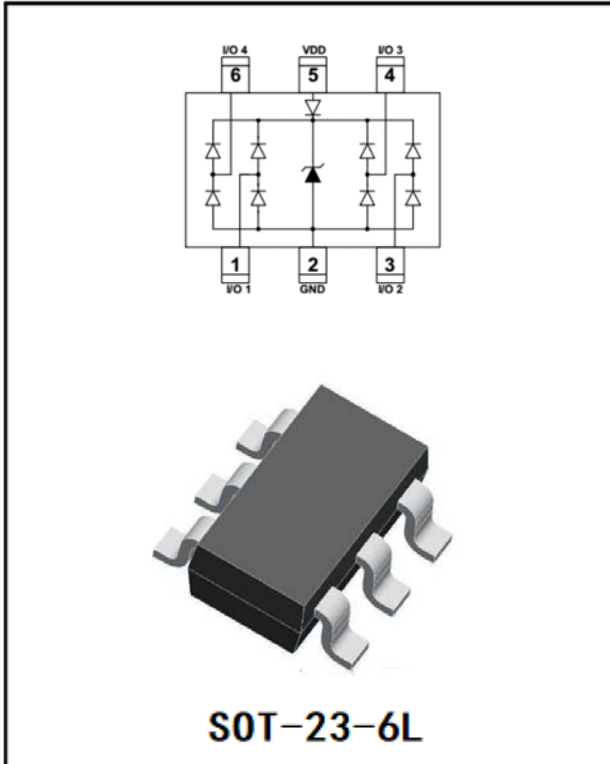


4-Line, Uni-directional, low Capacitance Transient Voltage Suppressors



Features

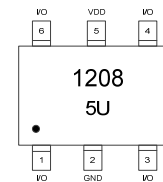
- Stand-off voltage: 5V Max
- Transient protection for each line according to
IEC61000-4-2(ESD): $\pm 30\text{kV}$ (contact)
IEC61000-4-4(EFT): 40A(5/50ns)
IEC61000-4-5(surge): 6A(8/20 μs)
- Ultra-low capacitance: $C_J = 1.2\text{pF}$ typ
- Low leakage current
- Low clamping voltage
- RoHS Compliant

Applications

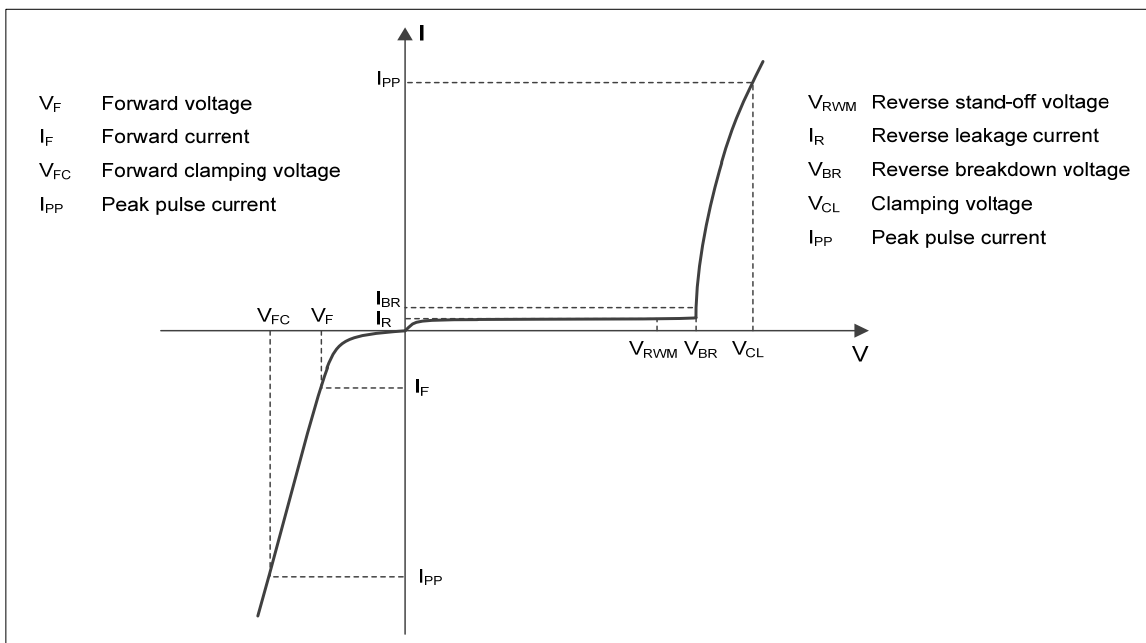
- USB 2.0
- Video Graphics Cards
- DVI
- IEEE 1394
- Monitors and Flat Panel Displays
- 10/100 Ethernet
- Notebooks

