

CUSTOMER: 好麦创新

日期 DATE: 2025/09/01

纳入仕様书 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.: LR5220H2450-A03

版本号 VERSION NO.: V1.1

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

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梁启新	付迎华	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
2	2007.12.01	修改 MARK 标识 Update the mark pattern	1.1	张海恩

目录 CATALOG

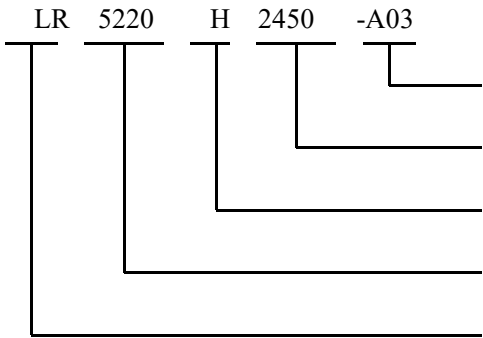
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1 适用范围 Scope

叠层片式天线 LR 系列产品，设计用于 WLAN、蓝牙天线、PHS，手机多频天线，GPS 等小体积 SMD 片式设计。

Multilayer Chip Antenna series are designed to be used in WLAN、Bluetooth、PHS、 Multiple-band Mobile phone antenna, GPS, etc and compact size SMD chip design.

2 品名构成 Product Identification



产品名称，编号 A01/Normaling Type: A04

中心频率/ Center Frequency: 2450MHz

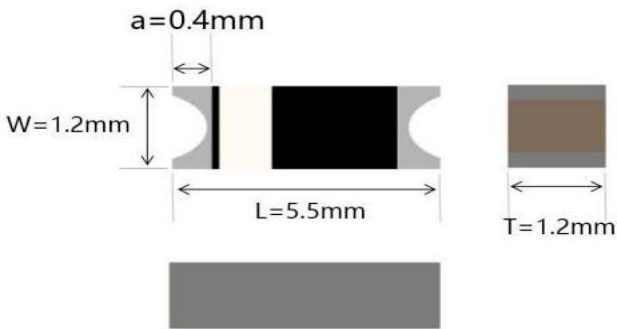
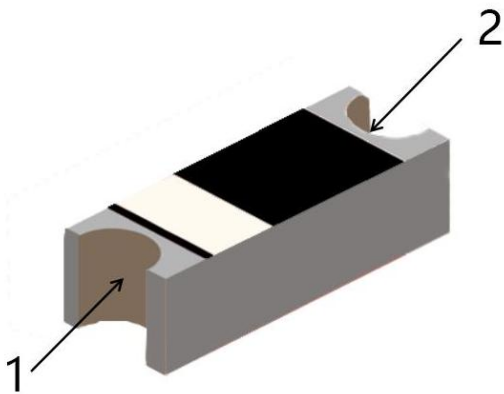
结构系列/Structure Series

产品尺寸/Size: 5.2×2.0×1.1 mm

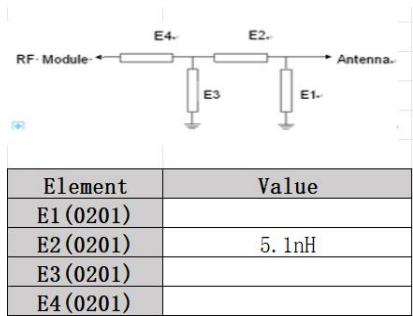
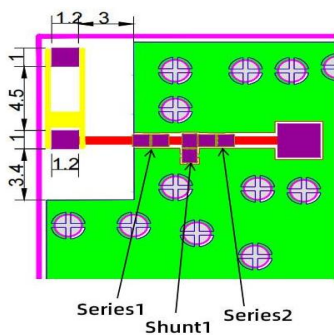
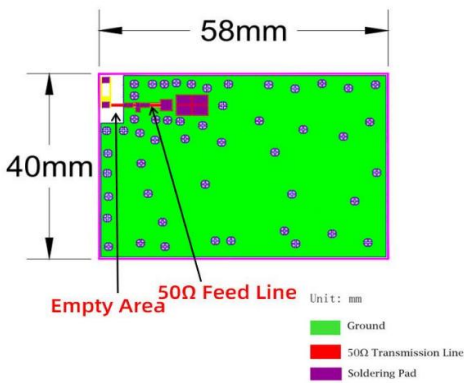
多层结构天线/Multi-layer Antenna

