

# 3.0 x 6.0 x 10.0 (mm), Wi-Fi Dual Band, Dual Polarizations Pillar

## Antenna (CU10D7) Engineering Specification

### 1. Product Number

H 2 U 8 6 D 2 K 1 S 0 1 0 0



### 2. Features

- \*Stable and reliable performances in both 2.4 and 5 GHz bands
- \*Dual polarizations
- \*RoHS2.0 compliance
- \*SMT processes compatible

### 3. Applications

- \*Wireless communication devices when IEEE802.11 a/b/g/n/ac functions are needed.
- \*IoT applications
- \*For Wi-Fi 6 network communication products

### 4. Description

Unictron's CU10D7 Pillar antenna is designed for Wi-Fi Dual Band applications, covering both 2400~2484 MHz & 5150~5850 MHz frequency bands. Fabricated with proprietary design and processes, CU10D7 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 : **Michael**

Checked by : **Mike**

Approved by : **Herbert**

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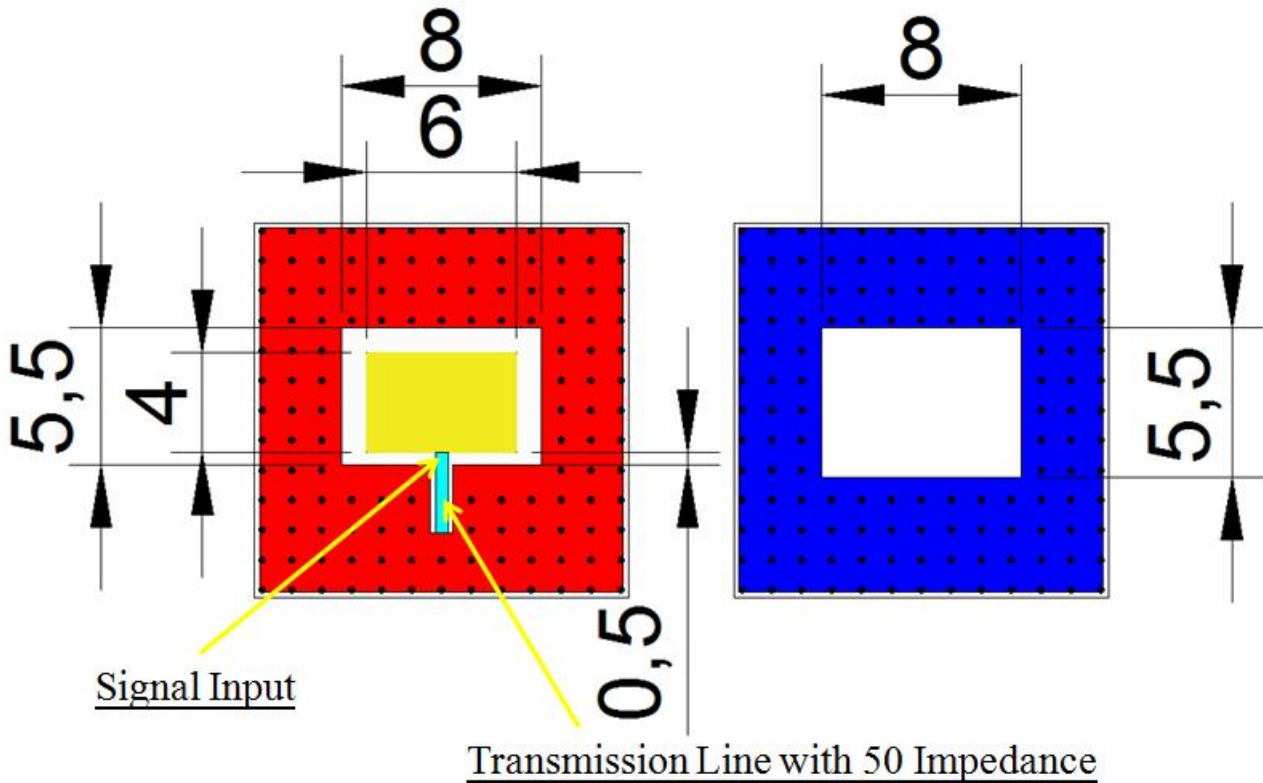
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## 5. Layout Guide & Electrical Specifications

