



## Cirocomm Microwave Components

### Ceramic Patch Antenna

#### 1. Features

- Temperature stable (-40°C to +105°C)
- Dimensions for antennas from 8mm to 70mm square
- Low return loss
- Uniform dielectric constant
- Offset single-point feeding method
- Customization available (800 MHz to 6 GHz)
- Silver plated electrode and probe
- Surface mount
- 50 Ohm impedance
- Halogen Free compliance



#### 2. Applications

- Automobile
- Marine device
- Aviation device
- Hand-held device
- Navigator – GPS, Glonass, Beidou, Galileo
- Satellite communication device – Iridium, Inmarsat, Thuraya, Globalstar, Terrestar
- Satellite digital audio radio device – DAB, XM and Sirius
- Radio frequency identification

### Ordering Information - Standard Single Frequency Patch Element

**PAXXXX-XXXXX**

Class	Size	Application	Configuration	Assembly	Serial
		Platform		Type	Number

### 3. Specification

Application	Part Number	Central Frequency (MHz)	Bandwidth (MHz) At 2:1 VSWR	Gain (dBi)	Ground plane (mm)	Polarization	Reference Outline
RFID-Japan	PA 070A-I00XX	953 ±2.5	15	3.5	100 X 100	RHCP	A01
RFID-Taiwan	PA 060A-H00XX	925 ± 2.5	20	3.0	100 X 100	RHCP	B01
RFID-America	PA 060B-G00XX	915 ±2.5	20	3.0	100 X 100	RHCP	B02
RFID-Europe	PA 050A-F00XX	867 ±2.5	15	2.0	70 X 70	RHCP	C01
GPS + Glonss	PA 040A-Q00XX	1592 ±4	45	3.0	100 X 100	RHCP	D01
Iridium	PA 035A-O00XX	1618 ±3	20	4.0	75 X 75	RHCP	E01
GPS	PA 035B-A00XX	1575.42 ±3	20	4.0	75 X 75	RHCP	E02
GPS + Iridium	PA 035C-U00XX	1600.5 ±4	30	5.0	75 X 75	RHCP	E03
GPS + SDAR	PA 030B-R00XX	1575.42 ±3 2332.5 ±4	20 50	2.0 4.0	100 X 100	RHCP LHCP	F01
GPS	PA 025A-A00XX	1575.42 ±3	20	5.0	70 X 70	RHCP	G01
GPS	PA 025B-A00XX	1575.42 ±3	20	5.0	70 X 70	RHCP	G02
GPS	PA 025C-A00XX	1575.42 ±3	12	2.5	70 X 70	RHCP	G03
GPS	PA 025D-A00XX	1575.42 ±3	15	3.5	70 X 70	RHCP	G04
Inmarsat	PA 025E-M00XX	1542.5 ±3	25	5.0	70 X 70	LHCP	G05
Thuraya	PA 025E-N00XX	1542.5 ±3	25	5.0	70 X 70	RHCP	G06
ISM	PA 025F-D00XX	2450 ±4	100	5.5	70 X 70	RHCP/LHCP	G07
GPS	PA 025G-A00XX	1575.42 ±3	12	2.5	70 X 70	RHCP	G08
ISM	PA 025I-D00XX	2450 ±4	110	5.0	70 X 70	RHCP/LHCP	G09
GPS SMT	PA 025J-A00XX	1575.42 ±3	20	5.0	70 X 70	RHCP	G10
GPS SMT	PA 025K-A00XX	1575.42 ±3	12	2.5	70 X 70	RHCP	G11
ISM	PA 025L-D00XX	2450 ±3	110	5.5	70 X 70	RHCP/LHCP	G12
RFID-China	PA 025M-T00XX	922.5 ±2.5	5	-1.0	50 X 50	RHCP	G13
Inmarsat	PA 025N-M00XX	1642.5 ±3	25	5.0	70 X 70	LHCP	G14
Thuraya	PA 025N-N00XX	1642.5 ±3	25	5.0	70 X 70	RHCP	G15
Globalstar	PA 025N-P00XX	1618 ±3	25	5.0	70 X 70	LHCP	G14
GPS L2	PA 025O-A00XX	1227.6 ±2	10	-1.5	70 X 70	RHCP	G16
Satellite Radio	PA 022A-C00XX	2332.5 ±4	50	5.0	60 X 60	LHCP	H01
Satellite Radio	PA 018A-C00XX	2332.5 ±4	30	3.0	50 X 50	RHCP	I01
GPS	PA 018B-A00XX	1575.42 ±3	12	2.5	50 X 50	RHCP	I02
GPS	PA 018C-A00XX	1575.42 ±3	12	2.5	50 X 50	RHCP	I03
Satellite Radio	PA 018D-C00XX	2332.5 ±4	40	3.0	50 X 50	RHCP	I04

