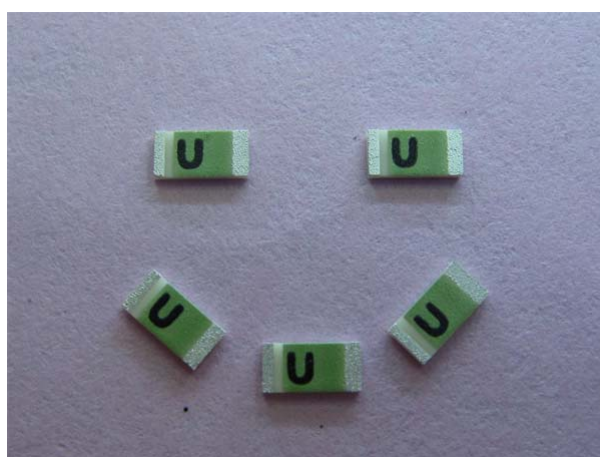


3.2 x 1.6 x 0.5 (mm) GPS Ceramic Chip Antenna (AA088)

Engineering Specification

1. Product Number

H 2 U 1 4 W 1 H 1 A 0 1 0 0



2. Features

- *Stable and reliable in performances
- *Low temperature coefficient of frequency
- *Low profile, compact size
- *RoHS compliance
- *SMT processes compatible

3. Applications

- *Navigation systems or position tracking systems
- *Hand-held devices when GPS function is needed, e.g., PDA, Smart phone, PND.

4. Description

Unictron's chip antenna series are specially designed for GPS applications. Based on Unictron's proprietary design and processes, this chip antenna has excellent stability and sensitivity to consistently provide high signal reception efficiency.



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Checked by : Mike

Approved by : Herbert

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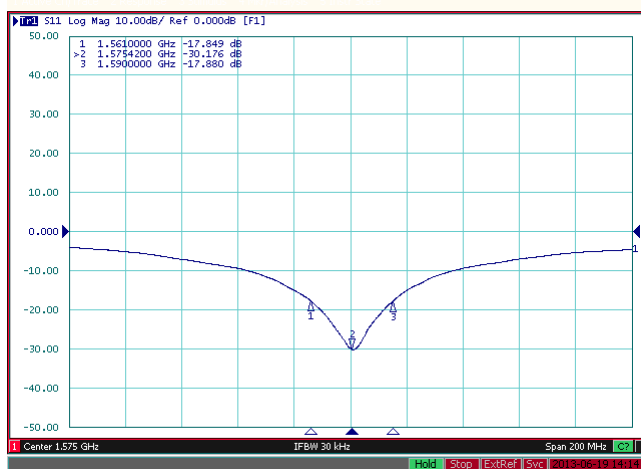
5. Electrical Specifications (80 x 40 mm² ground plane)

5-1. Electrical Table

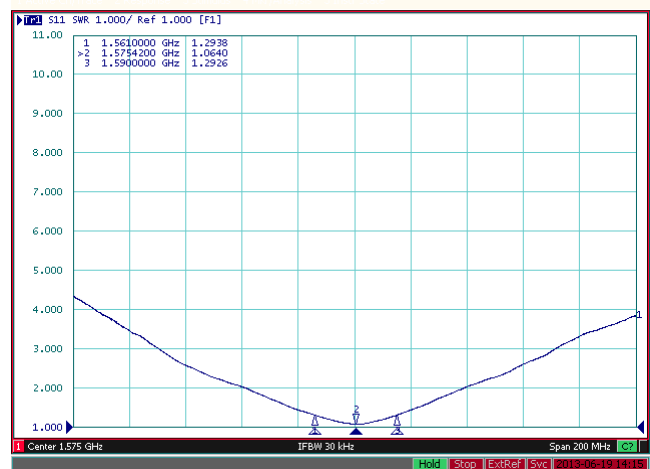
Characteristics		Specifications	Unit
Outline Dimensions		3.2x1.6x0.5	mm
Working Frequency		1575.42	MHz
VSWR		2 Max.	
Impedance		50	Ω
Polarization		Linear Polarization	
Gain	Peak	3.2 (typical)	dBi
	Efficiency	83 (typical)	%

