Description

The AR0506M8 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 AR0506M8 has a low capacitance with a typical value at 0.6pF, and complies with the IEC 61000-4-2 (ESD) standard with ±25kV air and ±20kV contact discharge. It is assembled into a 8-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 AR0506M8 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 four data lines
- Flow-through package
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±25kV
    - Contact discharge: ±20kV
  - IEC61000-4-5 (Lightning) 3.5A (8/20μs)
- RoHS Compliant

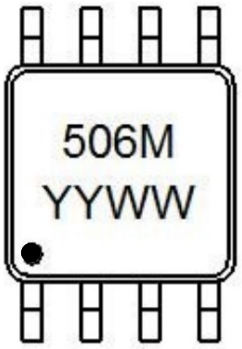
Mechanical Characteristics

- Package: MSOP-8
- Lead Finish: Matte Tin
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- DVI Ports
- HDMI Ports
- Set Top Box
- Projection TV
- Notebook Computers
- 10/100/1000 Ethernet
- Monitors and Flat Panel Displays

Marking Information

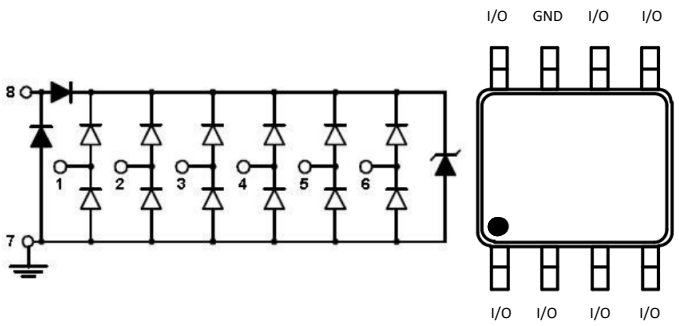


506M = Device Marking Code

YYWW = Date Code

Dot denotes pin1

Dimensions and Pin Configuration



Ordering Information

Part Number	Packaging	Reel Size
AR0506M8	4000/Tape & Reel	13 inch

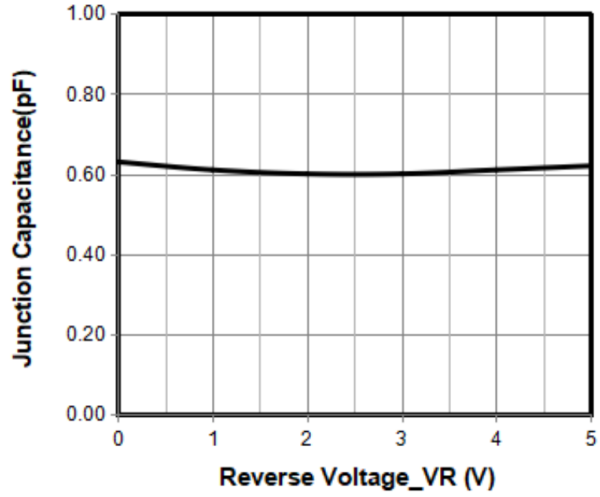
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	40	W
Peak Pulse Current (8/20μs)	I_{PP}	3.5	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	°C
Storage Temperature Range	Tstg	−55 to +150	°C

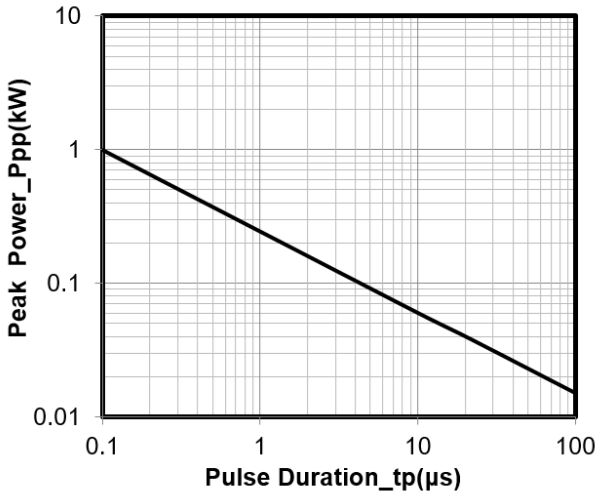
Electrical Characteristics (T_A=25°C unless otherwise specified)

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			9	V	I_{PP} = 1A (8 x 20μs pulse), any I/O
Clamping Voltage	V_C			11.5	V	I_{PP} = 3.5A (8 x 20μs pulse) ,any I/O pin to ground
Junction Capacitance	C_J		0.3		pF	VR = 0V, f = 1MHz, between I/O pins
Junction Capacitance	C_J		0.6		pF	VR = 0V, f = 1MHz, any I/O pin to ground

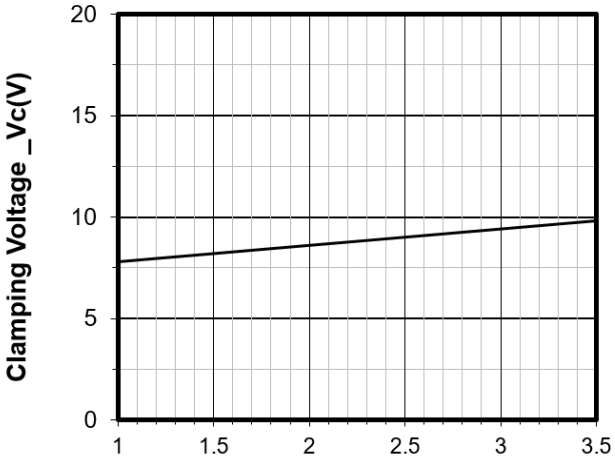
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