Application	Part Number	Central Frequency (MHz)	Bandwidth (MHz) At 2:1 VSWR	Gain (dBi)	Ground plane (mm)	Polarization	Reference Outline
GPS	PA 018E-A00XX	1575.42 ±3	8	1.5	50 X 50	RHCP	I05
GPS	PA 018F-A00XX	1575.42 ±3	12	2.5	50 X 50	RHCP	I06
GPS	PA 018G-A00XX	1575.42 ±3	8	1.5	50 X 50	RHCP	I07
GPS SMT	PA 018H-A00XX	1575.42 ±3	12	2.5	50 X 50	RHCP	I08
GPS SMT	PA 018I-A00XX	1575.42 ±3	8	1.5	50 X 50	RHCP	I09
RFID	PA 018J-I00XX	953 ±1	12	--	50 X 50	RHCP	I10
GPS	PA 018K-A00XX	1575.42 ±3	8	1.5	50 X 50	RHCP	I11
GPS	PA 017A-A00XX	1575.42 ±3	12	1.0	50 X 50	RHCP	J01
GPS	PA 015B-A00XX	1575.42 ±3	10	-1.0	40 X 40	RHCP	K01
GPS	PA 015C-A00XX	1575.42 ±3	10	-1.0	40 X 40	RHCP	K02
GPS	PA 015D-A00XX	1575.42 ±3	5	-2.0	40 X 40	RHCP	K03
GPS	PA 013A-A00XX	1575.42 ±3	8	-2.0	40 X 40	RHCP	L01
GPS	PA 013B-A00XX	1575.42 ±3	8	-2.0	40 X 40	RHCP	L02
GPS	PA 128A-A00XX	1575.42 ±3	8	-2.5	40 X 40	RHCP	M01
Satellite Radio	PA 125A-C00XX	2332.5 ±3	30	1.5	30 X 30	LHCP	N01
GPS	PA 012A-A00XX	1575.42 ±2	5	-3.0	35 X 35	RHCP	O01
GPS	PA 012B-A00XX	1575.42 ±2	6	-2.5	35 X 35	RHCP	O02
ISM	PA 012C-D00XX	2450 ±3	100	2.0	50 X 50	RHCP/LHCP	O03
ISM	PA 012C-E00XX	2442 ±3	85	2.0	50 X 50	RHCP/LHCP	O03
GPS	PA 012D-A00XX	1575.42 ±2	5	-3.0	35 X 35	RHCP	O04
GPS	PA 012E-A00XX	1575.42 ±2	5	-4.0	35 X 35	RHCP	O05
Wireless LAN	PA 012F-V00XX	5200 ±2	300	5.0	25 X 25	RHCP	O06
GPS	PA 010A-A00XX	1575.42 ±2	5	-4.0	30 X 30	RHCP	P01
GPS	PA 010B-A00XX	1575.42 ±2	4	-5.0	30 X 30	RHCP	P02
Wireless LAN	PA 010C-W00XX	5800 ±2	300	5.0	25 X 25	RHCP	P03
GPS	PA 009A-A00XX	1575.42 ±2	5	-3.0	30 X 30	RHCP	Q01
GPS	PA 008A-A00XX	1575.42 ±2	5	-3.5	25 X 25	RHCP	R01
GPS	PA 206A-A00XX	1575.42 ±2	8	-8.5	30 X 9	Linear	S01
GPS	PA 166A-A00XX	1575.42 ±2	8	-9.0	24 X 9	Linear	T01
GPS	PA 166B-A00XX	1575.42 ±2	8	-9.0	24 X 9	Linear	T02
GPS	PA 126A-A00XX	1575.42 ±2	7	-10	18 X 9	Linear	U01