5-2. Return Loss & VSWR

Return Loss (S_{11})



VSWR (S_{11})



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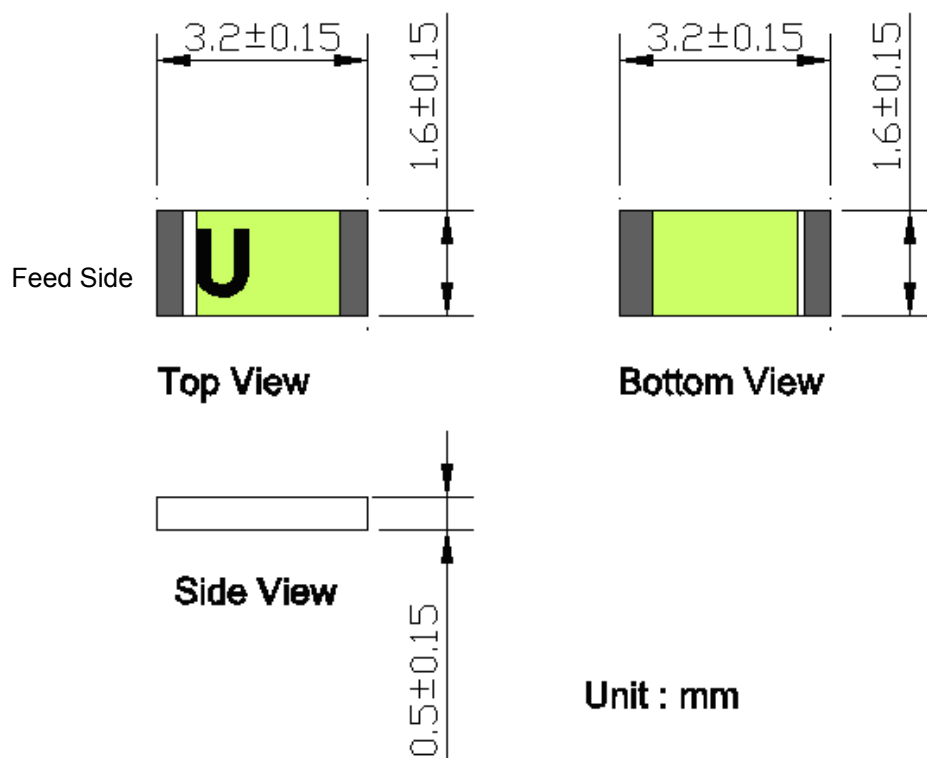
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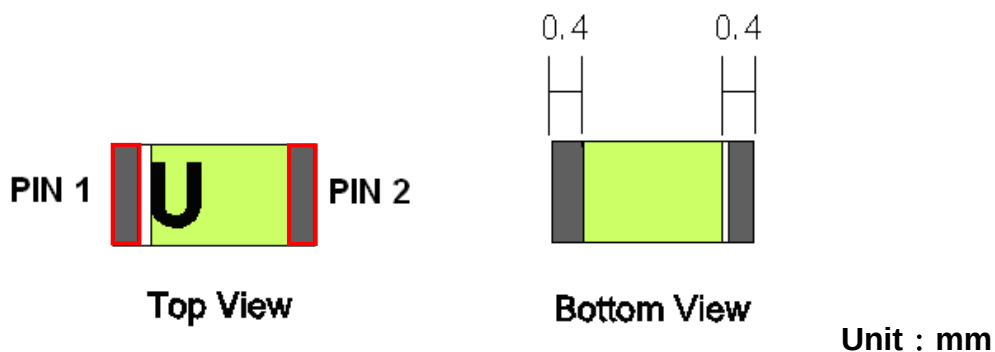
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6. Antenna Dimensions & Test Board (unit: mm)

