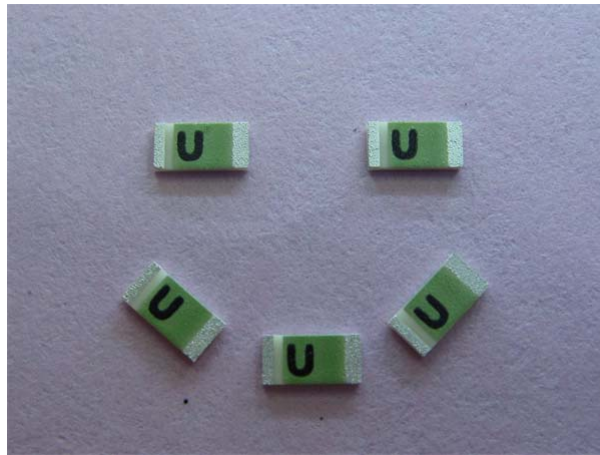


3.2 x 1.6 x 0.5 (mm) GPS Ceramic Chip Antenna (AA088)

Engineering Specification

1. Product Number

H 2 U 1 4 W 1 H 1 A 0 4 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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5. Electrical Specifications (80x40(mm) ground plane)

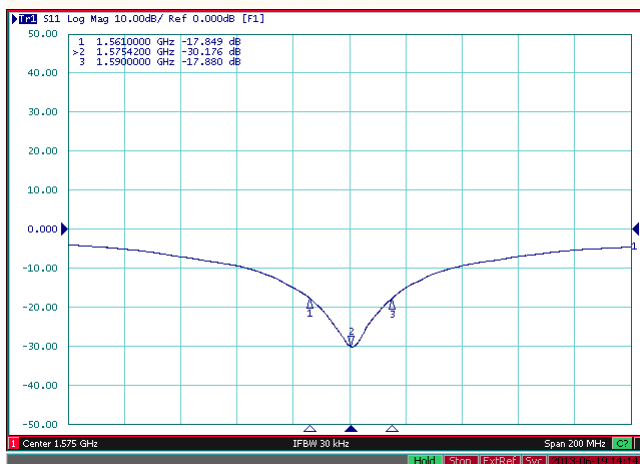
5-1. Electrical Table

Characteristics		Specifications	Unit
Outline Dimensions		3.2x1.6x0.5	mm
Ground Plane		80x40	mm
Working Frequency		1575.42	MHz
Bandwidth		48 (typical)	MHz
VSWR (@Center Frequency) *		2 (typical)	
Impedance		50	Ω
Polarization		Linear Polarization	
Gain	Peak	3.2 (typical)	dBi
	Efficiency	83 (typical)	%

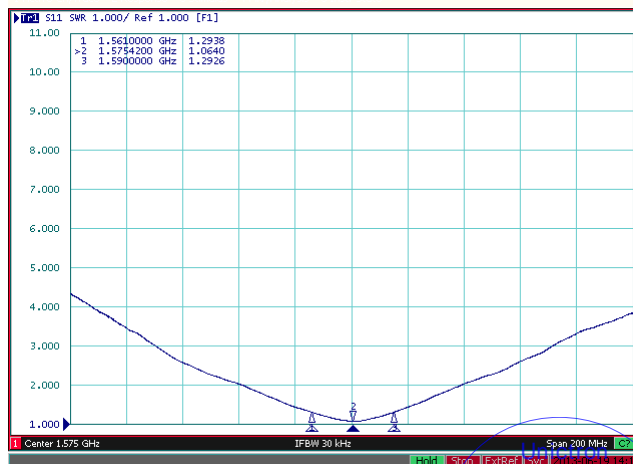
* Center frequency will be offset to another frequency according to the conditions of user's ground plane and radome.