#### 4. Reference Outlines

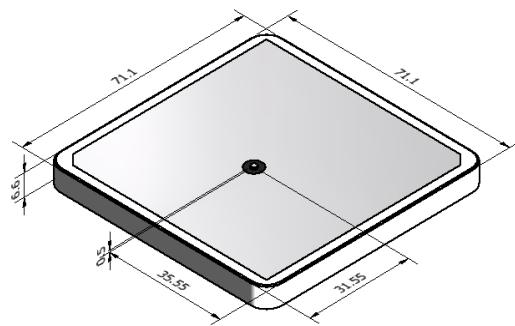


Figure A01

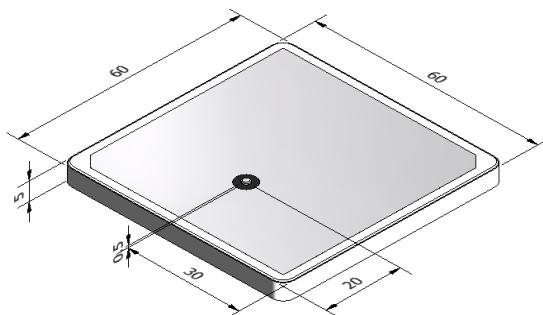


Figure B01

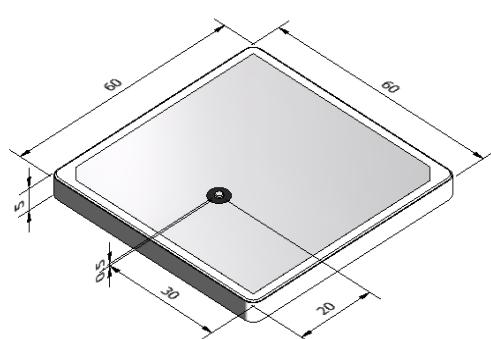


Figure B02

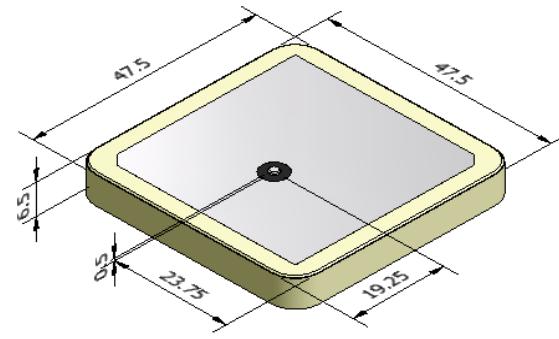


Figure C01

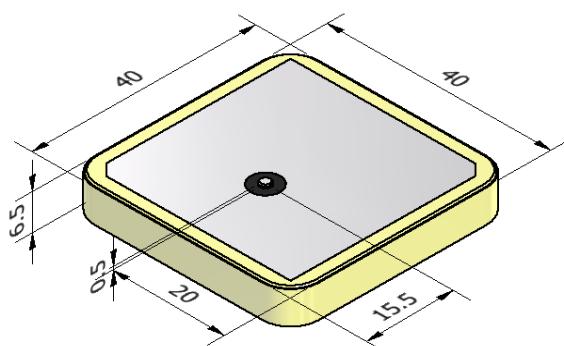


Figure D01

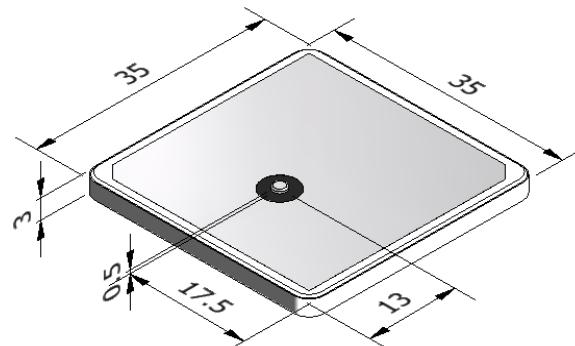


Figure E01

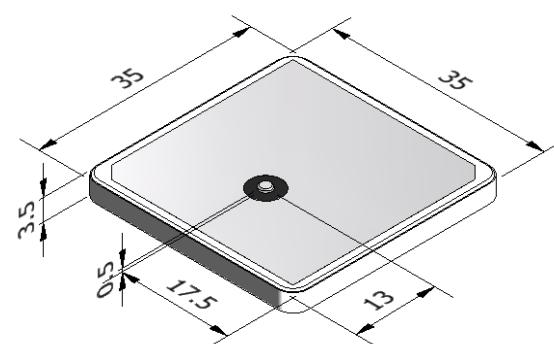


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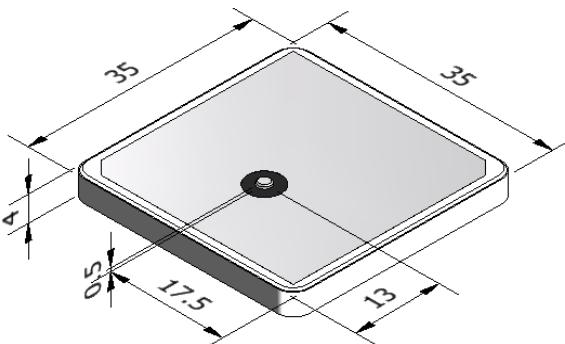


Figure E03

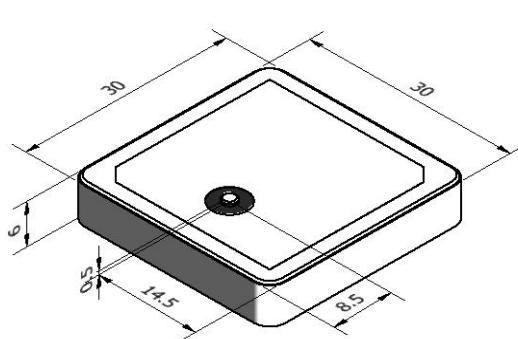


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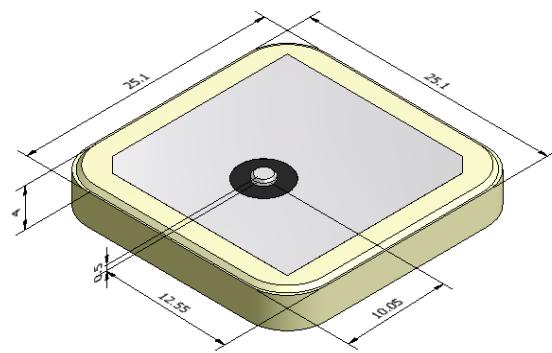


Figure G01

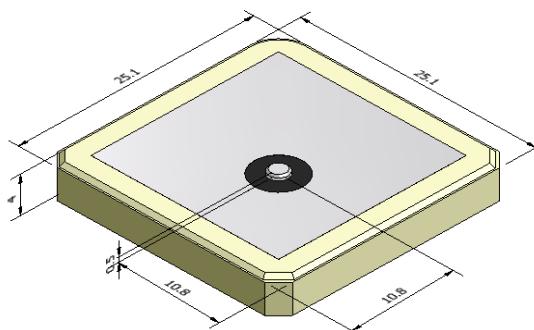


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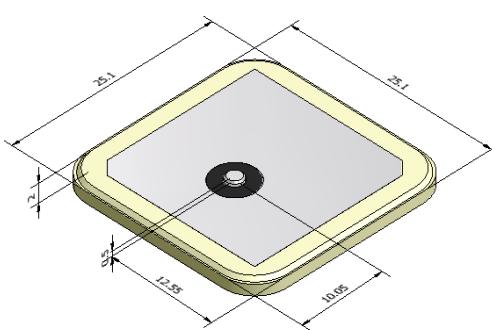


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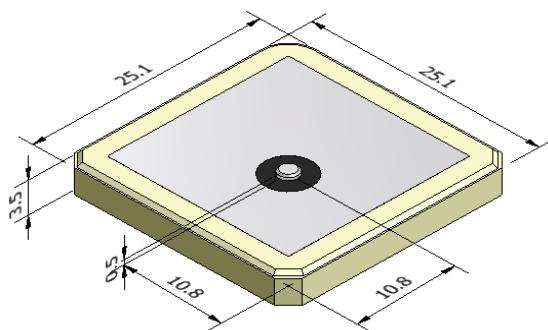


