

### **Description**

The AR3304P8 is a 3.3V uni-directional TVS diode array, utilizing leading monolithic silicon technology to provide fast response time and ultra low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The AR3304P8 complies with the IEC 61000-4-2 (ESD) with ±25kV air and ±15kV contact discharge. It is assembled into 2.6x2.6x0.55mm DFN lead-free package. The small size and high ESD surge protection make AR3304P8 an ideal choice to protect Gigabit Ethernet, telecommunication lines, and digital video.

#### **Features**

- Ultra low leakage: nA level
- Ultra low operating voltage: 3.3V
- Ultra low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
     Air discharge: ±25kV
    - Contact discharge: ±15kV
  - IEC61000-4-5 (Lightning) 25A (8/20μs)
- RoHS Compliant

### **Mechanical Characteristics**

- Package: DFN2626-10
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

### **Applications**

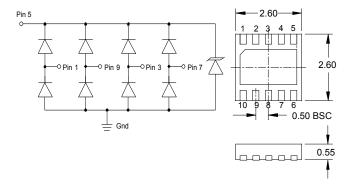
- Analog Video
- RJ-45 Connectors
- T1/E1 Secondary Protection
- T3/E3 Secondary Protection
- 10/100/1000 Ethernet

### **Marking Information**



3304 = Device Marking Code YYWW = Date Code Dot denotes Pin1

### **Dimensions and Pin Configuration**



Circuit and Pin Schematic Package Dimensions

#### **Ordering Information**

Part Number	Packaging	Reel Size	
AR3304P8	3000/Tape & Reel	7 inch	



# Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)

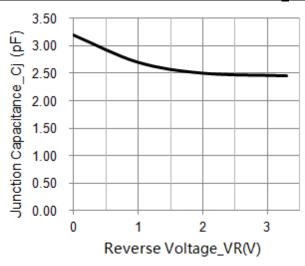
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20µs)	Ppk	450	W
Peak Pulse Current (8/20µs)	Ipp	25	А
ESD per IEC 61000-4-2 (Air)	VESD	±25	kV
ESD per IEC 61000-4-2 (Contact)	VESD	±15	
Operating Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

# Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)

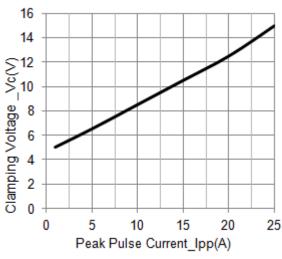
Parameter	Symbol	Min	Тур	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			3.3	V	
Punch-Through Voltage	VPT	3.5			V	IPT = 2µA
Snap-Back Voltage	VsB	2.8			V	ISB = 50mA
Reverse Leakage Current	I <sub>R</sub>			0.5	μA	VRWM = 3.3V
Clamping Voltage	Vc			5.5	V	IPP = 1A (8 x 20μs pulse), any I/O to GND
Clamping Voltage	Vc			9.5	V	IPP = 10A (8 x 20µs pulse), any I/ O to GND
Clamping Voltage	Vc			18	V	IPP = 25A (8 x 20µs pulse), any I/ O to GND
Junction Capacitance	Cı		2.0		pF	VR = 0V, f = 1MHz, between I/O pins
Junction Capacitance	Сл		3.2	5.0	pF	VR = 0V, f = 1MHz, any I/O to GND



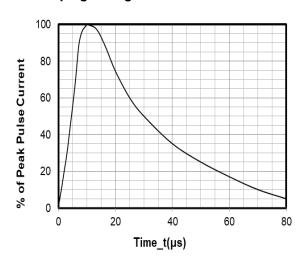
## Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)



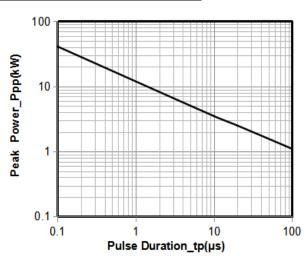
#### Junction Capacitance vs. Reverse Voltage



