

深圳市金航标电子有限公司  
Shenzhen golden beacon Electronics Co., LTD

## 产 品 技 术 规 格 书

### SPECIFICATION

|                               |
|-------------------------------|
| 产品型号 PART NO:      KH3216-A35 |
| 客户料号 CUSTOMER PART NO:        |
| 客户确认 CUSTOMER APPROVED BY:    |
| 确认日期 APPROVED DATE:           |

RoHS Compliant Parts

深圳市龙华区民治大道1079号展滔科技大厦C座C809室  
TEL: 0755-83040901    FAX: 0755-83040901

|                 |                                   |                 |
|-----------------|-----------------------------------|-----------------|
| 拟制 Prepared by: | 审核 Checked by :                   | 批准 Approved by: |
| 送样日期 Formed On  | 产品版本 Document Version<br>( V1.2 ) |                 |

## 目 录

### Table of contents

|                                                          |      |
|----------------------------------------------------------|------|
| 规格书版本更改记录 Version rejigger track record·····             | 3    |
| 1. 概述 Introduction·····                                  | 4    |
| 2. 外型尺寸及测试板焊盘尺寸 Dimensions·····                          | 4~5  |
| 3. 测试电路和匹配电路 Evaluation Board and Matching Circuits····· | 5    |
| 4. 电气性能 Electrical Characteristics·····                  | 6    |
| 5. 特性曲线 Characteristic curve·····                        | 6    |
| 6. 方向图 Radiation Pattern·····                            | 7~8  |
| 7. 可靠性试验后允许误差 Post Dependability Tolerance ·····         | 9    |
| 8. 可靠性试验 Dependability Test·····                         | 9~10 |
| 9. 回流焊温度 Reflow Soldering Standard Condition·····        | 10   |
| 10.包装尺寸 Packaging and Dimensions ·····                   | 11   |

