

1.Description

The UDT23AxxL02 series are ultra low capacitance TVS arrays designed to protect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by electrostatic discharge (ESD), cable discharge events(CDE) and electrical fast transients(EFT).

3.Features

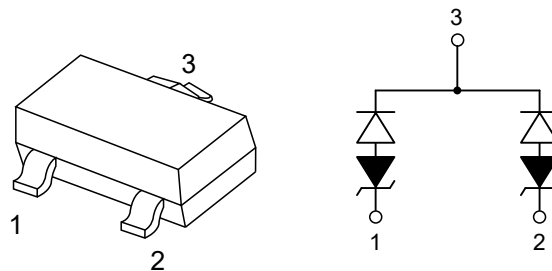
- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- Protects two high speed data lines
- Working voltage: 3.3V, 5V,12V, 15V and 24V

2.Applications

- HDMI interface protection
- Mobile display digital interface
- RF/Antenna circuits
- USB 2.0 & Firewire ports
- GaAs photodetector protection
- HBT power Amp protection
- Infiniband transceiver protection

- Ultra low capacitance and clamping voltages
- Low leakage current
- Solder reflow temperature:
Pure Tin-Sn, 260~270°C

4.Pinning information



SOT-23



5.Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Peak pulse power ($t_p=8/20\mu s$ waveform)	P_{PP}	400	W
ESD voltage (Contact discharge)	V_{ESD}	± 8	kV
ESD voltage (Air discharge)		± 15	kV
Storage & Junction temperature range	T_{STG}, T_J	-55 to 150	$^{\circ}C$



6.1 Electrical Characteristics (UDT23A03L02)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse stand-off voltage	V_{RWM}				3.3	V
Reverse breakdown voltage	V_{BR}	$I_{BR}=1mA$	4			V
Reverse leakage current	I_R	$V_R=3.3V$, Each I/O pin			20	μA
Clamping voltage ($t_p=8/20\mu s$)	V_C	$I_{PP}=1A$			10	V
Off state junction capacitance	C_J	0Vdc, $f=1MHz$ Between I/O pins and GND		0.8		pF

6.2 Electrical Characteristics (UDT23A05L02)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
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			5	μA
Clamping voltage ($t_p=8/20\mu s$)	V_C	$I_{PP}=1A$			12	V
Off state junction capacitance	C_J	0Vdc, $f=1MHz$ Between I/O pins and GND		0.8		pF



6.3 Electrical Characteristics (UDT23A12L02)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse stand-off voltage	V_{RWM}				12	V
Reverse breakdown voltage	V_{BR}	$I_{BR}=1\text{mA}$	13.3			V
Reverse leakage current	I_R	$V_R=12\text{V}$, Each I/O pin			1	μA
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=1\text{A}$			25	V
Off state junction capacitance	C_J	0Vdc, $f=1\text{MHz}$ Between I/O pins and GND		0.8		pF

6.4 Electrical Characteristics (UDT23A15L02)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse stand-off voltage	V_{RWM}				15	V
Reverse breakdown voltage	V_{BR}	$I_{BR}=1\text{mA}$	16.7			V
Reverse leakage current	I_R	$V_R=15\text{V}$, Each I/O pin			1	μA
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=1\text{A}$			30	V
Off state junction capacitance	C_J	0Vdc, $f=1\text{MHz}$ Between I/O pins and GND		0.8		pF

