

5.0 x 2.2 x 1.6 (mm) WiFi / Bluetooth Chip Antenna (CW505)

Engineering Specification

1. Product Number

H 2 U 3 6 F 1 K 1 B 0 2 0 0



2. Features

- *Stable and reliable in performances
- *Low profile, compact size
- *RoHS 2.0 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 CW505 chip antenna is designed for ISM 2.4GHz applications, covering frequencies 2400~2500MHz. Fabricated with proprietary design and processes, CW505 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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Designed by : George Hung

Checked by : Mike

Approved by : Herbert

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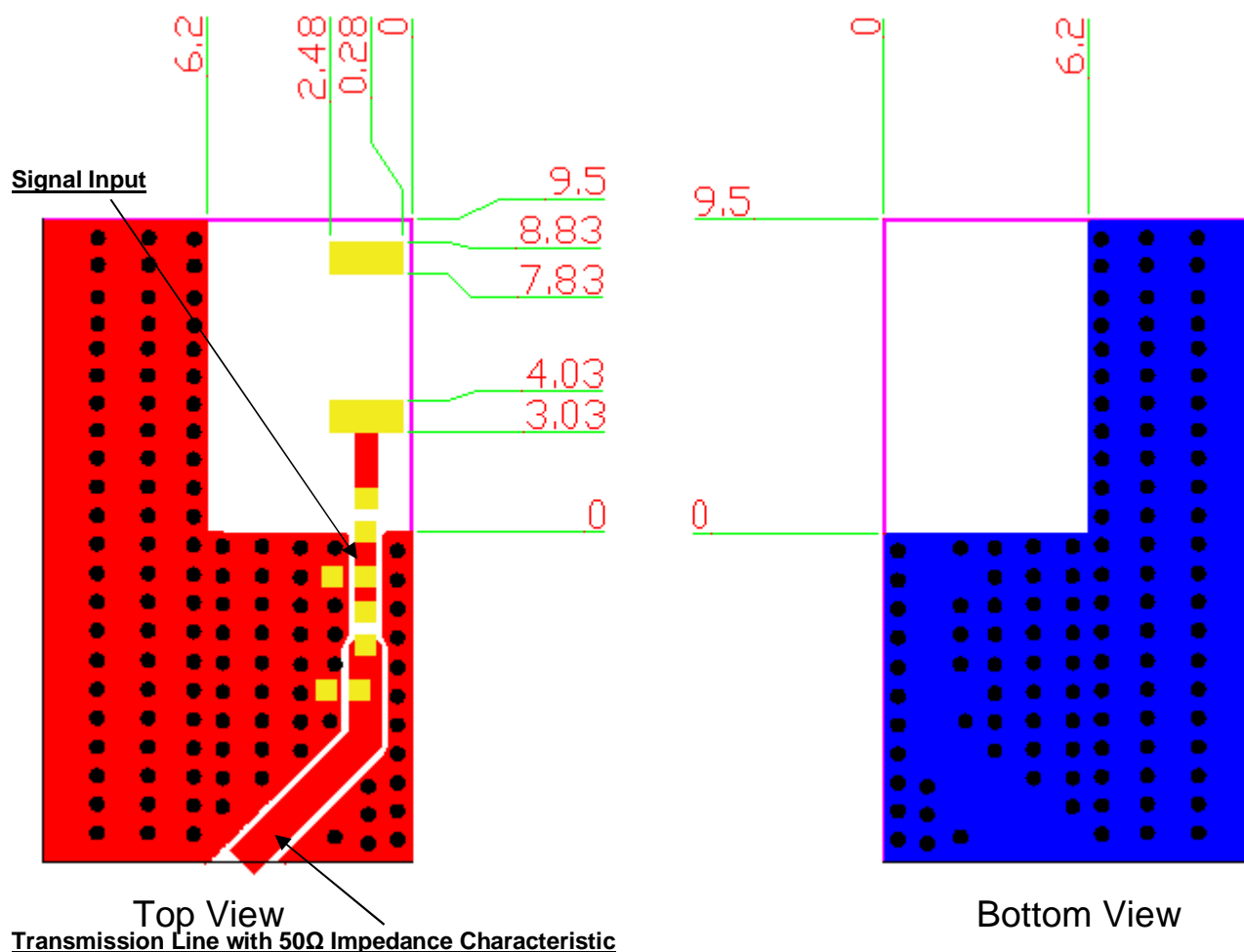
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5. Layout Guide & Electrical Specifications

