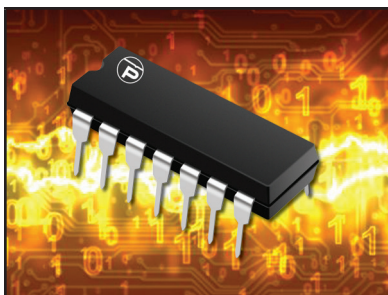


## ULTRA LOW CAPACITANCE MULTI-LINE STEERING DIODE ARRAY



**14 PIN DIP PACKAGE**

### DESCRIPTION

The MAD Series are a low distortion steering diodes. These devices are intended for use in high frequency analog or digital data I/O ports for protection against Electrostatic Discharge (ESD) and Electrical Fast Transients (EFT). The MAD Series is connected between rail-to-rail voltage bus or rail-to-ground for clamping and diverting overvoltage transients for the protection of sensitive network interface circuits.

This series provides low capacitance, which insures signal integrity up to 900MHz, while complete isolation between adjacent diodes keeps cross-talk to a minimum. The MAD Series is available in a 14 pin DIP and meets the IEC 61000-4-2, IEC 61000-4-4 and IEC 61000-4-5 requirements.

### FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 24A, 8/20 $\mu$ s - Level 2(Line-Gnd) & Level 3(Line-Line)
- 500 Milliwatt Continuous Power Dissipation
- Monolithic Design
- ESD Protection > 25 kilovolts
- Protects up to 7 to 10 I/O Lines
- Working Voltage > 50 Volts
- Low Leakage Current < 0.1 $\mu$ A
- Ultra Low Capacitance: 5pF per Diode
- RoHS Compliant
- REACH Compliant

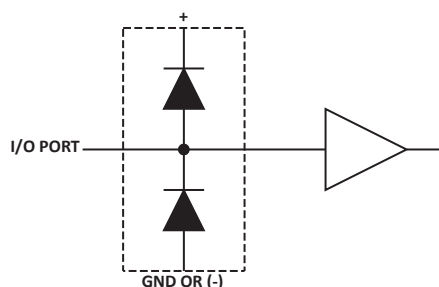
### APPLICATIONS

- High Frequency Data Lines
- RS-232 & RS-422 Interface Networks
- Ethernet 10/100 Base T
- Computer I/O Ports

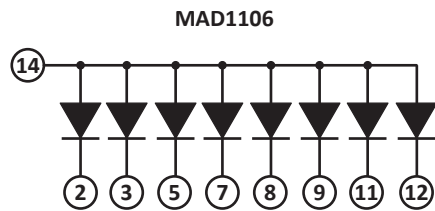
### MECHANICAL CHARACTERISTICS

- Molded 14 Pin Dual-In-Line (DIP) Package
- Approximate Weight: 1.2 grams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:  
Pure-Tin - Sn, 100: 260-270°C
- Flammability Rating UL 94V-0

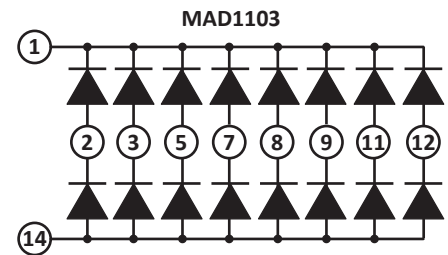
### CIRCUIT DIAGRAM



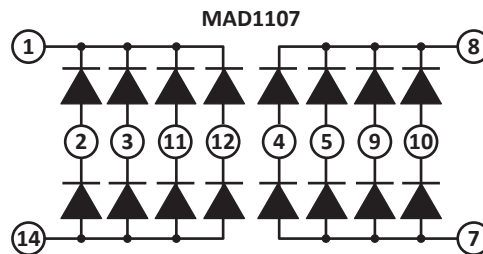
## PIN IDENTIFICATION AND CONFIGURATION



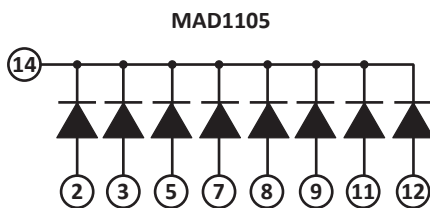
8 Diode Common Anode Array  
 NC Pins 1, 4, 6, 10 & 13  
 8 Lines of Protection



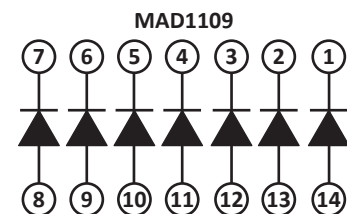
16 Diode Array  
 NC Pins 4, 6, 10 & 13  
 8 Lines of Protection



