

# Part No. M830120 GPS/GLONASS/Beidou/Galileo Ceramic Antenna

1.575 / 1.561 / 1.606 GHz

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



Ethertronics' series of ceramic Isolated Magnetic Dipole™ (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 GPS enabled handheld 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.

### GPS / GLONASS / Beidou / Galileo Ceramic Antenna

1.575 GHz, 1.561 GHz, 1.606 GHz

#### 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 design
- POS, Headsets, Tablets
- Gateway, Access Point
- Handheld
- Telematics
- Tracking
- Healthcare
- M2M, Industrial devices
- Smart Grid
- OBD-II

### Electrical Specifications

Typical performance on 40 x 80 mm PCB

Frequency (GHz)	1.559 – 1.563	1.575	1.559 – 1.591	1.593 – 1.610
GNSS Bands	Beidou	GPS	Galileo	Glomass
Peak Gain (dBi)	1.76	1.92	1.92	1.71
Efficiency (%)	70	73	70	62
Center Frequency $f_0$ (GHz)	1.561	1.575	1.575	1.603
VSWR	2.0:1 max			
Feed Point Impedance	50 $\Omega$ unbalanced			

### Mechanical Specifications & Ordering Part Number

Ordering Part Number	M830120
Size (mm)	8.00 x 3.00 x 1.33
Mounting	Surface mount
Weight (grams)	0.2
Packaging	Tape & Reel, M830120 – 1,000 pieces per reel
Demo Board	M830120-01

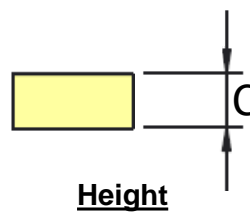
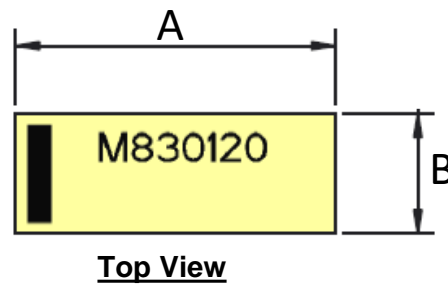
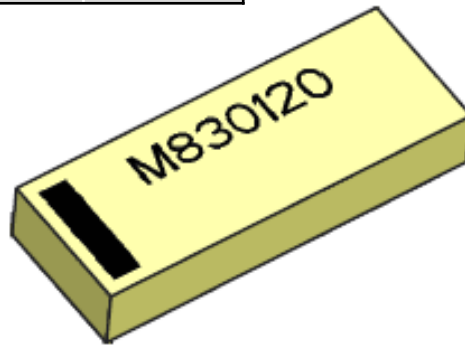


GNSS Ethertronics' Embedded Ceramic Antenna Specifications  
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

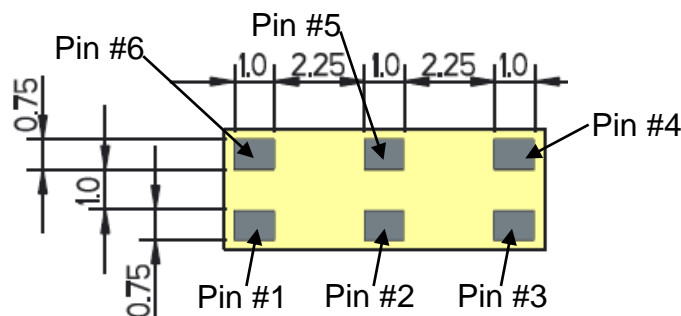
### Antenna Dimensions

Typical antenna dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
M830120	8.00 ± 0.2	3.00 ± 0.2	1.33 ± 0.1



Pin	Description
1	Ground
2	Dummy Pad
3	Matching circuit connection
4	Dummy Pad
5	Dummy Pad
6	Feed