### 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

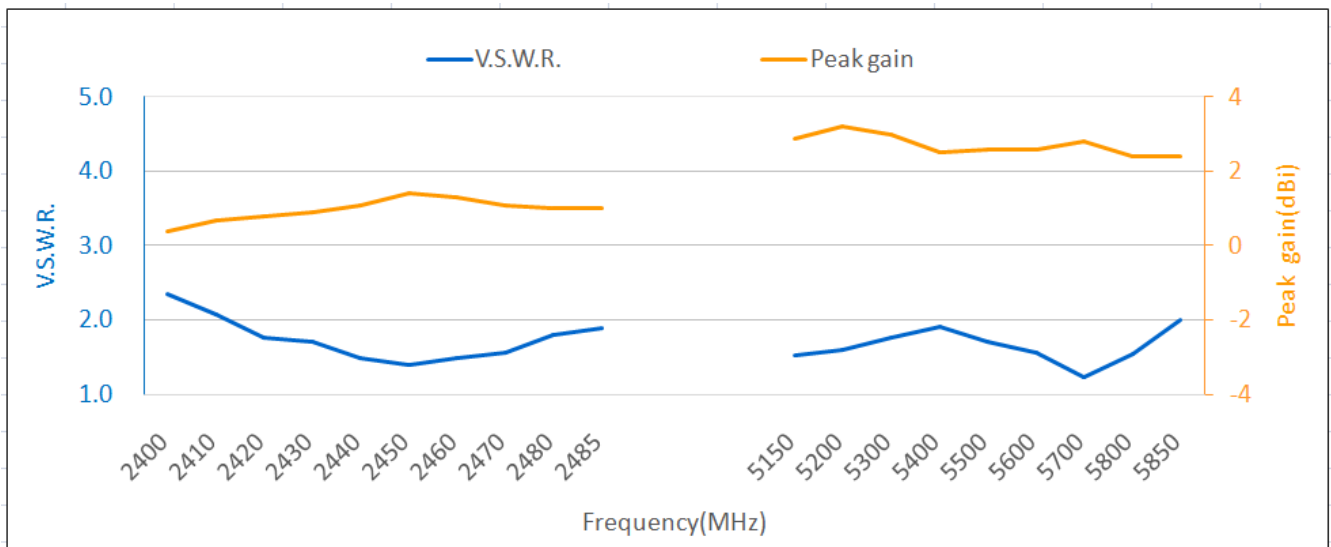
### 5-2-1. Electrical Table

Characteristics		Specifications		Unit
Outline Dimensions		3.0 x 6.0 x 10.0		mm
EVB Dimensions		80 x 80		mm
Working Frequency		2400~ 2484	5150~5850	MHz
VSWR (@ center frequency)*		2 Max.		
Characteristic Impedance		50		$\Omega$
Polarization		Vertical & Horizontal Polarization		
Peak Gain	(@Center Frequency) *	1.2(Typical**)	2.6(Typical**)	dBi
Efficiency		63.1(Typical**)	68.3(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 Peak Gain



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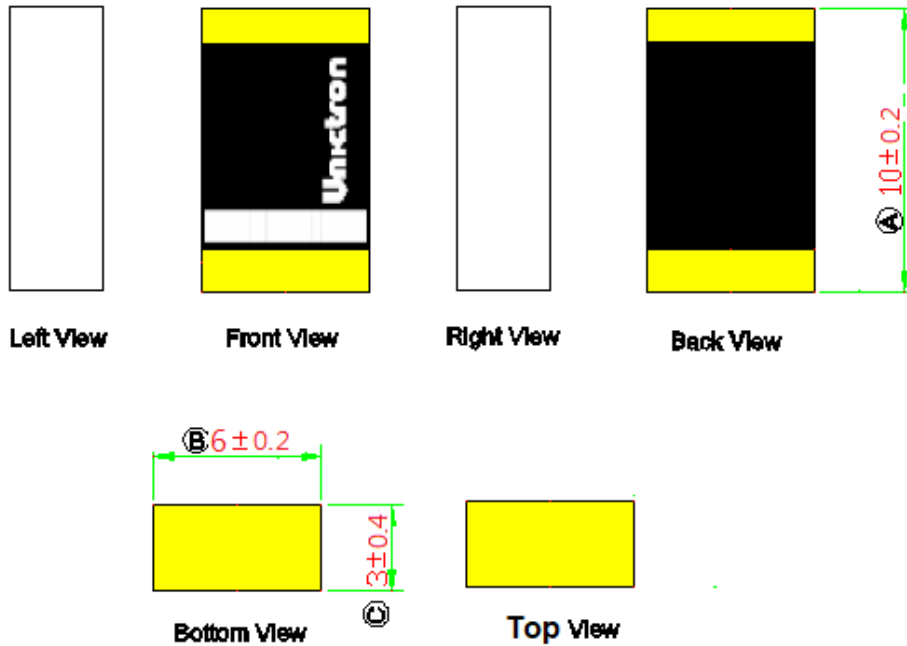
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## 6. Outline Dimensions of Antenna (unit: mm)

