



DATASHEET Part No. M620720 Product: ISM 868 & 915 MHz Embedded Ceramic

# Part No. M620720 ISM 868 & 915 MHz Embedded Ceramic Antenna

868 MHz; 915 MHz

Supports: Tracking, Smart Home, Agriculture, Automotive, Healthcare, Digital Signage, Wearables, Industrial Devices



ISM 868 & 915 MHz Embedded Ceramic Antenna

868 MHz; 915 MHz

#### KEY BENEFITS Stay-in-Tune

IMD antenna technology provides superior RF field containment, resulting in less interaction with surrounding components.

## Quicker Time-to-Market

By optimizing antenna size, performance and emissions, customer and regulatory specifications are more easily met.

## Reliability

Products are the latest RoHS version compliant.

#### **APPLICATIONS**

•	Embedded	•	Telematics
	design	•	Tracking
•	Cellular,	•	Healthcare
	Headsets,	•	M2M,
	Tablets		Industrial
•	Gateway,		devices
	Access	•	Smart Grid
	Point	•	OBD-II

Handheld

Ethertronics' series of Ceramic Isolated Magnetic Dipole<sup>™</sup> (IMD) antennas deliver on the key needs of device designers for higher functionality and performance in smaller/thinner designs. These innovative antennas provide compelling advantages for 868 and 915 MHz ISM enabled handheld devices, media players and other mobile devices.

#### **Real-World Performance and Implementation**

Ceramic antennas may look alike on the outside, but the important difference is inside. Other antennas may contain simple PIFA or monopole designs that interact with their surroundings, complicating layout or changing performance with use position. Ethertronics' antennas utilize patented IMD technology to deliver a unique size and performance combination.

## **Electrical Specifications**

Typical performance on 40 x 100 mm PCB

Frequency	863 - 870 MHz	902 – 928 MHz	
Peak Gain	0.30 dBi	0.75 dBi	
Average Efficiency	58%	60%	
VSWR Match	1.6:1 max	2.5:1 max	
Feed Point Impedance	50 ohms		
Polarization	Linear		
Power Handling	0.5 Watt CW		

## **Mechanical Specifications & Ordering Part Number**

Ordering Part Number	M620720
Size (mm)	6.00 x 2.00 x 1.08
Mounting	SMT
Weight (grams)	0.1
Packaging	Tape & Reel, M620720 – 1,000 pieces per reel
Demo Board	M620720-01

Proprietary

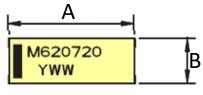


# **Antenna Dimensions**

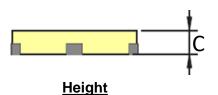
Typical antenna dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
M620720	$6.00 \pm 0.2$	$2.00 \pm 0.2$	1.08 ± 0.1

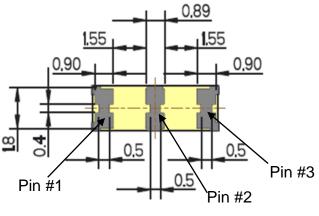




Top View



Pin	Description
1	Feed
2	Dummy
3	Ground



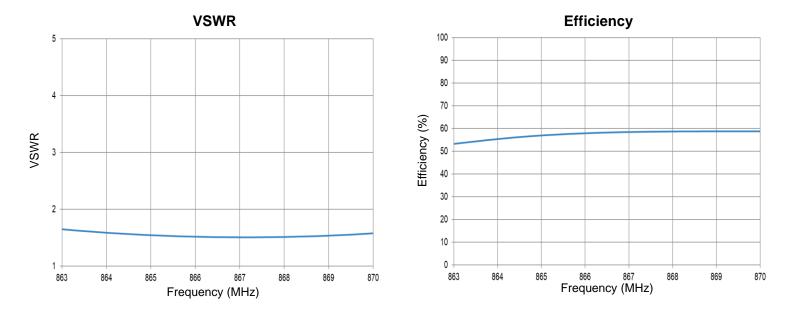
# **Bottom View**



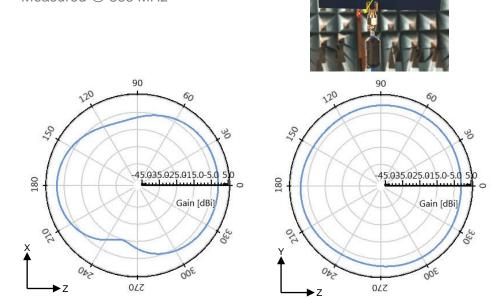


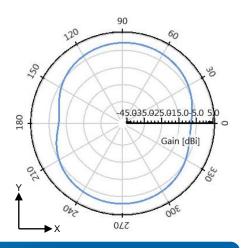
Typical performance on 40 x 100 mm PCB

	863-870 MHz		
Component	Value	Tolerance	50ohm
P1	5.0 pF	±0.05 pF	P2
P2	82 pF ± 5%		<u> </u>



## **Antenna Radiation Patterns**





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Typical performance on 40 x 100 mm PCB Measured @ 868 MHz