a. Antenna Dimensions



PIN Definitions



PIN 1	PIN 2
Signal Input	Tuning / Signal Output



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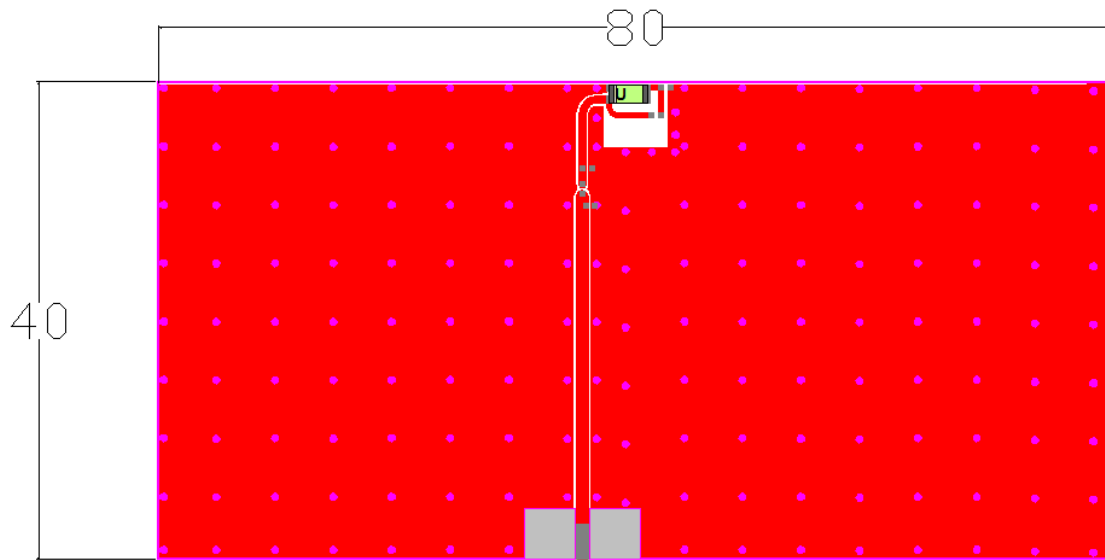
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b. Test Board with Antenna



Unit : mm



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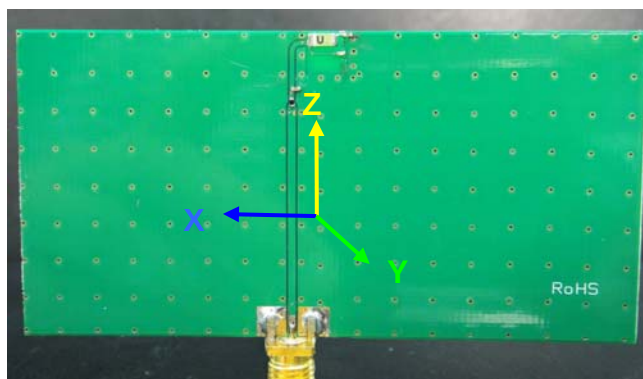
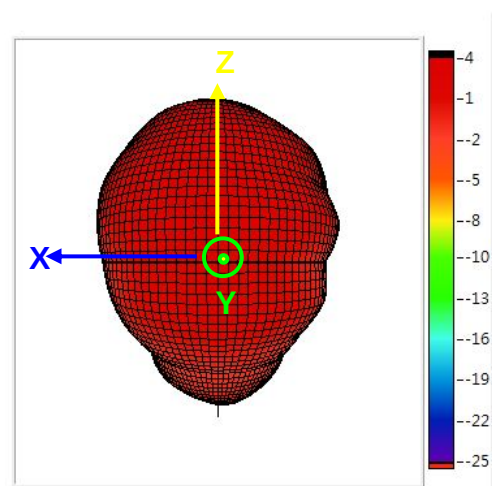
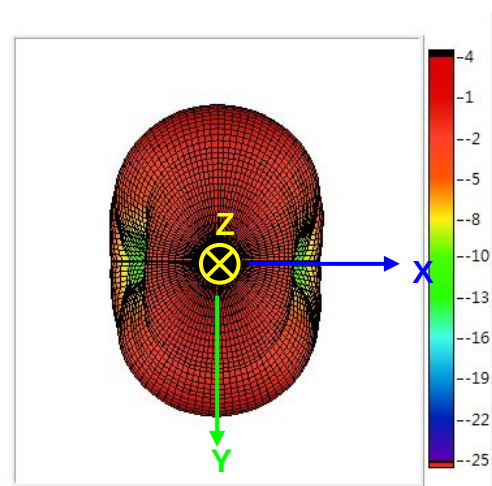
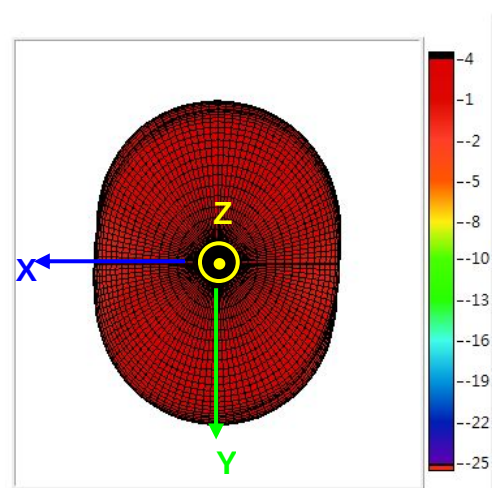
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7. Radiation Pattern (80 x 40 mm² ground plane)

