

# **SMD Antenna Spec**

**OverAir™ SMD Antenna series**

Compliant with RoHS standards

**PN: OA-C15**

**2.4 GHz ISM Frequency Band Antenna**

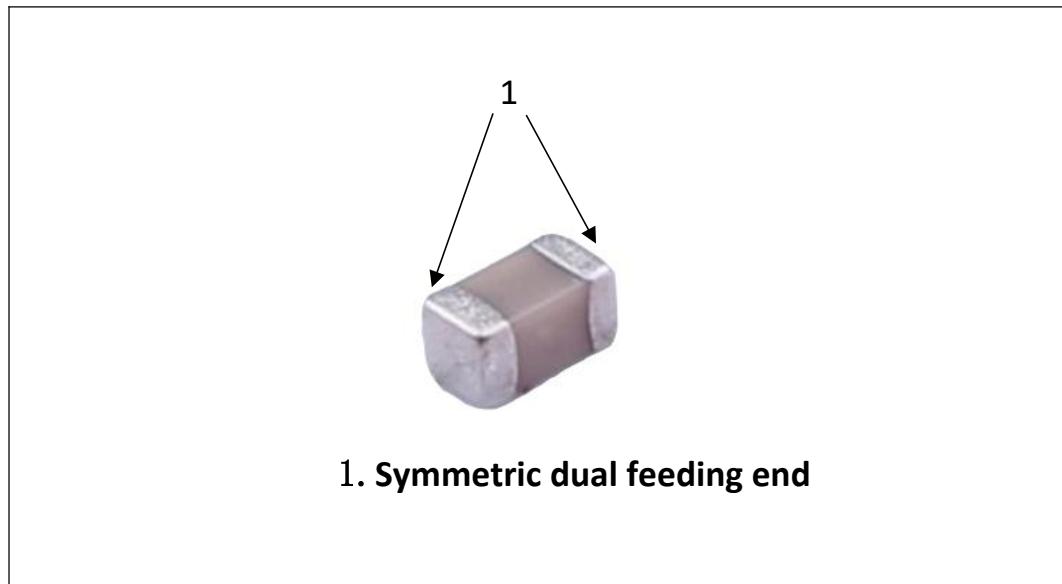
## Characteristics

1. A small-sized SMD patch antenna with dimensions of only  $1.6 \times 0.8 \times 0.8$  mm<sup>3</sup>.
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



