

CUSTOMER: 好麦创新

日期 DATE: 2025/09/01

陶瓷天线规格书 SPECIFICATION

产 品 名 称 PRODUCT NAME: 叠层片式天线

Multilayer Chip Antenna

贵 司 料 号 YOUR PART NO.:

敝 司 料 号 OUR PART NO.: LR3216H2450-A02

版本号 VERSION NO.: V1.0

接受 RECEPTION

THE SPECIFICATION HAS BEEN ACCEPTED.

该纳入仕様书已被我司接受

日期:
DATE:

公司:
COMPANY:

批准
CFMD

审核
CHKD

接收
RCVD

本纳入仕様书共 13 页

MANUFACTURING NAME

深圳市林荣科技有限公司

SHENZHEN LINRONG TECHNOLOGY CO.,LTD TEL:

86-755-32903855

地址：深圳市龙华区大浪街道华荣路联建工业园1栋3楼

ADD : Floor3, building1, LianJian Industrial Park,
Huarong Road, Dalang street, Longhua
District, Shenzhen

CFMD. 批准	CHKD. 审核	DSGD. 担当
梁启新	赖定权	曾艳锋

纳入仕様书改定履历 MODIFY HISTORY OF SPECIFICATION

NO.	DATE	CONTENT	REV	APPROVED
1	2006-10-25	初稿 Constitute	1.0	张海恩

目录 CATALOG

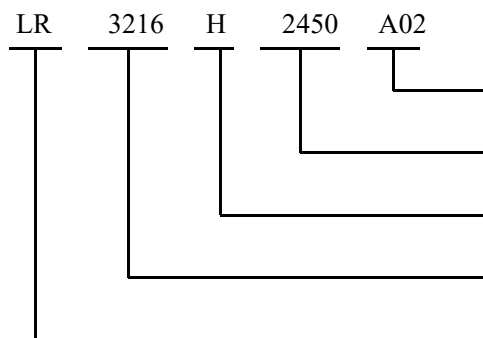
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1 适用范围 Scope

波叠层片式介质天线 MGMA 系列产品，设计用于 WLAN、HomeRF、Bluetooth、Module 等，小体积 SMD 片式设计。

Microwave Multilayer Chip Antenna series are designed to be used in WLAN、HomeRF、Bluetooth、Module、etc, small size SMD chip design.

2 品名构成 Product Identification



标准规格，编号:A02/Normaling Type: A02

中心频率/ Center Frequency: 2450MHz

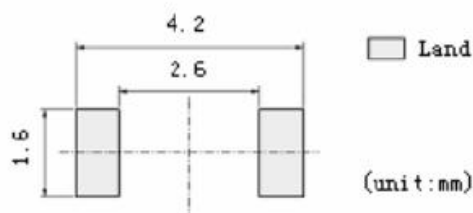
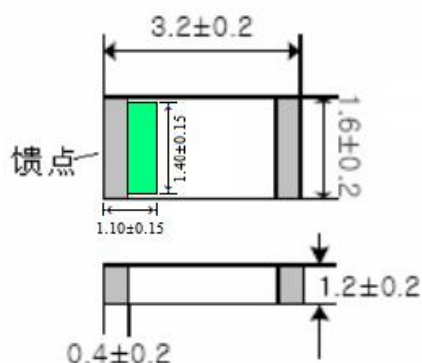
结构: 过孔设计

产品尺寸: $3.2 \times 1.6 \times 1.2$ S 型

多层结构天线/Multi-layer Chip Antenna

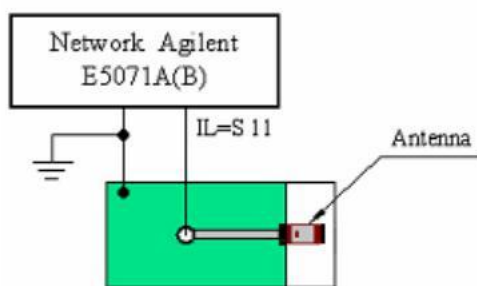
3 形状、尺寸 Appearance and Dimensions

Unit: mm

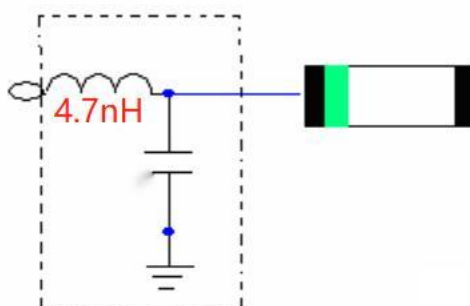


All the technical data and information specified herein are subject to variation without prior notice

