



**MAD130
MAD1103
MAD1107
MAD1108**

DIODE ARRAY

These diode arrays are multiple diode junctions fabricated by a planar process and mounted in integrated circuit packages for use in high-current, fast-switching core-driver applications. These arrays offer many of the advantages of integrated circuits such as high-density packaging and improved reliability. These advantages result from such factors as fewer connections, more uniform device parameters, smaller size, less weight and fewer glass-to-metal seals.

- Designed for Use in Computers and Peripheral Equipment
- Applications Include:
 - Magnetic Cores
 - Thin-Film Memories
 - Plated-Wire Memories
 - Decoding or Encoding Applications

**MONOLITHIC
DIODE ARRAY**
HIGH CURRENT/FAST SWITCHING

MAXIMUM RATINGS (@ 25°C Free-Air Temperature unless otherwise noted)

Rating	Symbol	MAD130	MAD1103	MAD1107 MAD1108	Unit
Peak Reverse Voltage (1)	V _{RM}	40	50	50	Vdc
Steady-State Reverse Voltage	V _R	25	25	40	Vdc
Peak Forward Current at (or below) 25°C Free-Air Temperature (1)	I _{FM}	500			mA
Continuous Forward Current at (or below) 25°C Free-Air Temperature (2)	I _F	400			mA
Continuous Power Dissipation at (or below) 25°C Free-Air Temperature (3)	P _D	600			mW
Operating Free-Air Temperature Range	T _A	-65 to +125	-65 to +125	-55 to +150	°C
Storage Temperature Range	T _{stg}	-65 to +150	-65 to +150	-65 to +175	°C
Lead Temperature 1/16" from Case for 10 Seconds		260			°C

NOTES

- 1 These values apply for PW ≤ 100 μs, duty cycle ≤ 20%
- 2 Derate linearly to +125°C temperature at rate of 3.2 mA/°C
- 3 Derate linearly to +125°C temperature at rate of 6.0 mW/°C

PACKAGE OPTIONS

Device	CERAMIC C Suffix		PLASTIC P Suffix		FLAT CERAMIC F Suffix	
	Pin Connection Ref. No.	Case	Pin Connection Ref. No.	Case	Pin Connection Ref. No.	Case
MAD130 Dual 10-Diode Array	3	632-02	3	646-05	—	—
MAD1103 Dual 8-Diode Array	5	632-02	5	646-05	4	606-04
MAD1107 Dual 8-Diode Array	2	632-02	2	646-05	2	607-05
MAD1108 8-Diode Array	1	620-02	1	648-05	1	650-02

MAD1103F
FLAT CERAMIC PACKAGE
CASE 606-04

MAD1107F
FLAT CERAMIC PACKAGE
CASE 607-05

MAD1108C
CERAMIC PACKAGE
CASE 620-02

**MAD130C
MAD1103C
MAD1107C**
CERAMIC PACKAGE
CASE 632-02

MAD1108P
PLASTIC PACKAGE
CASE 648-05

**MAD130P
MAD1103P
MAD1107P**
PLASTIC PACKAGE
CASE 646-05

MAD1108F
FLAT CERAMIC PACKAGE
CASE 650-02

ELECTRICAL CHARACTERISTICS (@ 25°C Free-Air Temperature)

Characteristic	Symbol	Limit		Unit
		Min	Max	
Reverse Breakdown Voltage (1) ($I_R = 10 \mu A$)	$V_{(BR)}$	40 50	— —	Vdc
Static Reverse Current ($V_R = 25 V$) ($V_R = 40 V$)	I_R	— — —	0.5 0.5 0.1	μA
Static Forward Voltage ($I_F = 100 mA$) ($I_F = 500 mA$) (2)	V_F	— —	1.1 1.5	Vdc
Peak Forward Voltage (3) ($I_F = 500 mA$)	V_{FM}	—	5.0	Vdc

NOTES

- 1 This parameter must be measured using pulse techniques. $PW = 100 \mu s$, duty cycle $\leq 20\%$
- 2 This parameter is measured using pulse techniques. $PW = 300 \mu s$, duty cycle $\leq 2\%$. Read time is $90 \mu s$ from the leading edge of the pulse
- 3 The initial instantaneous value is measured using pulse techniques. $PW = 150 ns$, duty cycle $\leq 2\%$, pulse rise time $\leq 10 ns$. The total capacitance shunting the diode is $19 pF$ maximum and the equipment bandwidth is $80 MHz$

