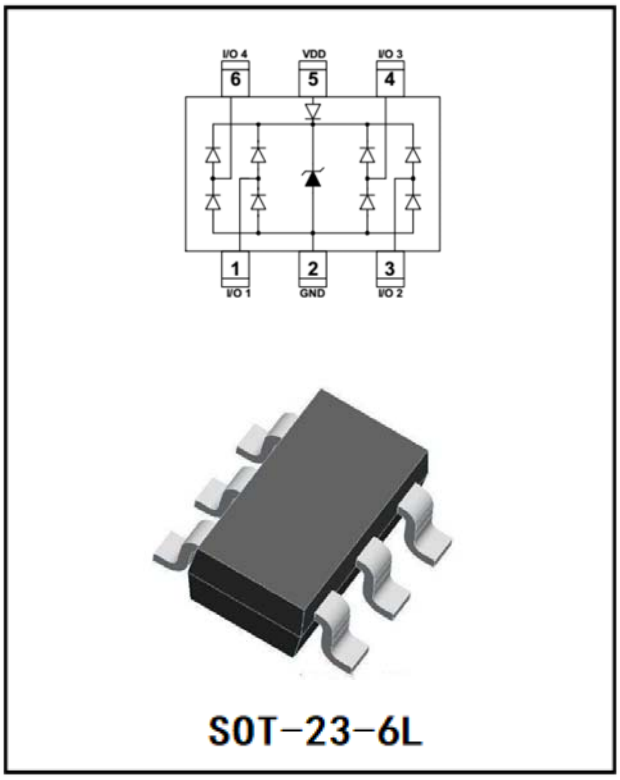
4-Line, Uni-directional, low Capacitance Transient Voltage Suppressors



Features

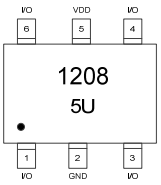
- Stand-off voltage: 5V Max
- Transient protection for each line according to
  IEC61000-4-2(ESD): ±30kV (contact)
  IEC61000-4-4(EFT):40A(5/50ns)
  IEC61000-4-5(surge): 6A (8/20μs)
- Ultra-low capacitance: C_J = 1.2pF typ
- Low leakage current
- Low clamping voltage
- RoHS Compliant

Applications

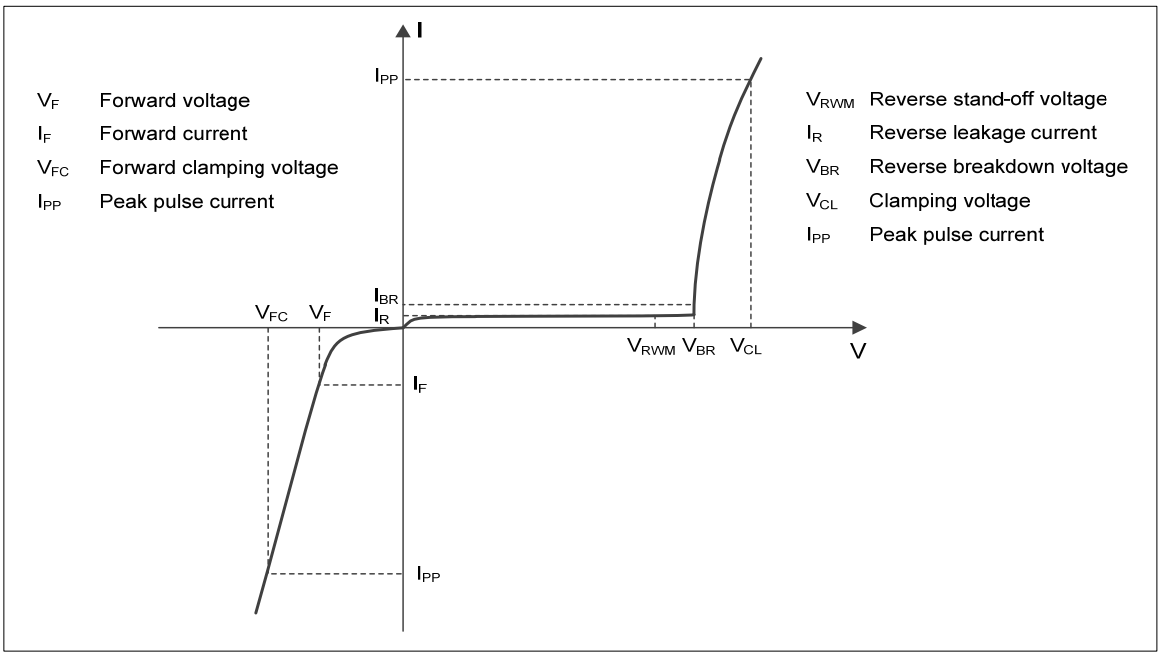
- USB 2.0
- Video Graphics Cards
- DVI
- IEEE 1394
- Monitors and Flat Panel Displays
- 10/100 Ethernet
- Notebooks

