

## Description

The AR0554P3 is a 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 AR0554P3 complies with the IEC 61000-4-2 (ESD) with  $\pm 30\text{kV}$  air and  $\pm 30\text{kV}$  contact discharge. It is assembled into a 6-pin DFN1616-6 lead-free package. 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

- Low capacitance: 2pF 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:  $\pm 30\text{kV}$   
Contact discharge:  $\pm 30\text{kV}$
  - IEC61000-4-5 (Lightning) 11A (8/20 $\mu\text{s}$ )
- RoHS Compliant

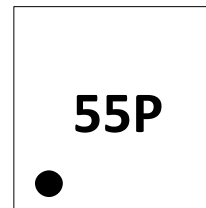
## Mechanical Characteristics

- Package: DFN1616-6
- Case Material: "Green" Molding Compound
- Terminal Connections: See Diagram Below
- Marking Information: See Below

## Applications

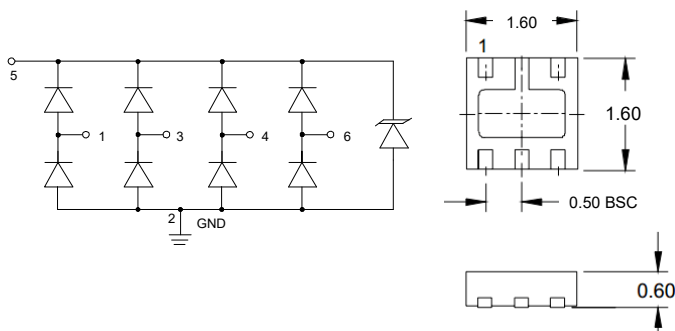
- USB 2.0 and USB OTG
- Multi Media Card Interfaces
- SD Card Interfaces
- MDDI Ports
- SIM Ports
- Key Pads
- Gigabit Ethernet

## Marking Information



55P = Device Marking Code  
Dot denotes Pin1

## Dimensions and Pin Configuration



Circuit Diagram

Pin Schematic

## Ordering Information

Part Number	Packaging	Reel Size
AR0554P3	3000/Tape & Reel	7 inch

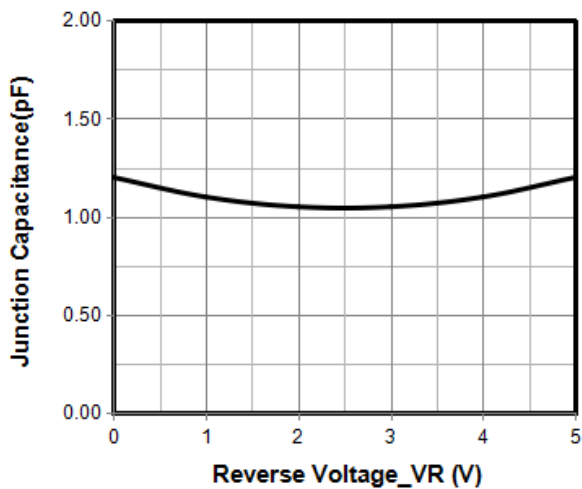
**Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 $\mu\text{s}$ )	Ppk	240	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	I <sub>PP</sub>	11	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V <sub>ESD</sub>	$\pm 30$ $\pm 30$	kV
Operating Temperature Range	T <sub>J</sub>	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	$^{\circ}\text{C}$