SWITCHING CHARACTERISTICS (@ 25°C Free-Air Temperature)

Characteristic	Symbol	Typical Value	Unit
Forward Recovery Time, Figure 3 ($I_F = 500 mA$)	t_{fr}	20	ns
Reverse Recovery Time, Figure 2 ($I_F = 200 mA$, $I_{RM} = 200 mA$, $R_L = 100 \Omega$, $i_{rr} = 20 mA$)	t_{rr}	80	ns

PIN CONNECTION DIAGRAMS

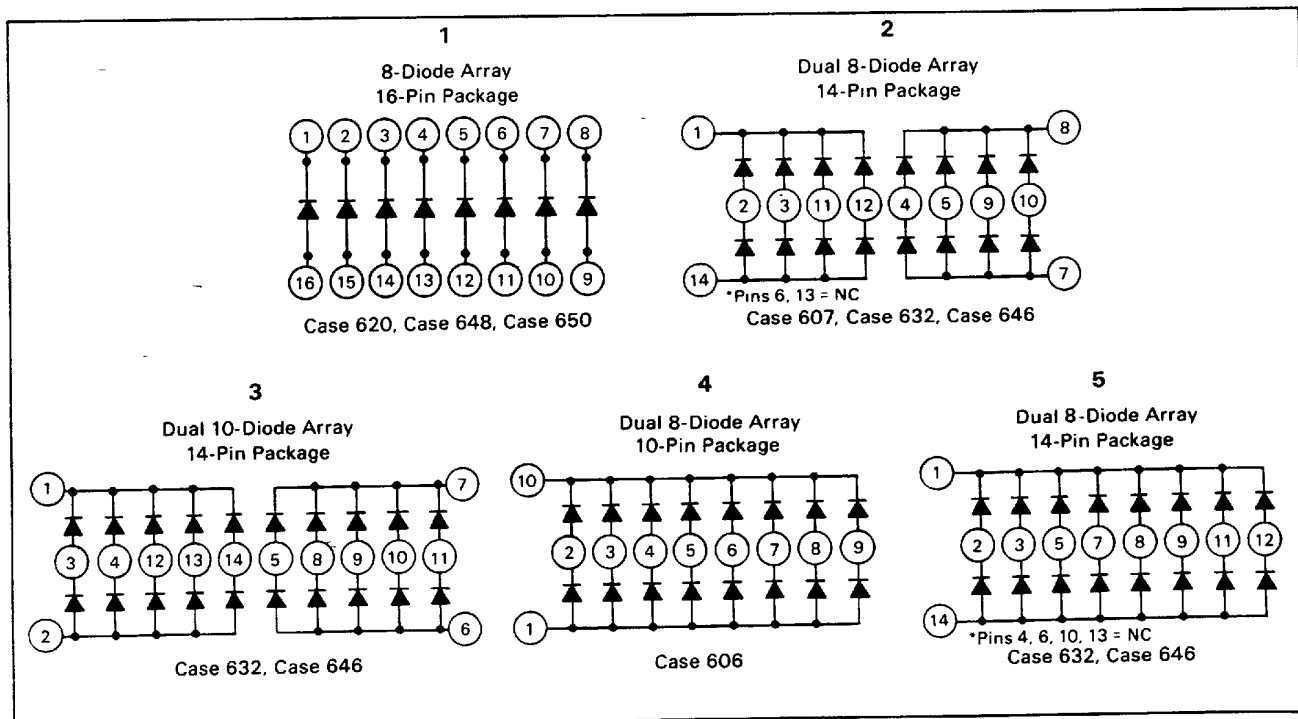


