

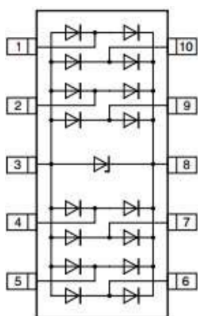
Description

The AR0508MP 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 AR0508MP has a low capacitance with a typical value at 0.6 pF, and complies with the IEC 61000-4-2 (ESD) with $\pm 25\text{kV}$ air and $\pm 20\text{kV}$ contact discharge. It is assembled into a 10-pin lead-free MSOP package. The flow through style package allows for easy PCB layout and matched trace lengths necessary to maintain consistent impedance between high speed differential lines. The small size, low capacitance and high ESD surge protection make AR0508MP an ideal choice to protect high speed ports.

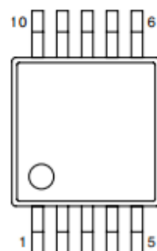
Features

- Very low capacitance: 0.6pF typical
- Low operating voltage: 5V
- Low clamping voltage
- Protects one power line and six data lines
- Flow-through package
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: $\pm 25\text{kV}$
Contact discharge: $\pm 20\text{kV}$
 - IEC61000-4-5 (Lightning) 5A (8/20 μs)
- RoHS Compliant

Dimensions and Pin Configuration



Circuit Diagram



Pin Schematic

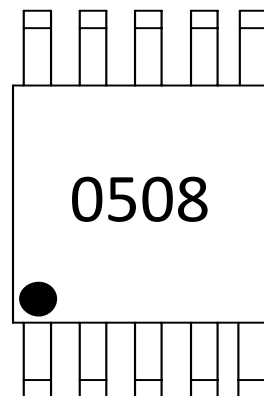
Mechanical Characteristics

- Package: MSOP-10
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- DVI Ports
- HDMI Ports
- USB 2.0
- High-Speed Data Lines

Marking Information



0508 = Device Marking Code
 YYWW = Date Code
 Dot denotes pin1

Ordering Information

| Part Number | Packaging | Reel Size |
|-------------|------------------|-----------|
| AR0508MP | 3000/Tape & Reel | 13 inch |

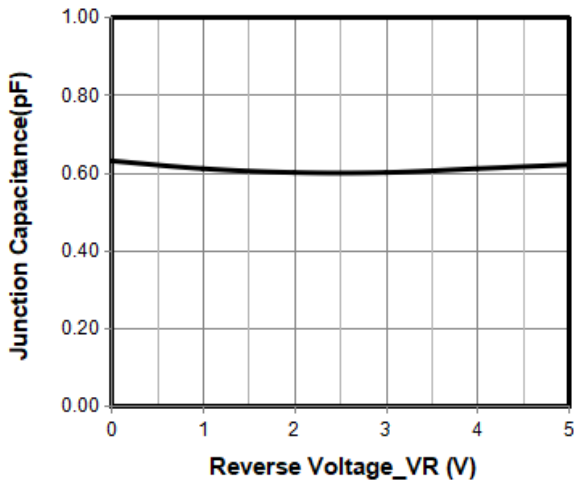
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|--|------------------|----------------------|--------------------|
| Peak Pulse Power (8/20 μs) | Ppk | 80 | W |
| Peak Pulse Current (8/20 μs) | I _{PP} | 5 | A |
| ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact) | V _{ESD} | ± 25 ± 20 | kV |
| Operating Temperature Range | T _J | -55 to +125 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T _{stg} | -55 to +150 | $^{\circ}\text{C}$ |