7-1. 3D Gain Pattern @ 1575.42 MHz



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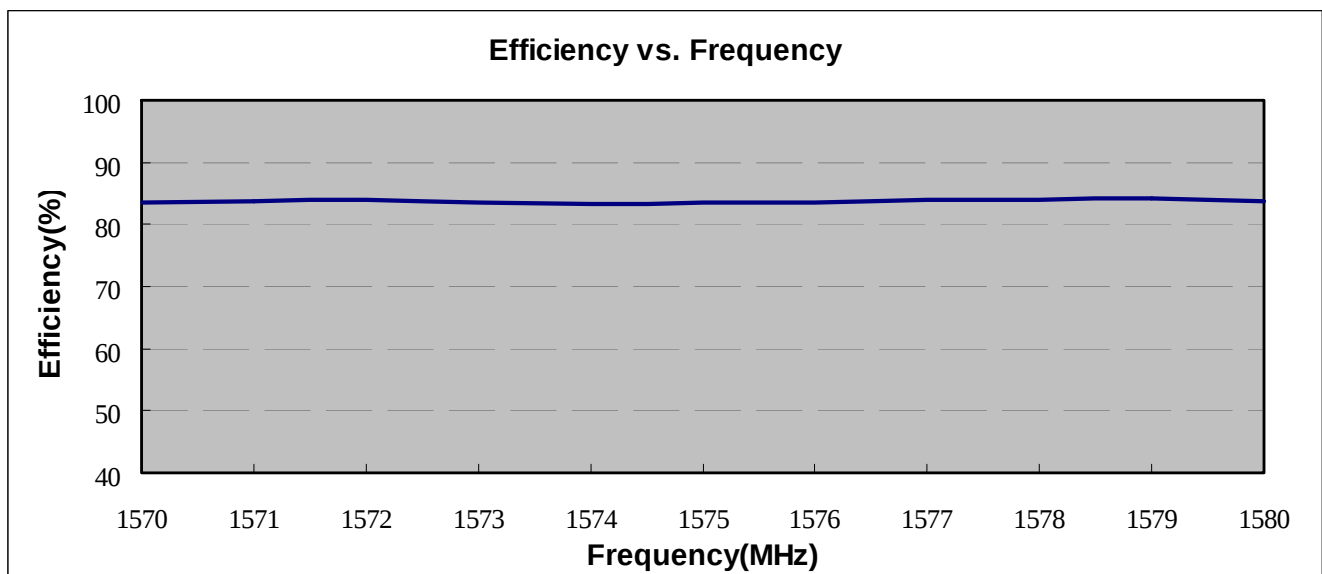
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7-2. 3D Efficiency Table

Frequency (MHz)	1570	1571	1572	1573	1574	1575	1576	1577	1578	1579	1580
Efficiency (dB)	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
Efficiency (%)	83.4	83.8	84.0	83.6	83.4	83.4	83.6	84.0	84.0	84.2	83.8
Gain (dBi)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3