5-2. Return Loss & VSWR

Return Loss (S_{11})



VSWR (S_{11})



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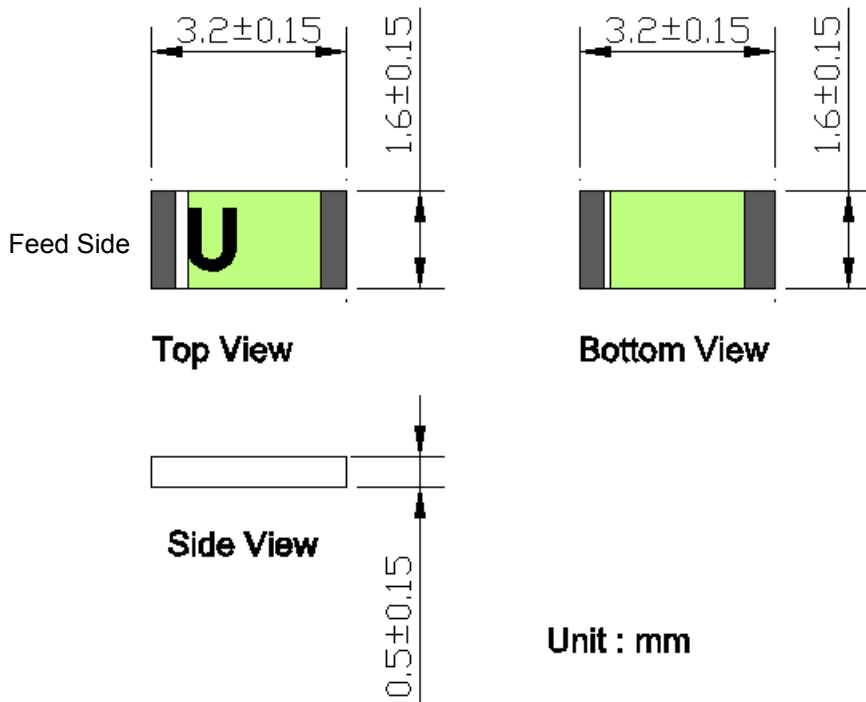
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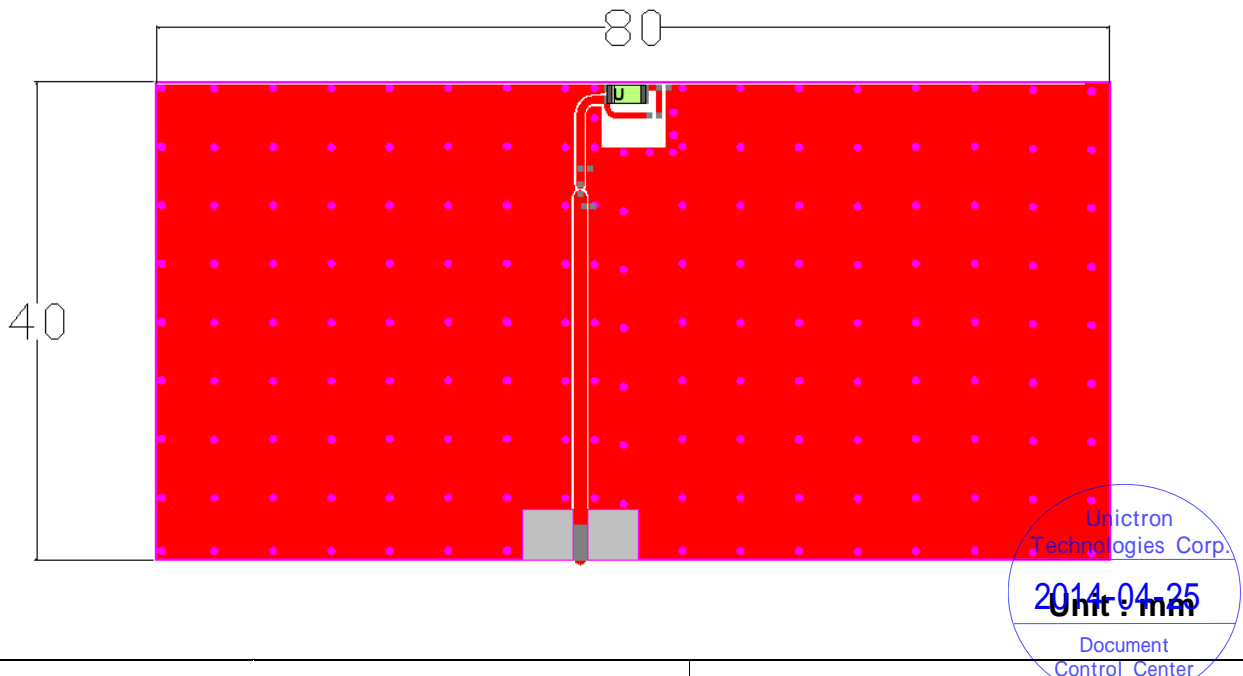
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6. Antenna Dimensions & Test Board (unit: mm)