## 产品规格书版本更改记录

### Version rejigger track record

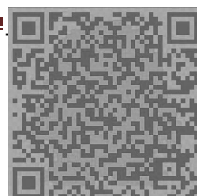
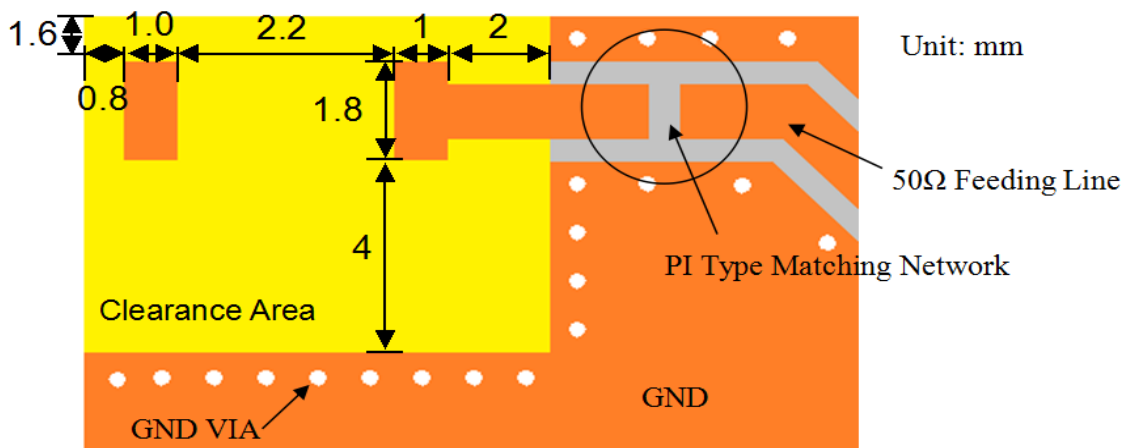
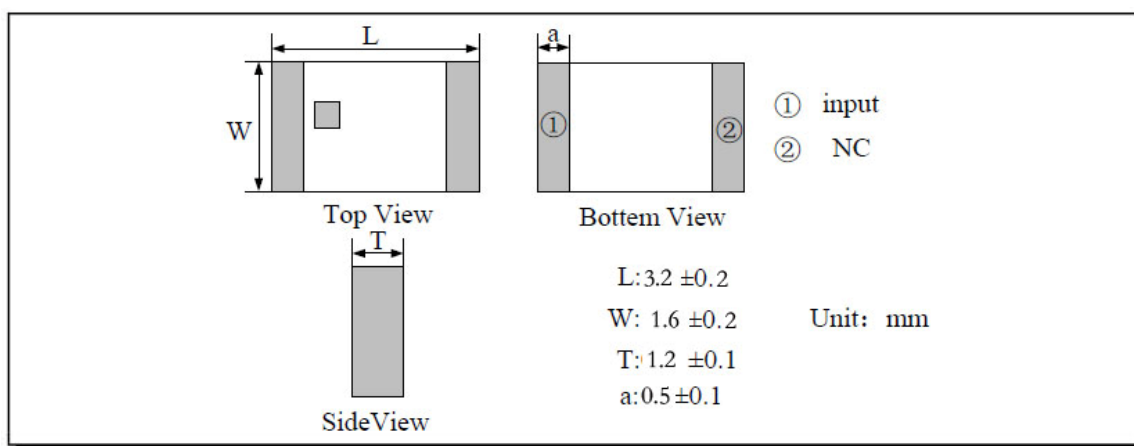
| 版本号<br>Version                                                                                                    | 更改记录 Rejigger         | 拟制<br>Prepared | 批准<br>Approve | 日期<br>Date   |
|-------------------------------------------------------------------------------------------------------------------|-----------------------|----------------|---------------|--------------|
| V1.0                                                                                                              | 首次发行                  | 姚富鑫            | 贺俊驹           | 2015. 12. 25 |
| V1.1                                                                                                              | 更改产品尺寸公差值             | 陈星             | 贺俊驹           | 2017. 05. 24 |
| V1.2                                                                                                              | 修正可靠性试验说明内容 8. 1~8. 4 | 姚富鑫            | 贺俊驹           | 2017. 11. 07 |
|                                                                                                                   |                       |                |               |              |
|                                                                                                                   |                       |                |               |              |
|                                                                                                                   |                       |                |               |              |
|                                                                                                                   |                       |                |               |              |
|                                                                                                                   |                       |                |               |              |
|                                                                                                                   |                       |                |               |              |
|                                                                                                                   |                       |                |               |              |
|                                                                                                                   |                       |                |               |              |
|                                                                                                                   |                       |                |               |              |
|                                                                                                                   |                       |                |               |              |
|                                                                                                                   |                       |                |               |              |
| 备注：<br>1、更改产品电性能指标时，版本号需更换（V1.0 换为 V2.0、V3.0……）；<br>2、更改产品测试方法（包括可靠性测试条件），或更改使用条件时，当前版本号加系列（V1.0 换为 V1.1、V1.2……）。 |                       |                |               |              |

## 1. 概述 INTRODUCTION

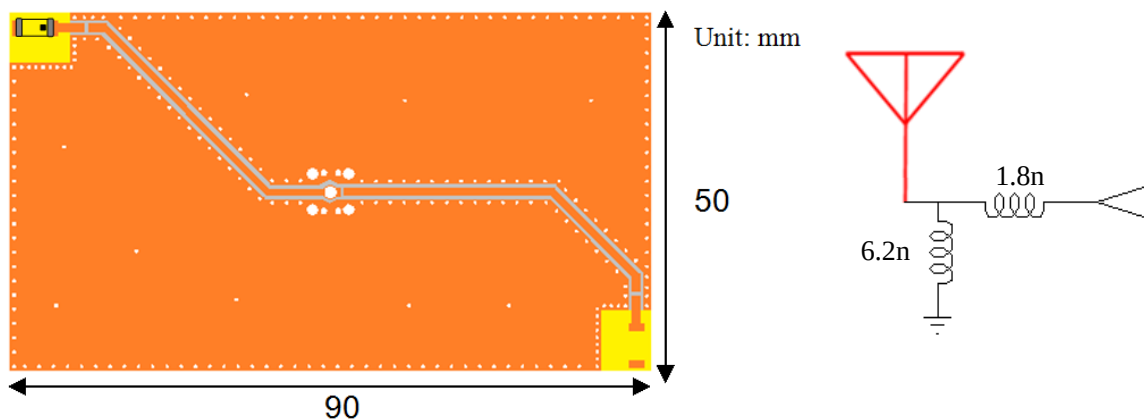
金航标微波多层陶瓷天线 LA 系列产品设计用于 WLAN、WiFi、蓝牙、PHS，手机多频天线, FM 等小体积 SMD 片式设计。

