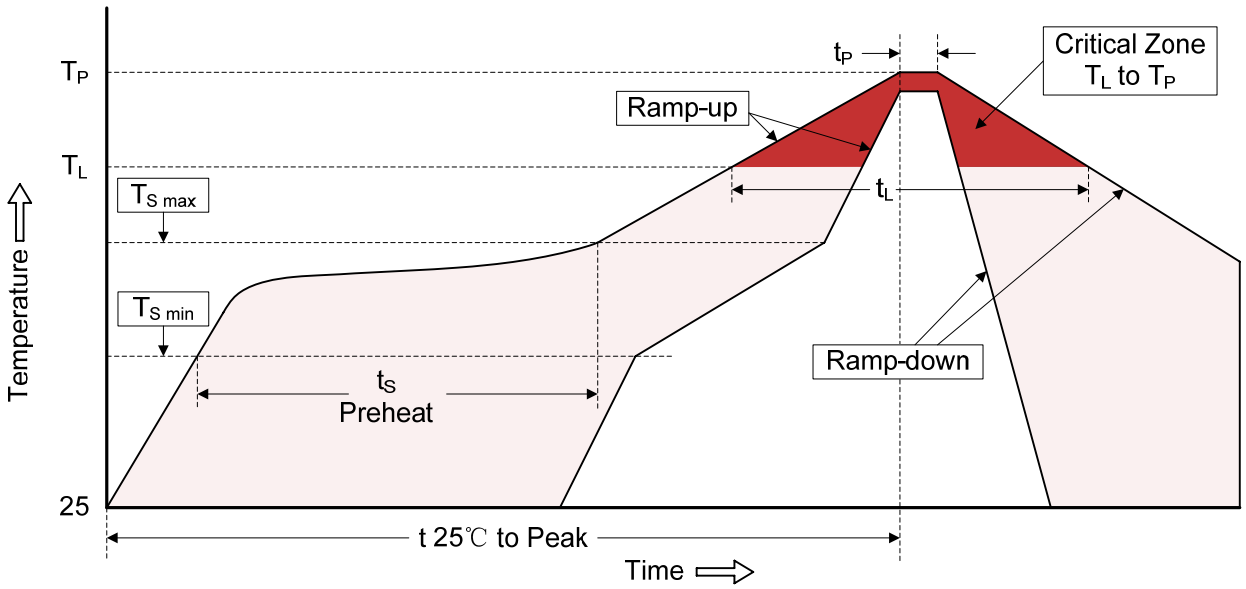


Figure 5. Clamping Voltage vs. Peak Pulse Current



Recommended Soldering Conditions

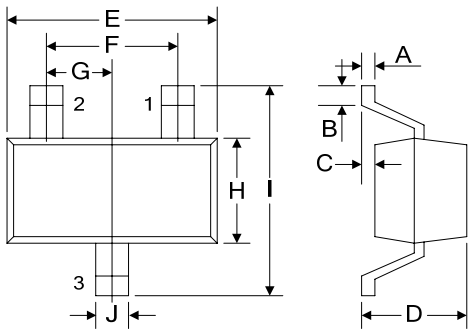
Reflow Soldering

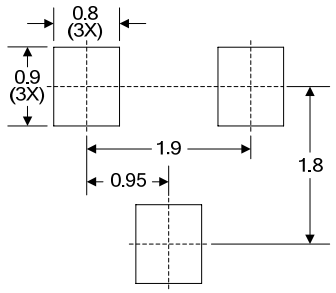


Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (ts)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

Dimensions (SOT-23)



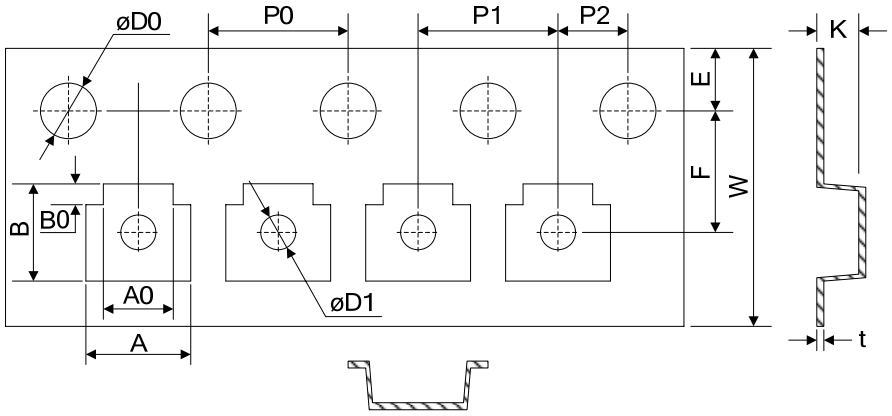


Recommended Soldering Pad Layout

Symbol	Dimension			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.08	0.18	0.003	0.007
B	0.15	-	0.006	-
C	-	0.13	-	0.005
D	0.89	1.09	0.035	0.043
E	2.80	3.05	0.110	0.120
F	1.90		0.075	
G	0.95		0.037	
H	1.19	1.40	0.047	0.055
I	2.10	2.49	0.083	0.098
J	0.35	0.50	0.014	0.020

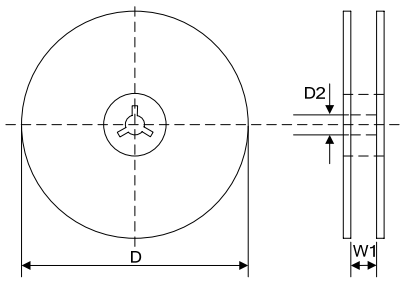
Packaging

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	3.10±0.10
A0	2.10±0.10
B	2.75±0.10
B0	0.65±0.10
K	1.10±0.10
t	0.20±0.05

Reel



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