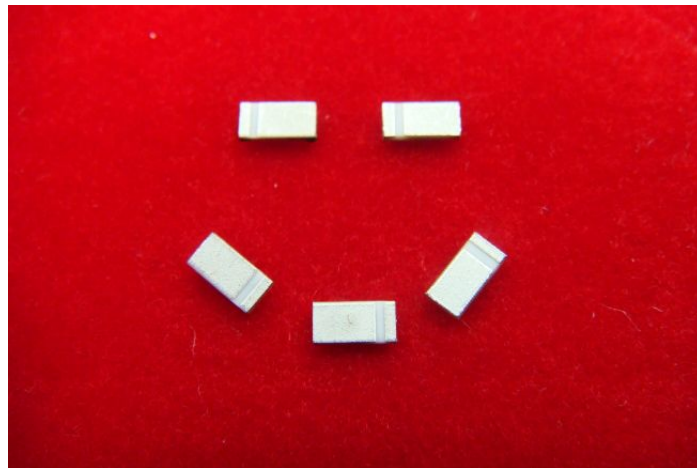


# 3.2 x 1.6 x 0.5 (mm) WiFi/Bluetooth Ceramic Chip Antenna (AA055)

## Engineering Specification

### 1. Product Number

H 2 U 3 4 W G T Q W 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

- \*Bluetooth earphone systems
- \*Hand-held devices when WiFi /Bluetooth functions are needed, e.g., Smart phone.
- \*IEEE802.11 b/g/n
- \*ZigBee
- \*Wireless PCMCIA cards or USB dongle

### 4. Description

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Prepared by : Xenia	Designed by : Mike	Checked by : Mike	Approved by : Herbert
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Unictron's chip antenna series are specially designed for WiFi/Bluetooth applications. Based on Unictron's proprietary design and processes, this chip antenna has excellent stability and sensitivity to consistently provide high signal reception efficiency.

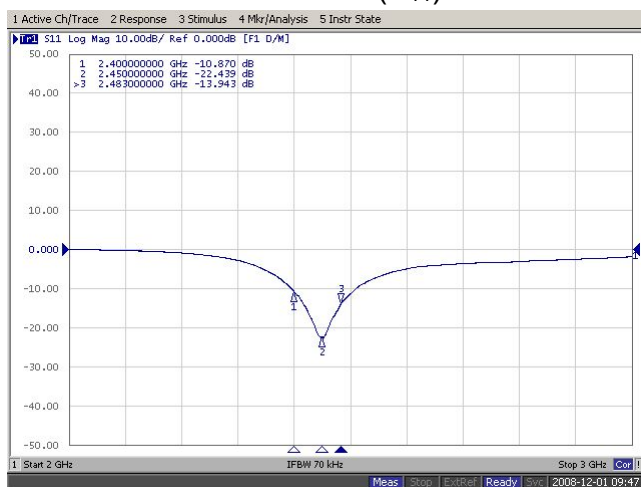
## 5. Electrical Specifications (80 x 40 mm<sup>2</sup> ground plane)

### 5-1. Electrical Table

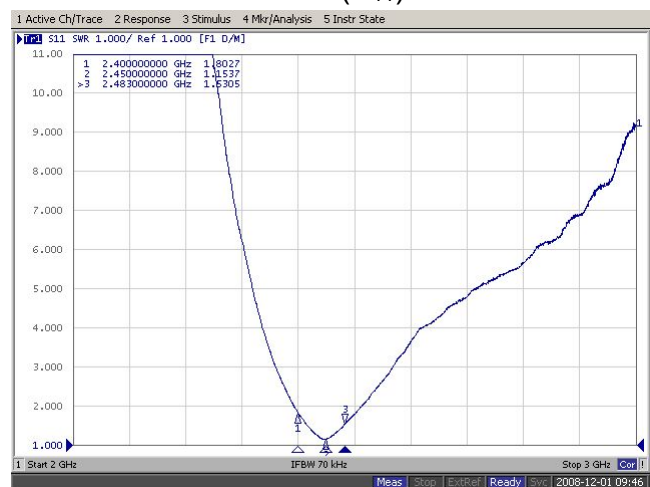
Characteristics		Specifications	Unit
Outline Dimensions		3.2x1.6x0.5	mm
Working Frequency		2400~2500	MHz
VSWR		2 Max.	
Impedance		50	Ω
Polarization		Linear Polarization	
Gain	Peak	2.5 (typical)	dBi
	Efficiency	84 (typical)	%

