

# 5.0 x 3.0 x 4.0 (mm) GNSS Chip Antenna (CG508)

## Engineering Specification

### 1. Product Number

H 2 U J 6 F 1 K 2 A 0 1 0 0



### 2. Features

- \*Stable and reliable in performances
- \*Low profile, compact size
- \*RoHS 2.0 compliance
- \*SMT processes compatible

### 3. Applications

- \*GNSS (Global Navigation Satellite System)
- \*Hand-held devices when GPS& BDS & GLONASS & GALILEO functions are needed, e.g., PDA, Smart phone, PND.

### 4. Description

Unictron's CG508 chip antenna is designed for GNSS band applications, covering frequencies 1560~1606 MHz. Fabricated with proprietary design and processes, CG508 shows excellent performance and is fully compatible with SMT processes which can decrease the assembly cost and improve device's quality and consistency.

### 5. Layout Guide & Electrical Specifications



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Prepared by :Wen

Designed by : George Hung

Checked by : Mike

Approved by : Herbert

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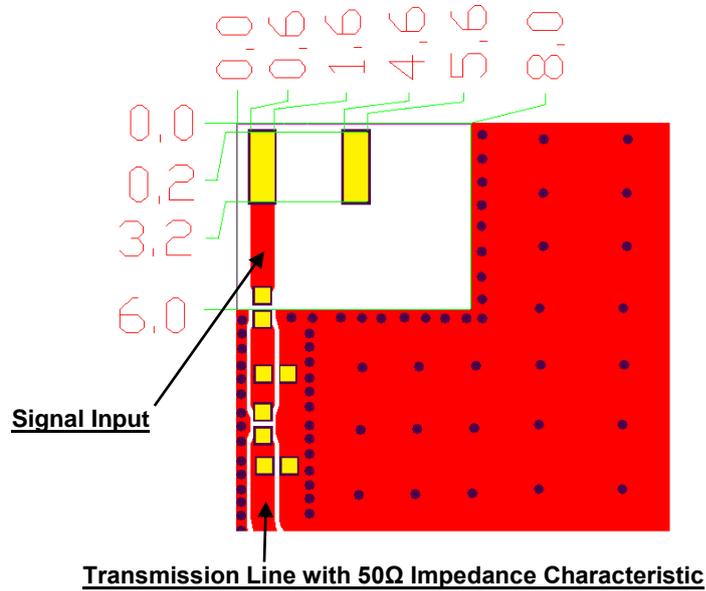
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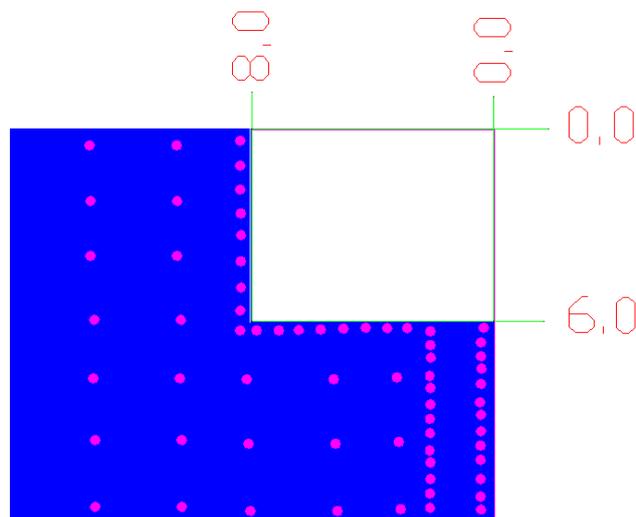
## 5-1. Layout Guide (unit : mm)

### 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.



Top View



Bottom View



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## 5-2. Electrical Specifications (Evaluation Board Dimensions: 100 x 50 mm<sup>2</sup>)