FIGURE 1 — TYPICAL CHARACTERISTICS
STATIC FORWARD VOLTAGE

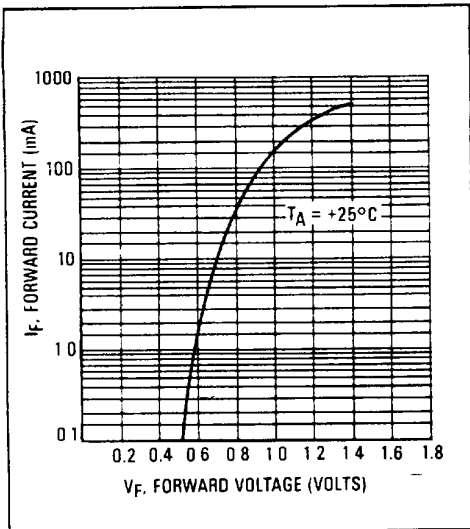


FIGURE 2 — FORWARD RECOVERY TIME AND PEAK FORWARD VOLTAGE TEST CIRCUIT AND WAVEFORMS

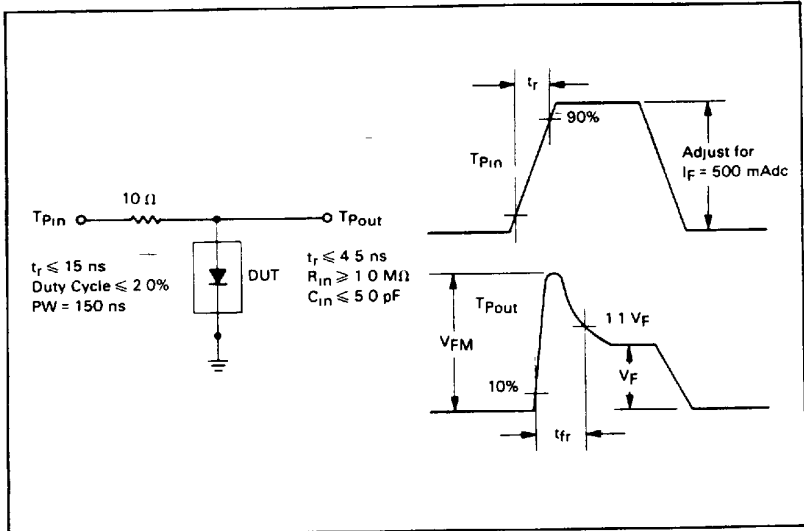
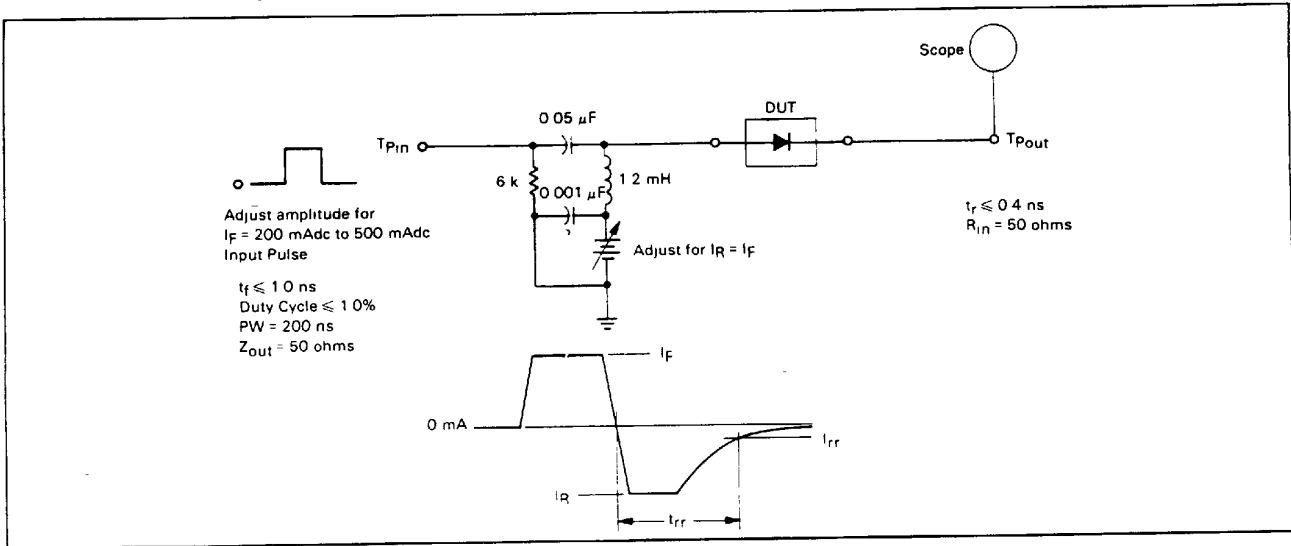
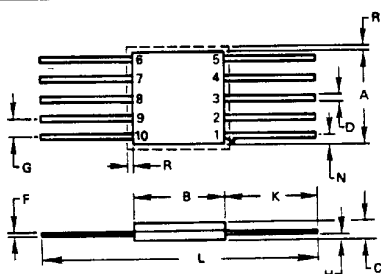