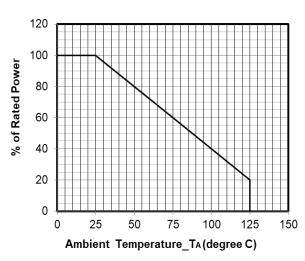
Clamping Voltage vs. Peak Pulse Current



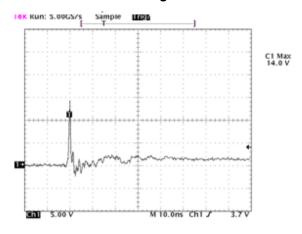
8 X 20uS Pulse Waveform



### Peak Pulse Power vs. Pulse Time



**Power Derating Curve** 



Note: Data is taken with a 10x attenuator

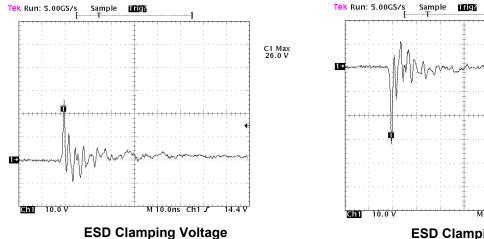
ESD Clamping Voltage

8 kV Contact per IEC61000-4-2

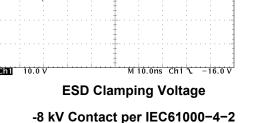
C1 Min -32.6 V



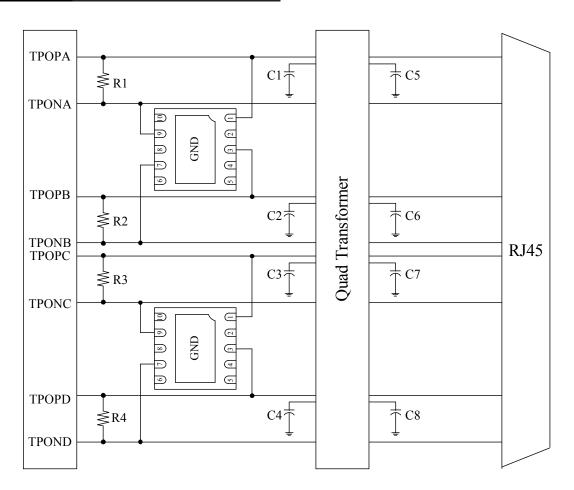
### Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)



8 kV Contact per IEC61000-4-2

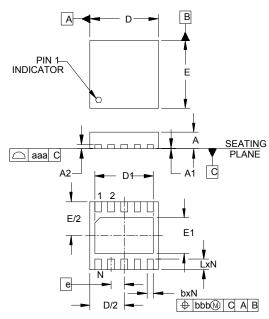


### **AR3304P8 on Gigabit Ethernet Protection**





### **DFN2626-10 Package Outline Drawing**

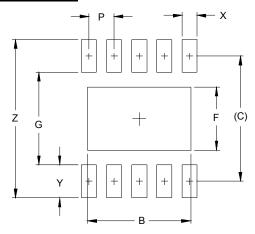


DIMENSIONS					
INCHES		MILLIMETERS			
MIN	NOM	MAX	MIN	NOM	MAX
.020	.022	.024	0.50	0.55	0.60
.000	.001	.002	0.00	0.03	0.05
(.007)			(0.17)		
.007	.010	.012	0.20	0.25	0.30
.098	.102	.106	2.50	2.60	2.70
.079	.085	.089	2.00	2.15	2.25
.098	.102	.106	2.50	2.60	2.70
.044	.050	.054	1.11	1.26	1.36
.020 BSC			0.50 BSC		
.011	.014	.016	0.30	0.35	0.40
10				10	
.003		0.08			
.004				0.10	
	MIN .020 .000 .007 .098 .079 .098	INCHE MIN NOM .020 .022 .000 .001 .007 .010 .098 .102 .079 .085 .098 .102 .044 .050 .020 B: .011 .014 .003	INCHES   MIN   NOM   MAX   020   0.02   .024   .000   .001   .002   .007   .007   .010   .012   .098   .102   .106   .079   .085   .089   .098   .102   .106   .044   .050   .054   .020   BSC   .011   .014   .016   .003   .003	INCHES   MILL	NCHES   MILLIMET

NOTES:

- 1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
- 2. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

### **Suggested Land Pattern**



DIMENSIONS				
DIM	INCHES	MILLIMETERS		
В	.081	2.05		
С	.100	2.50		
F	.050	1.26		
G	.073	1.85		
Р	.020	0.50		
Х	.012	0.30		
Υ	.025	0.65		
Z	.124	3.15		

#### NOTES:

THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY.
CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR
COMPANY'S MANUFACTURING GUIDELINES ARE MET.

### **Contact Information**

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