

12.0 x 4.0 x 1.6 (mm) ISM 868 MHz Chip Antenna (C812D5)

Engineering Specification

1. Product Number

H 2 U 6 6 J 1 K 2 B 0 1 0 0



2. Features

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

3. Applications

- *Short Range Devices (SRD)
- *IoT applications
- *Alarm system

4. Description

Unictron's C812D5 chip antenna is designed for ISM 868MHz band applications, covering frequencies 863~870 MHz. Fabricated with proprietary design and processes, C812D5 shows excellent performance and is fully compatible with SMT processes which can decrease the assembly cost and improve device's quality and consistency.

2016-03-02

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Prepared by : Xenia

Designed by : Ken

Checked by : Mike

Approved by : Herbert

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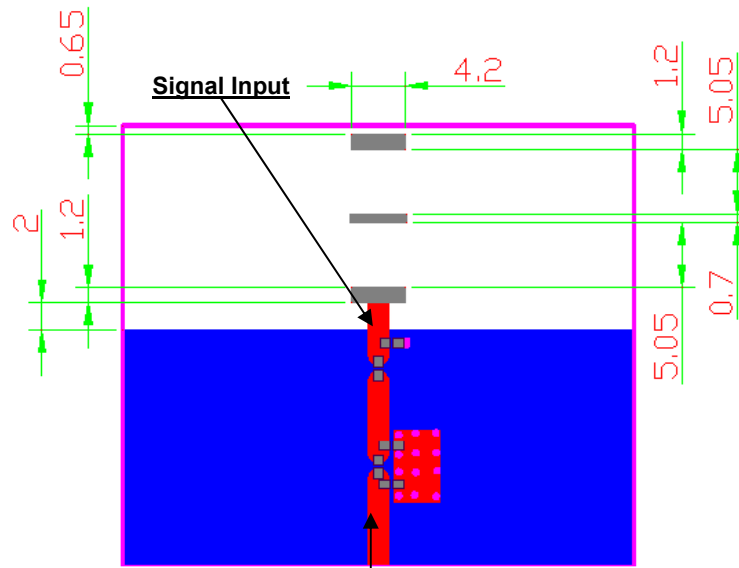
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5. Layout Guide & Electrical Specifications

5-1. Layout Guide (unit : mm)

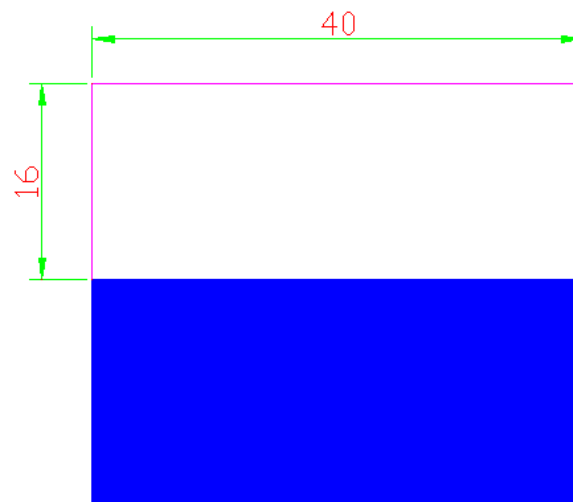
Solder Land Pattern:

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



Transmission Line with 50Ω Impedance Characteristic

Top View



Bottom View



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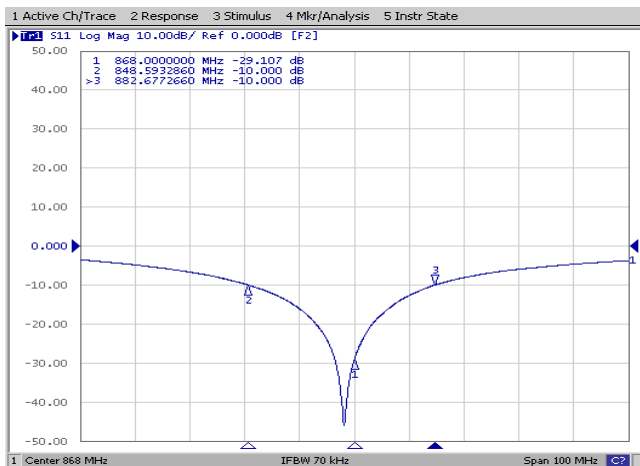
5-2. Electrical Specifications (Evaluation Board Dimensions: 80 x 40 mm²)