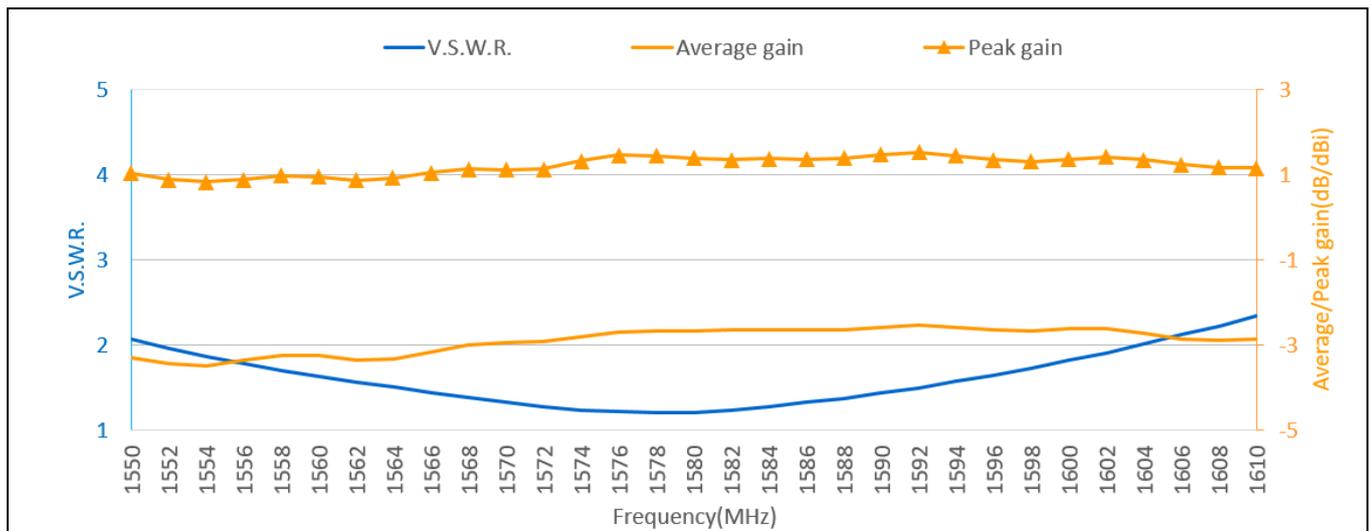
### 5-2-1. Electrical Table

Characteristics		Specifications	Unit
Outline Dimensions		5.0 x 3.0 x 4.0	mm
Ground Plane Dimensions		100 x 50	mm
Working Frequency		1560~ 1606	MHz
VSWR (@ center frequency)*		2 Max.	
Characteristic Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@ 1575.42 MHz)	1.5(typical)**	dBi
Efficiency		55.8(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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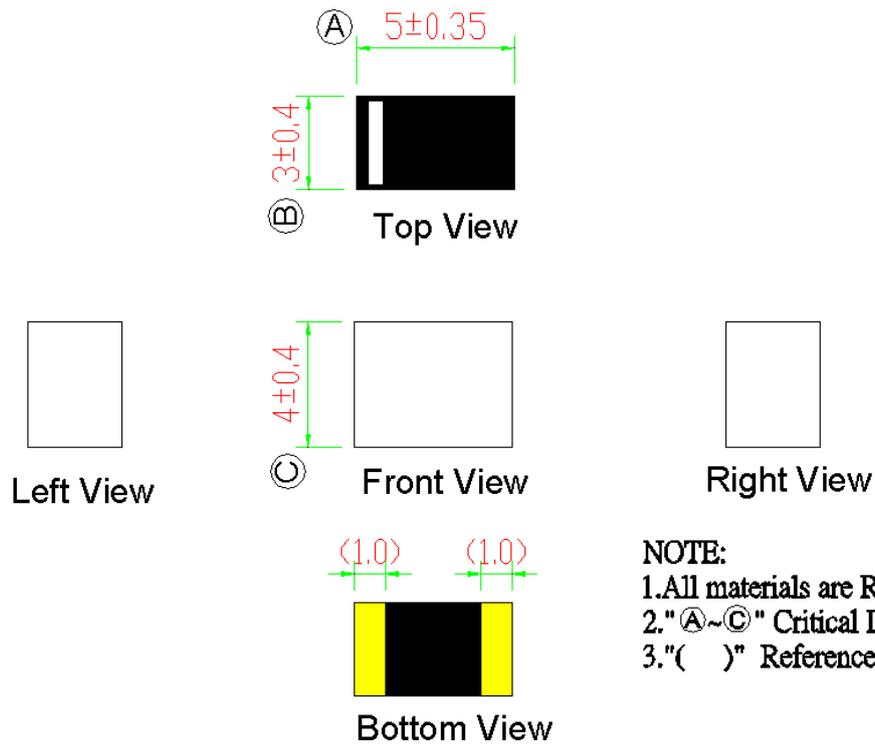
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## 6. Outline Dimensions of Antenna & Evaluation Board (unit: mm)