### 5-2. Return Loss & VSWR

Return Loss (S<sub>11</sub>)



VSWR(S<sub>11</sub>)



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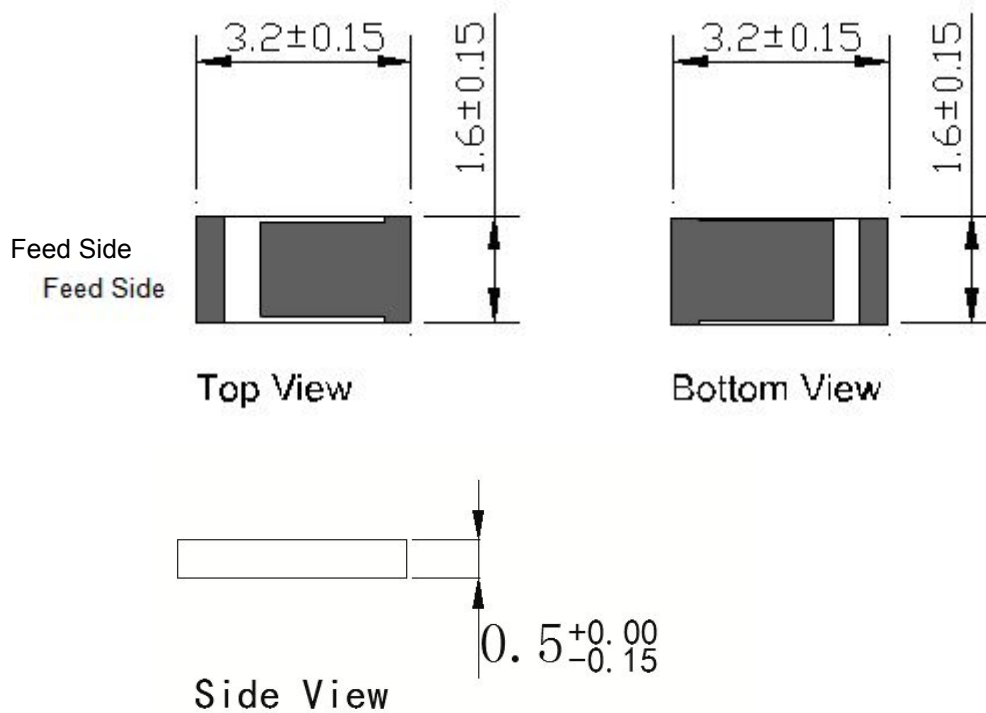
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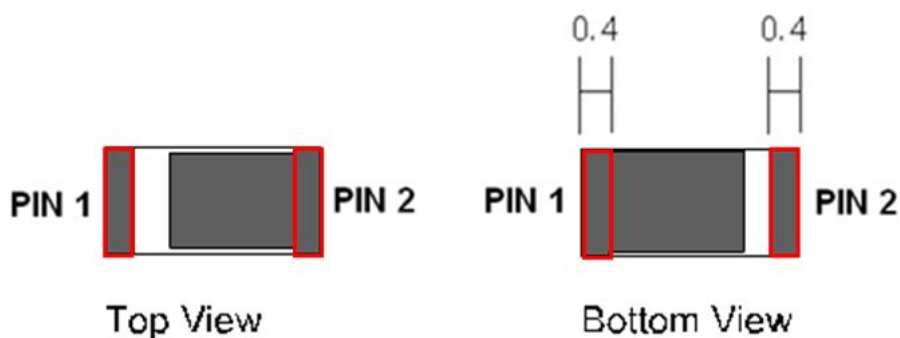
## 6. Antenna Dimensions & Test Board (unit: mm)

