

# 产 品 技 术 规 格 书

## SPECIFICATION

产品型号 PART NO: LA1022P2450-A03

客户料号 CUSTOMER PART NO:

客户确认 CUSTOMER APPROVED BY:

确认日期 APPROVED DATE:

RoHS Compliant Parts

中国浙江省嘉兴市经济开发区正原路 66 号

No.66 ZhengyuanRoad, Economic Development Zone,Jiaxing,Zhejiang,China

TEL: 0086-573-83651818

FAX: 0086-573-83651858

|                 |                                   |                 |
|-----------------|-----------------------------------|-----------------|
| 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>( V1.1 ) |                 |

## 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. 型号 Part Number                                   | 4   |
| 3. 外形尺寸 Dimension                                   | 4   |
| 4. 测试电路和匹配电路 Evaluation Board and Matching Circuits | 4~5 |
| 5. 电气性能 Electrical Characteristics                  | 5   |
| 6. 方向图 Radiation Pattern                            | 6   |
| 7. 可靠性试验后允许误差 Post Dependability Tolerance          | 7   |
| 8. 可靠性试验 Dependability Test                         | 7~8 |
| 9. 回流焊温度 Reflow Soldering Standard Condition        | 8   |
| 10. 包装尺寸 Packaging and Dimensions                   | 9   |

## 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                                                        | 王剑强            | 陆德龙           | 2007. 11. 30 |
| V1.1                                                                                                              | 更新回流焊温度曲线图表<br>新增 11.1 产品包装摆放方向示意图<br>修正 11.3 产品储存条件为 MSL:1 | 潘枫             | 卢冠宇           | 2018. 11. 20 |
|                                                                                                                   |                                                             |                |               |              |
|                                                                                                                   |                                                             |                |               |              |
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|                                                                                                                   |                                                             |                |               |              |
|                                                                                                                   |                                                             |                |               |              |
| 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……）。 |                                                             |                |               |              |