5-1. Layout Guide (unit : mm)

Solder Land Pattern:

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



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5-2. Electrical Specifications (Evaluation Board Dimensions: 40 x 40 mm²)

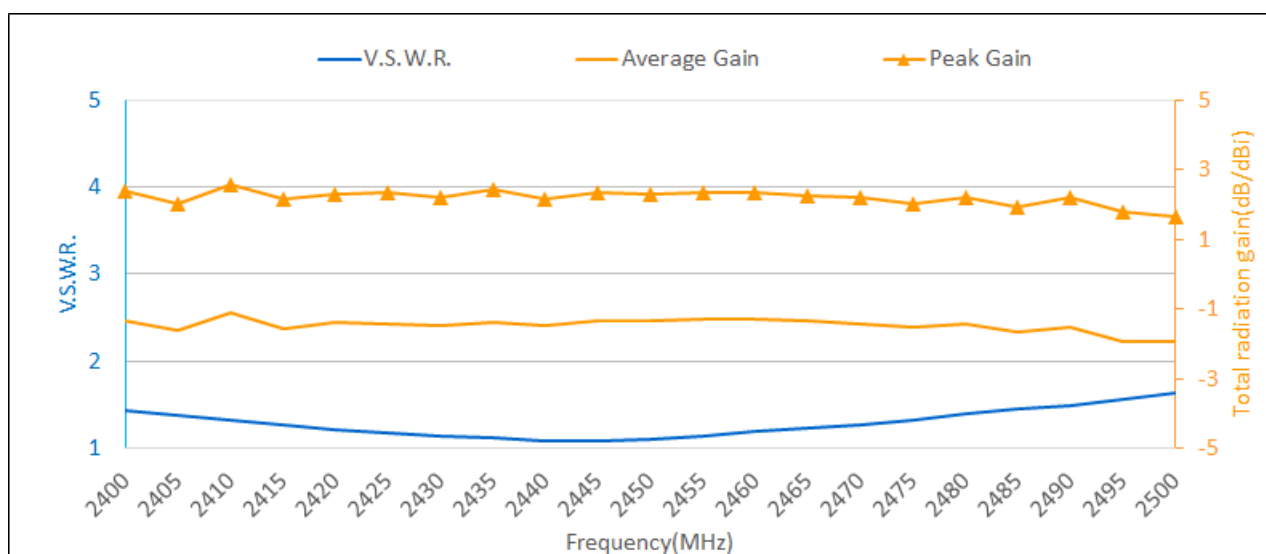
5-2-1. Electrical Table

Characteristics		Specifications	Unit
Outline Dimensions		5.0 x 2.2 x 1.6	mm
Ground Plane Dimensions		40 x 40	mm
Working Frequency		2400 ~ 2500	MHz
VSWR(@ center frequency)*		2 Max.	
Characteristic Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@2442 MHz)	2.2 (typical)**	dBi
Efficiency		72 (typical)**	%

*Center frequency means the frequency with the lowest value in return loss of the chip antenna on the evaluation board.

