10x3.2x0.5 ISM 868 MHz Chip Antenna (AA067)

Engineering Specification

1. Explanation of Product Number

H	2	U	6	4	6	M	T	N	W	0	1	0	0

2. Features

*Stable and reliable in performances
*Low temperature coefficient of frequency
*Low profile, compact size
*RoHS 2.0 compliance
*SMT processes compatible
*AEC-Q200 compliant

3. Applications

*ISM Band system.
*RFID system

4. Description

Unictron's chip antenna series are specially designed for ISM Band applications. Based on Unictron's proprietary design and processes, this chip antenna has excellent stability and sensitivity to consistently provide high signal reception efficiency.

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

5-1. Electrical Table:

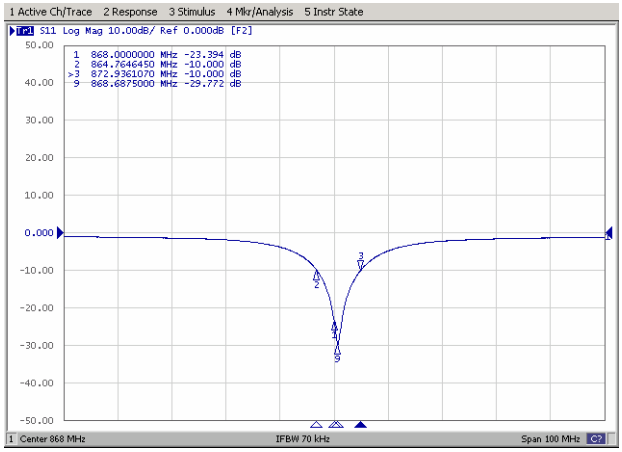
Characteristics		Specifications	Unit
Outline Dimensions		10x3.2x0.5	mm
Ground Plane		80x40	mm
Working Frequency		863~870	MHz
VSWR (@ center frequency)*		2 Max.	
Characteristic Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@915MHz)	0.5(typical**)	dBi
Efficiency		60(typical**)	%

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

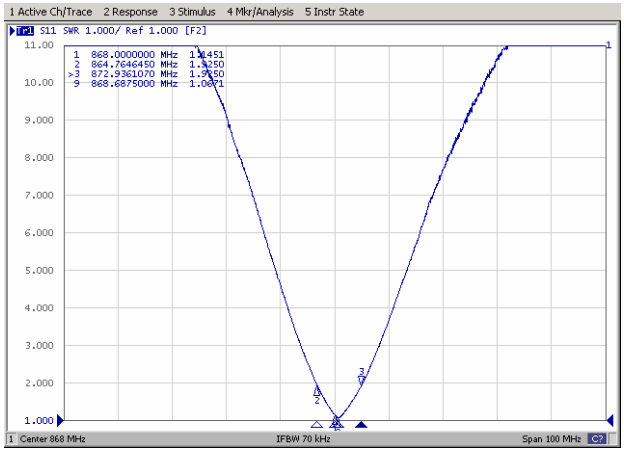
**A typical value is for reference only, not guaranteed.

5-2. Return Loss & VSWR

Return Loss (S_{11})

