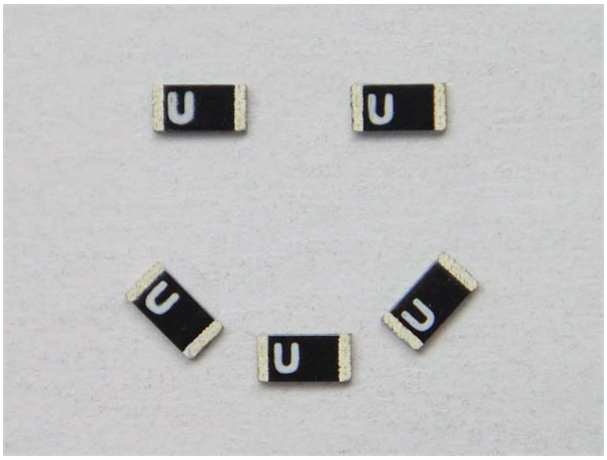
# 3.2 x 1.6 x 0.5 (mm) WiFi/Bluetooth Ceramic Chip Antenna (AA055A)

## Engineering Specification

## 1. Product Number

| H | 2 | U | 3 | 4 | W | 1 | H | 1 | Z | 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

*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

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.







| Prepared by : Nacy | Designed by : Mike | Checked by : Mike | Approved by : Herbert | UNIT : mm |
|---|---|---|---|---|

| TITLE : 3.2 x 1.6 x 0.5(mm) WiFi/Bluetooth Ceramic Chip Antenna (AA055A) Engineering Specification | DOCUMENT NO. | H2U34W1H1Z0400 | REV. A |
|---|---|---|---|

# 5. Electrical Specifications (80x40(mm) ground plane)

## 5-1. Electrical Table

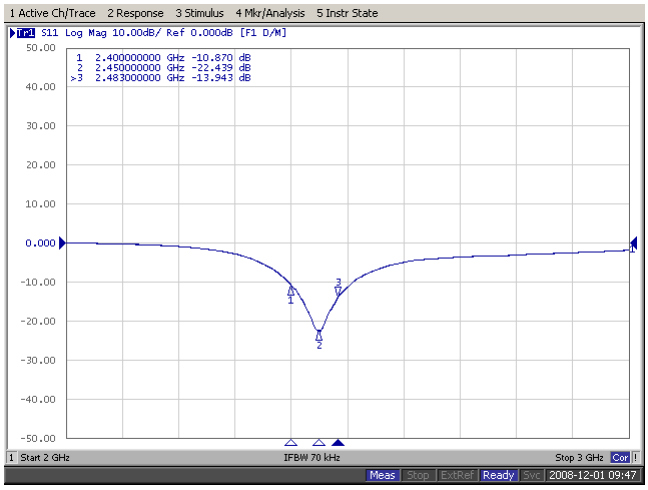
| Characteristics | | Specifications | Unit |
|---|---|---|---|
| Outline Dimensions | | 3.2x1.6x0.5 | mm |
| Ground Plane | | 80x40 | mm |
| Working Frequency | | 2400~2500 | MHz |
| Bandwidth | | 100 (typical) | MHz |
| VSWR (@Center Frequency)* | | 2 (typical) | |
| Impedance | | 50 | Ω |
| Polarization | | Linear Polarization | |
| Gain** | Peak | 2.5 (typical) | dBi |
| | Efficiency | 84 (typical) | % |

