

Datasheet

GPS

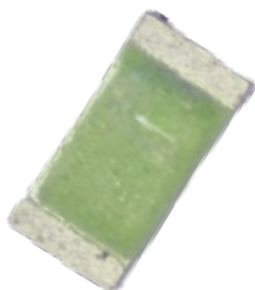
Chip antenna

Features:

The chip antenna supports GPS and has much higher efficiency with small form factor, suitable for mounting inside device.

Applications:

- Navigation device
- Telematics box
- Fleet management
- Portable Handsets
- Tracking and Positioning



3.2 × 1.6 × 0.5 mm

Chip Antenna



Electrical Specifications

Antenna Characteristics

Antenna Type	Radiation Pattern	Polarization	Max. Input Power	Impedance
Chip Antenna	Omni	Linear	1W	50Ω
Frequency (GHz)	1.56~1.59			
Return Loss (dB)	< -10			
Peak Gain (dBi)	2.9			
Average Gain (dB)	-1.6			
Efficiency (%)	70			

Mechanical Specifications

Mechanical

Dimension (mm)	3.2 × 1.6 × 0.5
Material	Ceramic
Weight (g)	0.01

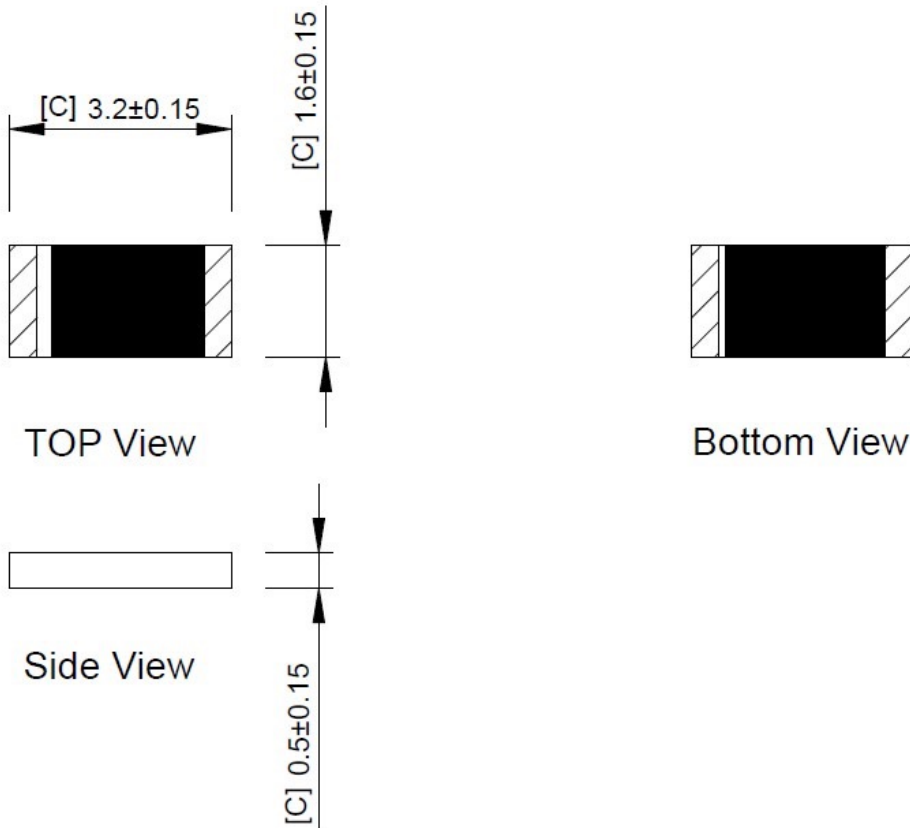
Environmental

Temperature Range (°C)	-25 to 70
Humidity	Non-condensing 65°C 95% RH

RoHS Compliant

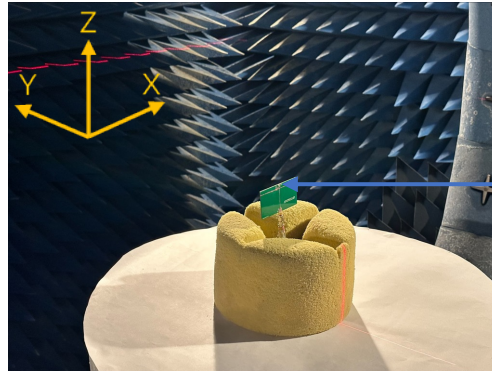
Mechanical Drawing

Unit : mm



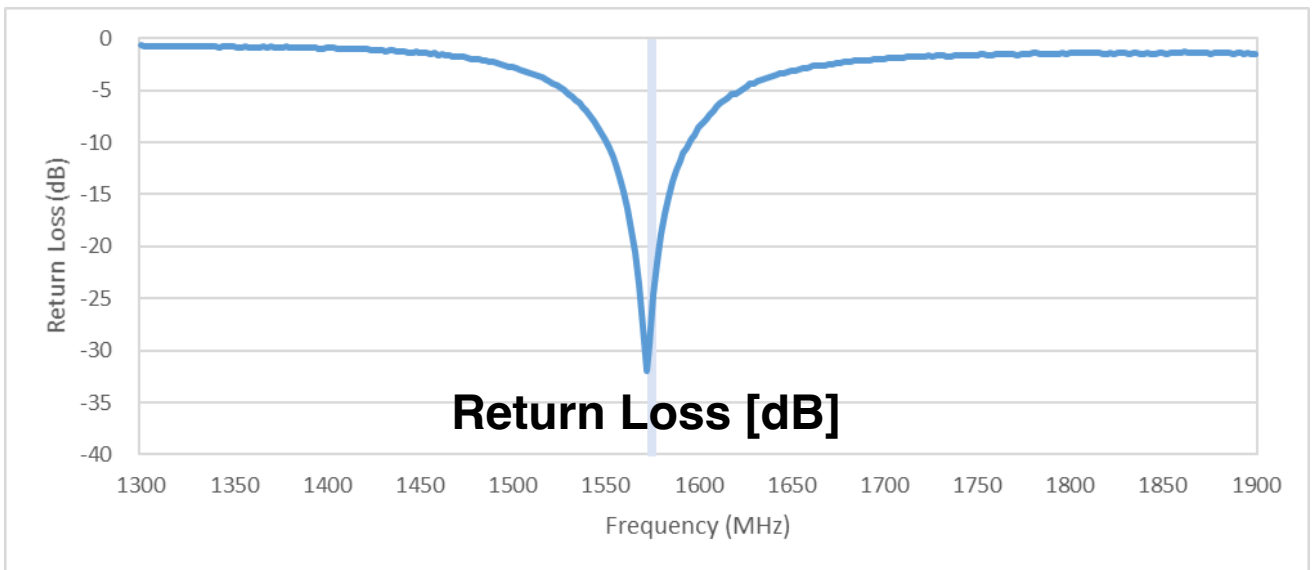
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Antenna Testing Includes Evaluation Board