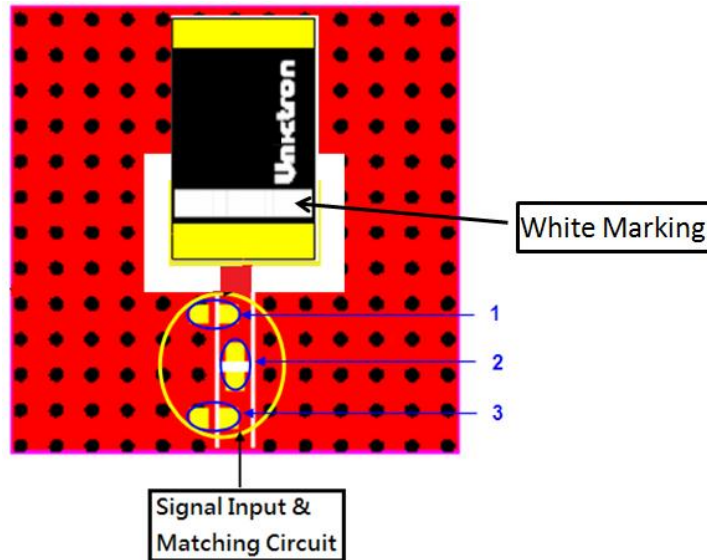
### 6-1. Antenna Dimensions



**NOTE:**

1. All materials are RoHS 2.0 compliant.
2. "A~C" Critical Dimensions.
3. "( )" Reference Dimensions.

### 6-2. Direction of antenna signal feed-in



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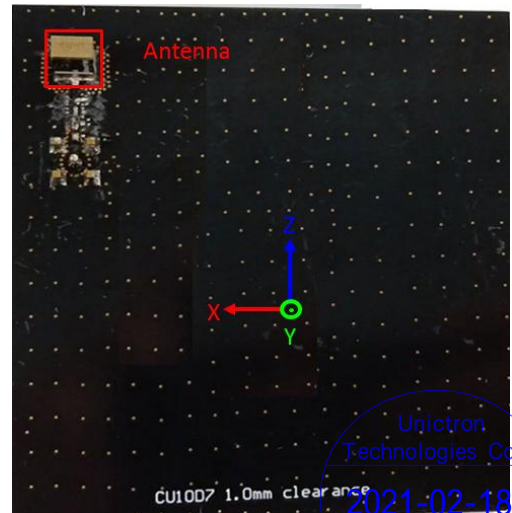
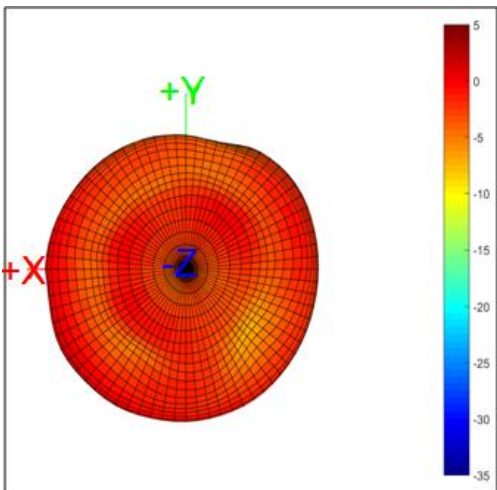
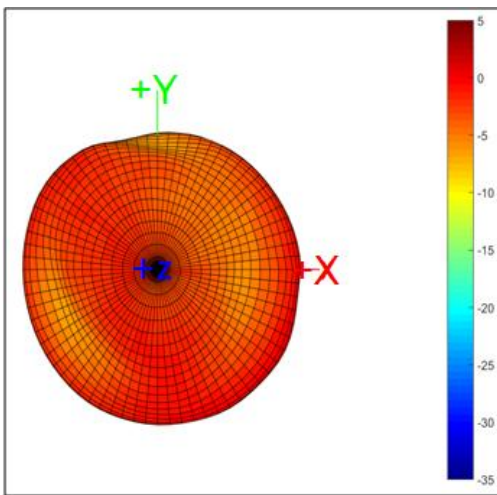
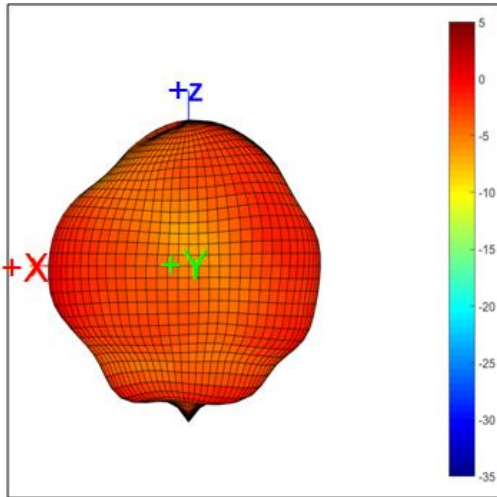
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## 7. 3D Radiation Gain Pattern