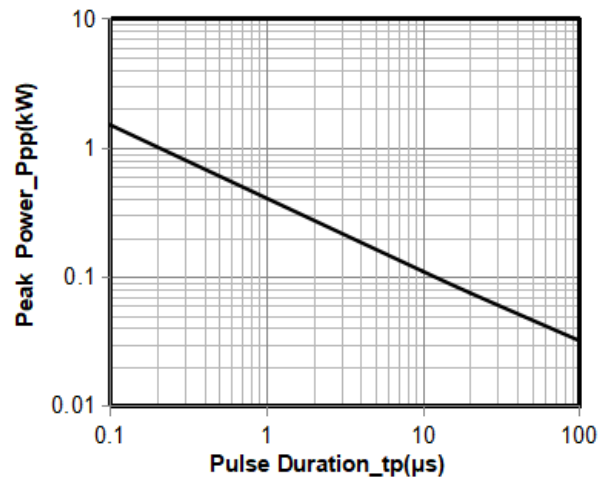
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|------------------|-----|-----|-----|---------------|--|
| Reverse Working Voltage | V _{RWM} | | | 5 | V | Pin 3 to 8 |
| Breakdown Voltage | V _{BR} | 6 | | | V | I _T = 1mA, Pin 3 to 8 |
| Reverse Leakage Current | I _R | | | 0.2 | μA | V _{RWM} = 5V, Pin 3 to 8 |
| Clamping Voltage | V _C | | | 10 | V | I _{PP} = 1A (8 x 20 μs pulse), any I/O pin to ground |
| Clamping Voltage | V _C | | | 16 | V | I _{PP} = 5A (8 x 20 μs pulse), any I/O pin to ground |
| Junction Capacitance | C _J | | 0.3 | 0.5 | pF | V _R = 0V, f = 1MHz, between I/O pins |
| Junction Capacitance | C _J | | 0.6 | | pF | V _R = 0V, f = 1MHz, any I/O pin to ground |

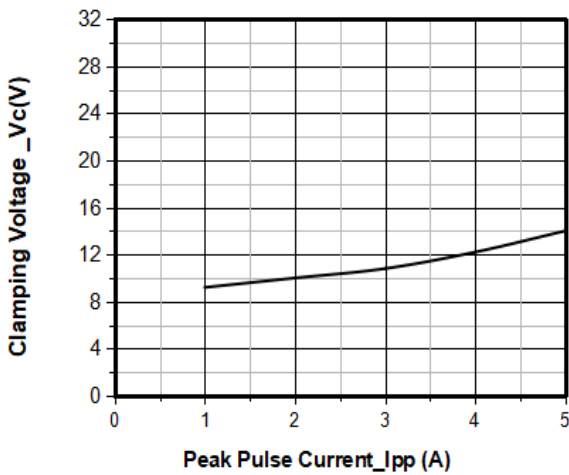
Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)



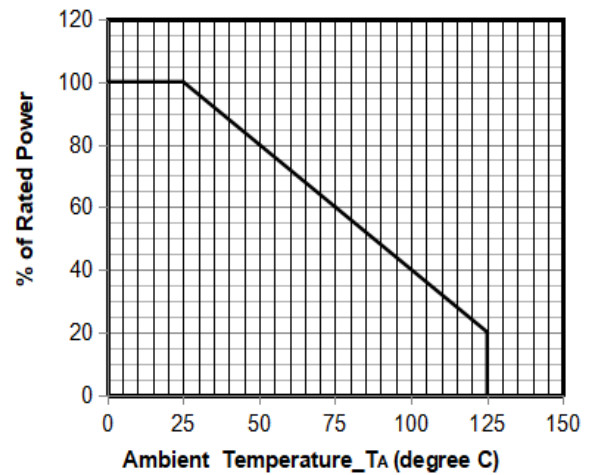
Junction Capacitance vs. Reverse Voltage