a. Antenna Dimensions



b. Test Board with Antenna



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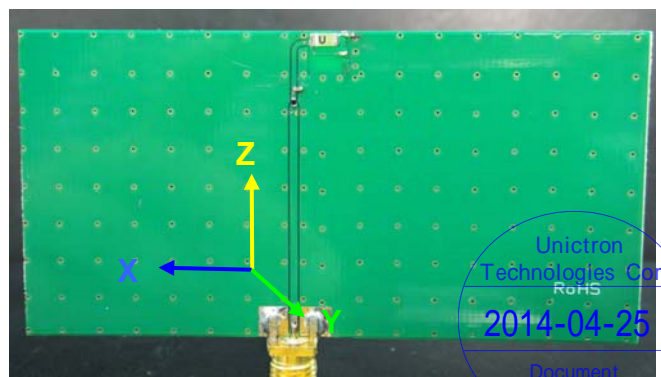
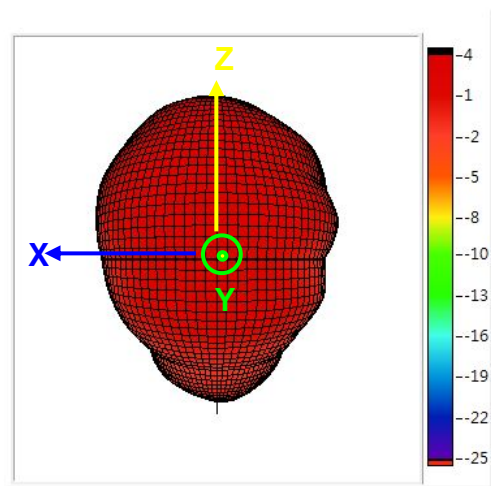
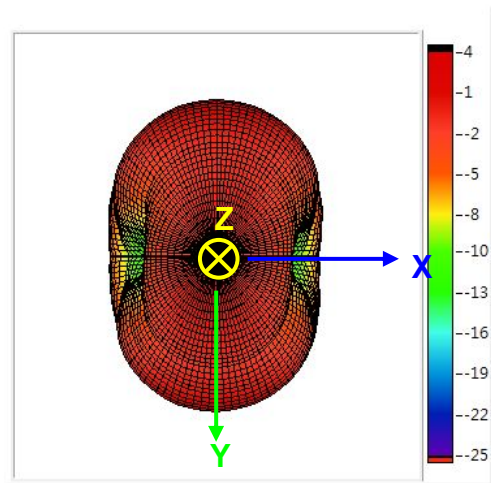
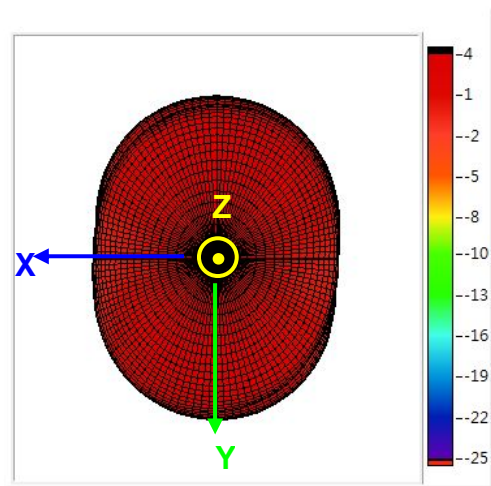
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7. Radiation Pattern (80x40(mm) ground plane)