Figure G04

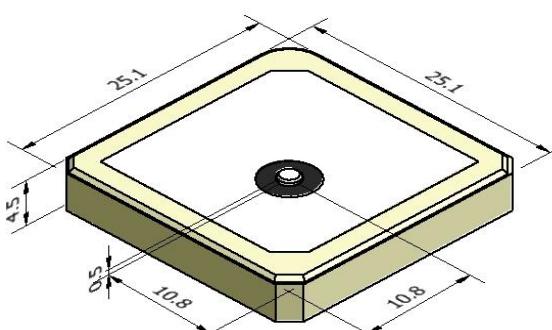


Figure G05

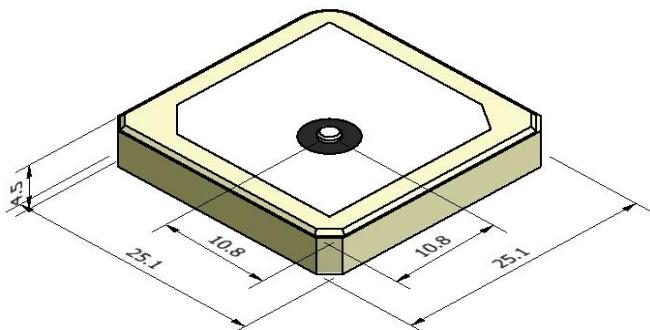


Figure G06

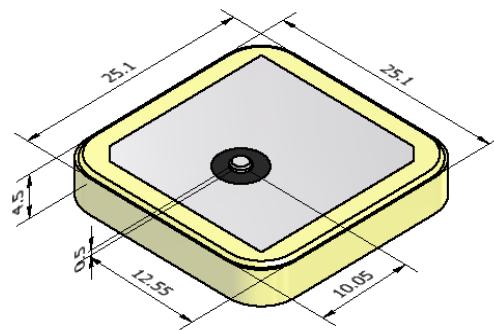


Figure G07

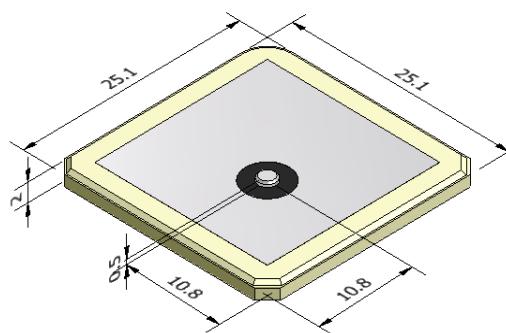


Figure G08

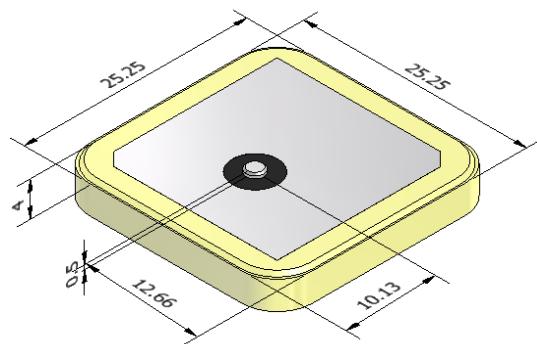


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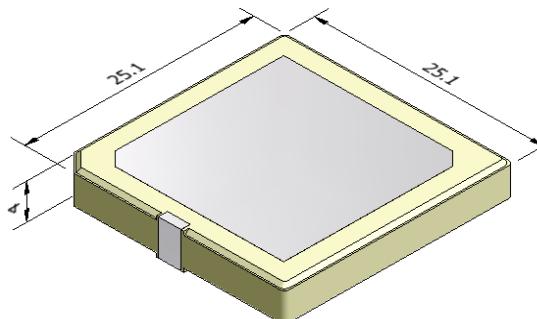


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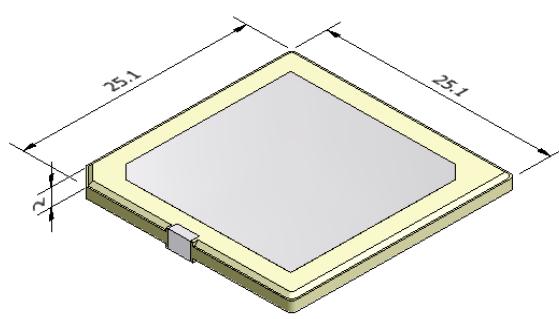


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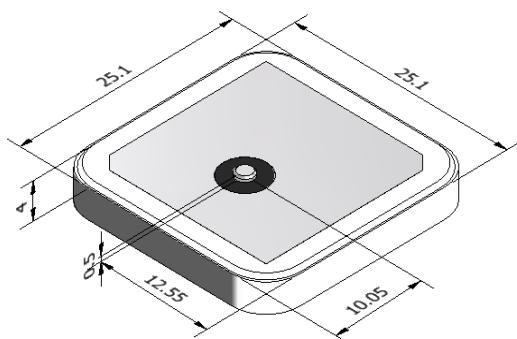


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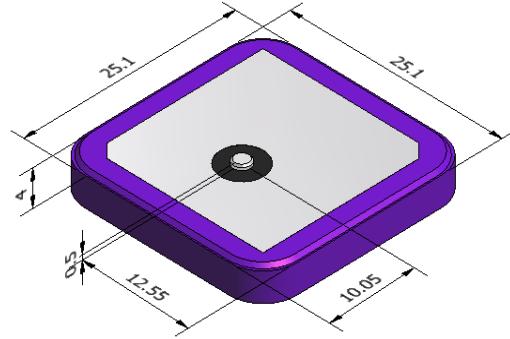


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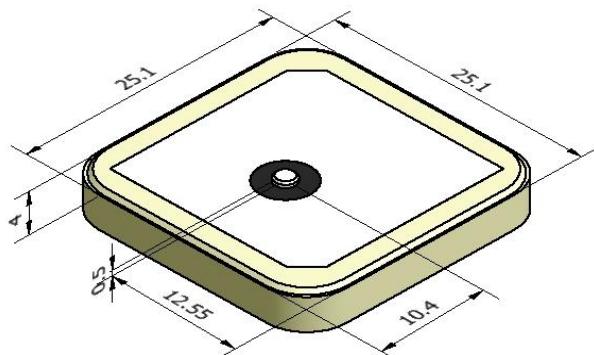