**A typical value is for reference only, not guaranteed.

5-2-2. Frequency vs. V.S.W.R. and Total Radiation Gain



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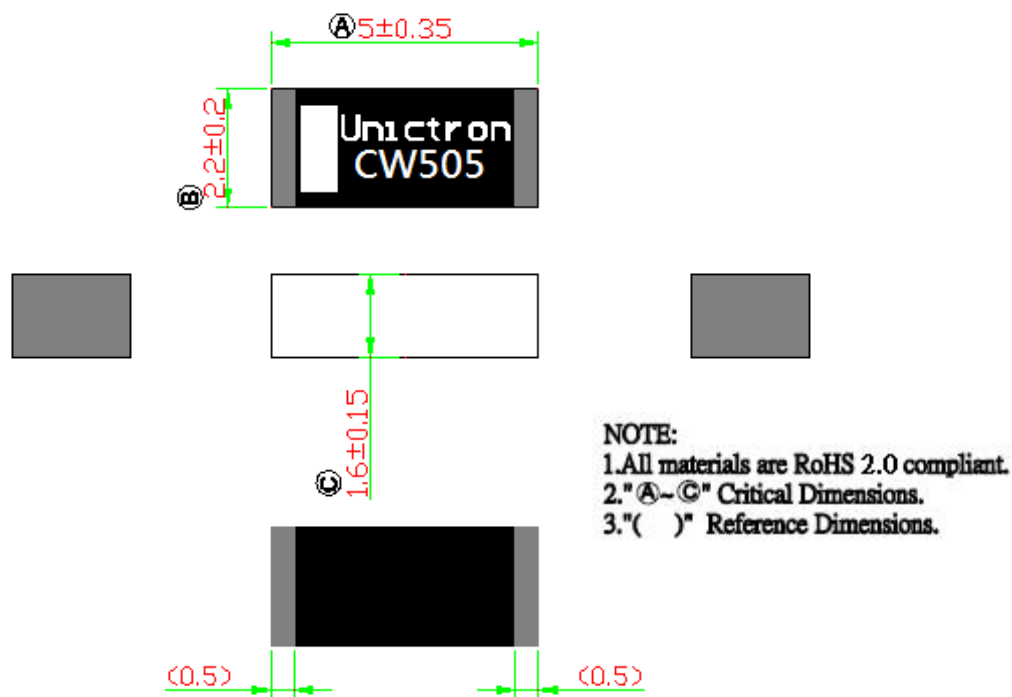
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6. Outline Dimensions of Antenna & Evaluation Board (unit: mm)

6-1. Antenna Dimensions



6-2. Pin definition.

PIN Definition



PIN	1	2
Soldering PAD	Signal	N/C



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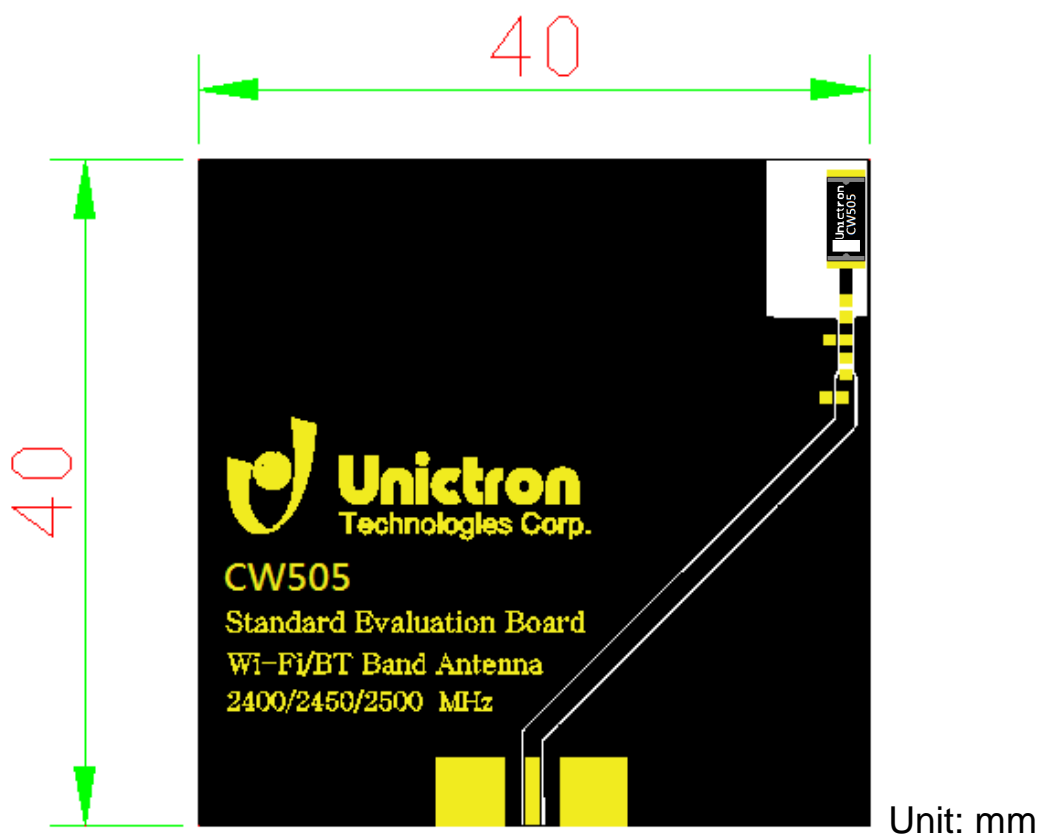
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6-3. Evaluation Board with Antenna