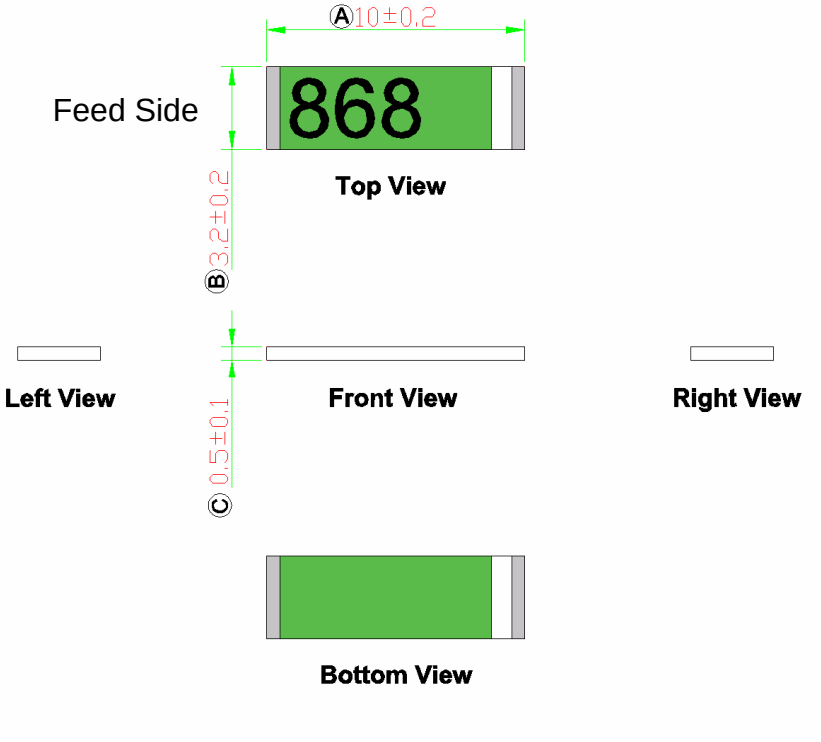


VSWR (S_{11})



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

6-1. Antenna Dimensions



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

PIN Definitions

PIN	1	2
Soldering PAD	Signal	Tuning / Ground

Prepared by : Jane | Designed by : Ken | Checked by : Mike | Approved by : Herbert

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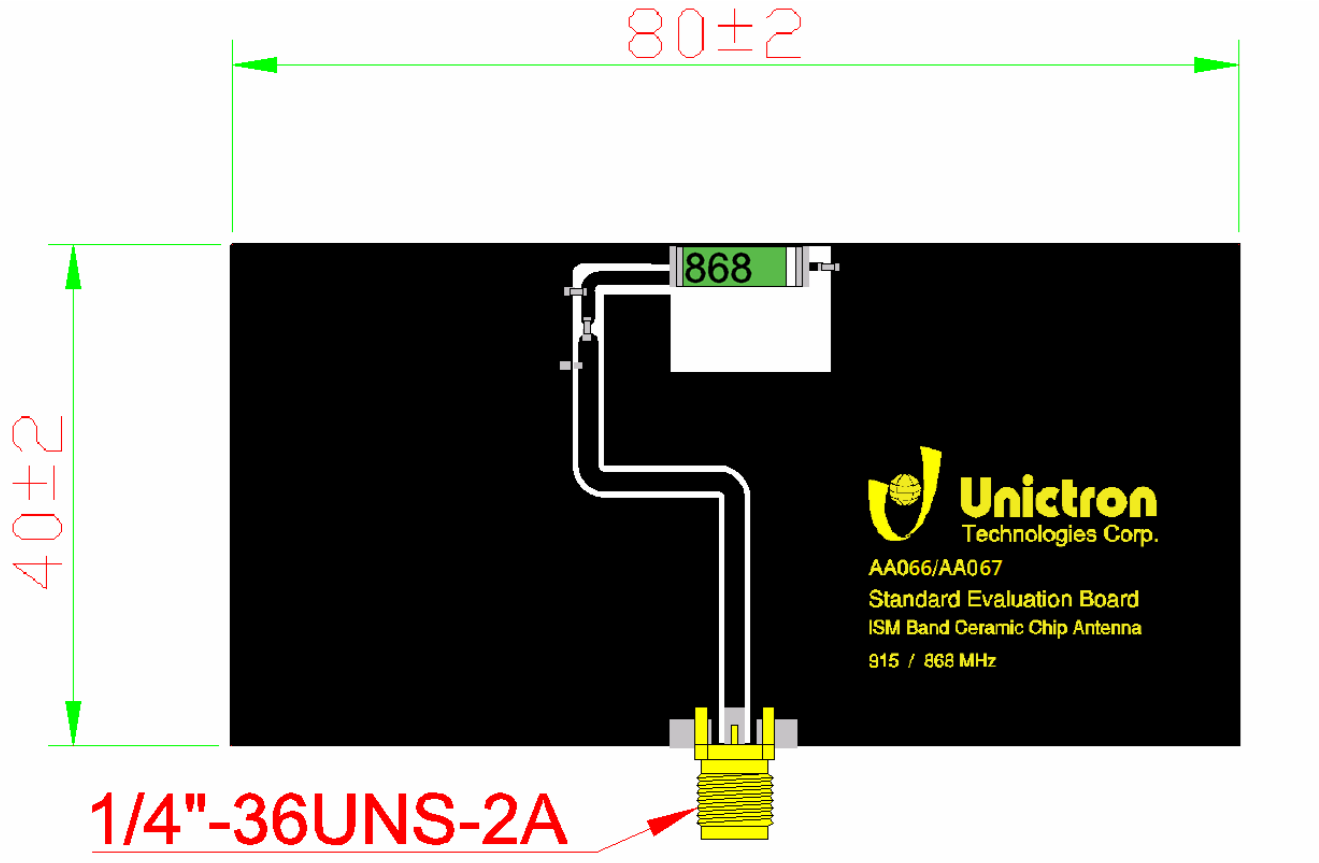
6-2. Test Board with Antenna