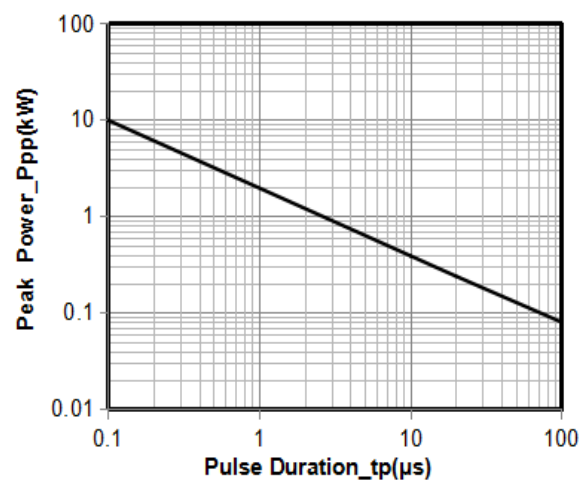
**Electrical Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>			5	V	Pin 5 to ground
Breakdown Voltage	V <sub>BR</sub>	6			V	I <sub>T</sub> = 1mA, pin 5 to ground
Reverse Leakage Current	I <sub>R</sub>			0.1	$\mu\text{A}$	V <sub>RWM</sub> = 5V, pin 5 to ground
Clamping Voltage	V <sub>C</sub>			10	V	I <sub>PP</sub> = 1A (8 x 20 $\mu\text{s}$ pulse), any I/O pin to ground
Clamping Voltage	V <sub>C</sub>			22	V	I <sub>PP</sub> = 11A (8 x 20 $\mu\text{s}$ pulse), any I/O pin to ground
Junction Capacitance	C <sub>J</sub>		2		pF	V <sub>R</sub> = 0V, f = 1MHz, between I/O pins
Junction Capacitance	C <sub>J</sub>		4		pF	V <sub>R</sub> = 0V, f = 1MHz, any I/O pin to ground

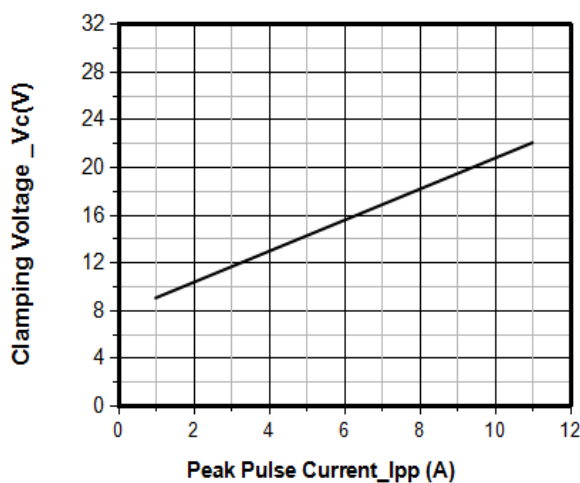
### Typical Performance Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise Specified)



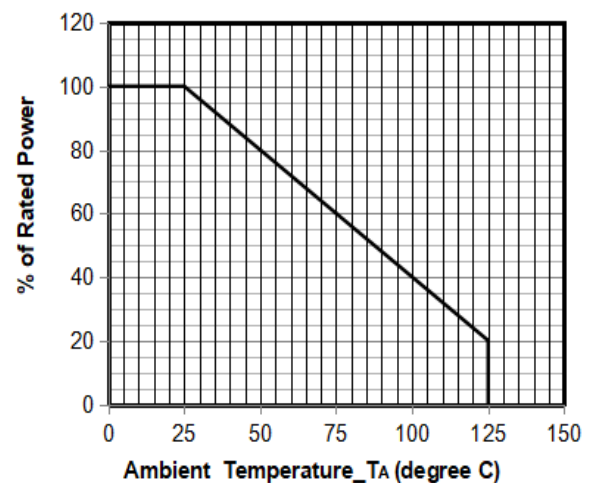
Junction Capacitance vs. Reverse Voltage