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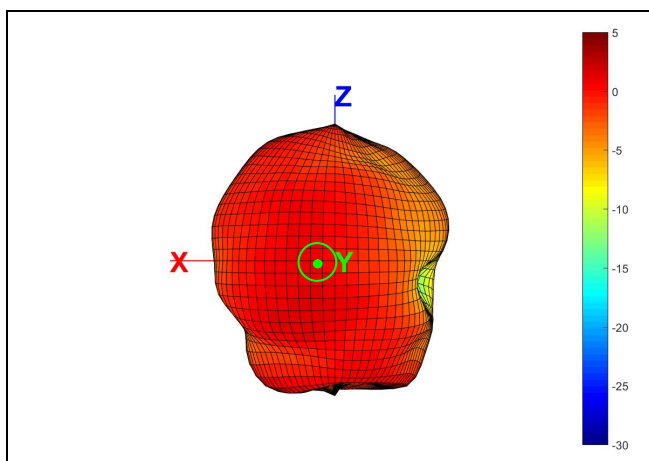
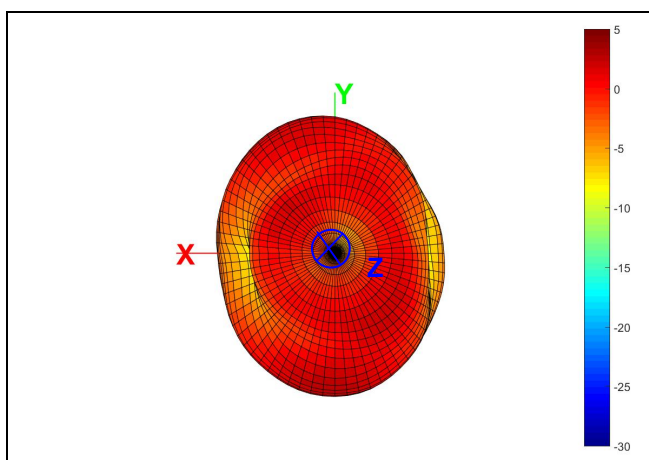
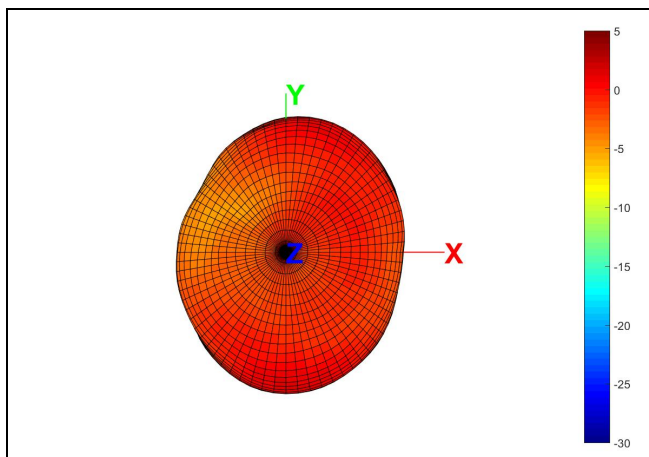
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7. Radiation Gain Pattern (with 40 x 40 mm² Evaluation Board)