5-2-1. Electrical Table (863 ~ 870 MHz Band)

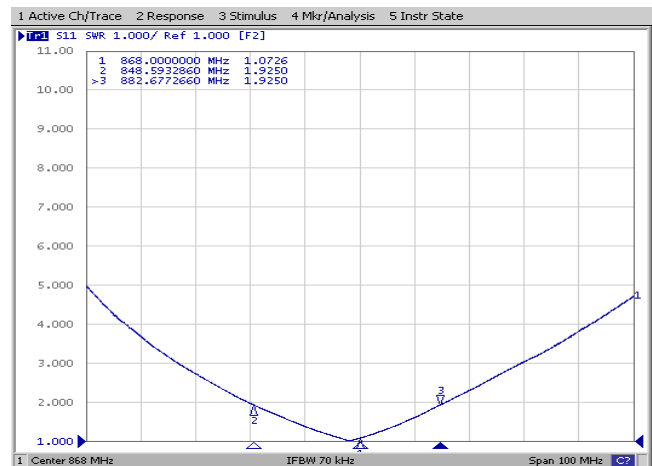
Characteristics		Specifications	Unit
Outline Dimensions		12.0 x 4.0 x 1.6	mm
Ground Plane Dimensions		64 x 40	mm
Working Frequency		863 ~ 870	MHz
Bandwidth		34 (typical)	MHz
VSWR		2 Max. (typical)	
Characteristic Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@ 868 MHz)	0.2 (typical)	dBi
Efficiency		52 (typical)	%

5-2-2. Return Loss & VSWR

Return Loss (S_{11})



VSWR (S_{11})



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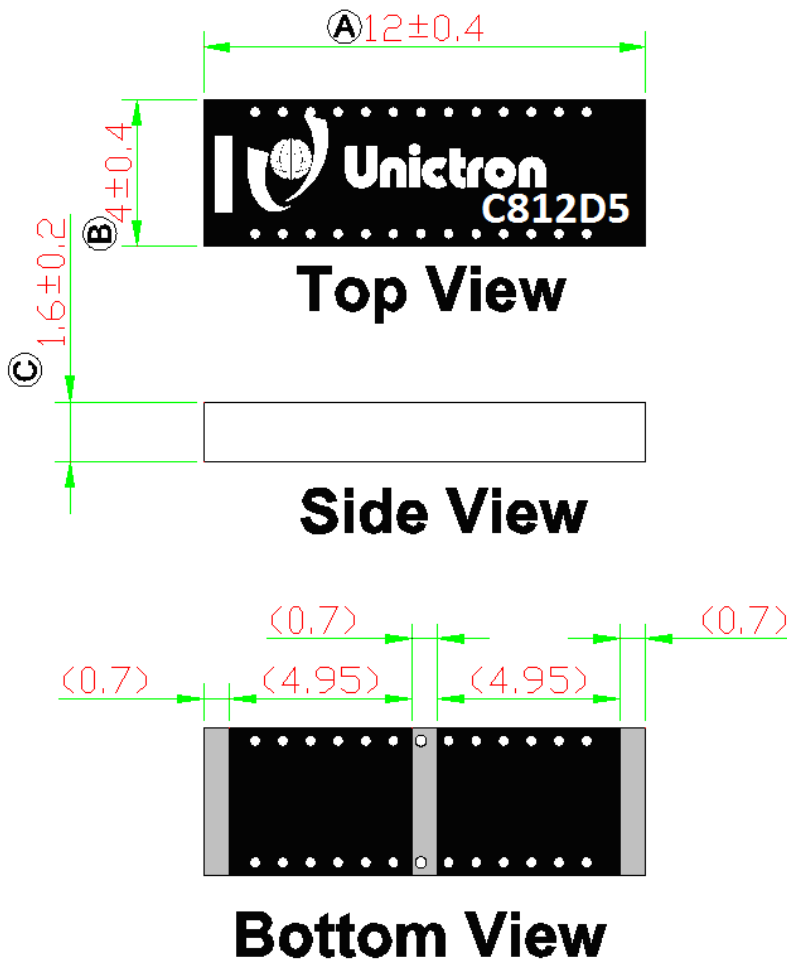
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6. Outline Dimensions of Antenna & Evaluation Board (unit: mm)

