

4-Line Ultra Low Capacitance TVS Diode Array

Features

- Ultra low capacitance : 0.3pF typical (I/O to I/O)
- Ultra low leakage : nA level
- Low operating voltage : 3.3V
- Low clamping voltage
- Up to 4 lines protects
- Leadless flow-through package
- Complies with following standards :
 - IEC 61000-4-2(ESD) immunity test
 - Air discharge : $\pm 25kV$,
 - Contact discharge : $\pm 20kV$
 - IEC 61000-4-5 (Lightning) 5A (8/20us)
- RoHS Compliant

Mechanical Data

- Package : DFN2510-10 (2.5 × 1.0 × 0.5mm)
- Case Material : "Green" Molding Compound.
- Lead Finish : Matte Tin
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity : Level 3 per J-STD-020
- Terminal Connections : See Diagram Below
- Marking Information : See Below

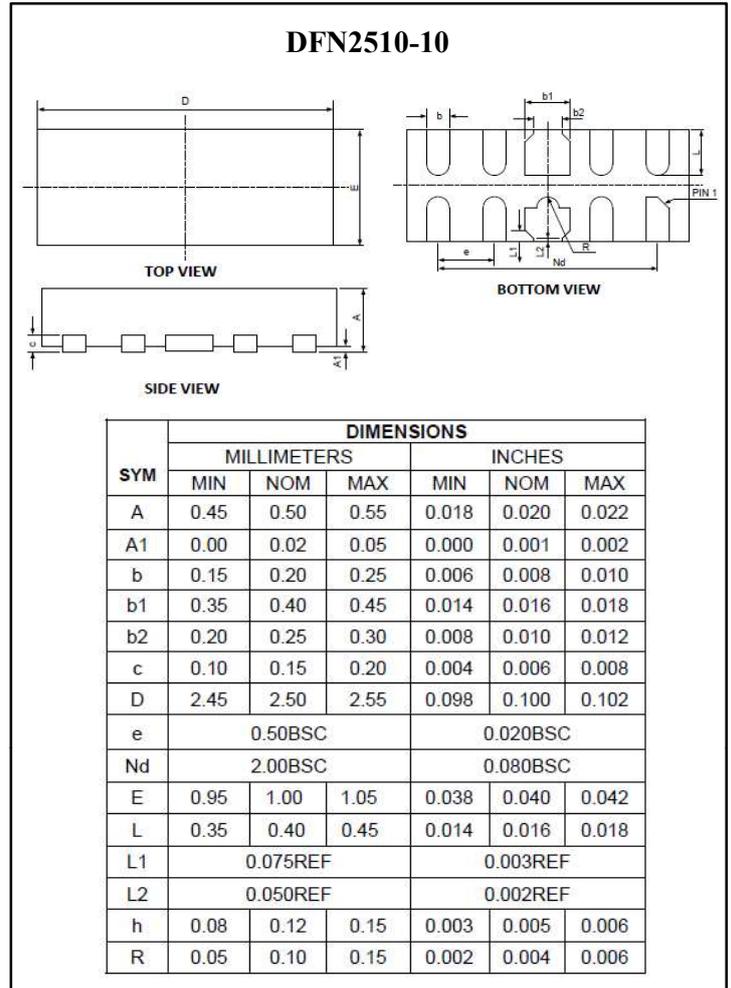
Applications

- HDMI 1.3 & 1.4, USB 2.0 & 3.0 and MDDI ports
- Monitors and flat panel displays
- Set-top box and Digital TV
- Digital Video Interface (DVI),
- Video graphics cards
- Notebook Computers
- PCI Express and Serial SATA Ports

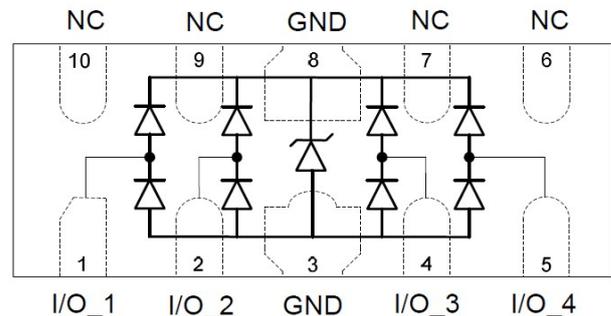
Marking Information



3324S = Device Marking Code
YYWW = Date Code
Dot denotes pin1



Circuit and Pin Configuration



Ordering Information

Part Number	Packaging	Reel Size
AR3304P5	3000/Tape & Reel	7 inch

Absolute Maximum Ratings (Ta= 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20us)	Ppk	80	W
Peak Pulse Current (8/20us)	Ipp	5	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V _{ESD}	±25 ±20	kV
Operating Junction Temperature Range	T _J	-55 to +125	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C

