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SMD 天线规格书

SMD Antenna Specification

OverAir™ SMD 天线系列
符合 RoHS 规范

PN: CA-C01

2.4GHz 频段天线

2.4GHz frequency band antenna

特点

1. 尺寸仅 $3.20 \times 1.60 \times 0.40 \text{ mm}^3$ 的小尺寸 SMD 贴片天线。
2. 低能量损耗，高天线效率。
3. 在温度湿度变化的情况下具有高稳定性。

应用

1. 2.4GHz ISM 频段的无线应用。
2. 蓝牙、无线、智能家居应用。

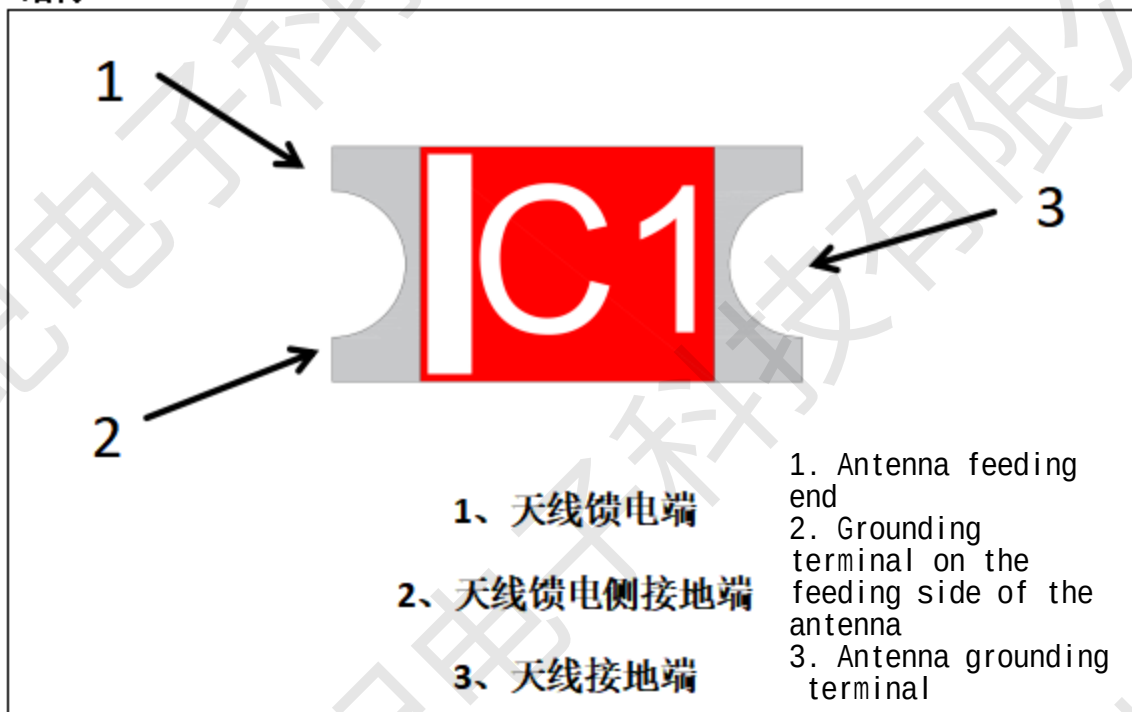
characteristic

1. The size is only $3.20 \times 1.60 \times 0.40 \text{ mm}$ The small-sized SMD patch antenna.
2. Low energy loss, high antenna efficiency.
3. Has high stability under temperature and humidity changes.

application

1. 2.4GHz ISM band antenna application.
2. Bluetooth, wireless, and smart home applications