4 测试电路及测试条件 Test Circuit and Testing Conditions



无匹配电路测试-3.5GHz中心频率
No Matching Circuit Testing



LC 匹配电路
LC Matching Circuit Testing

除非另有规定，否则在以下条件下测试 <Unless otherwise specified>

温度 Temperature : Ordinary Temperature (5 to 35℃)

湿度 Humidity : Ordinary Humidity (25 to 85% RH)

大气压强 Atmospheric Pressure : 86 to 106 kPa

当对测量结果有疑问时<In case of doubt>

温度 Temperature : 20±2℃

湿度 Humidity : 55 to 75% RH

大气压强 Atmospheric Pressure : 86 to 106 kPa

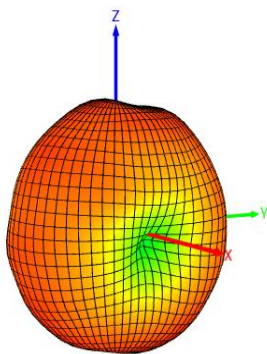
5 电气性能 Electrical Characteristics

操作温度范围 Operating Temperature Range : -40 to +85℃

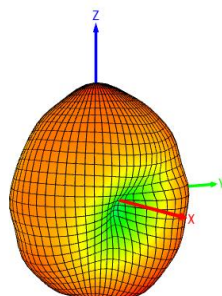
保存温度范围 Storage Temperature Range : -40 to +85℃

Antenna efficiency:

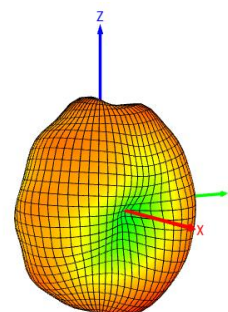
Freq (MHz)	Gain (dBi)	Efficiency (%)	Freq (MHz)	Gain (dBi)	Efficiency (%)
2300	-2.13	28.47	2460	-0.67	35.38
2310	-2.19	28.78	2470	-0.52	35.92
2320	-2.00	29.57	2480	-0.38	36.27
2330	-1.82	30.28	2490	-0.22	36.80
2340	-1.72	30.89	2500	-0.13	37.35
2350	-1.42	31.57	2510	-0.11	36.96
2360	-1.13	32.24	2520	-0.17	36.25
2370	-0.98	32.55	2530	-0.24	35.91
2380	-0.91	32.64	2540	-0.39	35.86
2390	-0.83	33.66	2550	-0.51	36.16
2400	-0.85	34.67	2560	-0.56	36.48
2410	-0.95	34.93	2570	-0.48	36.81
2420	-1.03	35.34	2580	-0.43	36.72
2430	-1.02	35.47	2590	-0.38	36.22
2440	-0.95	35.44	2600	-0.35	35.82
2450	-0.86	35.25			