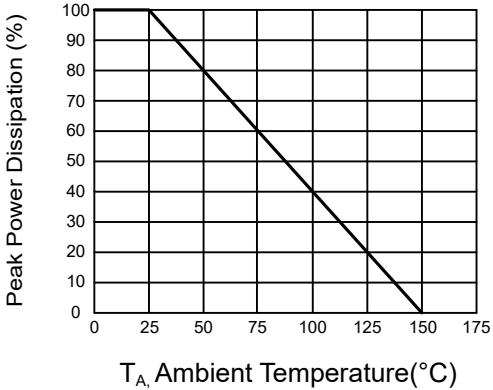
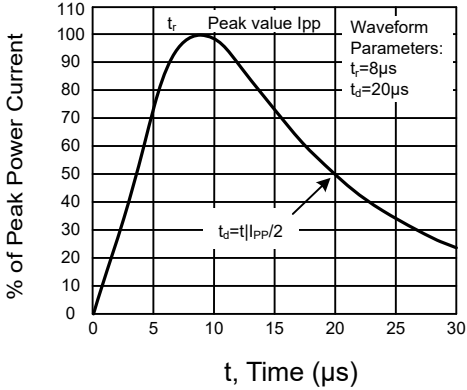
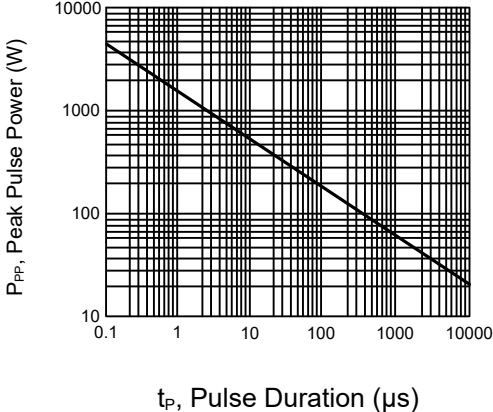
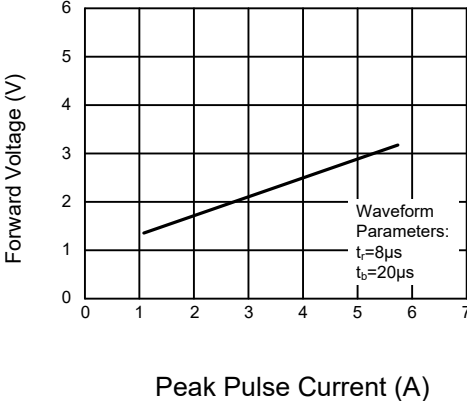


6.5 Electrical Characteristics (UDT23A24L02)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse stand-off voltage	V_{RWM}				24	V
Reverse breakdown voltage	V_{BR}	$I_{BR}=1\text{mA}$	26.7			V
Reverse leakage current	I_R	$V_R=24\text{V}$, Each I/O pin			1	μA
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=1\text{A}$			48	V
Off state junction capacitance	C_J	0Vdc, $f=1\text{MHz}$ Between I/O pins and GND		0.8		pF



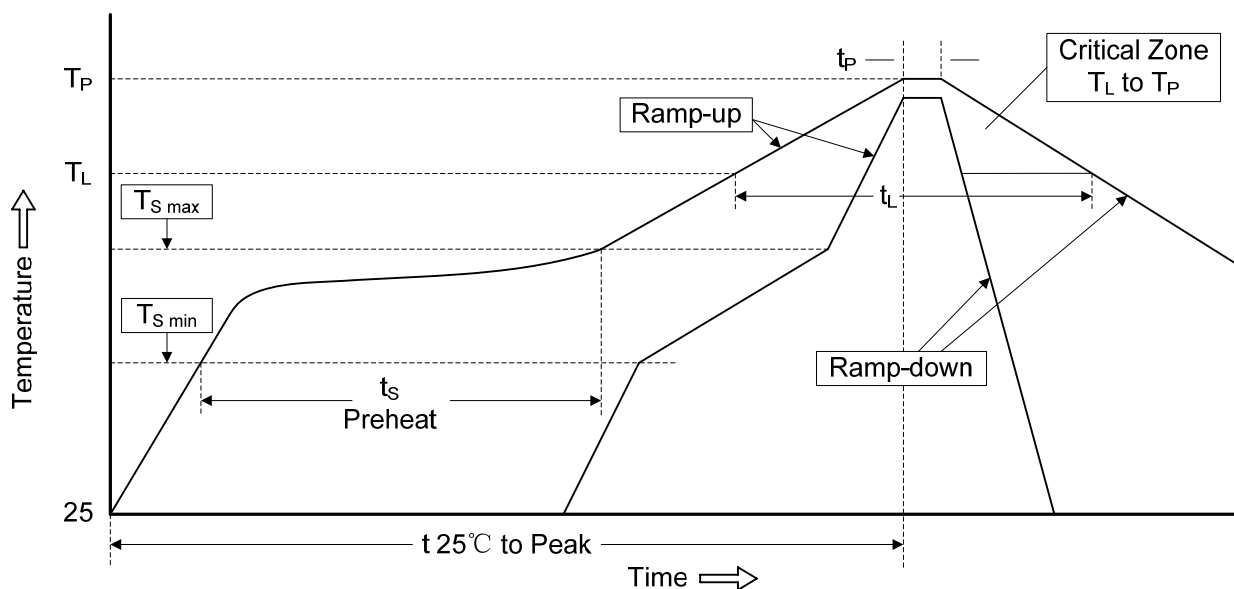
7. Typical characteristic

	
Figure 1: Power Derating Curve	Figure 2: Pulse Waveforms
	
Figure 3: Non-Repetitive Peak Pulse vs. Pulse Time	Figure 4: Forward Voltage vs. Forward Current