3 形状、尺寸 Appearance and Dimensions

(Unit: mm)



4 测试电路 Test Circuit



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

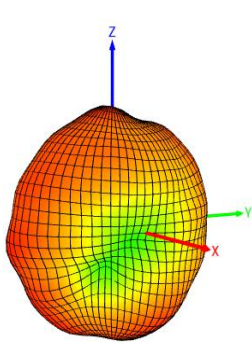
5 电气性能 Electrical Characteristics

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

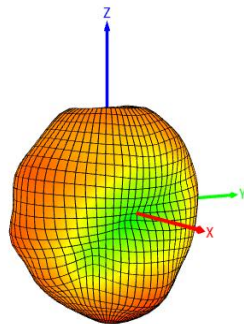
保存温度范围 Storage Temperature Range : -40 to +85℃

Antenna efficiency:

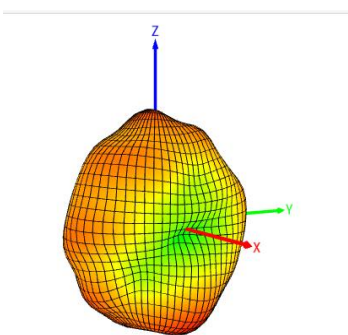
Freq (MHz)	Gain (dBi)	Efficiency (%)	Freq (MHz)	Gain (dBi)	Efficiency (%)
2300	-4.56	14.77	2460	-0.99	32.76
2310	-4.46	15.86	2470	-0.86	34.53
2320	-4.18	17.05	2480	-0.96	36.06
2330	-3.93	17.83	2490	-1.09	37.25
2340	-3.89	18.64	2500	-1.03	38.47
2350	-3.94	19.42	2510	-1.00	39.39
2360	-3.87	20.28	2520	-1.02	39.90
2370	-3.84	21.49	2530	-0.95	40.52
2380	-3.80	22.84	2540	-0.81	41.72
2390	-3.25	24.51	2550	-0.63	42.62
2400	-2.72	25.92	2560	-0.60	42.41
2410	-2.43	27.00	2570	-0.45	42.64
2420	-1.95	28.26	2580	-0.55	42.50
2430	-1.74	29.11	2590	-0.73	41.63
2440	-1.57	30.04	2600	-0.83	40.54
2450	-1.27	31.26			



2400MHz



2450MHz



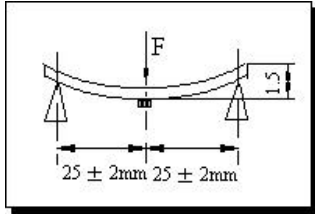
2500MHz

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。 	

NO.	Item	Specifications	Test Methods
7-5	Drop 跌落	Post Environmental Tolerance (环境试验后允许附加误差) 1 Center Frequency 中心频率: ±25 MHz; 2 Band Width 通带宽度: ±20 MHz; 3 Gain 增益: ±0.2 dBi 4 V.S.W.R (in BW) 驻波比: ±0.5 dB;	Drop 10 times on a concrete floor from a height of 1m. 从距混凝土地面 1m 高度自由落下, 重复 3 次。
7-6	Vibration 振动		频率 Frequency: 10 to 55Hz 振幅 Amplitude: 1.5mm 方向及时间 Direction and time: X, Y and Z directions for 2 hours each.
7-7	Humidity resistance 耐潮湿		a. 试验条件 Test condition 温度 Temp.: 60±2℃ 湿度 Humidity: 90%~95% 试验时间 Test time: 96±2 h b. 测量条件 Measurement method: 试验后常温常湿环境中放置 (24±2) 小时后测量。 The component should be stabilized at normal condition for (24±2) hours before test.
7-8	High temperature resistance 耐高温		a. 试验条件 Test condition 温度 Temp.: + 85±2℃ 试验时间 Test time: 96±2 h b. 测量条件 Measurement method: 试验后常温常湿环境中放置 (24±2) 小时后测量。 The component should be stabilized at normal condition for (24±2) hours before test.
7-9	Low temperature resistance 耐低温		a. 试验条件 Test condition 温度 Temp.: -40±2℃ 试验时间 Test time: 96±2 h b. 测量条件 Measurement method: 试验后常温常湿环境中放置 (24±2) 小时后测量。 The component should be stabilized at normal condition for (24±2) hours before test.
7-10	Thermal shock (Temperature cycle) 热冲击 (温度循环)		a. 试验条件 Test condition 1) 温度 Temp.: -40℃, 时间 time: 30±3min 2) 温度 Temp.: +85℃, 时间 time: 30±3min 5 cycles b. 测量条件 Measurement method: 试验后常温常湿环境中放置 (24±2) 小时后测量。 The component should be stabilized at normal condition for (24±2) hours before test.

