USBLC6-2SC6

2-Line Uni-directional TVS Diode

Description

The USBLC6-2SC6 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 USBLC6-2SC6 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.

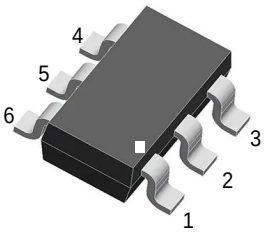
Features

* 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 lineprotects
* 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

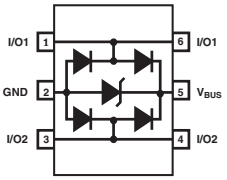
Applications

* 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

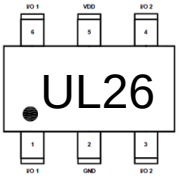
SOT-23-6L



Circuit Diagram



Marking Diagram



Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

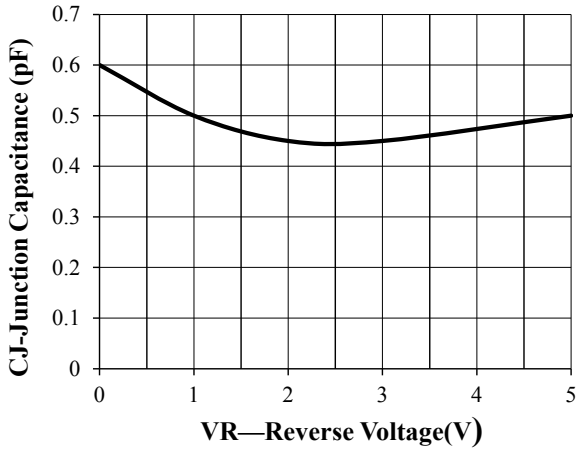
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs,I/O-GND)	Ppk	60	W
Peak Pulse Power (8/20μs,Vcc-GND)	Ppk	300	W
Peak Pulse Current (8/20μs,I/O-GND)	IPP	4.5	A
Peak Pulse Current (8/20μs,Vcc-GND)	IPP	17	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	$V_{ESD,VDD}$ $V_{ESD,I/O}$	±20 ±15	kV
Operating Temperature Range	TJ	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

USBLC6-2SC6

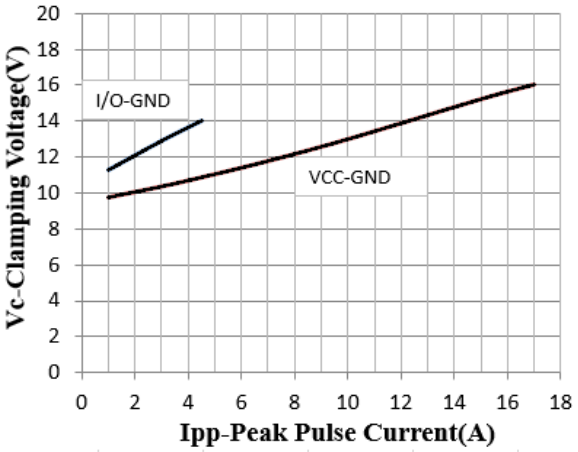
Electrical Characteristics (T_A=25°C unless otherwise specified)

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 = 1mA($_{Pin\ 5\ to\ GND,I/O-GND}$)	6.0	7.5	8.5	V
Reverse Leakage Current	I_R	V_{RWM} = 5. 0V			0.5	μA
Forward Breakdown Voltage	V_F	I_F= 15mA,GND to Pin 5/IO		0.8	1.0	V
Clamping Voltage	V_C	IPP = 4.5A (8 x 20μs pulse, I/O to GND)		14.0	15.0	V
Clamping Voltage	V_C	IPP = 17A (8 x 20μs pulse,Pin 5 to GND)		16.0	18. 0	V
Junction Capacitance	C_J	V_{pin5} = 5V, I/O=0V, f = 1MHz,I/O-GND		0.6	0.7	pF
Junction Capacitance	C_J	V_{pin5} = 5V, I/O=0V, f = 1MHz,I/O-I/O pins		0.3	0.4	pF

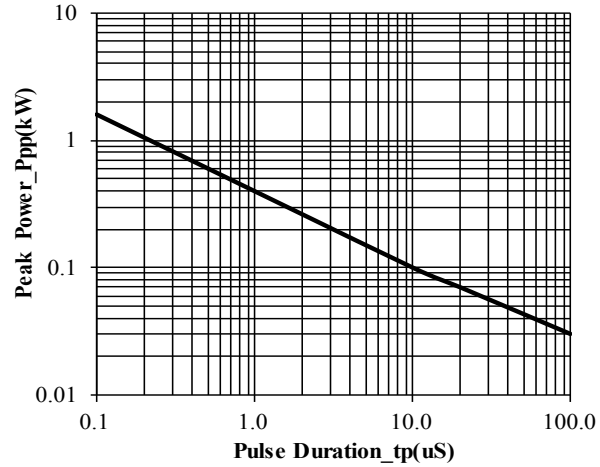
RATING AND CHARACTERISTIC CURVES (USBLC6-2SC6)