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





ESDSL0504S2A

■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



ESDSL0504S2A

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

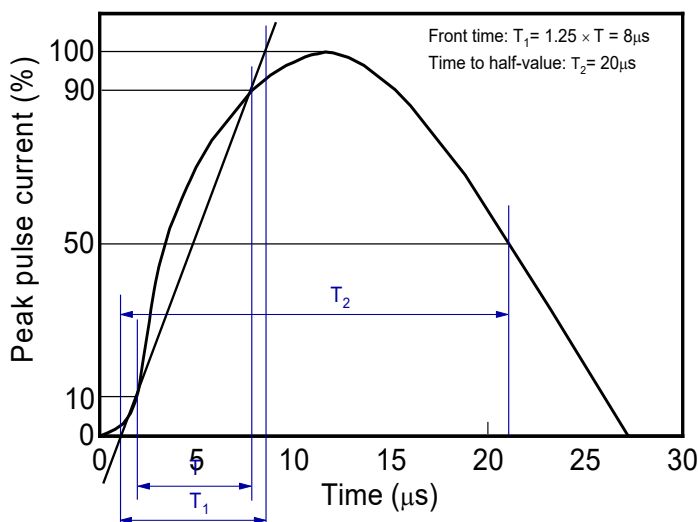
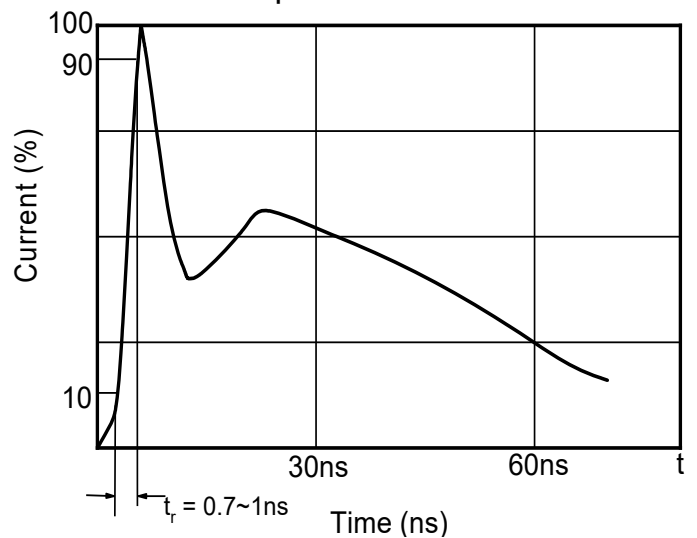


