

#### Description

The USBL C6-2SC6 is an ultra low capacitance TVS array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The USBL C6-2SC6 has an ultra-low capacitance with a typical value at 0.6 pF, and complies with the IEC 61000-4-2 (ESD) standard with ±15kV air and ±8kV contact discharge. It is assembled into a 6-pin lead-free SOT23-6 package. The combination of small size, ultra low capacitance, and high ESD surge capability make it ideal for use in applications such as multimedia, and other high speed ports.

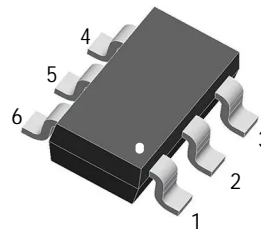
#### Features

- \* Ultra low capacitance: 0.6pF typical (I/O-GND)
- \* Ultra low leakage: nA level
- \* Low operating voltage: 5.0V
- \* Up to 4 data lines and one power line protects
- \* Low clamping voltage
- \* Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test  
Air : ±20kV; discharge: ±15kV
  - IEC61000-4-5 (Lightning) 4.5A (8/20µs)
- \* SOT23-6 Package
- \* RoHS Compliant

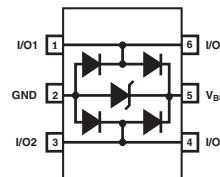
#### Applications

- \* Monitors and flat panel displays
- \* Set-top box and Digital TV
- \* Video graphics cards
- \* Digital Video Interface (DVI)
- \* Notebook Computers
- \* PCI Express and Serial SATA Ports

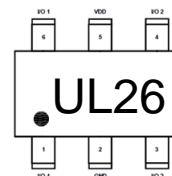
SOT-23-6L



Circuit Diagram



Marking Diagram



### Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)

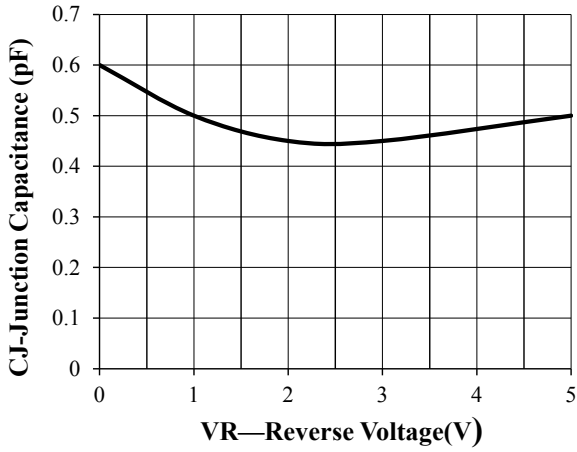
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20µs, I/O-GND)	Ppk	60	W
Peak Pulse Power (8/20µs, Vcc-GND)	Ppk	300	W
Peak Pulse Current (8/20µs, I/O-GND)	IPP	4.5	A
Peak Pulse Current (8/20µs, Vcc-GND)	IPP	17	A
ESD per IEC 61000-4-2 (Air)	V <sub>ESD, VDD</sub>	±20	kV
ESD per IEC 61000-4-2 (Contact)	V <sub>ESD, I/O</sub>	±15	kV
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C

# USBLC6-2SC6

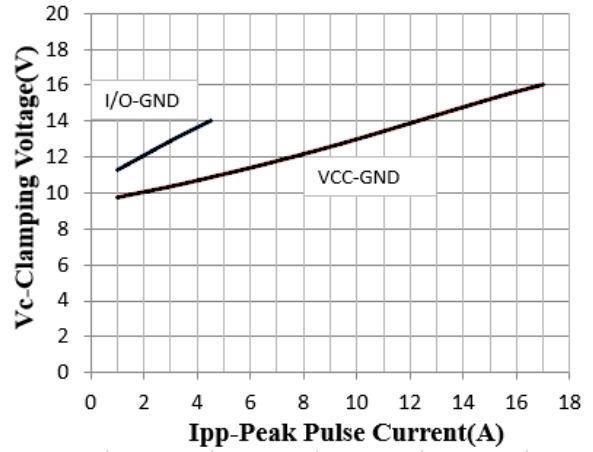
## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	$V_{RWM}$	Pin 5 to GND,I/O-GND			5.0	V
Breakdown Voltage	$V_{BR}$	$I_T = 1\text{mA}$ (Pin 5 to GND,I/O-GND)	6.0	7.5	8.5	V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5.0\text{V}$			0.5	$\mu\text{A}$
Forward Breakdown Voltage	$V_F$	$I_F = 15\text{mA}$ ,GND to Pin 5/IO		0.8	1.0	V
Clamping Voltage	$V_C$	$IPP = 4.5\text{A}$ (8 x 20 $\mu\text{s}$ pulse, I/O to GND)		14.0	15.0	V
Clamping Voltage	$V_C$	$IPP = 17\text{A}$ (8 x 20 $\mu\text{s}$ pulse,Pin 5 to GND)		16.0	18.0	V
Junction Capacitance	$C_J$	$V_{pin5} = 5\text{V}$ , I/O=0V, $f = 1\text{MHz}$ ,I/O-GND		0.6	0.7	pF
Junction Capacitance	$C_J$	$V_{pin5} = 5\text{V}$ , I/O=0V, $f = 1\text{MHz}$ ,I/O-I/O pins		0.3	0.4	pF