6-1. Antenna Dimensions



NOTE:

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

PIN Definitions



Item	PIN 1	PIN 2	PIN 3
Terminal	Signal	Soldering Pad	Soldering Pad

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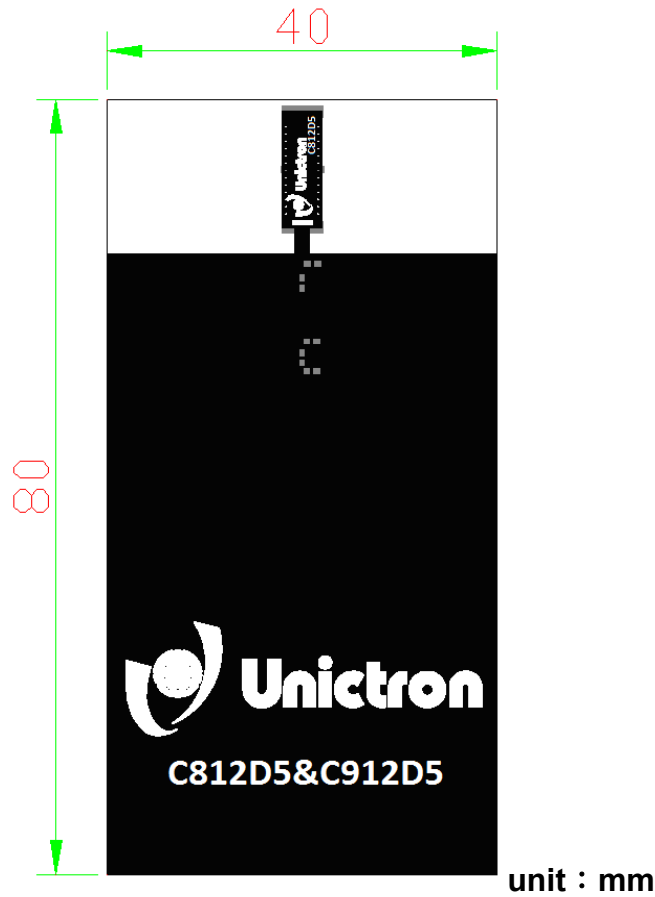
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6-2. Evaluation Board with Antenna



