

SMD Antenna Spec

OverAir™ SMD Antenna series

Compliant with RoHS standards

PN: OA-C15

2.4 GHz ISM Frequency Band Antenna

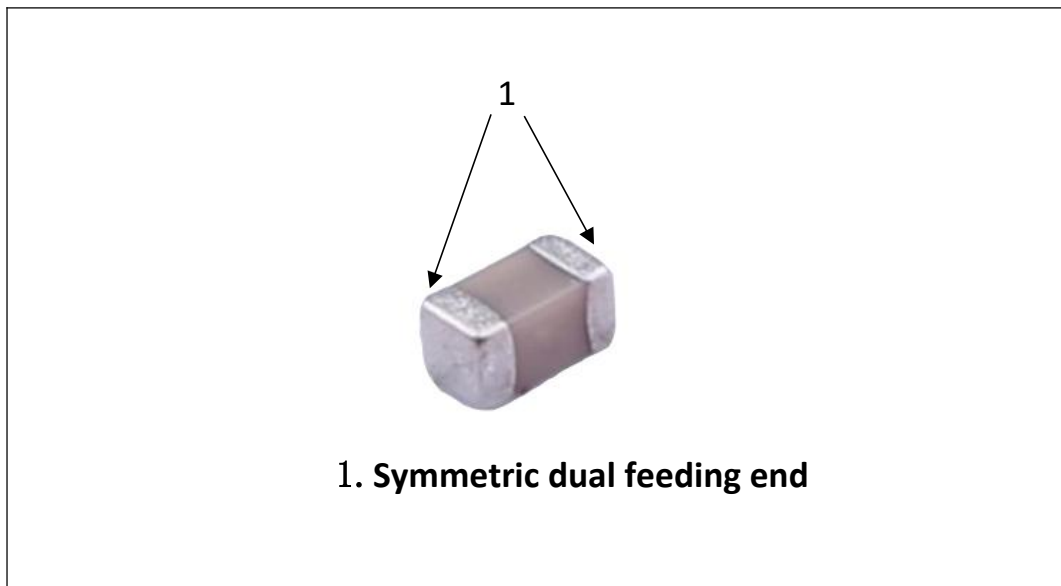
Characteristics

1. A small-sized SMD patch antenna with dimensions of only $1.6 \times 0.8 \times 0.8 \text{ mm}^3$.
2. Low energy loss and high antenna efficiency.
3. High stability under changes in temperature and humidity.

Application

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

Structure



Size

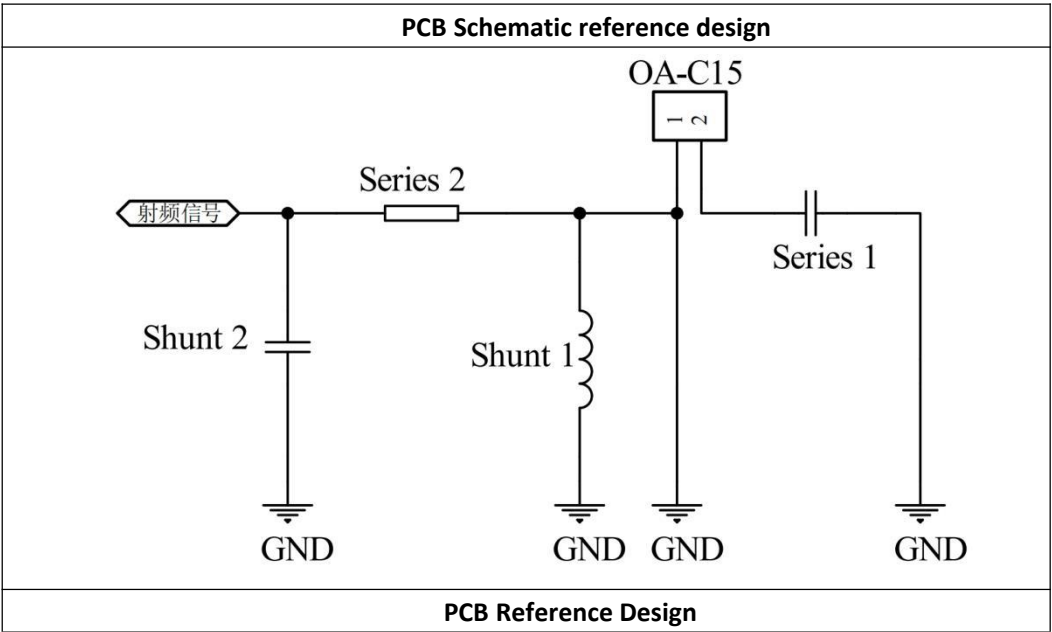
Three-view drawing	Symbol	Size (mm)
	L	1.6 ± 0.1
	w	0.8 ± 0.1
	T	0.8 ± 0.1
	WB	0.3 ± 0.1