结构



尺寸

三视图	符号	尺寸(mm)
	L	3.20 ± 0.10
	W	1.60 ± 0.10
	T	0.40 ± 0.05
	a	0.60 ± 0.10

电气特性

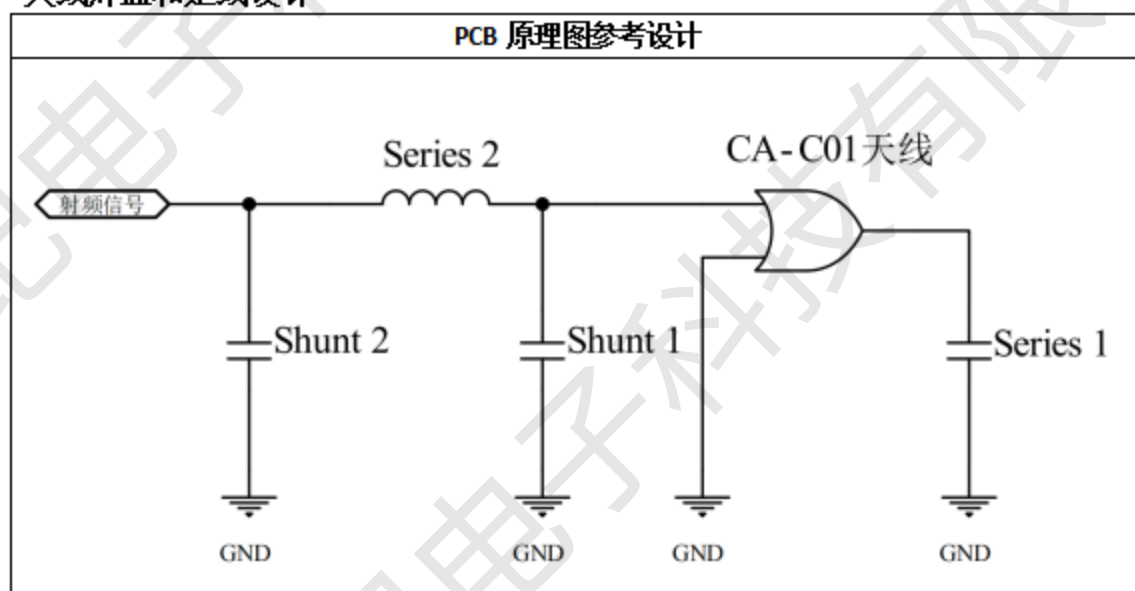
CA-C01	Specification
工作频率范围 Working Frequency	2450±50MHz
带宽 Band Width	>100MHz
阻抗 Impedance	50Ω
增益 Gain(dBi)	2.96
驻波比 VSWR	<2
工作温度 Operation Temperature	-40℃~+85℃
可承受功率 Power Capacity	3W

需要通过阻抗匹配器件实现工作频率 2.45GHz.

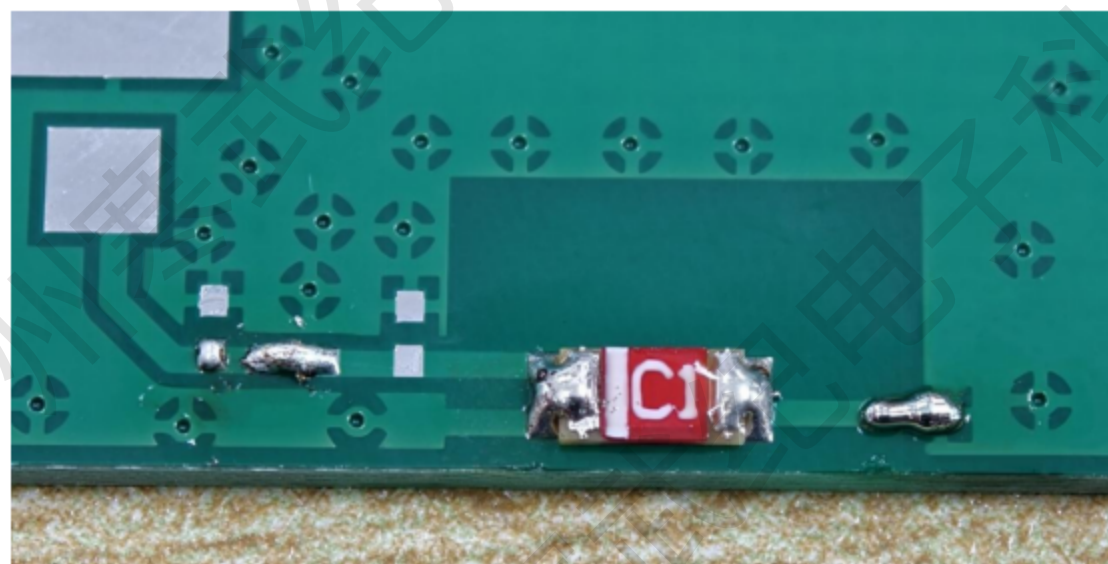
An impedance matching device is required to achieve a working frequency of 2.45 GHz

