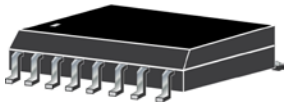
RoHS Available

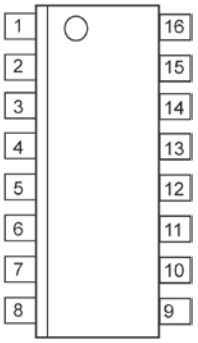
# Switching Diode Array
# Steering Diode TVS Array™

## DESCRIPTION

These low capacitance diode arrays are multiple, discrete, isolated junctions fabricated by a planar process and mounted in a 16-Pin SOIC package for use as steering diodes protecting up to eight I/O ports from ESD, EFT, or surge by directing them either to the positive side of the power supply line or to ground (see Figure 1). An external TVS diode may be added between the positive supply line and ground to prevent overvoltage on the supply rail. They may also be used in fast switching core-driver applications. This includes computers and peripheral equipment such as magnetic cores, thin-film memories, plated-wire memories, etc., as well as decoding or encoding applications. These arrays offer many advantages of integrated circuits such as high-density packaging and improved reliability. This is a result of fewer pick and place operations, smaller footprint, smaller weight, and elimination of various discrete packages that may not be as user friendly in PC board mounting. They are available with either tin-lead plating terminations or as RoHS compliant with annealed matte-tin finish.



16-Pin Package




Top Viewing Pin Layout

**Important:** For the latest information, visit our website http://www.microsemi.com.

## FEATURES

- 8-diode array protects 8 lines
- Molded 16-Pin SOIC package
- UL 94V-0 flammability classification
- Low capacitance 1.5 pF per diode
- Switching speeds less than 5 ns
- IEC 61000-4 compatible:
  - 61000-4-2 (ESD): Air 15 kV, contact – 8 kV
  - 61000-4-4 (EFT): 40 A – 5/50 ns
  - 61000-4-5 (surge): 12 A, 8/20 µs
- RoHS compliant device is available

## APPLICATIONS / BENEFITS

- Low capacitance steering diode protection for high frequency data lines
- Ideal for:
  - RS-232 & RS-422 Interface Networks.
  - Ethernet: 10 Base T
  - Computer I / O Ports
  - LAN
  - Switching Core Drivers

**MSC – Lawrence**
6 Lake Street,
Lawrence, MA 01841
Tel: 1-800-446-1158 or
(978) 620-2600
Fax: (978) 689-0803

**MSC – Ireland**
Gort Road Business Park,
Ennis, Co. Clare, Ireland
Tel: +353 (0) 65 6840044
Fax: +353 (0) 65 6822298

**Website:**
www.microsemi.com


©2013 Microsemi Corporation

One Enterprise, Aliso Viejo, CA 92656 Ph: 949-380-6100 sales.support@microsemi.com

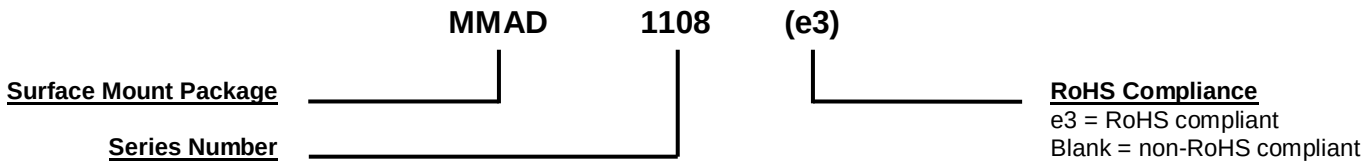
## MAXIMUM RATINGS

| Parameters/Test Conditions | Symbol | Value | Unit |
|---|---|---|---|
| Junction and Storage Temperature | $T_J$ and $T_{STG}$ | -55 to +150 | ºC/W |
| Peak Working Reverse Voltage | $V_{RWM}$ | 75 | V |
| Repetitive Peak Forward Current (one diode) | $I_{FRM}$ | 400 | mA |
| Forward Surge Current @ 8.3 ms<br>@ 8/20 µs | $I_{FSM}$ | 2<br>12 | A |
| Rated Average Power Dissipation (total package) | $P_{M(AV)}$ | 1500 | mW |
| Solder Temperature @ 10 s | | 260 | ºC |