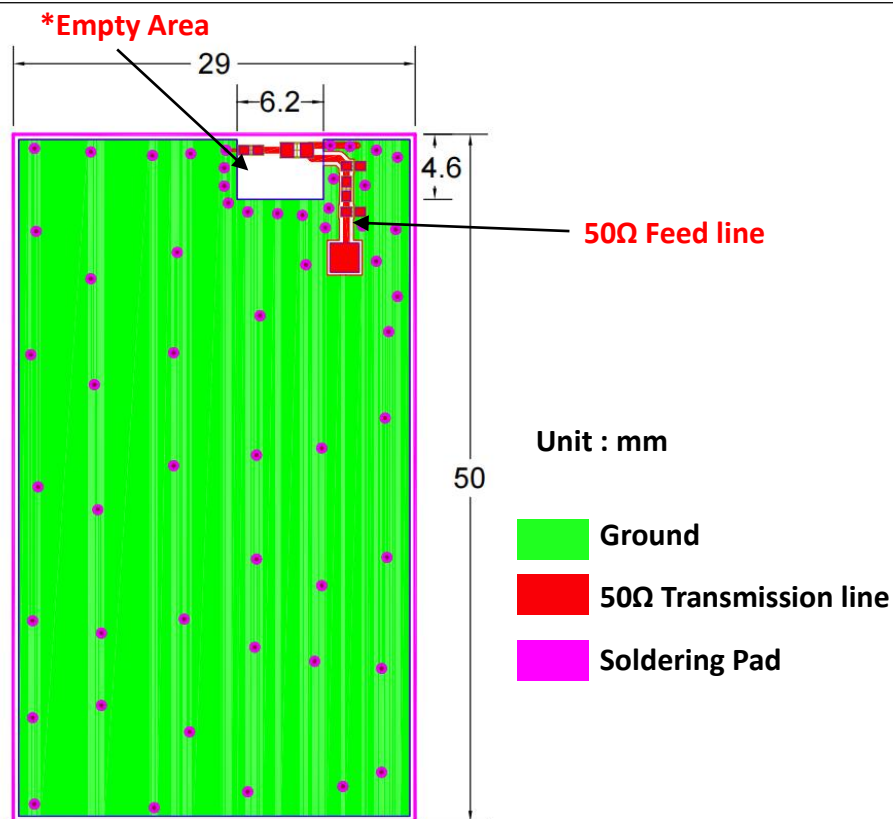
Electrical characteristics

OA-C15	Specification
Working Frequency	2450 ± 50MHz
Band Width	>100MHz
Impedance	50 Ω
Gain(dBi)	1.54
VSWR	<2.5
Operation Temperature	-40℃~+85℃
Power Capacity	3W

Needtoachieveoperatingfrequencythroughimpedancematchingdevices 2.45GHz.

