

4-Line Low Capacitance TVS Diode

Primary characteristics			
Parameter	Symbol	Value	Unit
Reverse working voltage	V_{RWM}	5	V
ESD per IEC 61000-4-2 (air)	V_{ESD}	±20	kV
ESD per IEC 61000-4-2 (contact)	V_{ESD}	±25	kV
Peak pulse power (8/20μs)	P_{PP}	70	W

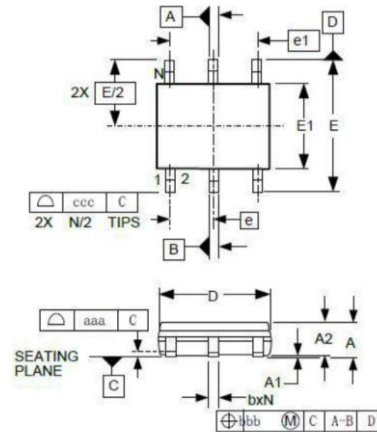
Features

- Ultra low capacitance
- Ultra low leakage: nA level
- Up to 4 data lines and one power line protects
- Complies with IEC 61000-4-2 (ESD) immunity test
- UL flammability classification rating 94V-0
- RoHS compliant
- Moisture sensitivity: Level 3 per J-STD-020
- Case material: “Green” molding compound

Applications

- High speed line: USB1.0/2.0, VGA, DVI.SDI
- High definition multi-media interface (HDMI1.3/1.4/2.0)
- Serial and parallel ports
- Notebooks, desktops, servers
- Peripherals
- Cellular handsets and accessories
- Portable instrumentation

Case dimensions



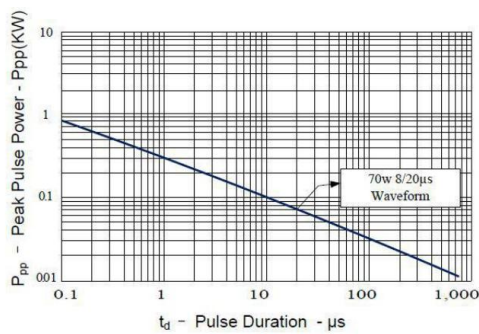
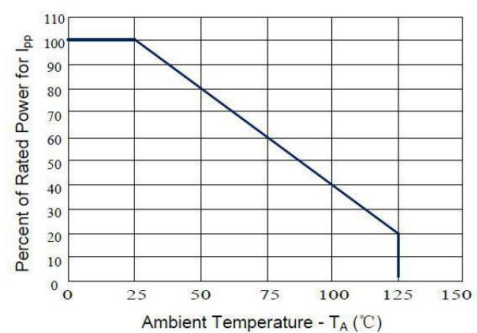
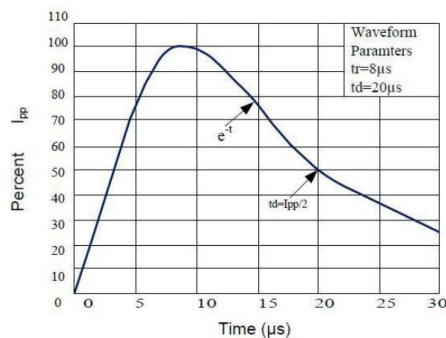
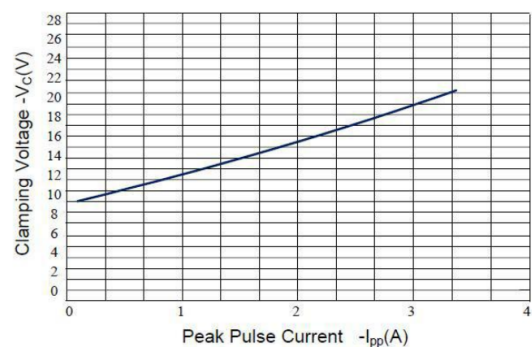
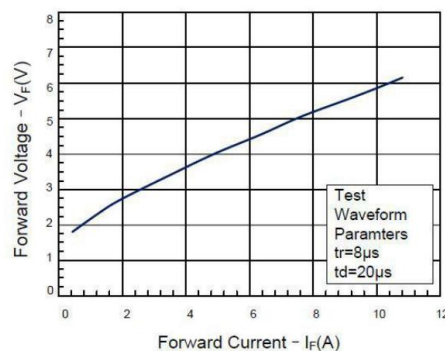
SOT-23-6L