7-1. 3D Gain Pattern @ 1575.42 MHz



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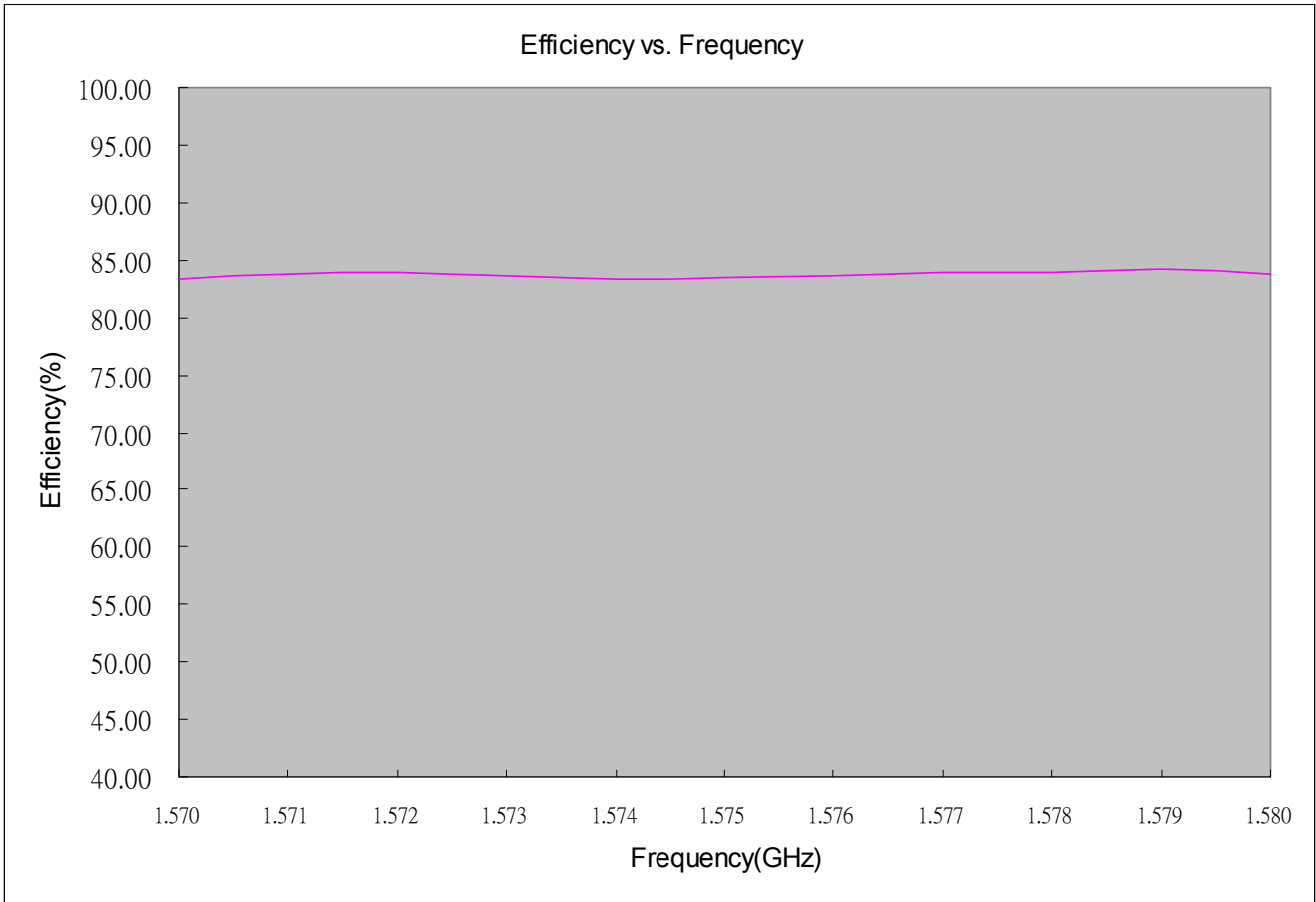
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7-2. 3D Efficiency Table