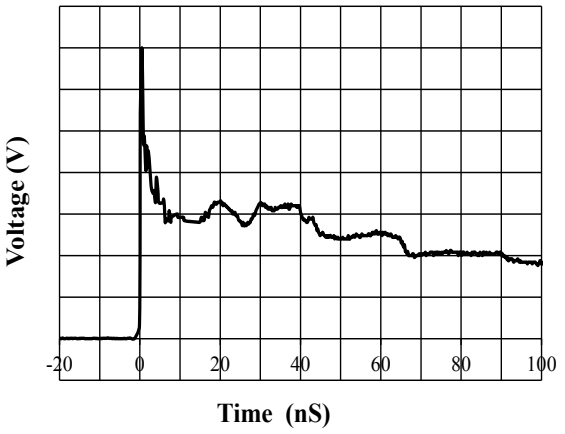
Junction Capacitance vs. Reverse Voltage



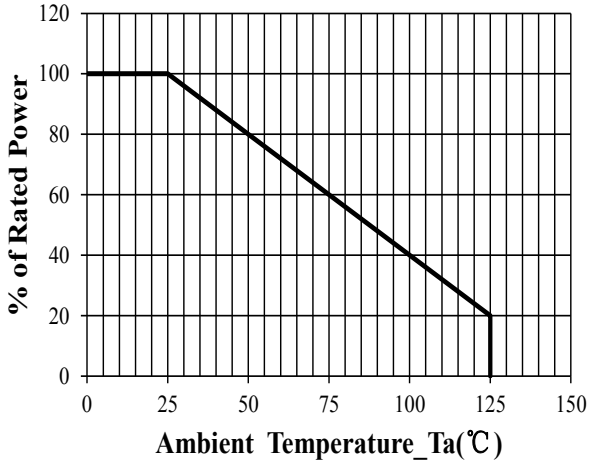
Clamping Voltage vs. Peak Pulse Current



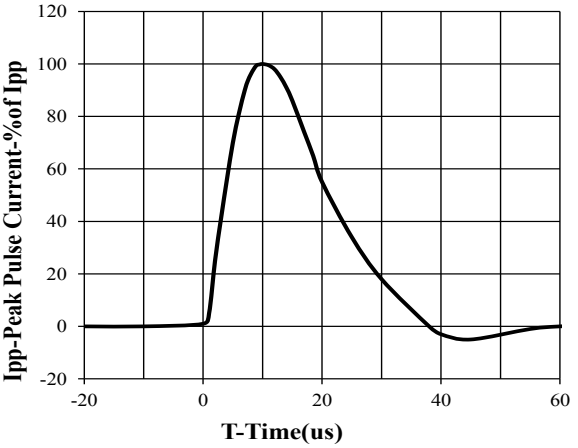
Peak Pulse Power vs. Pulse Time



IEC61000−4−2 Pulse Waveform

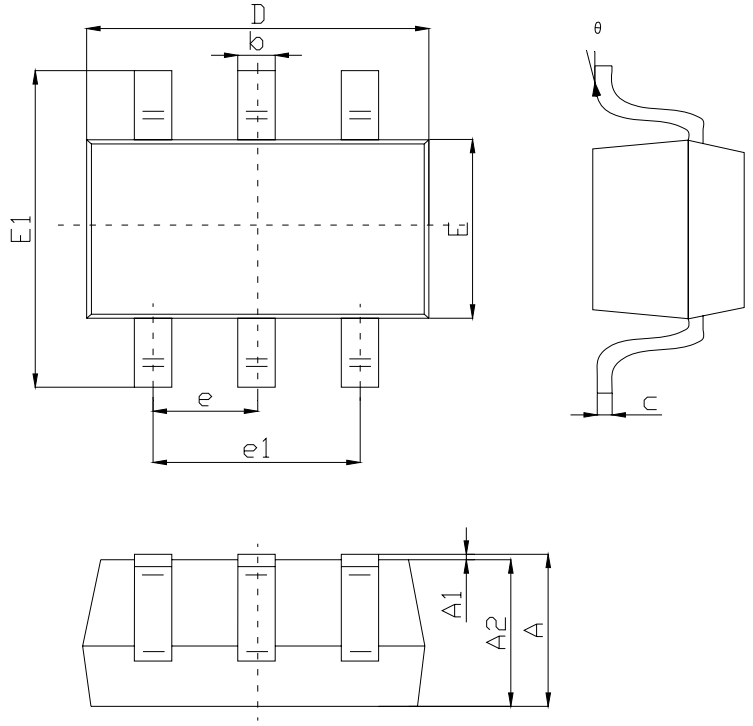


Power Derating Curve



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°