Mechanical Characteristics

- Package: SOT-23-6L
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below



■Definitions of electrical characteristics



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

PARAMETER	SYMBOL	Rating	UNIT
Peak pulse power (t_p = 8/20μs)	P_{pk}	72	W
Peak pulse current (t_p = 8/20μs)	I_{PP}	6	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	±30	KV
ESD according to IEC61000-4-2 contact discharge		±30	KV
Junction temperature	T_J	125	°C
Storage temperature	T_{STG}	-55~150	°C

■Electrical Characteristics（T_a=25℃ Unless otherwise specified）

I/O Pins

PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse maximum working voltage	V_{RWM}	V				5.0
Reverse leakage current	I_R	nA	V_{RWM} =5V			100
Reverse breakdown voltage	V_{BR}	V	I_{BR} = 1mA	7.0	8.0	9.0
Forward voltage	V_F	V	I_F = 10mA	0.6	0.9	1.2
Clamping voltage 1)	V_{CL}	V	I_{PP} = 16A, t_p = 100ns		11	
Dynamic resistance 1)	R_{DYN}	Ω			0.31	
Clamping voltage 2)	V_{CL}	V	V_{ESD} +8kV		12	
Clamping voltage 3)	V_{CL}	V	I_{PP} = 1A, t_p = 8/20μs		6.6	8
		V	I_{PP} = 6A, t_p = 8/20μs		10	12
Junction capacitance	C_J	pF	V_R = 0V, f = 1MHz, Any I/O pin to GND		1.2	1.6
		pF	V_R = 0V, f = 1MHz, Between Any I/O pins		0.6	0.8

VDD Pins

PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse maximum working voltage	V_{RWM}	V				6.0
Reverse leakage current	I_R	nA	V_{RWM} =6V			1
Reverse breakdown voltage	V_{BR}	V	I_{BR} = 1mA	7.0	8.0	9.0
Forward voltage	V_F	V	I_F = 10mA	0.6	0.9	1.2
Clamping voltage 1)	V_{CL}	V	I_{PP} = 16A, t_p = 100ns		9.5	
Dynamic resistance 1)	R_{DYN}	Ω			0.20	
Clamping voltage 2)	V_{CL}	V	V_{ESD} +8kV		10	
Clamping voltage 3)	V_{CL}	V	I_{PP} = 1A, t_p = 8/20μs		6.4	7.0
		V	I_{PP} = 3.5A, t_p = 8/20μs		9.5	11

Notes：

(1). TLP parameter: Z_0 = 50Ω, t_p = 100ns, t_r = 2ns, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.
(2). Contact discharge mode, according to IEC61000-4-2.
(3). Non-repetitive current pulse, according to IEC61000-4-5

■Ordering Information (Example)

PREFERED P/N	UNIT WEIGHT(mg)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
ESDSLC0504S2A	Approximate 15.85	3000	30000	120000	Tape & reel

■Typical Performance Characteristics (Ta=25°C unless otherwise Specified)