### 7-1. 3D Radiation Gain Pattern@ 2445 MHz (Unit: dBi)



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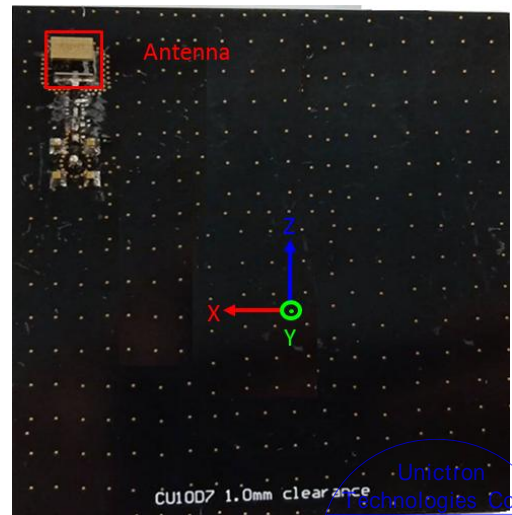
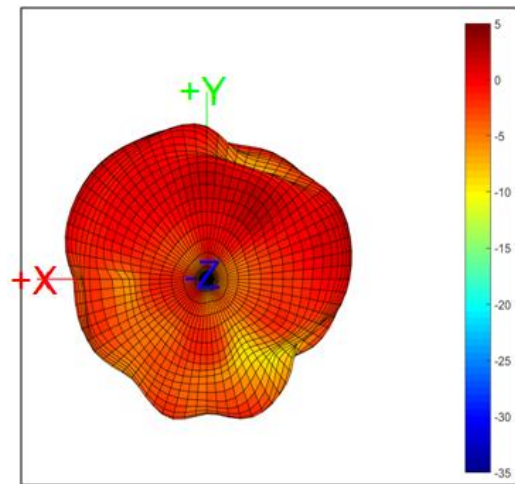
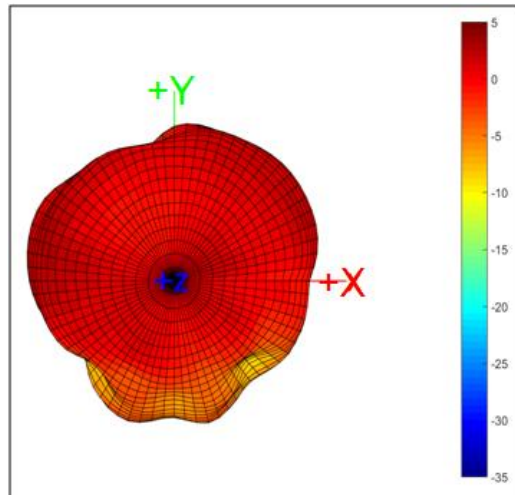
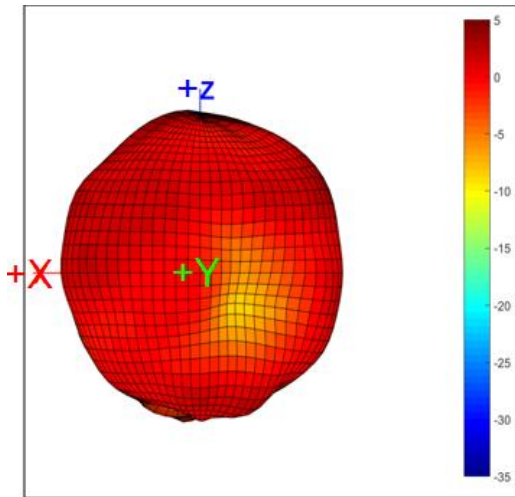
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7-2. 3D Radiation Gain Pattern@ 5500 MHz (Unit: dBi)