2400MHz



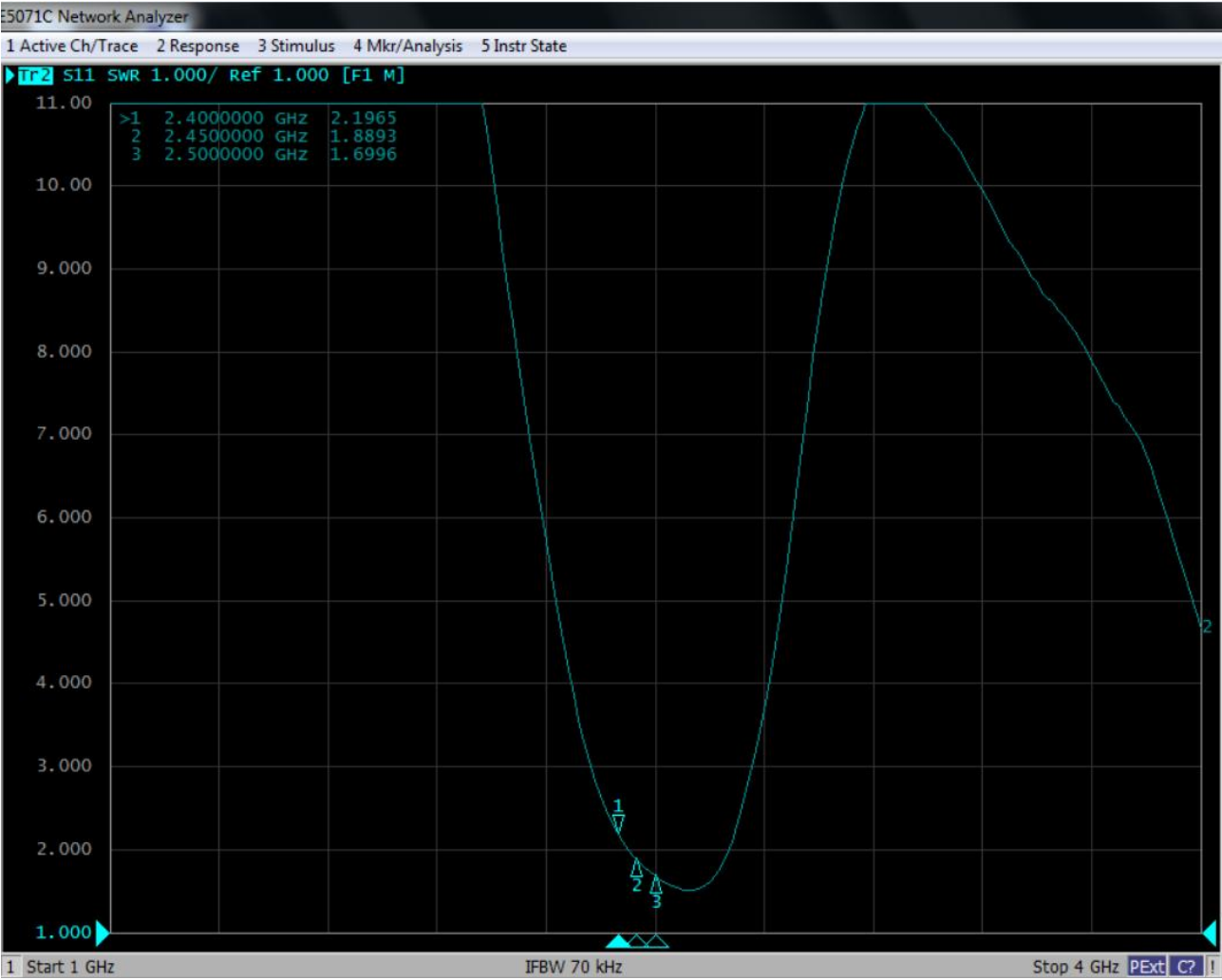
2450MHz



2500MHz

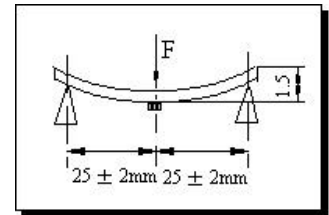
6 特性曲线 Characteristic curve

Antenna VSWR:



7 信赖性试验 Reliable Performance

NO.	Item	Specifications	Test Methods	
7-1	Solder-Ability 可焊性	More than 90% of termination should be covered with new solder. 端电极焊锡覆盖率为90%以上。	焊锡 Solder: Sn: Pb=	100:0
			焊锡温度 Temperature:	255℃+5℃/-0℃
			助焊剂 Flux: 松香 rosin	
			浸渍时间 Duration:	5±0.5s
7-2	Leaching Resistance 耐焊性	More than 75% of termination Should be covered with new solder. 端电极焊锡覆盖率为75%以上	焊锡 Solder: Sn: Pb=	100:0
			焊锡温度 Temperature:	270℃+2℃/-0℃
			助焊剂 Flux: 松香 rosin	
			浸渍时间 Duration:	10±0.5s
7-3	Terminal Strength 端头强度	The terminal and body should be no damage 端头和瓷体不应见损伤	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. 在产品电极端子上或表面上应能承受 1kg 垂直拉力 10±1 秒	
7-4	Bending Strength 弯曲试验	No mechanical damage should be noticed 不应见机械损伤	Weld the product to the center part of the PCB with the thickness 1.6±0.2mm as the illustration shows, and keep exerting force arrow-ward on it at speed of: 1mm/S, and hold for 5±1S at the position of 1.5mm bending distance, so far, any peeling off of the product metal coating should not be detected. 将产品按图焊在 1.6±0.2mm 的 PCB 板中间, 由箭头方向施力 1mm/S, 弯曲距离 1.5mm, 保持 5±1S, 产品金属层无脱落。	



8 焊接条件 Recommended Soldering Conditions

1、焊剂 Flux, Solder

① 使用松香助焊剂，禁止使用卤化物含量超过 0.2wt%的强酸性助焊剂。

Use rosin-based flux. Don't use highly acidic flux with halide content exceeding 0.2wt% (chlorine conversion value).

