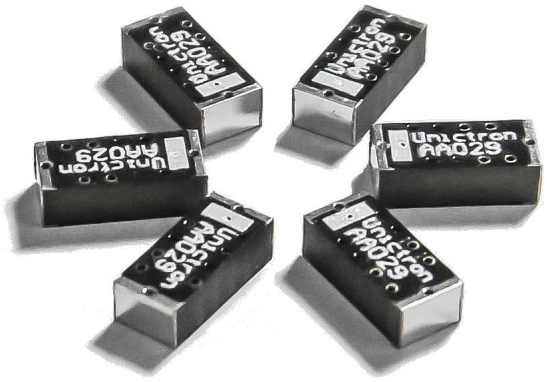
5.0 x 2.2 x 1.6 (mm) WiFi / Bluetooth Chip Antenna (AA029)
Engineering Specification

1. Explanation of Product Number

H	2	U	2	6	2	G	K	B	A	0	1	0	0



2. Features

*Stable and reliable in performances
*Low profile, compact size
*RoHS compliance
*SMT processes compatible

3. Applications

*ISM 2.4 GHz applications
*ZigBee/BLE applications
*Bluetooth earphone systems
*Hand-held devices when WiFi / Bluetooth functions are needed, e.g., Smart phones
*IEEE802.11 b/g/n
*Wireless PCMCIA cards or USB dongles

4. Description

Unictron's AA029 chip antenna is designed for ISM 2.4GHz applications, covering frequencies 2400~2484MHz. Fabricated with proprietary design and processes, AA029 shows excellent performance and is fully compatible with SMT processes which can decrease the assembly cost and improve device's quality and consistency.

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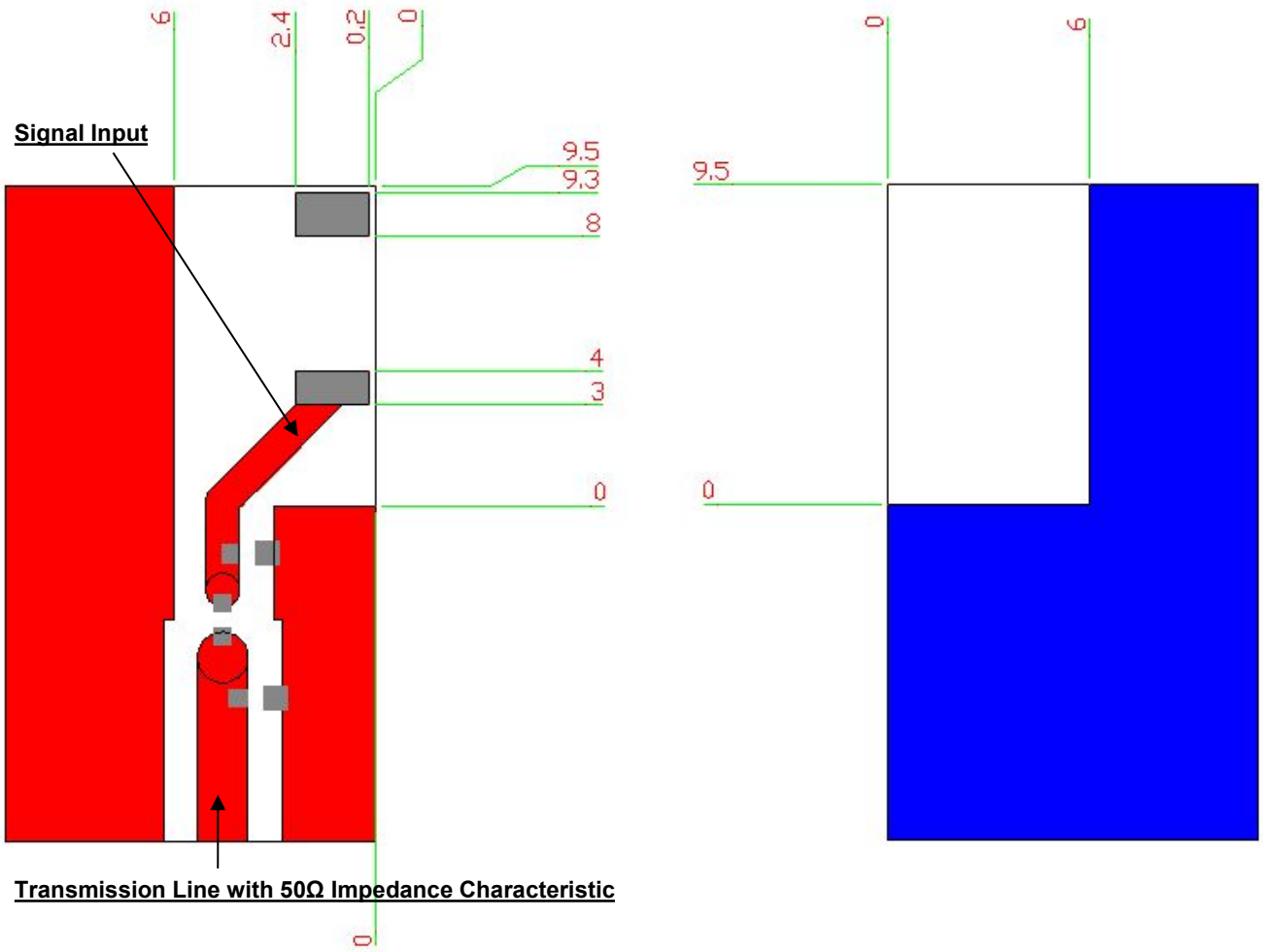
TITLE : 5.0 x 2.2 x 1.6 WiFi / Bluetooth Chip Antenna (AA029) Engineering Specification	DOCUMENT NO.	H2U262GKBA0100	REV. G