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

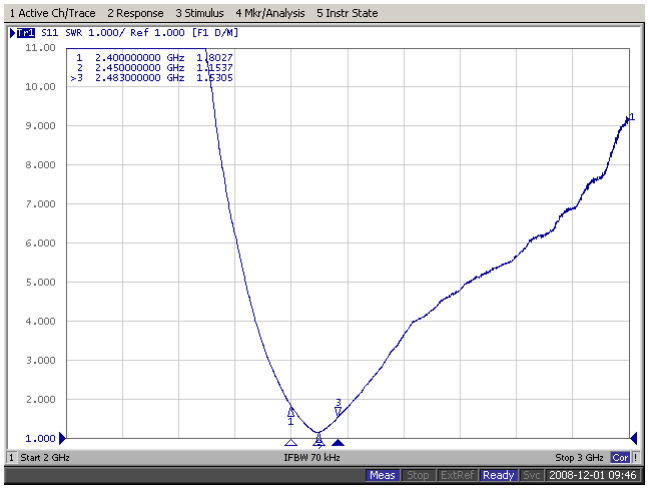
**The data was measured by A Test Lab Techno Corp.(CTIA Authorized Test Lab).

## 5-2. Return Loss & VSWR

Return Loss ($S_{11}$)

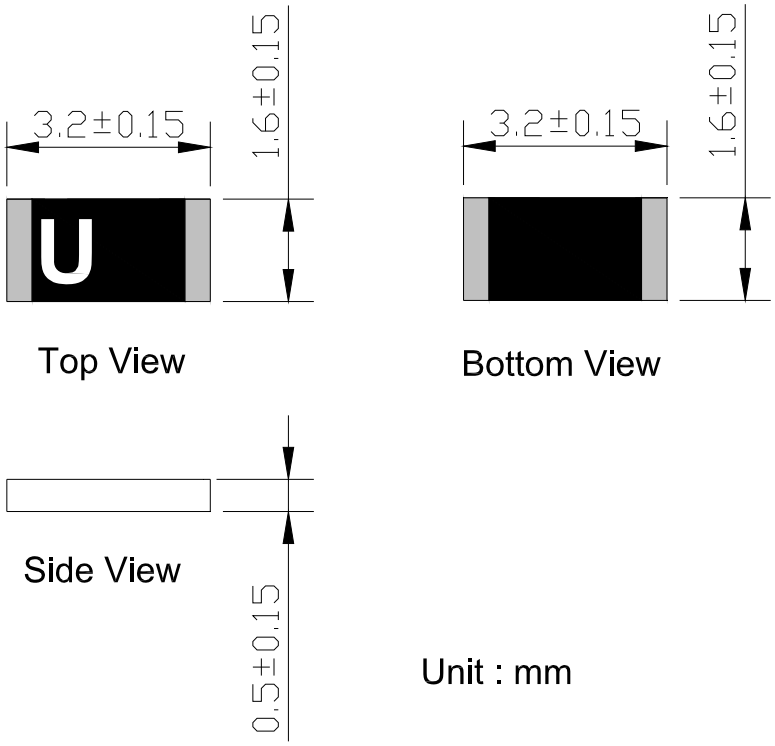



VSWR($S_{11}$)