## Specification

## 1. 概述 INTRODUCTION

"佳利"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。

"GLEAD" 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. 型号 Part Number

LA 1022 P 2450 – A03

产品名称，编号 A03/Product Name: A03

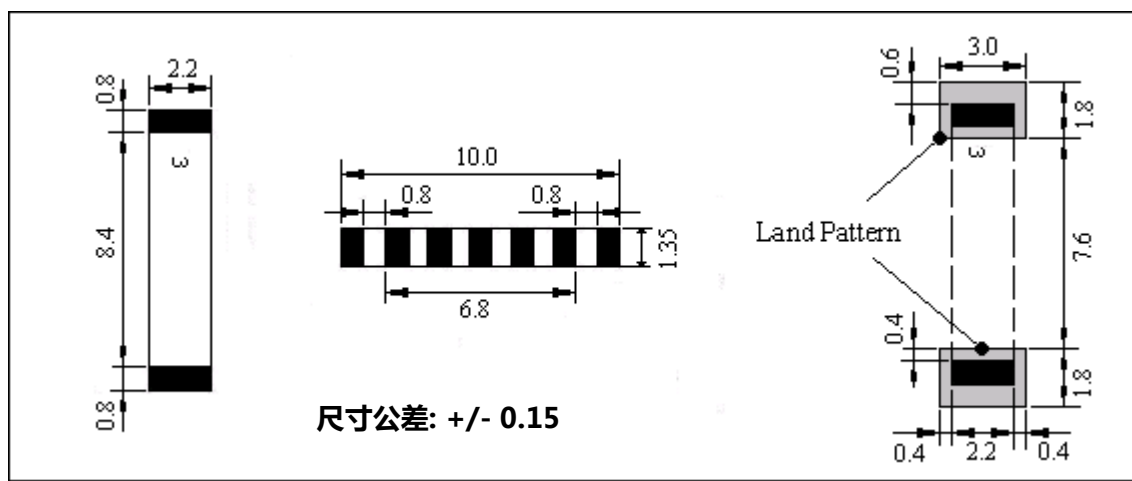
天线频率/ Antenna Frequency: 2450 MHz

产品设计结构 P 型/Planar Structure

产品尺寸/Size: 10.0×2.2×1.35

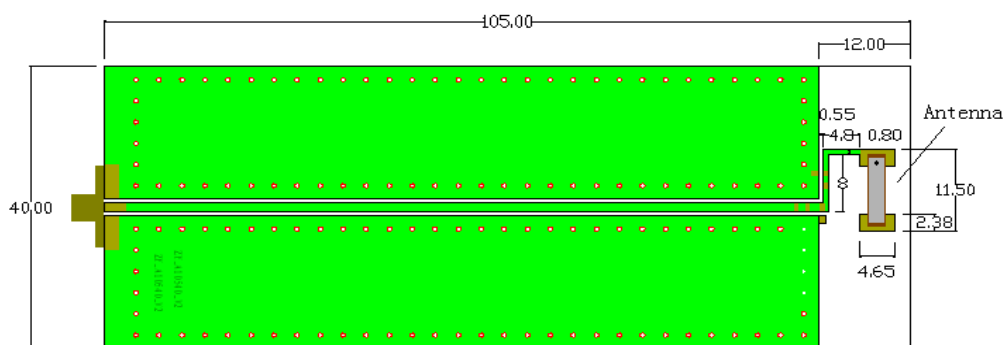
多层结构天线/Multi-layer Antenna

## 3. 外型尺寸 Dimensions (Unit: mm)



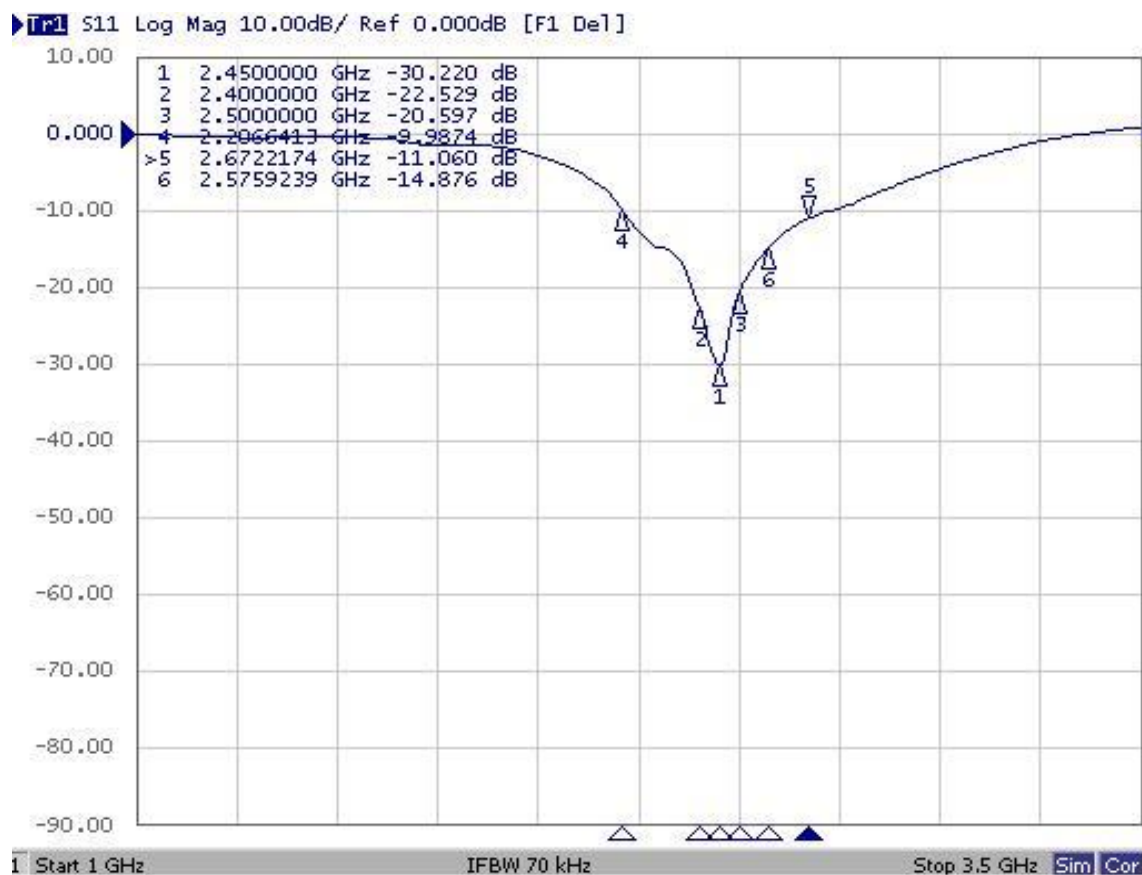
## 4. 测试电路和匹配电路 Evaluation Board and Matching Circuits