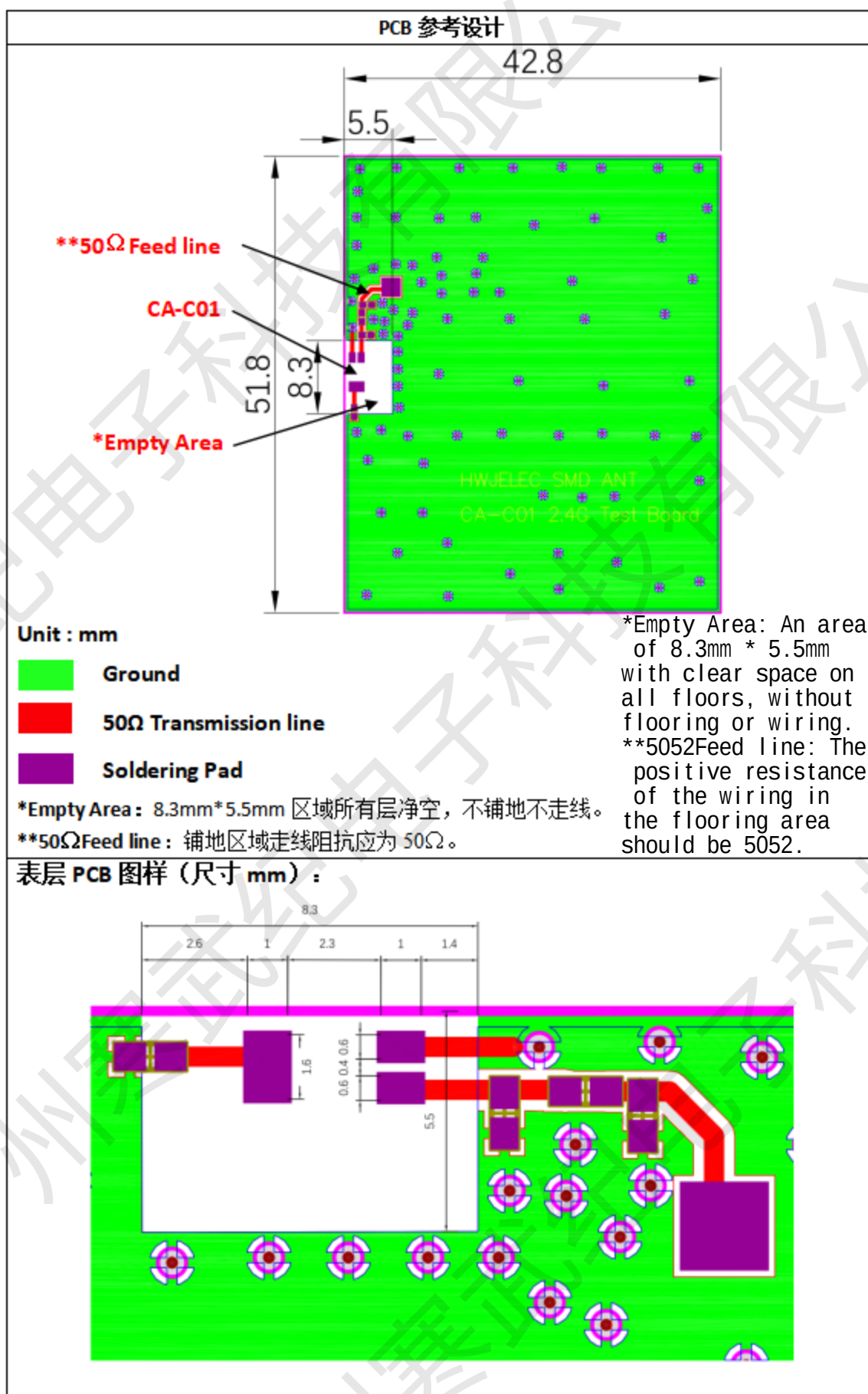
天线焊盘和走线设计

PCB 原理图参考设计

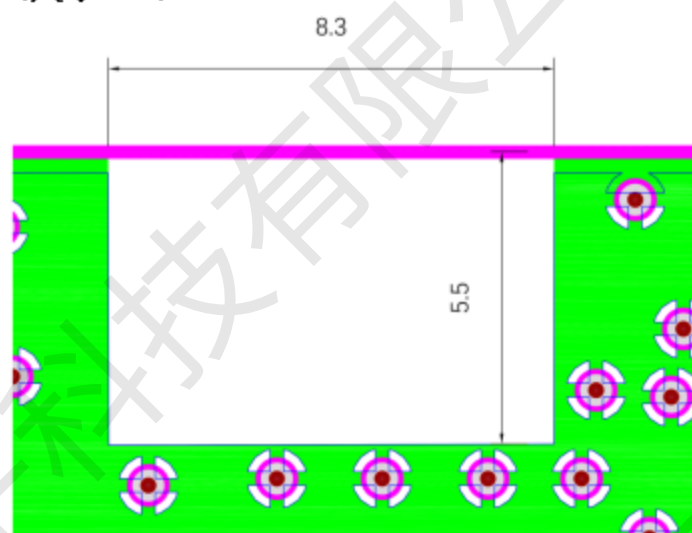


