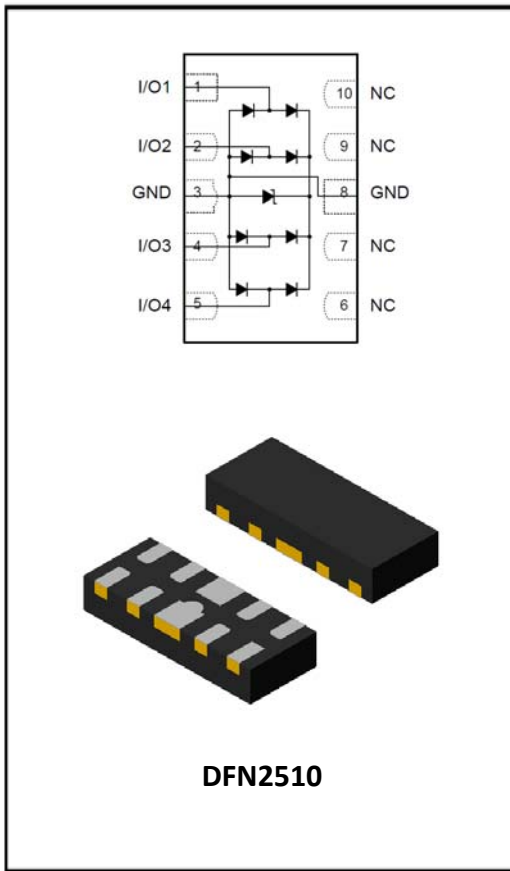


4-Line, Uni-directional, Ultra-low Capacitance, Transient Voltage Suppressor



Features

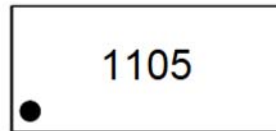
- Operating voltage: 5V
- Transient protection for each line according to IEC61000-4-2(ESD): $\pm 20\text{kV}$ (contact)
IEC61000-4-5(surge): 4.5A (8/20 μs)
- Ultra low capacitance: $C_j=0.45\text{pF}$ typ
- Ultra low leakage
- Low clamping voltage
- Up to 4 lines protects
- RoHS Compliant

Applications

- USB 2.0/3.0
- HDMI 1.3, HDMI 1.4 and HDMI 2.0
- SATA and eSATA interface
- DVI
- IEEE 1394
- Portable Electronics and Notebooks
- Ethernet port: 10/100/1000 Mbs/s
- Desktop and Notebooks PCS