Electrical Characteristics (Ta= 25°C unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Working Voltage	V _{RWM}	-	-	3.3	V	Any I/O pin to ground
Breakdown Voltage (any I/O pin to ground)	V _{BR}	3.5	-	-	V	I _T = 1mA
Reverse Leakage Current (any I/O pin to ground)	I _R	-	0.01	0.5	uA	V _{RWM} = 3.3V
Clamping Voltage (any I/O pin to ground)	V _C	-	-	9	V	I _{pp} = 1A (8×20us pulse)
Clamping Voltage (any I/O pin to ground)	V _C	-	-	16	V	I _{pp} = 5A (8×20us pulse)
Junction Capacitance (between I/O pins)	C _J	-	0.3	0.4	pF	f = 1MHz, V _R = 0V
Junction Capacitance (any I/O pin to ground)	C _J	-	-	0.8	pF	f = 1MHz, V _R = 0V

Ratings and Characteristics Curves (Ta=25°C unless otherwise noted)

Fig.1 Power Derating Curve

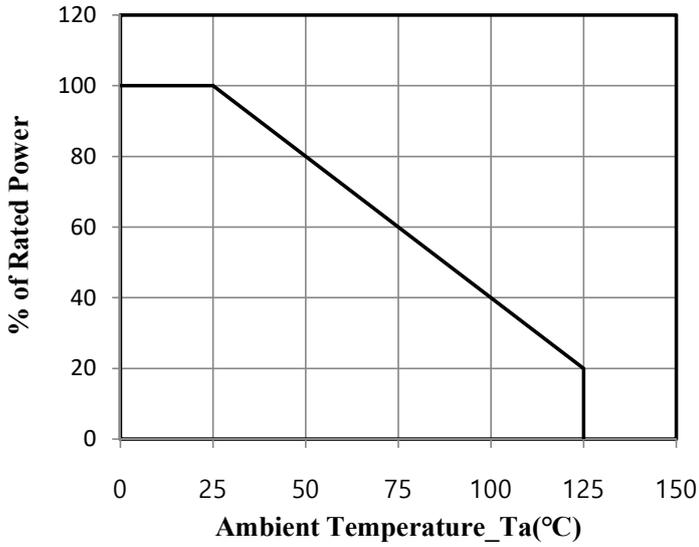


Fig.2 Peak Pulse Power vs. Pulse Time

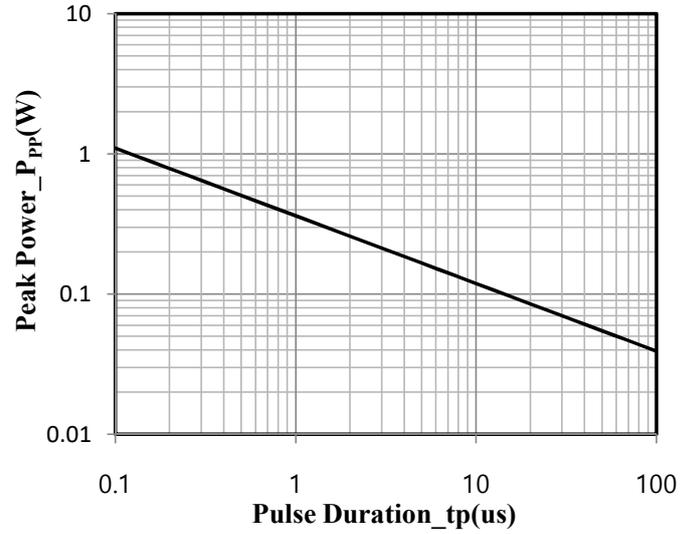


Fig.3 Clamping Voltage vs. Peak Pulse Current (tp=8/20us)

