

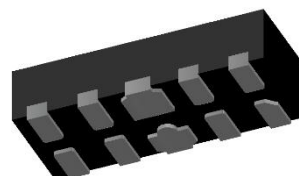
WHALD03G4U Series

Product Datasheet

ESD Protection Diodes Array

1.Description

The WHALD03G4U is a low capacitance TVS (Transient Voltage Suppressor) array designed to protect high speed data interfaces. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD (Electrostatic Discharge).



2.Features

- IEC 61000-4-2 (ESD)
 - $\pm 12\text{kV}$ Contact Discharge
 - $\pm 15\text{kV}$ Air Discharge
- IEC 61000-4-5 (Lightning)
 - 5.0A (8/20us)
- IEC 61000-4-4 EFT Protection
 - 40A (5/50ns)
- Solid-state silicon avalanche technology
- Halogen free and RoHS compliant
- Protects two or four I/O lines
- Low clamping voltage
- Low capacitance
- Low leakage current

3.Mechanical Data

- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interface (DVI)
- USB 1.1/2.0/OTG
- IEEE 1394 Firewire Ports
- PCI Express
- Projection TV & Monitors
- Notebooks & Handhelds
- Set-top box
- Flat Panel Displays

4.Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
WHALD03G4U	DFN2510-10L	.3324P	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

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5.Pin Configuration and Functions

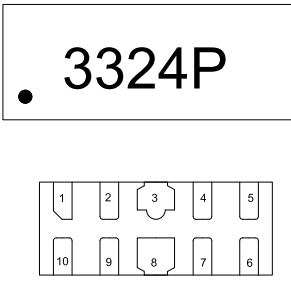
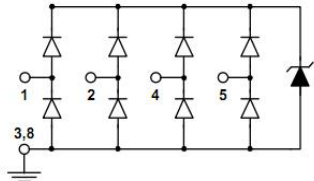
Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO		
2	IO	Connect to IO		
3	GND	Connect to GND		
4	IO	Connect to IO		
5	IO	Connect to IO		
6	NC	NO Connection		
7	NC	NO Connection		
8	GND	Connect to GND		
9	NC	NO Connection		
10	NC	NO Connection		

Table-2 Pin configuration

6. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)@25°C	P _{pk}	-	60	W
Peak pulse current (tp=8/20us)@25°C	I _{PP}		5.0	A
ESD (IEC61000-4-2 air discharge) @25°C	V _{ESD}	-	±15	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V _{ESD}	-	±12	kV
Junction temperature	T _J	-	125	°C
Operating temperature	T _{OP}	-40	125	°C
Storage temperature	T _{STG}	-55	150	°C
Lead temperature	T _L	-	260	°C

Table-3 Absolute Maximum rating

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7. Electrical Characteristics

At TA = 25°C unless otherwise noted

Parameters	Symbol	conditions	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				3.3	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1mA$	4.0			V
Reverse Leakage Current	I_R	$V_{RWM} = 3.3V$			1	uA
Clamping Voltage	V_{CL}	$I_{PP} = 1A; TP = 8/20us$		8.5		
Clamping Voltage	V_{CL}	$I_{PP} = 5A; TP = 8/20us$			12	V
Junction capacitance	C_J	I/O pins to ground; $V_R = 0V; f = 1MHz$		0.6		pF
		Between I/O pins; $V_R = 0V; f = 1MHz$		0.3		

Table-4 Electrical Characteristics

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8.Ratings and Characteristic Curves (TA =25℃ unless otherwise noted)