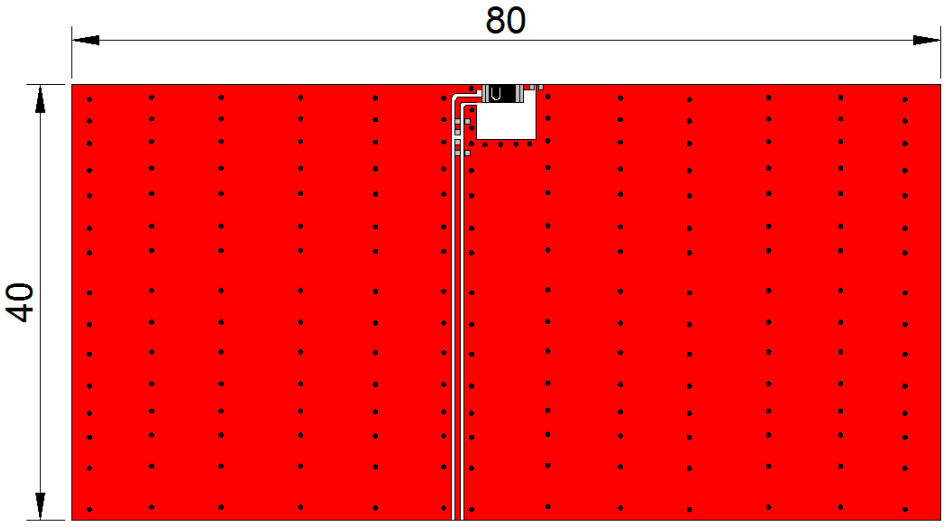


## 6. Antenna Dimensions & Test Board (unit: mm)

a. Antenna Dimensions



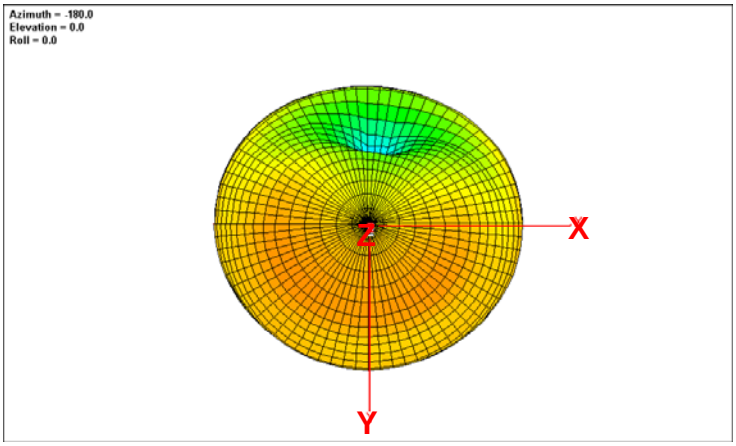

b. Test Board with Antenna

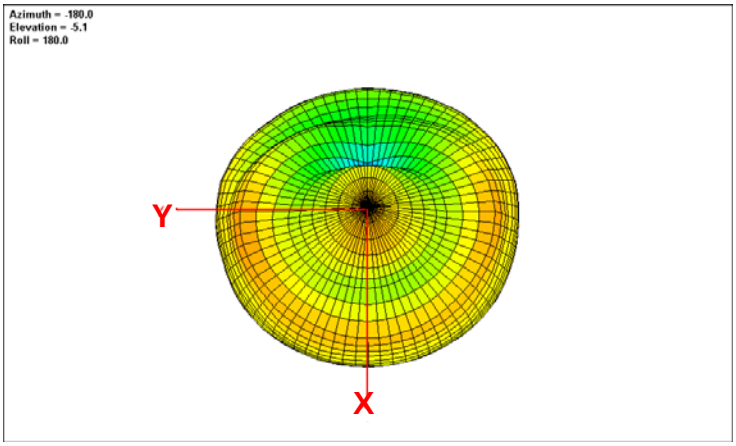


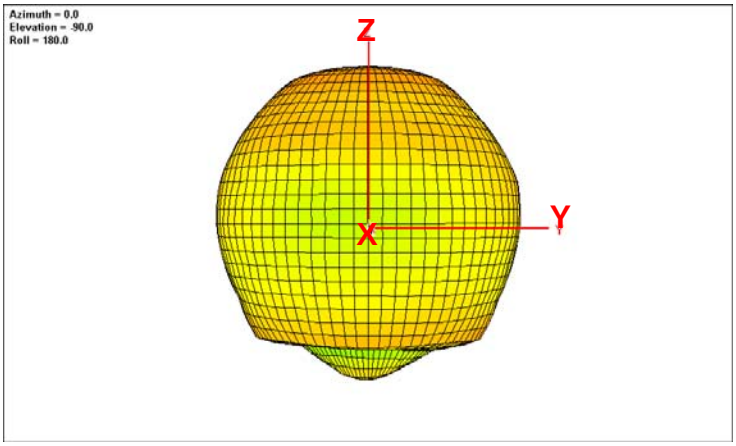

Unit : mm

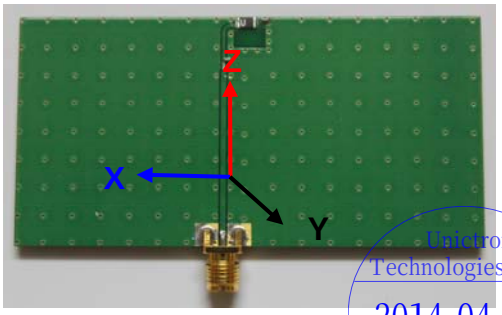
# 7. Radiation Pattern (80x40(mm) ground plane)