**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. 外型尺寸 Dimensions (Unit: r

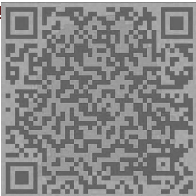


3. 测试电路和匹配电路      Evaluation Board and Matching Circuits

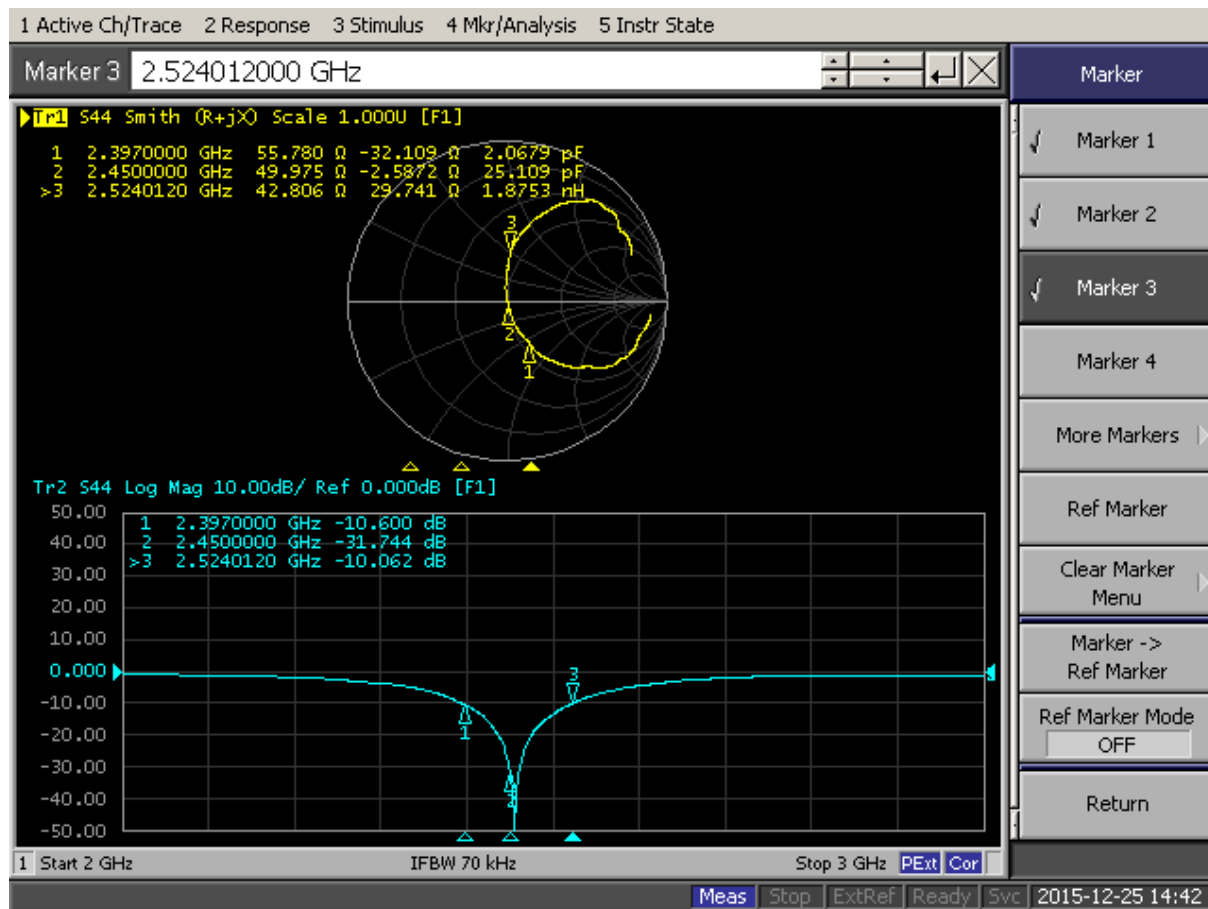


4. 电气性能      Electrical Characteristics

| No. | Item （项目）                           | Specifications （特性） |
|-----|-------------------------------------|---------------------|
| 4.1 | Central Frequency 中心频率(No matching) | 2875MHz             |
|     | (带匹配电路测试)After Matching             | 2450 MHz            |
| 4.2 | Band Width 通带宽度                     | 100MHz typ.         |
| 4.3 | Peak Gain 峰值增益                      | 5.19 dBi            |
| 4.4 | V.S.W.R 驻波比                         | ≤2.0                |
| 4.5 | Polarization 极化方式                   | Linear 线性           |
| 4.6 | Azimuth Beam width 方位角              | Omni-directional 全向 |
| 4.7 | Impedance 阻抗                        | 50 Ω                |

