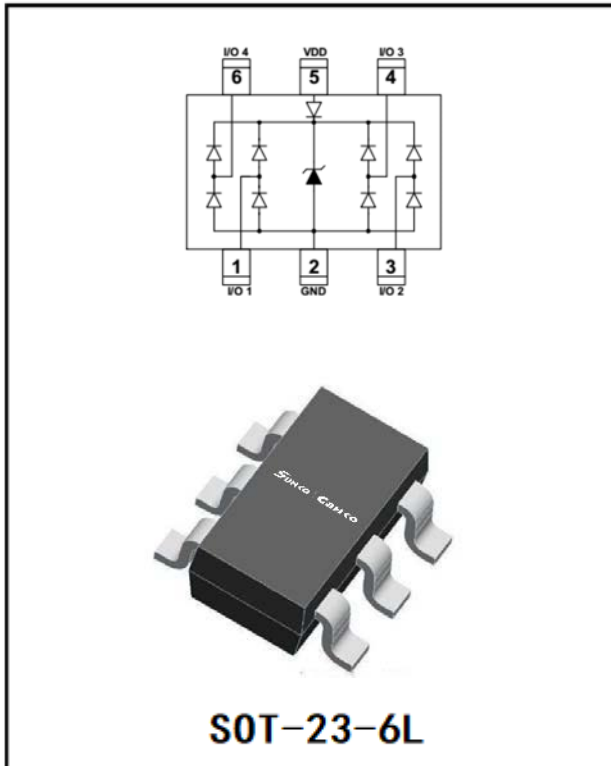


4-Line, Uni-directional, low Capacitance Transient Voltage Suppressors



Features

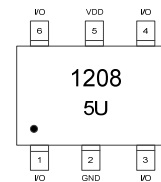
- Stand-off voltage: 5V Max
- Transient protection for each line according to
IEC61000-4-2(ESD): $\pm 30\text{kV}$ (contact)
IEC61000-4-4(EFT): 40A(5/50ns)
IEC61000-4-5(surge): 6A(8/20 μs)
- Ultra-low capacitance: $C_J = 1.2\text{pF}$ typ
- Low leakage current
- Low clamping voltage
- Compliant

Applications

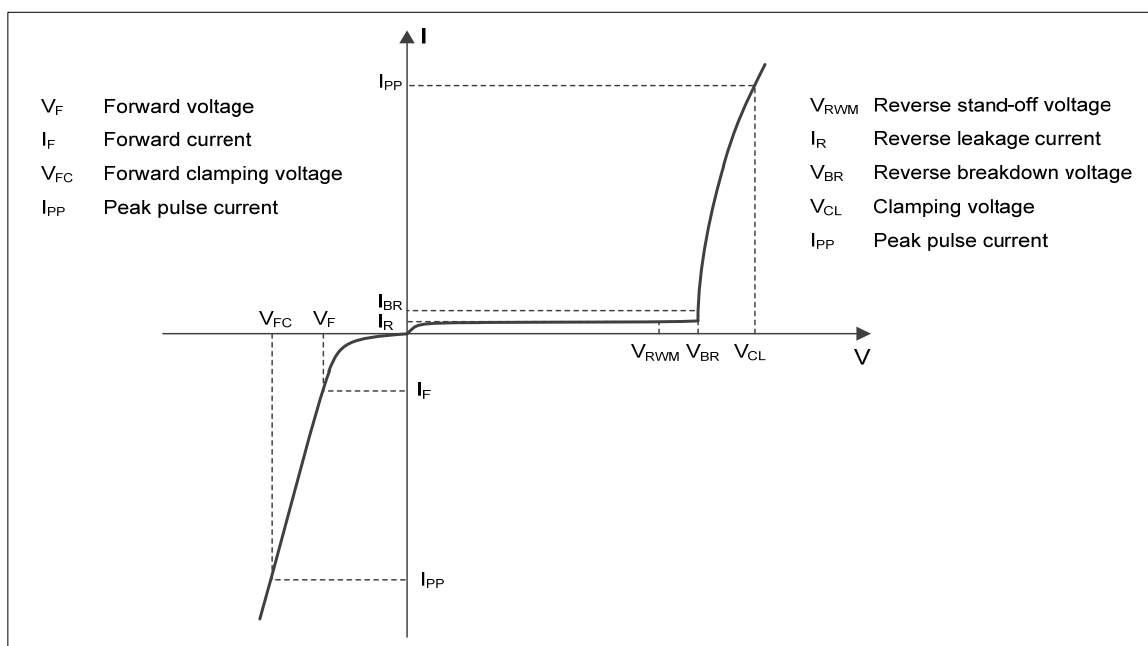
- USB 2.0
- Video Graphics Cards
- DVI
- IEEE 1394
- Monitors and Flat Panel Displays
- 10/100 Ethernet
- Notebooks