天线焊接图样



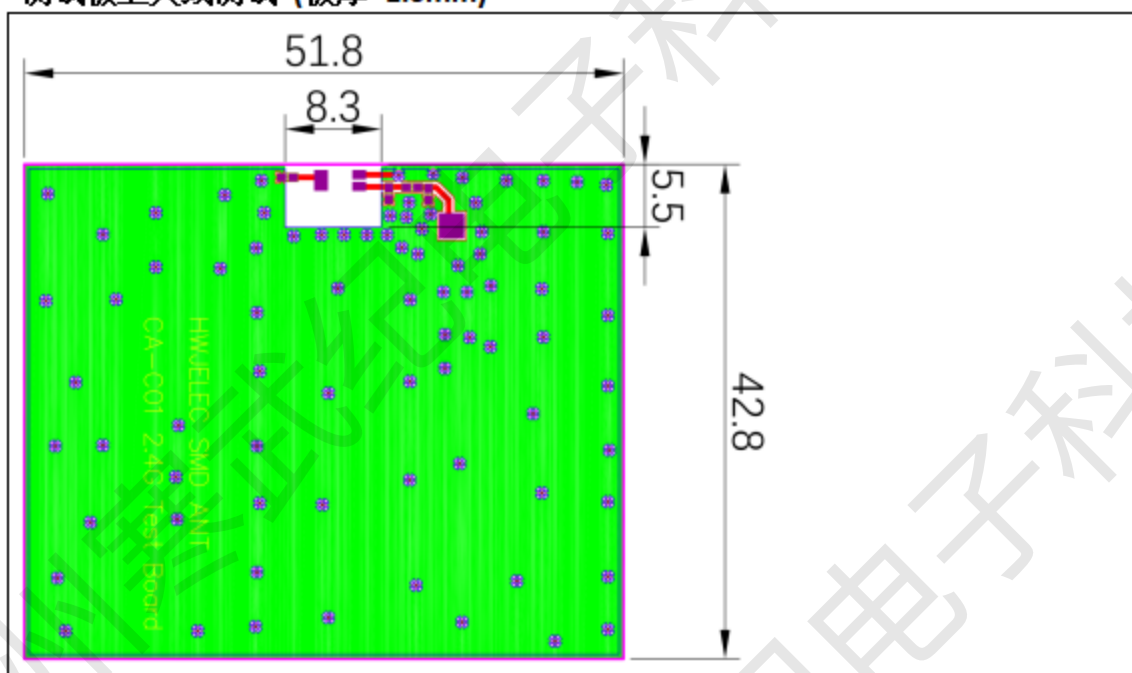


下层 PCB 图样 (尺寸 mm) :

