Description

The AR0504P9 is a low capacitance TVS arrays, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The AR0504P9 complies with the IEC 61000-4-2 (ESD) with ±30kV air and ±30kV contact discharge. It is assembled into a 10-pin DFN3020-10 lead -free package. The leads are finished with NiPdAu. Each device will protect up to four high-speed lines. The combination of small size, low capacitance, and high surge capability makes them ideal for use in applications such as USB 2.0, and video interfaces.

Features

- Low capacitance: 1.5pF typical (I/O to I/O)
- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- Up to 4 lines and one power line protects
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - IEC61000-4-5 (Lightning) 25A (8/20μs)
- RoHS Compliant

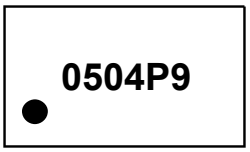
Mechanical Characteristics

- Package: DFN3020-10
- Lead Finish: NiPdAu
- Case Material: “Green” Molding Compound
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- USB 2.0 power and data line
- Monitors and Flat Panel Displays
- Video Graphics Cards
- Digital Visual Interface (DVI)
- Notebook Computers
- Networking Equipment

Marking Information

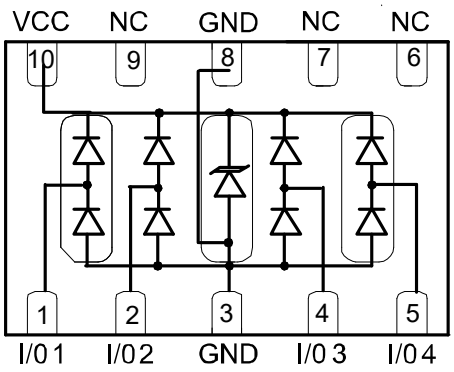


0504P9 = Device Marking Code
Dot denotes Pin1

Ordering Information

Part Number	Packaging	Reel Size
AR0504P9	3000/Tape & Reel	7 inch

Dimensions and Pin Configuration



Circuit and Pin Schematic

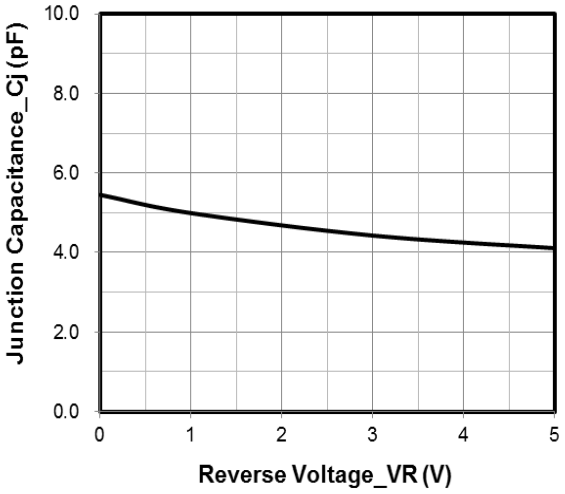
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	500	W
Peak Pulse Current (8/20μs)	I_{PP}	25	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±30 ±30	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

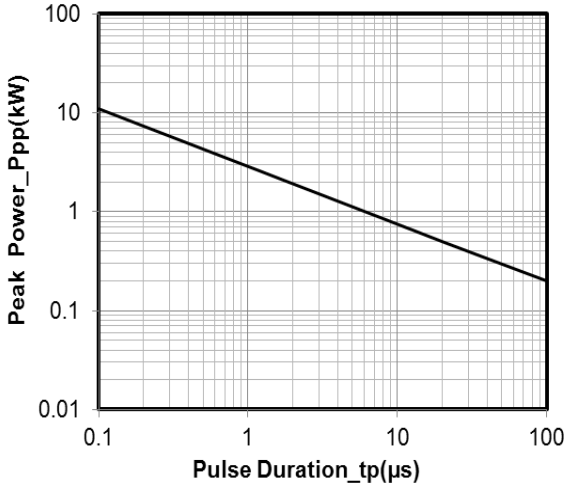
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6			V	I_T = 1mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 5V
Clamping Voltage	V_C			10	V	I_{PP} = 1A (8 x 20μs pulse), any I/O pin to ground
Clamping Voltage	V_C			12	V	I_{PP} = 10A (8 x 20μs pulse), any I/O pin to ground
Clamping Voltage	V_C			20	V	I_{PP} = 25A (8 x 20μs pulse), any I/O pin to ground
Junction Capacitance	C_J		1.5		pF	VR = 0V, f = 1MHz, between I/O pins
Junction Capacitance	C_J		3.0	5.0	pF	VR = 0V, f = 1MHz, any I/O pin to ground