### a. Antenna Dimensions



Unit: mm

### PIN Definitions



Unit : mm



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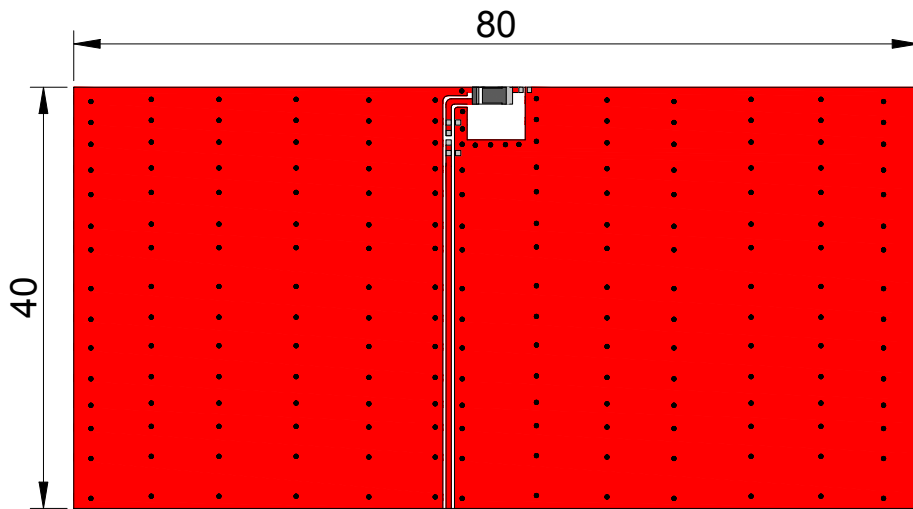
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b. Test Board with Antenna