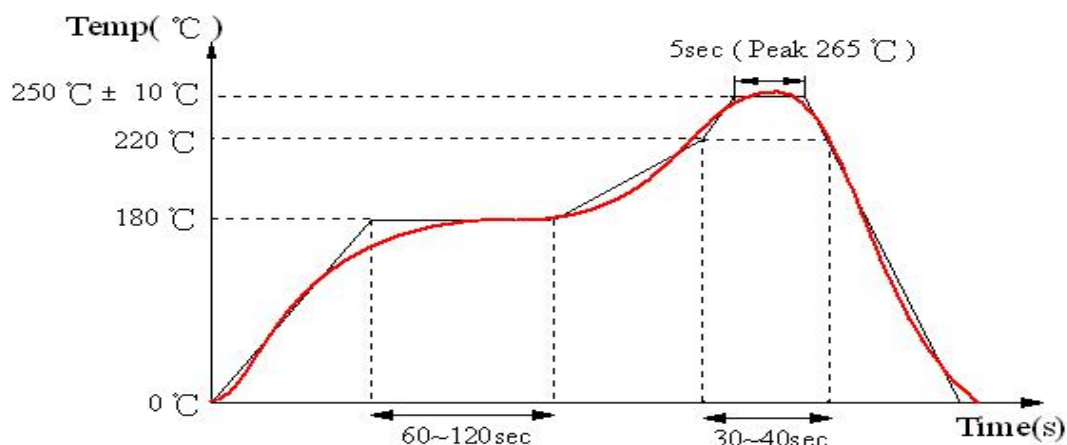
② 使用纯锡焊料 Use Sn solder.

2、回流焊条件 Reflow soldering conditions

●预热时，产品表温与焊料温度的温差最大不允许超出 150℃，焊接完后冷却时，产品表温与溶剂温度之间的温差最大不允许超出 100℃。预热不足有可能引发产品表面裂纹，导致产品品质下降。

Pre-heating should be in such a way that the temperature difference between solder and product surface is limited to 150℃ max. Cooling into solvent after soldering also should be in such a way that temperature difference is limited to 100℃ max. Unwrought pre-heating may cause cracks on the product, resulting in the deterioration of products quality.

●标准回流焊曲线 Standard soldering profile.



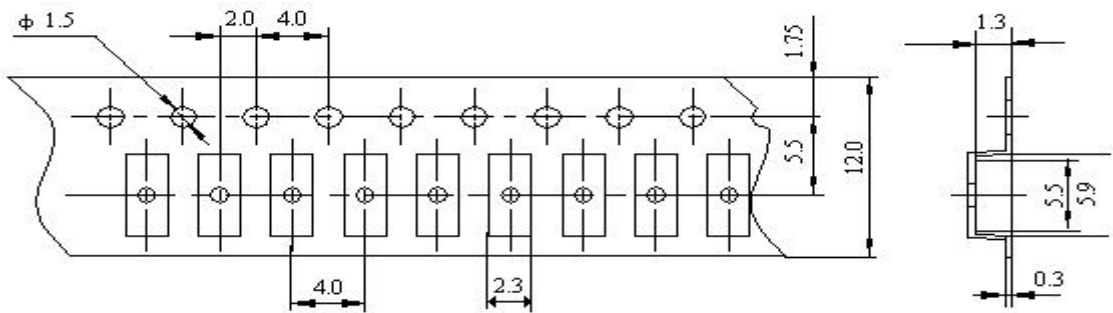
3、手工返工 Reworking with soldering iron

当使用电烙铁进行手工焊接时，以下条件必须严格遵守 The following conditions must be strictly followed when using a soldering iron.