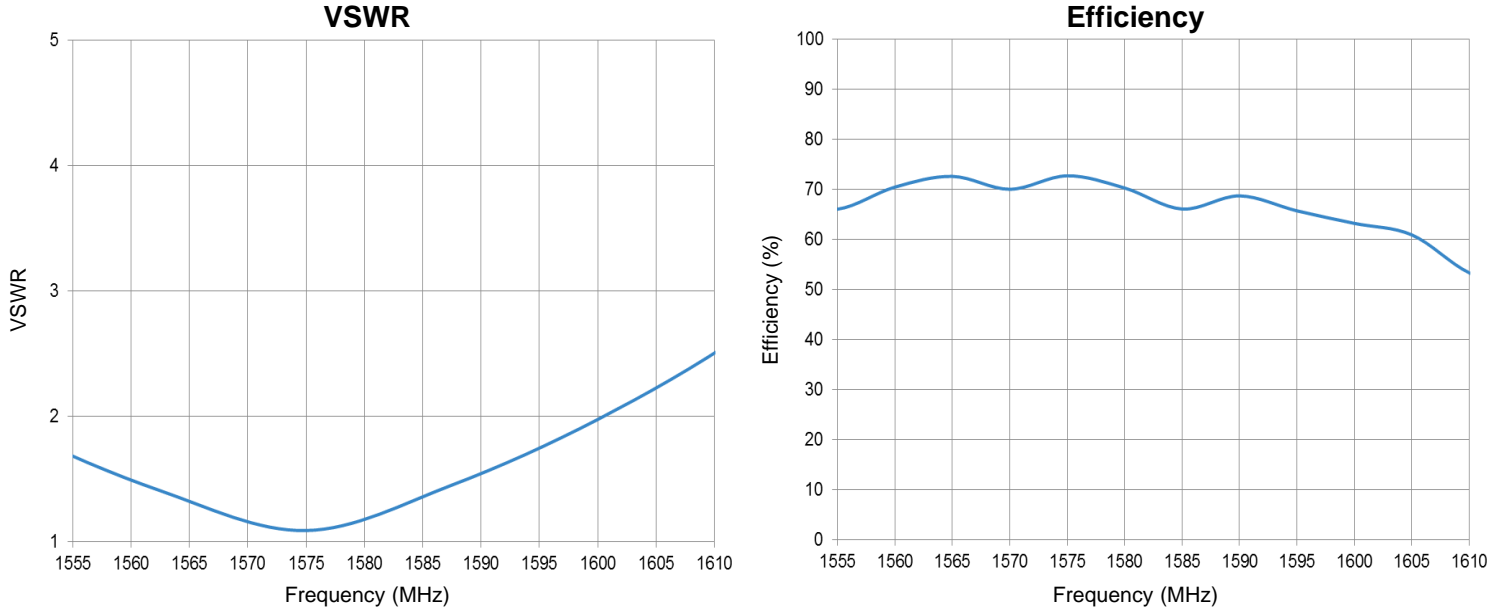
**Bottom View**



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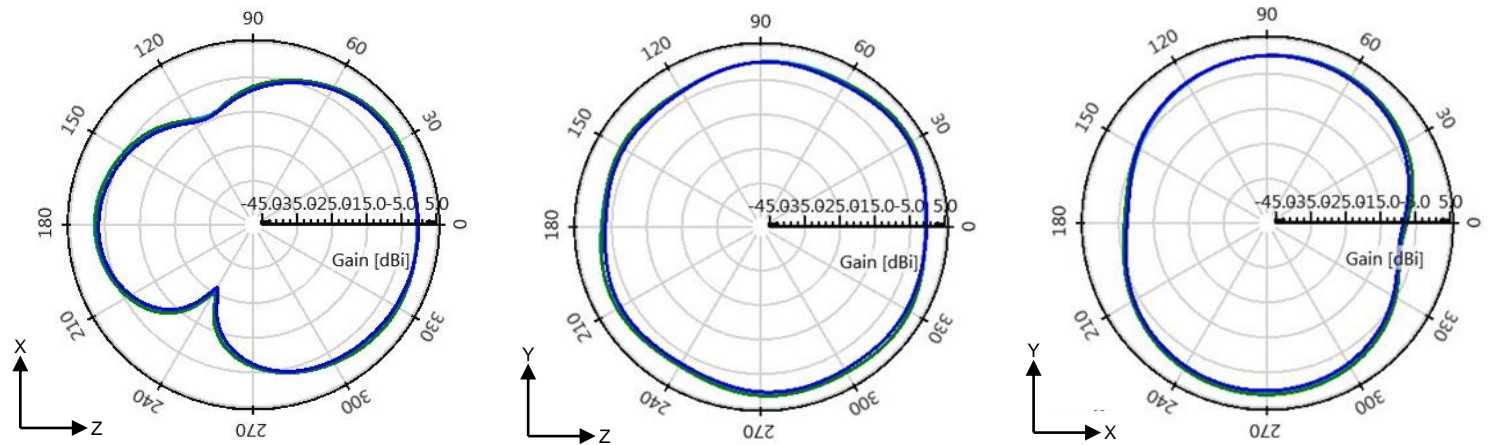
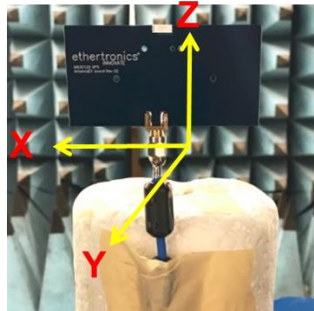
### VSWR, Efficiency Plots

