



**THE DATASHEET OF  
MMAD130E3/TR13**

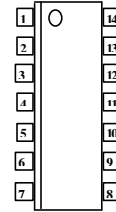
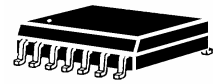


**Switching Diode Array  
Steering Diode TVS Array™**

**DESCRIPTION**

These low capacitance diode arrays are multiple, discrete, isolated junctions fabricated by a planar process and mounted in a 14-PIN package for use as steering diodes protecting up to ten 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.

**SWITCHING AND STEERING ARRAY**



Top Viewing Pin Layout

**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

**FEATURES**

- 20 Diode Array / protects 10 lines
- Molded 14-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 15kV, contact – 8 kV
  - 61000-4-4 (EFT): 40A – 5/50 ns
  - 61000-4-5 (surge): 12A, 8/20 μs

**APPLICATIONS / BENEFITS**

- High Frequency Data Lines
- RS-232 & RS-422 Interface Networks
- Ethernet: 10 Base T
- Computer I / O Ports
- LAN
- Switching Core Drivers

**MAXIMUM RATINGS**

- Operating Temperature: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Forward Surge Current: 2 Amps (8.3 ms)  
12 Amps (8/20 μs)
- Continuous Forward Current: 400 mA (one diode)
- Power Dissipation (P<sub>D</sub>): 1500 mW (total)

**MECHANICAL AND PACKAGING**

- Weight 0.127 grams (approximate)
- Marking: Logo, device number, date code
- Pin #1 defined by indent on top of package
- Tape & Reel packaging: 2500 pcs (STANDARD)
- Carrier tube packaging: 55 pcs

**ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless otherwise specified**

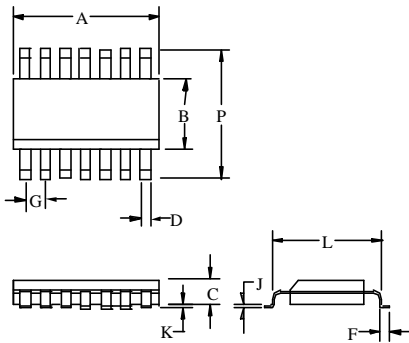
PART NUMBER	BREAKDOWN VOLTAGE $V_{BR}$ @ $I_{BR} = 100\mu A$ V	WORKING PEAK REVERSE VOLTAGE $V_{RWM}$ V	LEAKAGE CURRENT $I_R$ $T_A = 25^\circ C$ $\mu A$		LEAKAGE CURRENT $I_R$ $T_A = 150^\circ C$ $\mu A$		CAPACITANCE C @ 0 V pF	REVERSE RECOVERY TIME $t_{rr}$ ns	FORWARD VOLTAGE $V_F$ $I_F = 10 mA$ V	FORWARD VOLTAGE $V_F$ $I_F = 100 mA$ V
	MIN	MAX	MAX	@ $V_R$	MAX	@ $V_R$	TYP	MAX	MAX	MAX
MMAD130	90	75	0.200	20	300	20	1.5	5.0	1.00	1.20

**Switching Diode Array  
Steering Diode TVS Array™**

**SYMBOLS & DEFINITIONS**

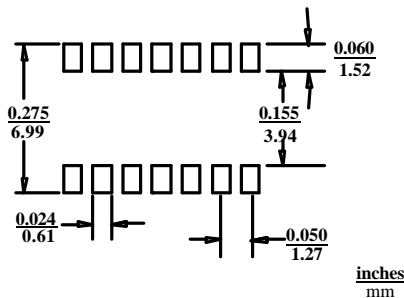
Symbol	DEFINITION
$V_{BR}$	Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current.
$V_{RWM}$	Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range.
$V_F$	Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current.
$I_R$	Maximum Leakage Current: The maximum leakage current that will flow at the specified voltage and temperature.
C	Capacitance: The capacitance of the TVS as defined @ 0 volts at a frequency of 1 MHz and stated in picofarads.

**OUTLINE AND CIRCUIT**

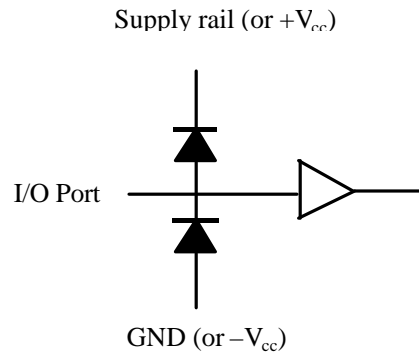


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.336	0.344	8.53	8.74
B	0.150	0.158	3.81	4.01
C	0.053	0.069	1.35	1.75
D	0.011	0.021	0.28	0.53
F	0.016	0.050	0.41	1.27
G	0.050 BSC		0.127 BSC	
J	0.006	0.010	0.15	0.25
K	0.004	0.008	0.10	0.20
L	0.189	0.206	4.80	5.23
P	0.228	0.244	5.79	6.19

**OUTLINE**

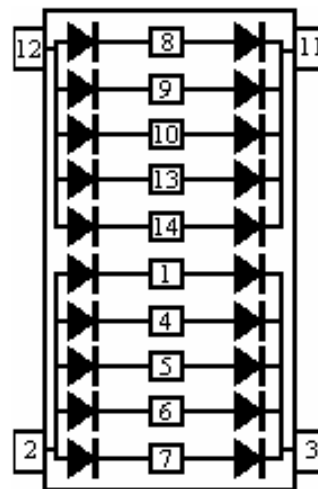


**PAD LAYOUT**



**STEERING DIODE APPLICATION**



figure 1



**CIRCUIT CONFIGURATION**

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View MMAD130E3/TR13 on WIN SOURCE](#)
-  [Microsemi Corporation](#) Information

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