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



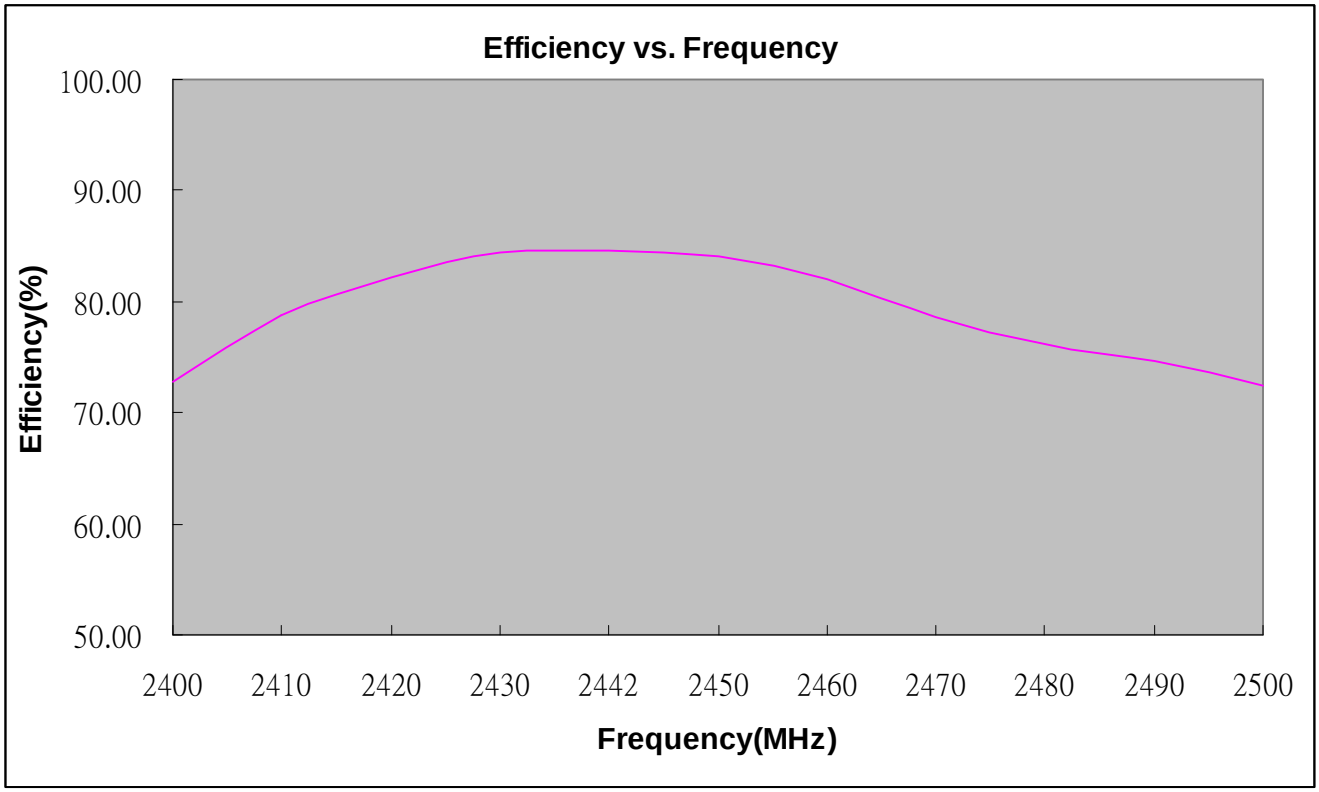



## 7-2. 3D Efficiency Table

| Frequency(MHz) | 2400 | 2410 | 2420 | 2430 | 2442 | 2450 | 2460 | 2470 | 2480 | 2490 | 2500 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Efficiency(dB) | -1.38 | -1.04 | -0.85 | -0.74 | -0.73 | -0.76 | -0.86 | -1.05 | -1.18 | -1.27 | -1.40 |