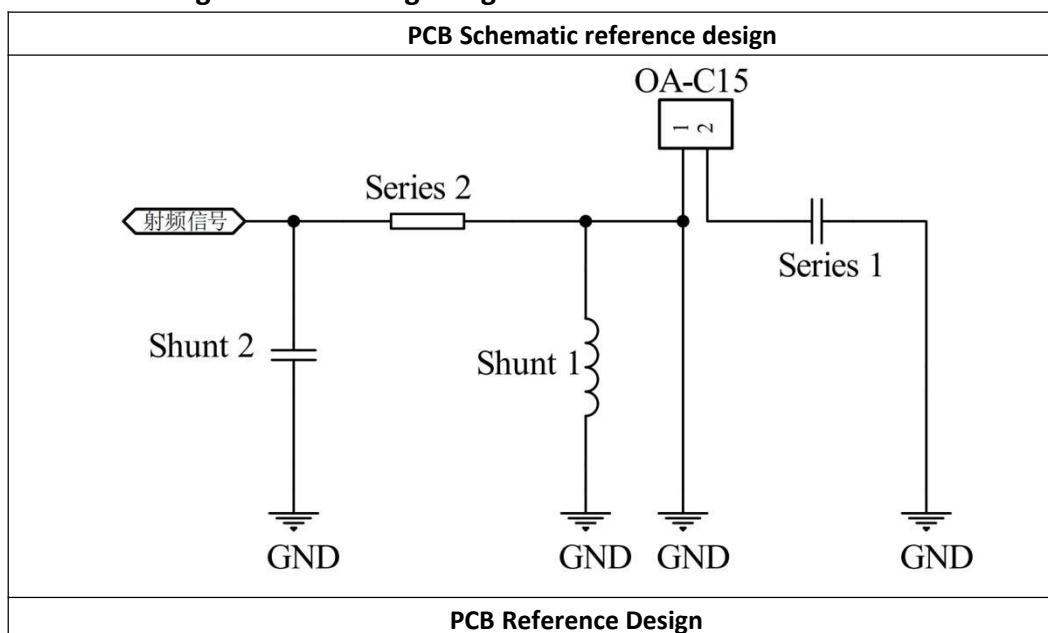
## Size

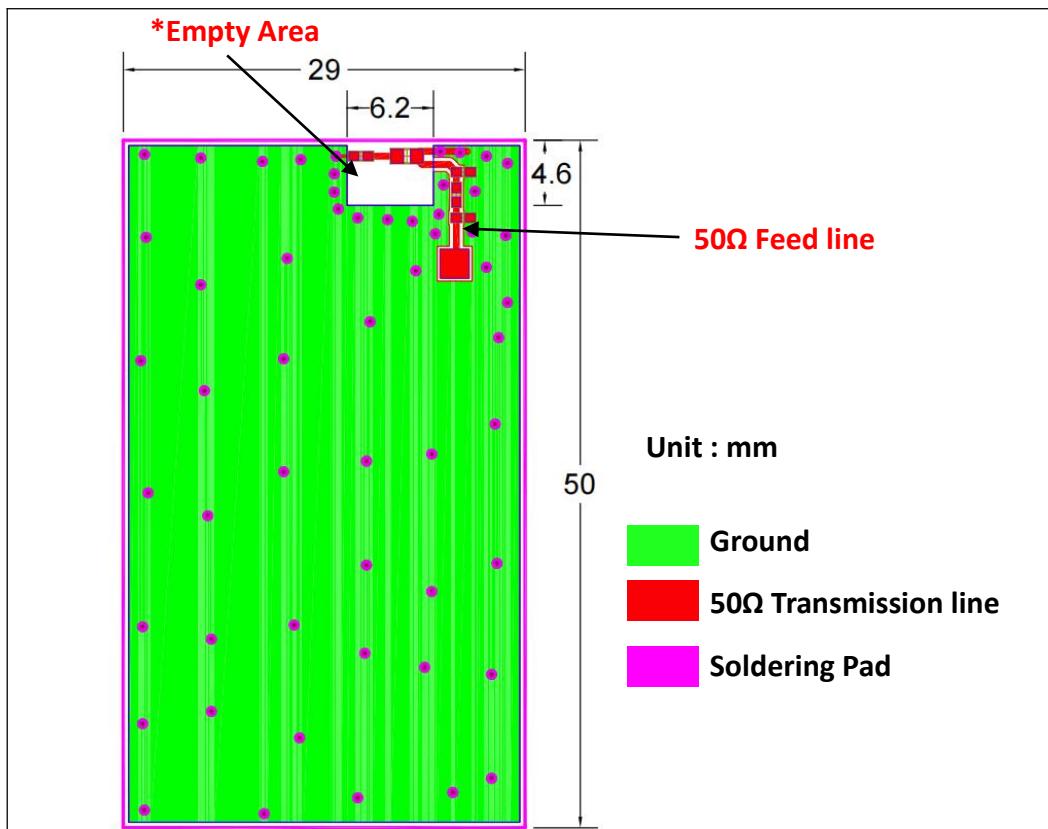
Three-view drawing	Symbol	Size (mm)
	<b>L</b>	<b>1.6±0.1</b>
	<b>W</b>	<b>0.8±0.1</b>
	<b>T</b>	<b>0.8±0.1</b>
	<b>WB</b>	<b>0.3±0.1</b>

**Electrical characteristics**

OA-C15	Specification
<b>Working Frequency</b>	$2450 \pm 50 \text{MHz}$
<b>Band Width</b>	$>100 \text{MHz}$
<b>Impedance</b>	$50 \Omega$
<b>Gain(dBi)</b>	1.54
<b>VSWR</b>	<2.5
<b>Operation Temperature</b>	$-40^\circ\text{C} \sim +85^\circ\text{C}$
<b>Power Capacity</b>	3W

Need to achieve operating frequency through impedance matching devices 2.45GHz.