Frequency(GHz)	1.570	1.571	1.572	1.573	1.574	1.575	1.576	1.577	1.578	1.579	1.580
Efficiency(dB)	-0.79	-0.77	-0.76	-0.78	-0.79	-0.79	-0.78	-0.76	-0.76	-0.75	-0.77
Efficiency(%)	83.38	83.77	83.96	83.58	83.38	83.43	83.58	83.96	83.96	84.16	83.77
Gain(dBi)	3.29	3.29	3.30	3.28	3.29	3.29	3.29	3.29	3.29	3.28	3.26

7-3. 3D Efficiency vs. Frequency



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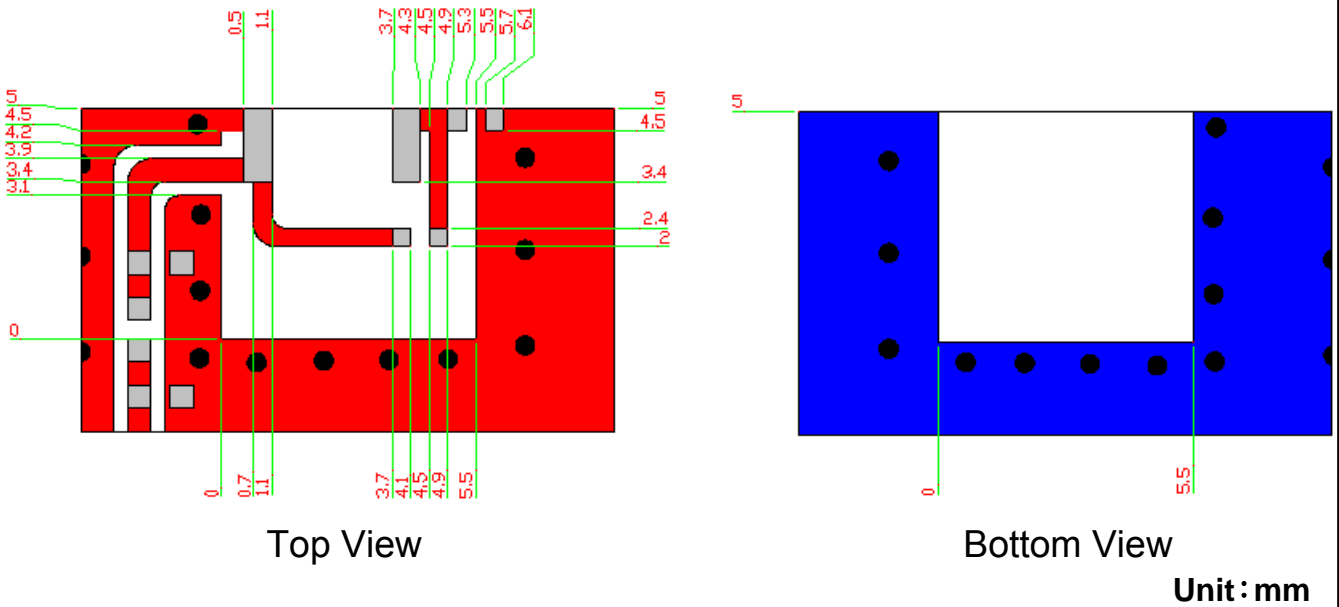
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8. Layout Guide