| Efficiency(%) | 72.83 | 78.71 | 82.27 | 84.39 | 84.53 | 84.04 | 82.00 | 78.60 | 76.14 | 74.64 | 72.50 |
| Gain(dBi) | 1.47 | 1.81 | 2.10 | 2.40 | 2.50 | 2.50 | 2.37 | 2.10 | 1.90 | 1.87 | 1.75 |

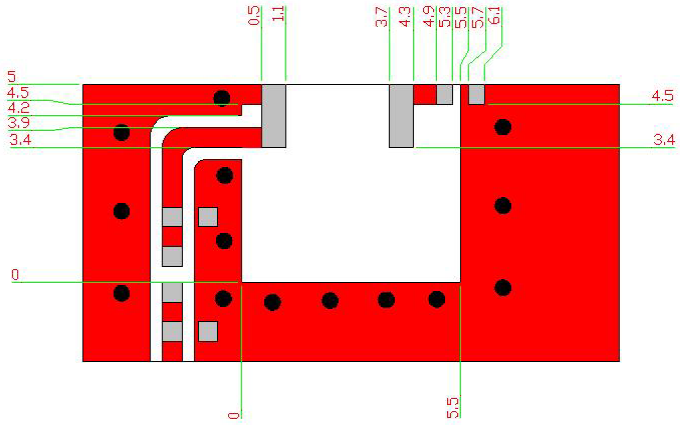
## 7-3. 3D Efficiency vs. Frequency



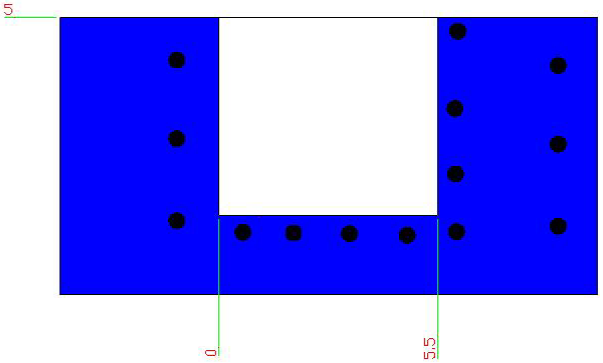
# 8. Layout Guide

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.