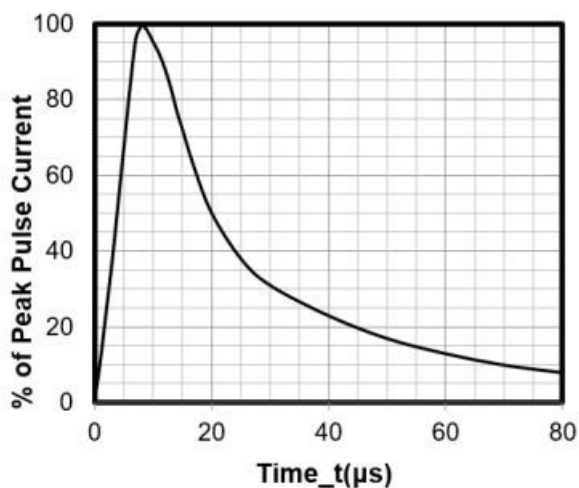
Peak Pulse Power vs. Pulse Time



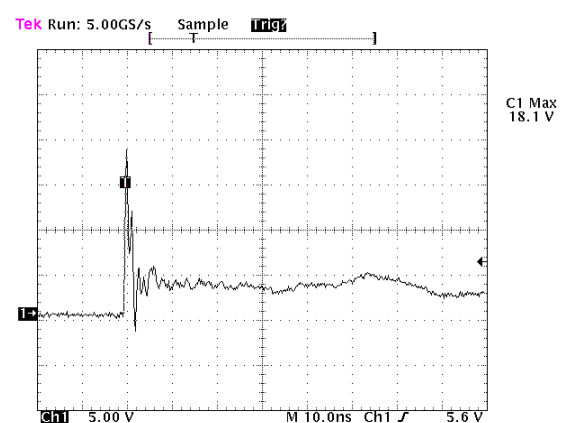
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