Unit: mm



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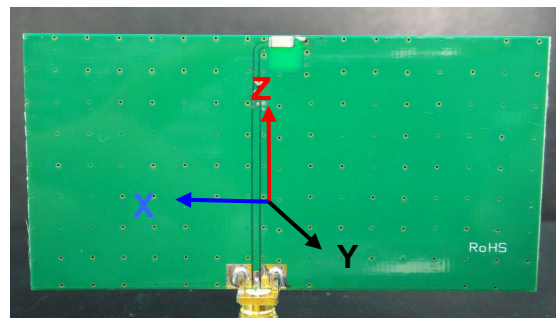
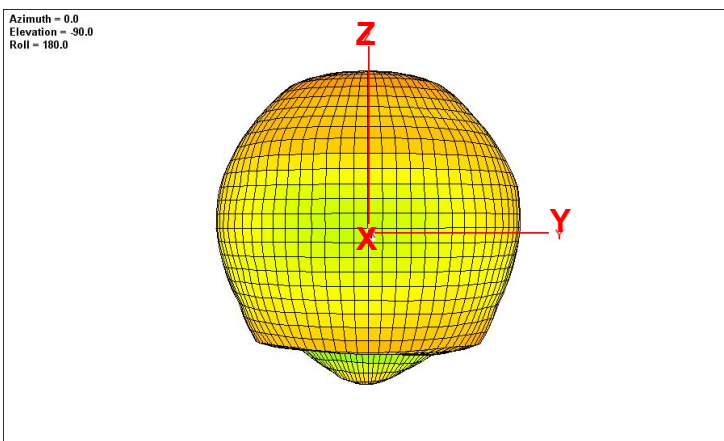
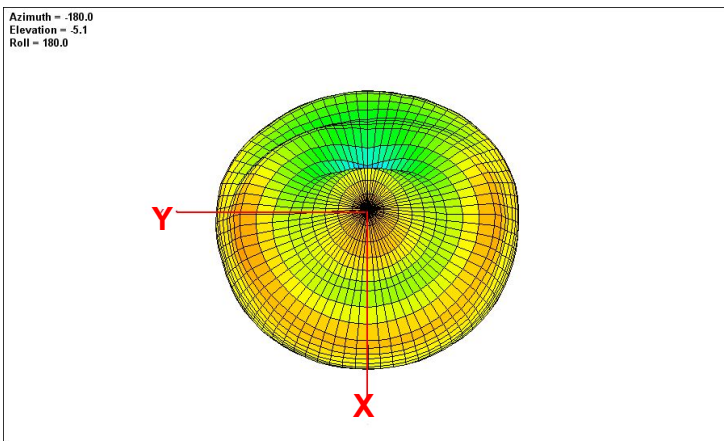
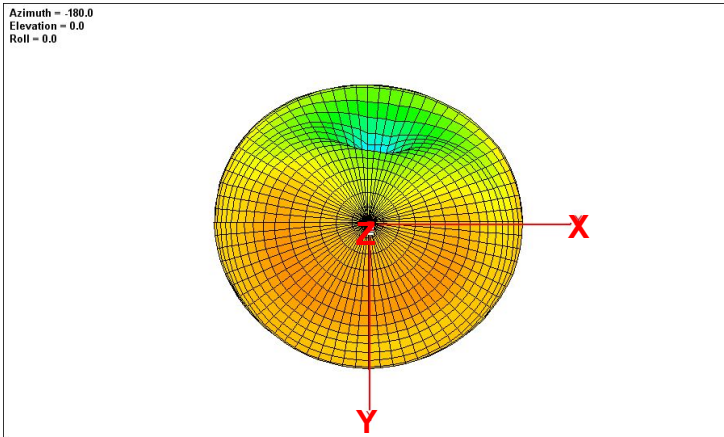
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# 7. Radiation Pattern (80 x 40 mm<sup>2</sup> ground plane)

## 7-1. 3D Gain Pattern @ 2442 MHz



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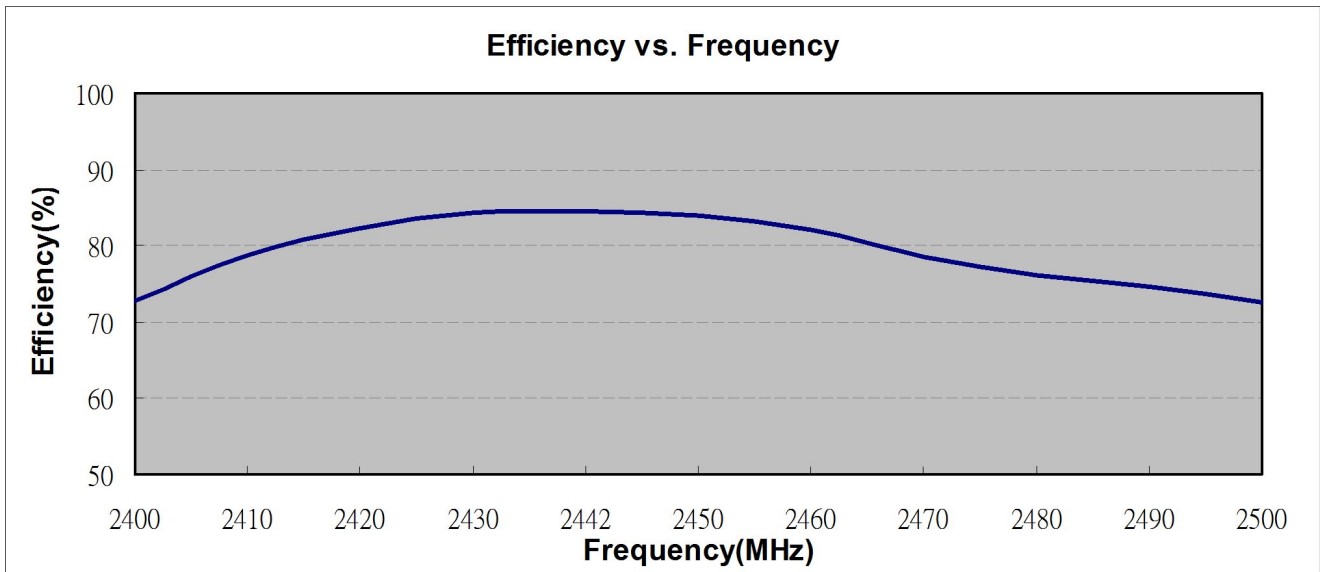
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### 7-2. 3D Efficiency Table