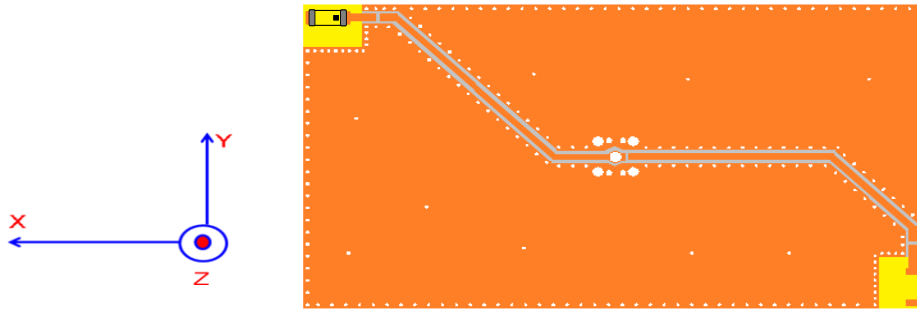


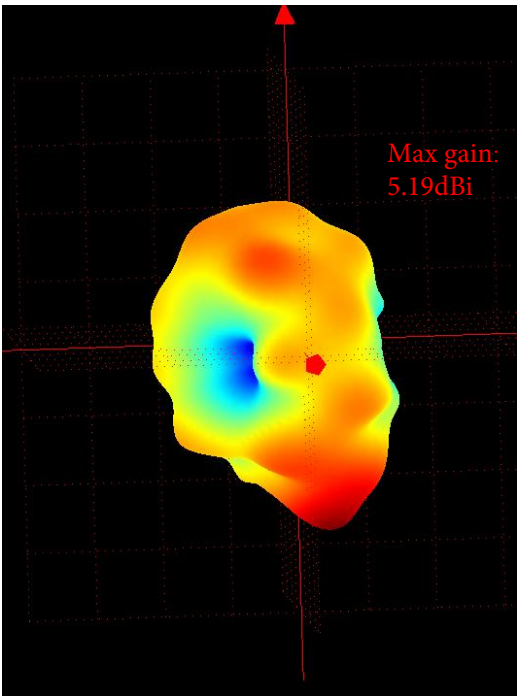
## 5. 特性曲线 Characteristic curve



## 6. 方向图 Radiation Pattern

coordinates:





|                    |       |       |       |
|--------------------|-------|-------|-------|
| 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. 可靠性试验后允许误差 Post Dependability Tolerance

经可靠性试验后允许比起始读数偏差见下表

Post Dependability Tolerance (Refer to the table)

| No. | Item (项目)              | Post Dependability Tolerance<br>(可靠性试验后允许附加误差) |
|-----|------------------------|------------------------------------------------|
| 7.1 | Central Frequency 中心频率 | $\pm 5$ MHz                                    |
| 7.2 | Band Width 通带宽度        | $\pm 5$ MHz                                    |
| 7.3 | Gain 增益                | $\pm 0.1$ dBi                                  |
| 7.4 | V.S.W.R (in BW) 驻波比    | $\pm 0.1$                                      |

## 8. 可靠性试验 Dependability Test

基准条件: 温度范围 Temperature range  $25 \pm 5^{\circ}\text{C}$   
 相对湿度范围 Relative Humidity range 55~75%RH  
 工作温度 Operating Temperature range  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