Unit：mm

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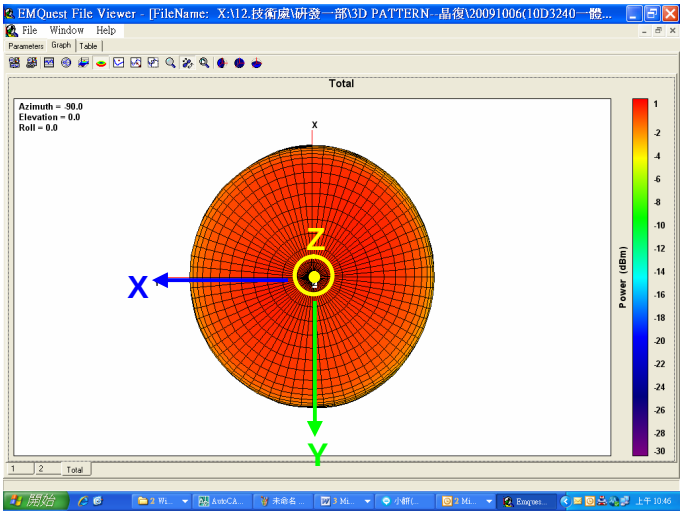
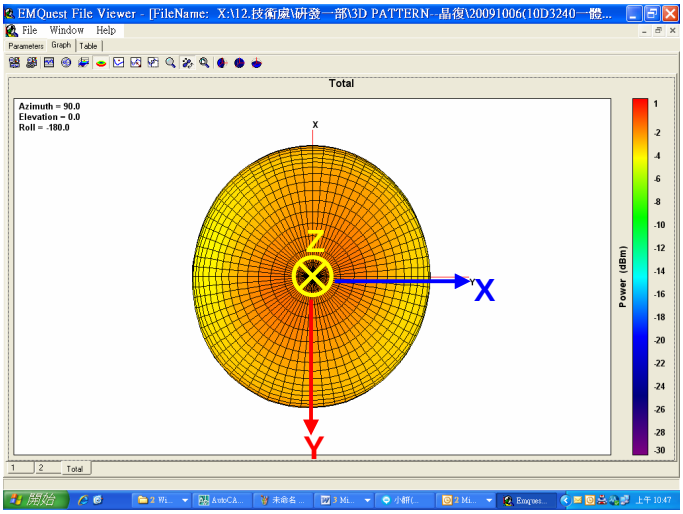
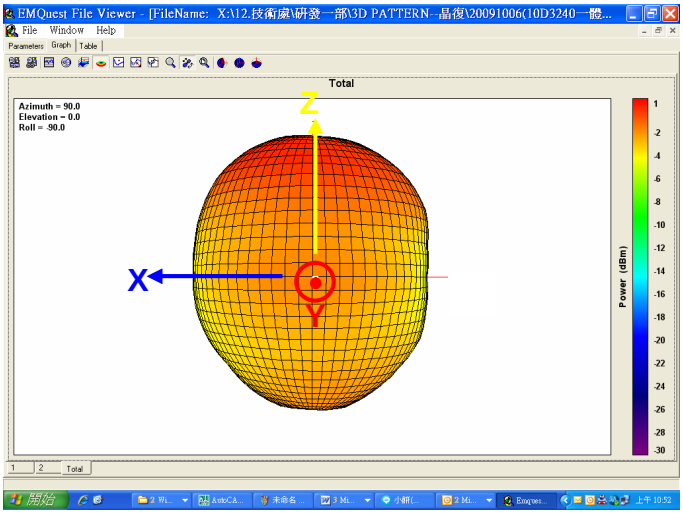
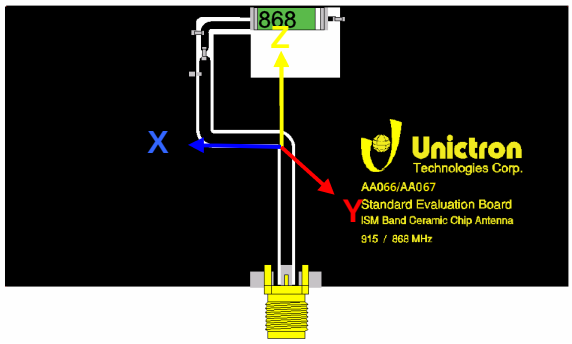
7. Radiation Pattern (80x40(mm) ground plane)

