

Package Style 1072

Features

- ◆ Non-Magnetic Package for MRI Applications
- ◆ Rectangular MELF Ceramic Package
- ◆ Hermetically Sealed
- ◆ RoHS Compliant

Description

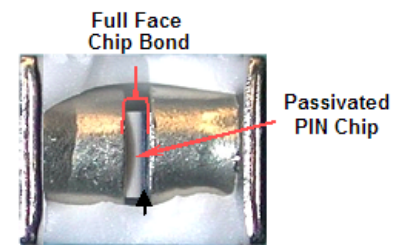
The MADP-000235-10720T is a surface mount PIN diode in a non-magnetic **Metal Electrode Leadless Faced (MELF)** package. The MADP-000235-10720T is manufactured using M/A-COM Technology Solutions time proven HIPAX technology. The result is a low inductance ceramic package with no ribbons or wires. The package utilizes a unique non-magnetic plating process that provides for a hermetically sealed component that has extremely low electromagnetic permeability. Incorporated in the package is a glass passivated CERMA chip that is full face bonded on the cathode and anode which maximizes the surface contact area to minimize the electrical and thermal resistances. The chip and package have been comprehensively characterized both electrically and mechanically to ensure repeatable and predictable performance.

Application

The MADP-000235-10720T is designed for circuit protection and the tuning of RF coil designs in MRI applications. When connected in an anti-parallel configuration these PIN diodes provide excellent protection from long RF pulses and spikes.

Designed for Automated Assembly

This easy to use package design makes automatic pick and place, indexing and assembly, extremely easy. The parallel flat surfaces are well suited for most key jaw or vacuum pick-up techniques. All of the solderable surfaces are tin plated and compatible with industry standard reflow and vapor phase soldering processes.



Diode Cross Section

Absolute Maximum Ratings^{1,2,3} @ 25°C

Parameter	Absolute Maximum
Reverse Voltage	-35 V
Forward Current	1.5 A
Operating Temperature	-55°C to +150°C
Storage Temperature	-55°C to +175°C
Mounting Temperature	+260°C for 30 seconds

1. Exceeding these limits may cause permanent damage to the device.
2. Values will re-rate over temperature.

RoHS

The MADP-000235-10720T is fully RoHS compliant meaning that it contains less than the maximum allowable concentration of 0.1% by weight for lead, PBB, PBDE, and 0.01% of cadmium and hexavalent chromium at raw homogeneous materials level. There is less than 100ppm of mercury and no mercury was intentionally added to the component.

ADVANCED: Data Sheets contain information regarding a product M/A-COM is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

PRELIMINARY: Data Sheets contain information regarding a product M/A-COM has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

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Non-Magnetic MELF PIN Diode

V1

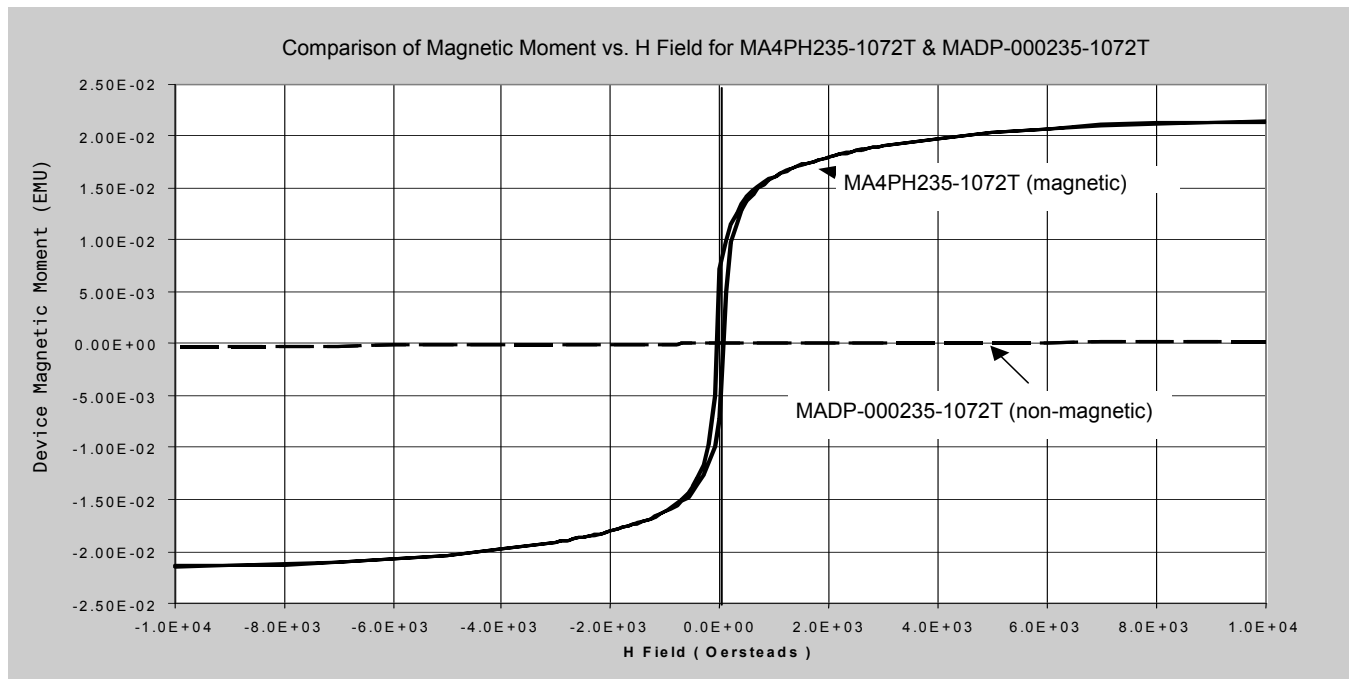
Electrical Specifications @ $T_{AMB} = +25^{\circ}\text{C}$