7-3. 3D Efficiency vs. Frequency



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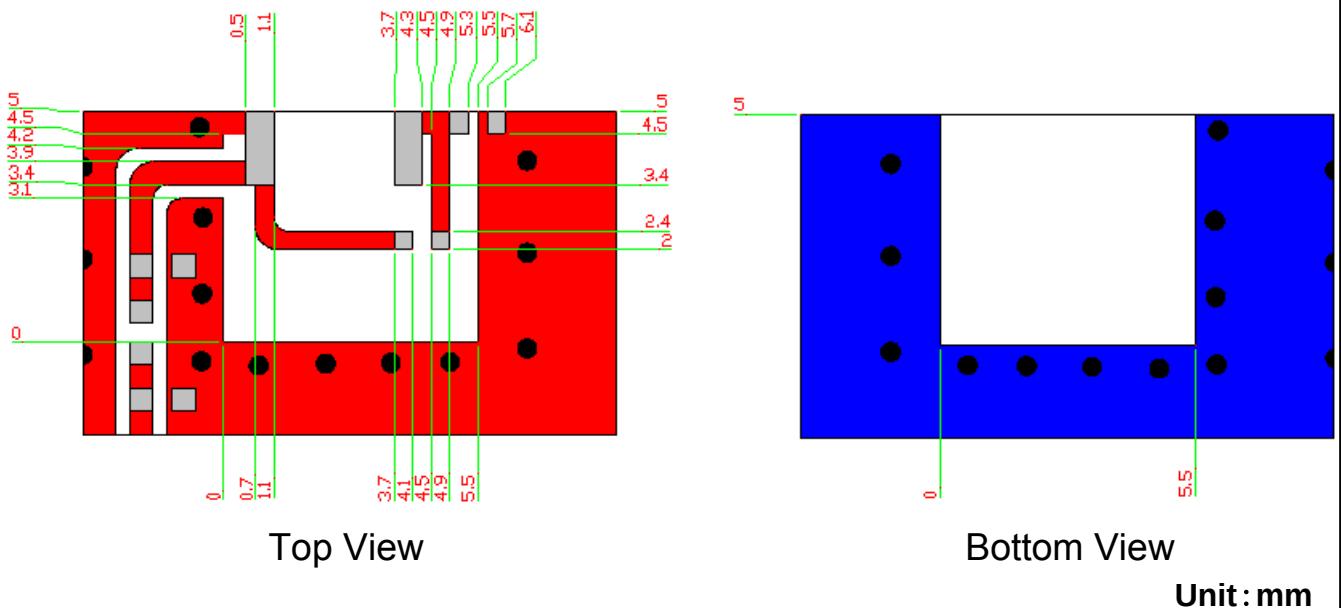
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8. Layout Guide