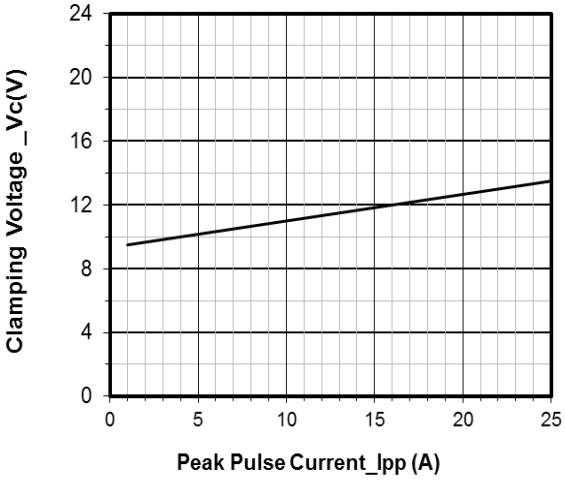
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



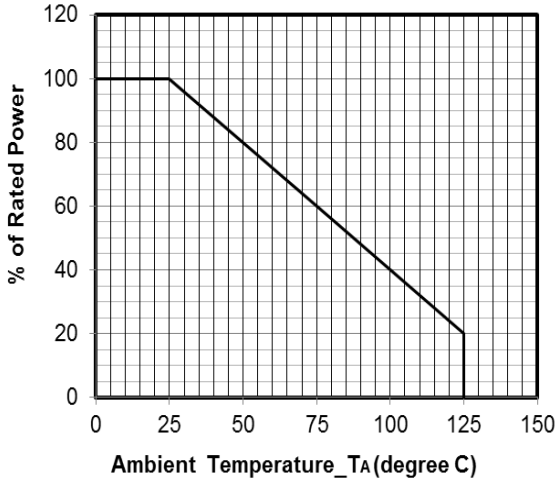
Junction Capacitance vs. Reverse Voltage



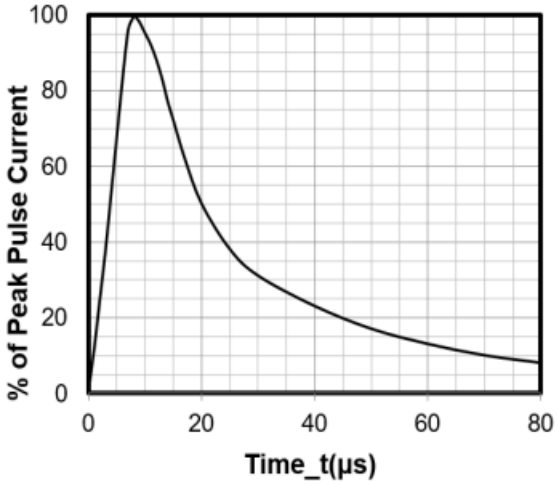
Peak Pulse Power vs. Pulse Time



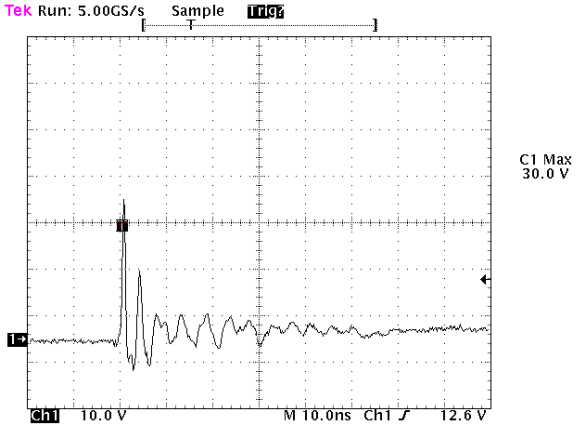
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