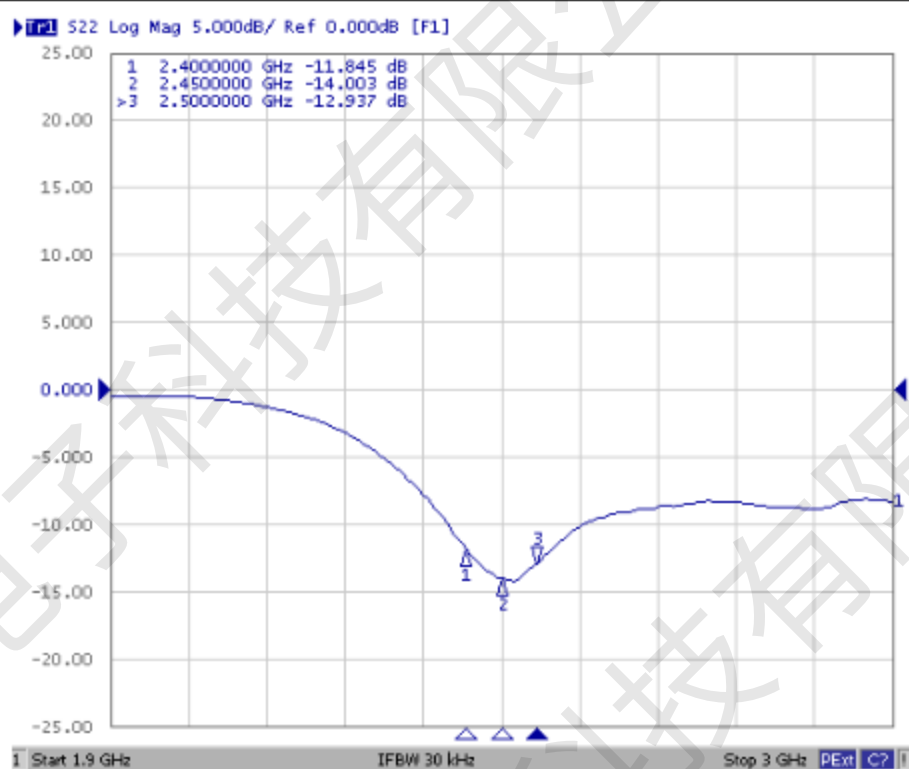


匹配器件值 Matching device values	串联器件 Series 1	0.75pF
	并联器件 Shunt 1	1pF
	串联器件 Series 2	1.8nH
	并联器件 Shunt 2	NC

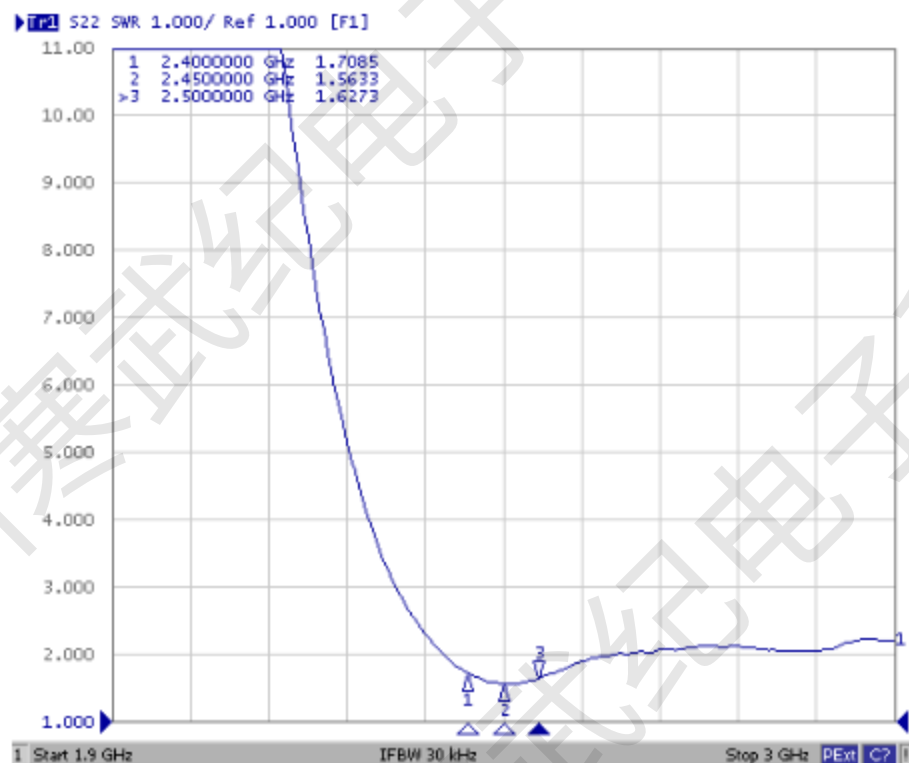
测试板上天线测试 (板厚 1.0mm)



天线 S11 特性

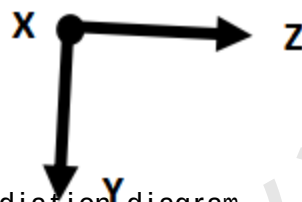
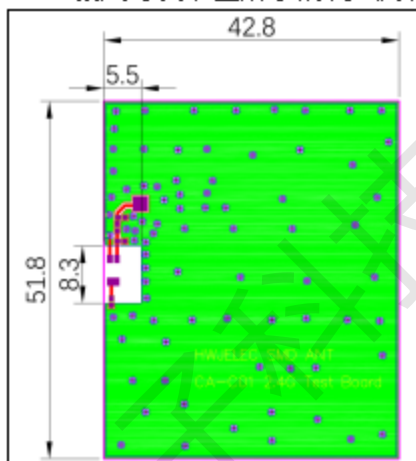


天线 VSWR 特性



效率和辐射图

效率、辐射图、增益等性能基于测试 PCB 板设计。CA-C01 天线规格特性测试数据基于测试 PCB 板尺寸及下图所示的测试方向。下列数据基于 ETS 3D 微波暗室测试结果。