预热 Pre-heating	150℃, 1 minute
尖端温度 Tip temperature	350℃ max
输出功率 Soldering iron output	80w max
电烙铁头尖端尺寸 End of soldering iron	φ3mm max
焊接时间 Soldering time	3 seconds max

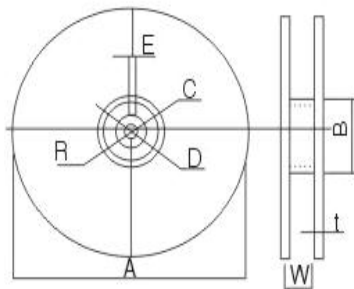
9 包装 Packaging

① 编带尺寸 Dimensions of Tape:



② 带轮尺寸 Dimensions of Reel

Unit: mm



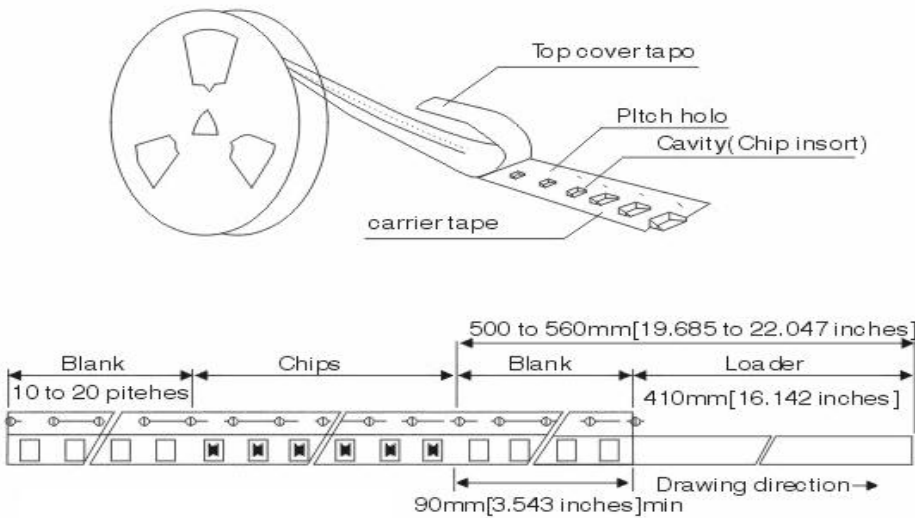
Reel material: PS (Polystyrene)

A	178 $\pm$ 2
B	60 $\pm$ 2
C	13.0 $\pm$ 0.5
D	21.0 $\pm$ 0.8
E	2.0 $\pm$ 0.5
W	12.5 $\pm$ 1.5
t	1.2 $\pm$ 0.2
R	1.0 $\pm$ 0.25

③ 编带抗拉强度 Pulling strength of tapes:

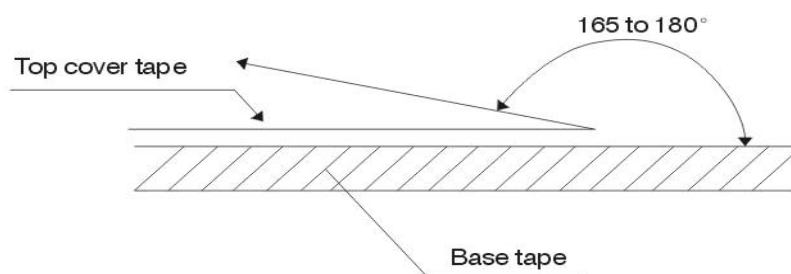
载带 Carrier tape	10N or more (1kgf or more)
上盖带 Cover tape	5N or more (1kgf or more)

④ 编带简图及拉伸方向 Taping figure and drawing direction:



⑤ 盖带的剥离强度 Peeling strength of cover tape:

盖带 Cover tape	0.3~0.7N (30gf~70gf)
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测试条件 Test condition:

- 1) 剥离角度 peel angle: 165°~180° vs. carrier tape.
- 2) 剥离速度 peel speed: 300mm/min±10%.

⑥ 包装数量 Packaging quantities: 3000 PCS / Reel

10 装箱清单及标志 Packing documents and marking

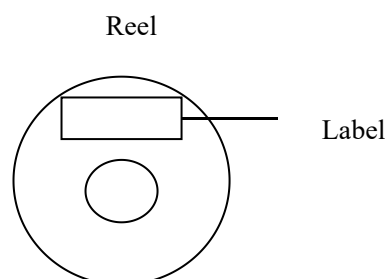
1. 包装文件 Packing documents

Packing includes the following:

- a. 装箱清单 Packing list.
- b. 合格证书 Certificate of compliance.