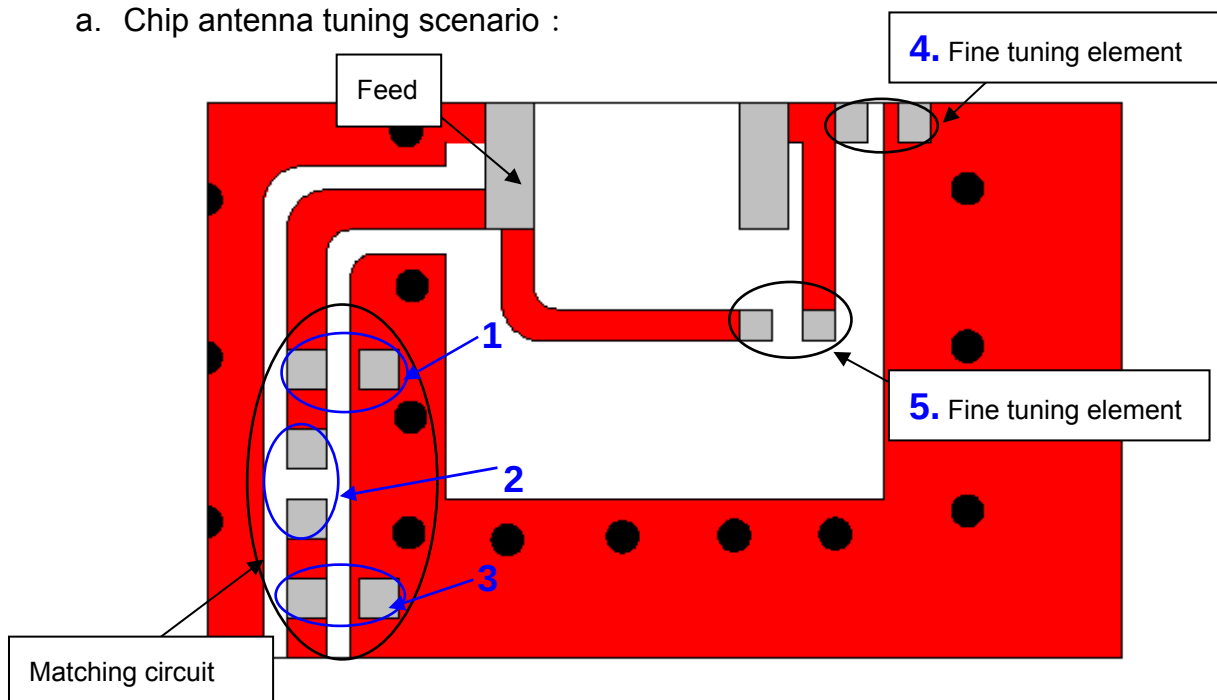
a. Solder Land Pattern:

Land pattern for soldering (gray marking areas) is as shown below. Depending on Customer's requirement, matching circuit as shown below is also recommended .



9. Frequency tuning

a. Chip antenna tuning scenario :



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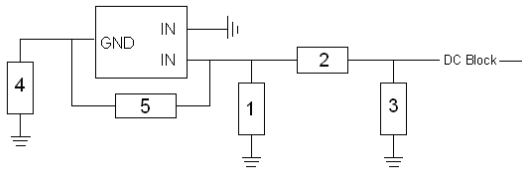
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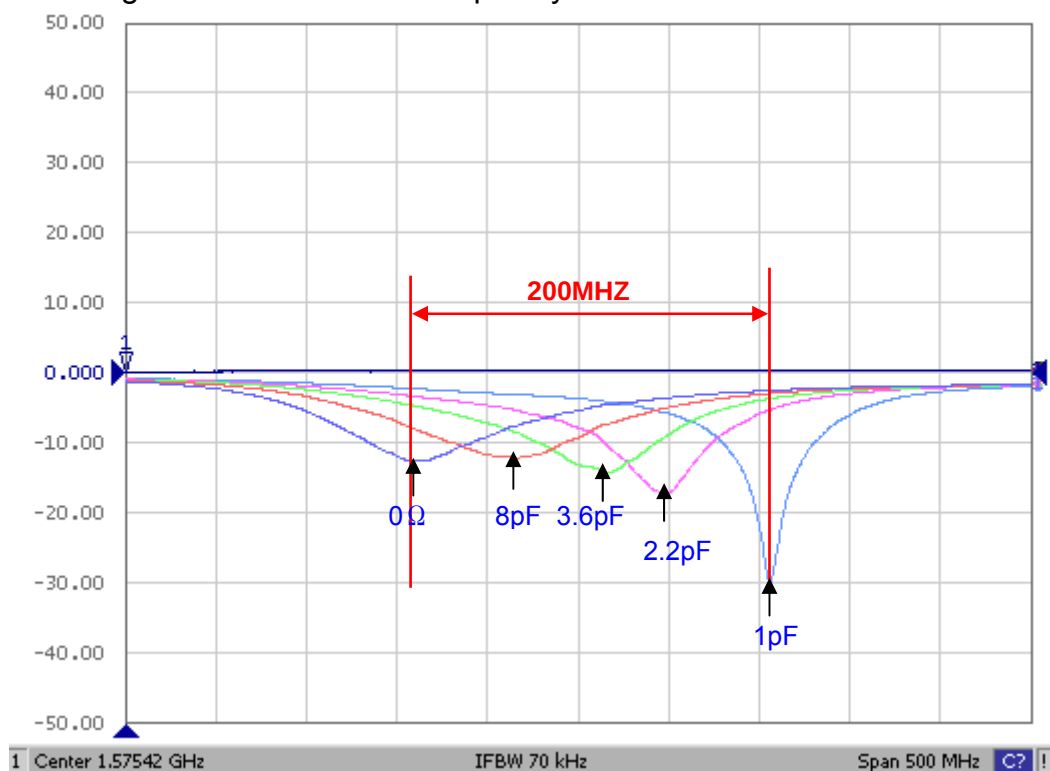
b. Matching circuit : (Center frequency is about 1575.42MHz @ 80 x 40 mm² ground plane)