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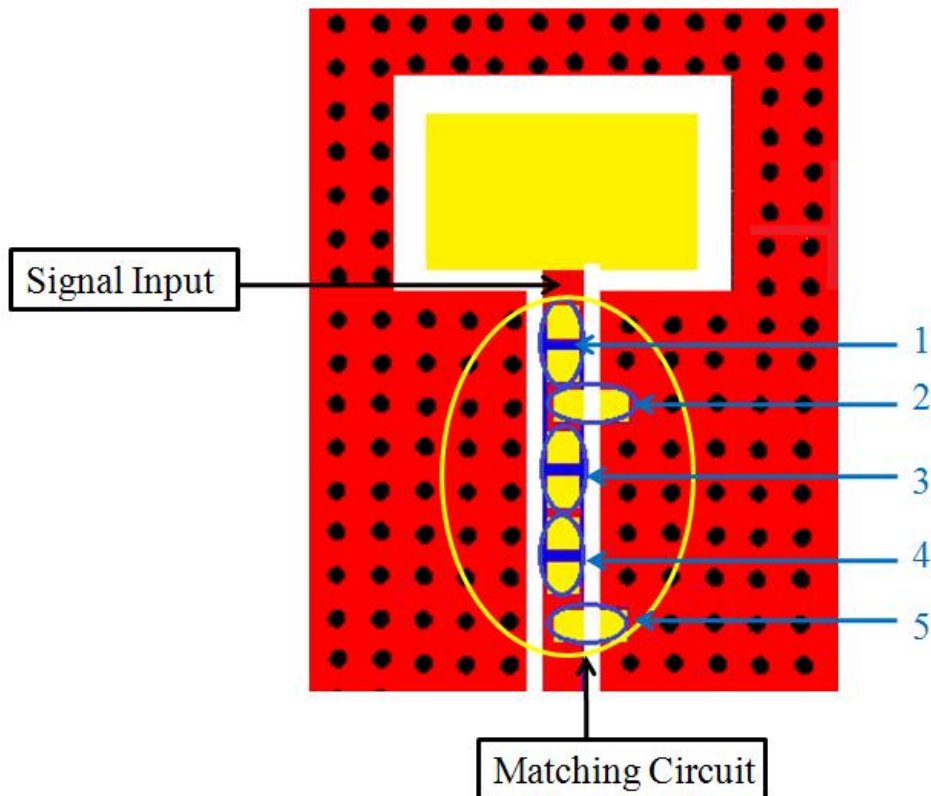
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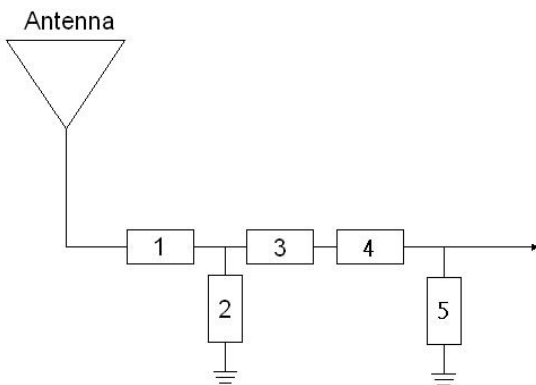
## 8. Frequency Tuning

### 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 2442/5500 MHz at our standard 80 x 80 mm<sup>2</sup> 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	0 ohm, (0402)	-	-
2	0.6 pF, (0402)	MURATA	±0.05 pF
3	3.6pF, (0402)	MURATA	±0.05 pF
4	0 ohm, (0402)	-	-
5	0.2 pF, (0402)	MURATA	±0.05 pF