Symbol	Millimeters			Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.90	-	1.45	0.035	-	0.057
A1	0.00	-	0.15	0.000	-	0.006
A2	0.90	1.25	1.30	0.035	0.049	0.051
b	0.35	-	0.50	0.010	-	0.020
c	0.08	-	0.20	0.003	-	0.007
D	2.80	2.90	3.00	0.110	0.114	0.122
E1	1.50	1.625	1.75	0.060	0.063	0.069
E	2.80 BSC			0.110 BSC		
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
L	0.35	0.45	0.60	0.013	0.018	0.024
L1	(0.60)			(0.024)		
θ	0°	-	8°	0°	-	8°
N	6			6		
aaa	0.10			0.004		
bbb	0.20			0.008		
ccc	0.20			0.008		

Maximum ratings and electrical characteristics ($T_A = 25^\circ\text{C}$, RH=45-75%, unless otherwise noted)

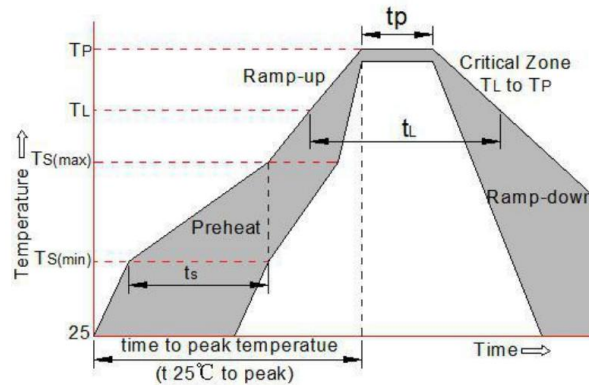
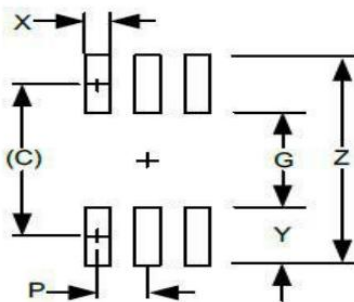
Characteristics	Test condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Peak pulse power ($t_p=8/20\mu\text{s}$ waveform)	-	P_{PP}	-	70	-	W
Peak pulse current ($t_p=8/20\mu\text{s}$ waveform)	-	I_{PP}	-	3	-	A
ESD per IEC 61000-4-2 (air)	-	V_{ESD}	-	20	-	kV
ESD per IEC 61000-4-2 (contact)			-	25	-	
Operating temperature range	-	T_J	-55	-	+125	°C
Storage temperature range	-	T_{stg}	-55	-	+150	°C
Reverse working voltage	-	V_{RWM}	-	-	5	V

Breakdown voltage	$I_T=1\text{mA}$	V_{BR}	6	-	-	V
Reverse leakage current	$V_{RWM}=5\text{V}$	I_R	-	-	5	μA
Forward voltage	$I_T=15\text{mA}$	V_F	-	0.8	1.5	V
Clamping voltage	$I_{PP}=3\text{A}$ (8x20 μs)	V_C	-	-	22	V
Junction capacitance	Between I/O pins $V_R=0\text{V}$, $f=1\text{MHz}$	C_J	-	0.4	0.6	pF
Junction capacitance	I/O pins and ground $V_R=0\text{V}$, $f=1\text{MHz}$		-	0.5	0.8	pF

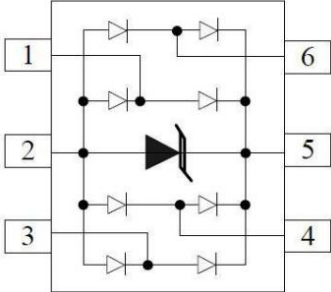
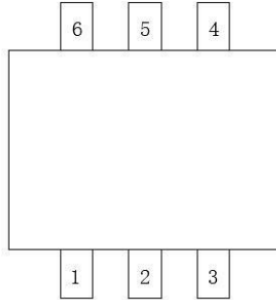
Typical performance characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)
Peak pulse power vs. Pulse time

Power derating curve

Pulse waveform

Clamping voltage vs. Peak pulse current

Forward voltage vs. Forward current


Soldering parameters

Reflow condition		Pb-free assembly
Pre heat	Temperature Min ($T_{s(min)}$)	+150°C
	Temperature Min ($T_{s(max)}$)	+200°C
	Time (Min to Max) (t_s)	60-180 sec.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L – Ramp-up rate		3°C/sec. Max
Reflow	Temperature (T_L) (Liquid us)	+217°C
	Temperature (t_L)	60-150 sec.
Peak Temp (T_p)		+260 (+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 sec. Max
Ramp-down rate		6°C/sec. Max
Time 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260°C


Suggested land pattern


Symbol	Dimensions	
	Millimeters	Inches
C	(2.50)	(0.098)
G	1.40	0.055
P	0.95	0.037
X	0.60	0.024
Y	1.10	0.043
Z	3.60	0.141

Pinning – top view	Marking information
	

Ordering information		
Part Number	Package	Shipping Quantity
USBLC6-2SC6	SOT-23-6L	3 000 pcs / 7" reel

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