

# SPECIFICATION

|                              |                   |
|------------------------------|-------------------|
| <b>PART NO:</b>              | <b>KH3216-A35</b> |
| <b>CUSTOMER PART NO:</b>     |                   |
| <b>CUSTOMER APPROVED BY:</b> |                   |
| <b>APPROVED DATE:</b>        |                   |

RoHS Compliant Parts

18th Floor, Building T2, Lijincheng Center, Yousong  
Community, Longhua Street, Longhua District, Shenzhen

TEL: 0755-83040901 FAX: 0755-83040901

|              |              |                              |
|--------------|--------------|------------------------------|
| Prepared by: | Checked by : | Approved by:                 |
| Formed On    |              | Document Version<br>( V1.2 ) |

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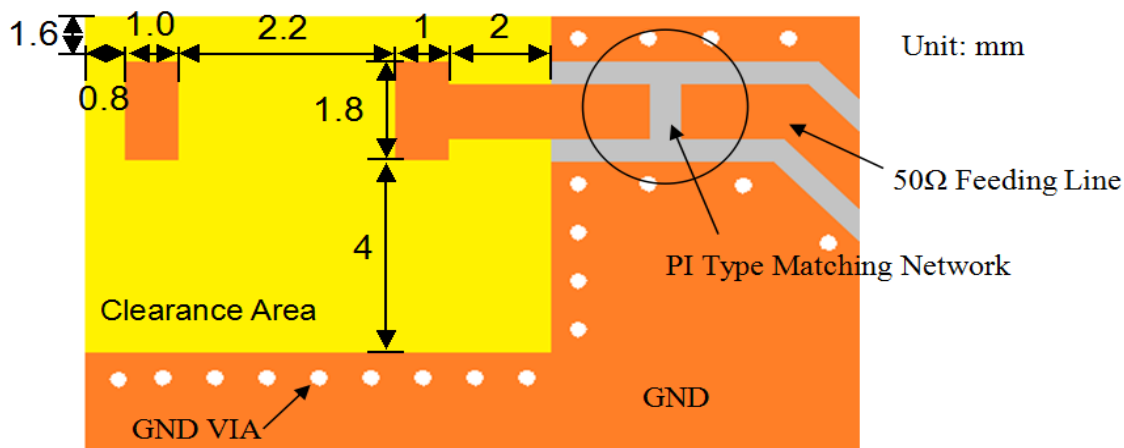
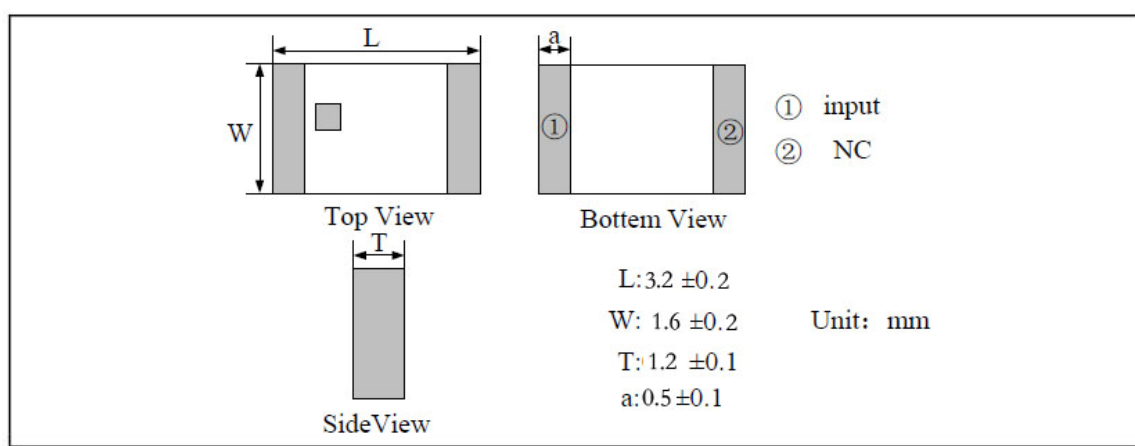
## Version rejigger track record