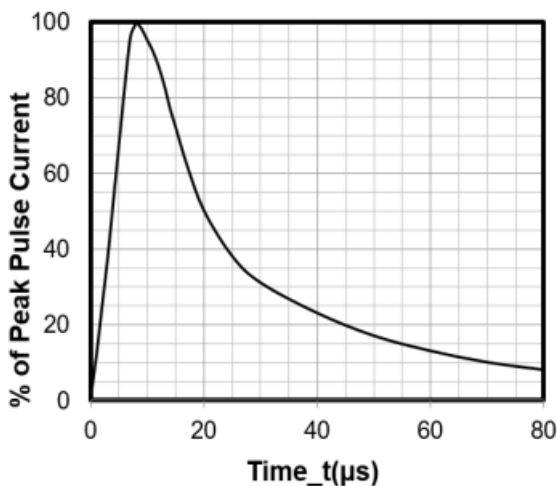
Peak Pulse Power vs. Pulse Time



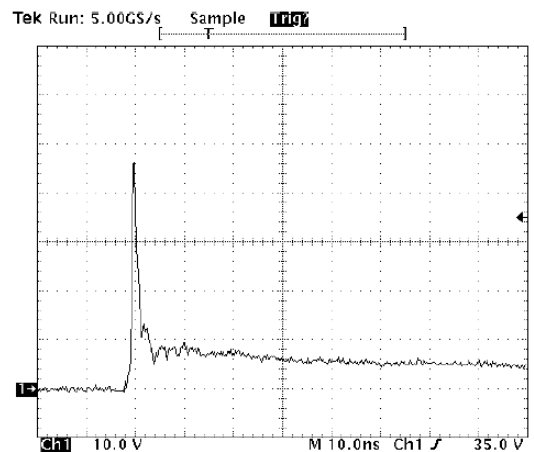
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

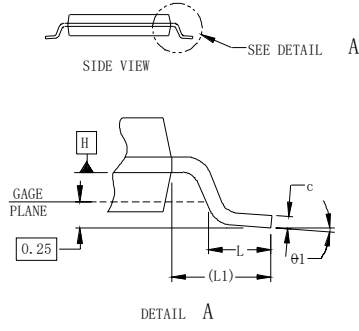
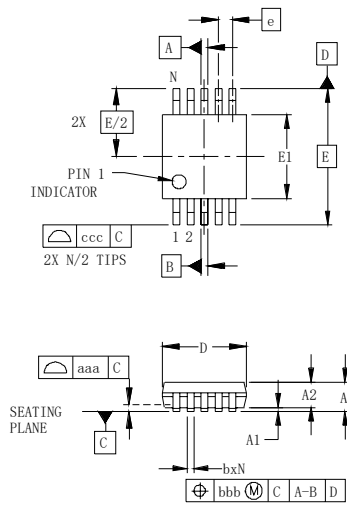


Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

8 kV Contact per IEC61000-4-2

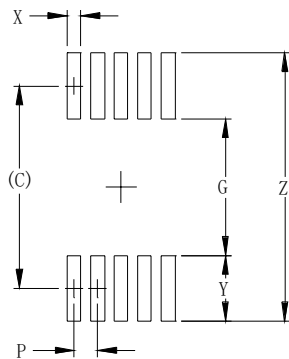
MSOP-10 Package Outline Drawing



| DIM | DIMENSIONS | | | | | |
|--------|------------|------|------|-------------|------|------|
| | INCHES | | | MILLIMETERS | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | - | - | .043 | - | - | 1.10 |
| A1 | .000 | - | .006 | 0.00 | - | 0.15 |
| A2 | .030 | - | .037 | 0.75 | - | 0.95 |
| b | .007 | - | .011 | 0.17 | - | 0.27 |
| c | .003 | - | .009 | 0.08 | - | 0.23 |
| D | .114 | .118 | .122 | 2.90 | 3.00 | 3.10 |
| E1 | .114 | .118 | .122 | 2.90 | 3.00 | 3.10 |
| E | | | | 4.90 BSC | | |
| e | | | | 0.50 BSC | | |
| L | .016 | .024 | .032 | 0.40 | 0.60 | 0.80 |
| L1 | (.037) | | | (.95) | | |
| N | 10 | | | 10 | | |
| theta1 | 0° | - | 8° | 0° | - | 8° |
| aaa | .004 | | | 0.10 | | |
| bbb | .003 | | | 0.08 | | |
| ccc | .010 | | | 0.25 | | |

- NOTES:
1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
 2. DATUMS **-A-** AND **-B-** TO BE DETERMINED AT DATUM PLANE **-H-**
 3. DIMENSIONS "E1" AND "D" DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
 4. REFERENCE JEDEC STD MO-187, VARIATION BA.

Suggested Land Pattern



| DIM | DIMENSIONS | |
|-----|------------|-------------|
| | INCHES | MILLIMETERS |
| C | (.161) | (4.10) |
| G | .098 | 2.50 |
| P | .020 | 0.50 |
| X | .011 | 0.30 |
| Y | .063 | 1.60 |
| Z | .224 | 5.70 |

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

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