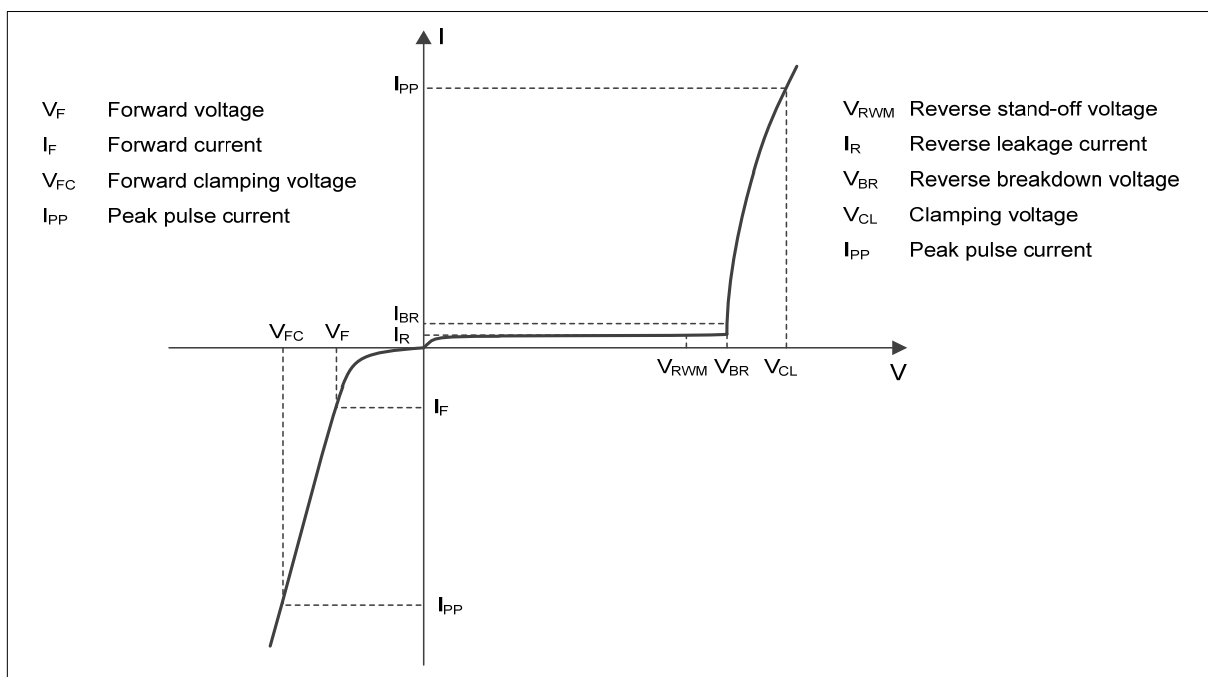
Mechanical Data

- Package: DFN2510-10 (2.5 \times 1.0 \times 0.5mm)
- Terminals: Tin plated leads, solderabl per J-STD-002 and JESD22-B102
- Marking Information: See Below



1105 = Device Marking Code
Dot denotes Pin1

■Definitions of electrical characteristics





ESDSL0504P5A

■Maximum Ratings

PARAMETER	SYMBOL	LIMITS	UNIT
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	54	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{pp}	4.5	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 20	KV
ESD according to IEC61000-4-2 contact discharge		± 20	
Junction temperature	T_J	125	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

■Electrical Characteristics ($T_a=25^{\circ}C$ Unless otherwise specified)

PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse maximum working voltage	V_{RWM}	V	Any I/O pin to ground			5.0
Reverse leakage current	I_R	nA	$V_{RWM} = 5.0V$, any I/O pin to ground			100
Reverse breakdown voltage	$V_{(BR)}$	V	$I_T = 1mA$, any I/O pin to ground	7.0		9.0
Forward Voltage	V_F	V	$I_F = 10mA$ ground to any I/O pin	0.6		1.2
Clamping voltage ¹⁾	V_{CL}	V	$I_{PP} = 16A$, $t_p = 100ns$ any I/O pin to ground		14	
Dynamic resistance ¹⁾	R_{DYN}	Ω			0.35	
Clamping voltage ²⁾	V_{CL}	V	$V_{ESD} = 8kV$ any I/O pin to ground		15	
Clamping voltage	V_{CL}	V	$I_{PP} = 1A$, $t_p = 8/20\mu s$		8	9.5
		V	$I_{PP} = 4.5A$, $t_p = 8/20\mu s$		10.5	12
Junction capacitance	CJ	pF	$V_R = 0V$, $f = 1MHz$ Any I/O pin to GND		0.45	0.6
			$V_R = 0V$, $f = 1MHz$ Between I/O pins		0.25	0.4

Notes:

- (1). TLP parameter: $Z_0 = 50\Omega$, $t_p = 100ns$, $t_r = 2ns$, averaging window from 60ns to 80ns. RDYN 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	PACKING CODE	UNIT WEIGHT(mg)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
ESDSL0504P5A	F1	Approximate 3.48	3000	30000	120000	7 reel



■ Characteristics (Typical)

