

設計驗證
工程課
2023.09.26
發行
鈺鐘科技開發股份有限公司

上海维安电子股份有限公司
Wayon Electronics Co.,Ltd.

客 户 物 料 承 认 书

SPECIFICATION FOR APPROVAL

客户 (Customer)	DIVA LABORATORIES, LTD.			
QISDA PN	TY.8CD10.005			
DIVA PN	3DTWS05001Y (D0162)			
维安型号 (Way-on P/N)	WS05-4R2PJ			
页码总数（pages）	共 7 页			
维安 (Way-on）	拟制 Draft	确认(技术部) Checked	确认（质量部） Checked	审核 Approved
	胡亚莉			
日期（Date)	2023.09.22	2023.09.22		2023.09.22
客户 (Customer)	客户确认 APPROVED FOR CUSTOMER			
	确认 Checked	审核 Approved		批准 authorized
		設計驗證 工程課 2023.09.26		
日期（Date)				

备注：各业务员和尊敬的客户，为了确保产品满足客户的需求，请将该承认书签回以备存档。如客户该产品已下订单视为默认承认已确认，并满足客户需求，特此说明。

Notes:Sales and respected customers, In order to ensure products meet customer's requirement, a signed APPROVAL SHEET shall be expected to be returned for records. Any parts that are ordered by the customer shall be taken as default of acknowledgement and confirmed to meet the customer's requirement.

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上海维安电子股份有限公司
Wayon Electronics Co.,Ltd.

更改记录表/ Change record

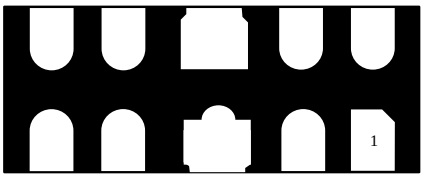
版次 NO.	制定或更改原因 Change reason	主要更改内容/页数 Change content	更改者 Change by	更改日期 Change date
Ver.A	新版制定		胡亚莉	2023.09.22

WS05-4R2PJ

Transient Voltage Suppressor

Features

- Solid-state silicon-avalanche technology
- Low operating and clamping voltage
- Up to four I/O Lines of Protection
- Ultra low capacitance: 0.3pF typical(I/O to GND)
- Low Leakage
- Low operating voltage:5V
- Flow-Through design



DFN2510-10L

IEC COMPATIBILITY (EN61000-4)

- **IEC 61000-4-2 (ESD) ±25kV (air), ±12kV (contact)**
- **IEC 61000-4-4 (EFT) 40A (5/50ns)**
- **IEC 61000-4-5 (Lightning) 3A (8/20μs)**

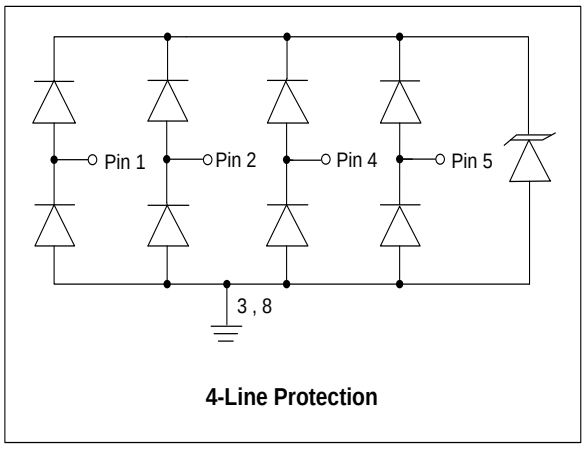
Mechanical Characteristics

- DFN2510-10L package
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant

Applications

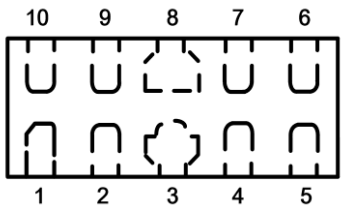
- USB3.0/USB3.1
- HDMI 2.0
- Digital Visual Interface(DVI)
- MDDI Ports
- DisplayPortTM Interface
- PCI Express
- eSATA Interfaces