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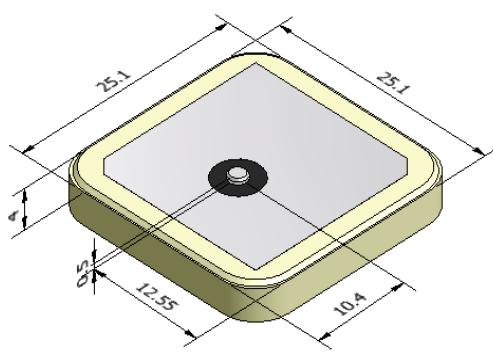


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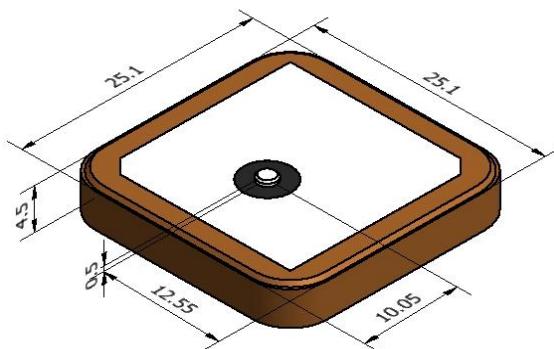


Figure G16

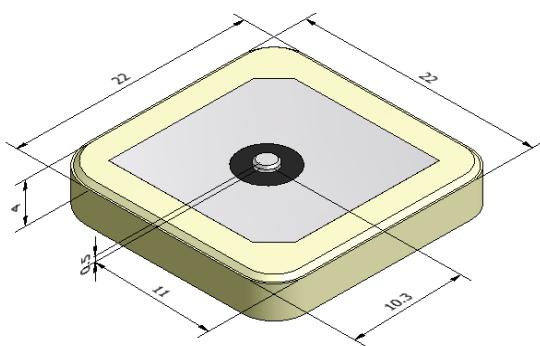


Figure H01

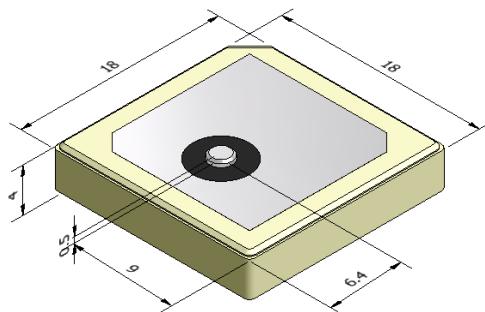


Figure I01

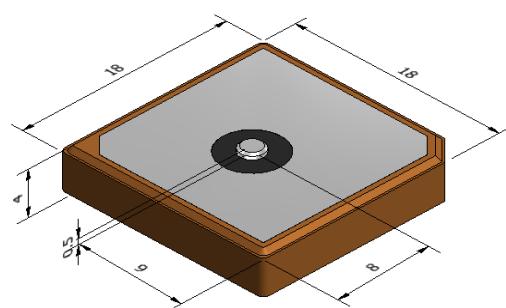


Figure I02

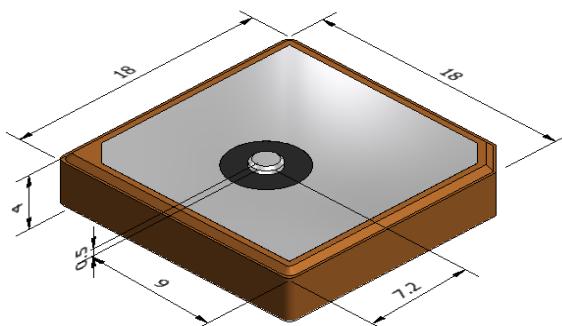


Figure I03

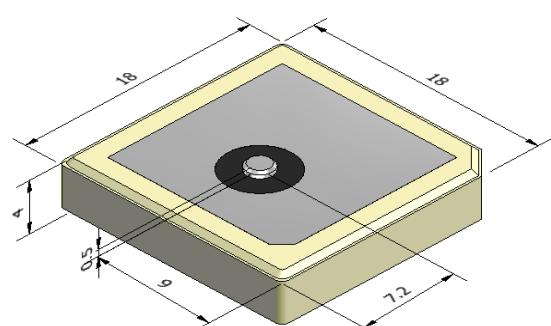


Figure I04

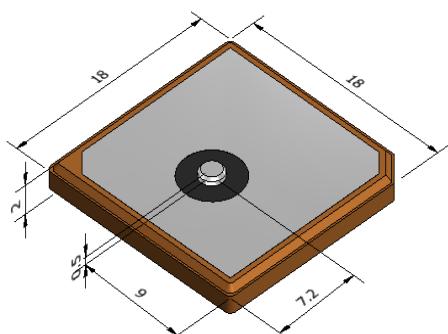


Figure I05

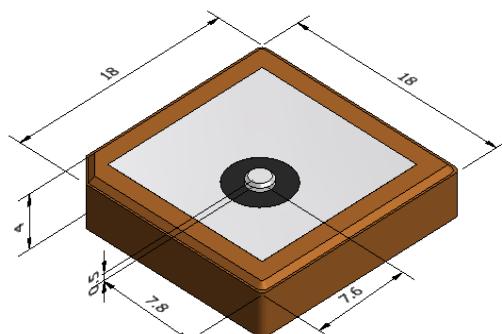


Figure I06

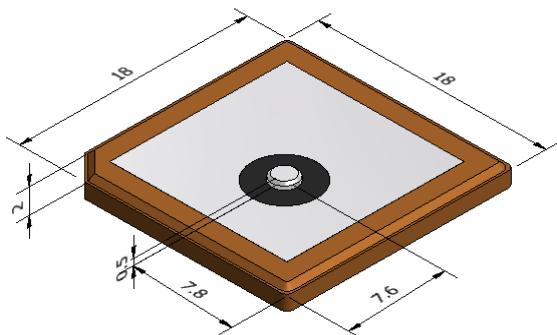


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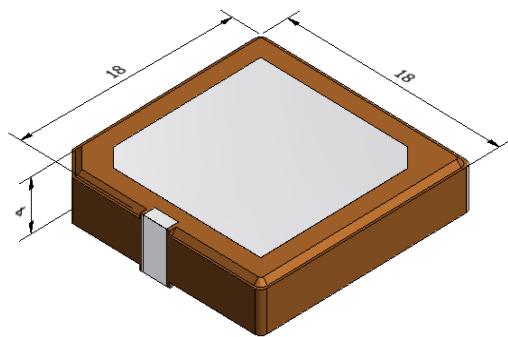