Fig.1 8/20μs waveform per IEC61000-4-5

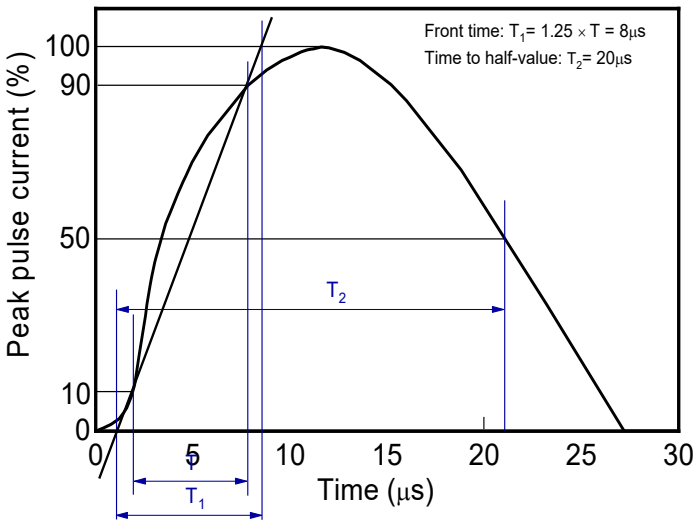


Fig.2 Contact discharge current waveform per IEC61000-4-2

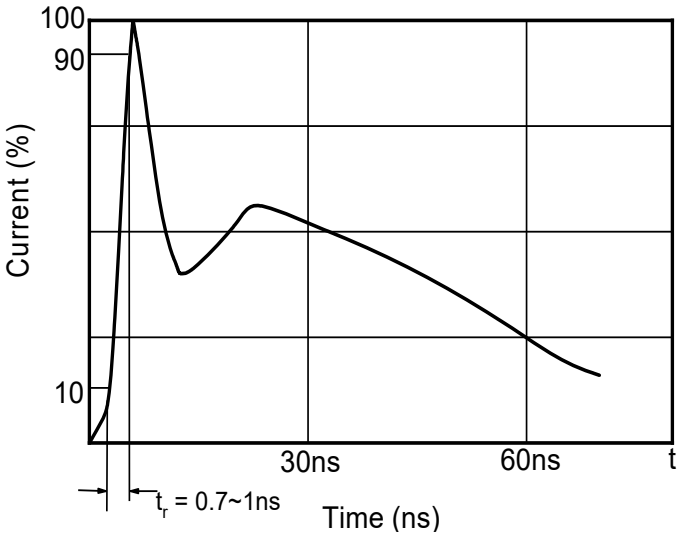


Fig.3 Clamping voltage vs. Peak pulse current

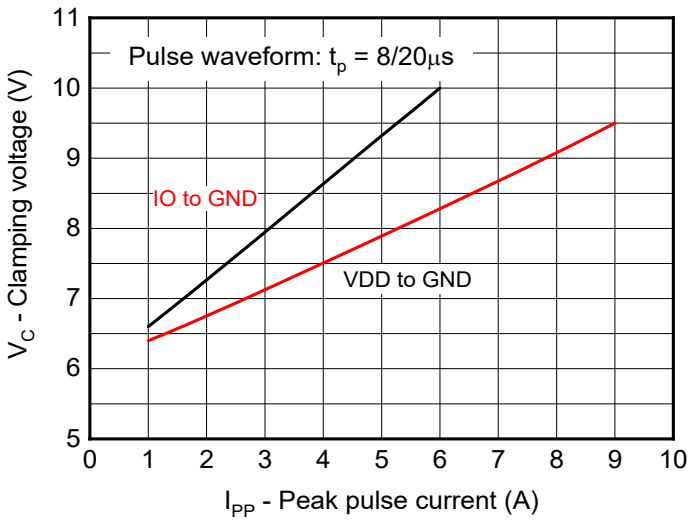


Fig.4 Capacitance vs. Reverse voltage