Fig.2 Contact discharge current waveform per IEC61000-4-2





ESDSL0504S2A

Fig.3 Clamping voltage vs. Peak pulse current

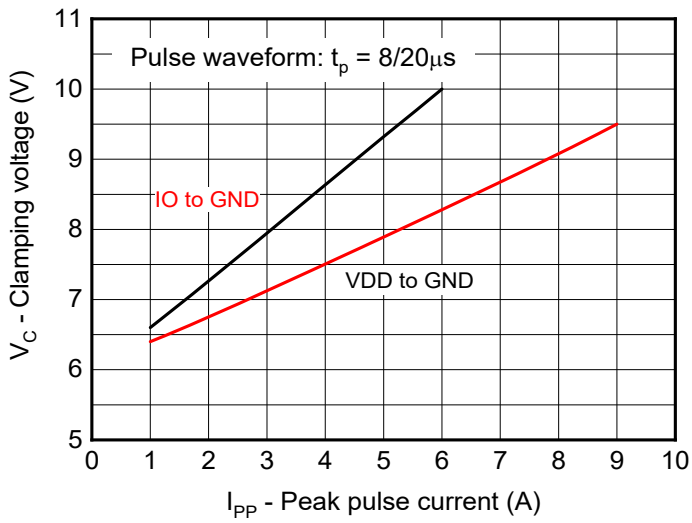


Fig.4 Capacitance vs. Reverse voltage

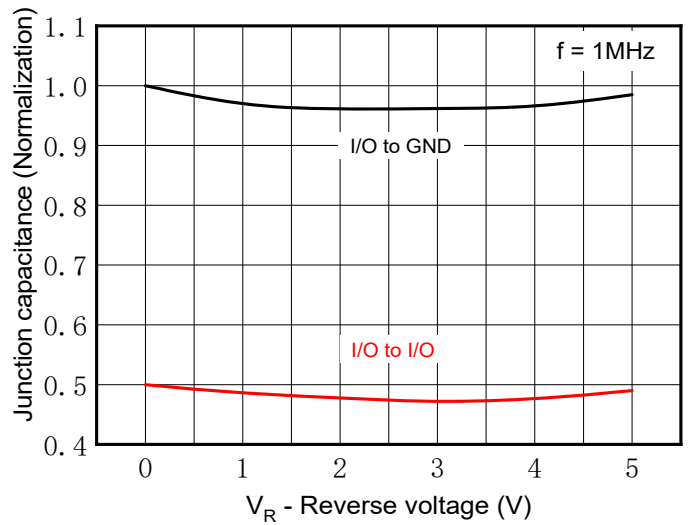


Fig.5 Non-repetitive peak pulse power vs. Pulse time

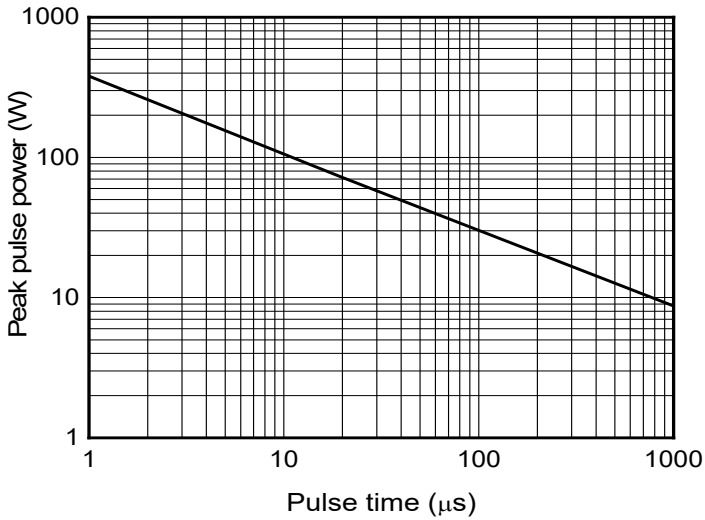


Fig.6 Power derating vs. Ambient temperature

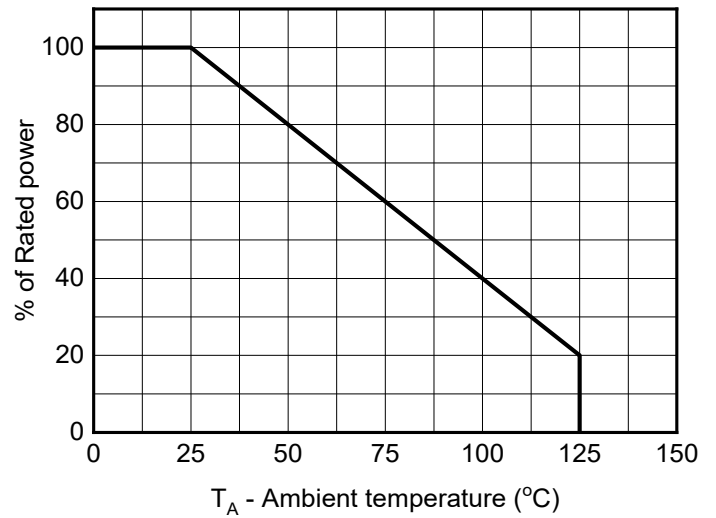


Fig.7 ESD clamping - I/O to GND (+8kV contact discharge per IEC61000-4-2)