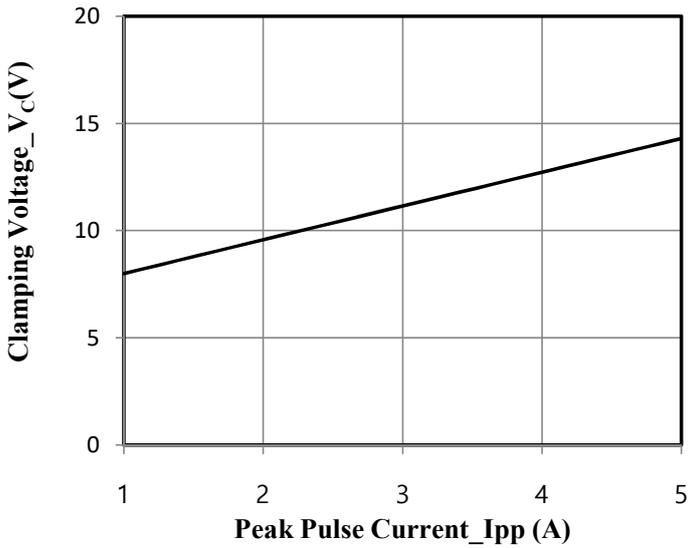


Fig.4 Junction Capacitance vs. Reverse Voltage

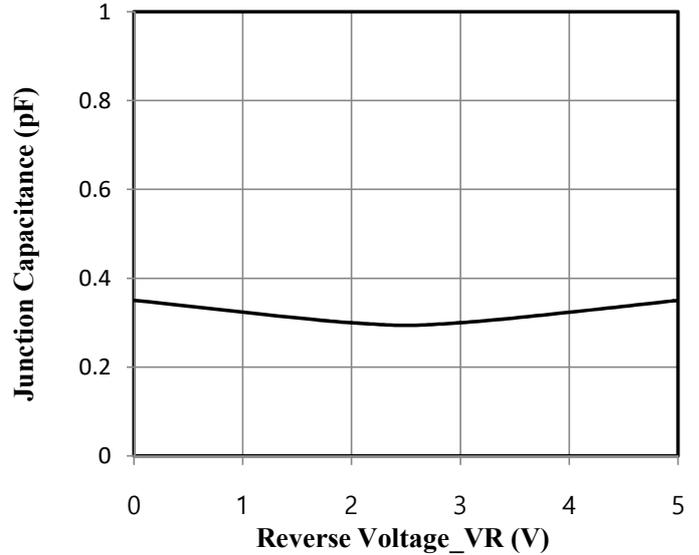
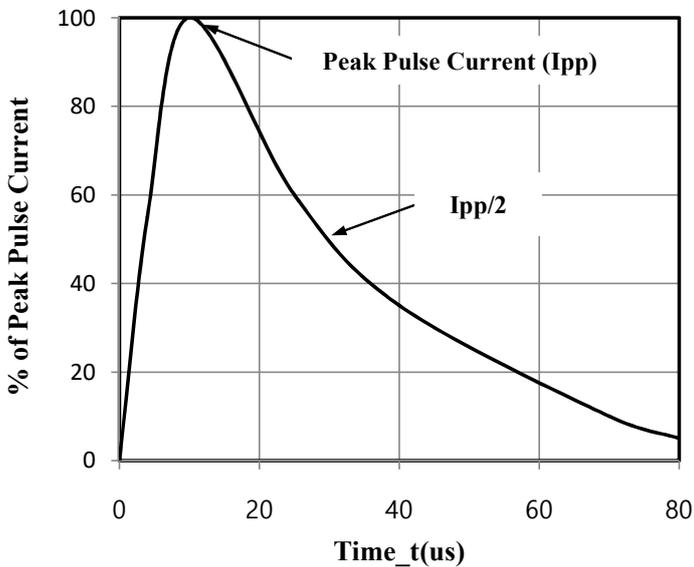
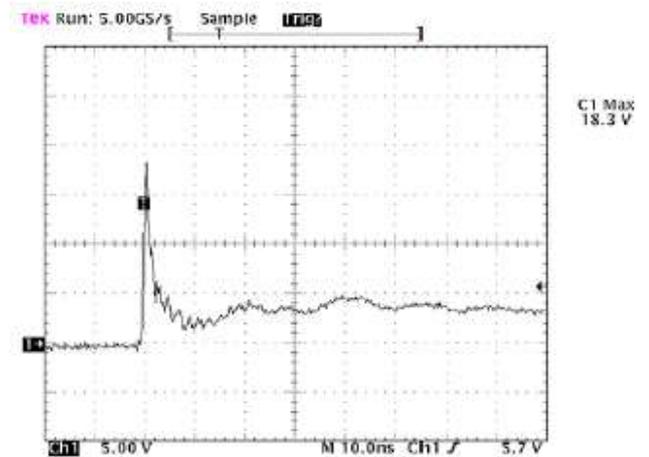