Antenna Soldering Pad And wiring design

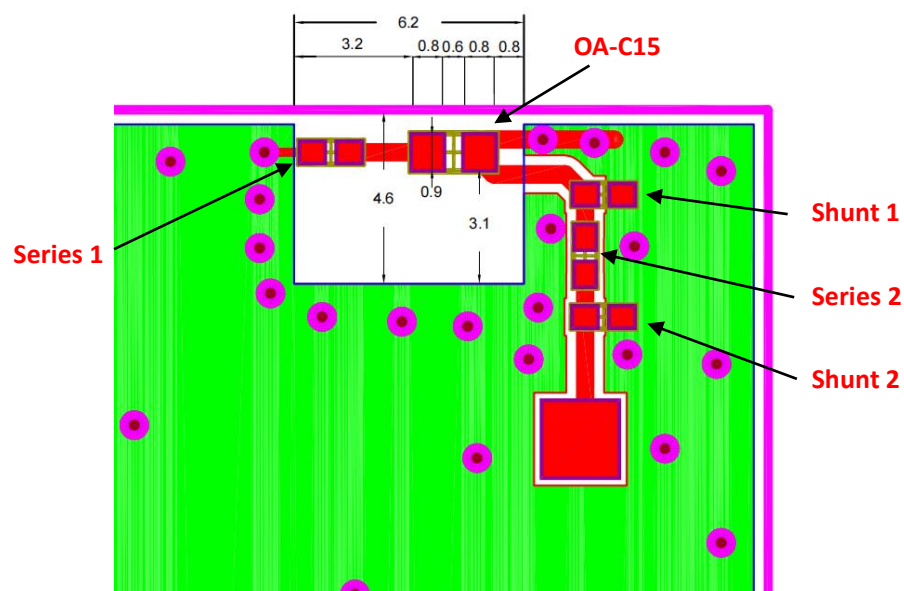




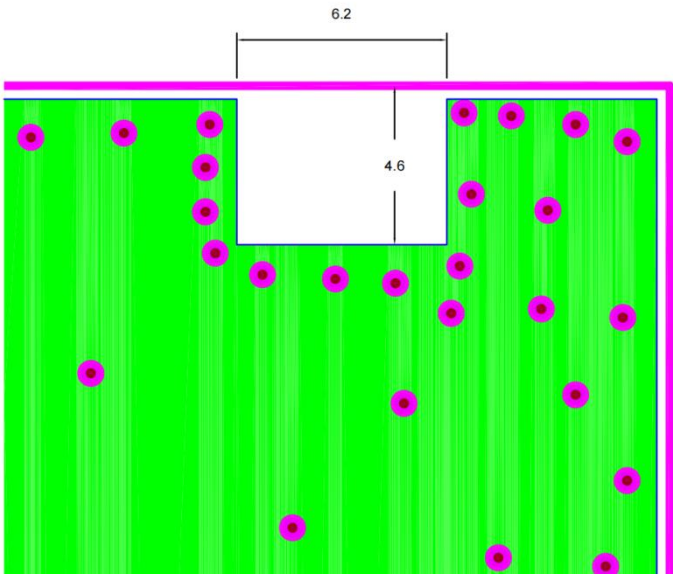
***Empty Area:** 6.2mm x 4.6mm* All layers in this area have sufficient clearance and no ground or wiring is required.

***50 Ω Feed line:** In non-clearance areas, the RF signal line needs to be laid with a ground layer and 50Ω impedance control should be implemented.

Top layer PCB layout (Size mm) :

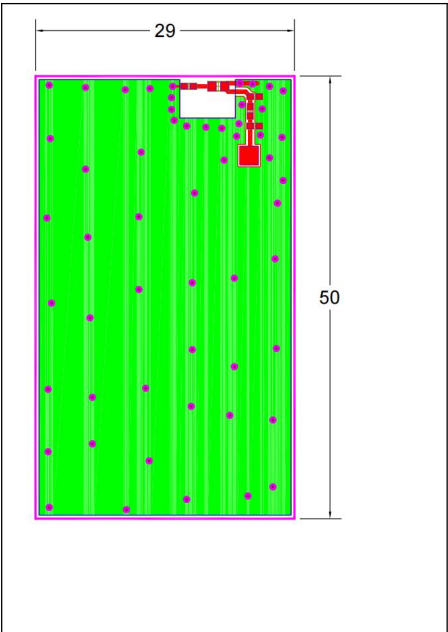


Bot layer PCB layout (Size mm) :