System Matching Circuit Component			
Location	Description	Vendor	Tolerance
1	2.5 pF*	DARFON(0402)	±0.1pF
2	0 Ω*	(0402)	-
3	N/A*	N/A	N/A
Fine tuning element 4	4.7 pF*	DARFON(0402)	±0.1pF
Fine tuning element 5	1 pF*	DARFON(0402)	±0.1pF

*Typical reference values which may need to be changed when circuit boards or part vendors are different.

c. Fine tuning element vs. Center frequency



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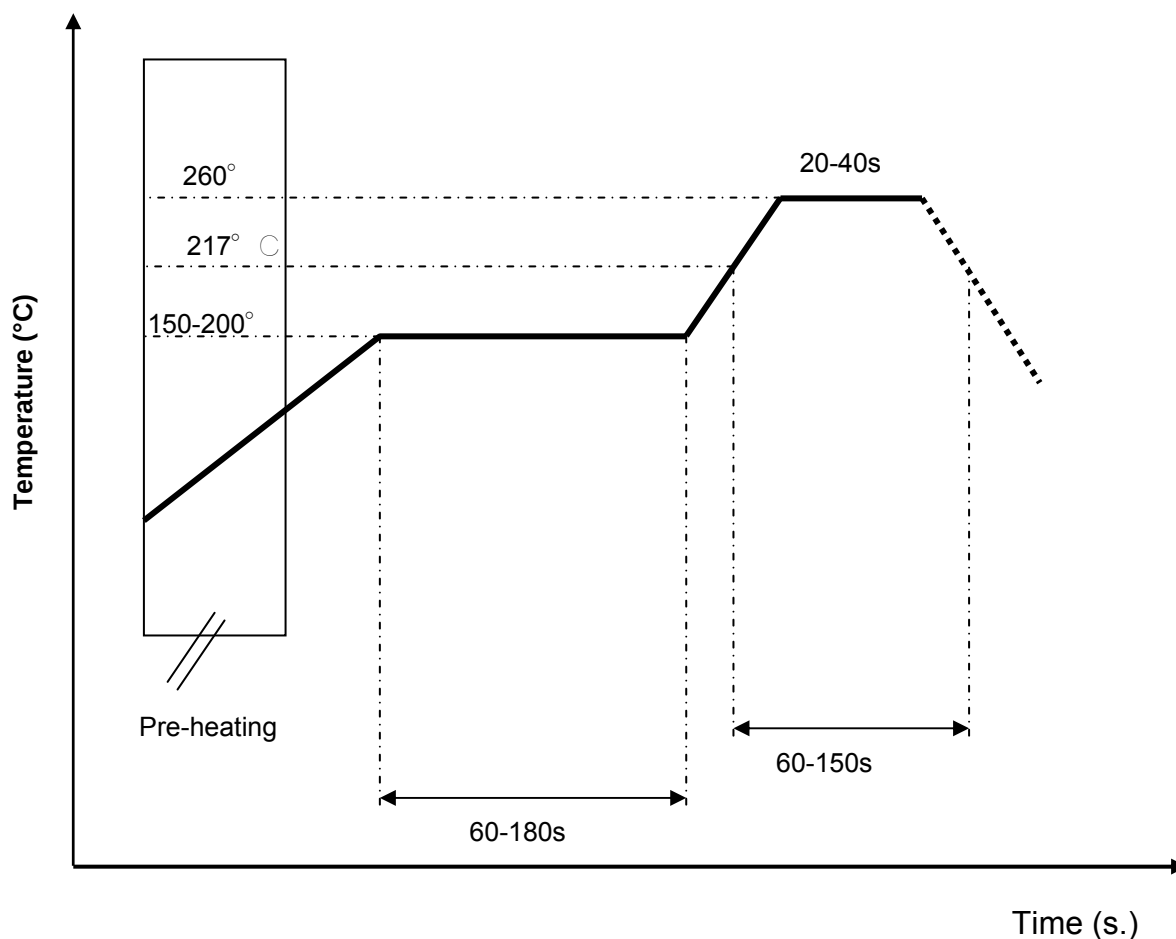
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10. Soldering Conditions