Fig.5 8 × 20us Pulse Waveform



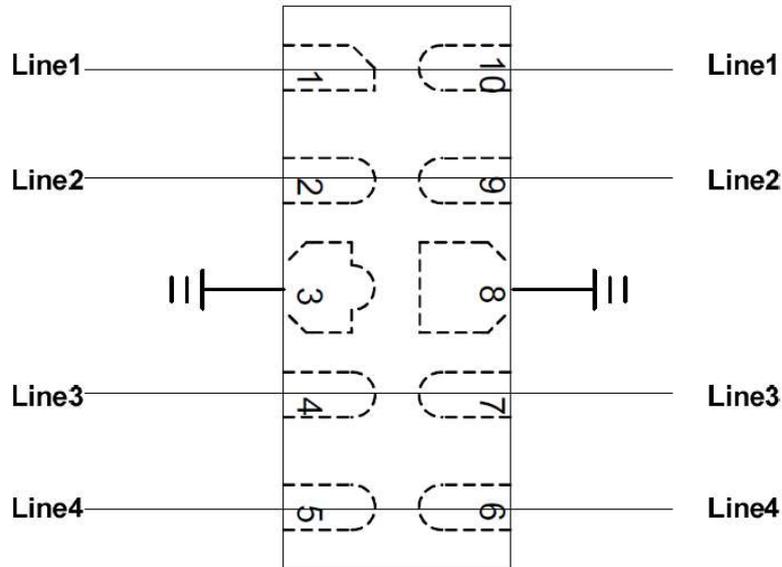
**Fig. 6 ESD Clamping Voltage
8kV Contact per IEC61000-4-2**



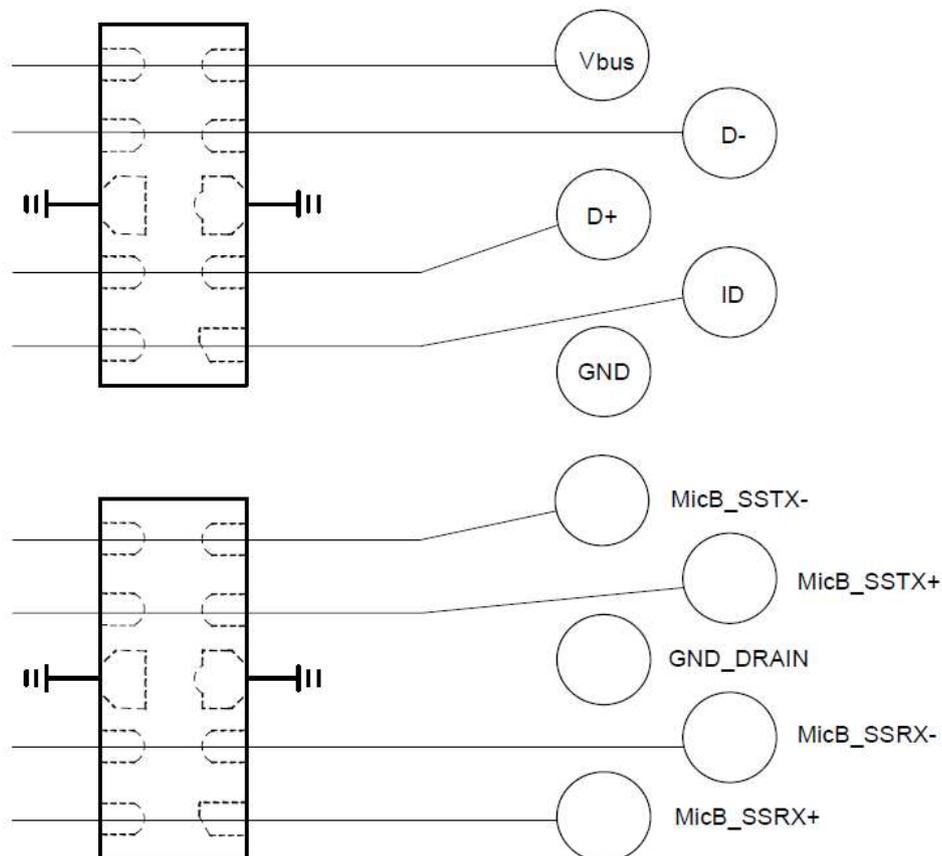
Note: Data is taken with a 10x attenuator