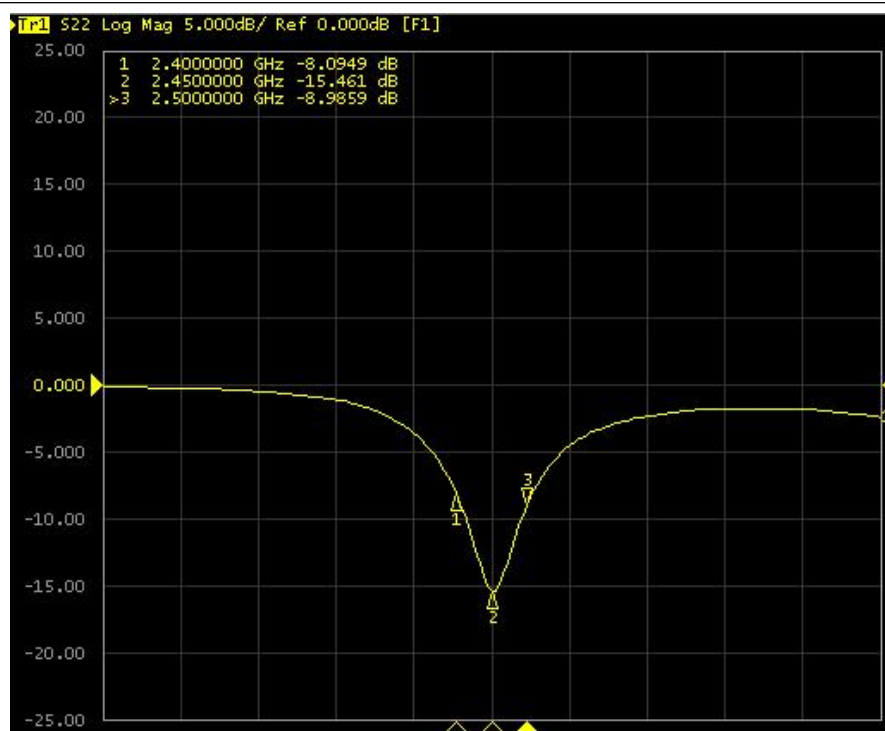


Matching device values	Series devices Series 1	capacitance 2pF
	Parallel devices Shunt 1	6.2nH
	Series devices Series 2	0 Ω
	Parallel devices Shunt 2	vacant NC

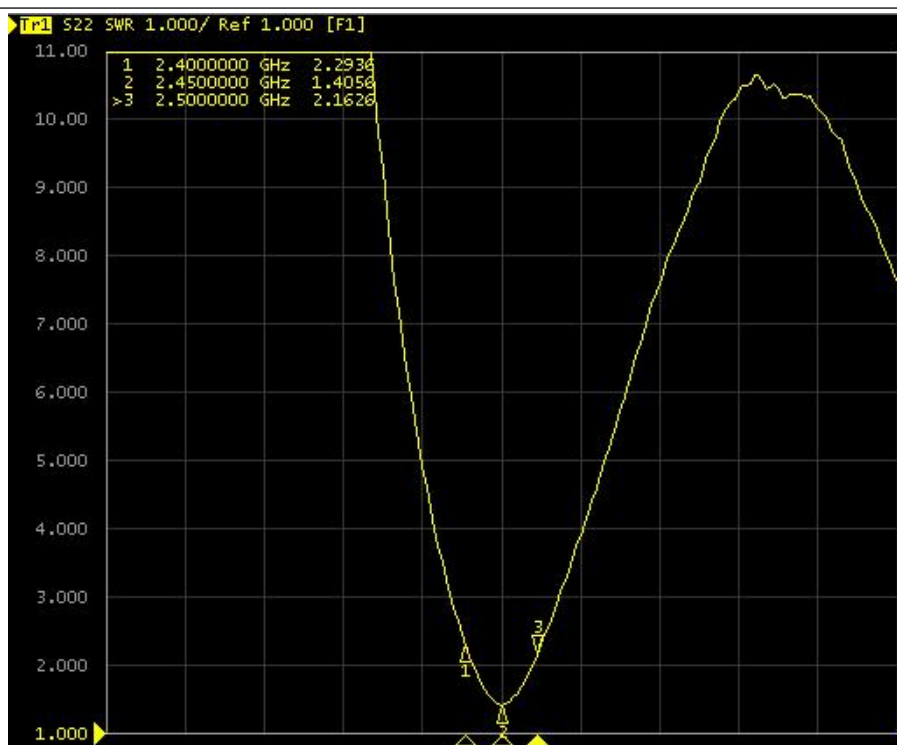
Antenna testing on the test board (Plate thickness 1.0mm)