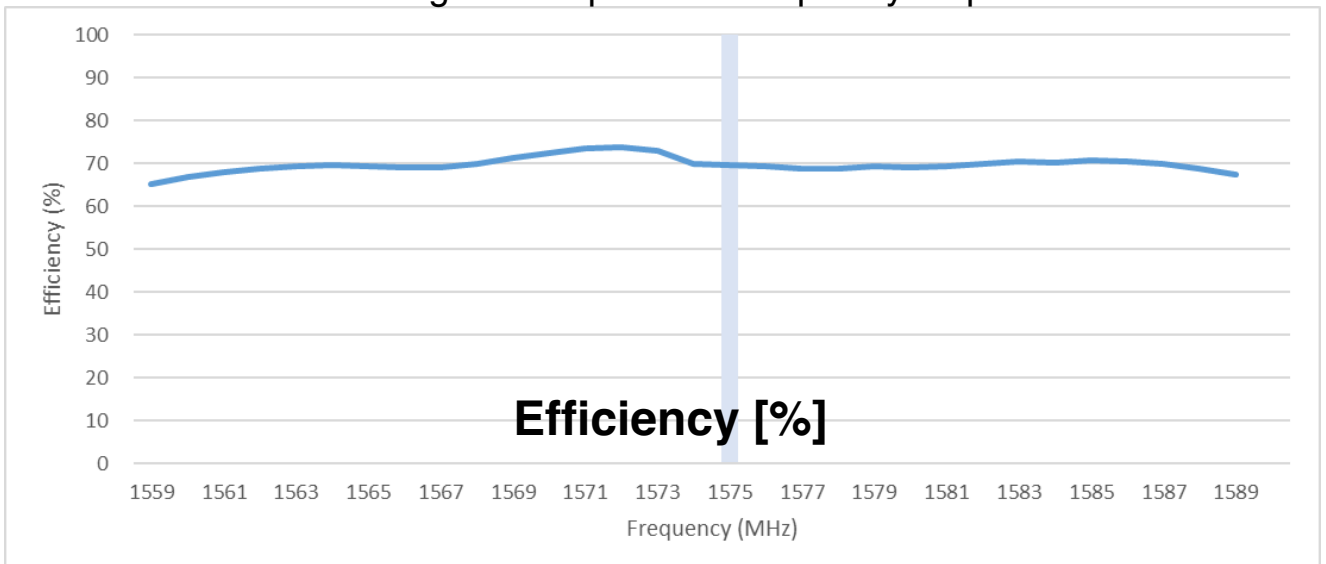


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Test setup, measurement performed in 3D anechoic chamber.

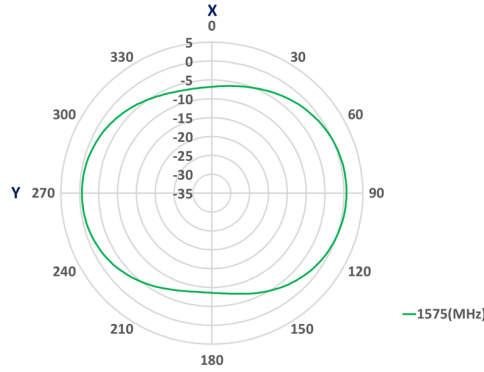


Blue background represents frequency response.