5. Layout Guide & Electrical Specifications

5-1. Layout Guide (unit：mm)

Solder Land Pattern:

The solder land pattern (gray marking areas) is shown below. Recommendation on matching circuit will be provided according to customer's installation conditions.



Top View

Bottom View

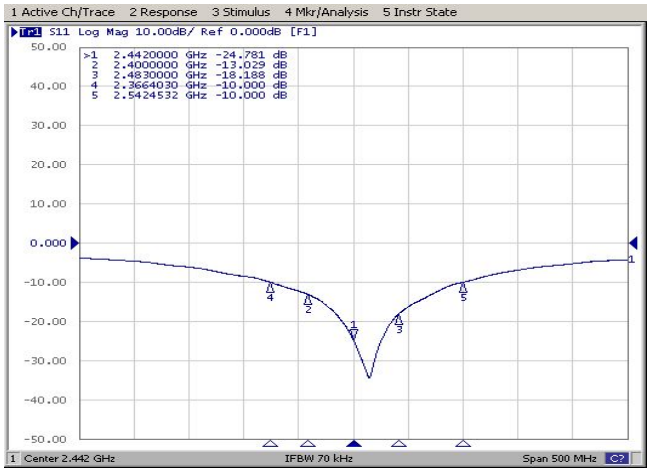
5-2. Electrical Specifications (Evaluation Board Dimensions: 100 x 50 mm^2)

5-2-1. Electrical Table

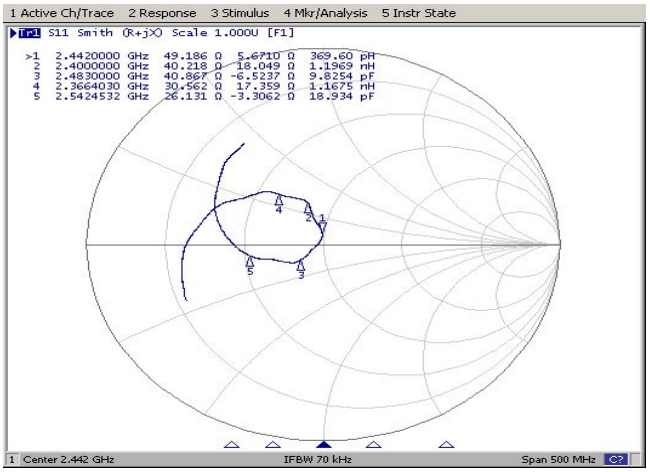
Characteristics		Specifications	Unit
Outline Dimensions		5.0 x 2.2 x 1.6	mm
Working Frequency		2400 ~ 2484	MHz
Bandwidth		140 (typical)	MHz
VSWR		2 Max. (typical)	
Characteristic Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@2462 MHz)	3.8 (typical)	dBi
Efficiency		65.5 (typical)	%