## a) 无匹配电路 (Without Matching Circuits)



## Specification

b) 无匹配测试回损 Return Loss (S11)



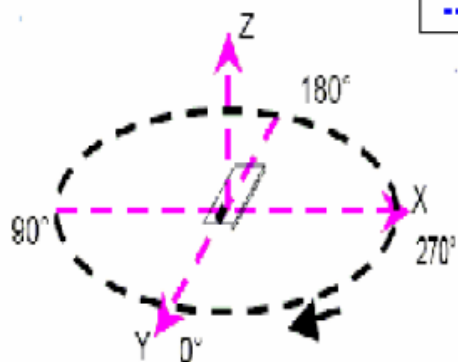
## 5. 电气性能 Electrical Characteristics

| No. | Item (项目)                        | Specifications (特性)             |
|-----|----------------------------------|---------------------------------|
| 5.1 | Working Central Frequency 中心工作频率 | 2450 MHz                        |
| 5.2 | Band Width 通带宽度                  | $\geq 300$ MHz ( 2300~2600MHz ) |
| 5.3 | Gain 增益                          | 0~2 dBi                         |
| 5.4 | V.S.W.R (in BW) 驻波比              | $\leq 1.5$                      |
| 5.5 | Polarization 极化方式                | Linear 线性                       |
| 5.6 | Azimuth Beam width 方位角           | Omni-directional 全向             |
| 5.7 | Efficiency (效率)                  | Bluetooth>65%                   |
| 5.8 | Impedance 阻抗                     | 50 $\Omega$                     |