FIGURE 3 — REVERSE RECOVERY TIME TEST CIRCUIT AND WAVEFORMS



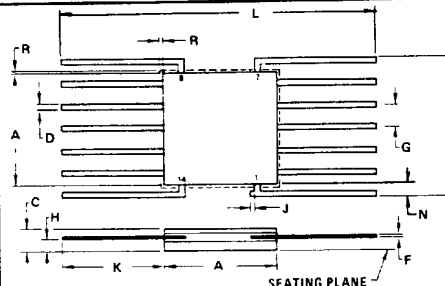
OUTLINE DIMENSIONS



NOTE
1 ALL RULES & NOTES ASSOCIATED WITH TO 91 OUTLINE SHALL APPLY
2 LEADS WITHIN 0.25 mm (0.010) TOTAL OF TRUE POSITION AT MAXIMUM MATERIAL CONDITION (AT BODY)

CASE 606-04
F SUFFIX
CERAMIC PACKAGE

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.10	7.36	0.240	0.290
B	6.10	6.60	0.240	0.260
C	0.762	1.77	0.030	0.070
D	0.254	0.482	0.010	0.019
F	0.077	0.152	0.003	0.006
G	1.15	1.39	0.045	0.055
H	0.127	0.389	0.005	0.035
K	1.78	—	0.070	—
R	—	0.381	—	0.015



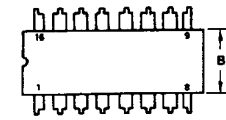
NOTES
1 R DIMENSIONS DETERMINE ZONE WITHIN WHICH ALL BODY AND LEAD IRREGULARITIES LIE
2 LEADS WITHIN 0.13 mm (0.005) TOTAL OF TRUE POSITION RELATIVE TO A AT MAXIMUM MATERIAL CONDITION

CASE 607-05
F SUFFIX
CERAMIC PACKAGE

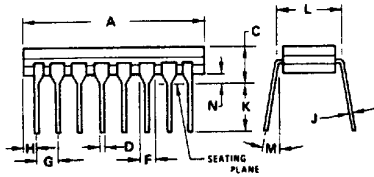
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.10	6.60	0.240	0.260
C	0.76	1.78	0.030	0.070
D	0.33	0.48	0.013	0.019
F	0.08	0.15	0.003	0.006
G	1.27 BSC	—	0.050 BSC	—
H	0.30	0.89	0.012	0.035
J	—	0.38	—	0.015
K	6.35	9.40	0.250	0.370
L	18.80	—	0.740	—
N	0.25	—	0.010	—
R	—	0.38	—	0.015
S	7.62	8.38	0.300	0.330



OUTLINE DIMENSIONS (continued)

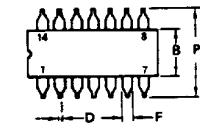


- NOTES:
 1 LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION
 2 PKG. INDEX: NOTCH IN LEAD NOTCH IN CERAMIC OR INK DOT
 3 DIM "L" TO CENTER OF LEADS WHEN FORMED PARALLEL

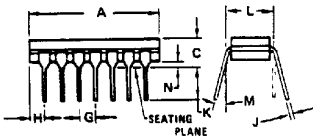


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	19.06	19.81	0.750	0.780
B	6.22	6.98	0.245	0.275
C	4.06	5.08	0.160	0.200
D	0.38	0.51	0.015	0.020
F	1.40	1.65	0.055	0.065
G	2.54 BSC		0.100 BSC	
H	0.51	1.14	0.020	0.045
J	0.20	0.30	0.008	0.012
K	3.18	4.06	0.125	0.160
L	7.37	7.87	0.290	0.310
M	15°		15°	
N	0.51	1.02	0.020	0.040

CASE 620-02
 C SUFFIX
 CERAMIC PACKAGE



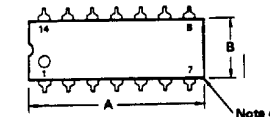
- NOTES:
 1. ALL RULES AND NOTES ASSOCIATED WITH MO-001 AA OUTLINE SHALL APPLY
 2. DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
 3. LEADS WITHIN 0.25mm (0.010) DIA OF TRUE POSITION AT SEATING PLANE AND MAXIMUM MATERIAL CONDITION.