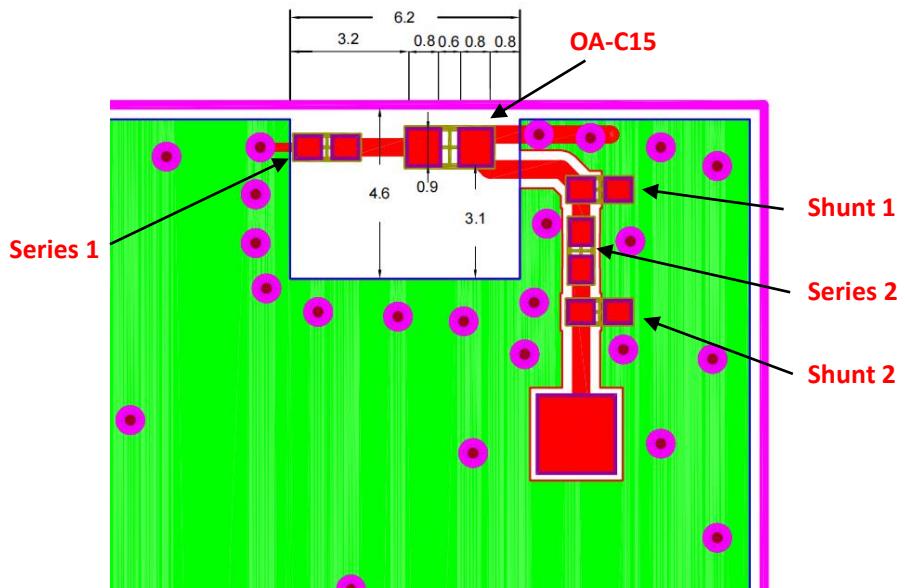
**Antenna Soldering Pad And wiring design**

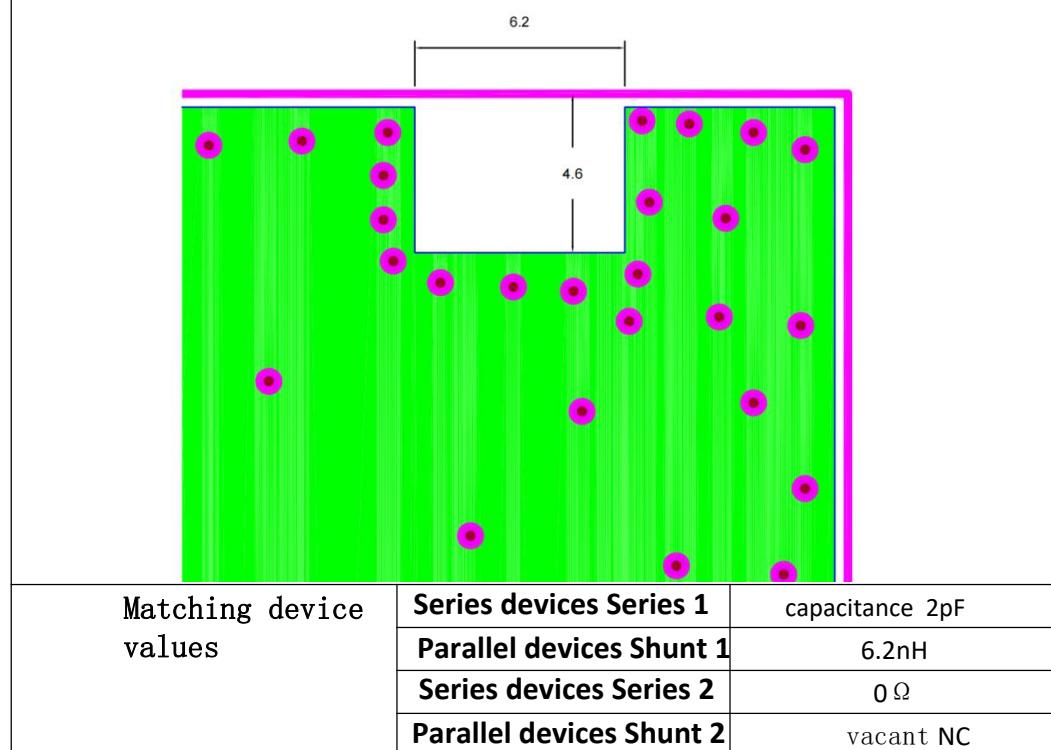
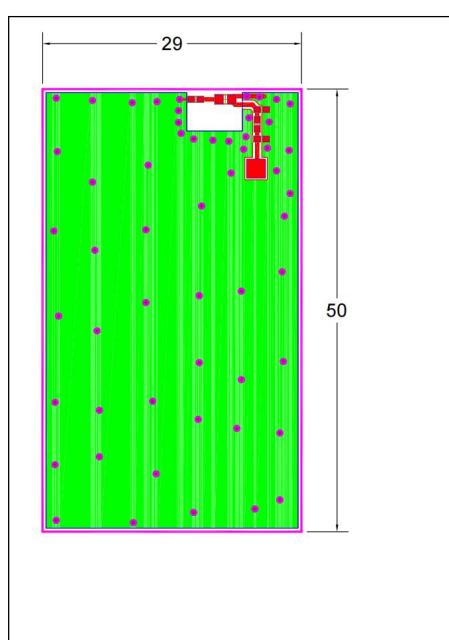