Frequency( MHz)	2400	2410	2420	2430	2442	2450	2460	2470	2480	2490	2500
Efficiency (dB)	-1.4	-1.0	-0.9	-0.7	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3	-1.4
Efficiency (%)	72.8	78.7	82.3	84.4	84.5	84.0	82.0	78.6	76.1	74.6	72.5
Gain (dBi)	1.5	1.8	2.1	2.4	2.5	2.5	2.4	2.1	1.9	1.9	1.8

### 7-3. 3D Efficiency vs. Frequency



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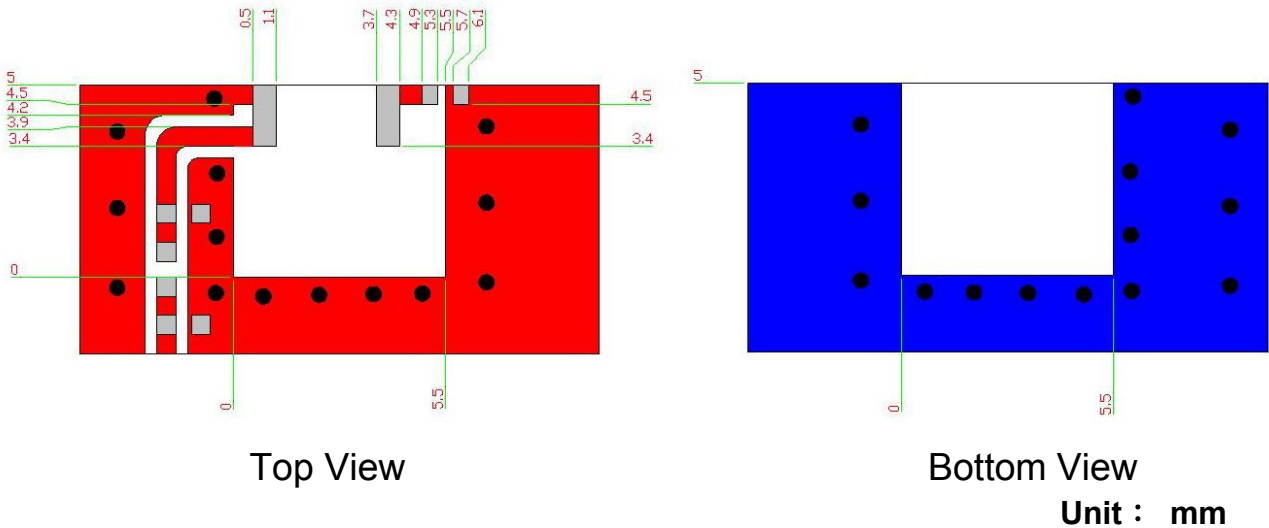
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## 8. Layout Guide