Circuit Diagram



4-Line Protection

Schematic & PIN Configuration



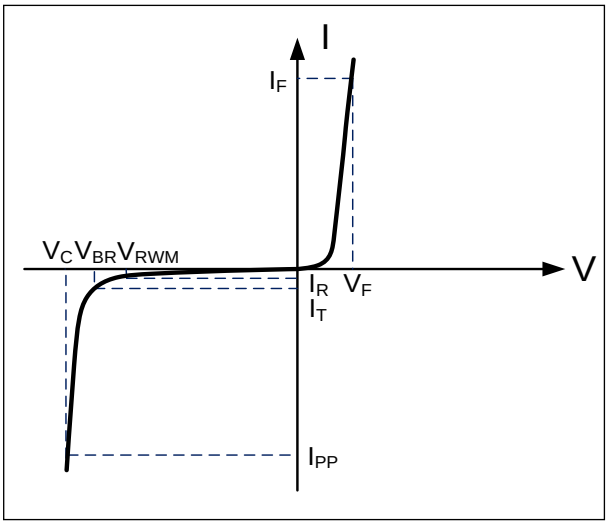
Pin	Identificaion
1,2,4,5	Input Lines
6,7,9,10	Output Lines (No Internal Connection)
3,8	Ground

Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (t_p =8/20μs)	P_{PP}	39	Watts
Peak Pulse Current (t_p =8/20μs)	I_{pp}	3	A
Operating Temperature	T_J	-55 to + 125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Parameters (T=25°C)

Symbol	Parameter
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Reverse Stand-Off Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F



Electrical Characteristics

WS05-4R2PJ						
Parameter	**Symbol**	**Conditions**	**Minimum**	**Typical**	**Maximum**	**Units**
Reverse Stand-Off Voltage	V_{RWM}	Any I/O pin to ground			5.0	V
Reverse Breakdown Voltage	V_{BR}	I_t = 1mA Any I/O pin to ground	6.0			V
Reverse Leakage Current	I_R	V_{RWM} = 5V, T=25°C Any I/O pin to ground			200	nA
Clamping Voltage	Vc	I_{pp}=3A, t_p=8/20μs Any I/O pin to ground		11.0	13.0	V
ESD Clamping Voltage[1]	V_C	IPP = 4A, tp = 0.2/100ns (TLP)		10.5		V
ESD Clamping Voltage[1]	V_C	IPP = 16A, tp = 0.2/100ns (TLP)		20.0		V
Dynamic Resistance[1,2]	R_{DYN}	TLP=0.2/100ns		0.75		Ω
Junction Capacitance	C_j	V_R =1.5V, f = 1MHz I/O pin to GND		0.35	0.45	pF
		V_R = 1.5V, f = 1MHz Between I/O pins，		0.15	0.20	pF

Notes：1、TLP Setting：t_p=100ns, t_r=0.2ns, I_{TLP} and V_{TLP} sample window:t_1=70ns to t_2=90ns.
2、Dynamic resistance calculated from I_{PP}=4A to I_{PP}=16A using “Best Fit”.

Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

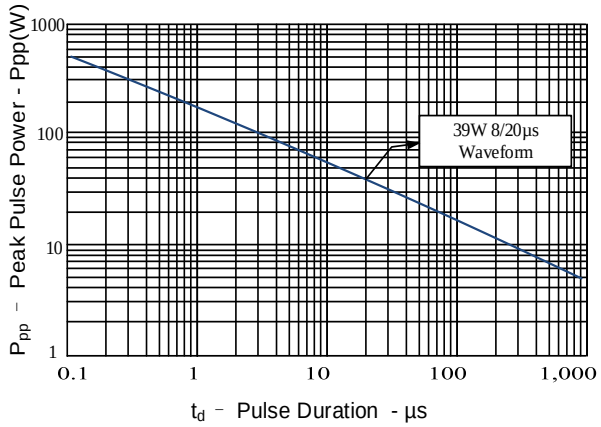


Figure 2: Power Derating Curve

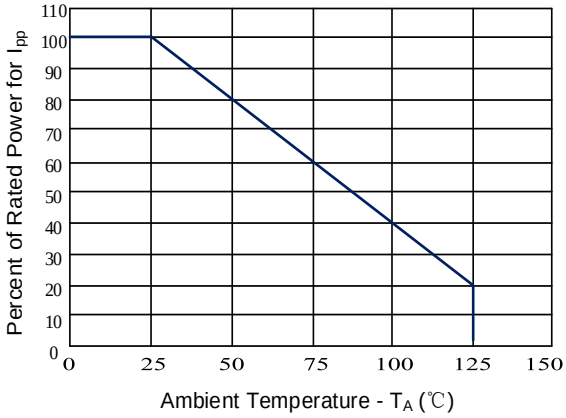


Figure 3: Clamping Voltage vs. Peak Pulse Current

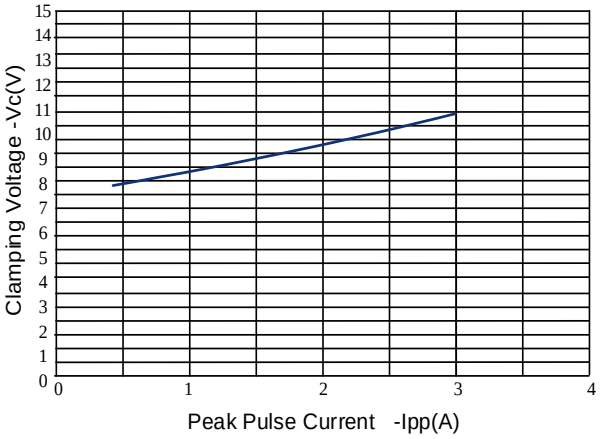


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

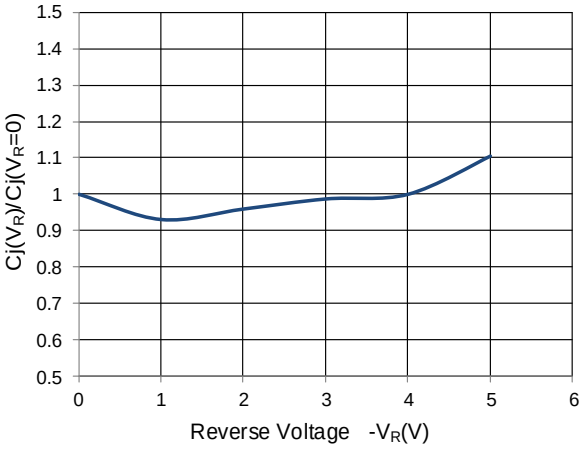


Figure 5: 8/20µs Pulse Waveform

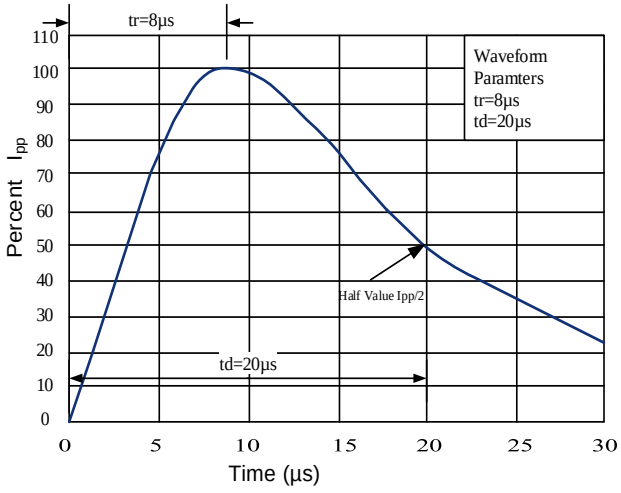
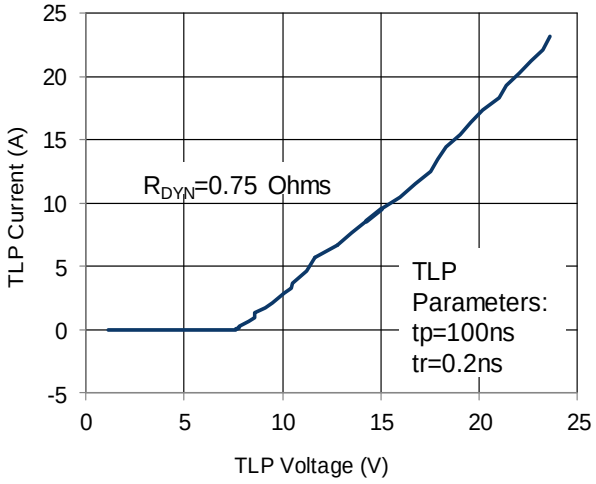
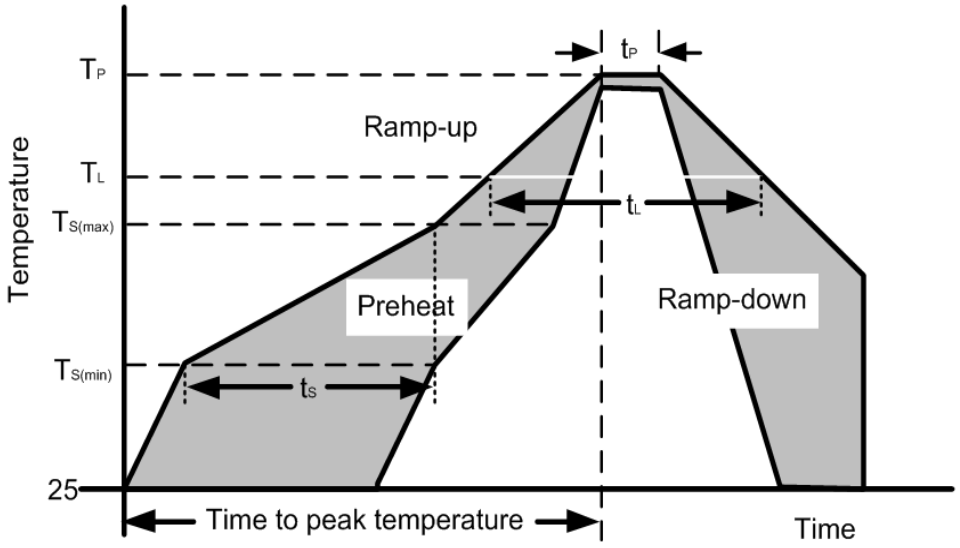