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).

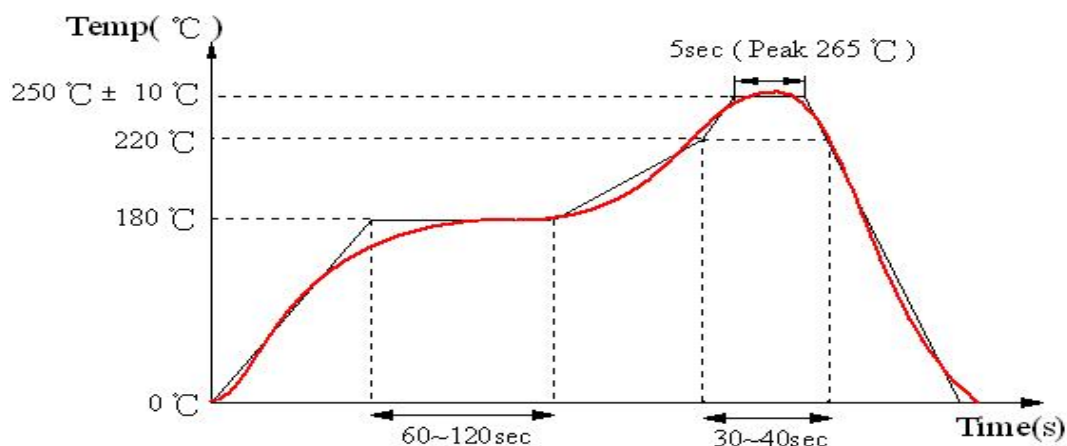
- ② 使用纯锡焊料 Use Sn solder.

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.