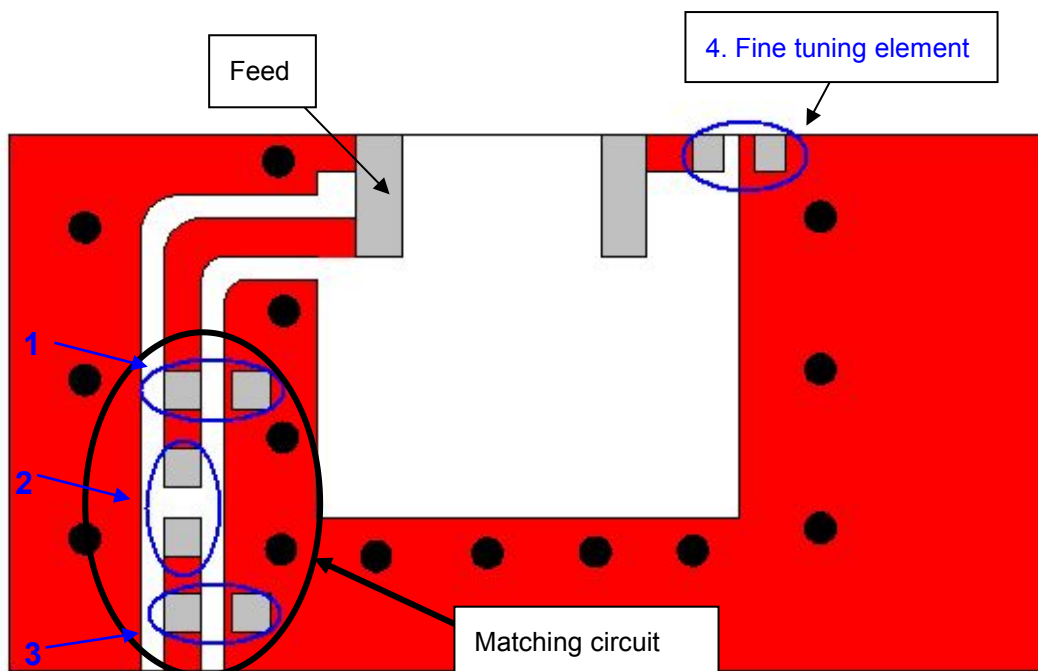
### a. Solder Land Pattern:

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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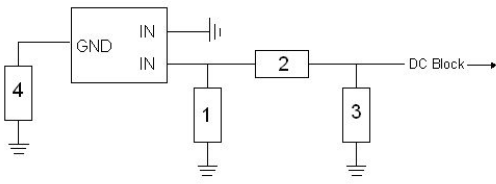
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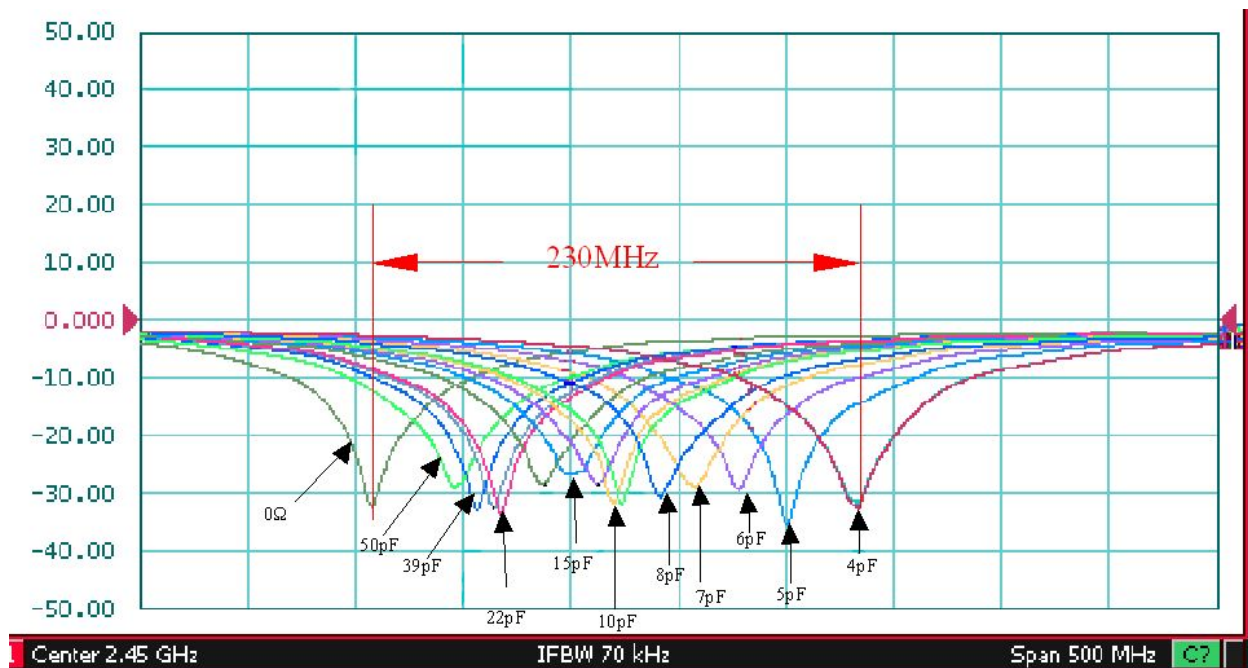
b. Matching circuit : (Center frequency is about 2442 MHz @ 80 x 40 mm<sup>2</sup> ground plane)