### 8.1 耐振动 Vibration Resist

在振动频率为 10~55Hz 振幅为 1.5mm 沿 X,Y,Z 方向各振动 2 小时后测试符合表 8.1~8.4 规定。

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 耐跌落冲击 Drop Shock

在 100cm 高度处按 X, Y, Z 三个面分别自由跌落在木制地板上共 3 次后测试符合表 8.1~8.4 规定。

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 耐焊接热 Solder Heat Proof

能承受经 120~150°C 的温度预热 120 秒后, 在 255°C+10°C 的焊锡浸 5±0.5 秒, 或 300°C-10°C 的电烙铁焊接 3±0.5 秒, 焊接面无损伤。

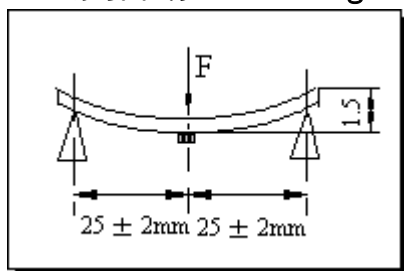
The device should be satisfied after preheating at 120°C~150°C for 120 seconds and dipping in soldering Sn at 255°C+10°C for 5±0.5 seconds, or electric iron 300°C-10°C for 3±0.5 seconds, without damage.

### 8.4 结合力试验 Tensile Strength of Terminal

在产品电极端子上或表面上应能承受 1kg 垂直拉力 10±1 秒。

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±1 seconds.

## 8.5 耐弯曲试验 Bending Resist Test



将产品按图焊在  $1.6 \pm 0.2\text{mm}$  的 PCB 板中间，由箭头方向施力： $1\text{mm/S}$ ，弯曲距离： $1.5\text{mm}$ ，保持  $5 \pm 1\text{S}$ ，产品金属层无脱落。

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 耐湿热特性 Moisture Proof

在温度为  $60 \pm 2^\circ\text{C}$ ，相对湿度  $90 \sim 95\%$  的恒温湿箱中放置 96 小时，在常温中恢复 1~2 小时后测试，符合表 8.1~8.4 规定。

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 高温特性 High Temperature Endurance

在温度为  $85 \pm 5^\circ\text{C}$  的恒温箱中放置  $96 \pm 2$  小时，在常温中恢复 1~2 小时后测试。符合表 8.1~8.4 规定。

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 低温特性 Low Temperature Endurance

在温度为  $-40^\circ\text{C} \pm 5^\circ\text{C}$  低温箱中放置  $96 \pm 2$  小时后恢复 1~2 小时测试符合表 8.1~8.4 规定。

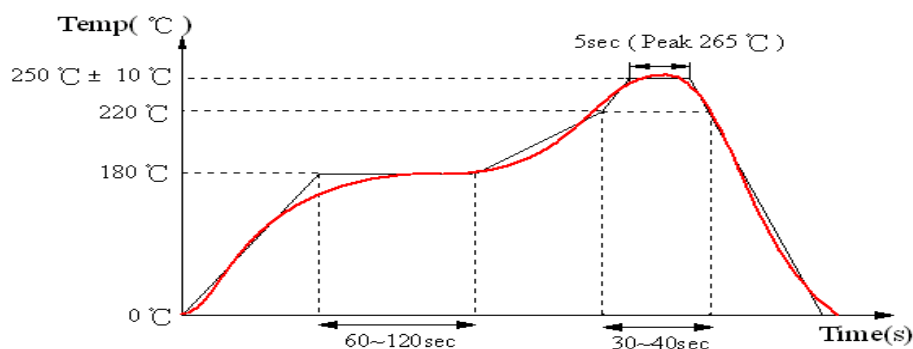
The device should also satisfy the electrical characteristics specified in paragraph 8.1~8.4 after exposed to the temperature  $-40^\circ\text{C} \pm 5^\circ\text{C}$  for  $96 \pm 2$  hours and to 2 hours recovery time under normal temperature.

## 8.9 温度循环 Temperature Cycle Test

在  $-40^\circ\text{C}$  温度中保持 30 分钟，再在  $+85^\circ\text{C}$  温度中保持 30 分钟，共循环 5 次后在常温中恢复 1~2 小时后测试符合表 8.1~8.4 规定。