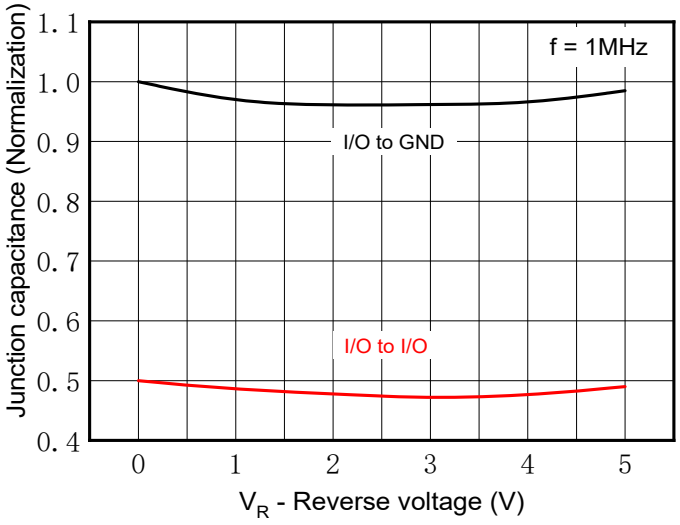


Fig.5 Non-repetitive peak pulse power vs. Pulse time

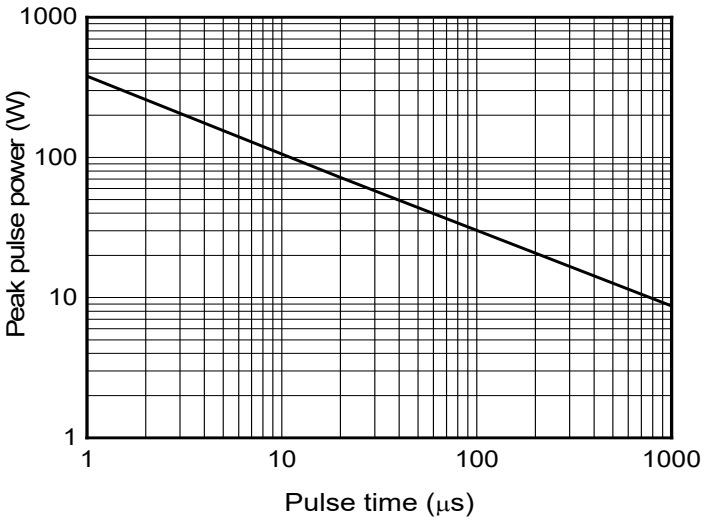


Fig.6 Power derating vs. Ambient temperature

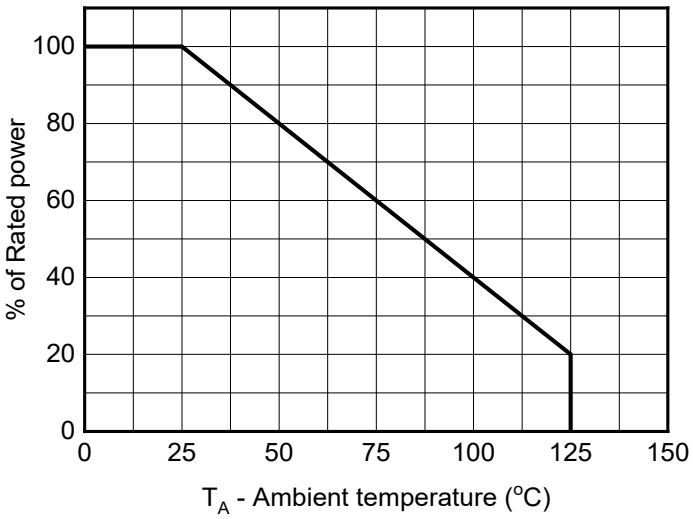


Fig.7 ESD clamping - I/O to GND
(+8kV contact discharge per IEC61000-4-2)