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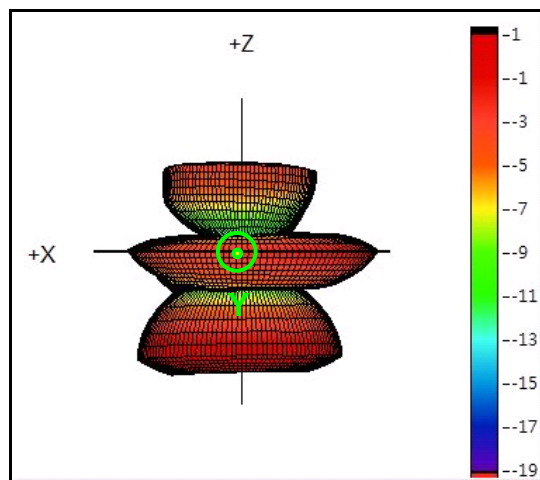
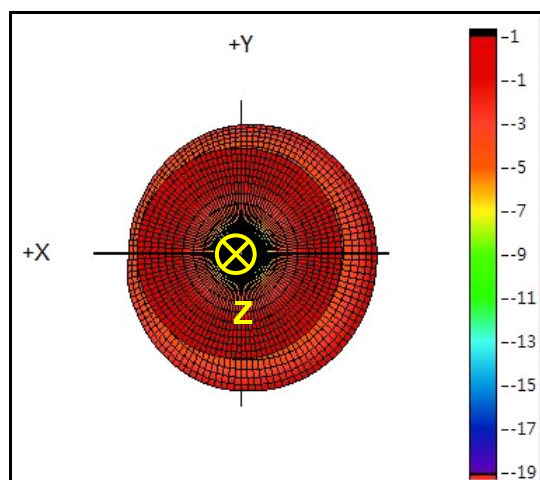
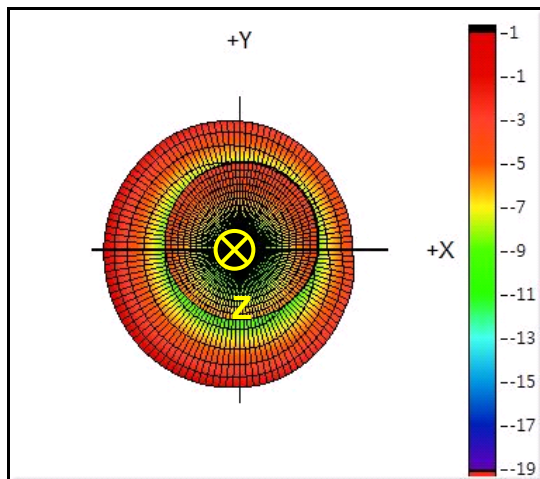
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7. Radiation Pattern (with 80 x 40 mm² Evaluation Board)

7-1. 3D Gain Pattern @ 868 MHz (unit: dBi)



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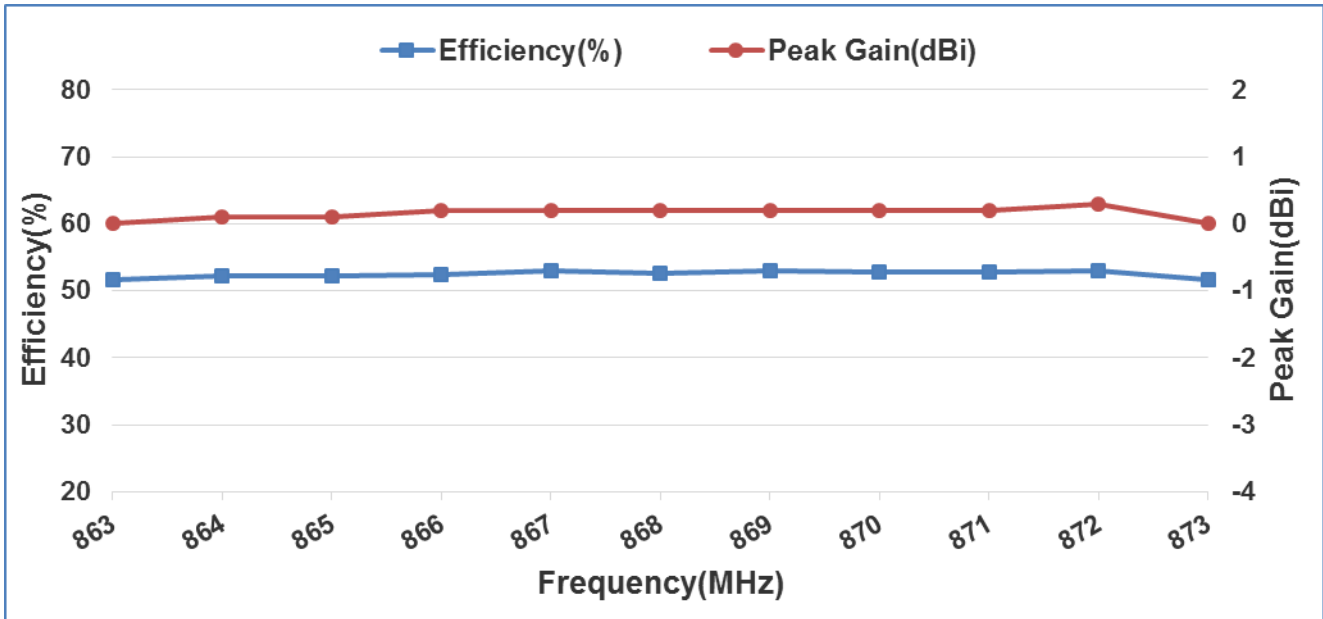
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7-2. 3D Efficiency Table