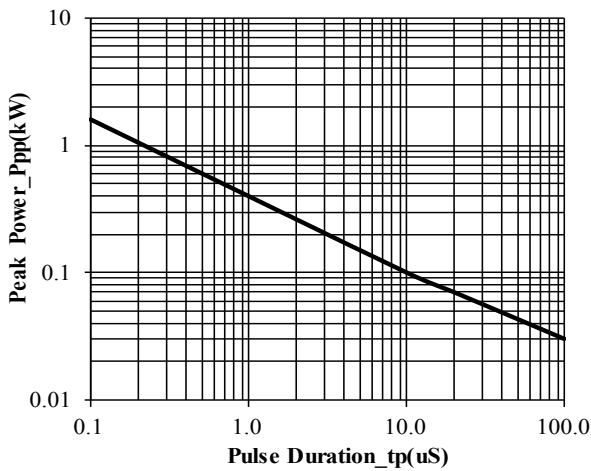
## RATING AND CHARACTERISTIC CURVES (USBLC6-2SC6)



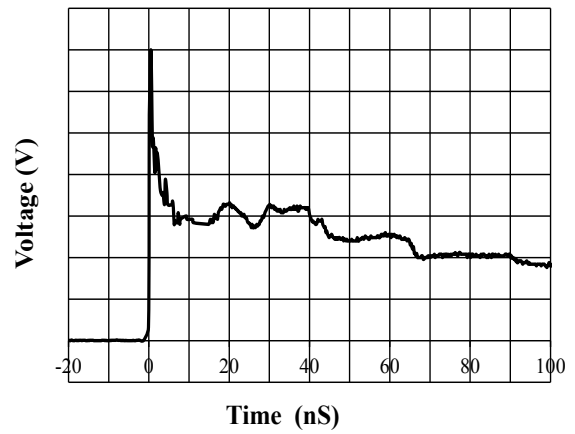
**Junction Capacitance vs. Reverse Voltage**



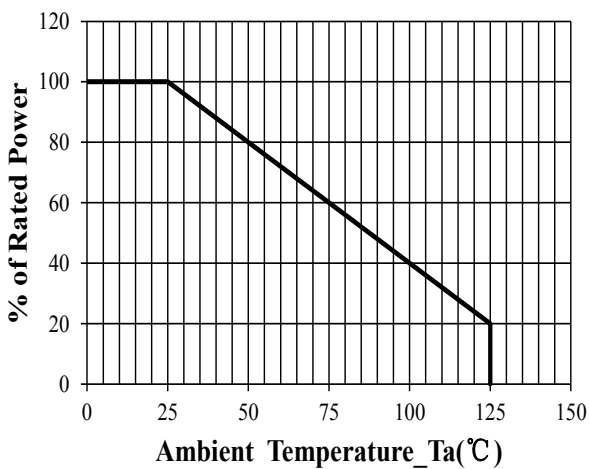
**Clamping Voltage vs. Peak Pulse Current**



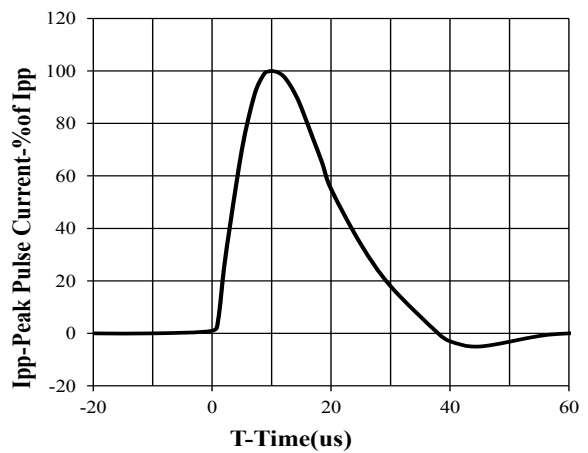
**Peak Pulse Power vs. Pulse Time**



**IEC61000-4-2 Pulse Waveform**

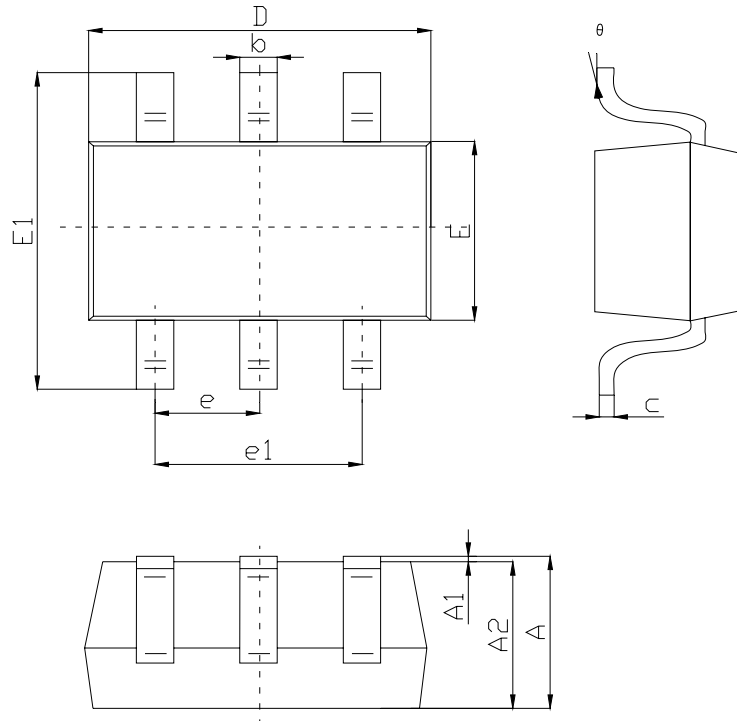


**Power Derating Curve**



**8 X 20us Pulse Waveform**

### SOT-23-6L PACKAGE OUTLINE DIMENSIO



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100		0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0,950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
	0°	8°	0°	8°

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