System Matching Circuit Component			
Location	Description	Vendor	Tolerance
1	1.2 pF*	DARFON(0402)	±0.1 pF
2	3.3nH*	DARFON(0402)	±0.1 nH
3	N/A*	-	-
Fine tuning element 4	1.5 pF*	DARFON(0402)	±0.1 pF

\*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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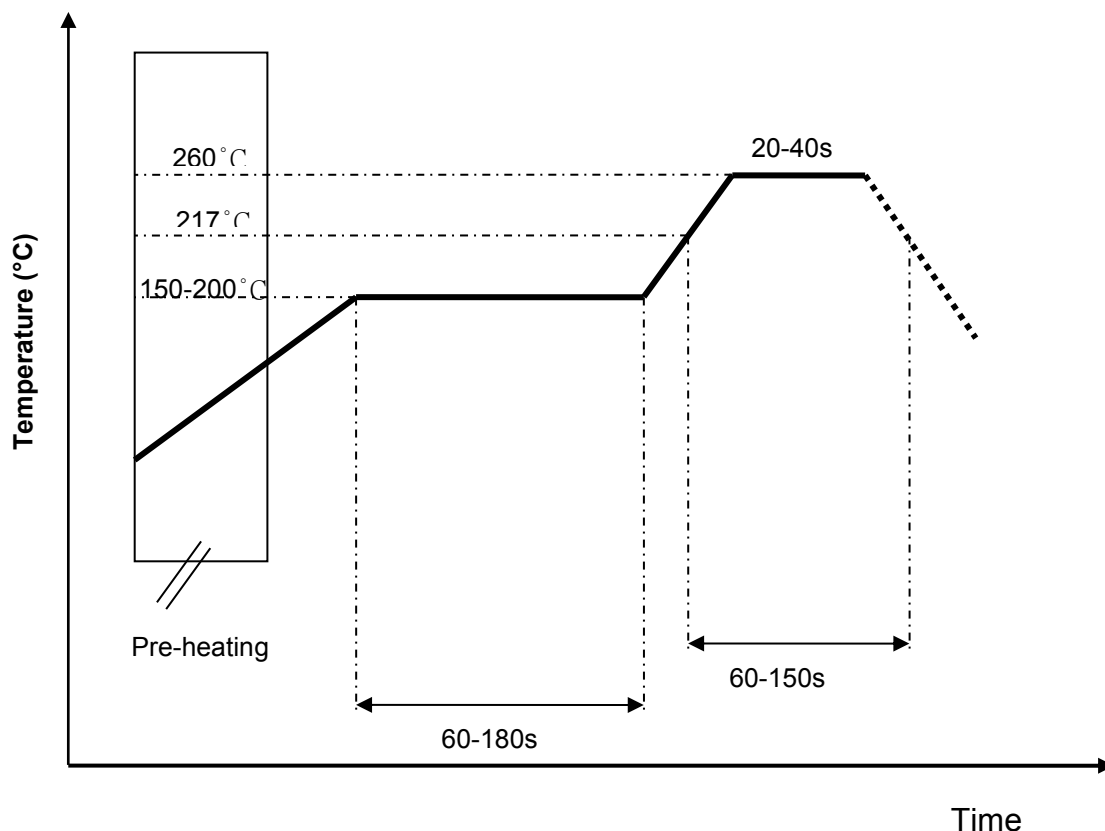
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## 10. Soldering Conditions