5-2. Return Loss & Smith Chart

Return Loss (S_{11})

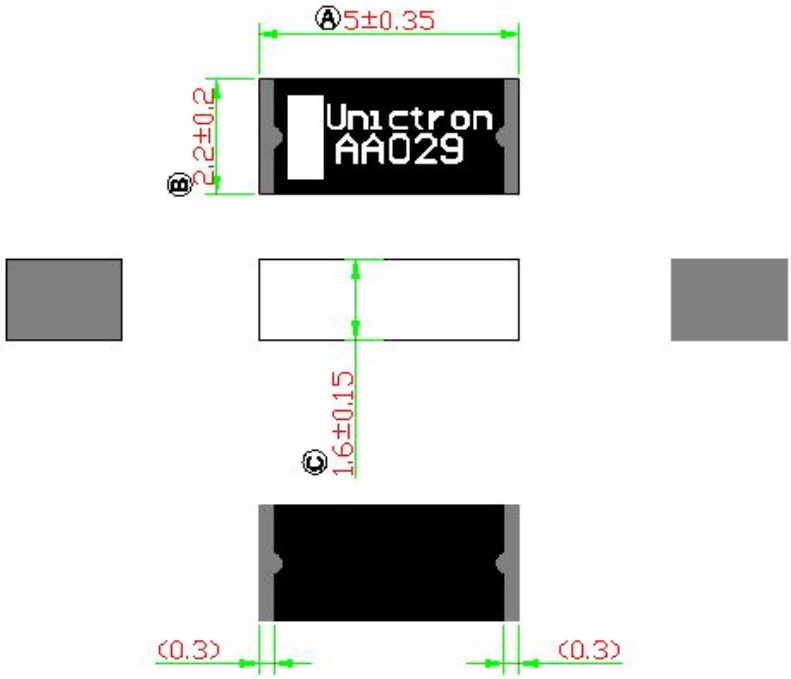


Smith Chart (S_{11})



