## Description

The AR0504P4 is an ultra low capacitance TVS array, 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 AR0504P4 complies with the IEC 61000-4-2 (ESD) with ±25kV air and ±20kV contact discharge. It is assembled into a 6-pin DFN2020-6 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 cellular phones, LCD displays, USB, and multi media card interfaces.

## Features

- Ultra low capacitance: 0.3pF 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: ±25kV
    - Contact discharge: ±20kV
  - IEC61000-4-5 (Lightning) 5A (8/20μs)
- RoHS Compliant

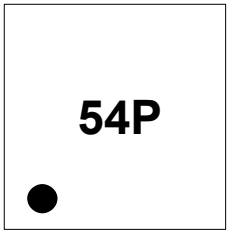
## Mechanical Characteristics

- Package: DFN2020-6
- Case Material: “Green” Molding Compound
- Terminal Connections: See Diagram Below
- Marking Information: See Below

## Applications

- USB 2.0 and USB OTG
- Multi Media Card Interfaces
- SD Card Interfaces
- MDDI Ports
- SIM Ports

## Marking Information

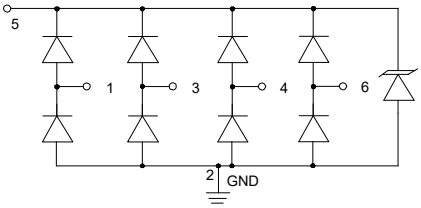



54P = Device Marking Code
Dot denotes Pin1

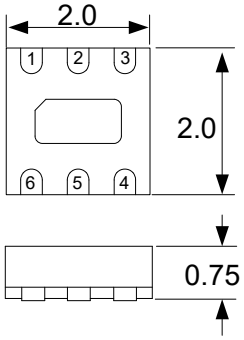
## Ordering Information

| Part Number | Packaging | Reel Size |
|---|---|---|
| AR0504P4 | 3000/Tape & Reel | 7 inch |

## Dimensions and Pin Configuration




Circuit Diagram




Pin Schematic

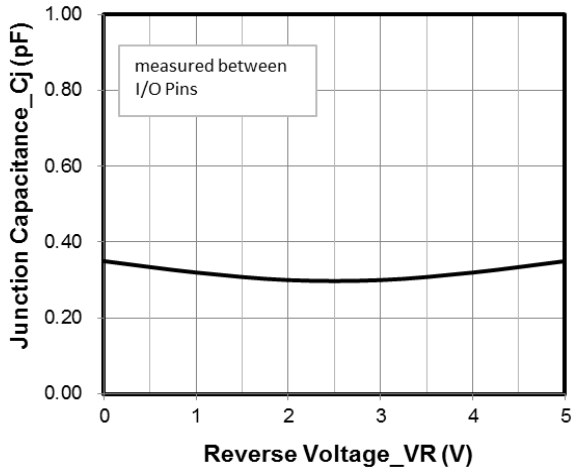
## Absolute Maximum Ratings ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Power (8/20μs) | Ppk | 75 | W |
| Peak Pulse Current (8/20μs) | $I_{PP}$ | 5 | A |
| ESD per IEC 61000−4−2 (Air)<br>ESD per IEC 61000−4−2 (Contact) | $V_{ESD}$ | ±25<br>±20 | kV |
| Operating Temperature Range | $T_J$ | −55 to +125 | °C |
| Storage Temperature Range | Tstg | −55 to +150 | °C |