a. Typical Soldering Profile for Lead-free Process



11. Notifications for Assembly

We recommend the notifications as following:

- Do NOT touch or push the chip antenna after SMT process.
- Do NOT bend PCB after SMT process.
- Do NOT place the cutting point between PCB and frame near the chip antenna.
- Do NOT use ultrasonic welding process or vibration process to avoid the cracking of the soldering of the chip antenna.



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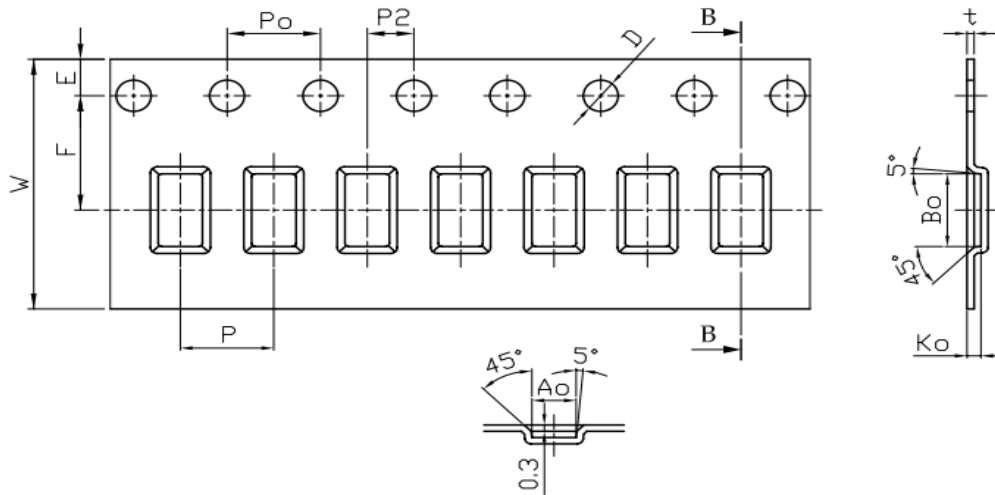
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12. Packing

(1) Quantity/Reel: 5000 pcs/Reel

(2) Plastic tape:



1. Cumulative tolerance of 10 sprocket hole pitch: $\pm 0.20\text{mm}$
2. Carrier camber not to exceed 1mm in 250mm
3. Ao and Bo measured on a plane above the inside bottom of the pocket.
4. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
5. All dimensions meet EIA-481-B requirements.
6. Material: ☐ Clear Non Anti-Static Polystyrene.
☒ Black Conductive Polystyrene.

2.1 Tape Dimensions(unit: mm)

Feature	Specifications	Tolerances
W	12.00	± 0.30
P	4.00	± 0.10
E	1.75	± 0.10
F	5.50	± 0.10
P2	2.00	± 0.10
D	1.50	+0.10 -0.00
Po	4.00	± 0.10
10Po	40.00	± 0.20

13. Storage Conditions

- (1) Temperature: -25°C to 85°C
- (2) Relative Humidity: 20% to 70%
- (3) Shelf Life :1 year

2.2 Pocket Dimensions(unit: mm)

Feature	Specifications	Tolerances
Ao	1.90	+0.20
Bo	3.50	-0.10
Ko	0.60	± 0.10
t	0.30	± 0.05



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