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

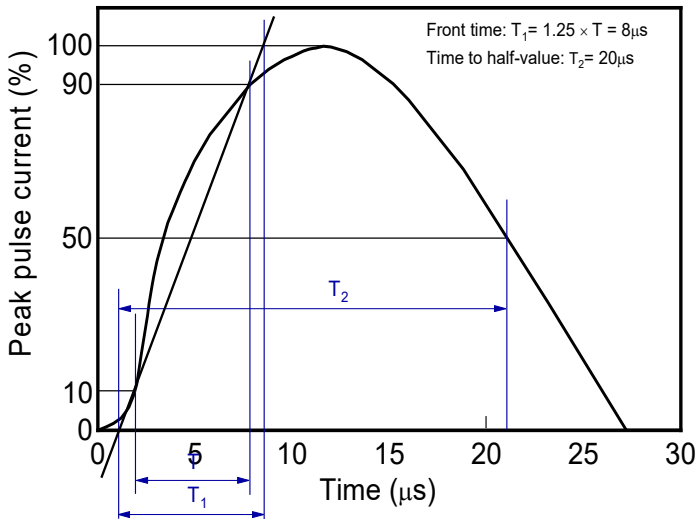


Fig.2 Contact discharge current waveform per IEC61000-4-2

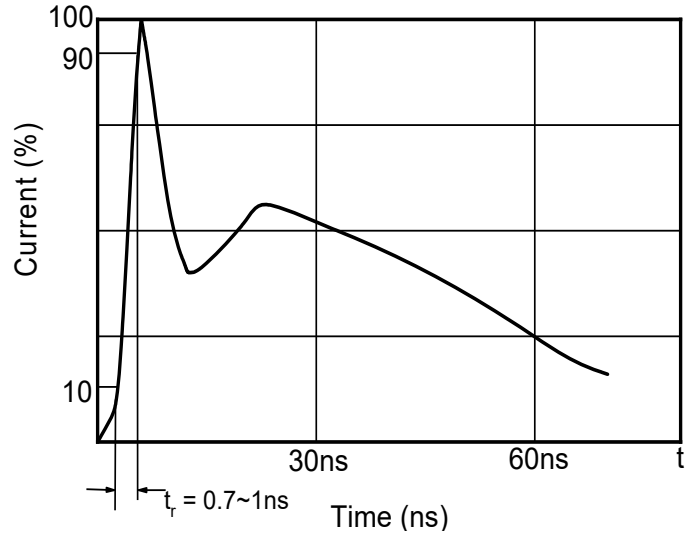


Fig.3 Clamping voltage vs. Peak pulse current

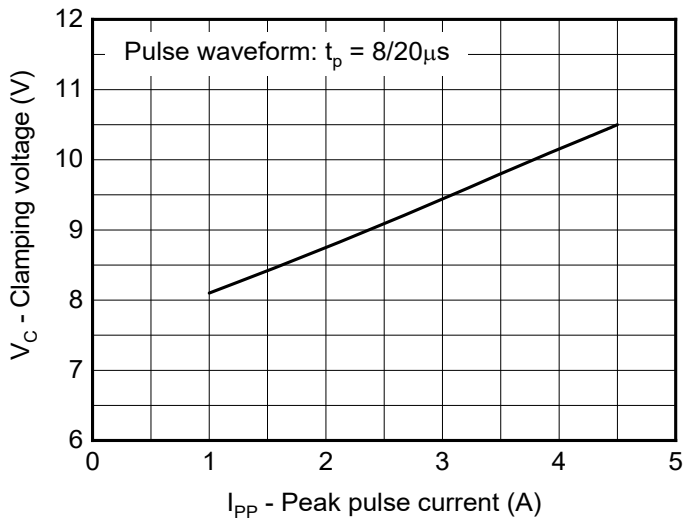


Fig.4 Capacitance vs. Reverse voltage

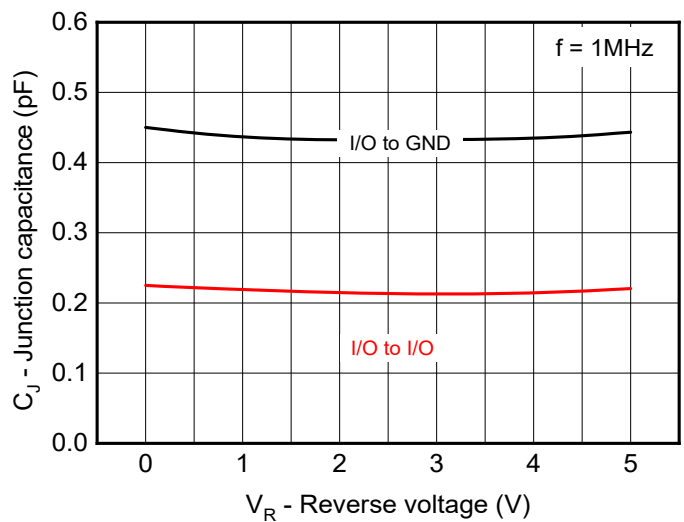