Top View

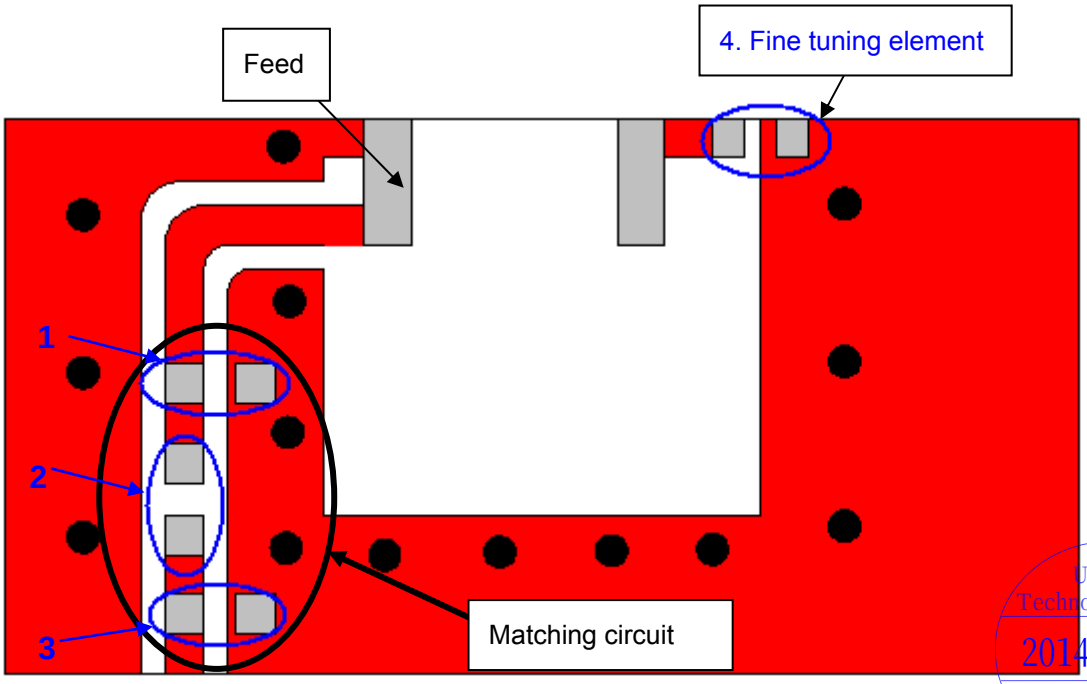



Bottom View

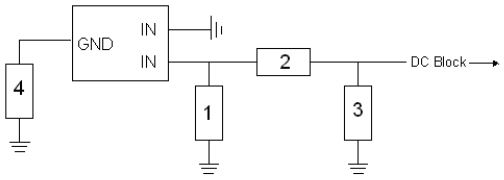
**Unit：mm**

# 9. Frequency tuning

a. Chip antenna tuning scenario：

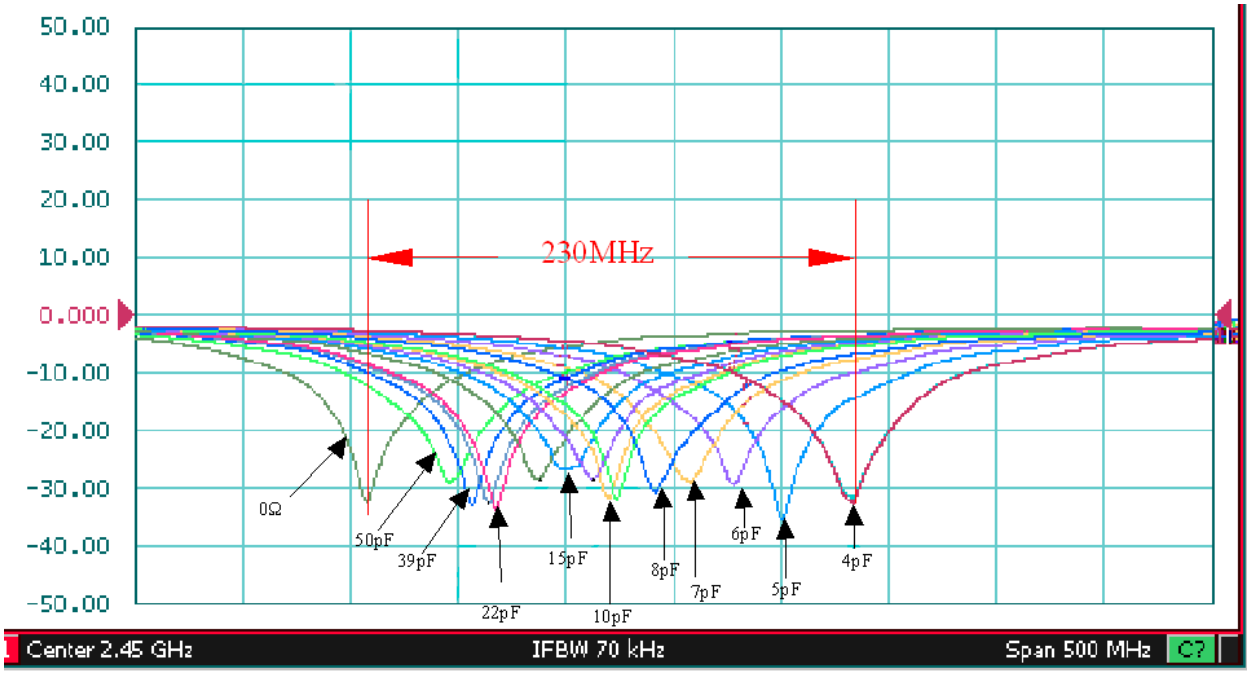


b. Matching circuit：(Center frequency is about 2442MHz @ 80x40(mm) ground plane)