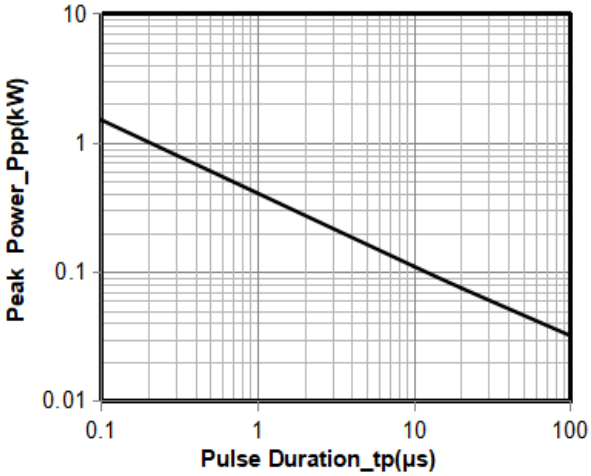
## Electrical Characteristics ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Reverse Working Voltage | $V_{RWM}$ | | | 5 | V | Any I/O to ground |
| Breakdown Voltage | $V_{BR}$ | 6 | | | V | $I_T$ = 1mA, any I/O to ground |
| Reverse Leakage Current | $I_R$ | | | 0.5 | μA | $V_{RWM}$ = 5V, any I/O to ground |
| Clamping Voltage | $V_C$ | | | 10 | V | $I_{PP}$ = 1A (8 x 20μs pulse), any I/O pin to ground |
| Clamping Voltage | $V_C$ | | | 15 | V | $I_{PP}$ = 5A (8 x 20μs pulse), any I/O pin to ground |
| Junction Capacitance | $C_J$ | | | 0.5 | pF | VR = 0V, f = 1MHz, between I/O pins |
| Junction Capacitance | $C_J$ | | | 0.8 | pF | VR = 0V, f = 1MHz, any I/O pin to ground |

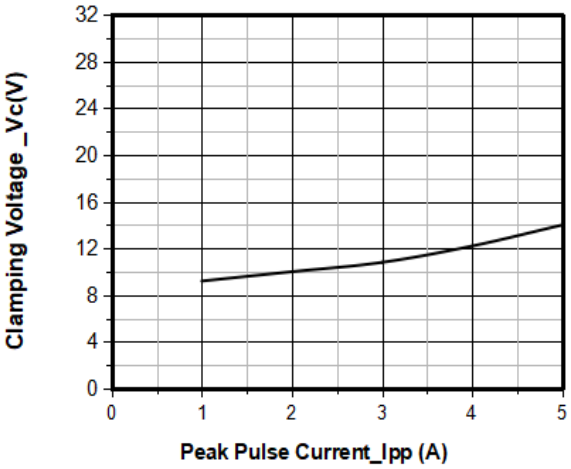
## Typical Performance Characteristics (TA=25°C unless otherwise Specified)