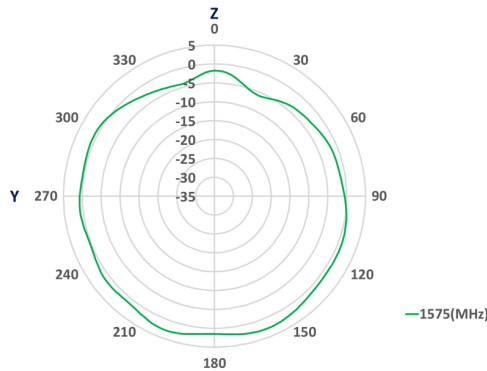


Radiation Pattern - Free Space

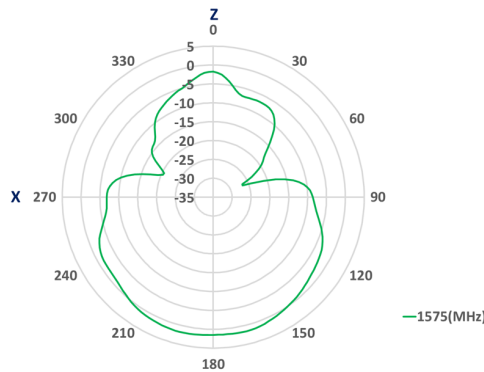
XY - Plane



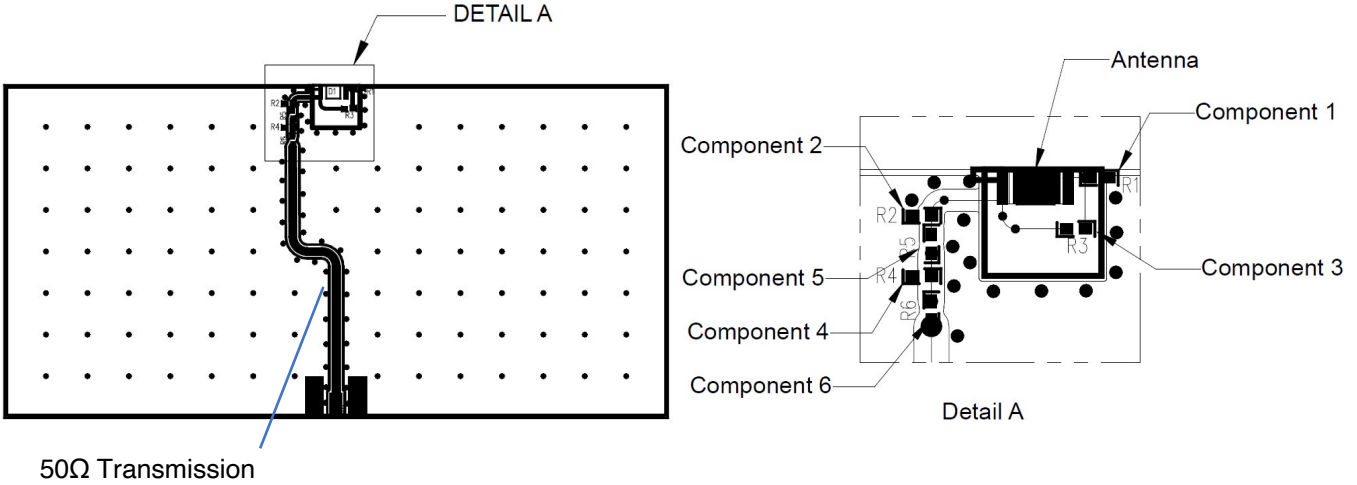
YZ - Plane



XZ - Plane



Matching Circuit Design

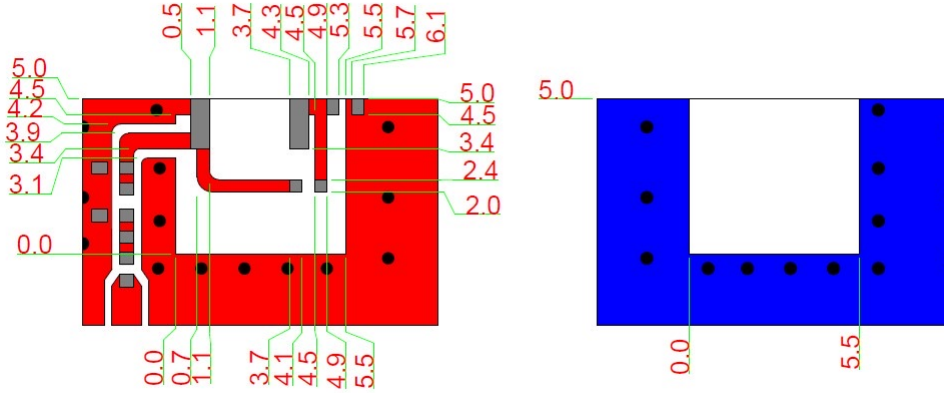


- * To make the antenna have this resonance, must be matched with matching circuit.
- * The matching component may be slightly different than that show depending ondistance to ground plane, dielectric constant of PCB, and PCB material thickness.