Figure I08

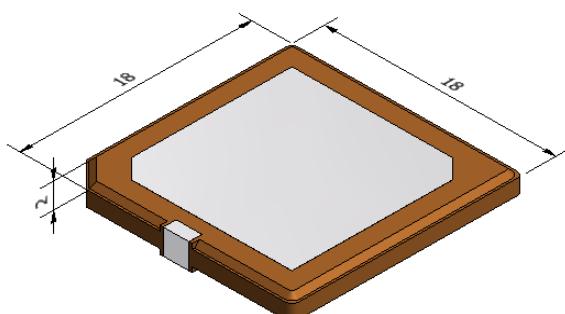


Figure I09

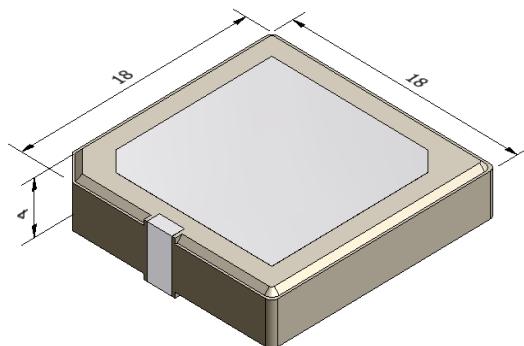


Figure I10

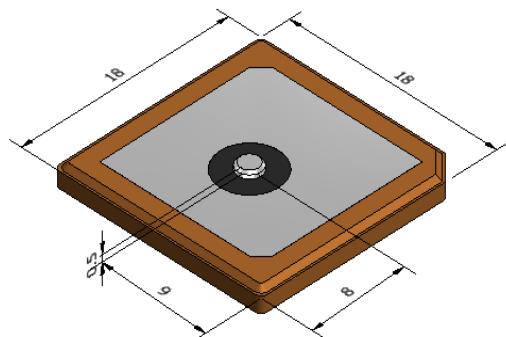


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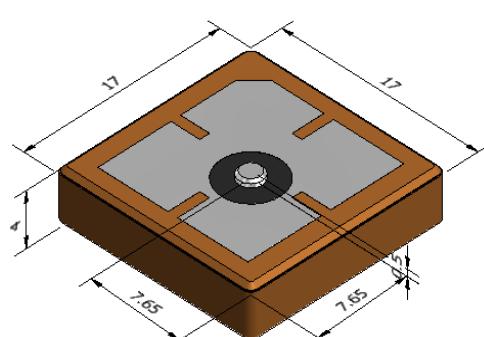