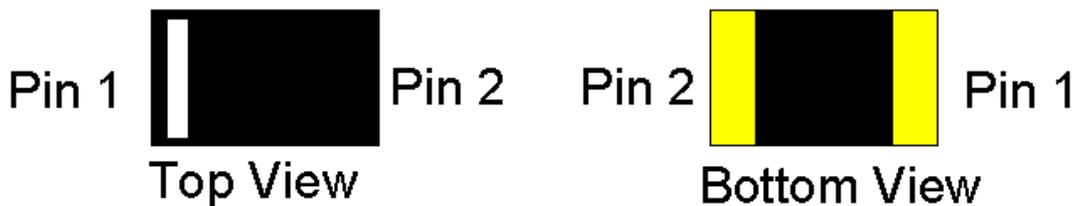
### 6-1. Antenna Dimensions



**NOTE:**

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

### PIN Definitions



PIN	1	2
Soldering pad	Signal	N/C



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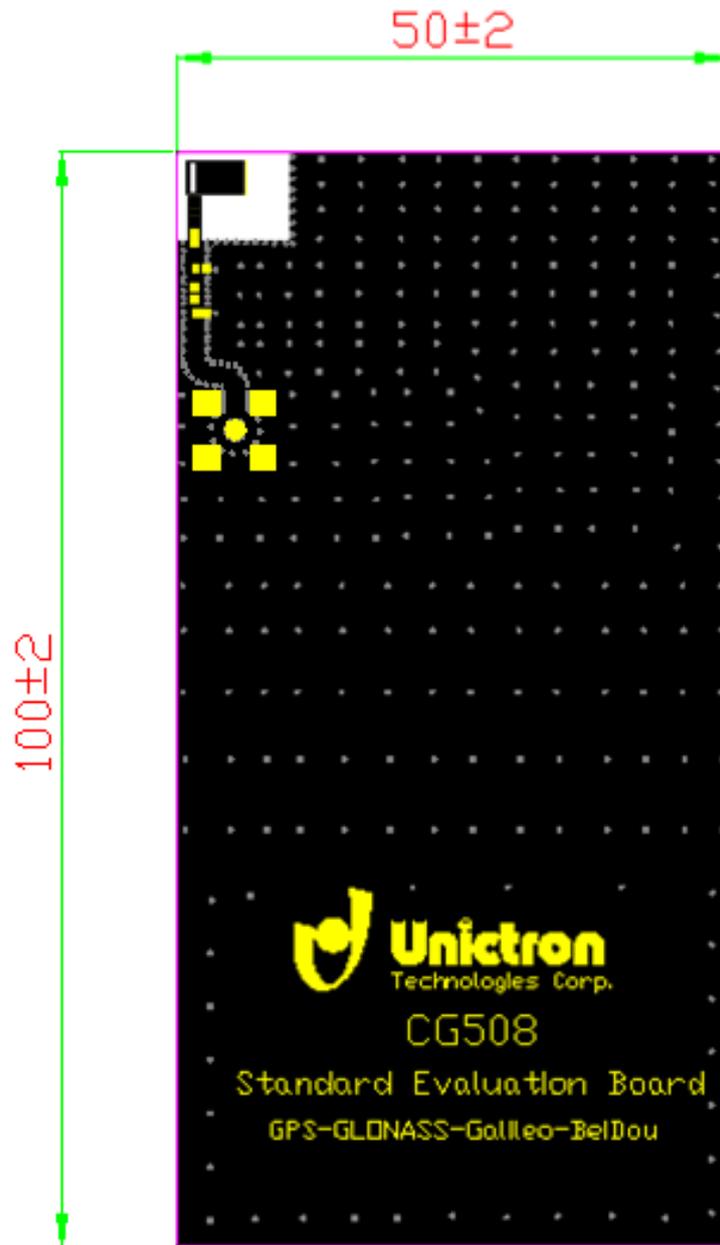
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6-2. Evaluation Board with Antenna