Figure 1. Pulse rating curve

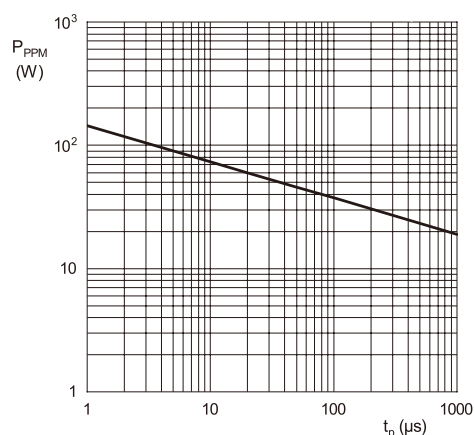


Figure 2 Peak pulse power derating curve

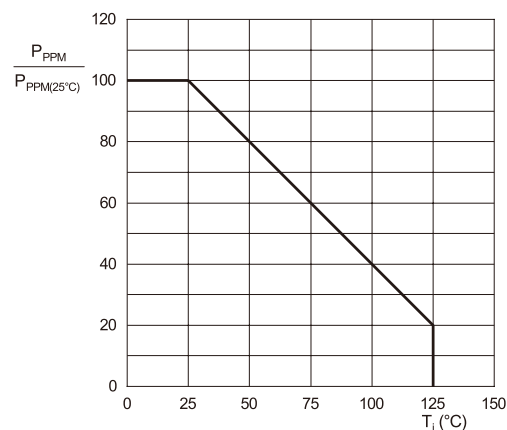


Figure 3 Pulse waveform

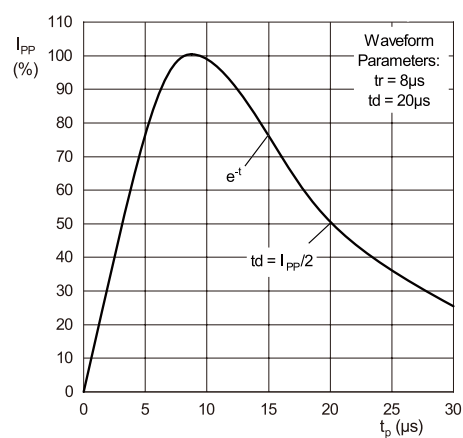
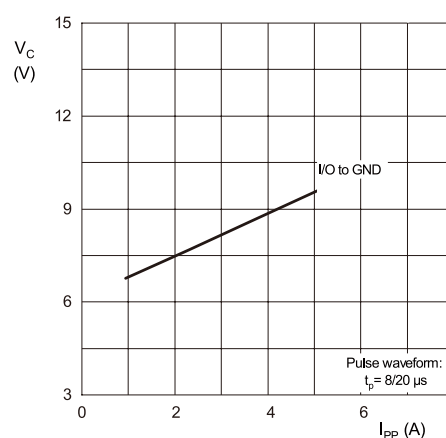


Figure 4 Clamping voltage vs Peak pulse current



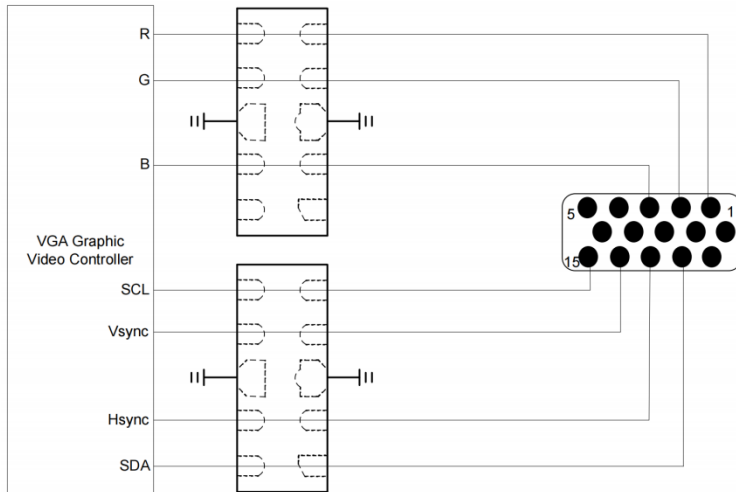
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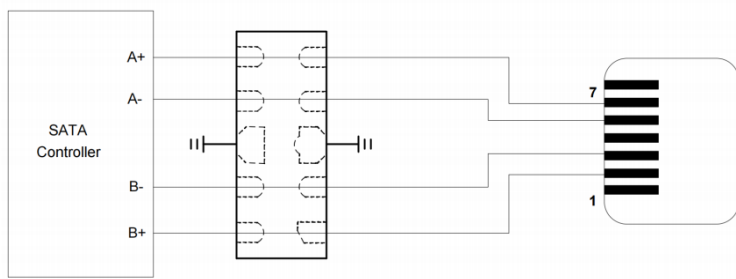
ESD Protection Diodes Array