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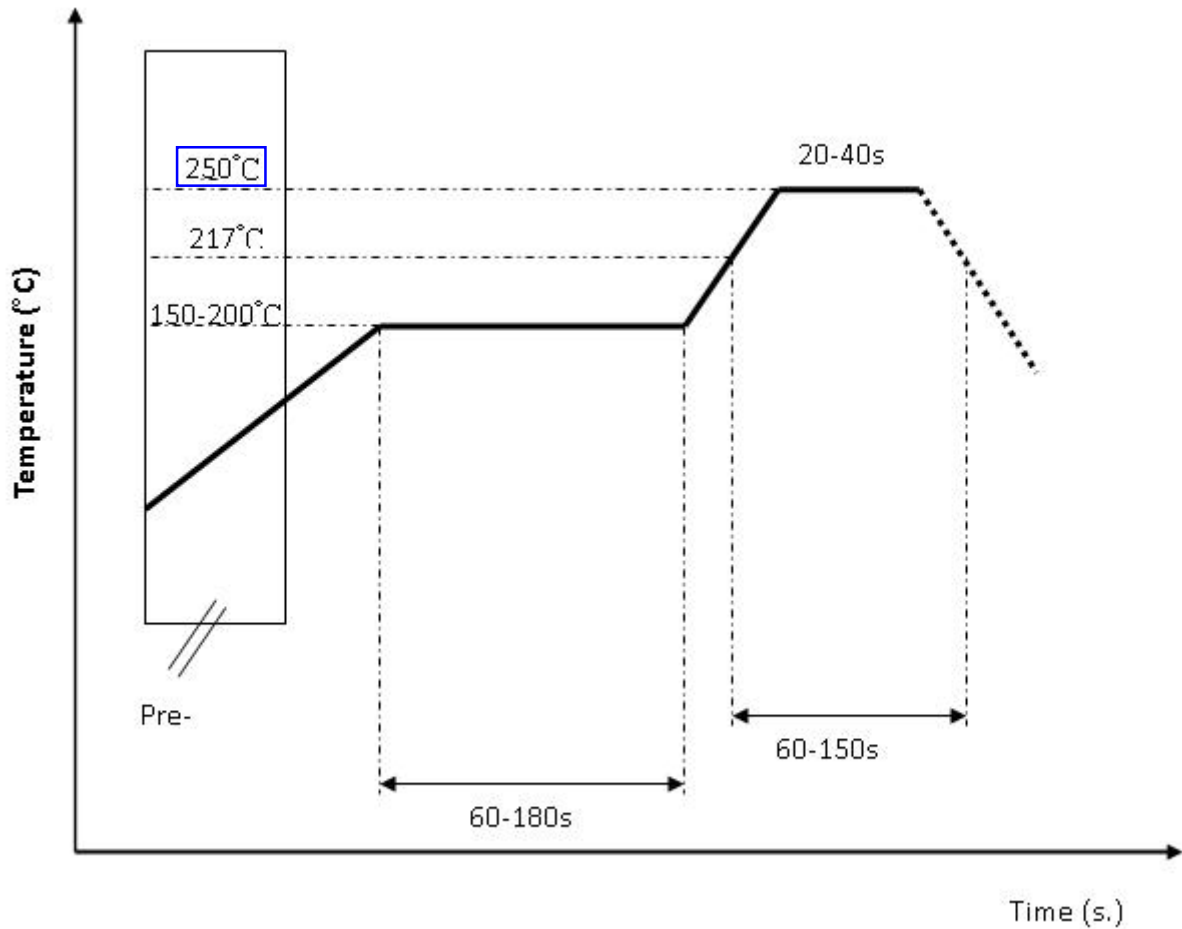
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## 9. Soldering Conditions