6. Outline Dimensions of Antenna & Evaluation Board (unit: mm)

6-1. Antenna Dimensions

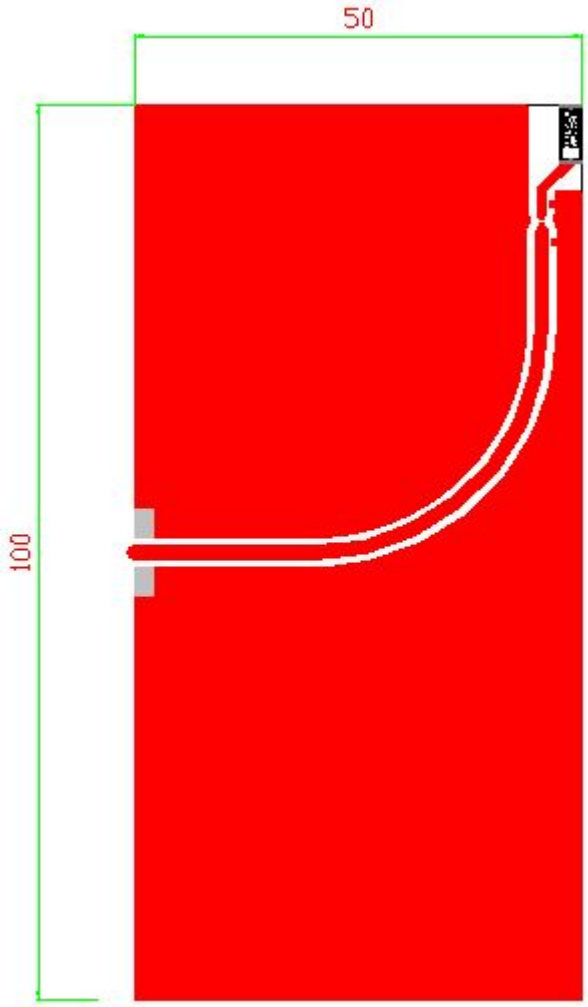


NOTE:
1.All materials are RoHS compliant.
2."Ⓐ~Ⓒ" Critical Dimensions.
3."( )" Reference Dimensions.

PIN Definitions

Item	PIN 1	PIN 2
Terminal	Signal	Soldering Pad

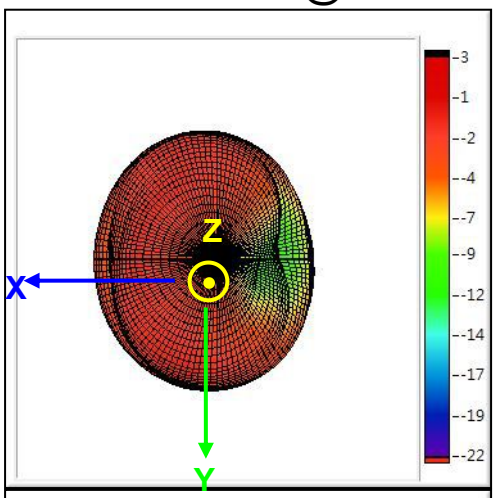
6-2. Evaluation Board with Antenna

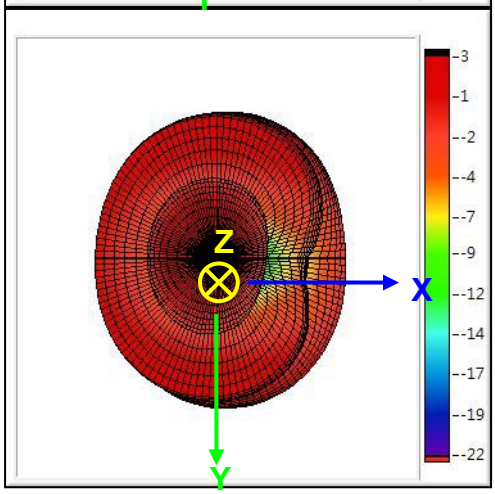


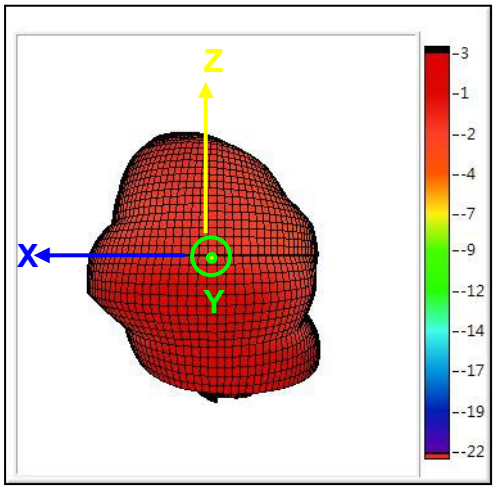
Unit: mm

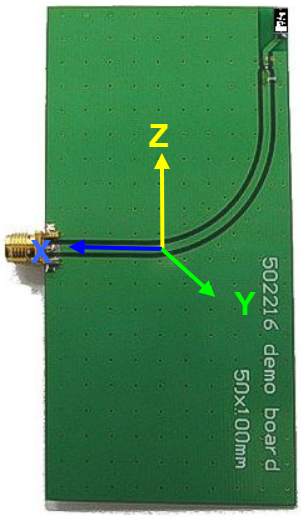
7. Radiation Pattern (with 100 x 50 mm² Evaluation Board)

7-1. 3D Gain Pattern @ 2442 MHz (unit: dBi)