Unit: mm



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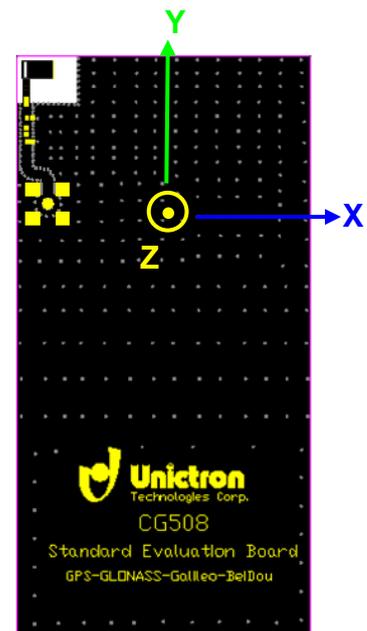
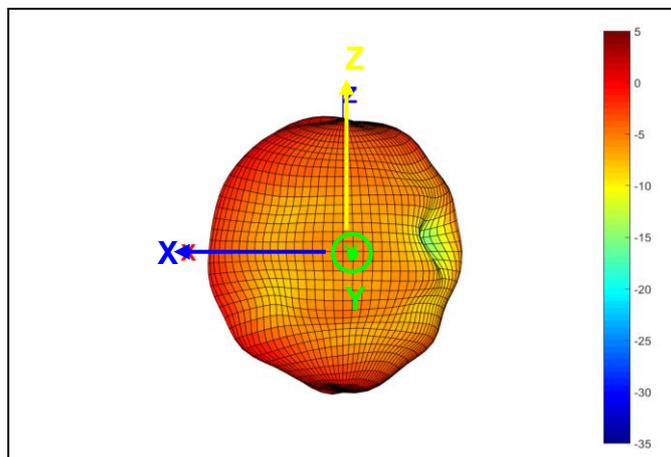
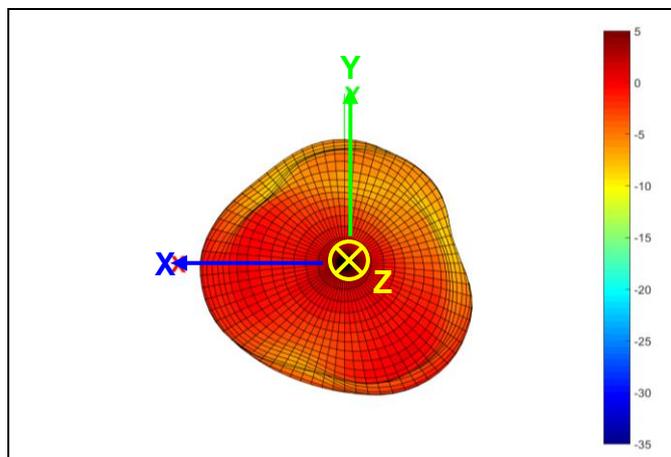
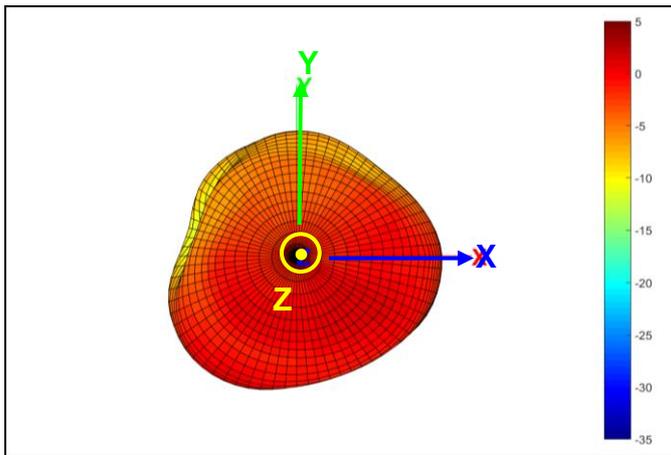
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**7. Radiation Pattern (with 100 x 50 mm<sup>2</sup> Evaluation Board)**  
 3D Gain Pattern @ 1575.42 MHz (Unit: dBi)