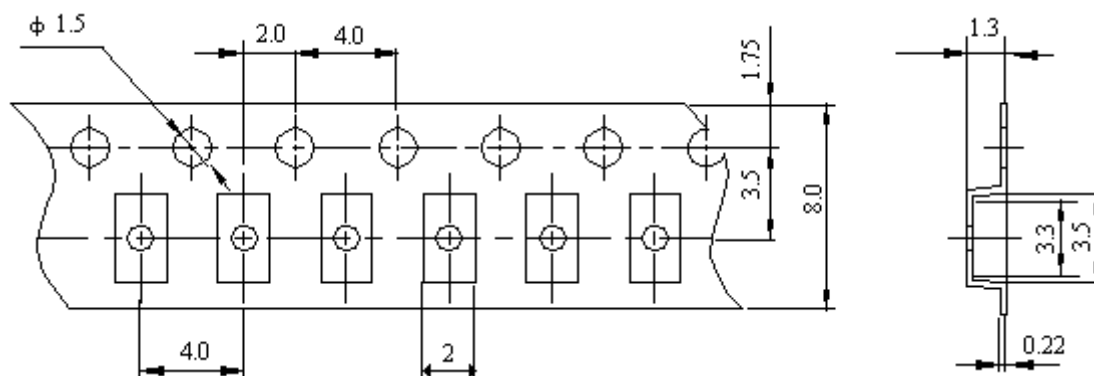
The device should also satisfy the electrical characteristics specified in paragraph 8.1~8.4 after exposed to the low temperature  $-40^\circ\text{C}$  and high temperature  $+85^\circ\text{C}$  for  $30 \pm 2$  min each by 5 cycles and 1 to 2 hours recovery time under normal temperature.

## 9. 回流焊温度 Reflow Soldering Standard Condition



## 10 包装尺寸 (3216) Packaging and Dimensions

### 10.1 Plastic Tape

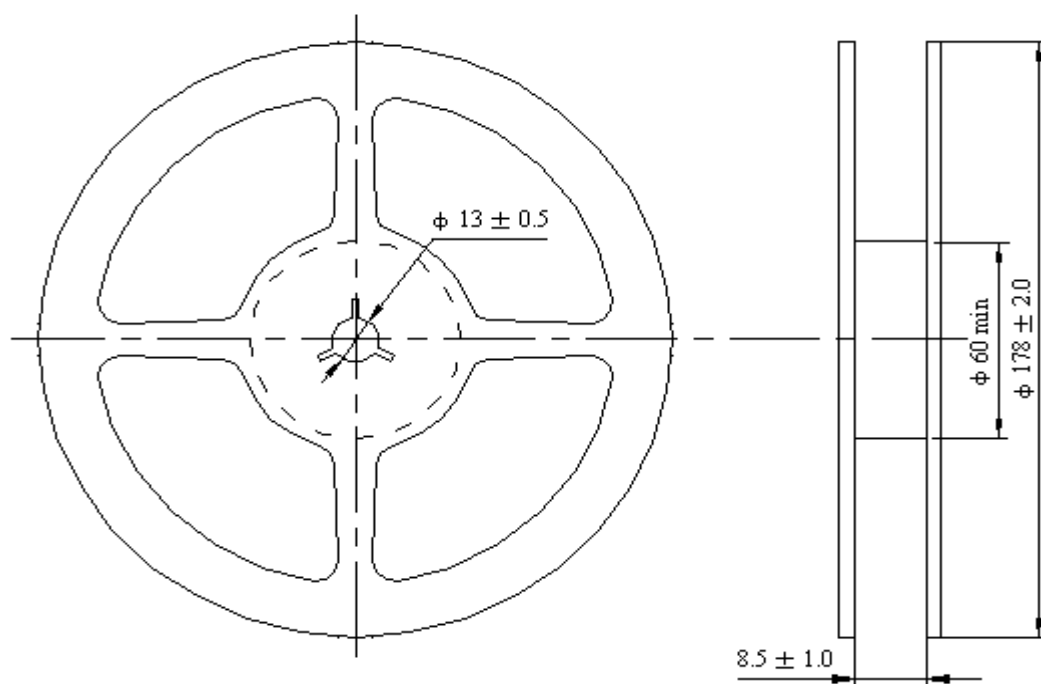


包装说明: Remarks for Package

载带尾部空穴长度 150~200mm, 载带头部空穴长度 250~300mm, 头部的盖带加长 250mm。

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 储存条件 Storage Period

易氧化产品, 真空状态储存一年. 产品拆封后请于 168 小时内用完或重新密封包装!

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

储存温度与湿度:

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