Antenna S11

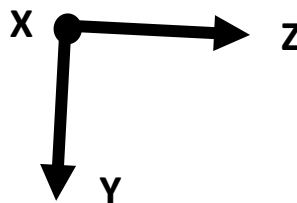
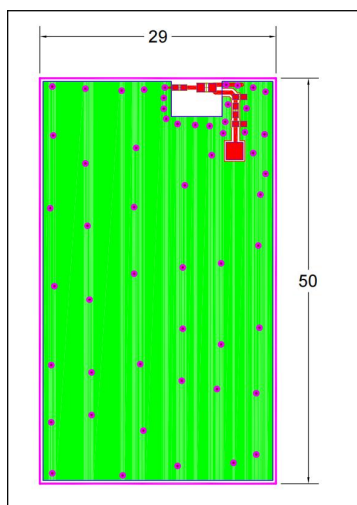


Antenna VSWR



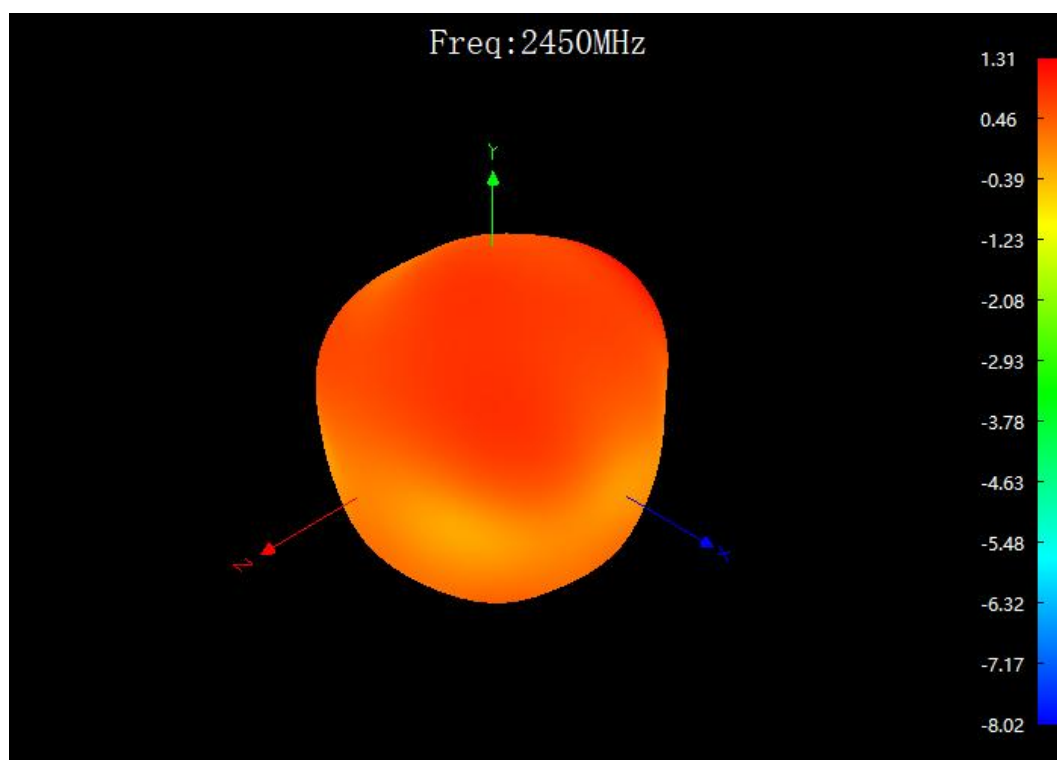
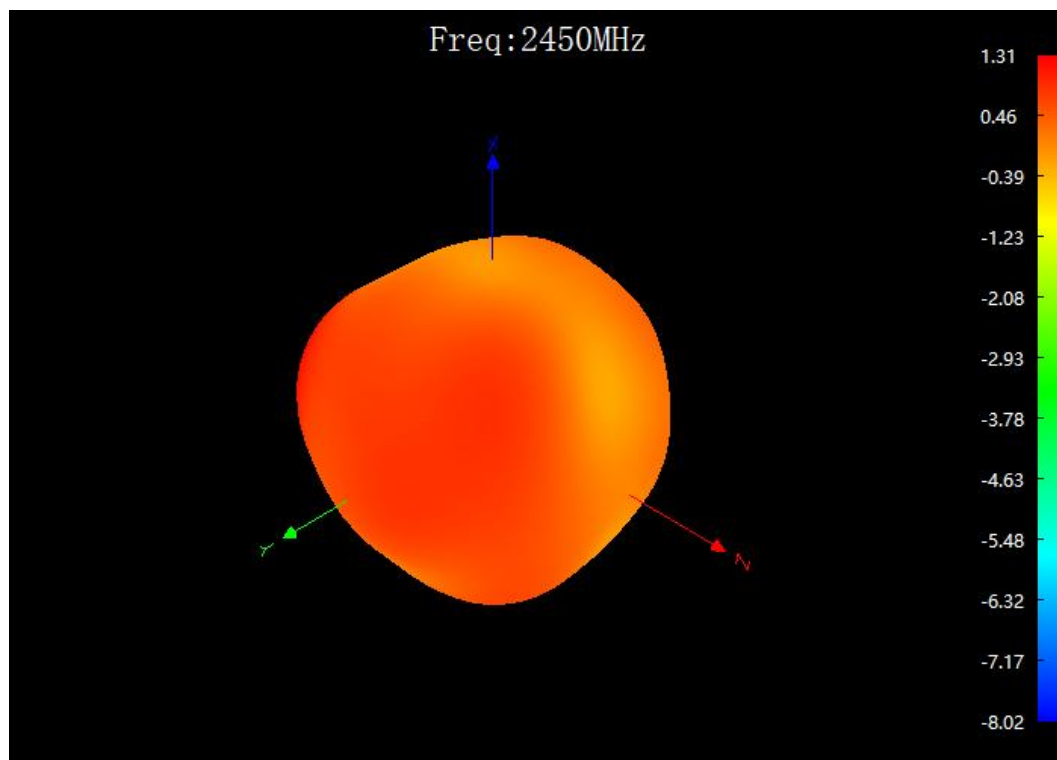
Efficiency and radiation diagram