| Version                                                                                                                                                                                                                                                                                                                                                                            | Rejigger                                                        | Prepared | Approve | Date         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|----------|---------|--------------|
| V1.0                                                                                                                                                                                                                                                                                                                                                                               | initial issue                                                   | 姚富鑫      | 贺俊驹     | 2015. 12. 25 |
| V1.1                                                                                                                                                                                                                                                                                                                                                                               | Change the dimensional tolerance value of the product           | 陈星       | 贺俊驹     | 2017. 05. 24 |
| V1.2                                                                                                                                                                                                                                                                                                                                                                               | Revise contents 8.1 to 8.4 of the reliability test instructions | 姚富鑫      | 贺俊驹     | 2017. 11. 07 |
|                                                                                                                                                                                                                                                                                                                                                                                    |                                                                 |          |         |              |
|                                                                                                                                                                                                                                                                                                                                                                                    |                                                                 |          |         |              |
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|                                                                                                                                                                                                                                                                                                                                                                                    |                                                                 |          |         |              |
| <p>Note:</p> <p>1、 When changing the electrical performance indicators of the product, the version number needs to be replaced (V1.0 to V2.0, V3.0, etc.) ;</p> <p>2、 When changing the product testing methods (including reliability testing conditions) or the usage conditions, the current version number is added to the series (V1.0 is changed to V1.1, V1.2, etc.). .</p> |                                                                 |          |         |              |

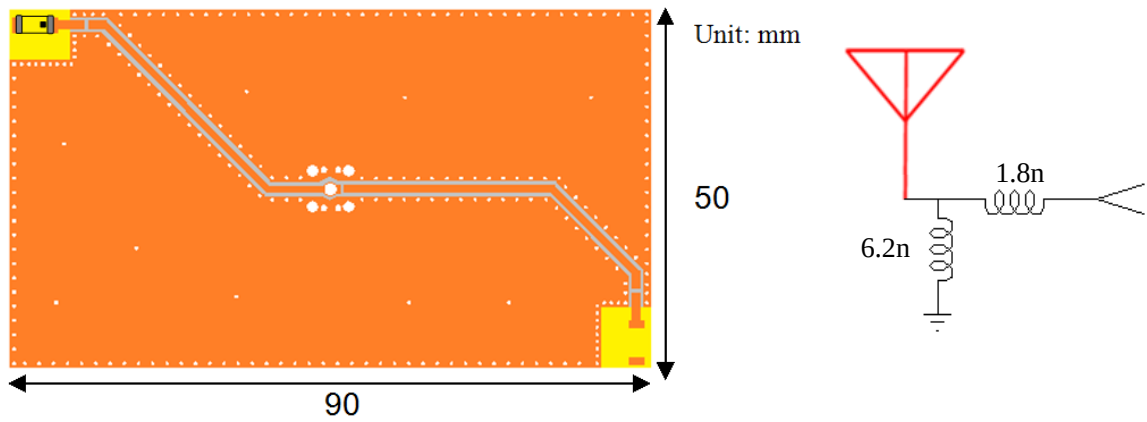
## 1. INTRODUCTION

**kinghelm** Microwave Multi-Layer Ceramic Antenna LA series are designed to be used in WLAN、WiFi、Bluetooth、PHS、 Multiple-band Mobile phone antenna, FM, etc and compact size SMD chip design.