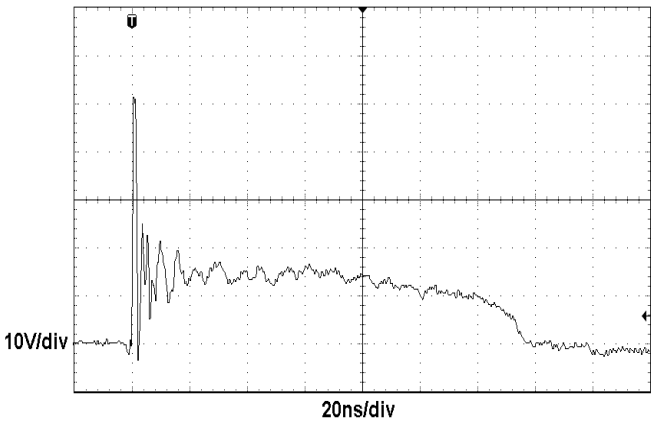


Fig.8 ESD clamping - I/O to GND
(-8kV contact discharge per IEC61000-4-2)

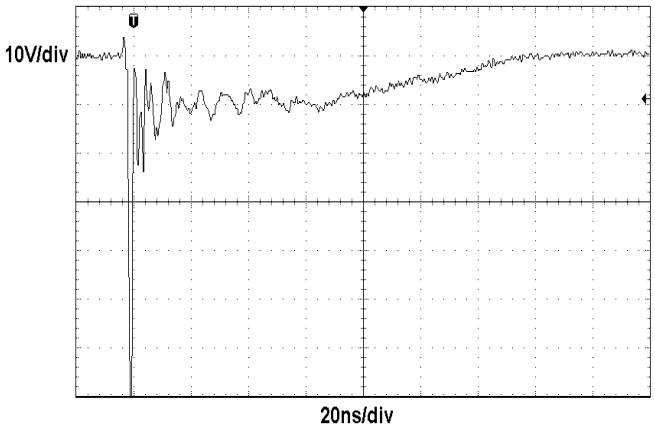


Fig.9 ESD clamping - VDD to GND
(+8kV contact discharge per IEC61000-4-2)

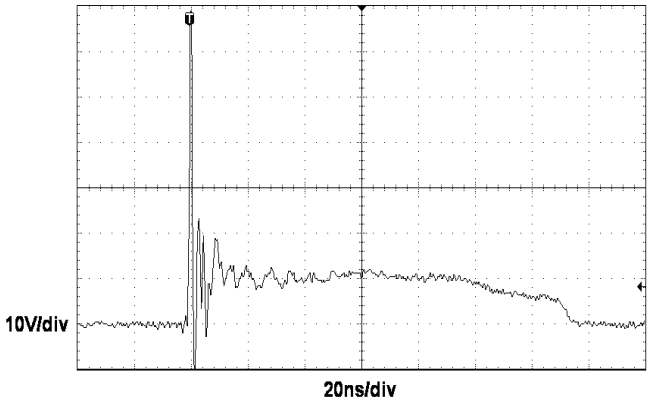


Fig.10 ESD clamping - VDD to GND
(-8kV contact discharge per IEC61000-4-2)