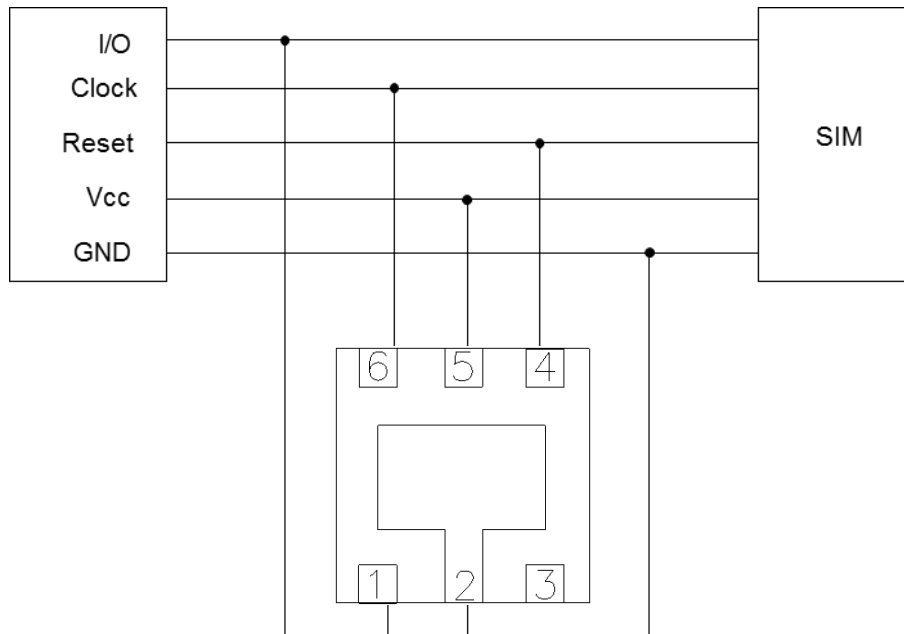


Note: Data is taken with a 10x attenuator

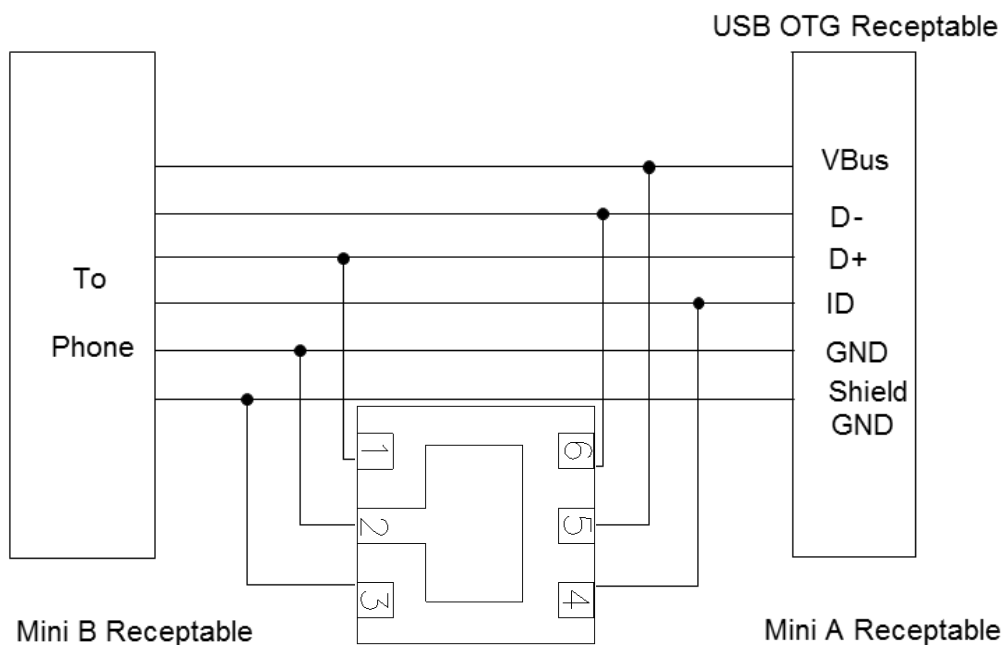
ESD Clamping Voltage

8 kV Contact per IEC61000-4-2

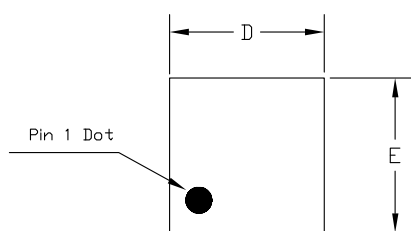
### AR0554P3 on SIM Port Application



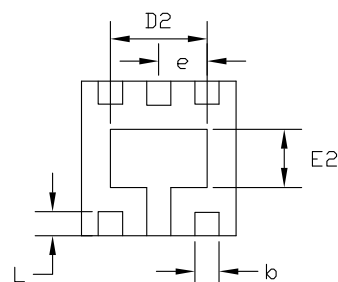
### AR0554P3 on USB OTG Application



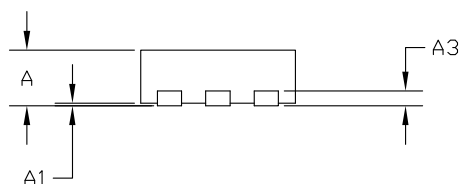
## DFN1616-6 Package Outline Drawing



TOP VIEW



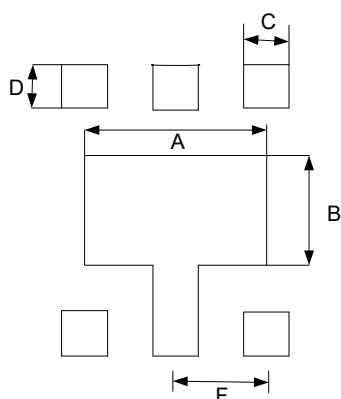
BOTTOM VIEW



SIDE VIEW

SYM	DIMENSIONS(MM)		
	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	0.00	—	0.05
A3	0.15 REF		
D	1.55	1.60	1.65
E	1.55	1.60	1.65
D2	0.85	1.00	1.10
E2	0.45	0.60	0.70
L	0.20	0.25	0.30
b	0.20	0.25	0.30
e	0.50 BSC		

## Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
A	1.20	0.04
B	0.72	0.028
C	0.30	0.012
D	0.30	0.012
F	0.50	0.020

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