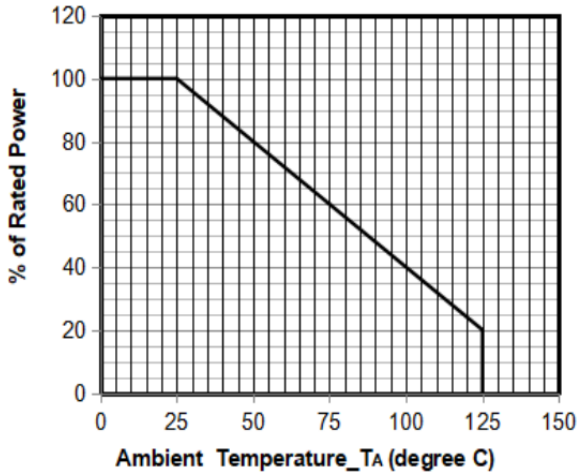
Junction Capacitance vs. Reverse Voltage



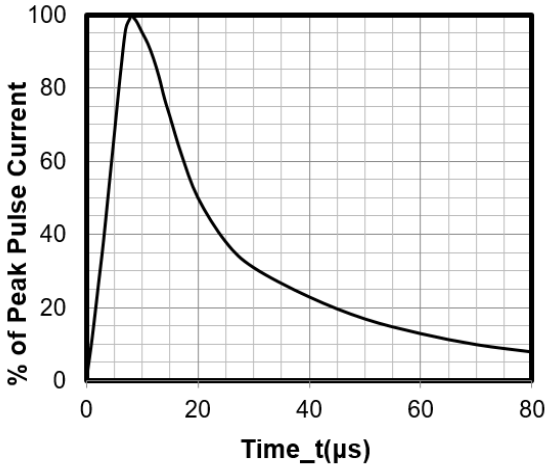
Peak Pulse Power vs. Pulse Time



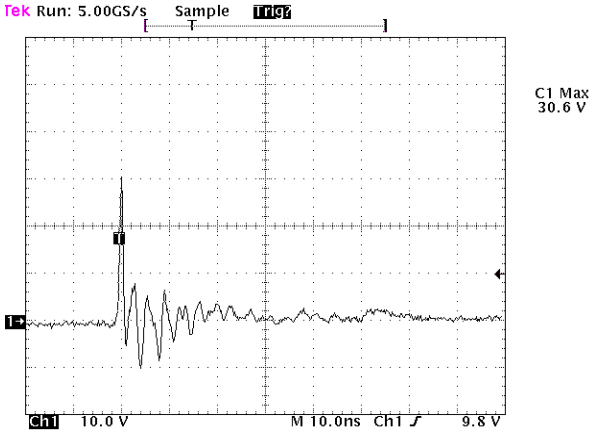
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



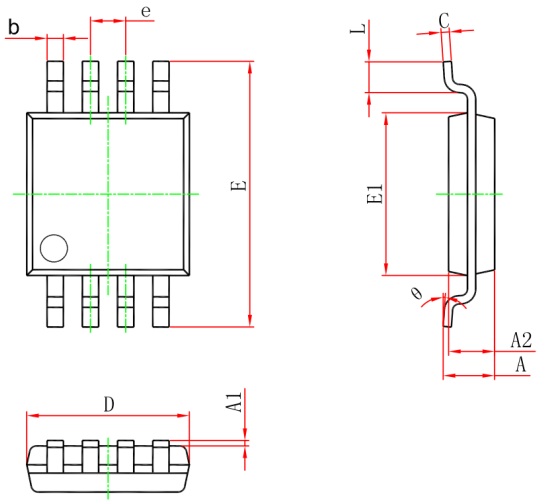
8 X 20μs Pulse Waveform



Note：Data is taken with a 10x attenuator

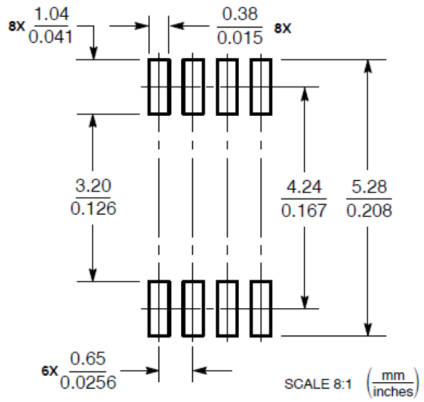
ESD Clamping Voltage
8 kV Contact per IEC61000−4−2

MSOP-8 Package Outline Drawing



SYMBOL	DIMENSIONS			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	--	1.100	--	0.043
A1	0.020	0.150	0.001	0.06
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
e	0.650 BSC		0.026 BSC	
E	4.750	5.050	0.187	0.199
E1	2.900	3.100	0.114	0.122
L	0.400	0.800	0.016	0.031
θ1	0°	6°	0°	6°

Suggested Land Pattern



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