## 2.Dimensions (Unit: mm)

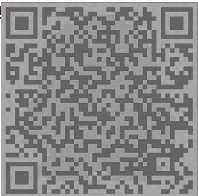


3.Evaluation Board and Matching Circuits

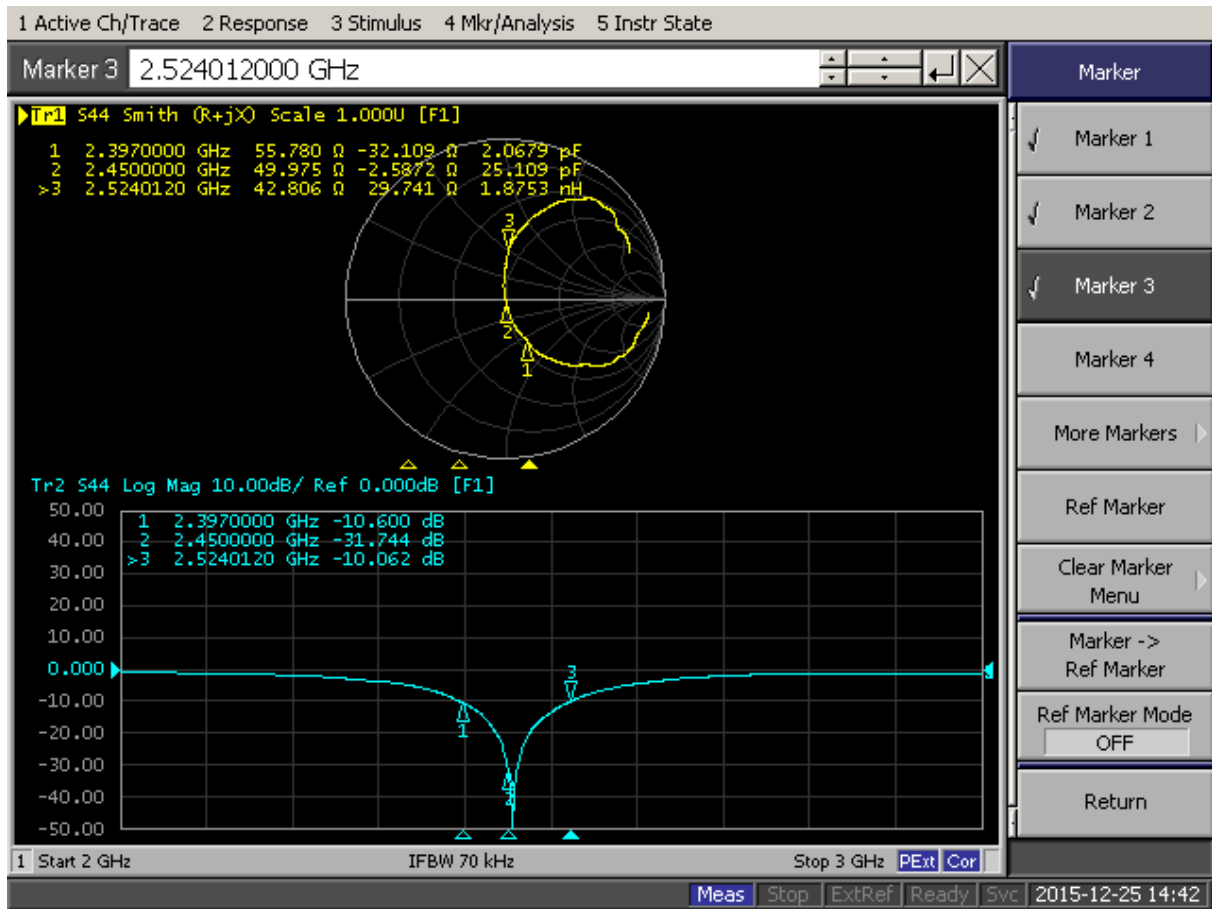


4.Electrical Characteristics

| No. | Item                            | Specifications   |
|-----|---------------------------------|------------------|
| 4.1 | Central Frequency (No matching) | 2875MHz          |
|     | After Matching                  | 2450 MHz         |
| 4.2 | Band Width                      | 100MHz typ.      |
| 4.3 | Peak Gain                       | 5.19 dBi         |
| 4.4 | V.S.W.R                         | $\leq 2.0$       |
| 4.5 | Polarization                    | Linear           |
| 4.6 | Azimuth Beam width              | Omni-directional |
| 4.7 | Impedance                       | 50 $\Omega$      |