2. 盘上标记 Marking on reels:

- a LR 料号 LR Part No.
- b 生产批号 Lot number
- c 盘装数量 Quantity per reel
- d 检验员号 Inspector No.



以上内容必须在标签上注明.All above shall be shown on marking label

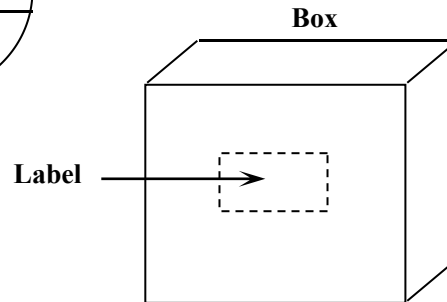
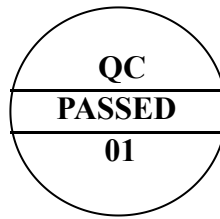
LR

CUSTOMER:	P. O. NO	
CUSTOMER PART NO:	DATE CODE	LOT NO
MG PART NO:	QUANTITY	INSP. NO

■■■■ ■■■■ ■■■■ ■■■■
MG PART NO

检验合格后, 检验员在标签上盖上合格章。合格章如下所示: The eligible reels will be pressed a mark onto

the surface. The mark will be as following:



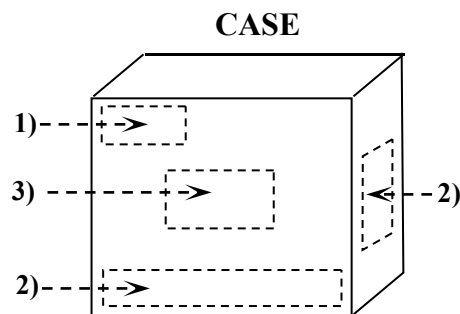
3. 内包装盒标记:Marking on inner box

- a. 型号 LR part No.
- b. 每盒数量 Quantity per box
- c. 包装日期 Date

以上内容必须在标签上注明（标签见 11.2 所示）。Above shall be shown on marking label (The marking label is shown in item 9.2).

4. 外包装箱标记 Marking on outer case:

- 1) 制造商 Manufacturer: “LR” ①
“中国深圳制造” “Made in Shenzhen CHINA”②
- 2) 发运标记 Ship marking:
“向上” “UP”, “小心轻放”“HAND CARE”, “防潮”“MOISTURE-PROOF”.
- 3) 包装标签包括以下内容 Packing label include the following:
 - a. 型号 LR Part No
 - b. 总数量 Total quantity per case
 - c. 包装日期 Date;



以上内容必须在标签上注明。（参见 11.2 所示）

All above shall be shown on marking label.

(The marking label is shown in item 11.2)

11 保管 Storage

①. 保管期限 Storage period

距 LR 出厂检验时间六个月内，产品可以使用；检验时间可以通过包装外侧标记的检验号确认；若时间超出六个月，应检查焊接性能后方可使用。Products which inspected in LR over 6 months ago should be examined and used, which can be confirmed with inspection No. marked on the container. Solder ability should be checked if this period is exceeded.

②. 保存条件 Storage conditions

●存放货物的库房应满足以下条件 Products should be storage in the warehouse on the following conditions

温度 Temperature: $\leq 40^{\circ}\text{C}$

湿度 Humidity : $\leq 70\%$ relative humidity

不允许温、湿度有极剧变化。No rapid change on temperature and humidity

●禁止将产品保管在腐蚀性物质中，例如硫磺、氯气或者酸，否则将引起端头氧化，导致降低焊接性。Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, or it may cause oxidization of electrode, resulting in poor solder ability.

●为了避免受潮气、灰尘等物质的影响，产品应保管于货架上。Products should be storage on the palette for the prevention of the influence from humidity, dust and so on.

●产品保管在库房中时，应避免热冲击，振动以及直接光照等等。Products should be storage in the warehouse without heat shock, vibration, and direct sunlight and so on.

●产品应密封包装 Products should be storage under the airtight packaged condition.