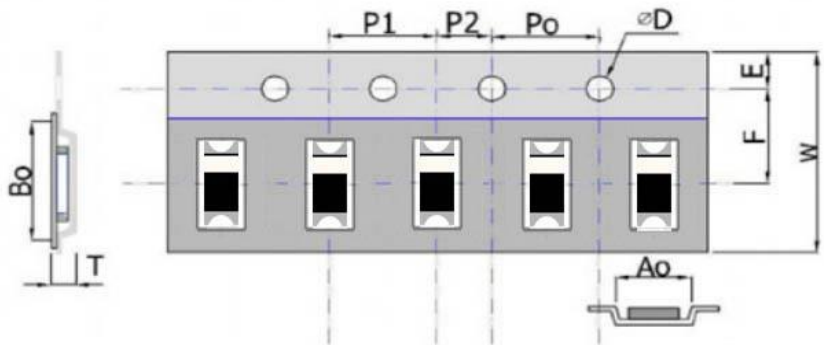
3、手工返工 Reworking with soldering iron

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

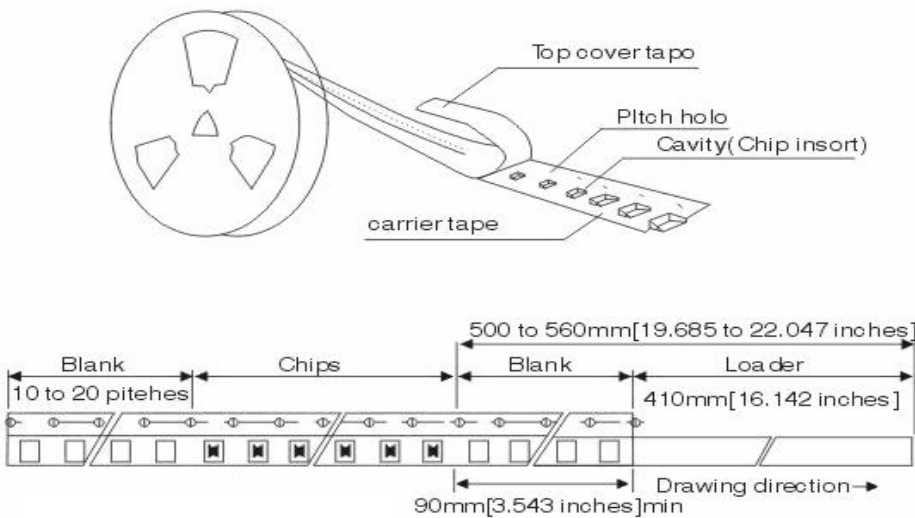
Unit: mm

Index	Ao	Bo	ΦD	T	W
Dimension (mm)	1.3±0.1	5.8±0.1	1.55±0.05	1.8±0.1	12±0.1
Index	E	F	Po	P1	P2
Dimension (mm)	1.5±0.1	5.4±0.1	4.0±0.1	4.0±0.1	2.0±0.1

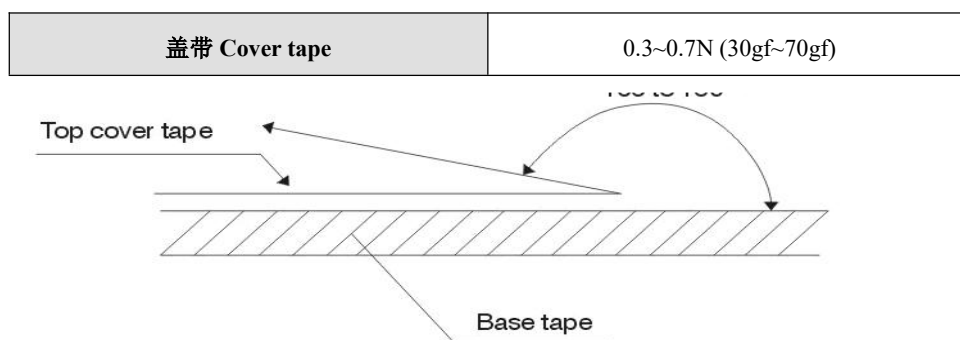
③ 编带抗拉强度 Pulling strength of tapes:

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:



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

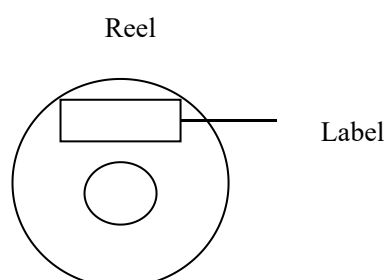
1. 包装文件 Packing documents

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:

- aLR 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.



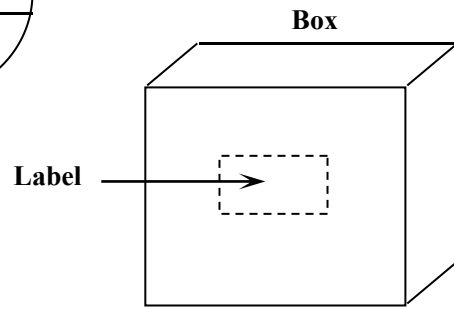
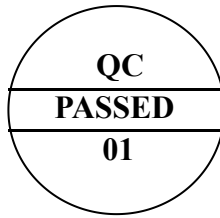
以上内容必须在标签上注明.All above shall be shown on marking label

麦捷公司标签如下所示: LR marking label will be as following:

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

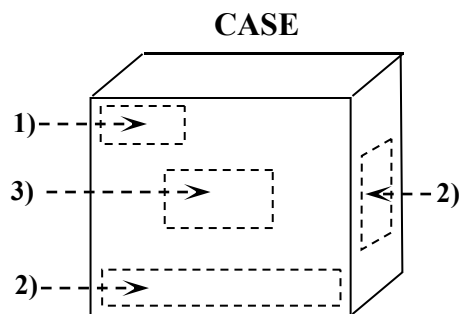
“中国深圳制造” “Made in Shenzhen CHINA”②

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.