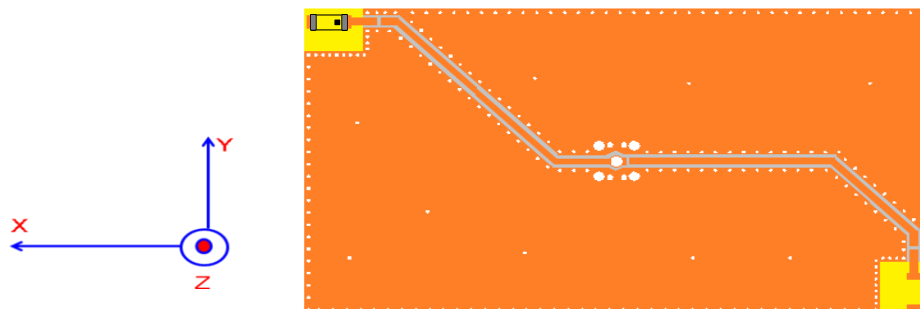


## 5.Characteristic curve

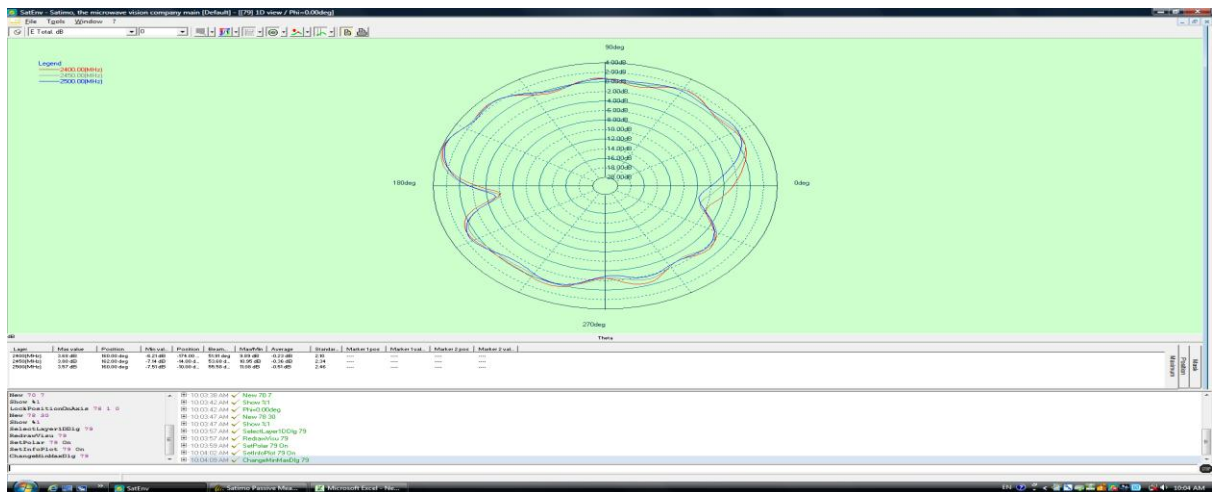


## 6.Radiation Pattern

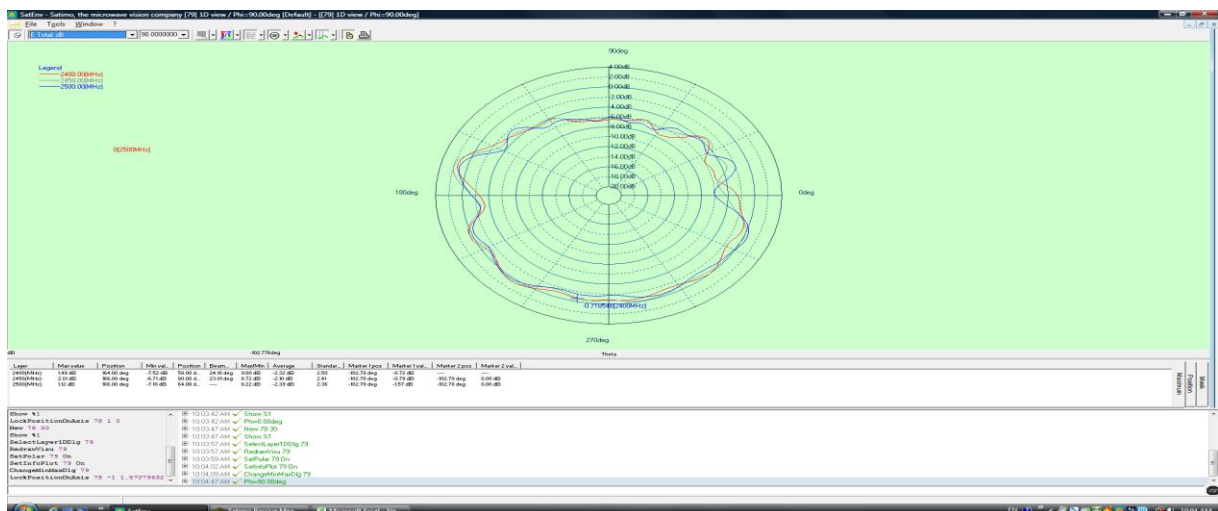
coordinates:



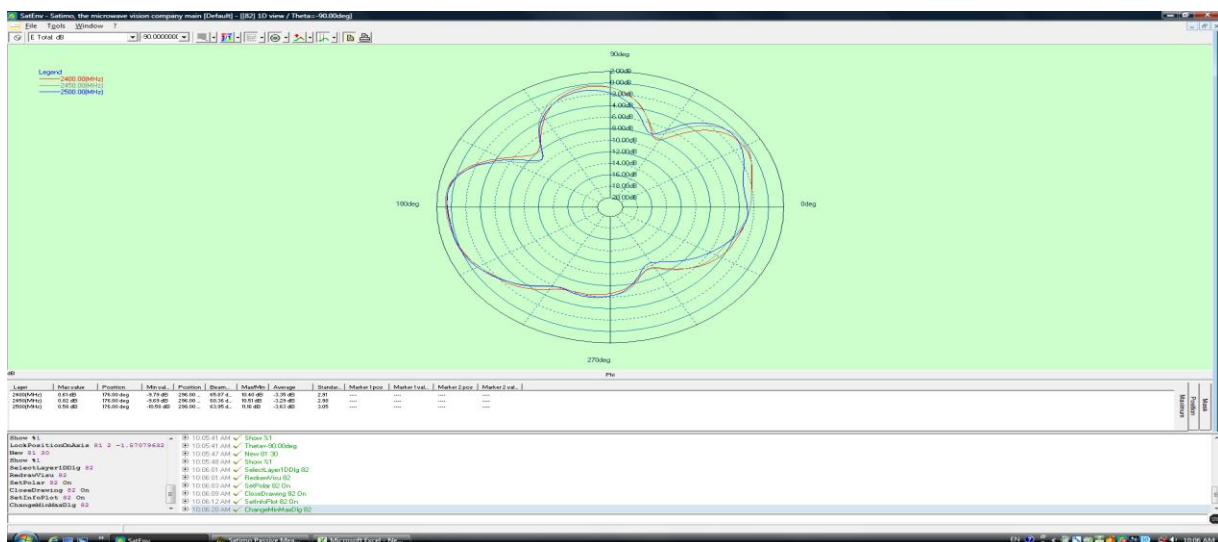
## X-Z Plane



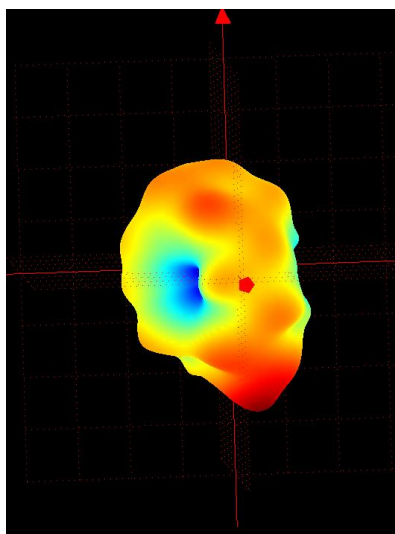
## Y-Z Plane



## X-Y Plane



## 3D Radiation Pattern



|                    |       |       |       |
|--------------------|-------|-------|-------|
| Frequency<br>(MHz) | 2400  | 2450  | 2500  |
| Avg. Gain<br>(dBi) | -0.23 | -0.36 | -0.51 |
| Peck Gain<br>(dBi) | 4.98  | 5.19  | 4.55  |
| Efficiency<br>(%)  | 70    | 71.2  | 69    |

## 7. Post Dependability Tolerance

Post Dependability Tolerance ( Refer to the table )

| No. | Item              | Post Dependability Tolerance |
|-----|-------------------|------------------------------|
| 7.1 | Central Frequency | $\pm 5$ MHz                  |
| 7.2 | Band Width        | $\pm 5$ MHz                  |
| 7.3 | Gain              | $\pm 0.1$ dBi                |
| 7.4 | V.S.W.R (in BW)   | $\pm 0.1$                    |

## 8. Dependability Test

Temperature range  $25 \pm 5^{\circ}\text{C}$

Relative Humidity range 55~75%RH

Operating Temperature range  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

### 8.1 Vibration Resist

The device should satisfy the electrical characteristics specified in paragraph 8.1~8.4 after applied to the vibration of 10 to 55Hz with amplitude of 1.5mm for 2 hours each in X, Y and Z directions.