Typical performance on 40 x 80 mm PCB



### Antenna Radiation Patterns

Typical performance on 40 x 80 mm PCB  
Measured @ 1560, 1575, 1605 MHz

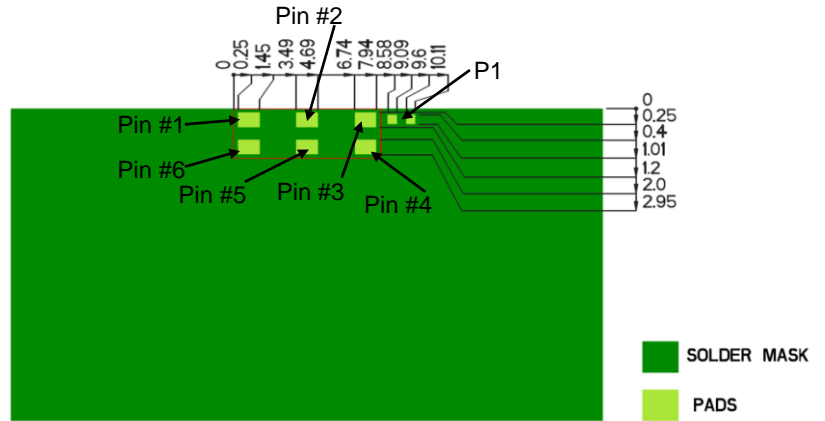
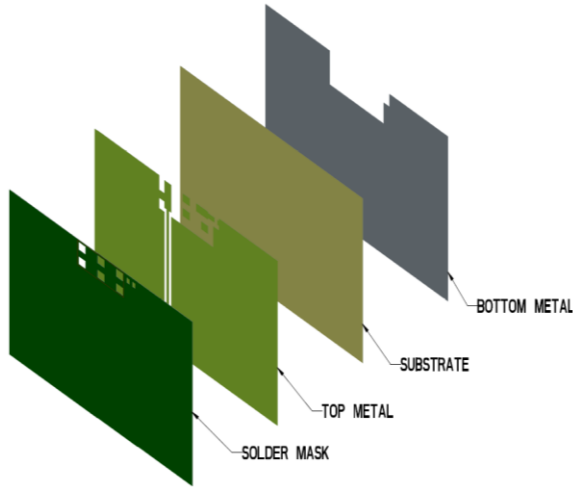




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**Antenna Layout**

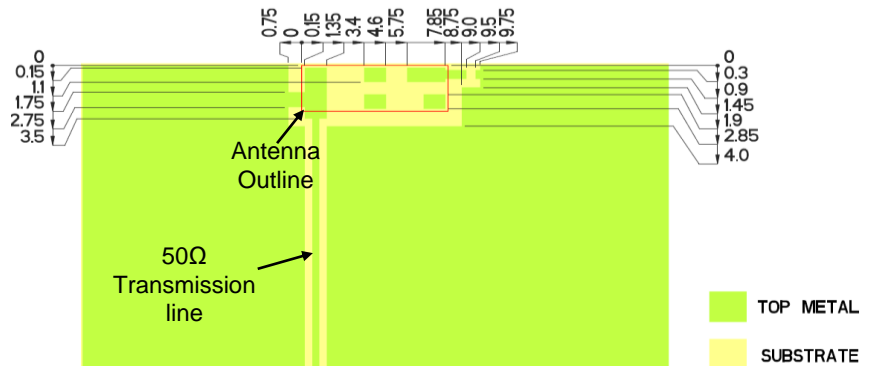
Typical layout dimensions (mm)