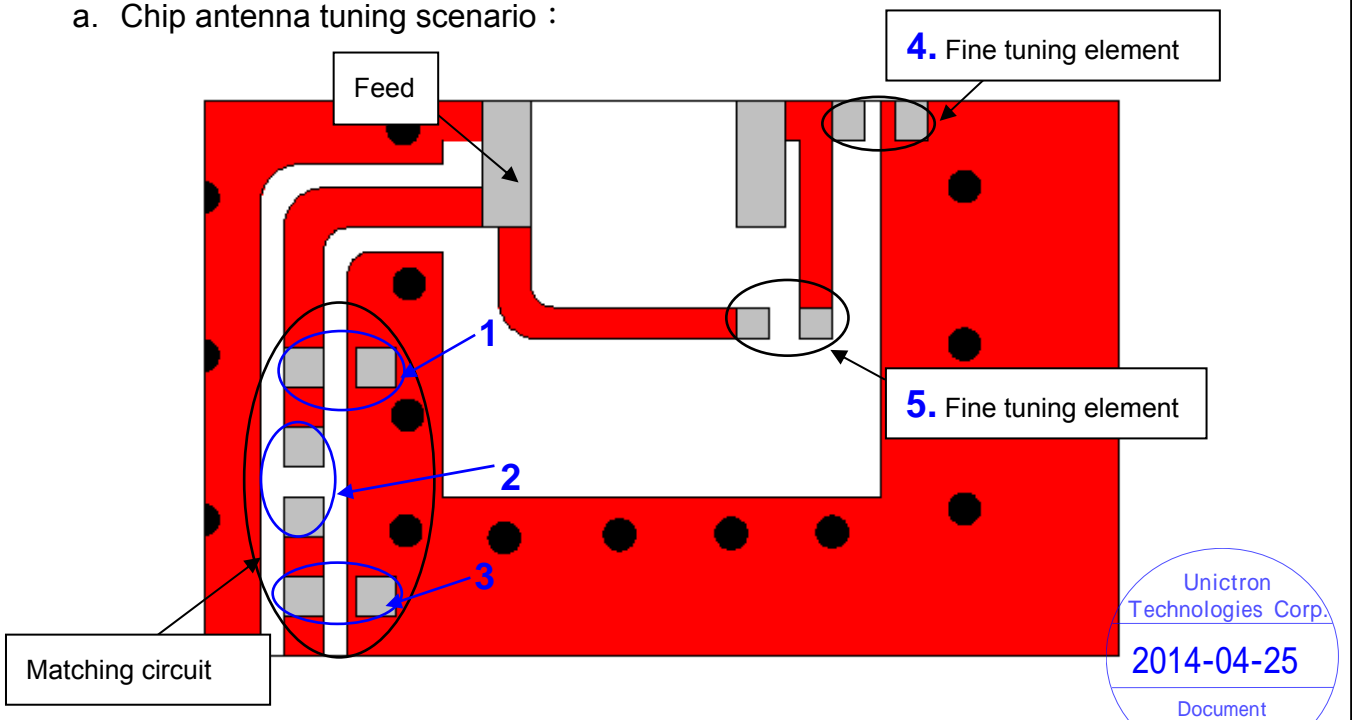
a. Solder Land Pattern:

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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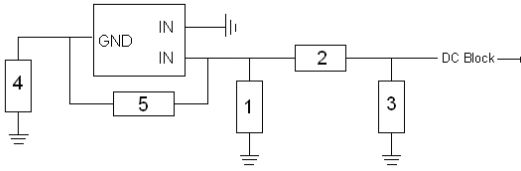
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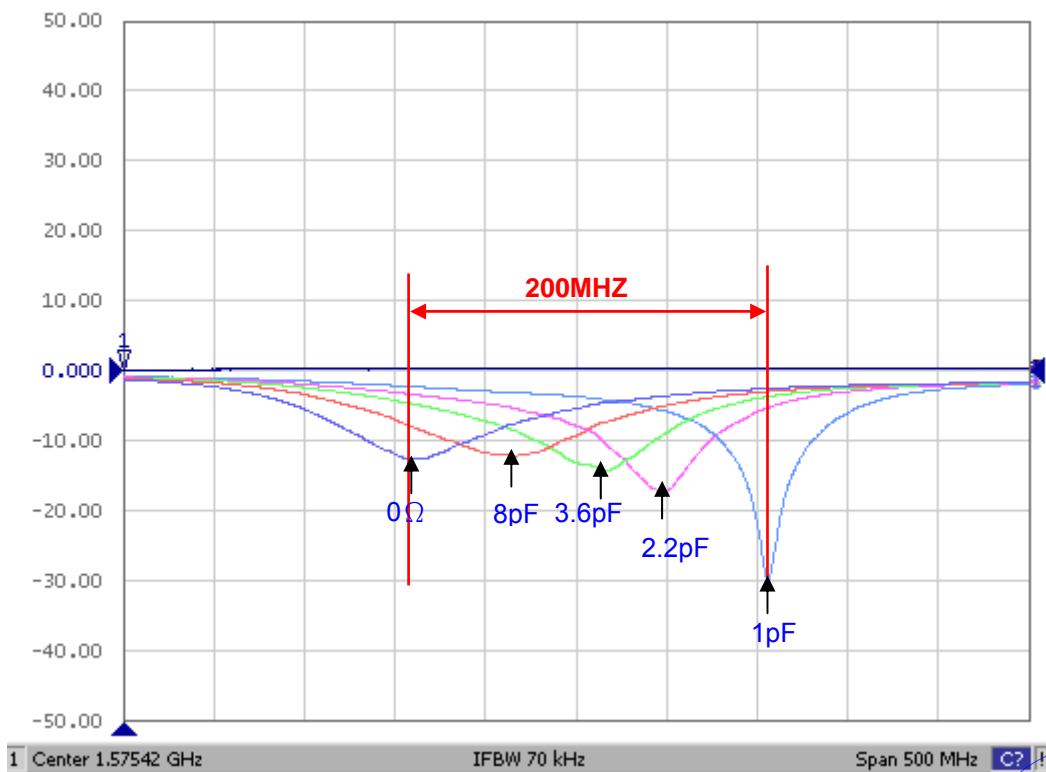
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b. Matching circuit : (Center frequency is about 1575.42MHz @ 80x40(mm) ground plane)



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

c. Fine tuning element vs. Center frequency



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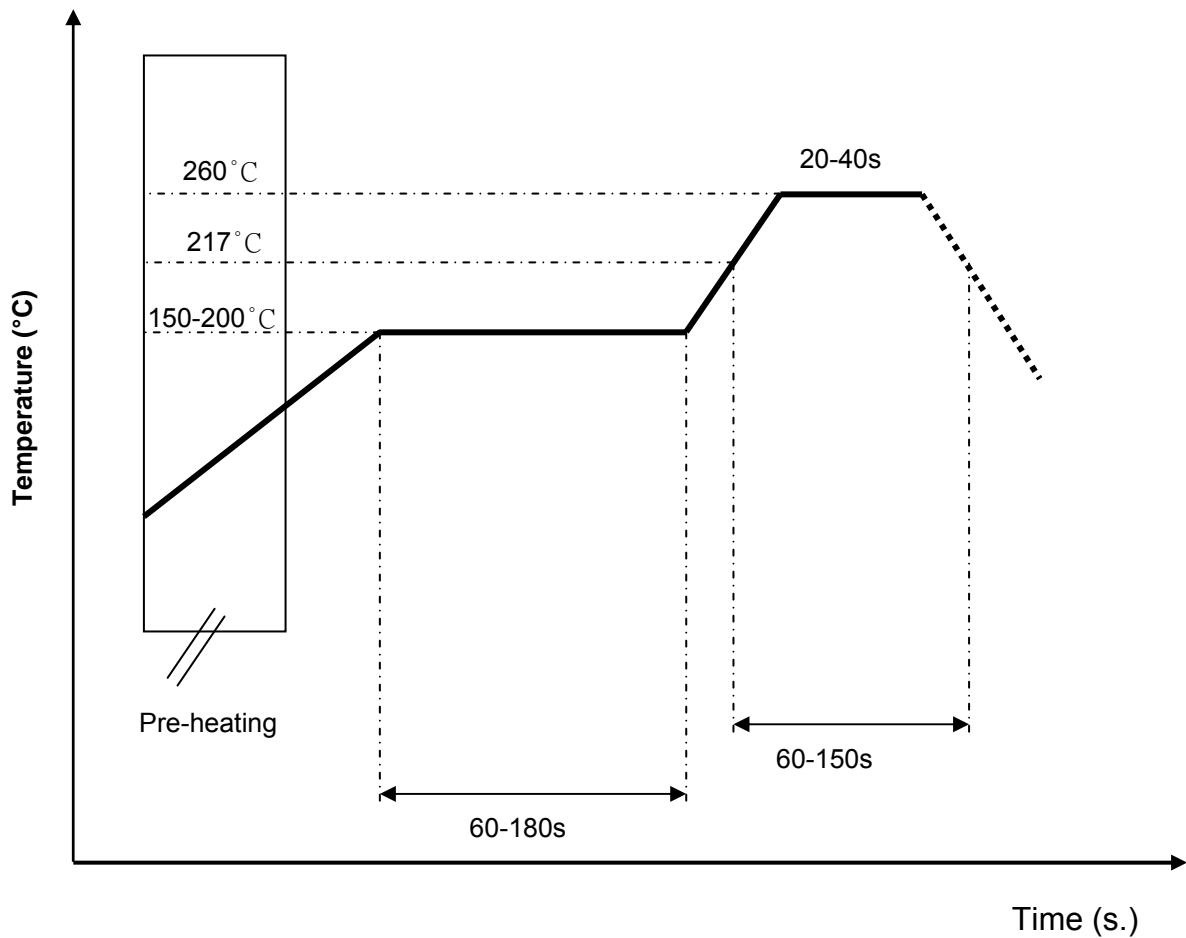
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10. Soldering Conditions