Fig.5 Non-repetitive peak pulse power vs. Pulse time

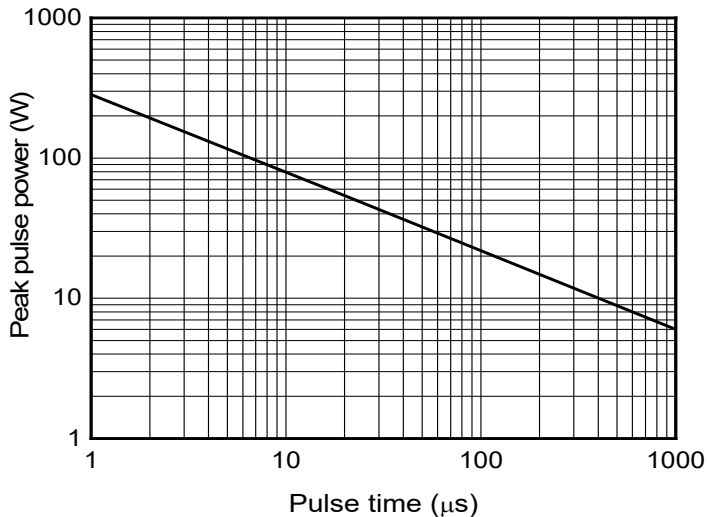
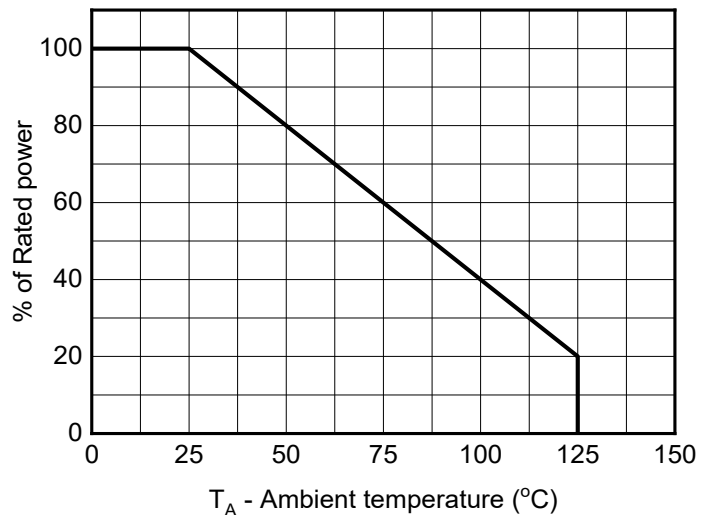


Fig.6 Power derating vs. Ambient temperature





ESDSL0504P5A

Fig.7 ESD clamping
(+8kV contact discharge per IEC61000-4-2)

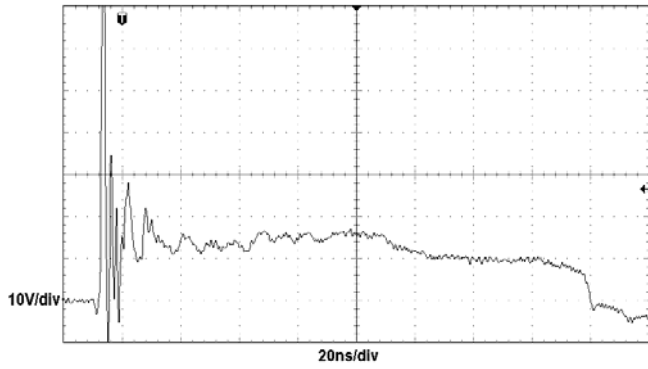


Fig.8 ESD clamping
(-8kV contact discharge per IEC61000-4-2)