7-1. 3D Gain Pattern (Radiation Pattern at 868 MHz)







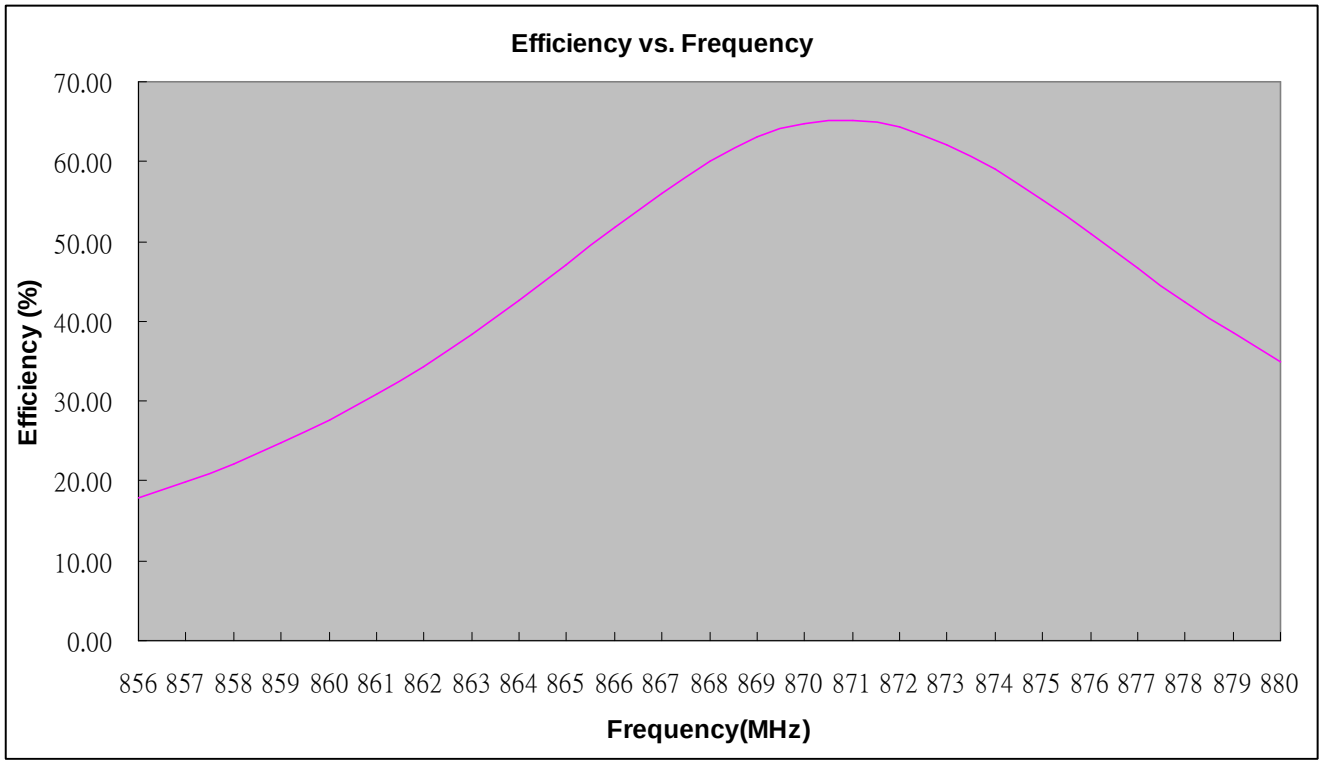


7-2. 3D Efficiency Table

Frequency(MHz)	856	857	858	859	860	861	862	863	864	865	866	867
Efficiency (dB)	-7.46	-7.01	-6.54	-6.07	-5.59	-5.11	-4.64	-4.17	-3.71	-3.28	-2.87	-2.51
Efficiency (%)	17.95	19.92	22.19	24.73	27.61	30.81	34.35	38.28	42.59	47.04	51.66	56.08
Gain (dBi)	-4.84	-4.39	-3.93	-3.43	-2.96	-2.44	-1.96	-1.47	-0.99	-0.56	-0.12	0.23