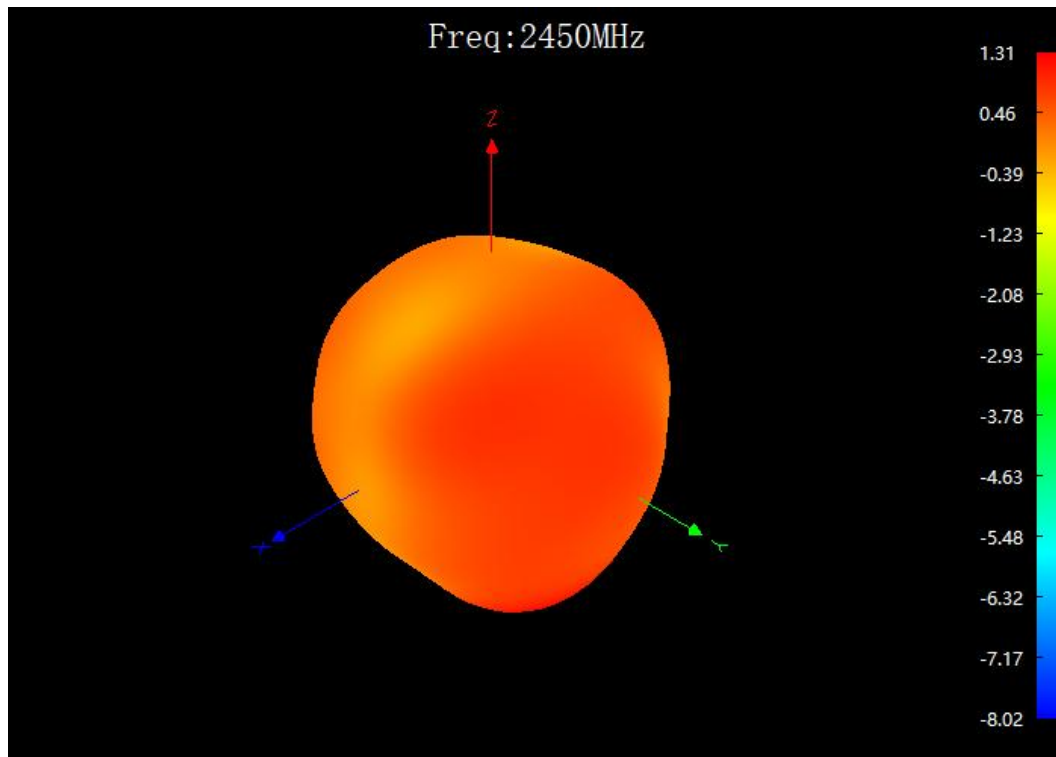
The efficiency, radiation diagram, gain and other performance parameters are based on the test of the PCB board design. The test data of the OA-C15 antenna specification characteristics are based on the test PCB board size and the test direction shown in the following figure. The following data are based on the test results of the ETS 3D microwave anechoic chamber.