Typical Application

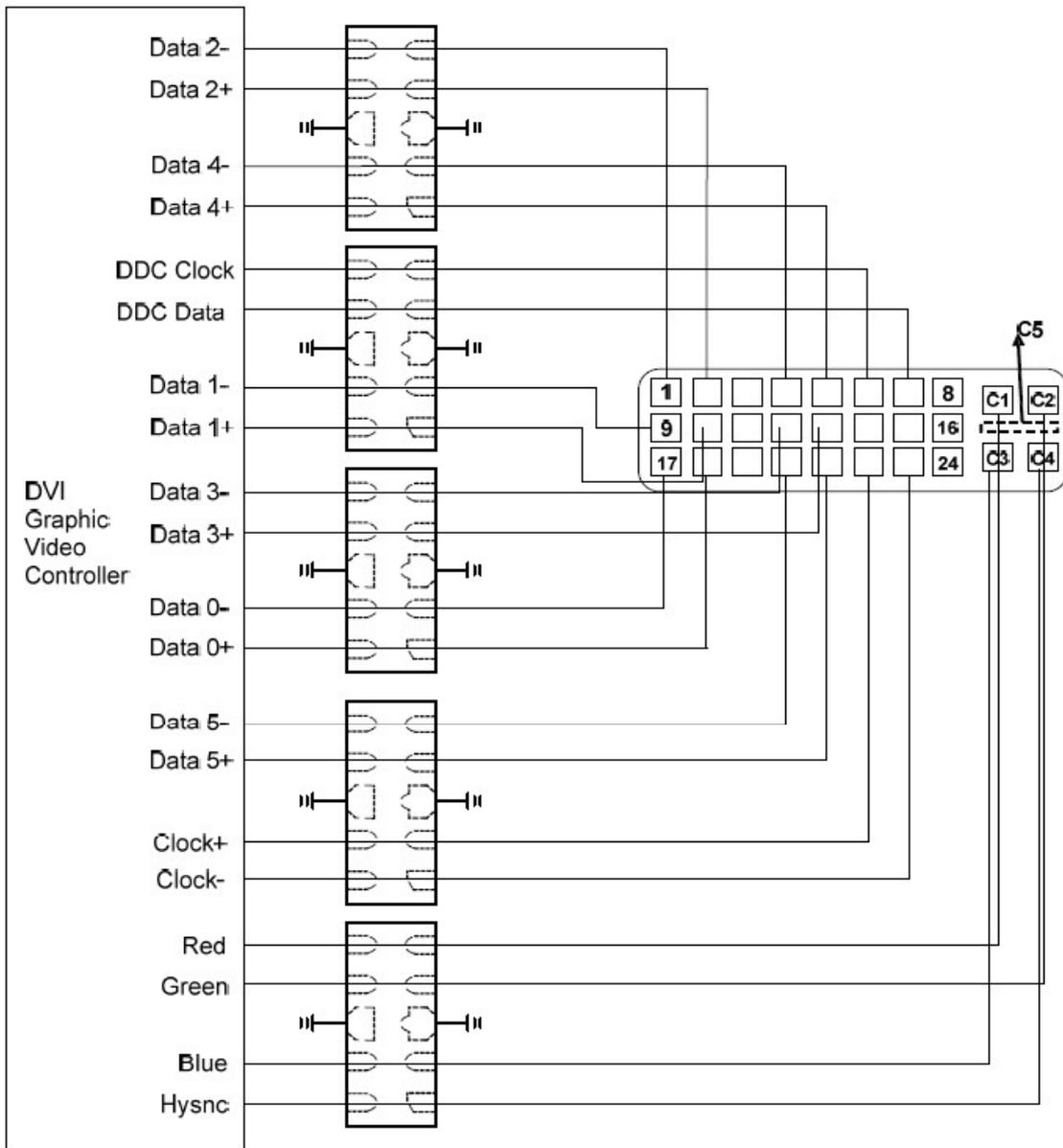
The AR3304P5 is designed for easy PCB layout by allowing the traces to run straight through the device. The PCB traces could be used to connect the pin pairs for each line. For example, line 1 enters at Pin 1 and exits at Pin 10 and the PCB trace connects Pin 1 and Pin 10 together. Ground is connected at Pin 3 and Pin 8.