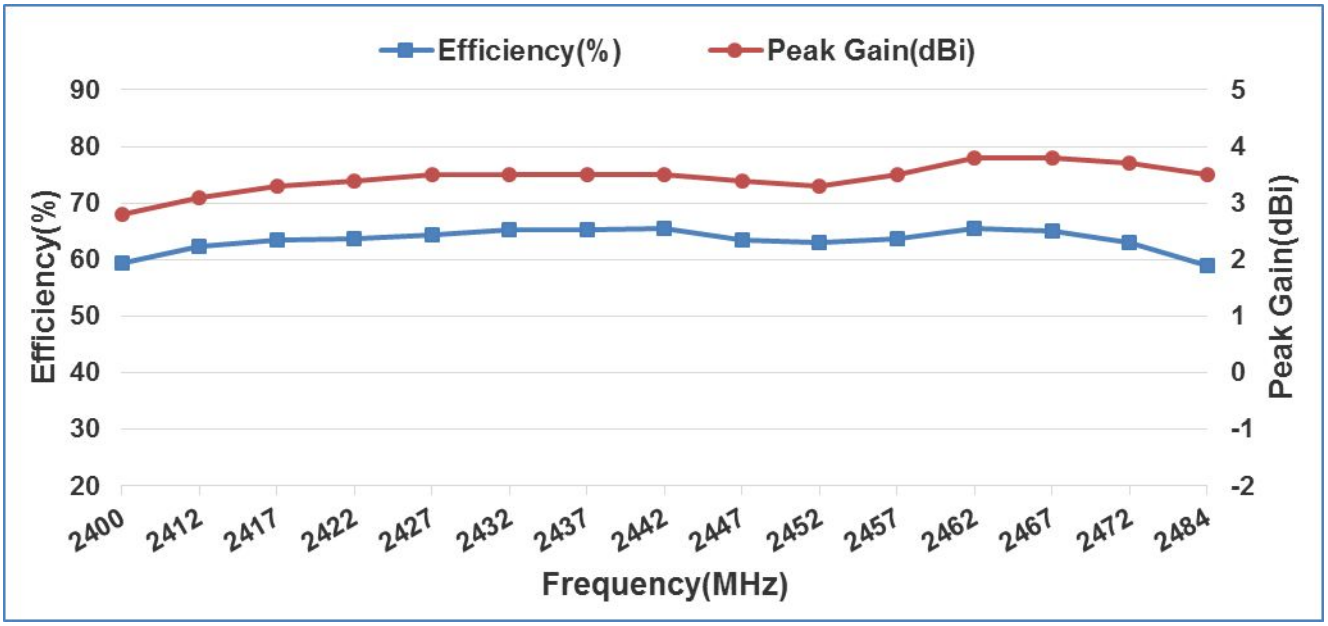




7-2. 3D Efficiency Table

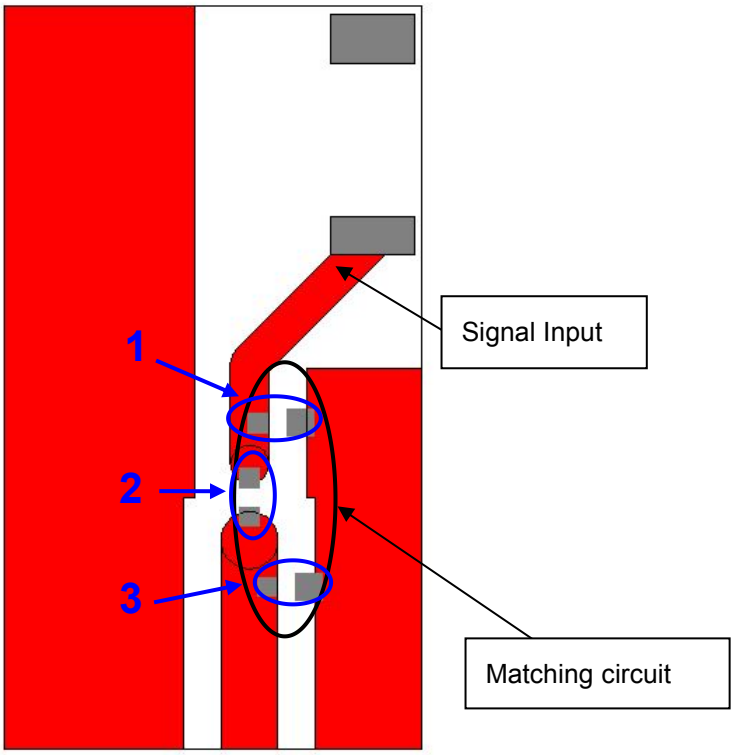
Frequency(MHz)	2400	2412	2417	2422	2427	2432	2437	2442	2447	2452	2457	2462	2467	2472	2484
Efficiency(dB)	-2.3	-2.0	-2.0	-2.0	-1.9	-1.9	-1.9	-1.8	-2.0	-2.0	-2.0	-1.8	-1.9	-2.0	-2.3
Efficiency (%)	59.3	62.4	63.4	63.8	64.4	65.3	65.2	65.5	63.5	63.1	63.7	65.5	65.0	63.1	59.0
Peak Gain (dBi)	2.8	3.1	3.3	3.4	3.5	3.5	3.5	3.5	3.4	3.3	3.5	3.8	3.8	3.7	3.5