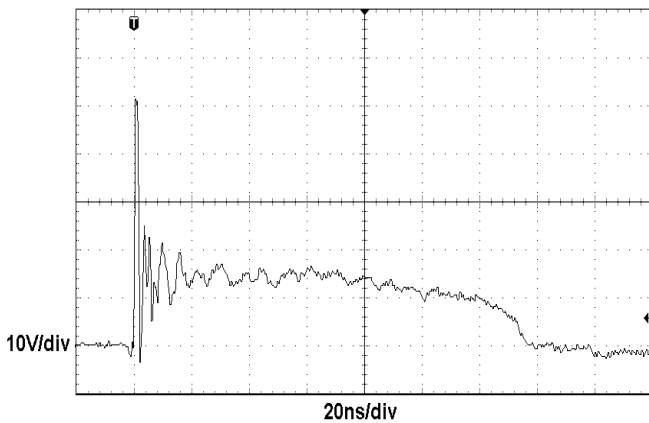
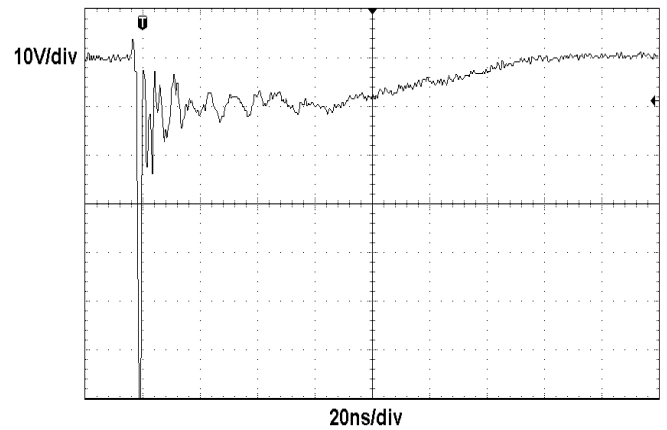


Fig.8 ESD clamping - I/O to GND (-8kV contact discharge per IEC61000-4-2)





ESDSL0504S2A

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

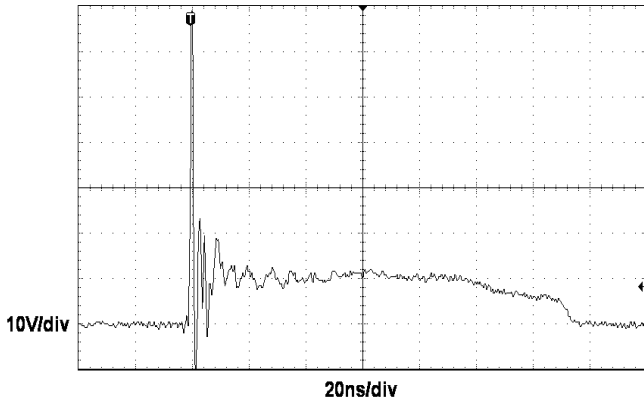


Fig.10 ESD clamping - VDD to GND
(-8kV contact discharge per IEC61000-4-2)