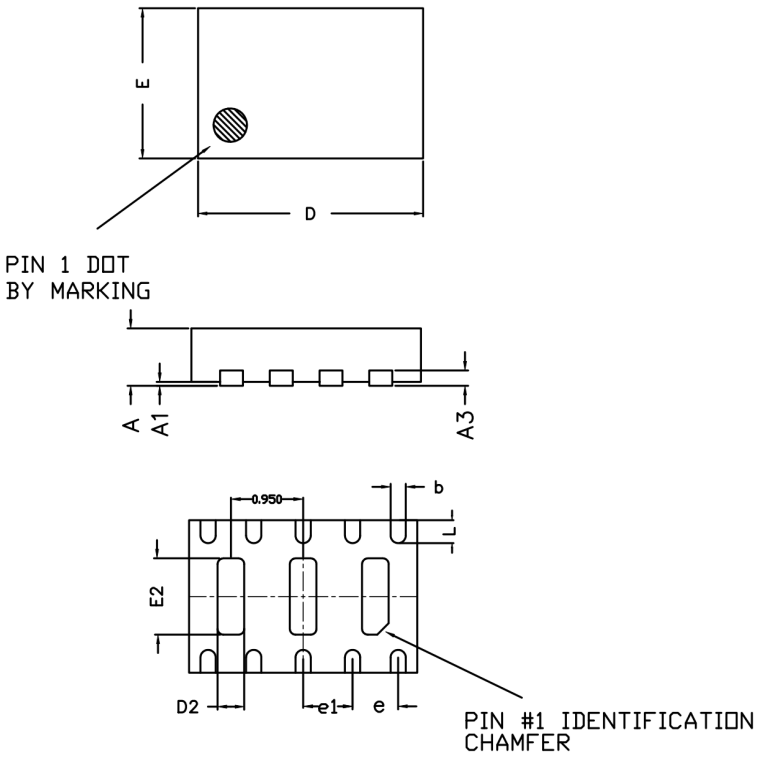


Note：Data is taken with a 10x attenuator

ESD Clamping Voltage

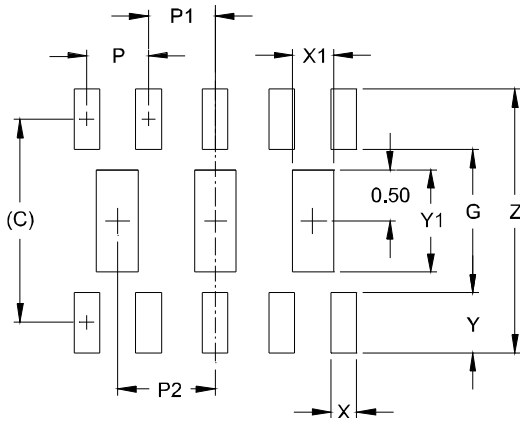
8 kV Contact per IEC61000−4−2

DFN3020-10 Package Outline Drawing



SYM	MILLIMETERS		
	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	0.00	—	0.05
A3		0.15 REF	
D	2.95	3.00	3.05
E	1.95	2.00	2.05
b	0.15	0.20	0.25
L	0.20	0.30	0.40
D2	0.25	0.35	0.45
E2	0.90	1.00	1.10
e		0.60 BSC	
e1		0.65 BSC	

Suggested Land Pattern



MILLIMETERS	
C	(1.98)
G	1.40
P	0.60
P1	0.65
P2	0.95
X	0.25
X1	0.40
Y	0.58
Y1	1.00
Z	2.56

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