Frequency (MHz)	863	864	865	866	867	868	869	870	871	872	873
Efficiency (dB)	-4.2	-4.2	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1
Efficiency (%)	51.7	52.2	52.3	52.5	52.9	52.7	52.9	52.8	52.8	52.9	51.7
Peak Gain (dBi)	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.0

7-3. 3D Efficiency vs. Frequency



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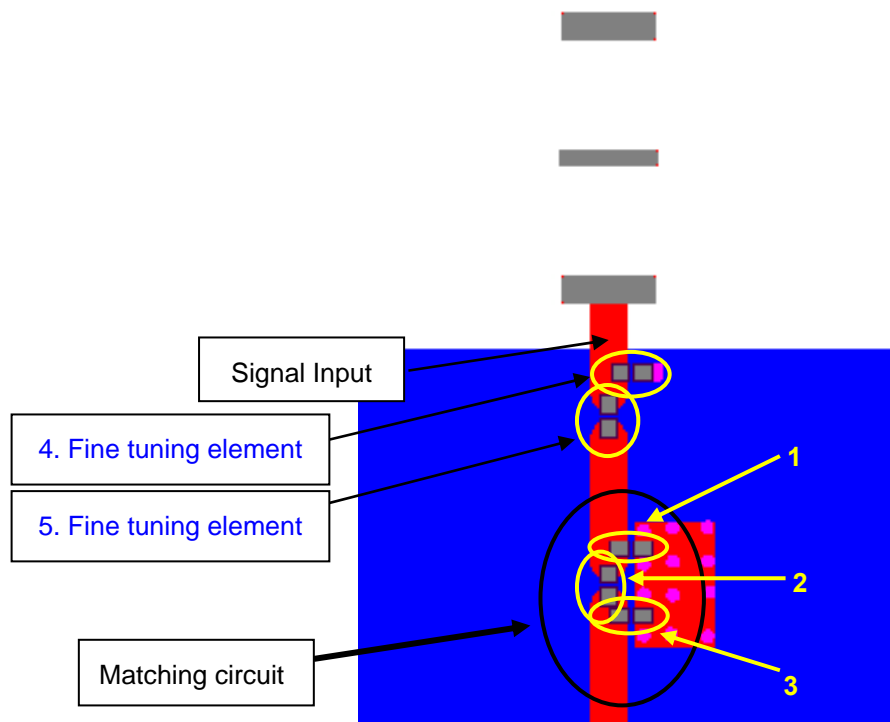
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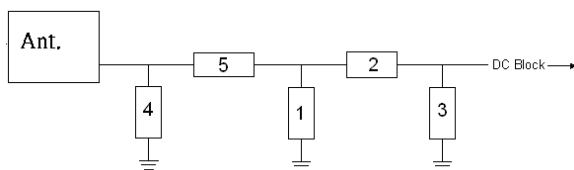
8. Frequency tuning and Matching circuit

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 868 MHz at our standard 80 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	0Ω	-	-
3	N/A	-	-
4	Fine tuning element	-	-
5	Fine tuning element	DARFON	±0.01nH