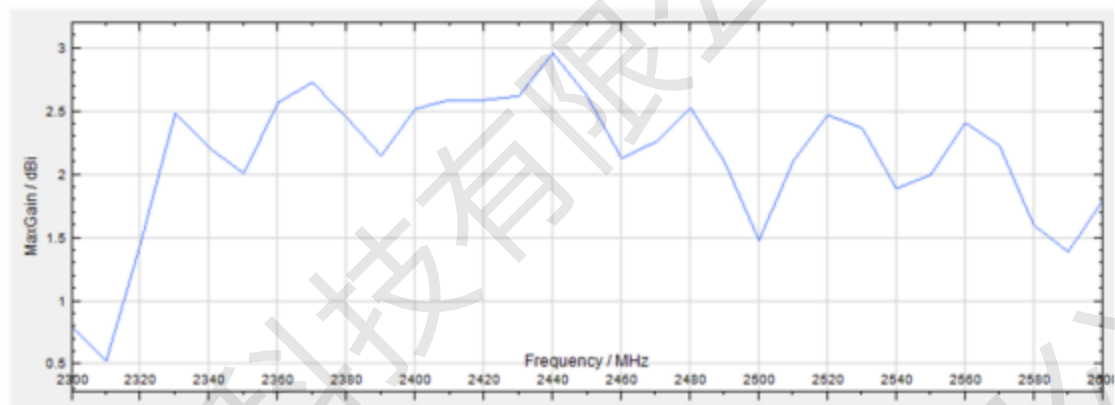
Efficiency and radiation diagram
Efficiency, radiation pattern, gain and other performance are based on the design of the test PCB board. CA-C01 antenna specification characteristic test data based on testing The size of the PCB board and the testing direction shown in the following figure. The following data is based on the results of ETS3D microwave darkroom testing.

天线增益效率测试表

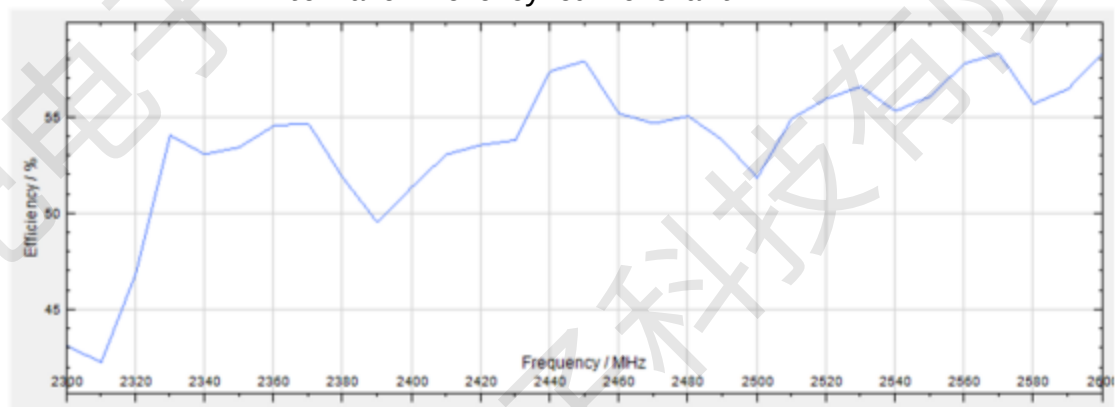
Antenna Gain Efficiency Test Table

Frequency/MHz	MaxGain/dBi	Efficiency / %
2400	2.52	51.4
2410	2.59	53.09
2420	2.59	53.58
2430	2.62	53.83
2440	2.96	57.41
2450	2.62	57.94
2460	2.13	55.21
2470	2.26	54.7
2480	2.53	55.08
2490	2.1	53.83
2500	1.48	51.88