## Specification

## 6. 方向图 Radiation Pattern

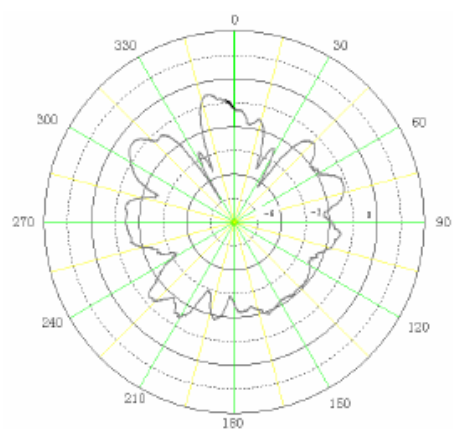
XY-V/XY-H



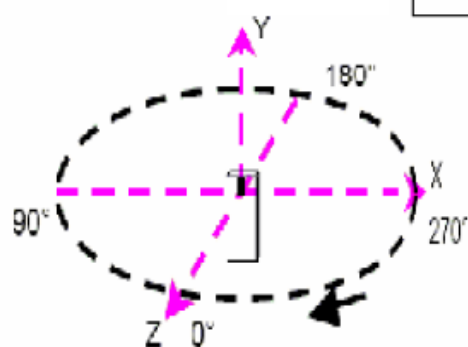
XY cut @2.45GHz

— Vertical

..... Horizontal



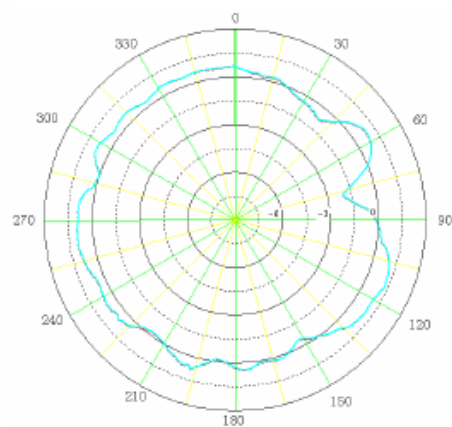
XZ-V/XZ-H



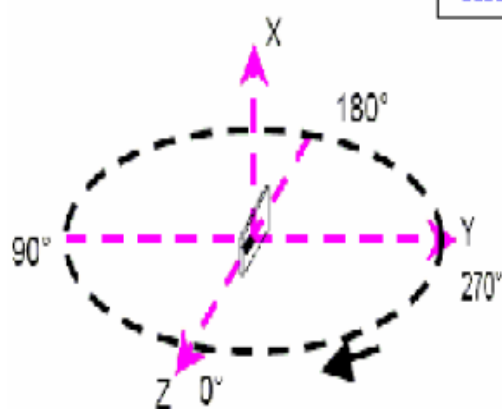
XZ cut @2.45GHz

— Vertical

..... Horizontal



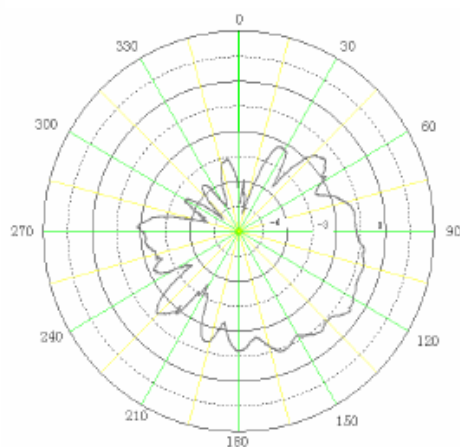
YZ-V/YZ-H



YZ cut @2.45GHz

— Vertical

..... Horizontal



## Specification

## 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 | $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ |
| 贮藏温度       | Storage 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 7.1~7.4 规定。

The device should satisfy the electrical characteristics specified in paragraph 7.1~7.4 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 7.1~7.4 规定。

The device should satisfy the electrical characteristics specified in paragraph 7.1~7.4 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

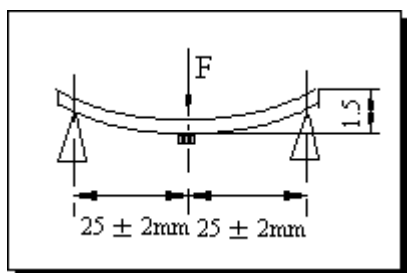
能承受经 120~150℃ 的温度预热 120 秒后, 在 255℃+10℃ 的焊锡浸 5±0.5 秒, 或 300℃-10℃ 的电烙铁焊接 3±0.5 秒, 焊接面无损伤。

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

## 8.4 推力试验 Adhesive Strength of Termination

在产品电极端子上或表面上可承受 5N( $\leq 0603$ ); 10N(>0603) 水平推力 10±1 秒而无明显外观损坏与电极移位。

The device have no remarkable damage or removal of the termination after horizontal force of 5N( $\leq 0603$ ); 10N(>0603) with 10±1 seconds.

**Specification****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 7.1~7.4 规定。

The device should satisfy the electrical characteristics specified in paragraph 7.1~7.4 after exposed to the temperature  $60 \pm 2^\circ\text{C}$  and the relative humidity  $90 \sim 95\% \text{ RH}$  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 7.1~7.4 规定。

The device should satisfy the electrical characteristics specified in paragraph 7.1~7.4 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**

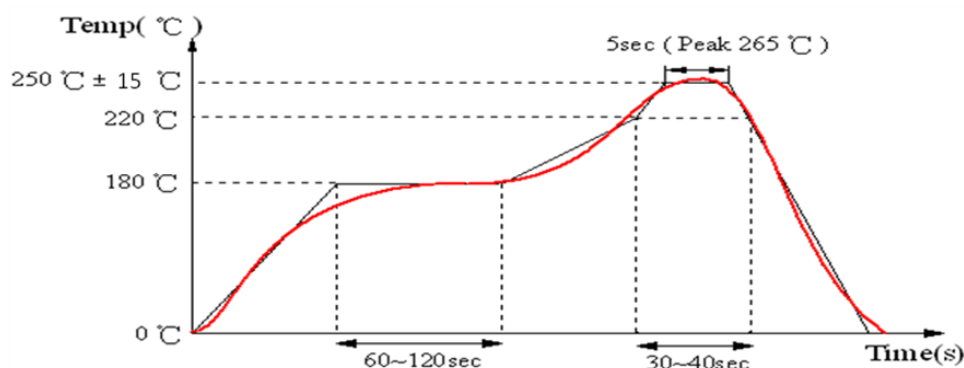
在温度为  $-40^\circ\text{C} \pm 5^\circ\text{C}$  低温箱中放置  $96 \pm 2$  小时后恢复 1~2 小时测试符合表 7.1~7.4 规定。

The device should also satisfy the electrical characteristics specified in paragraph 7.1~7.4 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 7.1~7.4 规定。

The device should also satisfy the electrical characteristics specified in paragraph 7.1~7.4 after exposed to the low temperature  $-40^\circ\text{C}$  and high temperature  $+85^\circ\text{C}$  for  $30 \pm 2 \text{ min}$  each by 5 cycles and 1 to 2 hours recovery time under normal temperature.