### 8.2 Drop Shock

The device should satisfy the electrical characteristics specified in paragraph 8.1~8.4 after dropping onto the hard wooden board from the height of 100cm for 3 times each facet of the 3 dimensions of the device.

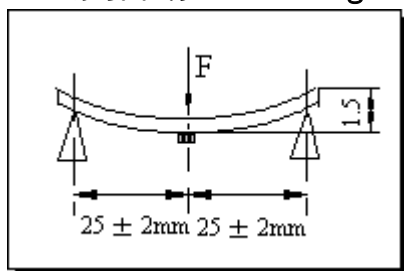
### 8.3 Solder Heat Proof

The device should be satisfied after preheating at  $120^{\circ}\text{C} \sim 150^{\circ}\text{C}$  for 120 seconds and dipping in soldering Sn at  $255^{\circ}\text{C} + 10^{\circ}\text{C}$  for  $5 \pm 0.5$  seconds, or electric iron  $300^{\circ}\text{C} - 10^{\circ}\text{C}$  for  $3 \pm 0.5$  seconds, without damage.

### 8.4 Tensile Strength of Terminal

The device should not be broken after tensile force of 1.0kg is slowly applied to pull a lead pin of the fixed device in the lead axis direction for  $10 \pm 1$  seconds.

## 8.5 耐弯曲试验 Bending Resist Test



Weld the product to the center part of the PCB with the thickness  $1.6 \pm 0.2\text{mm}$  as the illustration shows, and keep exerting force arrow-ward on it at speed of  $1\text{mm/S}$ , and hold for  $5 \pm 1\text{S}$  at the position of  $1.5\text{mm}$  bending distance, so far, any peeling off of the

product metal coating should not be detected.

## 8.6 Moisture Proof

The device should satisfy the electrical characteristics specified in paragraph 8.1~8.4 after exposed to the temperature  $60 \pm 2^\circ\text{C}$  and the relative humidity  $90 \sim 95\%$  RH for 96 hours and 1~2 hours recovery time under normal condition.

## 8.7 High Temperature Endurance

The device should satisfy the electrical characteristics specified in paragraph 8.1~8.4 after exposed to temperature  $85 \pm 5^\circ\text{C}$  for  $96 \pm 2$  hours and 1~2 hours recovery time under normal temperature.

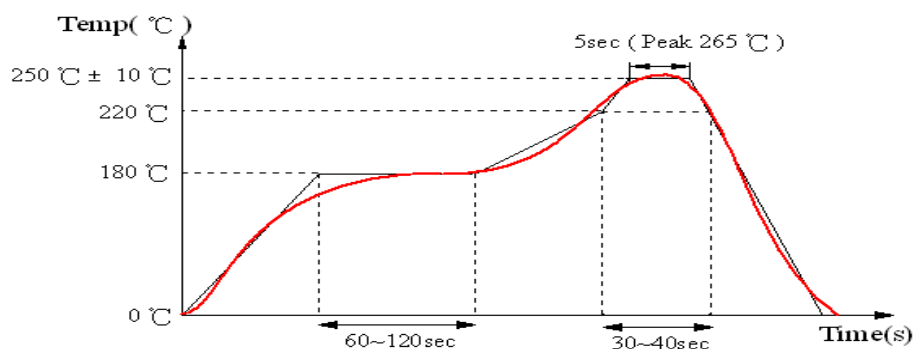
## 8.8 Low Temperature Endurance

The device should also satisfy the electrical characteristics specified in paragraph 8.1~8.4 after exposed to the temperature  $-40^\circ\text{C} \pm 5^\circ\text{C}$  for  $96 \pm 2$  hours and to 2 hours recovery time under normal temperature.