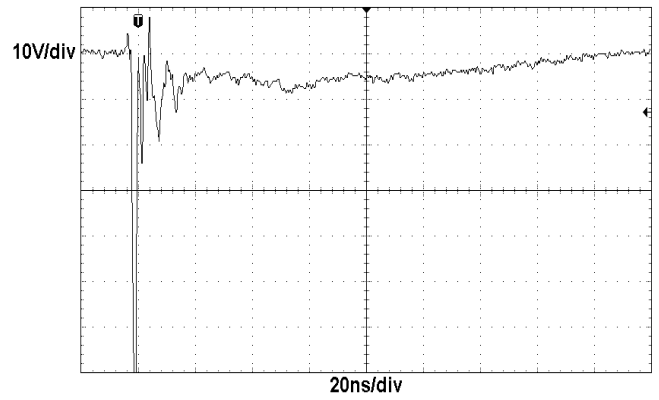


Fig.11 TLP Measurement -I/O to GND

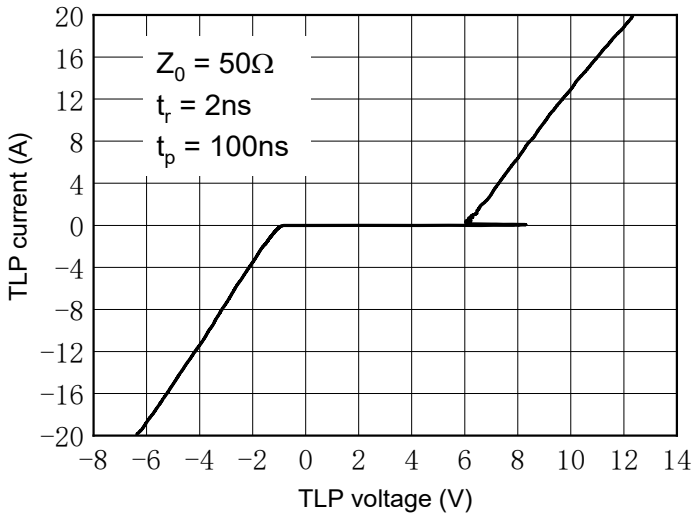
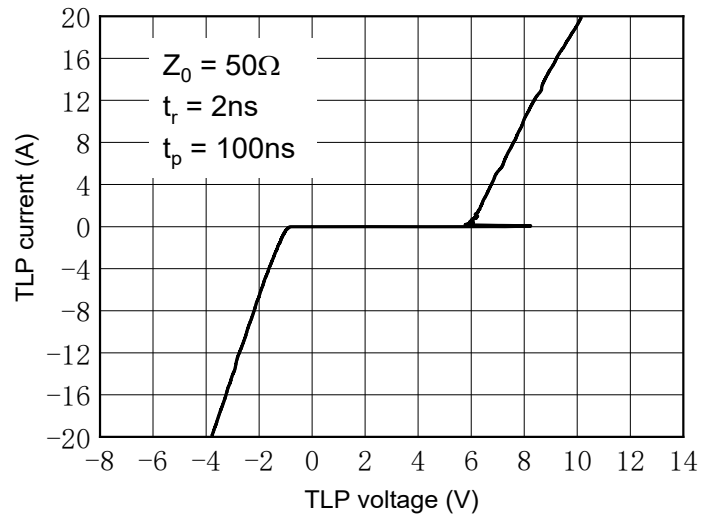


Fig.12 TLP Measurement -VDD to GND

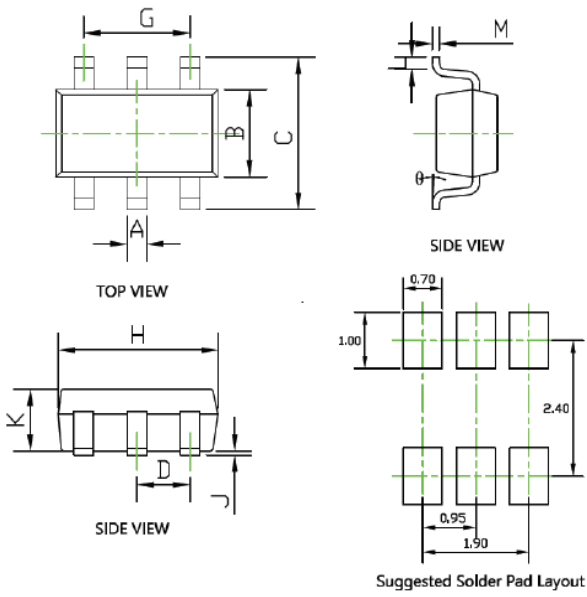




ESDSL0504S2A

■SOT-23 6L Package Outline Drawing

SOT-23-6L



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°

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



ESDSL0504S2A

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.