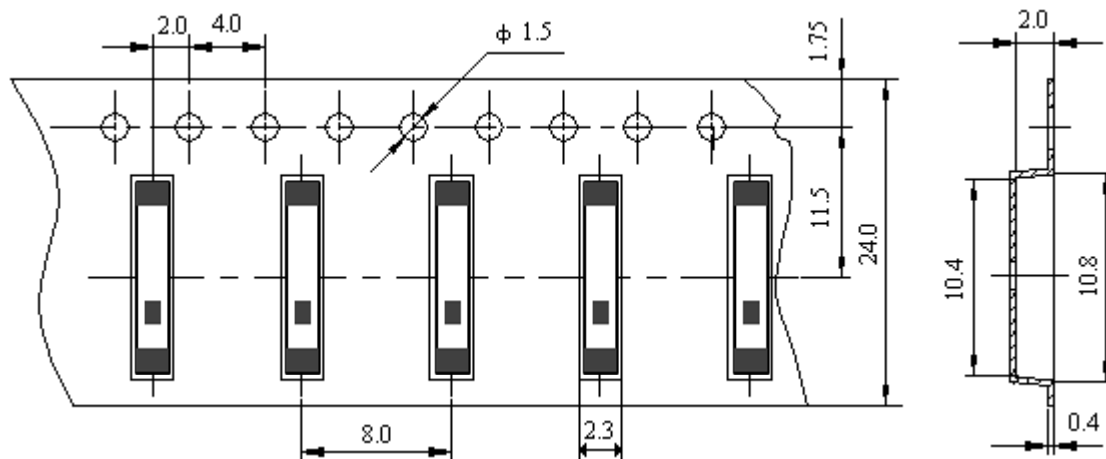
**9 回流焊温度 Reflow Soldering Standard Condition**



### Specification

## 10 包装尺寸 (1022) Packaging and Dimensions

### 10.1 Plastic Tape

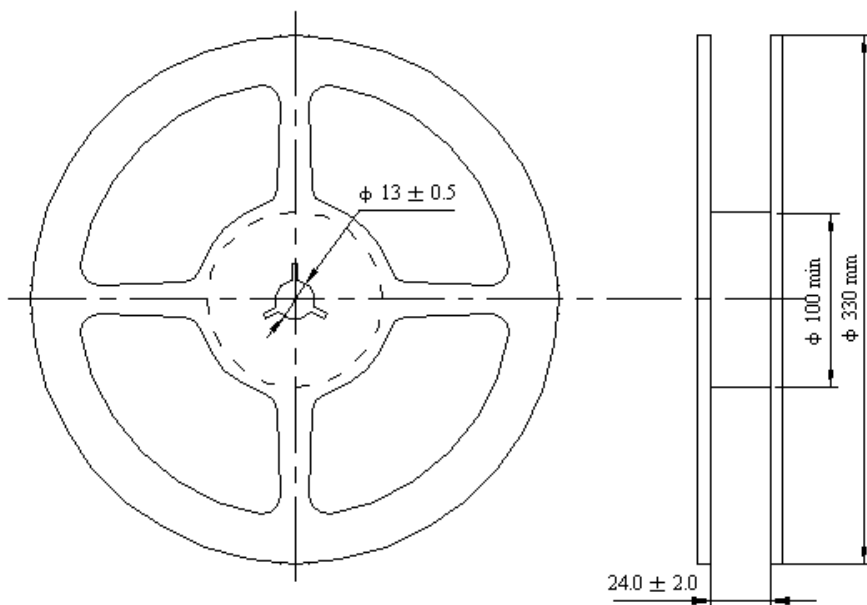


包装说明: Remarks for Package

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

产品收到后半年内使用完毕。

Product should be used within six months of receipt.

湿敏等级 1 / 储存温度与湿度:

MSL 1 / Storage Temperature Range : <30 degree C, Humidity : <85%RH

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Specification