7-3. 3D Efficiency vs. Frequency



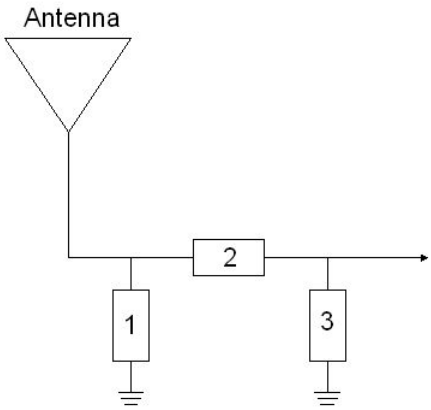
8. Frequency tuning and Matching circuit

8-1. Chip antenna tuning scenario：



8-2. Matching circuit：

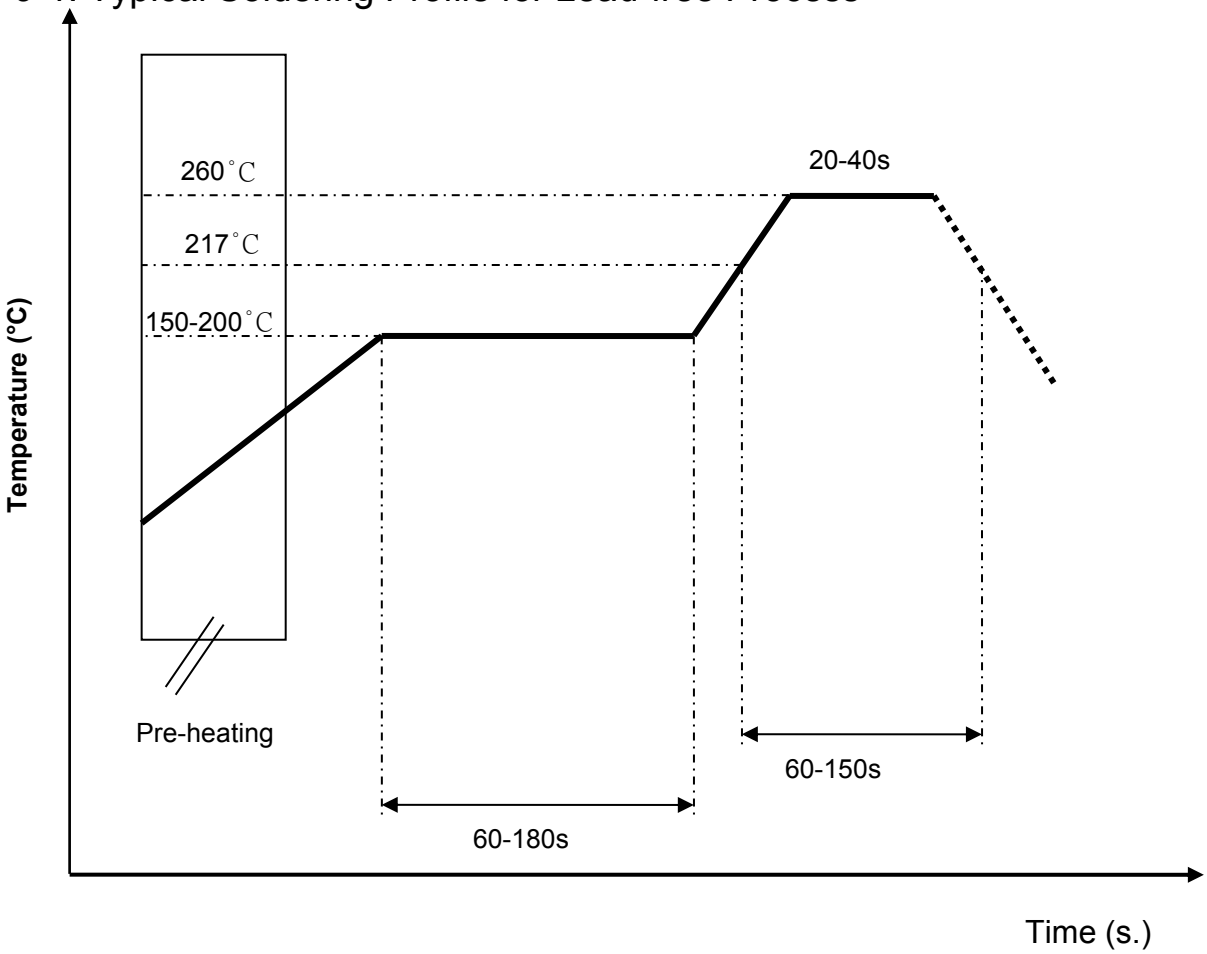
With the following recommended values of matching and tuning components, the center frequencies will be about 2442 MHz at our standard 100 x 50 mm^2 evaluation board. However, these are typical reference values which may need to be changed when circuit boards or part vendors are different.



System Matching Circuit Component			
Location	Description	Vendor	Tolerance
1	N/A*	-	-
2	2.2nH, (0402)	DARFON	±0.1nH
3	1pF, (0402)	DARFON	±0.1pF

9. Soldering Conditions

9-1. Typical Soldering Profile for Lead-free Process