## MECHANICAL and PACKAGING

- CASE: Void-free transfer molded thermosetting epoxy body meeting UL94V-0 flammability classification.
- TERMINALS: Tin-lead or RoHS compliant annealed matte-tin plating solderable per MIL-STD-750 method 2026.
- MARKING: MSC logo, MMAD1108 or MMAD1108e3 and date code. Pin #1 is to the left of the dot or indent on top of package.
- DELIVERY option: Tape and reel or carrier tube. Consult factory for quantities.
- WEIGHT: Approximately 0.127 grams
- See Package Dimensions on last page.

## PART NOMENCLATURE




## SYMBOLS & DEFINITIONS

| Symbol | Definition |
|---|---|
| $C_T$ | Total Capacitance: The total small signal capacitance between the diode terminals of a complete device. |
| $I_R$ | Maximum Leakage Current: The maximum leakage current that will flow at the specified voltage and temperature. |
| $V_{(BR)}$ | Breakdown Voltage: The voltage across the device at a specified current $I_{(BR)}$ in the breakdown region. |
| $V_F$ | Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current. |
| $V_{RWM}$ | Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range. |

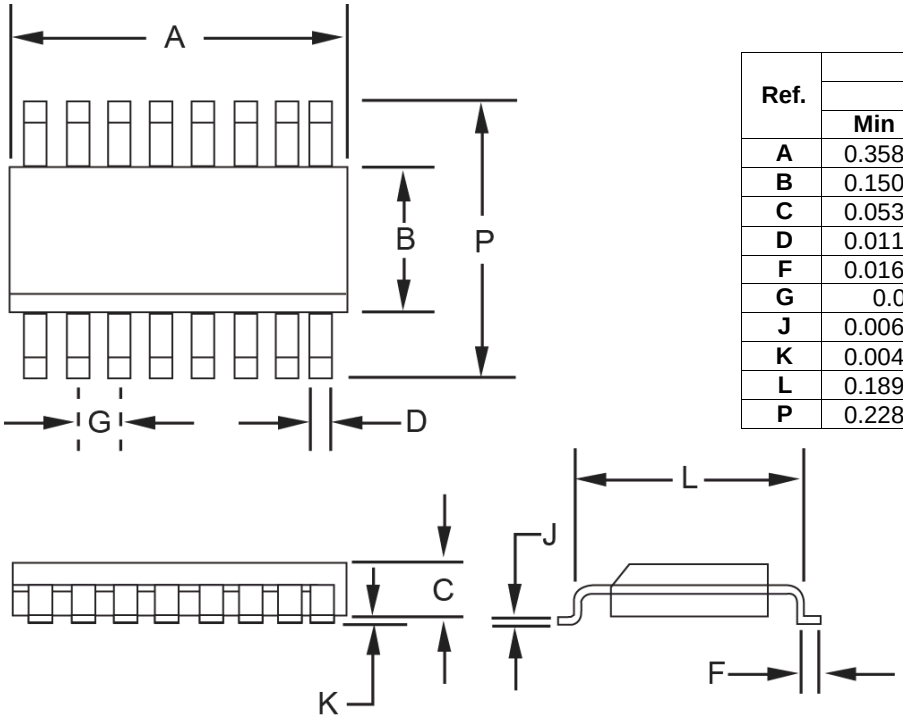
## ELECTRICAL CHARACTERISTICS @ 25 ºC unless otherwise stated