a. Typical Soldering Profile for Lead-free Process



11. Notifications for Assembly

We recommend the notifications as following:

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



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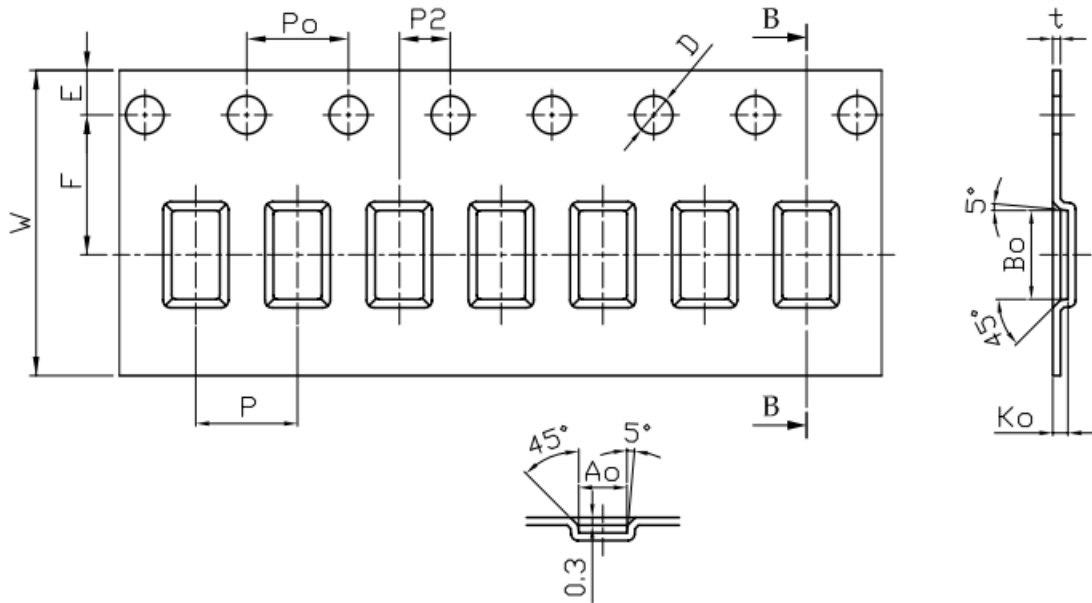
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12. Packing

- (1) Quantity/Reel: 5000 pcs/Reel
- (2) Plastic tape:



1. 10 sprocket hole pitch cumulative tolerance $\pm 0.20\text{mm}$
2. Carrier camber not to exceed 1mm in 100 mm
3. Ao and Bo measured on a plane the 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-D 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 : one year

2.2 Pocket Dimensions(unit: mm)

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



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