9. Typical Application

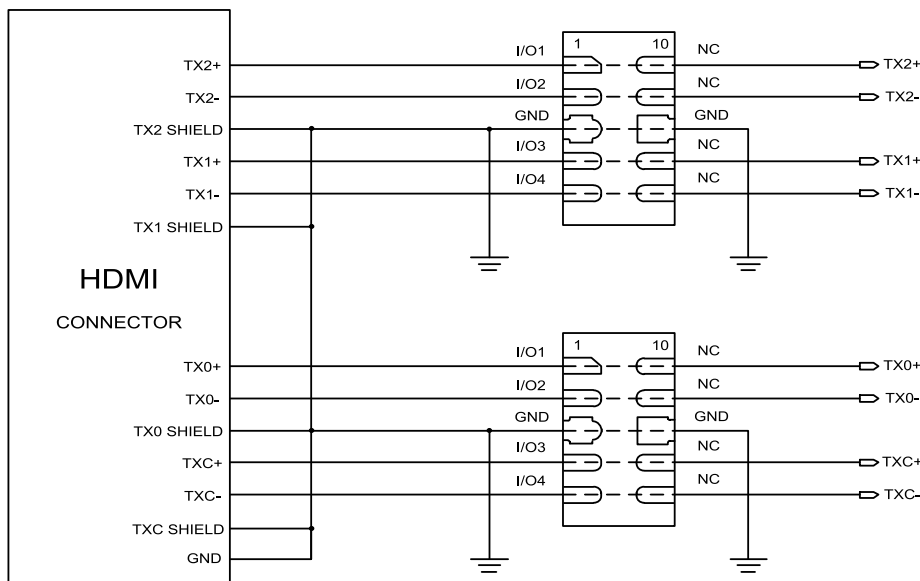
WHALD03G4U on VGA Port Application



WHALD03G4U on eSATA Port Application



WHALD03G4U on HDMI Interface Application

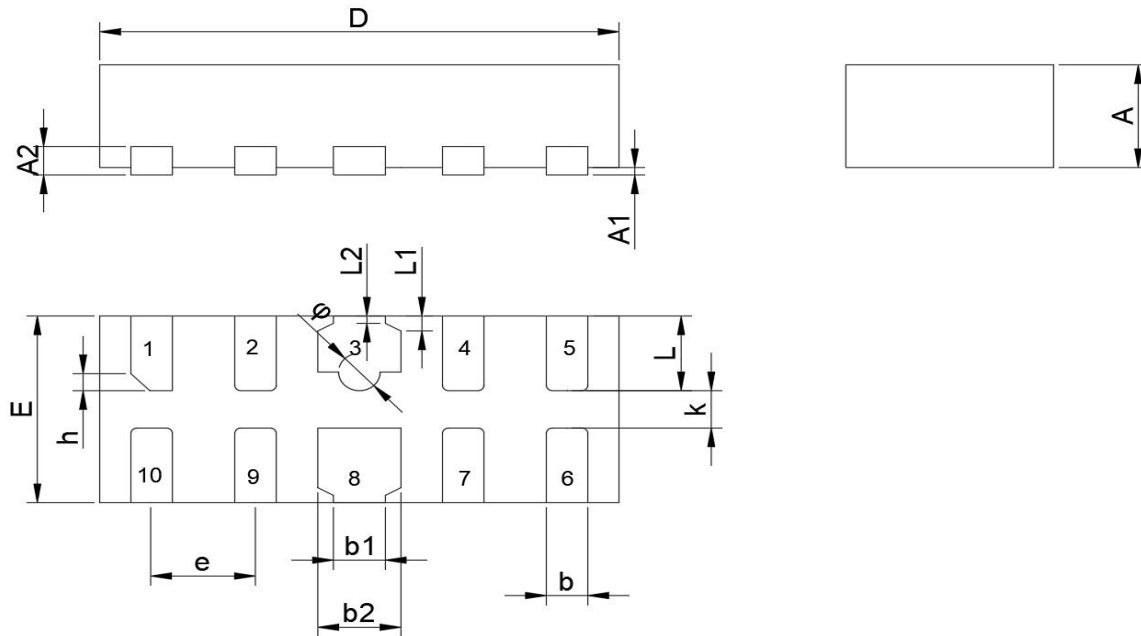


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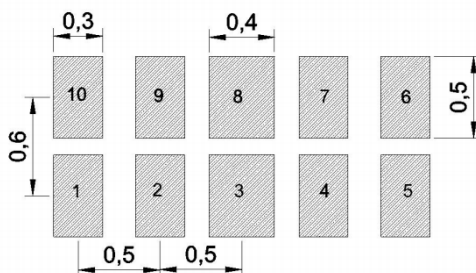
10.Dimension



Dimensions in Millimeter							
Symbol	Min.	Nom.	Max.	Symbol	Min.	Nom.	Max.
A	0.450	0.550	0.635	D	2.450	2.500	2.550
A1	0.00	/	0.05	E	0.950	1.00	1.050
A2	0.100	0.152	0.200	e	0.350	0.450	0.550
b	0.150	0.200	0.270	h	0.080	0.120	0.150
b1	0.200	0.250	0.300	k	0.150	0.200	0.250
b2	0.350	0.400	0.450	L	0.350	0.400	0.450
L1		0.075REF		L2		0.05REF	
φ	0.150	0.200	0.250				

Table-5 Product dimensions

11.Recommended Land Pattern



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only