Frequency(MHz)	869	870	871	872	873	874	875	876	877	878	879	880
Efficiency (dB)	-2.00	-1.89	-1.86	-1.92	-2.07	-2.29	-2.58	-2.92	-3.31	-3.72	-4.14	-4.57
Efficiency (%)	63.04	64.64	65.20	64.23	62.08	58.99	55.19	51.00	46.68	42.47	38.55	34.93
Gain (dBi)	0.78	0.91	0.96	0.90	0.75	0.53	0.23	-0.11	-0.49	-0.90	-1.34	-1.78

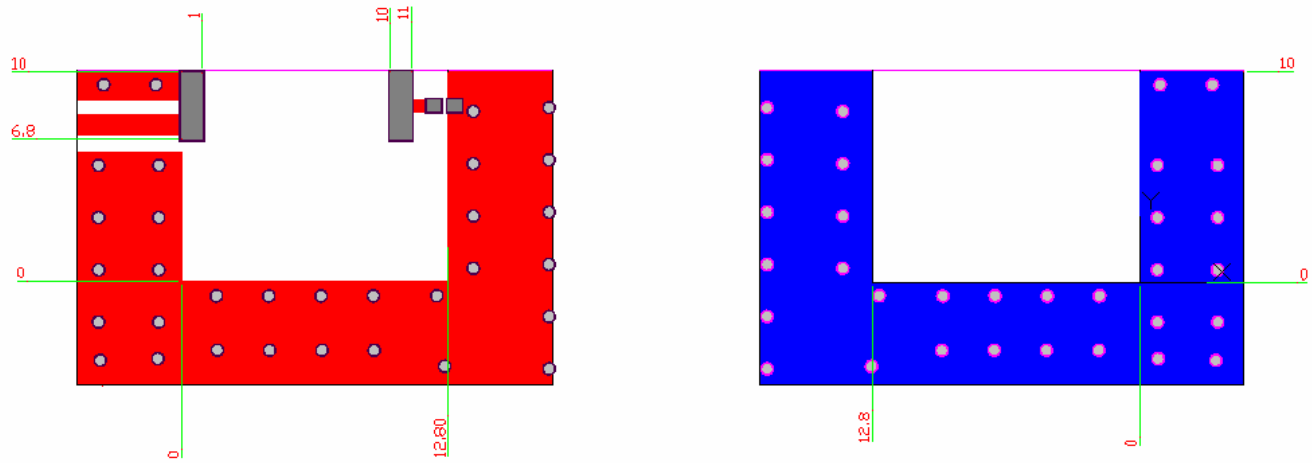
7-3. 3D Efficiency vs. Frequency



8. Layout Guide:

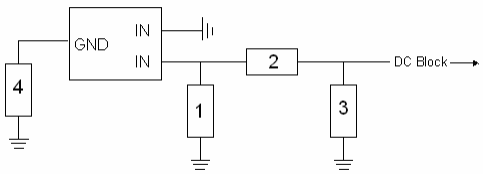
a. Solder Land Pattern:

Land pattern for soldering (black marking areas) is as shown below. Matching circuit is needed for good performance, when customer's device is different.



b. Matching circuit：

(Center frequency is about 915 MHz @ 80 x 40 mm^2 Evaluation Board)