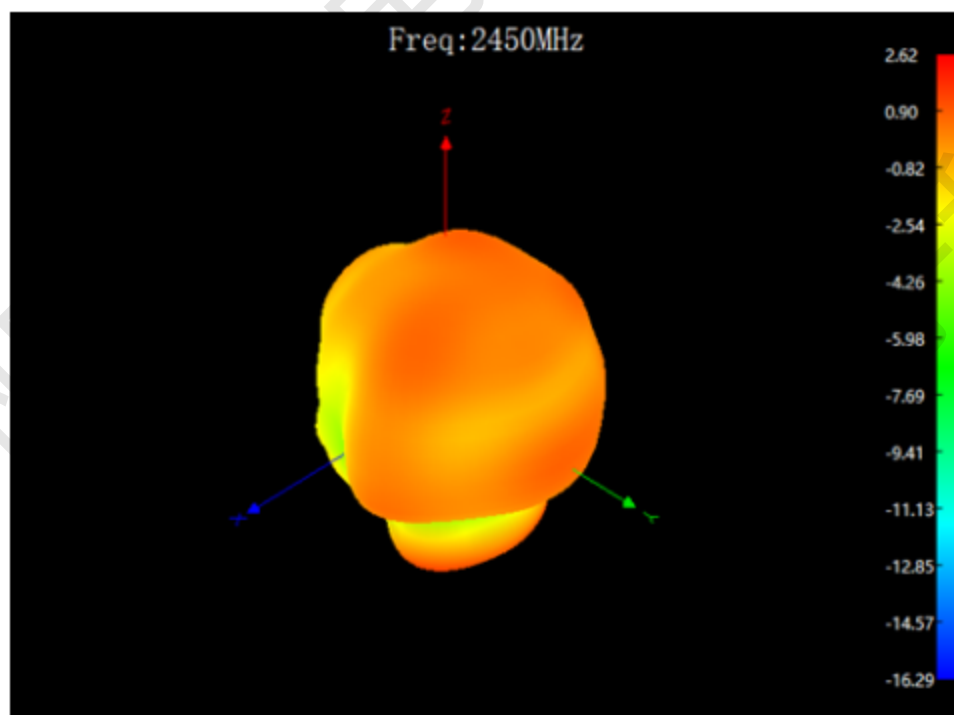
天线增益曲线图 Antenna gain curve graph



天线效率曲线图 Antenna efficiency curve chart



3D 方向图 3D directional diagram

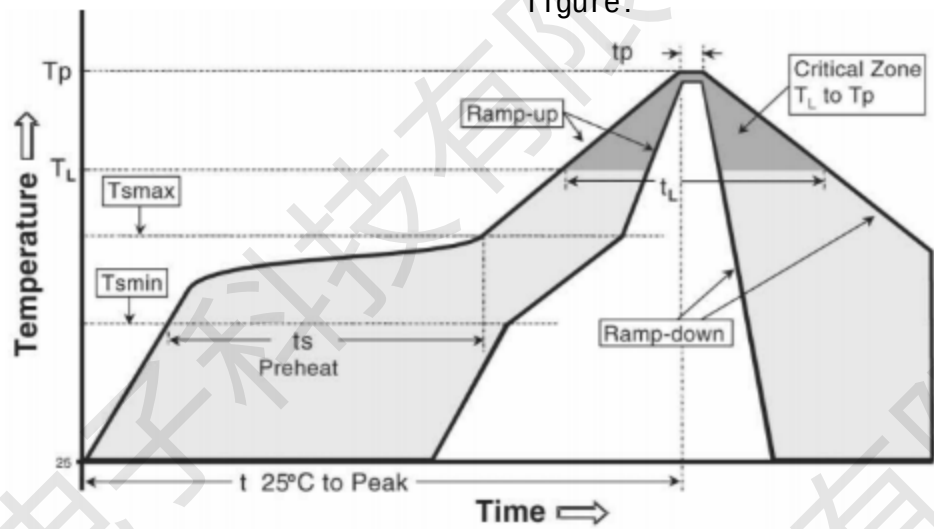


焊接条件

可靠无损的典型焊接规范如下图所示：

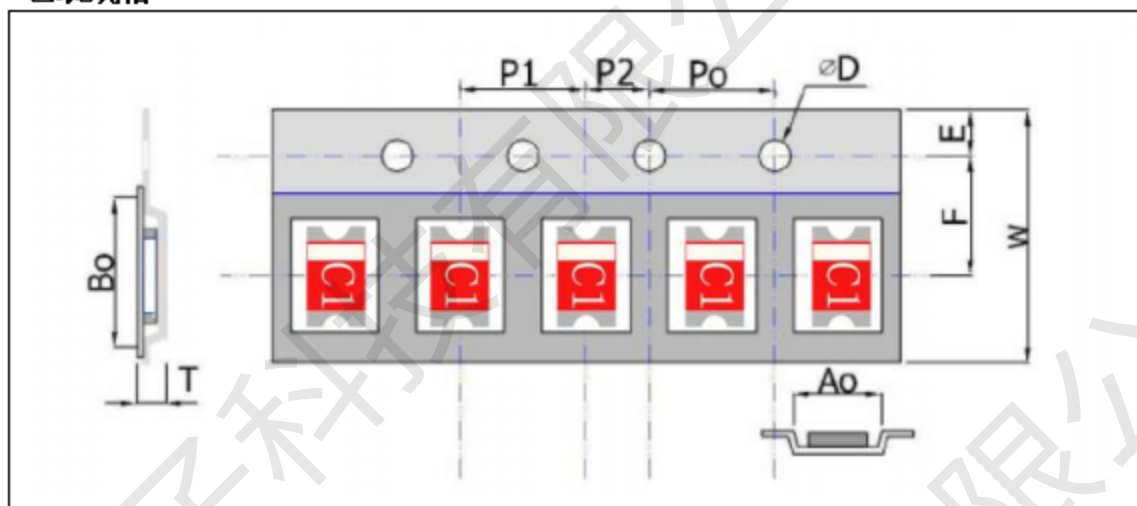
welding conditions

The typical welding specifications for reliable and non-destructive welding are shown in the following figure:



Phase	Profile features	Pb-Free assembly (SnAgCu)
RAMP-UP	Avg. Ramp-up Rate (Tsmax to Tp)	3 °C / second (max.)
PREHEAT	- Temperature Min (Tsmmin) - Temperature Max (Tsmmax) - Time (tsmin to tsmax)	150 °C 200 °C 60-180 seconds
REFLOW	- Temperature (TL) - Total Time above TL (tL)	217 °C 60-150 seconds
PEAK	- Temperature (Tp) - Time (tp)	260 °C 20-40 seconds
RAMP-DOWN	Rate	6 °C/second max
Time from 25 °C to Peak Temperature		8 minutes max

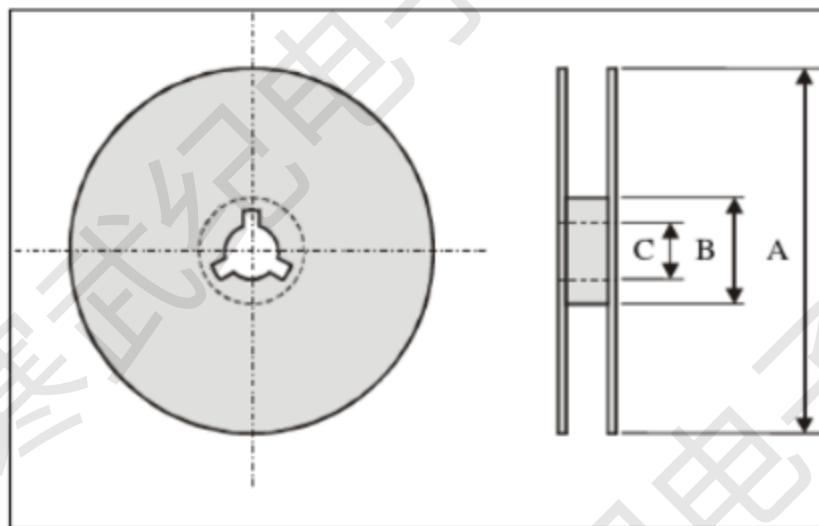
包装规格 Packing Specification



塑胶载带规格 (单位:mm) Plastic carrier tape specifications