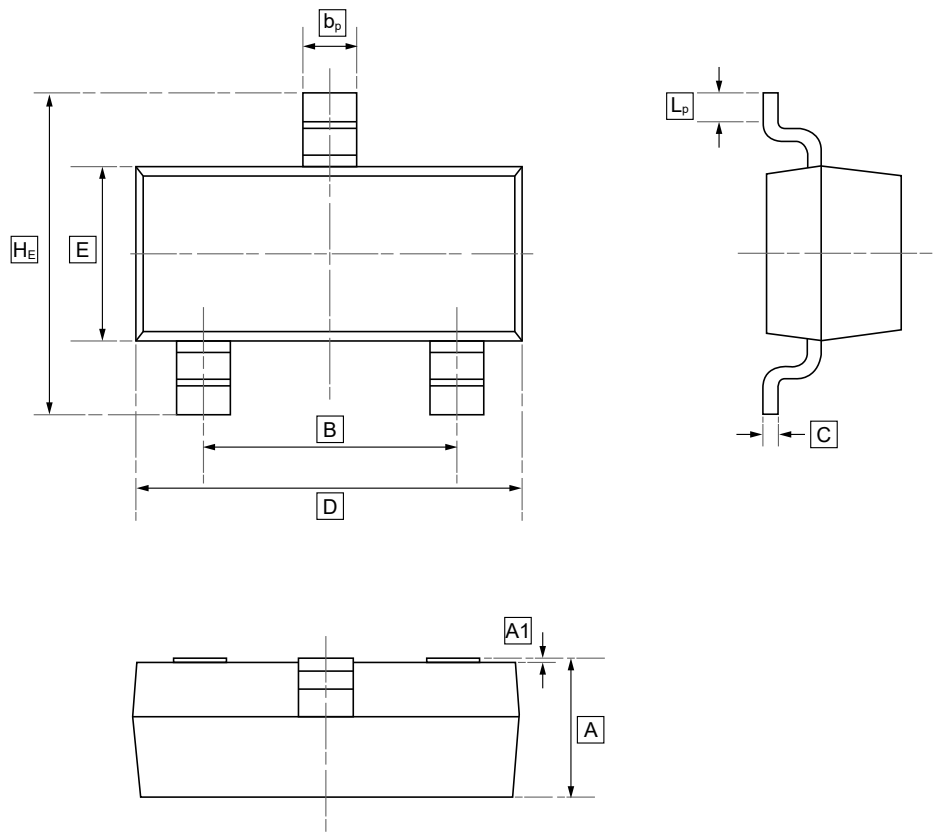
8. Recommended Soldering Conditions

Profile Feature		Pb-Free Assembly
Average ramp-up rate (T_L to T_P)		3°C/second max.
Preheat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60-180 secs.
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Time maintained above	-Temperature (T_L)	217°C
	-Time (T_L)	60-150 secs.
Peak Temperature (T_P)		260°C
Time within 5°C of actual Peak Temperature (T_P)		20-40 seconds
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temperature		8 min. Max





9.SOT-23 Package Outline Dimensions

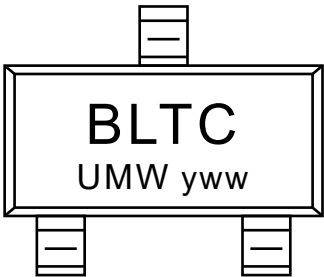


DIMENSIONS (mm are the original dimensions)

Symbol	A	B	b _p	C	D	E	H _E	A1	L _p
Min	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20
Max	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50



10.Ordering information



yww: Batch Code

Order Code	Marking	Package	Base QTY	Delivery Mode
UMW UDT23A03L02	B LSC	SOT-23	3000	Tape and reel
UMW UDT23A05L02	B LTC	SOT-23	3000	Tape and reel
UMW UDT23A12L02	B LUC	SOT-23	3000	Tape and reel
UMW UDT23A15L02	B LWC	SOT-23	3000	Tape and reel
UMW UDT23A24L02	B LXC	SOT-23	3000	Tape and reel



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