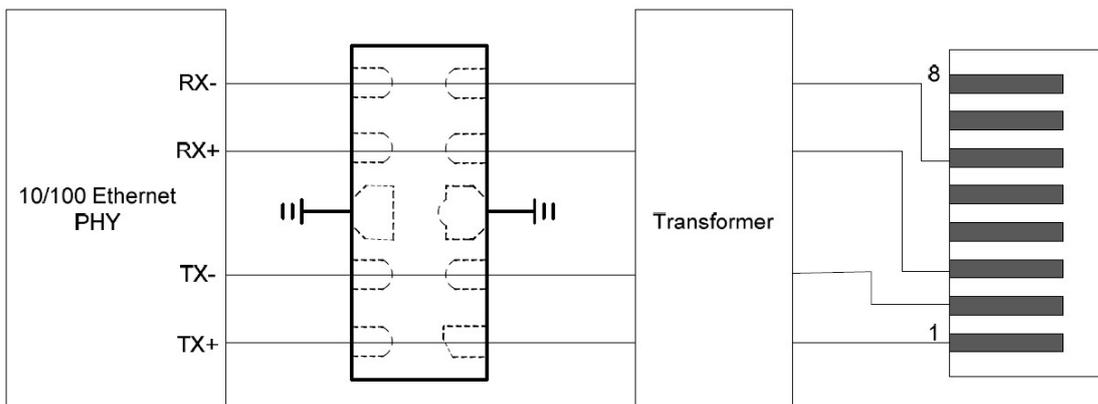
AR3304P5 on USB 3.0 Port Application



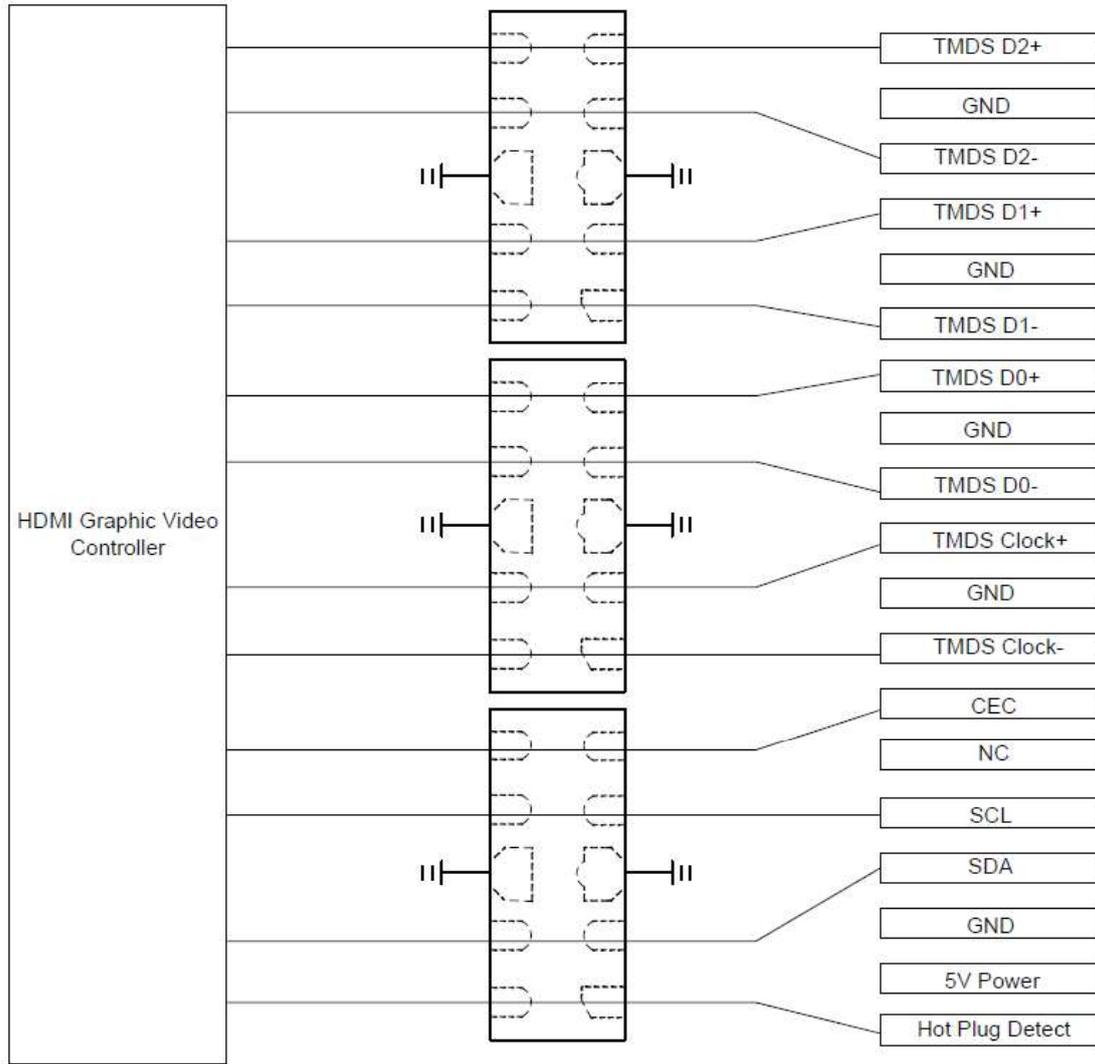
AR3304P5 on DVI Port Application



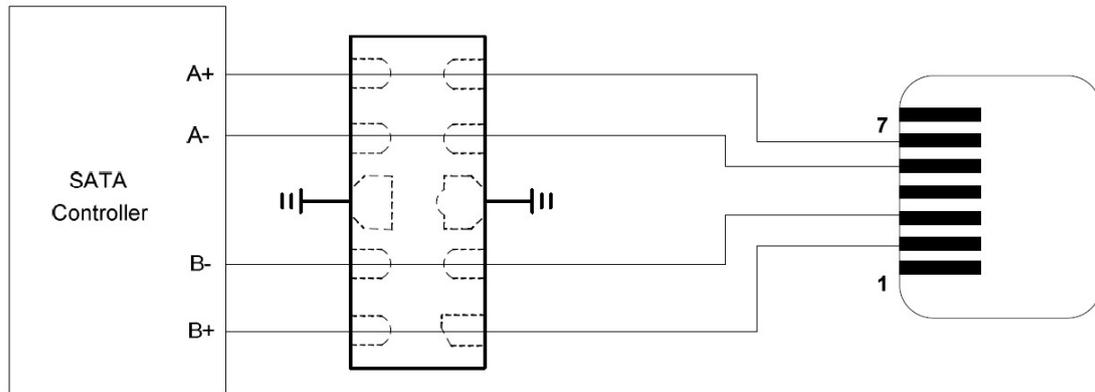
AR3304P5 on 10/100 Base Ethernet Port Application