3D Gain Pattern @ 2442 MHz (unit: dBi)



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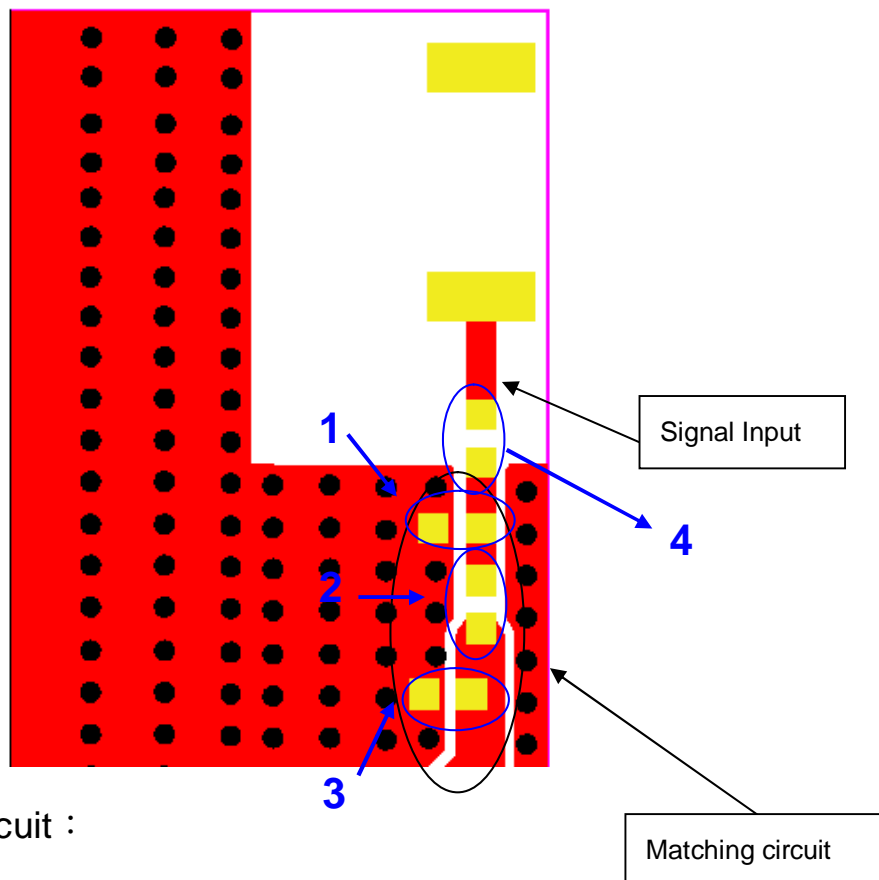
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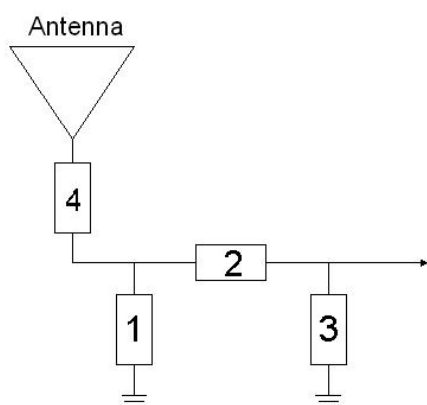
8. Frequency tuning and Matching circuit

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 40 x 40 mm² 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	2.7nH, (0402)	Murata	±0.1nH
3	1pF, (0402)	Murata	±0.1pF
4	0Ω, (0402)	-	-