**\* Empty Area:** 6.2mm x 4.6mm\* All layers in this area have sufficient clearance and no ground or wiring is required.

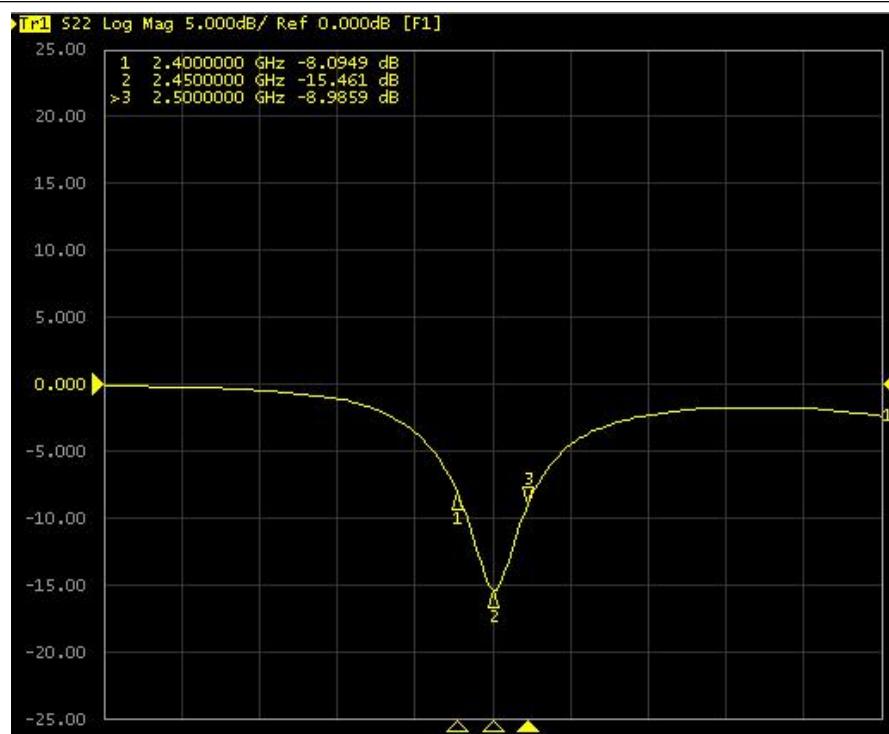
**\*50Ω Feed line:** In non-clearance areas, the RF signal line needs to be laid with a ground layer and 50Ω impedance control should be implemented.