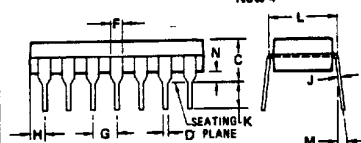
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	16.8	19.9	0.660	0.785
B	5.59	7.11	0.220	0.280
C	-	5.08	-	0.200
D	0.381	0.584	0.015	0.023
F	0.77	1.77	0.030	0.070
G	2.54 BSC		0.100 BSC	
J	0.203	0.381	0.008	0.015
K	2.54	-	0.100	-
L	7.62 BSC		0.300 BSC	
M	15°		15°	
N	0.51	0.76	0.020	0.030
P	-	8.25	-	0.325

CASE 632-02
 C SUFFIX
 CERAMIC PACKAGE

All JEDEC dimensions and notes apply.

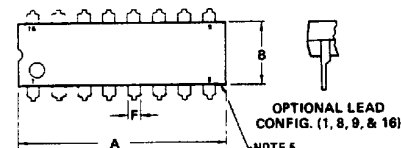


- NOTES:
 1. LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
 2. DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
 3. DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
 4. ROUNDED CORNERS OPTIONAL.

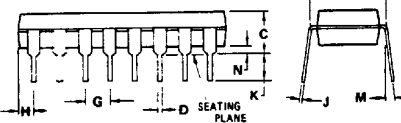


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	18.16	19.56	0.715	0.770
B	6.10	6.60	0.240	0.260
C	4.06	5.08	0.160	0.200
D	0.38	0.53	0.015	0.021
F	1.02	1.78	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	1.32	2.41	0.052	0.095
J	0.20	0.38	0.008	0.015
K	2.32	3.43	0.115	0.135
L	7.62 BSC		0.300 BSC	
M	0°		10°	
N	0.51	1.02	0.020	0.040

CASE 646-05
 P SUFFIX
 PLASTIC PACKAGE



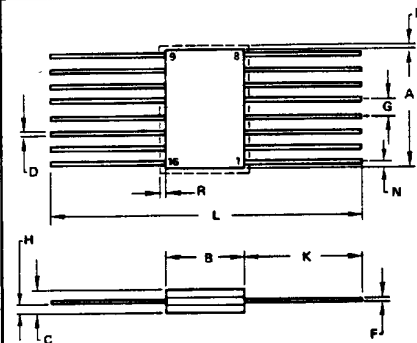
OPTIONAL LEAD CONFIG. (1, 8, 9, & 16)
 NOTE 5



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	18.80	21.34	0.740	0.840
B	6.10	6.60	0.240	0.260
C	4.06	5.08	0.160	0.200
D	0.38	0.53	0.015	0.021
F	1.02	1.78	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	0.38	2.41	0.015	0.095
J	0.20	0.38	0.008	0.015
K	2.92	3.43	0.115	0.135
L	7.62 BSC		0.300 BSC	
M	0°		10°	
N	0.51	1.02	0.020	0.040

CASE 648-05
 P SUFFIX
 PLASTIC PACKAGE

- NOTES:
 1. LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
 2. DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
 3. DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
 4. "F" DIMENSION IS FOR FULL LEADS. "HALF" LEADS ARE OPTIONAL AT LEAD POSITIONS 1, 8, 9, and 16)
 5. ROUNDED CORNERS OPTIONAL.



- NOTES:
 1. LEAD NO. 1 IDENTIFIED BY TAB ON LEAD OR DOT ON COVER.
 2. LEADS WITHIN 0.13 mm (0.005) TOTAL OF TRUE POSITION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.40	10.15	0.370	0.400
B	6.22	6.60	0.245	0.260
C	1.52	2.03	0.060	0.080
D	0.38	0.48	0.015	0.019
F	0.08	0.15	0.003	0.006
G	1.27 BSC		0.050 BSC	
H	0.64	0.89	0.025	0.035
K	6.35	9.40	0.250	0.370
L	18.92	-	0.745	-
N	-	0.51	-	0.020
R	-	0.38	-	0.015

CASE 650-02
 F SUFFIX
 CERAMIC PACKAGE

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