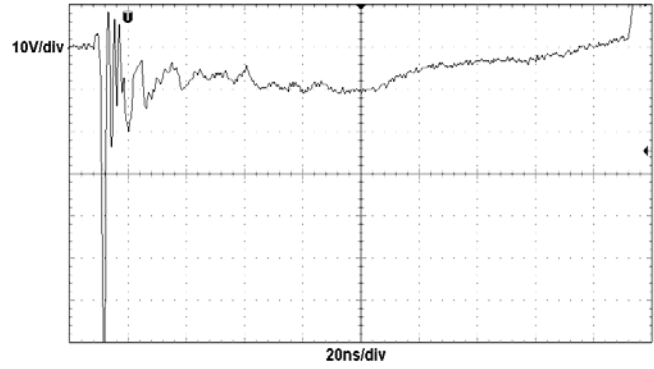
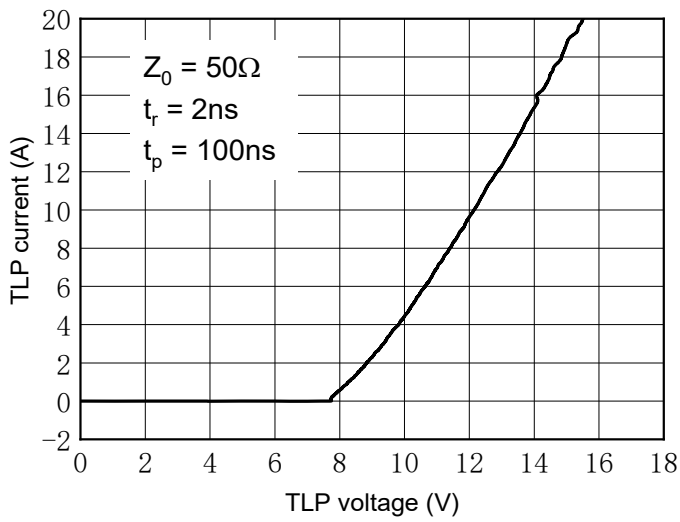


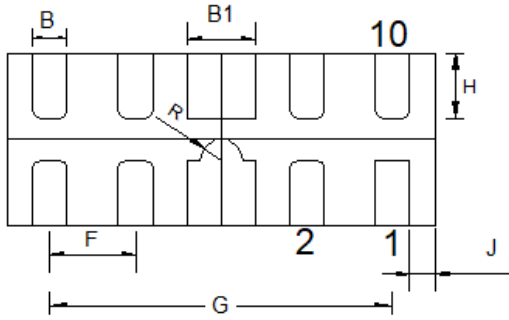
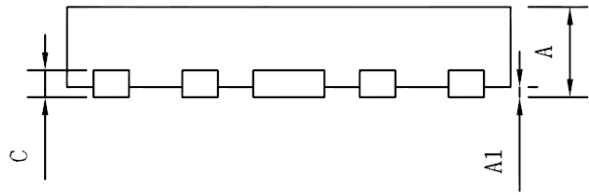
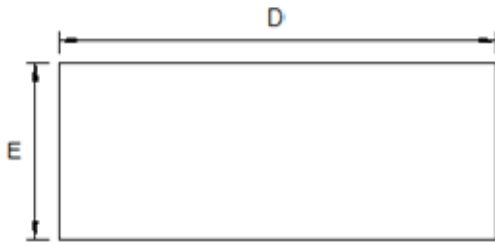
Fig.9 TLP Measurement





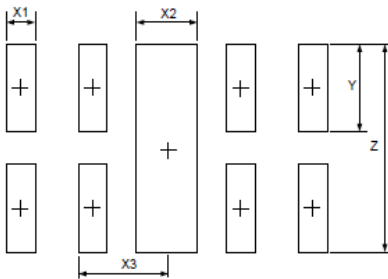
ESDSL0504P5A

■ Outline Dimensions



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.40	0.45	0.50
A1	--	0.02	0.05
B	0.15	0.20	0.25
B1	0.35	0.40	0.45
C	0.10	0.15	0.20
D	2.45	2.50	2.55
E	0.95	1.00	1.05
F	0.50 BSC		
G	2.00 BSC		
H	0.30	0.38	0.46
R	0.125 BSC		
J	0.10	0.15	0.20

■ Soldering Footprint



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X1	0.200	0.008
X2	0.400	0.016
X3	0.600	0.024
Y	0.600	0.024
Z	1.400	0.056

Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.



ESDSL0504P5A

Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com) , or consult your nearest Yangjie's sales office for further assistance.