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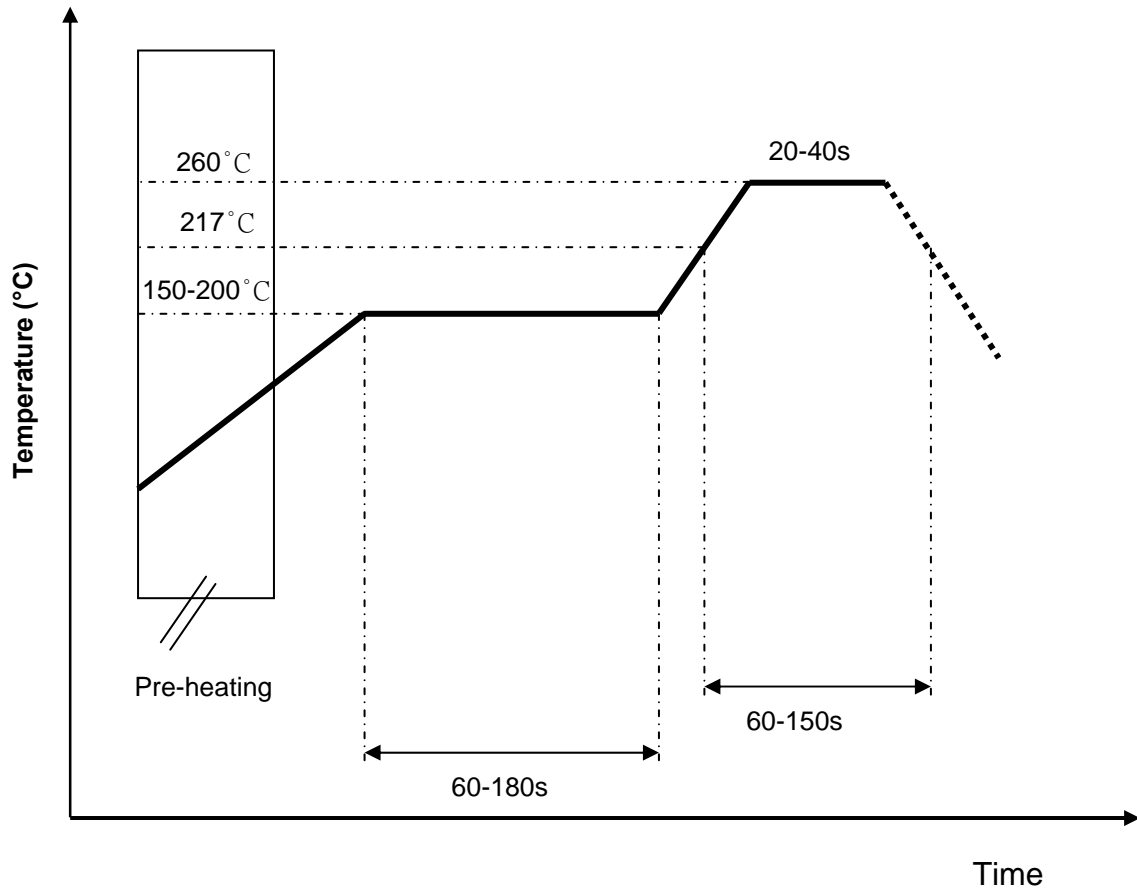
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9. Soldering Conditions

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



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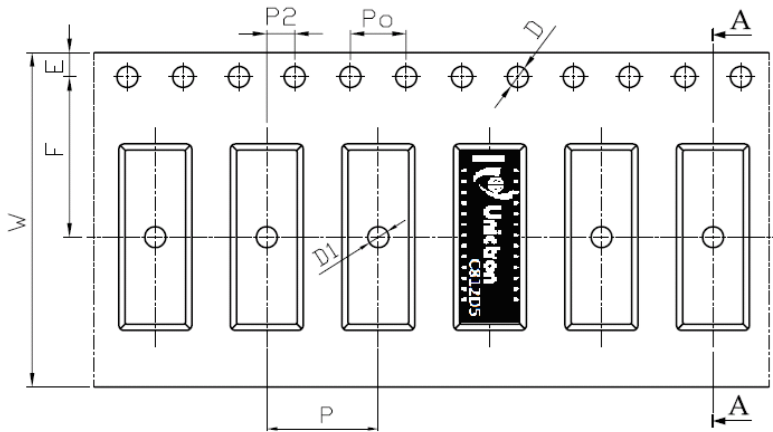
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10. Packing

- (1) Quantity/Reel: 3500 pcs/Reel
- (2) Plastic tape:

a. Tape Drawing



b. Tape Dimensions (unit: mm)

Feature	Specification	Tolerance
	s	s
W	24.00	±0.30
P	8.00	±0.10
E	1.75	±0.10
F	11.50	±0.10
P2	2.00	±0.10
D	1.50	+0.10 -0.00
D1	1.50	±0.10
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°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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