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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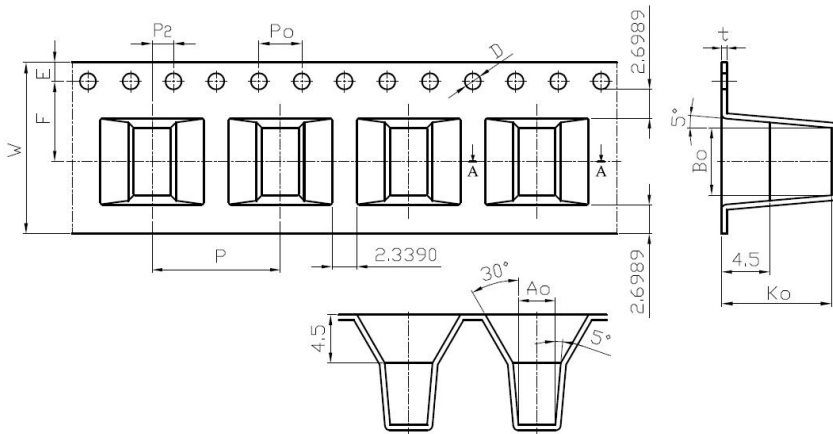
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## 10. Packing

- (1) Packaging method is implemented according to "MSL 2a 包裝作業指導書"
- (2) Quantity/Reel: 500 pcs/Reel
- (3) Plastic tape: Black Conductive Polystyrene.
- (4) Unit Weight:  $0.375 \pm 0.1$ (g)

a. Tape Drawing



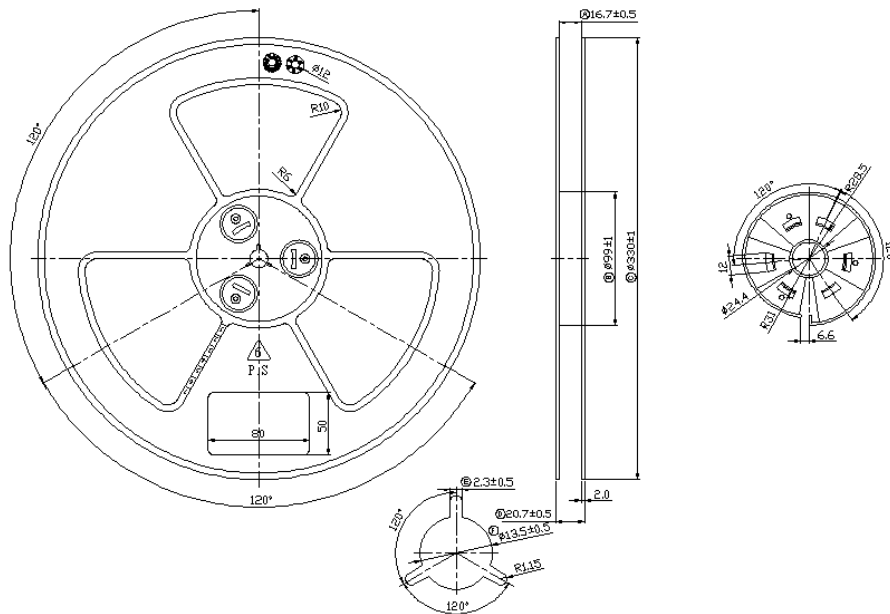
b. Tape Dimensions (unit: mm)

外觀	規格	公差
W	16.00	+0.30 -0.10
P	12.00	$\pm 0.10$
E	1.75	$\pm 0.10$
F	7.50	$\pm 0.10$
P <sub>2</sub>	2.00	$\pm 0.10$
D	1.50	+0.10 -0.00
D <sub>1</sub>	---	$\pm 0.10$
P <sub>0</sub>	4.00	$\pm 0.10$
10P <sub>0</sub>	40.00	$\pm 0.20$

2.2 口袋尺寸

外觀	規格	公差
A <sub>0</sub>	3.45	$\pm 0.10$
B <sub>0</sub>	6.30	$\pm 0.10$
K <sub>0</sub>	10.30	$\pm 0.10$
t	0.50	$\pm 0.05$

c. Reel Drawing



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## 11. Operating & Storage Conditions

### 11-1. Operating

- (1) Maximum Input Power: 2 W
- (2) Operating Temperature: -40°C to 85°C
- (3) Relative Humidity: 10% to 70%

### 11-2. Storage (sealed)

- (1) Storage Temperature: -5°C to 40°C
- (2) Relative Humidity: 20% to 70%
- (3) Shelf Life: 1 year

### 11-3. Storage (unsealed)

Meet the criteria of J-STD-033 MSL2a

### 11-4. Storage (After mounted on customer's PCB with SMT process)

- (1) Storage Temperature: -40°C to 85°C
- (2) Relative Humidity: 10% to 70%

## 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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