| PART NUMBER | BREAKDOWN VOLTAGE $V_{(BR)}$ @ $I_{(BR)}$ =100 µA<br>V | LEAKAGE CURRENT $I_R$ $T_A$ = 25 °C<br>µA | | LEAKAGE CURRENT $I_R$ $T_A$ = 150 °C<br>µA | | TOTAL CAPACITANCE $C_T$ @ 0 V<br>pF | REVERSE RECOVERY TIME $t_{rr}$<br>ns | FORWARD VOLTAGE $V_F$ $I_F$ = 10 mA<br>V | FORWARD VOLTAGE $V_F$ $I_F$ = 100 mA<br>V |
|---|---|---|---|---|---|---|---|---|---|
| | MIN | MAX | @$V_R$ | MAX | @$V_R$ | TYP | MAX | MAX | MAX |
| MMAD1108<br>MMAD1108e3 | 90 | 0.200 | 20 | 300 | 20 | 1.5 | 5.0 | 1.00 | 1.20 |


©2013 Microsemi Corporation

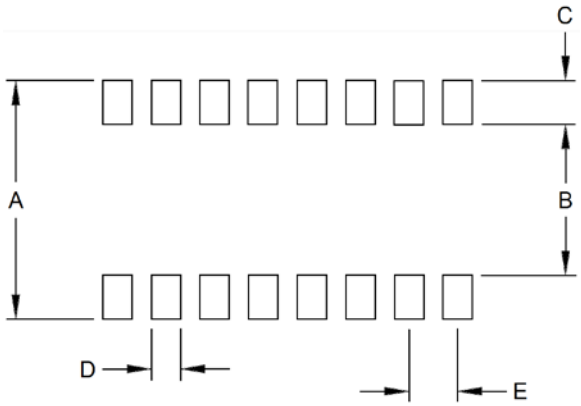
One Enterprise, Aliso Viejo, CA 92656 Ph: 949-380-6100 sales.support@microsemi.com

## PACKAGE DIMENSIONS




| Ref. | Dimensions | | | |
|---|---|---|---|---|
| | Inch | | Millimeters | |
| | Min | Max | Min | Max |
| A | 0.358 | 0.398 | 9.09 | 10.10 |
| B | 0.150 | 0.158 | 3.81 | 4.01 |
| C | 0.053 | 0.069 | 1.35 | 1.75 |
| D | 0.011 | 0.021 | 0.28 | 0.53 |
| F | 0.016 | 0.050 | 0.41 | 1.27 |
| G | 0.050 BSC | | 1.27 BSC | |
| J | 0.006 | 0.010 | 0.15 | 0.25 |
| K | 0.004 | 0.008 | 0.10 | 0.20 |
| L | 0.189 | 0.206 | 4.80 | 5.23 |
| P | 0.228 | 0.244 | 5.79 | 6.19 |

## PAD LAYOUT




| Ref. | Dimensions | |
|---|---|---|
| | Inch | Millimeters |
| | Typical | Typical |
| A | 0.275 | 7.0 |
| B | 0.155 | 4.0 |
| C | 0.060 | 1.52 |
| D | 0.024 | 0.6 |
| E | 0.050 | 1.270 |

## SCHEMATIC AND CIRCUIT

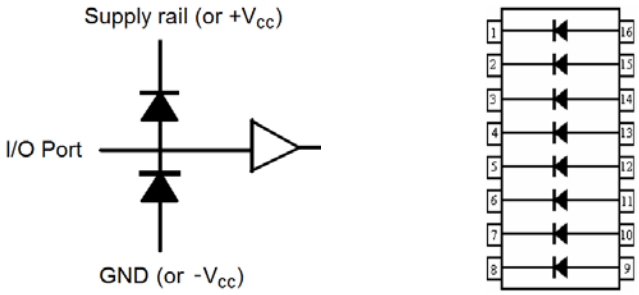



**Figure 1**


©2013 Microsemi Corporation

One Enterprise, Aliso Viejo, CA 92656 Ph: 949-380-6100 sales.support@microsemi.com