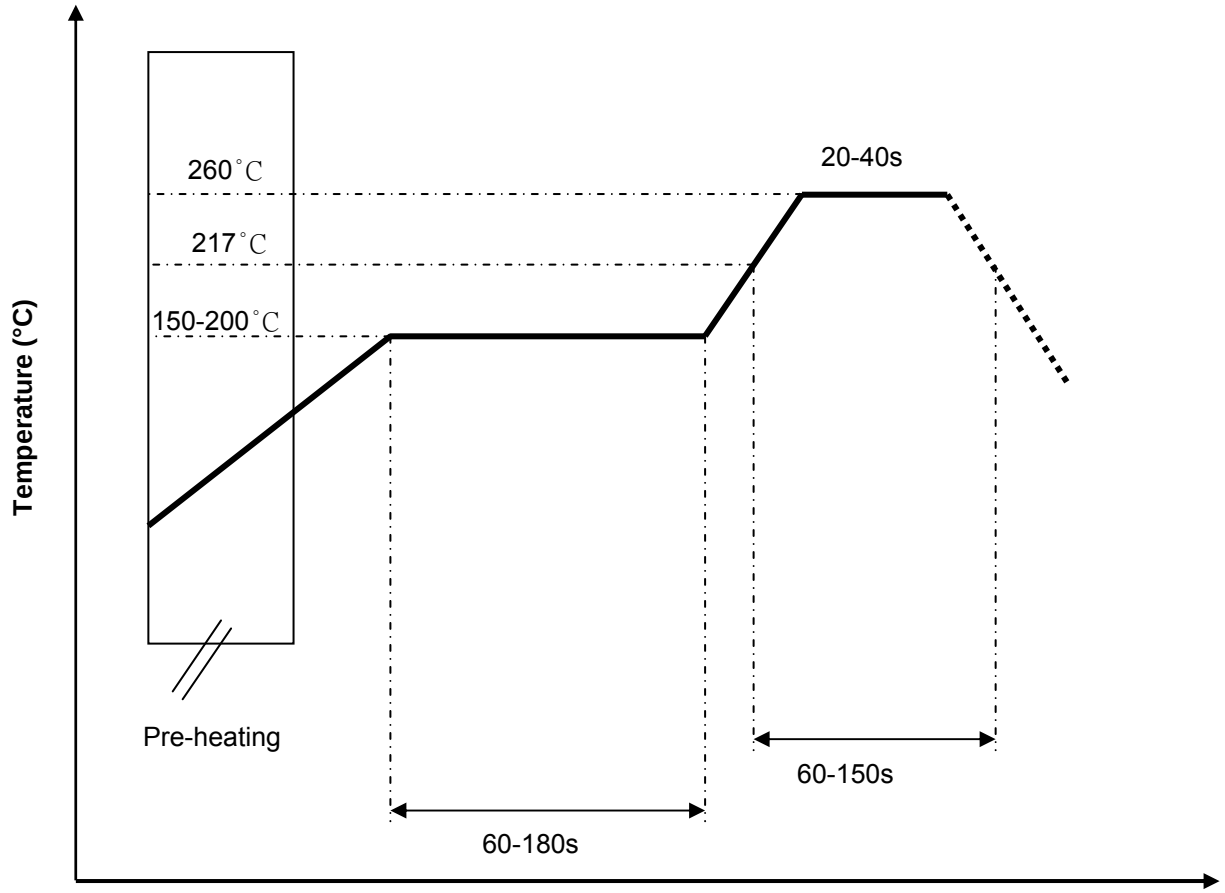

| System Matching Circuit Component | | | |
|---|---|---|---|
| Location | Description | Vendor | Tolerance |
| 1 | 1.2 pF | DARFON(0402) | ±0.1 pF |
| 2 | 3.3nH | DARFON(0402) | ±0.1 nH |
| 3 | N/A | - | - |
| 4 Fine tuning element | 1.5 pF | DARFON(0402) | ±0.1 pF |

c. Fine tuning element vs. Center frequency



## 10. Soldering Conditions

a. Typical Soldering Profile for Lead-free Process




## 11. Notifications for Assembly

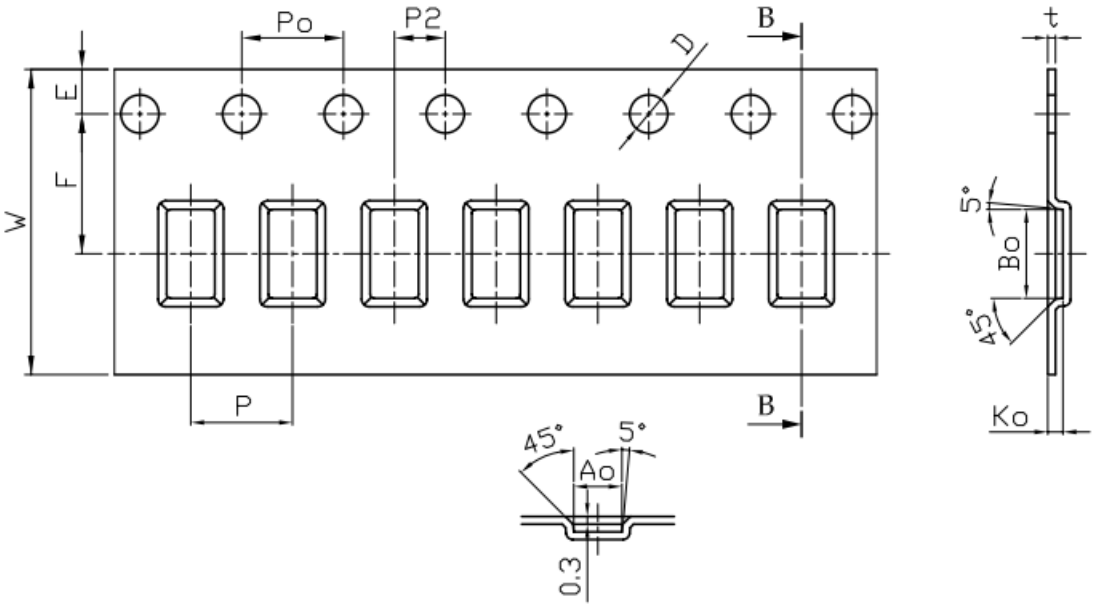
**We recommend the notifications as following:**

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.

# 12. Packing

(1) Quantity/Reel: 5000 pcs/Reel

(2) Plastic tape:




1. 10 sprocket hole pitch cumulative tolerance ±0.20mm
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<br>-0.00 |
| Po | 4.00 | ±0.10 |
| 10Po | 40.00 | ±0.20 |

2.2 Pocket Dimensions(unit: mm)

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

# 13. Storage Conditions

(1) Temperature: -25℃ to 85℃

(2) Relative Humidity: 20% to 70%

(3) Shelf Life : one year