Dual 8 Diode Array  
 NC Pins 6 & 13  
 8 Lines of Protection



8 Diode Common Cathode Array  
 NC Pins 1, 4, 6, 10 & 13  
 8 Lines of Protection



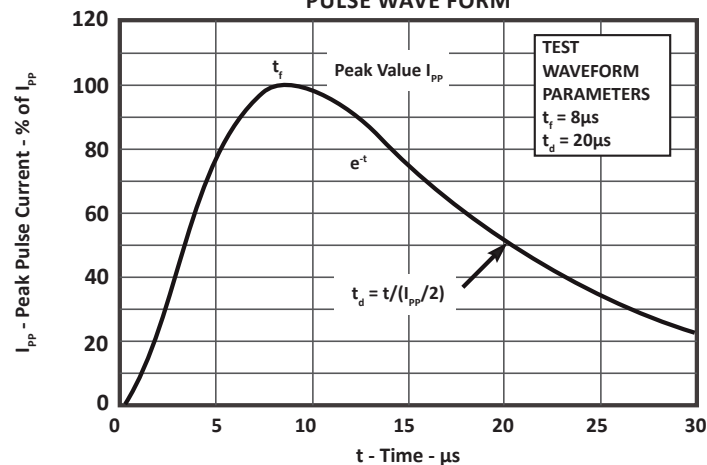
7 Isolated Diode Array  
 (Independent)  
 7 Lines of Protection

**TYPICAL DEVICE CHARACTERISTICS**
**MAXIMUM RATINGS @ 25°C Unless Otherwise Specified**

PARAMETER	SYMBOL	VALUE	UNITS
Continuous Power Dissipation	$P_{PK}$	500	Milliwatts
Continuous Forward Current (Single Diode)	$I_P$	400	mA
Repetitive Peak Forward Current @ $t_p = 5\mu s$ , $F = 50kHz$	$I_{FRM}$	700	mA
Operating Temperature	$T_A$	-55 to 150	°C
Storage Temperature	$T_{STG}$	-55 to 150	°C

**ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified**

PART NUMBER	REPETITIVE PEAK REVERSE VOLTAGE	MAXIMUM FORWARD PEAK PULSE CURRENT	MAXIMUM FORWARD VOLTAGE	MAXIMUM REVERSE LEAKAGE CURRENT	MAXIMUM CAPACITANCE (Per Diode)
	@ 10 $\mu A$ $V_{RRM}$ VOLTS	@ 8/20 $\mu s$ $I_{FM}$ AMPS	@ 100mA $V_F$ VOLTS	$V_{RRM}$ @ 40V $I_R$ $\mu A$	@ 4V, 1MHz $C_J$ pF
MAD1103	50	12	1.2	0.1	5
MAD1105	50	12	1.2	0.1	5
MAD1106	50	12	1.2	0.1	5
MAD1107	50	12	1.2	0.1	5
MAD1109	50	12	1.2	0.1	5

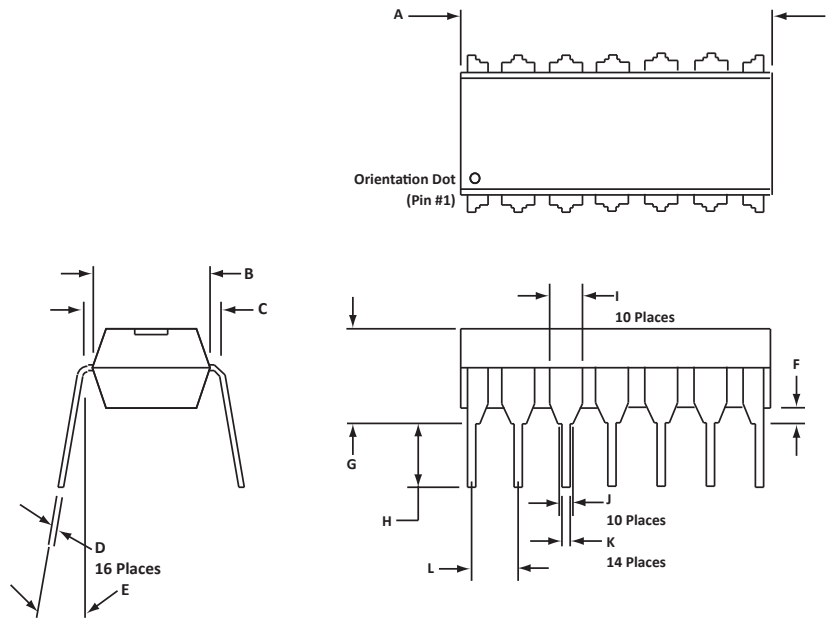
**FIGURE 1  
PULSE WAVE FORM**


## 14 PIN DIP PACKAGE INFORMATION

OUTLINE DIMENSIONS				
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	7.37	7.87	0.290	0.310
D	0.20	0.38	0.008	0.015
E	0°	10°	0°	10°
F	0.38	1.01	0.015	0.039
G	3.69	4.69	0.145	0.185
H	2.92	3.43	0.115	0.135
I	1.02	1.78	0.040	0.070
J	1.32	2.41	0.052	0.095
K	0.38	0.53	0.015	0.021
L	2.54	2.54	0.100	0.100

**NOTES**

- Dimensions are exclusive of mold flash and metal burrs.
- Dimension "L" is between centers.



## ORDERING INFORMATION

BASE PART NUMBER	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
MADxxxx	-LF	n/a	n/a	n/a	25

**NOTES**

- Marking on Part - logo, part number, date code and pin one defined by dot on top of package.
- This series is only available in a lead-free configuration.

Package outline per document number 06002.R4 10/11.

## COMPANY INFORMATION

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### COMPANY PROFILE

In business more than 25 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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