## 8.9 Temperature Cycle Test

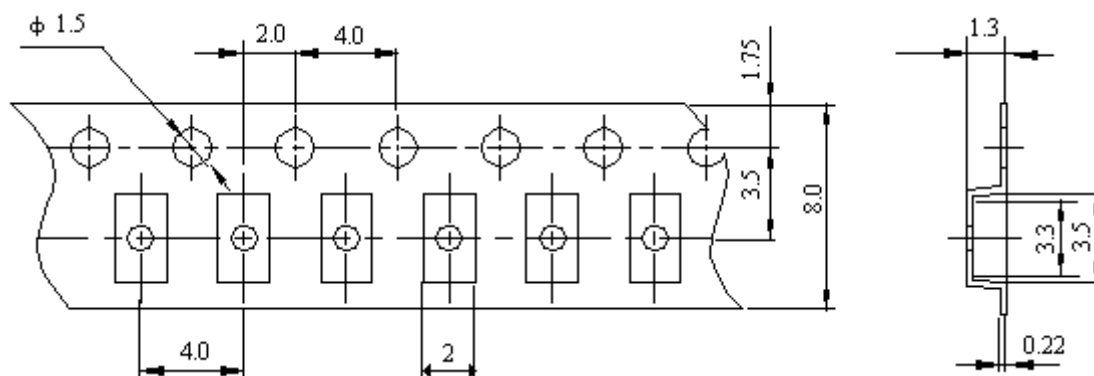
The device should also satisfy the electrical characteristics specified in paragraph 8.1~8.4 after exposed to the low temperature  $-40^\circ\text{C}$  and high temperature  $+85^\circ\text{C}$  for  $30 \pm 2$  min each by 5 cycles and 1 to 2 hours recovery time under normal temperature.

## 9. Reflow Soldering Standard Condition



## 10. Packaging and Dimensions

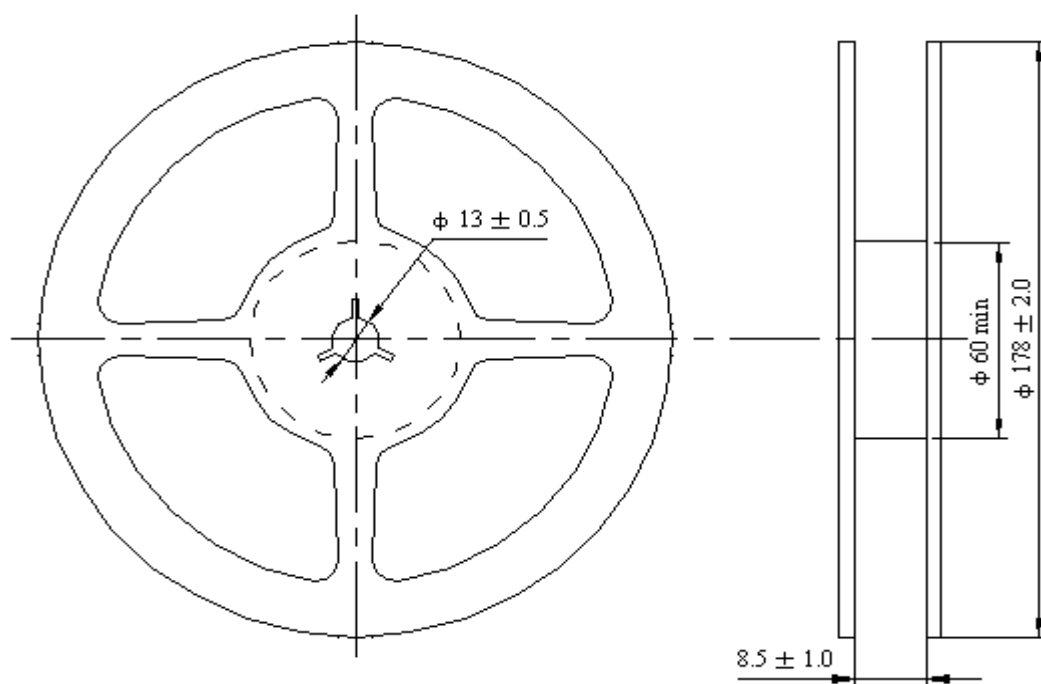
### 10.1 Plastic Tape



#### Remarks for Package

Reserve a length of 150~200mm for the trailer of the carrier and 250~300 mm for the leader of the carrier and further 250mm of cover tape at the leading part of the carrier.

### 10.2 Reel (3000 pcs/Reel)



### 10.3 Storage Period

Oxidizable, 12 months in vacuum sealed bag . Material, please repack within 168 hours by re-seal the package treatment after use them!

Storage Temperature Range : <30 degree C, Humidity : <60%RH