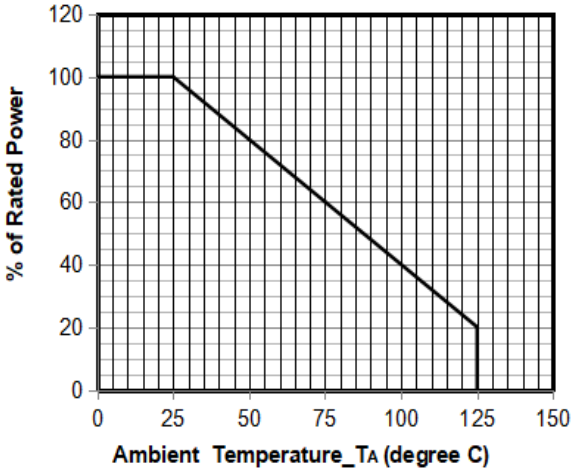

Junction Capacitance vs. Reverse Voltage



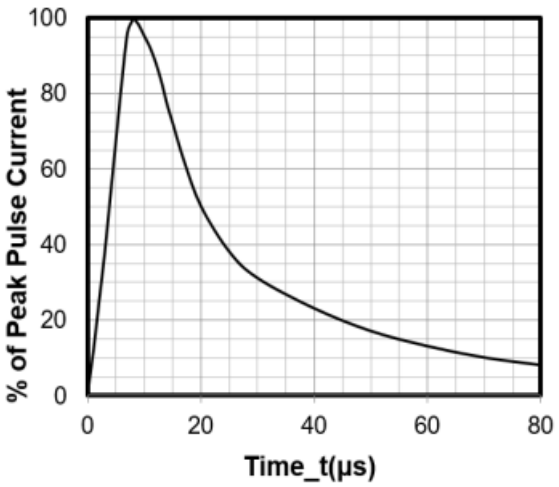

Peak Pulse Power vs. Pulse Time



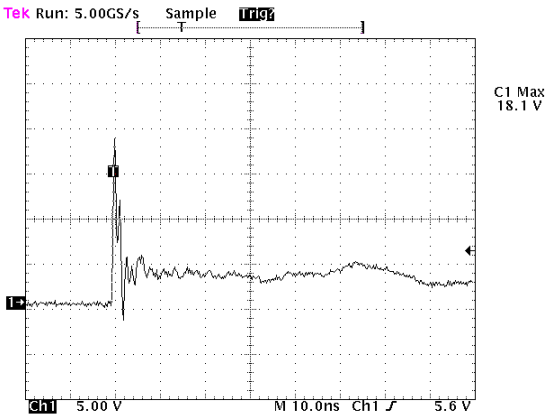

Clamping Voltage vs. Peak Pulse Current




Power Derating Curve




8 X 20μs Pulse Waveform

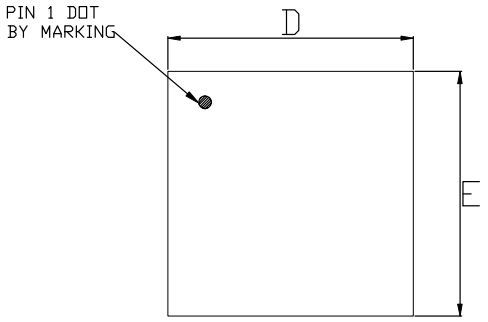



Note：Data is taken with a 10x attenuator

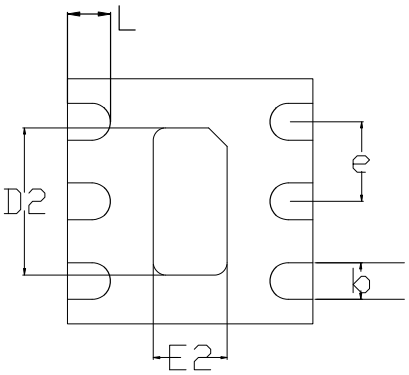
ESD Clamping Voltage

8 kV Contact per IEC61000−4−2

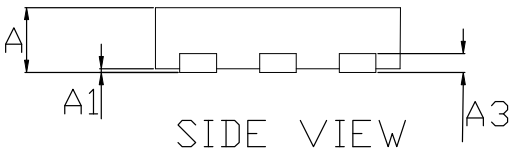
## DFN2020-6 Package Outline Drawing




TOP VIEW



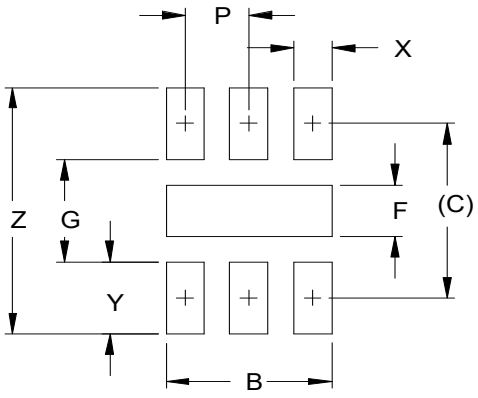

BOTTOM VIEW




SIDE VIEW

| COMMON DIMENSIONS(MM) | | | |
|---|---|---|---|
| PKG. | Wivery very THIN | | |
| REF. | MIN. | NOM. | MAX |
| A | 0.70 | 0.75 | 0.80 |
| A1 | 0.00 | - | 0.05 |
| A3 | 0.20 REF. | | |
| D | 1.95 | 2.00 | 2.05 |
| E | 1.95 | 2.00 | 2.05 |
| D2 | 1.05 | 1.20 | 1.30 |
| E2 | 0.45 | 0.60 | 0.70 |
| b | 0.25 | 0.30 | 0.35 |
| L | 0.25 | 0.35 | 0.45 |
| e | 0.65 BSC | | |

## Suggested Land Pattern




| DIMENSIONS | | |
|---|---|---|
| DIM | INCHES | MILLIMETERS |
| B | 0.065 | 1.65 |
| C | 0.070 | 1.95 |
| P | 0.026 | 0.65 |
| F | 0.034 | 0.86 |
| G | 0.049 | 1.25 |
| X | 0.014 | 0.35 |
| Y | 0.026 | 0.65 |
| Z | 0.100 | 2.55 |

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