**OA-C15 Antenna Gain Efficiency Test Table**

Frequency/Mhz	MaxGain/dBi	Efficiency / %
2400	-0.01	47.42
2410	0.39	52.6
2420	1.07	62.23
2430	1.28	66.37
2440	1.54	70.79
2450	1.31	71.29
2460	0.9	67.45
2470	0.51	62.09
2480	0	54.08
2490	-0.83	49.89
2500	-2.21	37.58

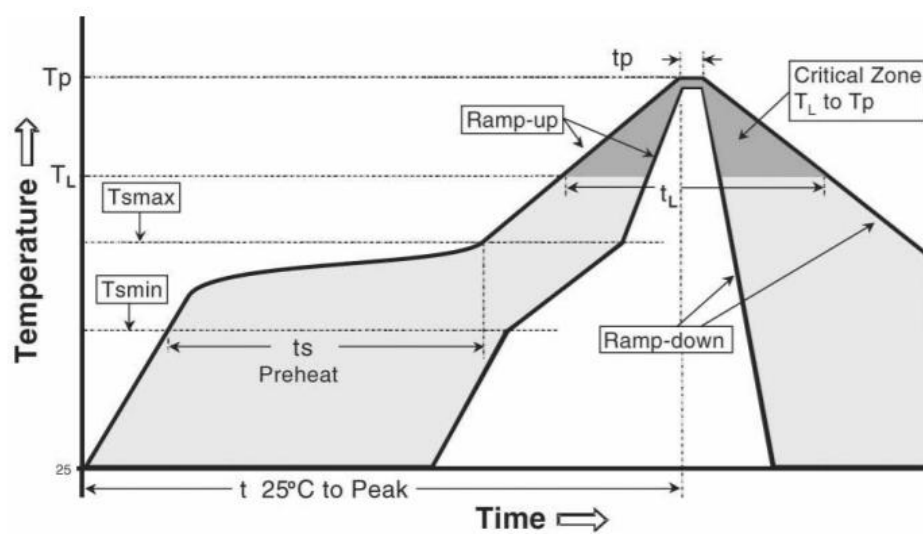
2.45GHz 3D Direction Diagram





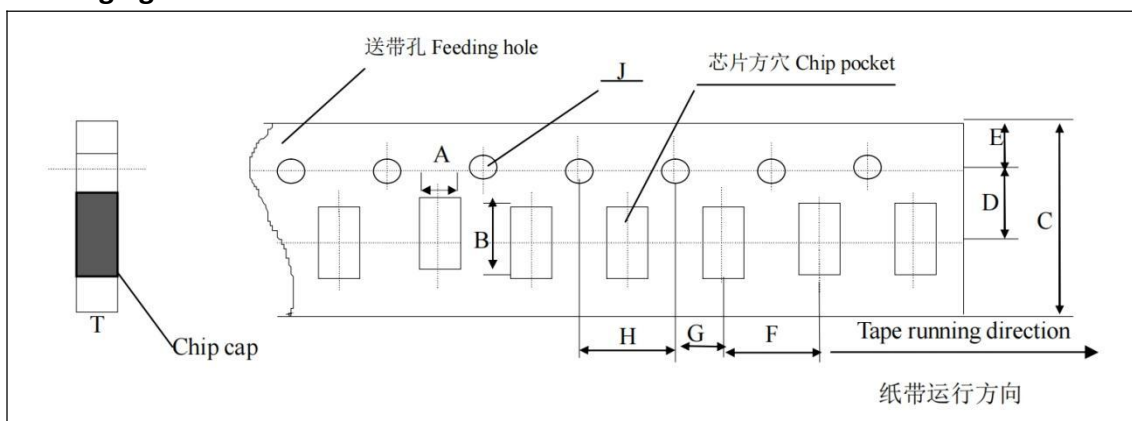
Welding conditions

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 (T _{smax} to T _p)	3 °C / second (max.)
PREHEAT	- Temperature Min (T _{smin}) - Temperature Max (T _{smax}) - Time (t _{smin} to t _{smax})	150 °C 200 °C 60-180 seconds
REFLOW	- Temperature (T _L) - Total Time above T _L (t _L)	217 °C 60-150 seconds
PEAK	- Temperature (T _p) - Time (t _p)	260 °C 20-40 seconds
RAMP-DOWN	Rate	6 °C/second max