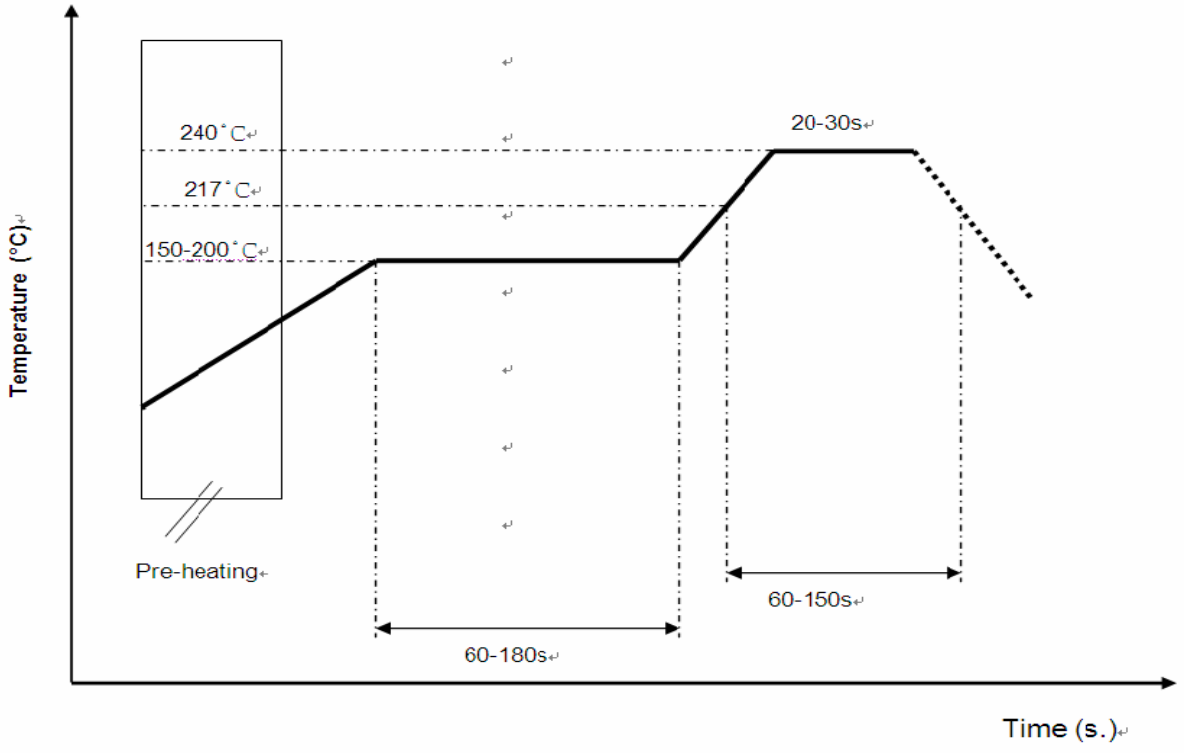


System Matching Circuit Component			
Location	Description	Vendor	Tolerance
1	N/A*	-	-
2	0Ω*	(0402)	-
3	5.0pF*	Murata (0402)	±0.05 pF
4	12pF*	Murata (0402)	±5 %

*Typical reference values which may need to be changed when circuit boards or part vendors are different.

9. Soldering Conditions:

a. Typical Soldering Profile for Lead-free Process



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

10. Reminders for users of Unictron's chip antennas

a. Since Unictron's chip antennas are made of ceramic materials which show different rigidity than circuit board materials, bending of circuit board at the locations where chip antennas are mounted may cause the cracking of solder joints or antenna itself.

b. Any connecting strip which will be cut off at PCB assembly process shall be located away from the installation site of chip antenna. Punching of the connecting strip may cause severe bending of the circuit board and cracking of solder joint or chip antenna itself may occur.

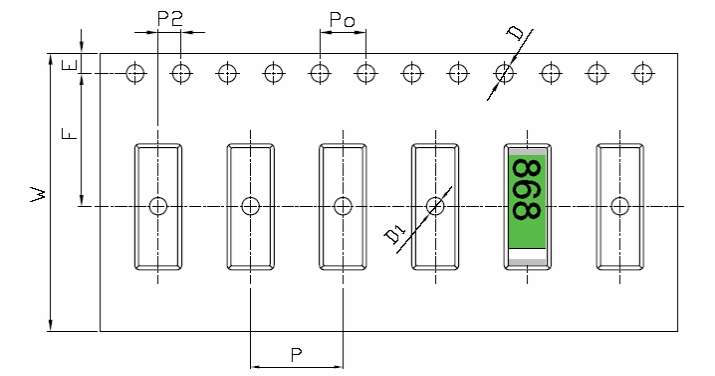
c. Be cautious when ultrasonic welding process needs to be used near the locations where chip antennas are installed. Strong ultrasonic vibration may cause the cracking of chip antenna solder joints.

11. Packing:

(1) Quantity/Reel: 6000pcs/Reel

(2) Plastic tape:

a. Tape Drawing



b. Tape Dimensions (unit: mm)

Feature	Specifications	Tolerances
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

12. Operating & Storage Conditions

12-1. Operating

(1) Maximum Input Power: 2 W

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

(3) Relative Humidity: 10% to 70%

12-2. Storage (sealed)

(1) Storage Temperature: -5℃ to 40℃

(2) Relative Humidity: 20% to 70%

(3) Shelf Life: 1 year

12-3. Storage (unsealed)

Meet the criteria of J-STD-033 MSL2a

12-4. Storage (After mounted on customer's PCB with SMT process)

(1) Storage Temperature: -40℃ to 85℃

(2) Relative Humidity: 10% to 70%

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13. 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.