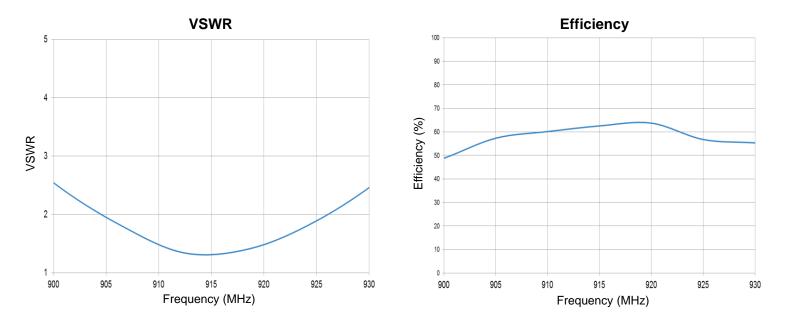
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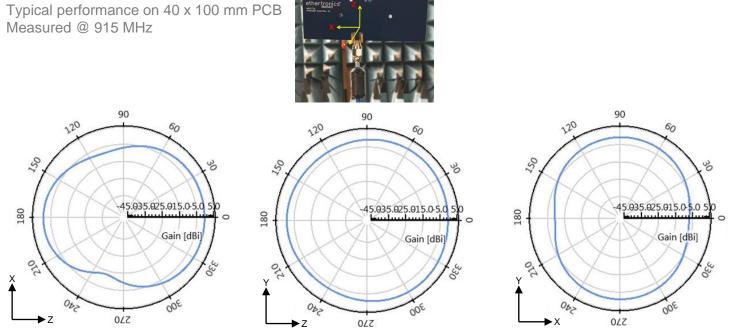


Typical performance on 40 x 100 mm PCB

	902-928 MHz		
Component	Value	Tolerance	
P1	3.6 pF	±0.05 pF	P2
P2	82 pF ± 5%		<u> </u>



#### **Antenna Radiation Patterns**



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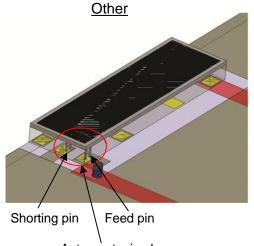
#### **Antenna Layout** Typical layout dimensions (mm) 9.9 10.4 10.4 0 0.7 2.0 2.4 Antenna Outline BOTTOM METAL SOLDER MASK SUBSTRATE PADS TOP METAL -SOLDER MASK Additional VIAS: Diam. 0.2mm to be placed around antenna, (no vias on transmission lines). Via holes must be covered by solder mask 9.0 **Pin Descriptions** 0.1 **Pin#** Description 0.7 2.1 2.4 Pin #1 Feed 1 3.2 Pin #2 2 Dummy Pin #3 3 Ground 8.2 50Ω Transmission-TOP METAL line SUBSTRATE Matching Network (Demo Board) 902-928 MHz 863-870 MHz Value Value Tolerance Component Tolerance ±0.05 pF P1 5.0 pF ±0.05 pF 3.6 pF P2 82 pF ± 5% 4.0 50 0.3 \*Actual matching values depend on customer design Antenna -Outline 8.2 50ohm

BOTTOM METAL

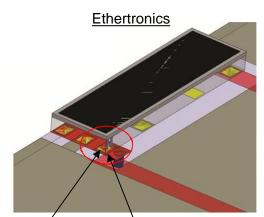


#### Antenna Layout Tips (General reference)

Important, layout guidelines for correct operation of Ethertronics Ceramic Antennas. Please read guidelines below before laying out the antenna in a device. Figure 1 shows the typical antenna layout. Figure 2 shows Ethertronics' antenna layout.



Antenna tuning loop: Figure 1 Typical Antenna Layout



Shorting pin and feed pin are shared in Ethertronics ceramic antennas

Figure 2 Ethertronics Antenna Layout (Required)

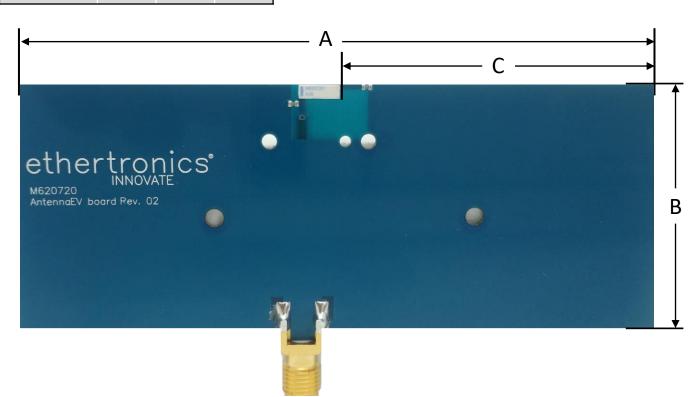
- The antenna tuning loop is formed by the PCB layout.
- The feed pin and shorting pin are combined because it requires very close proximity to achieve more band- width.



#### **Antenna Demo Board**

Typical layout dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
M620720-01	100.0	40.0	50.0



# **Mouser Electronics**

Authorized Distributor

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AVX: M620720 M620720-01