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 ($t_p = 8/20\mu s$)	P_{pk}	72	W
Peak pulse current ($t_p = 8/20\mu s$)	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 (Ta=25°C 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	$I_{PP} = 1A, t_p = 8/20\mu s$		6.6	8
		V	$I_{PP} = 6A, t_p = 8/20\mu s$		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	$I_{PP} = 1A, t_p = 8/20\mu s$		6.4	7.0
		V	$I_{PP} = 3.5A, t_p = 8/20\mu s$		9.5	11

Notes:

- (1). TLP parameter: $Z_0 = 50\Omega$, $t_p = 100ns$, $t_r = 2ns$, 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)

PREFERRED P/N	UNIT WEIGHT(mg)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
ESDSL0504S2A	Approximate 15.85	3000	30000	120000	Tape & reel

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

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

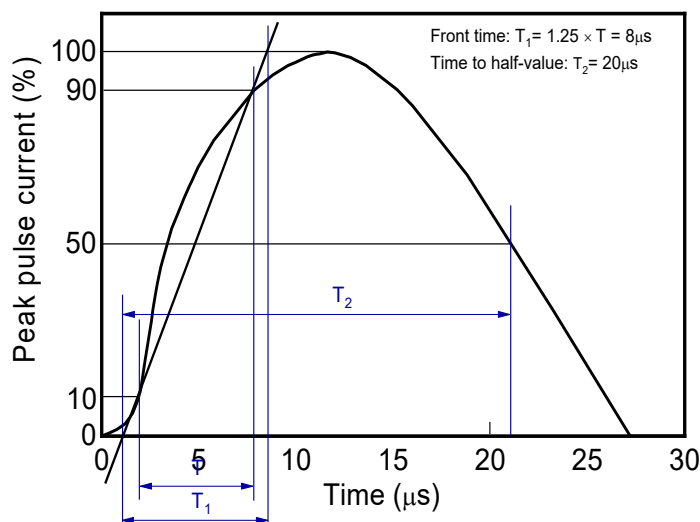


Fig.2 Contact discharge current waveform per IEC61000-4-2

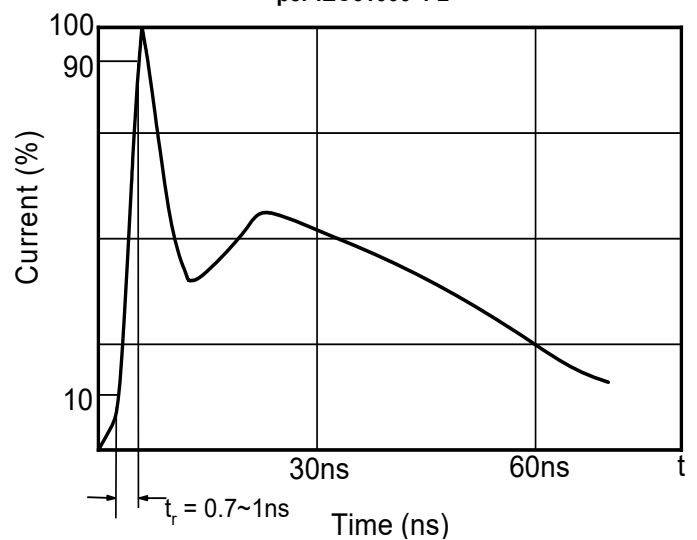


Fig.3 Clamping voltage vs. Peak pulse current

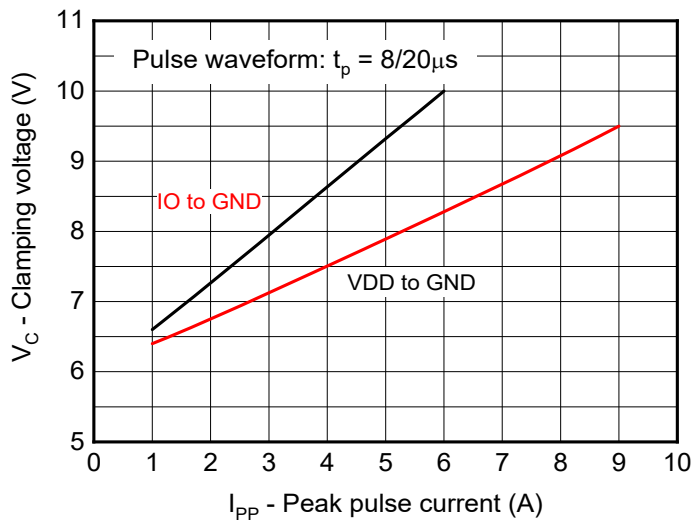


Fig.4 Capacitance vs. Reverse voltage

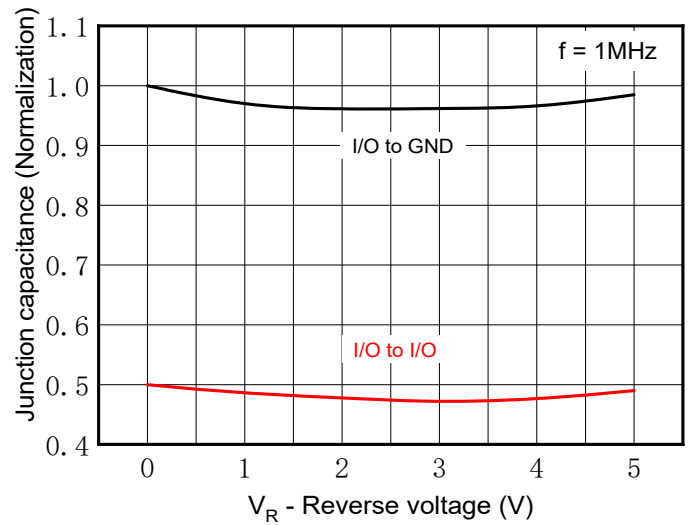