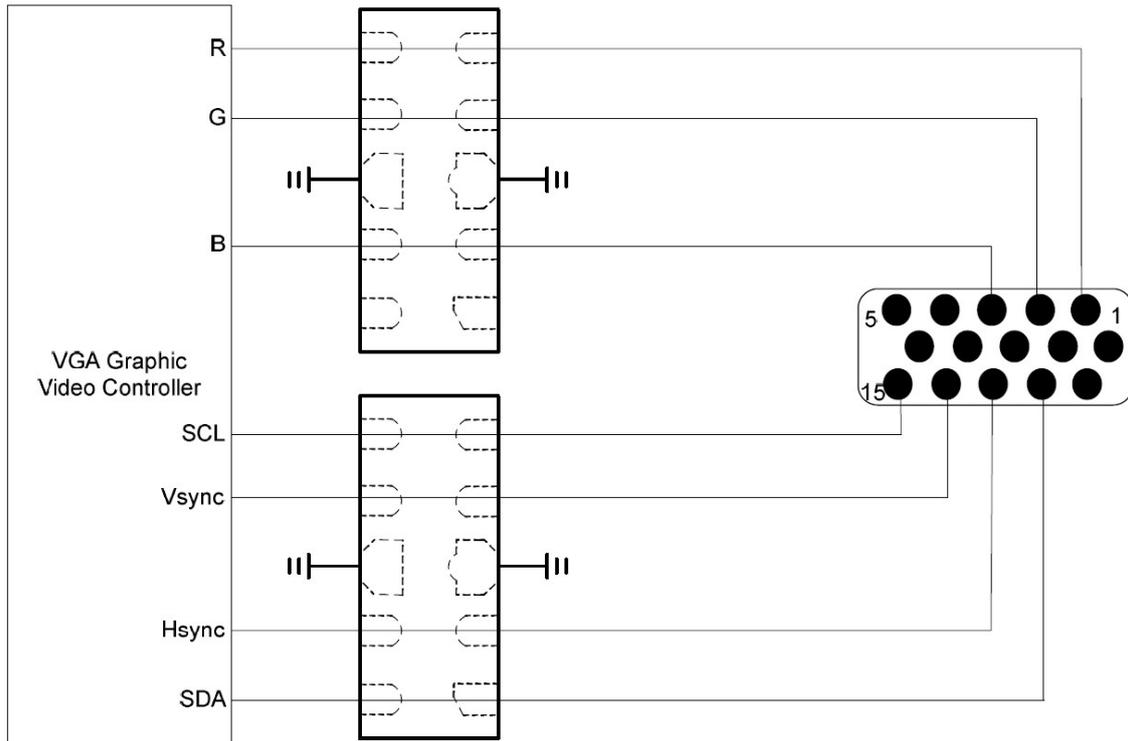
AR3304P5 on HDMI Port Application



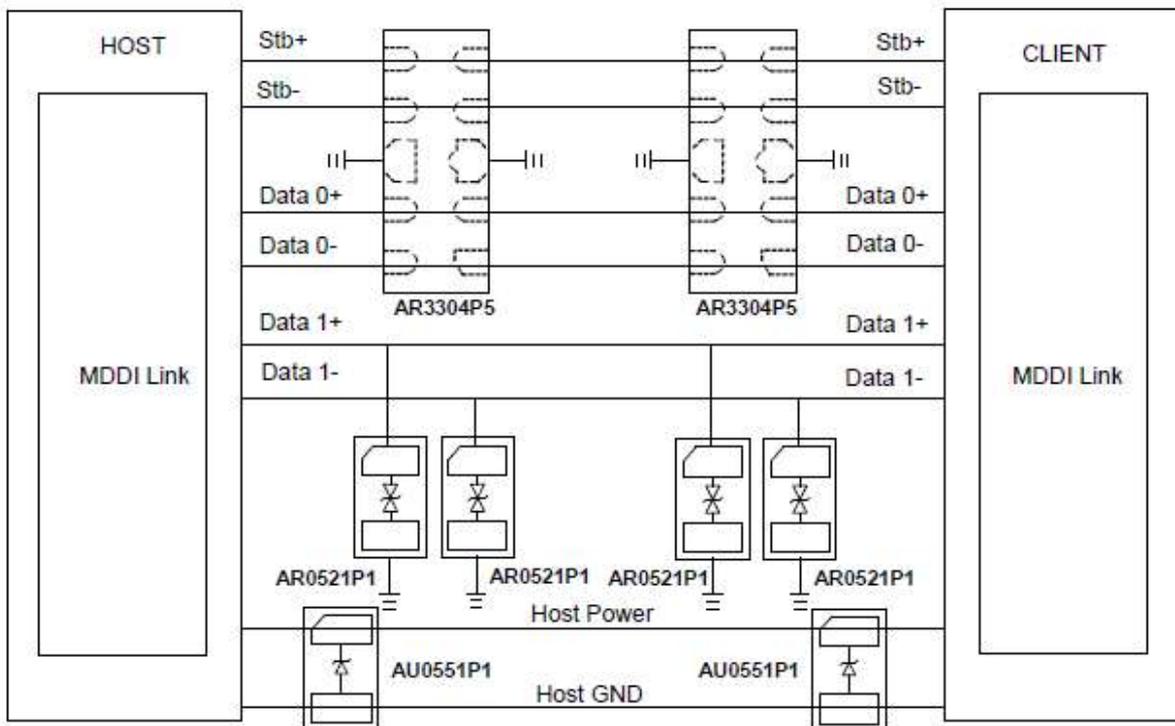
AR3304P5 on eSATA Port Application



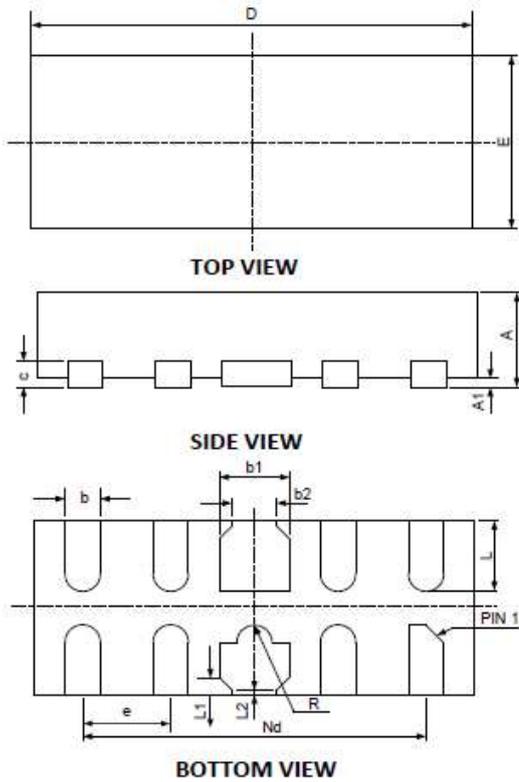
AR3304P5 on VGA Port Application



AR3304P5 on MDDI Port Application

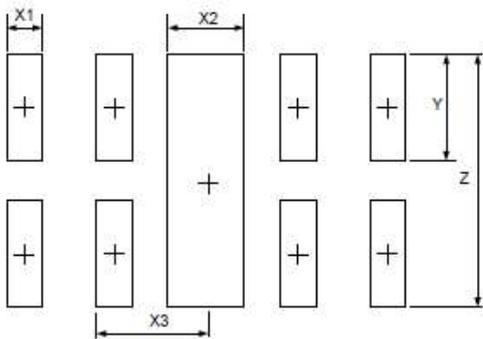


DFN2510-10 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.15	0.20	0.25	0.006	0.008	0.010
b1	0.35	0.40	0.45	0.014	0.016	0.018
b2	0.20	0.25	0.30	0.008	0.010	0.012
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.45	2.50	2.55	0.098	0.100	0.102
e	0.50BSC			0.020BSC		
Nd	2.00BSC			0.080BSC		
E	0.95	1.00	1.05	0.038	0.040	0.042
L	0.35	0.40	0.45	0.014	0.016	0.018
L1	0.075REF			0.003REF		
L2	0.050REF			0.002REF		
h	0.08	0.12	0.15	0.003	0.005	0.006
R	0.05	0.10	0.15	0.002	0.004	0.006

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X1	0.200	0.008
X2	0.400	0.016
X3	0.500	0.020
Y	0.600	0.024
Z	1.400	0.056