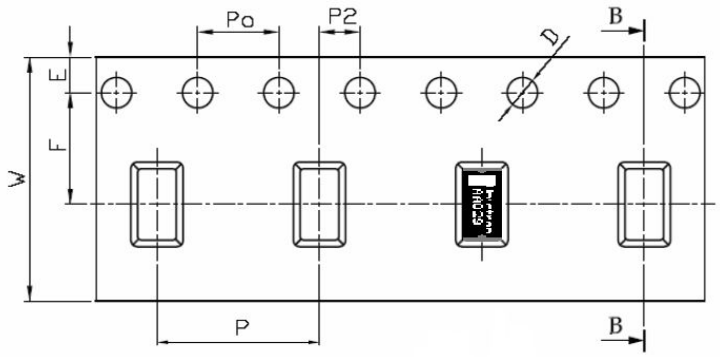


10. Packing

(1) Quantity/Reel: 3000pcs/Reel

(2) Plastic tape:

a. Tape Drawing



b. Tape Dimensions (unit: mm)

Feature	Specifications	Tolerances
W	12.00	±0.30
P	8.00	±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

11. Operating & Storage Conditions

11-1. Operating

(1) Maximum Input Power: 2 W

(2) Operating Temperature: -40℃ to 85℃

11-2. Storage

(1) Storage Temperature: -5℃ to 40℃

(2) Relative Humidity: 20% to 70%

(3) Shelf Life: 1 year

12. Notice

(1) Installation Guide:

Please refer to Unictron's application note "General guidelines for the installation of Unictron's chip antennas" for further information.

(2) All specifications are subject to change without notice.