Time from 25 °C to Peak Temperature		8 minutes max

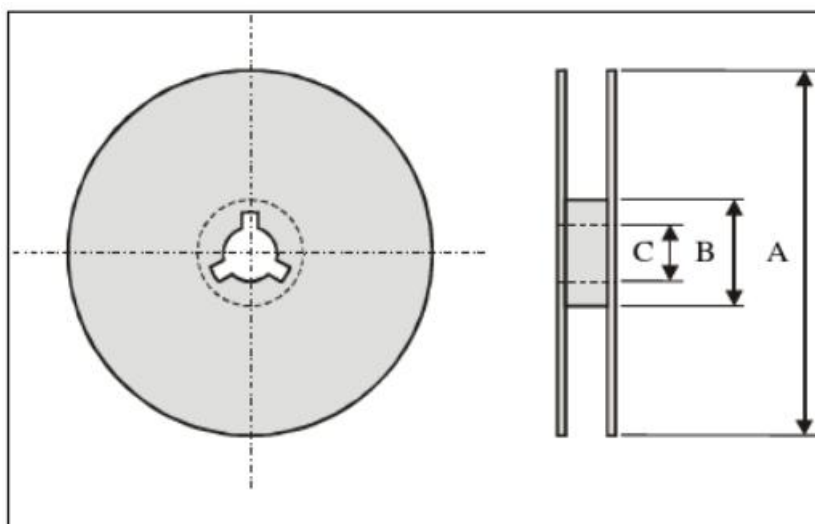
Packaging



Plastic carrier tape specifications (Unit: mm)

Index	A	B	C	D	J
Dimension (mm)	1.10±0.10	1.90±0.1	8.00±0.10	3.50±0.05	1.500/+0.10
Index	E	F	G	H	T
Dimension (mm)	1.75±0.10	4.00±0.1	2.00±0.10	4.00±0.10	1.10Max

Roll size



Index	A	B	C
Dimension(mm)	178	50	13±0.5

Standard quantity:: 4000 PCS.

Storage environment

The product should be stored under the following conditions:

Temperature: -10℃ to +40℃

Humidity: 30% to 70% relative humidity

The product should not be placed in areas exposed to corrosive gases such as sulfur. Chlorine or acid may cause the product's electrodes to oxidize, resulting in reduced weldability.

The product should be placed in a 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 in a sealed environment.