Fig.5 Non-repetitive peak pulse power vs. Pulse time

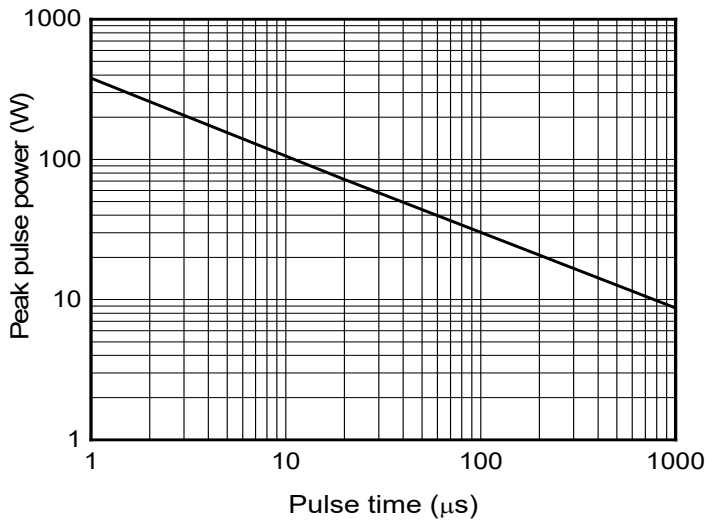


Fig.6 Power derating vs. Ambient temperature

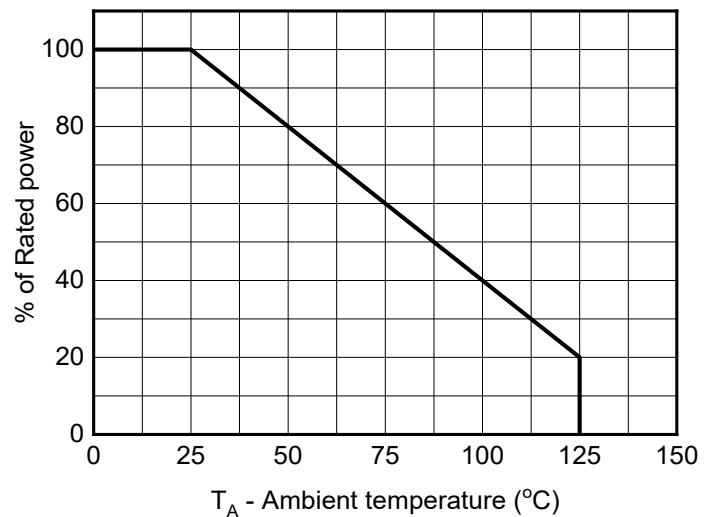


Fig.7 ESD clamping - I/O to GND
(+8kV contact discharge per IEC61000-4-2)

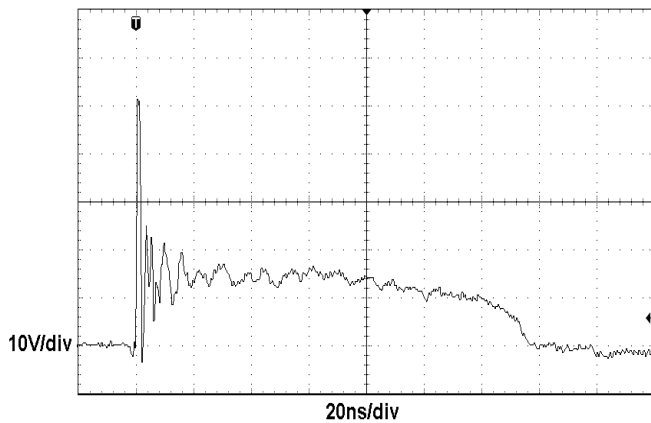


Fig.8 ESD clamping - I/O to GND
(-8kV contact discharge per IEC61000-4-2)

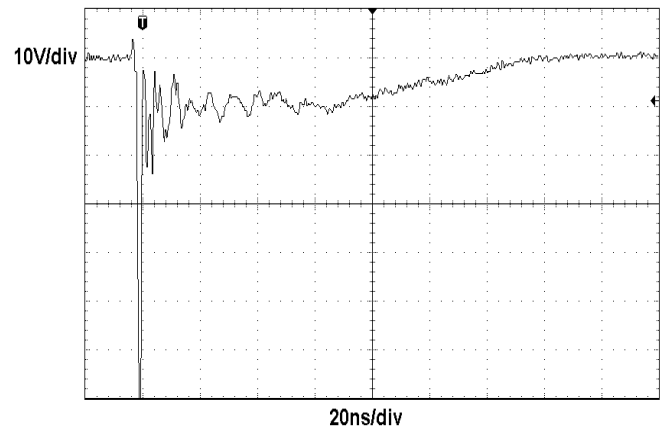


Fig.9 ESD clamping - VDD to GND
(+8kV contact discharge per IEC61000-4-2)

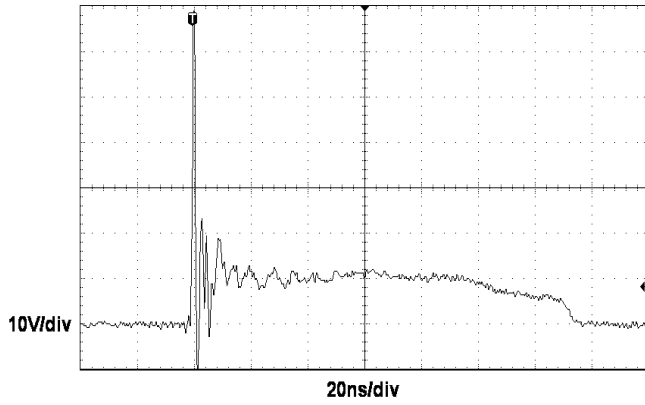


Fig.10 ESD clamping - VDD to GND
(-8kV contact discharge per IEC61000-4-2)