Index	A ₀	B ₀	φD	T	W
Dimension (mm)	2.0±0.1	3.6±0.1	1.55±0.05	0.9±0.1	8.2±0.1
Index	E	F	P ₀	P ₁	P ₂
Dimension (mm)	1.75±0.1	3.2±0.1	4.0±0.1	4.0±0.1	2.0±0.1

卷盘尺寸 Roll size



Index	A	B	C
Dimension(mm)	178	60	13.5

标准数量: 3000 PCS/盘.

存储环境

产品存储时应满足下列条件：

温度：-10℃~+40℃

湿度：30% 至 70% 相对湿度

产品放置的位置不要接触腐蚀性气体，如硫磺等。氯气或酸可能导致产品电极氧化造成可焊接性变差。

产品应放置在工具箱里且避免受潮、灰尘的影响。

产品应存放在仓库中且避免热、振动、阳光直射。

产品应在密闭条件下储存。

storage environment

The following conditions should be met when storing the product:

Temperature: -10 °C~+40 °C

Humidity: 30% to 70% relative humidity

The product should not be placed in contact with corrosive gases such as sulfur. Chlorine gas or acid may cause electrode oxidation of the product

Causing a decrease in weldability.

The product should be placed in the toolbox and protected from moisture and dust.

The product should be stored in a warehouse and protected from heat, vibration, and direct sunlight.

The product should be stored under sealed conditions.