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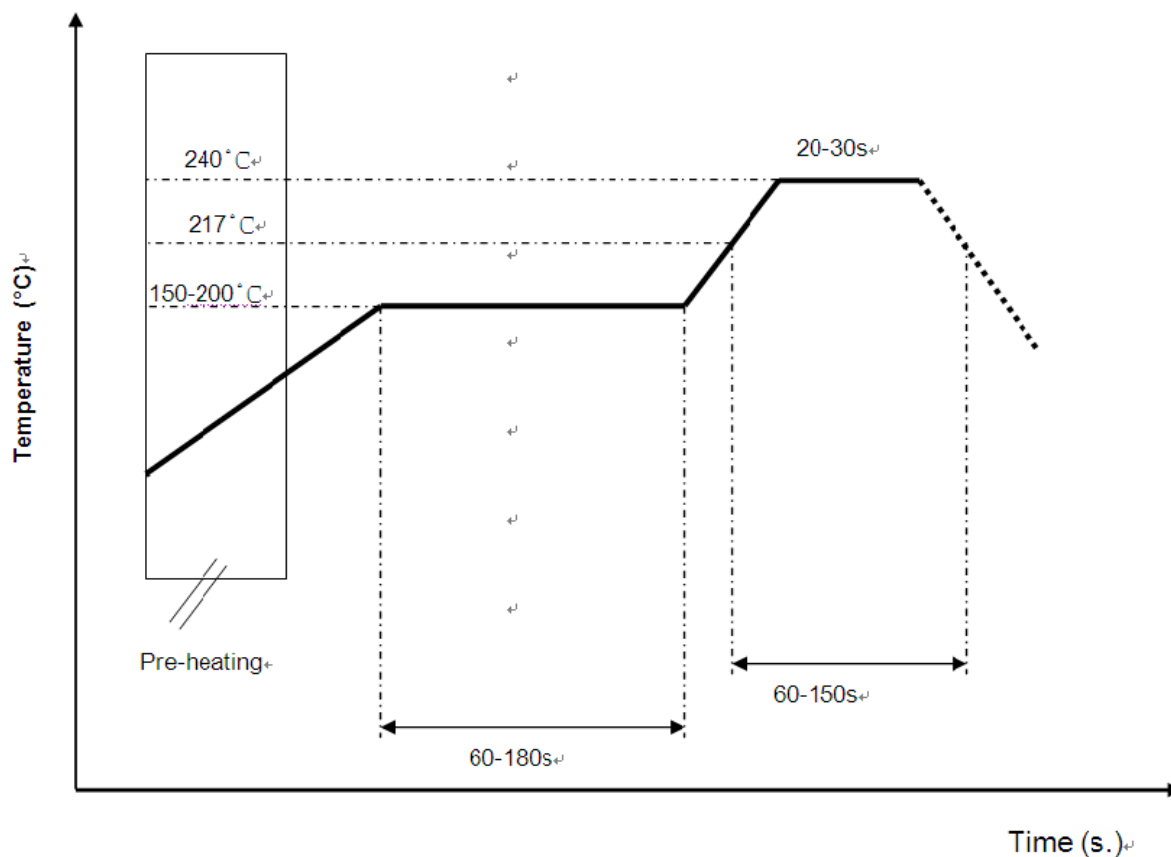
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9. Soldering Conditions

Typical Soldering Profile for Lead-free Process



*Recommended solder paste alloy: SAC305 (Sn96.5 /Ag3 /Cu0.5) Lead Free solder paste.



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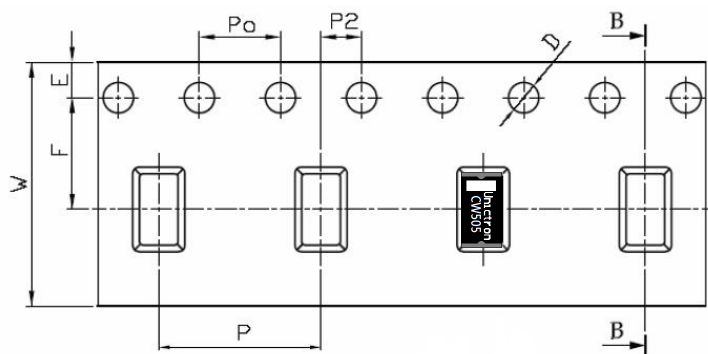
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10. Packing

(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
P0	4.00	±0.10
10P0	40.00	±0.20

11. Operating & Storage Conditions

11-1. Operating

(1) Maximum Input Power: 2 W

(2) Operating Temperature: -40°C to 85°C

11-2. Storage

(1) Storage Temperature: -5°C to 40°C

(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.



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