Figure J01

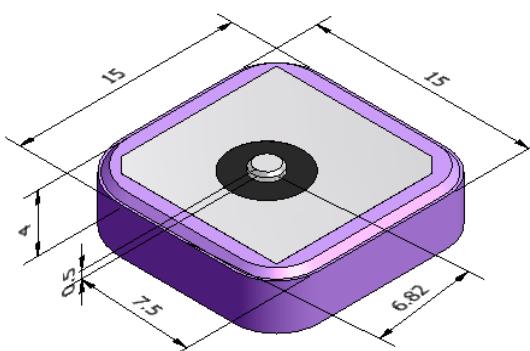


Figure K01

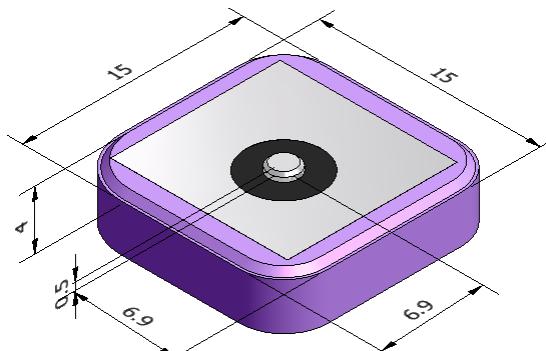


Figure K02

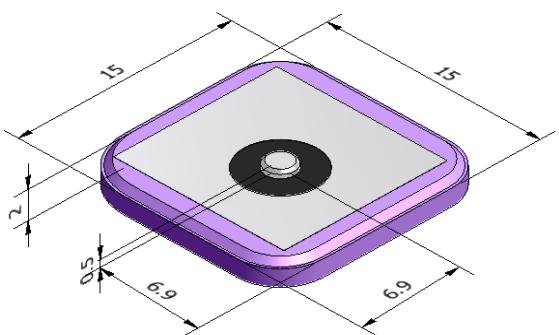


Figure K03

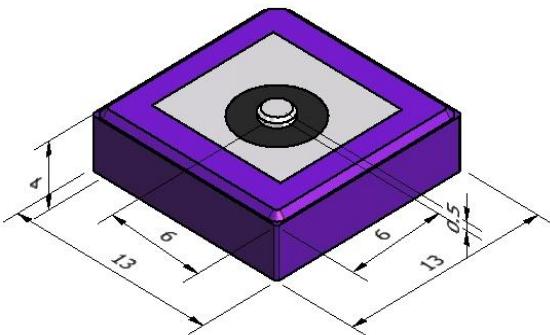


Figure L01

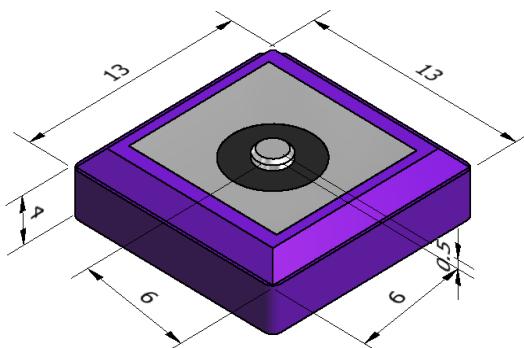


Figure L02

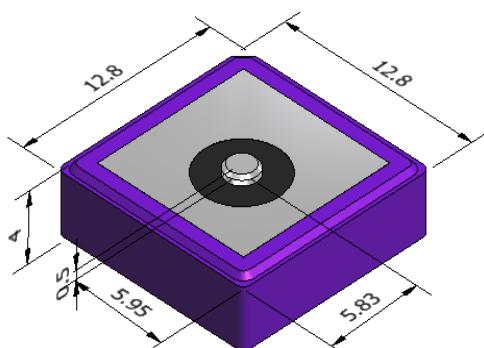


Figure M01

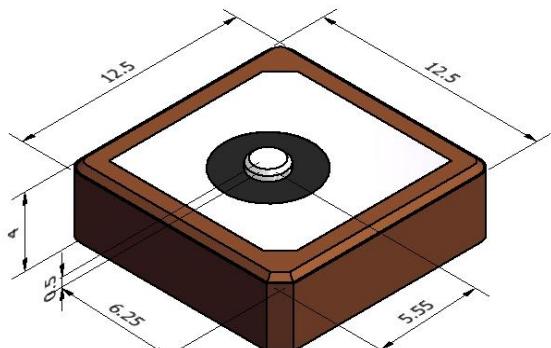


Figure N01

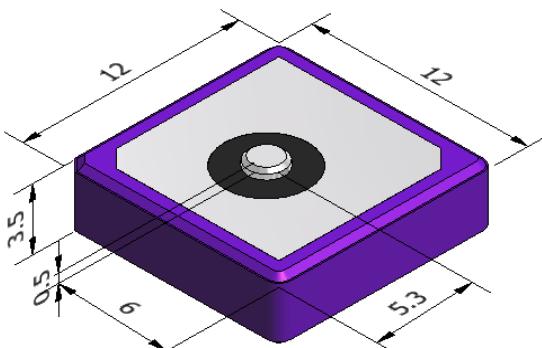


Figure O01

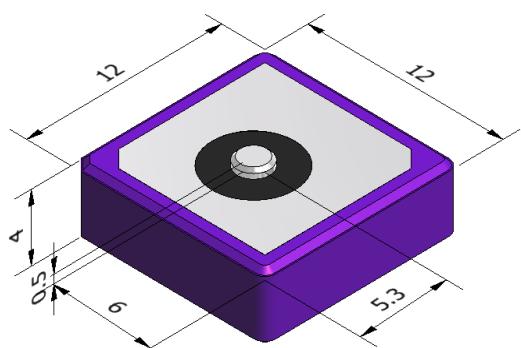


Figure O02

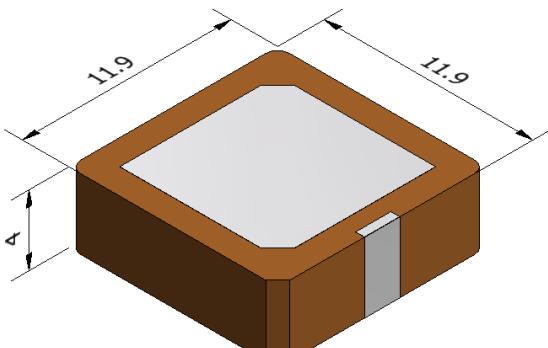


Figure O03

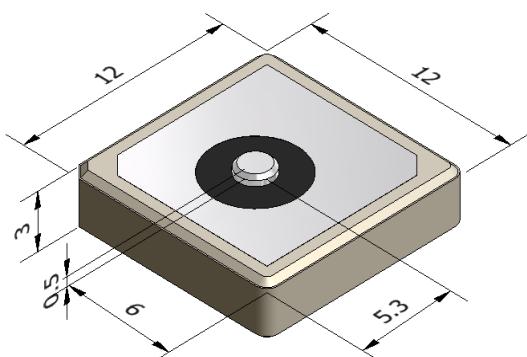


Figure O04

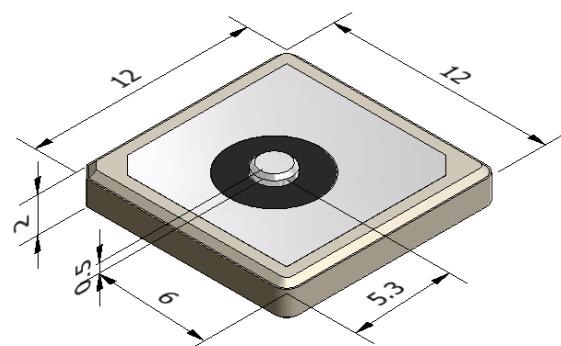


Figure O05

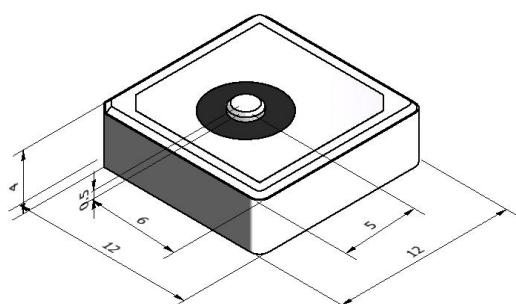


Figure O06

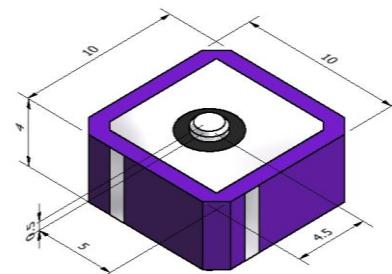


Figure P01

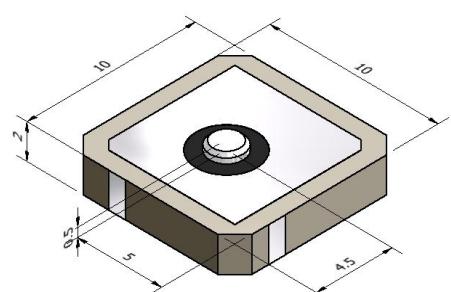


Figure P02

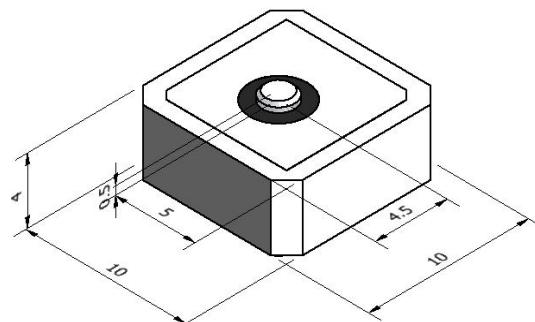


Figure P03

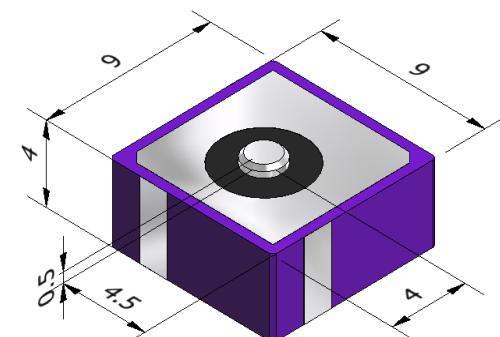


Figure Q01

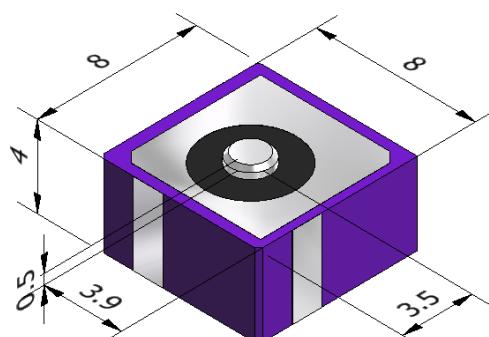


Figure R01

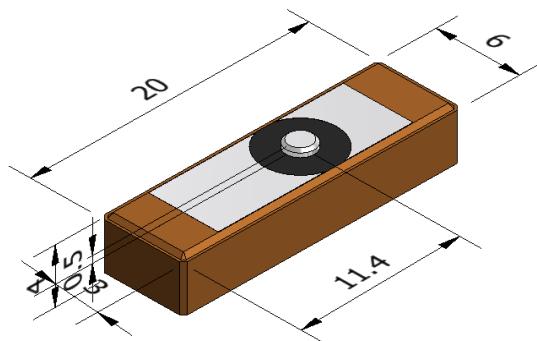


Figure S01

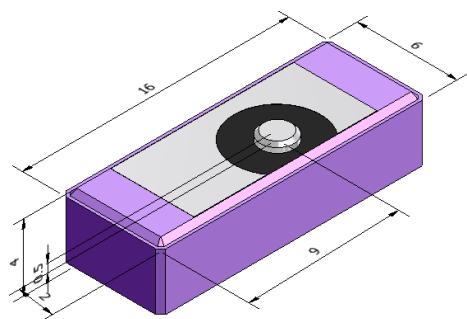


Figure T01

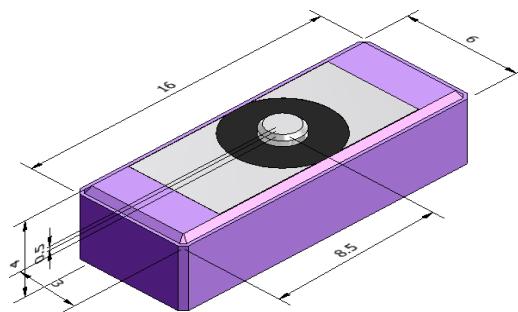


Figure T02

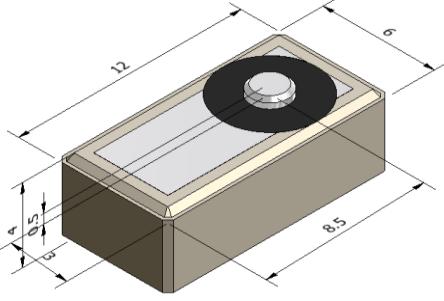


Figure U01

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## Antenna mounting frequently asked questions

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### 1. What are the minimum and maximum temperatures for the antenna itself?

Operating: -40C ~ +105°C

Storage: -40C ~ +105°C

### 2. Can the antenna undergo reflow soldering?

Yes. The pin is attached with Sn/Ag/Cu, however, and if you melt the solder on top for a duration exceeding a minute or so, you risk dissolving the silver electrode from atop the patch.

### 3. What are the minimum and maximum temperatures for the adhesive?

The adhesive will withstand higher process temps than the solder; it was designed for use with lead-free solder.

### 4. What surfaces are the adhesive compatible or incompatible with?

Anything that is well adhered to the substratum and clean. For example, if you place a patch on a rolled copper FR-4 board for longer than about a week, when you remove it the tape will very likely pull the silver electrode and some of the ceramic interface off the bottom of the patch puck.

### 5. What sort of surface preparation is recommended before installing the antenna?

Clean, de-grease and dry. The adhesive will continue the process of bonding to the substratum for days.

### 6. Is any supplemental adhesive recommended and if so, what type(s) are acceptable?

Absolutely not, unless you want to lower the frequency of the patch.

### 7. Can I tell by looking at an antenna what the polarization is?

Yes, Cirocomm's antennas utilize a design that allows the user to determine the polarization sense of the device.