Figure 6: TLP I-V Curve

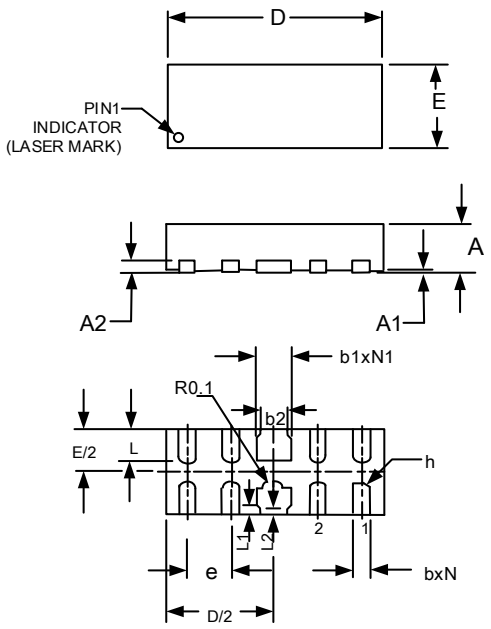


Soldering Parameters

Reflow Condition		Pb – Free assembly
Pre Heat	Temperature Min ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (ts)	60 – 190 secs
Average ramp up rate (Liquidus Temp) (T_L) to peak		5°C/second max
$T_{S(max)}$ to T_L——Ramp-up Rate		5°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260+0/-5 °C
Time within actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		280°C



Outline Drawing –DFN2510-10L

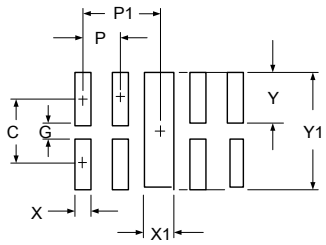




DFN2.5x1-10L

DIMENSIONS

DIM	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.018	0.020	0.022	0.45	0.50	0.55
A1	0.000	0.001	0.002	0.00	0.02	0.05
A2		0.006			0.15	
b	0.006	0.008	0.010	0.15	0.20	0.25
b1	0.014	0.016	0.018	0.35	0.40	0.45
b2	0.008	0.010	0.018	0.20	0.25	0.45
D	0.096	0.098	0.100	2.45	2.50	2.55
E	0.037	0.039	0.041	0.95	1.00	1.05
e		0.020 BSC			0.50 BSC	
L	0.014	0.016	0.018	0.35	0.40	0.45
L1	0.000	0.003	0.004	0.00	0.075	0.10
L2	0.000	0.002	0.003	0.00	0.05	0.08
h	0.000	0.005	0.006	0.00	0.12	0.15
N		8			8	
N1		2			2	



DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	0.034	0.875
G	0.008	0.20
P	0.020	0.50
P1	0.039	1.00
X	0.010	0.25
X1	0.018	0.45
Y	0.027	0.675
Y1	0.061	1.55

Notes:
Controlling Dimension: Millimeter.

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Marking Codes

Part Number	WS05-4R2PJ
Marking Code	5R2P

Package Information

Qty：3k/Reel

CONTACT INFORMATION

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Specifications are subject to change without notice.
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.
Users should verify actual device performance in their specific applications.