### a. Typical Soldering Profile for Lead-free Process



## 11. Reminders for users of Unictron's chip antennas

- Since Unictron's chip antennas are made of ceramic materials which show different rigidity than circuit board materials, bending of circuit board at the locations where chip antennas are mounted may cause the cracking of solder joints or antenna itself.
- Any connecting strip which will be cut off at PCB assembly process shall be located away from the installation site of chip antenna. Punching of the connecting strip may cause severe bending of the circuit board and cracking of solder joint or chip antenna itself may occur.
- Be cautious when ultrasonic welding process needs to be used near the locations where chip antennas are installed. Strong ultrasonic vibration may cause the cracking of chip antenna solder joints.
- 



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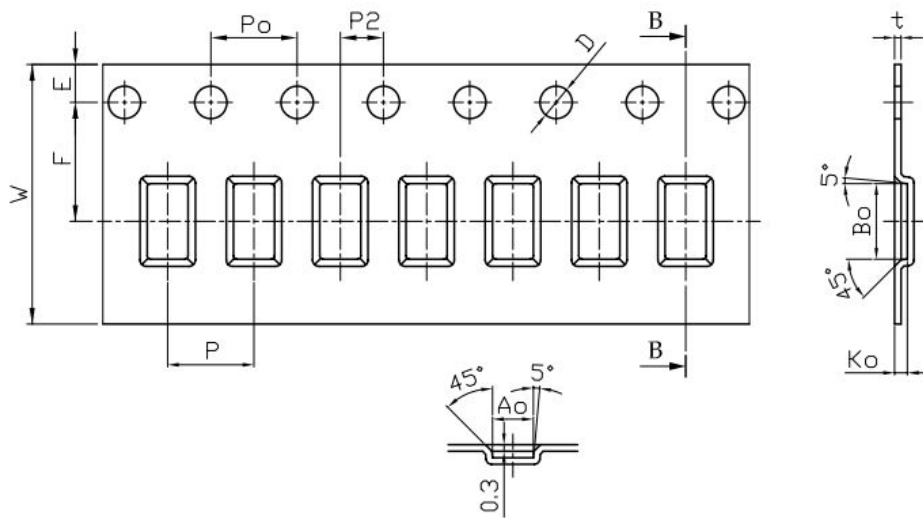
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## 12. Packing

- (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	$\pm 0.30$
P	4.00	$\pm 0.10$
E	1.75	$\pm 0.10$
F	5.50	$\pm 0.10$
P2	2.00	$\pm 0.10$
D	1.50	+0.10 -0.00
Po	4.00	$\pm 0.10$
10Po	40.00	$\pm 0.20$

## 13. Operating & Storage Conditions

### 13-1. Operating

- (1) Maximum Input Power: 2 W
- (2) Operating Temperature:  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$

### 13-2. Storage

- (1) Storage Temperature:  $-25^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- (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	$\pm 0.10$
t	0.30	$\pm 0.05$



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