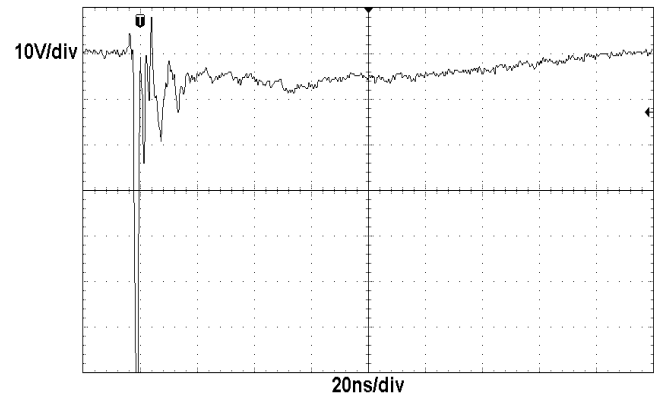


Fig.11 TLP Measurement -I/O to GND

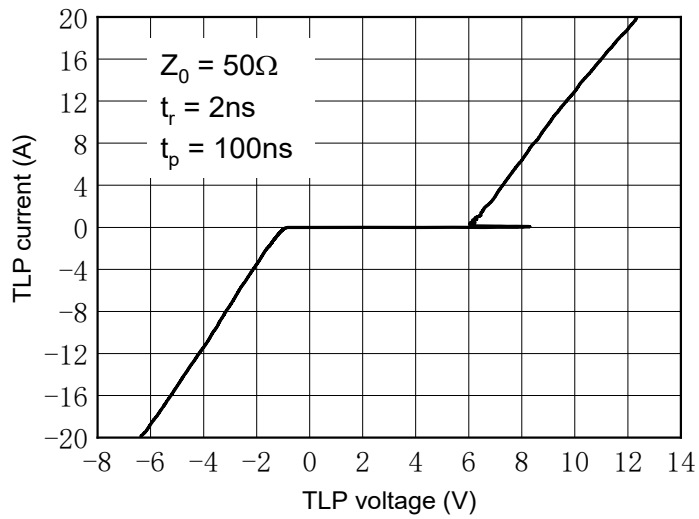
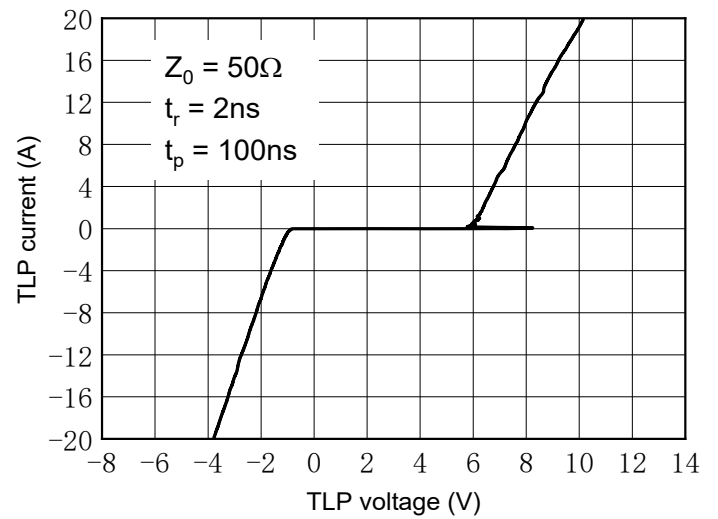
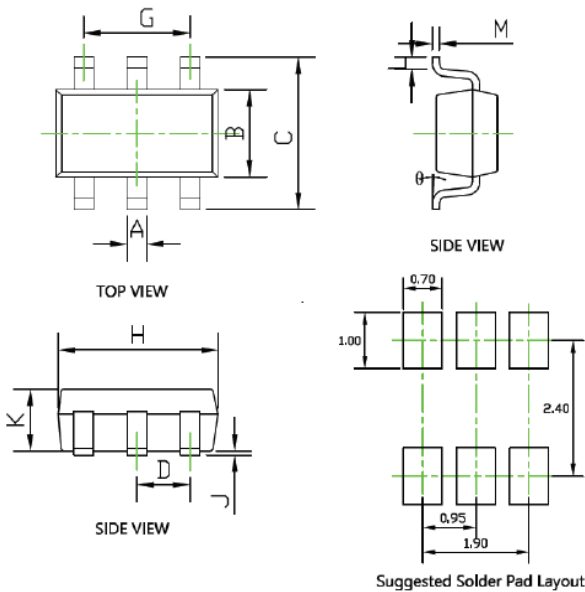


Fig.12 TLP Measurement -VDD to GND



■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.

SYMBOL	DIMENSIONS			
	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°

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