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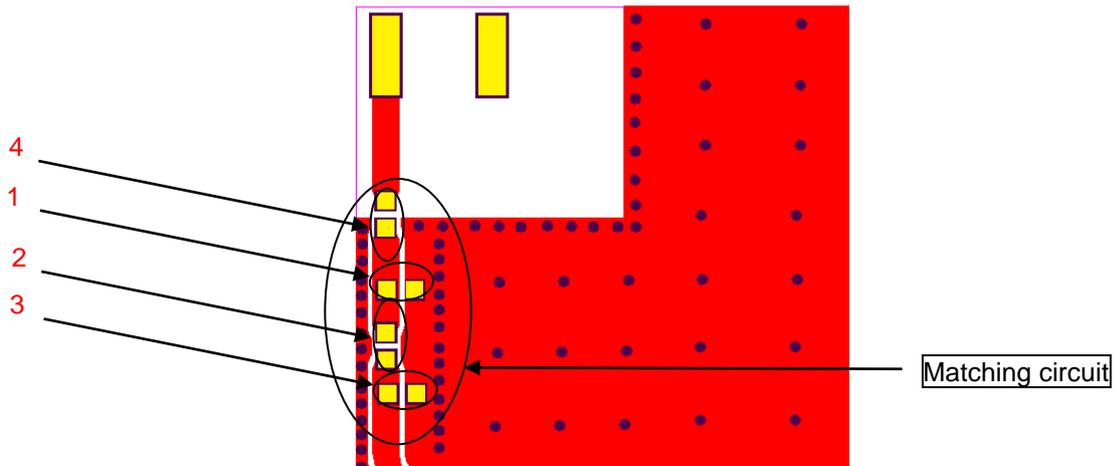
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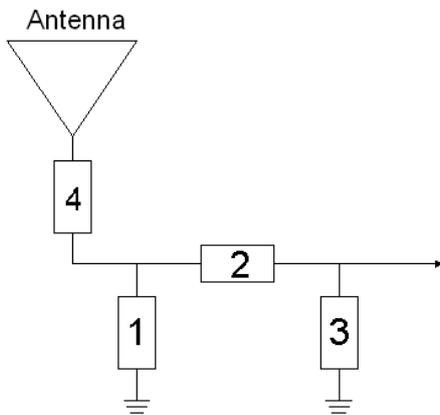
## 8. Frequency tuning

### 8-1. Chip antenna tuning scenario :



### 8-2. Matching circuit :

With the following recommended values of matching and tuning components, the Center frequency will be about 1575.42 MHz at our standard 100 x 50 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	2.2nH*, 0402	MURATA	±0.1nH
2	6.8pF*, 0402	MURATA	±0.05pF
3	N/A	N/A	N/A
4	6.3nH*,(HQ) 0402	MURATA	±0.1nH