Circuit Matching Components

Circuit Symbol	Size	Description
Component 1	0402	2.5 pF Capacitor
Component 2	0402	0 Ohm Resistance
Component 3	0402	None
Component 4	0402	4.7 pF Capacitor
Component 5	0402	1 pF Capacitor
Component 6	0402	0 Ohm Resistance

Clearance Area Design

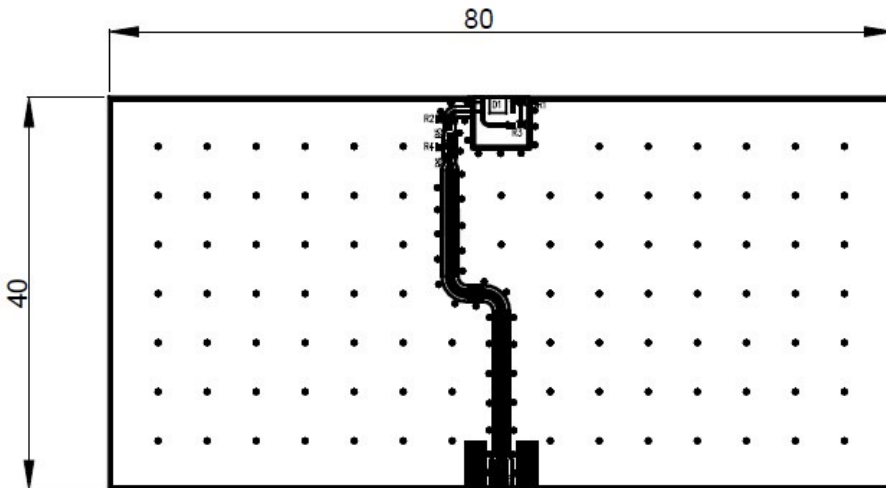


Top View

Bottom View

Evaluation Board

Unit : mm



Base Material : FR-4, T=1.2

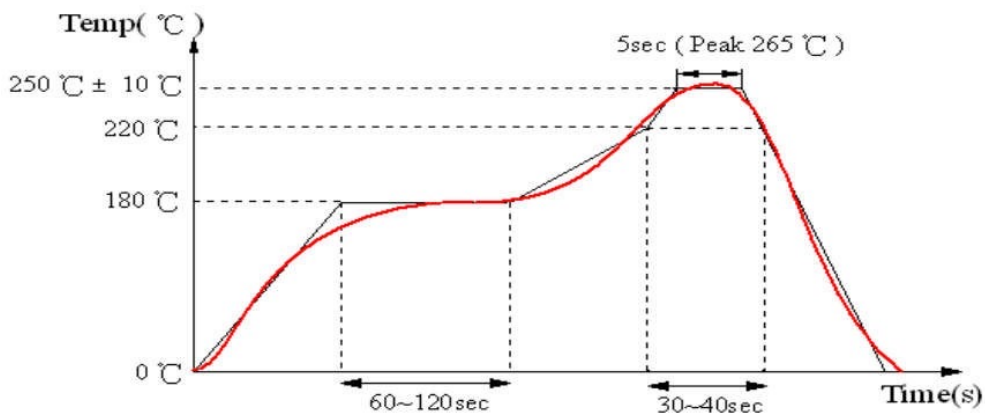
Recommended Reflow Temperature Profile

Flux :

- Use rosin flux, prohibit the use of strong acid flux with halide content exceeding 0.2wt%.
- Use pure tin solder.

Reflow Soldering Conditions :

- During preheating, the maximum temperature difference between the surface of the product and the solder is not allowed to exceed 150°C.
- When cooling down after soldering, the temperature difference between the surface of the product and the solvent is not allowed to exceed 100°C.
- Insufficient preheating may cause cracks on the product surface, resulting in a decline in product quality.



The graphic shows temperature profile component assembly process in reflow ovens.

Soldering With Iron

Soldering condition

Item	The conditions
Pre-heating	150°C, 1 Minute
Tip temperature	350°C Max.
Soldering iron output	80W Max.
End of soldering	Φ3mm Max.
Soldering time	3 Seconds Max.

Revisions

Rev.	Description	Date	ECN	Approval
A	Initial Release	2023-02-23	ST0543-00-N08-U-RA00	ATC

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