Part Number	Minimum ¹ Rev. Voltage	Maximum ² Capacitance	Maximum ³ Series Res.	Minimum ³ Parallel Res.	Thermal Resistance	Power Dissipation	Nominal Characteristics	
	$V_R @ 10\mu\text{A}$	$C_T @ 10\text{V}$	$R_S @ 10\text{mA}$	$R_P @ 10\text{mA}$		Rating	Carrier ⁴ Lifetime	I Region Width
	Volts	Volts	Ω	Ω		Watts	μS	mils
MADP-000235-10720T	35	1.2	0.5	5K	20	7.5	0.3	0.4

Notes:

1. The minimum specified V_R (Reverse Voltage) is sourced and the resultant reverse leakage current, I_r , is measured to be $<10\mu\text{A}$.
2. Capacitance is specified at 1MHz.
3. Resistance is specified at 100MHz
4. Nominal carrier life time specified with diode biased at $I_F = +10\text{mA}$, $I_{REV} = -6\text{mA}$

Typical Non-Magnetic Performance



Magnetic Property	MADP-000235-1072T	MA4PH235-1072T
Saturation Moment (EMU) @ $H = H_{MAX}$ Oersteds	$2.3 \times E-4$	$2.1 \times E-2$
Remanance Moment (EMU) @ $H = 0$ Oersteds	$4.2 \times E-8$	$7.1 \times E-3$
Coercivity (Oersteds) @ EMU = 0 Moment	1	59.2

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Non-Magnetic MELF PIN Diode

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Cleanliness and Storage

- ◆ These devices should be handled and stored in a clean environment.
- ◆ Ends of the device are tin plated for greater solderability.
- ◆ Continuous exposure to high humidity (>80%) for extended periods may cause the surface to oxidize. Caution should be taken when storing devices for long periods.

ESD

- ◆ These devices are susceptible to ESD and are rated Class 1A, HBM.

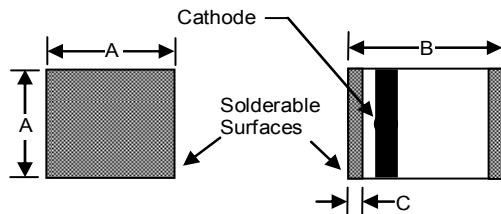
General Handling

- ◆ Device can be handled with tweezers or vacuum pickups and are suitable for use with automatic pick-and-place equipment.

MELF Assembly Recommendations

- ◆ Devices may be soldered using standard 60Sn/40Pb or RoHS compliant solders. MELF devices are tin plated 50 μ m thick to ensure an optimum connection.

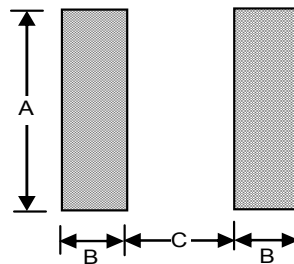
1072 Package Dimensions



Case Style	Size Inches (mm)		
	A (sq) Min./Max.	B Min./Max.	C Min./Max.
1072	0.080/0.095 (2.032/2.413)	0.115/0.135 (2.921/3.429)	0.008/0.030 (.203/.762)

All tolerances are $\pm .001$ " ($\pm .025$ mm).

Circuit Pad Layout



Dimension	Package Style 1072	
	inches	mm
A	0.093	2.36
B	0.050	1.27
C	0.060	1.52

Ordering Information

(Diodes are available in tape and reel in quantities shown below)

Part Number	Quantity (7" Reel)
MADP-000235-10720T	1500

Tape and reel information can be found on the M/A-COM Technology Solutions website at :

<http://www.macom.com/Application%20Notes/pdf/M513.pdf>

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