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



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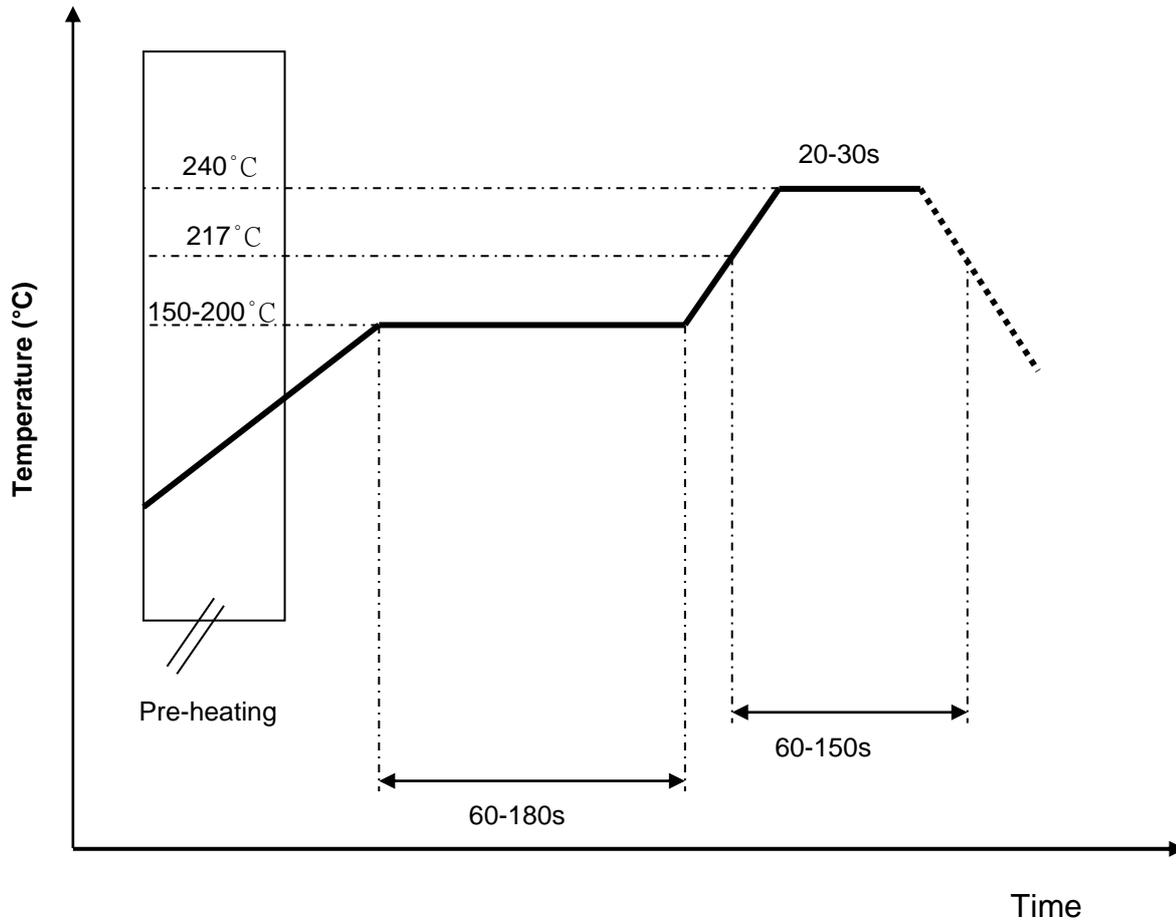
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## 9. Soldering Conditions:

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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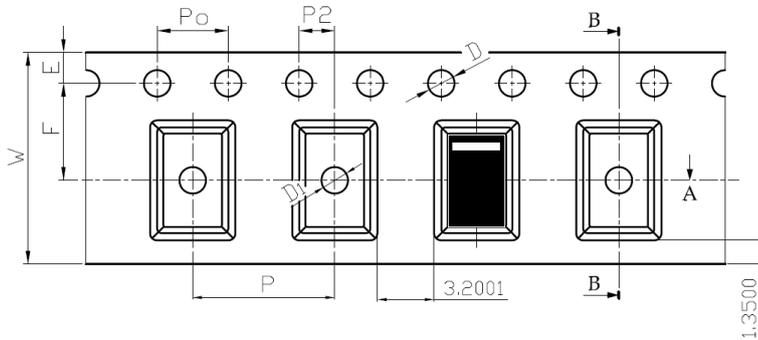
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## 10. Packing

- (1) Quantity/Reel: 1500 pcs/Reel
- (2) Plastic tape: Black conductive polystyrene.

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
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
- (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%



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