- Additional VIAS : Diam. 0.2mm to be placed around antenna, (no vias on transmission lines).
- Via holes must be covered by solder mask

**Pin Descriptions**

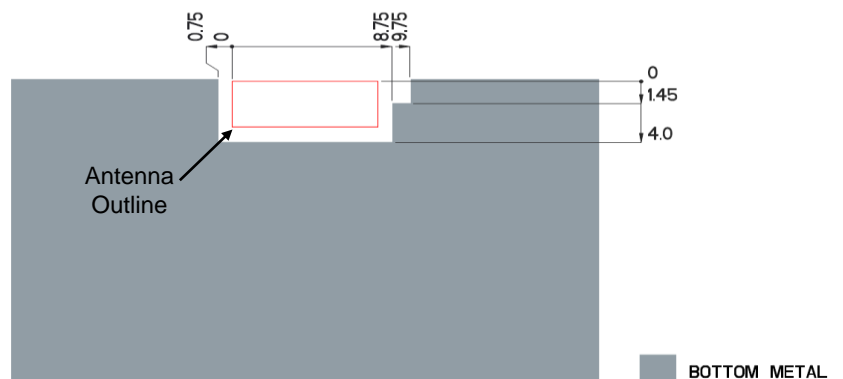
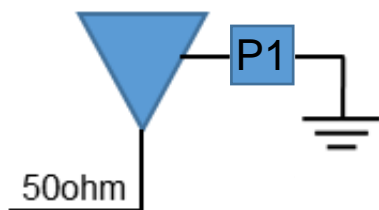
Pin#	Description
1	Ground
2	Dummy Pad
3	Matching circuit connection
4	Dummy Pad
5	Dummy Pad
6	Feed



**Matching Pi Network**

Component	Value	Tolerance
P1	0Ω	N/A

\*Actual matching values depend on customer design

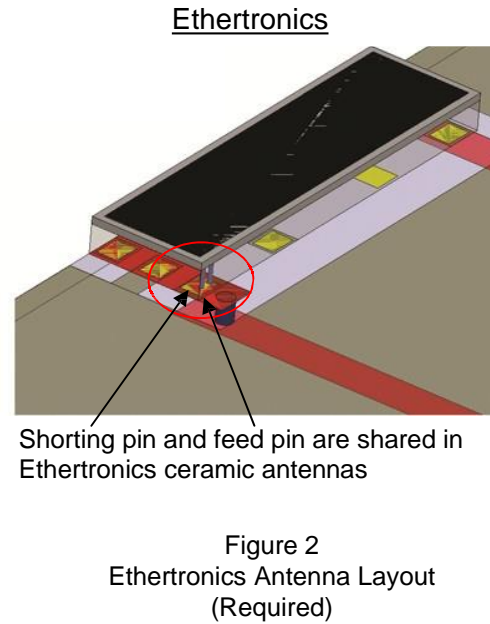
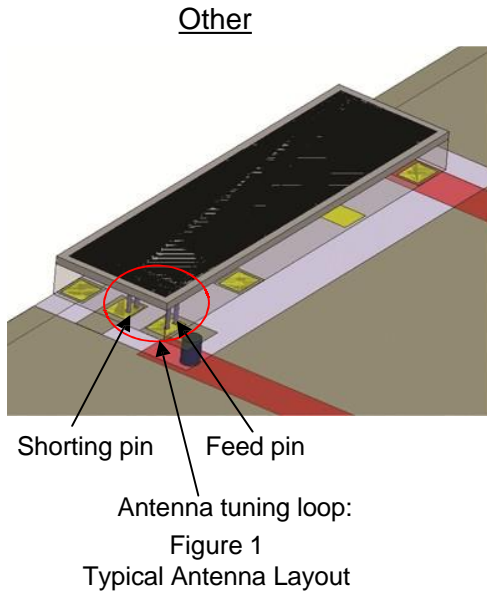




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### Antenna Layout Tips (General reference)

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.



- 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.



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### Antenna Demo Board

Typical layout dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
M830120-01	80.0	40.0	37.0