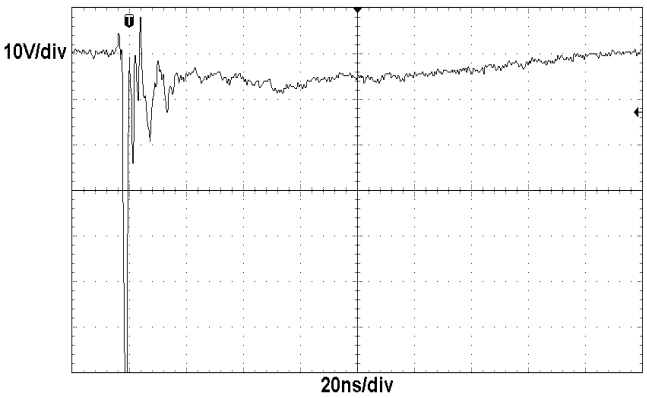


Fig.11 TLP Measurement -I/O to GND

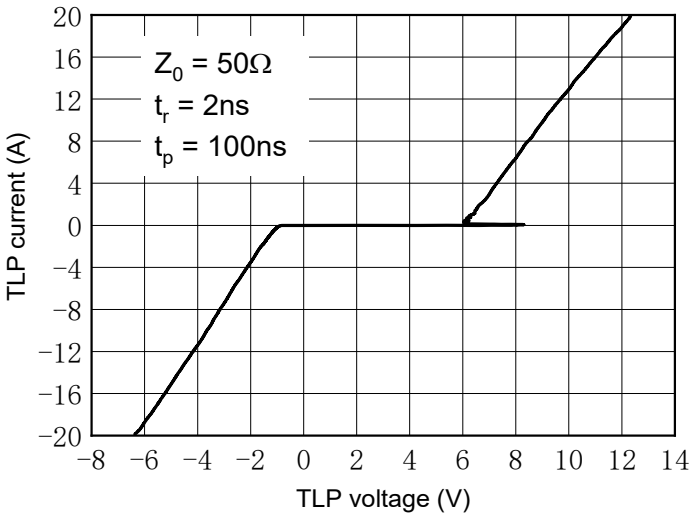
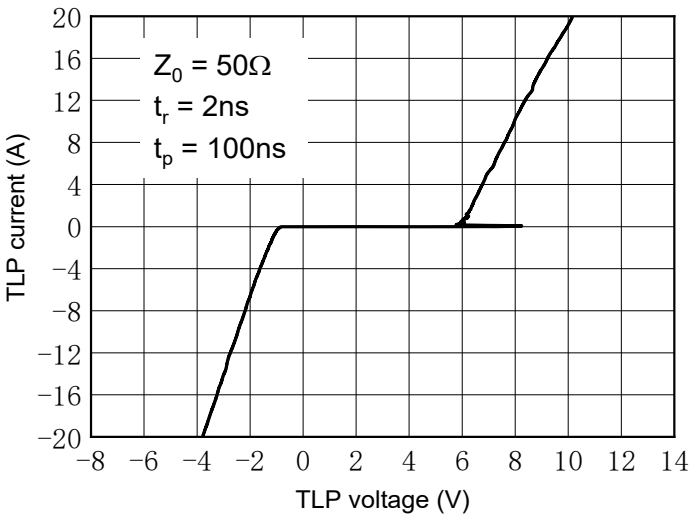
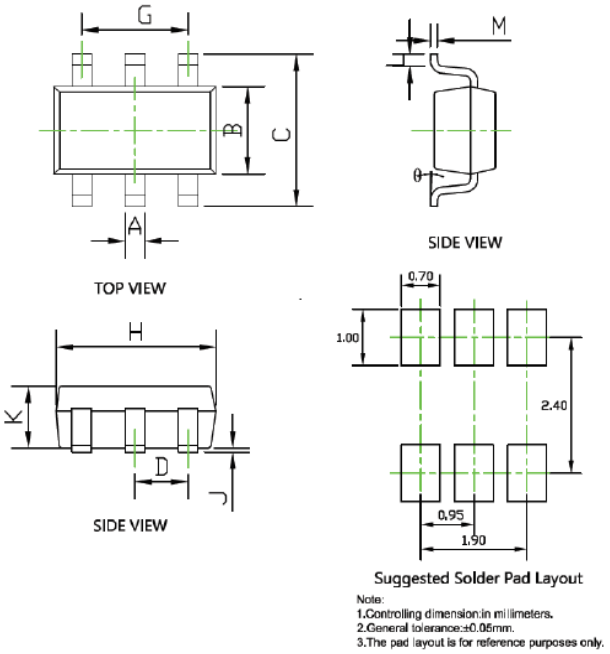


Fig.12 TLP Measurement -VDD to GND



■SOT-23 6L Package Outline Drawing

SOT-23-6L



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

DIMENSIONS				
SYMBOL	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.012	0.020	0.300	0.500
B	0.059	0.067	1.500	1.700
C	0.104	0.116	2.650	2.950
D	0.037BSC		0.950BSC	
G	0.075BSC		1.900BSC	
H	0.111	0.119	2.820	3.020
J	0.000	0.004	0.000	0.100
K	0.041	0.045	1.050	1.150
L	0.012	0.024	0.300	0.600
M	0.004	0.008	0.100	0.200
θ	0°	8°	0°	8°

Notice

All products, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise. Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in STARSEA's terms and conditions of sale for such products, STARSEA assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of STARSEA products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.