#### Top layer PCB layout (Size mm) :

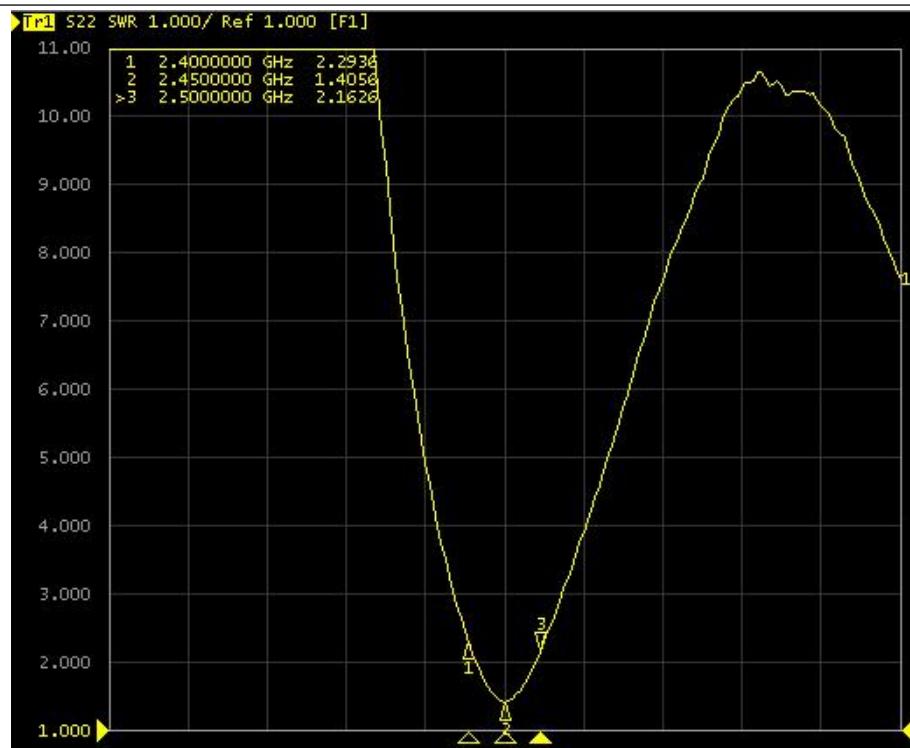


**Bot layer PCB layout (Size mm) :****Antenna testing on the test board (Plate thickness 1.0mm)**

## Antenna S11

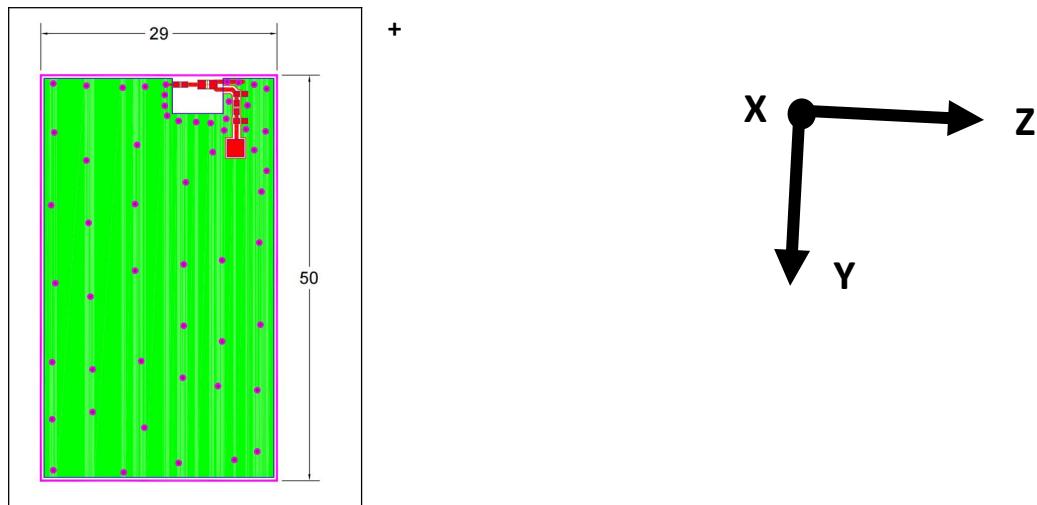


## Antenna VSWR



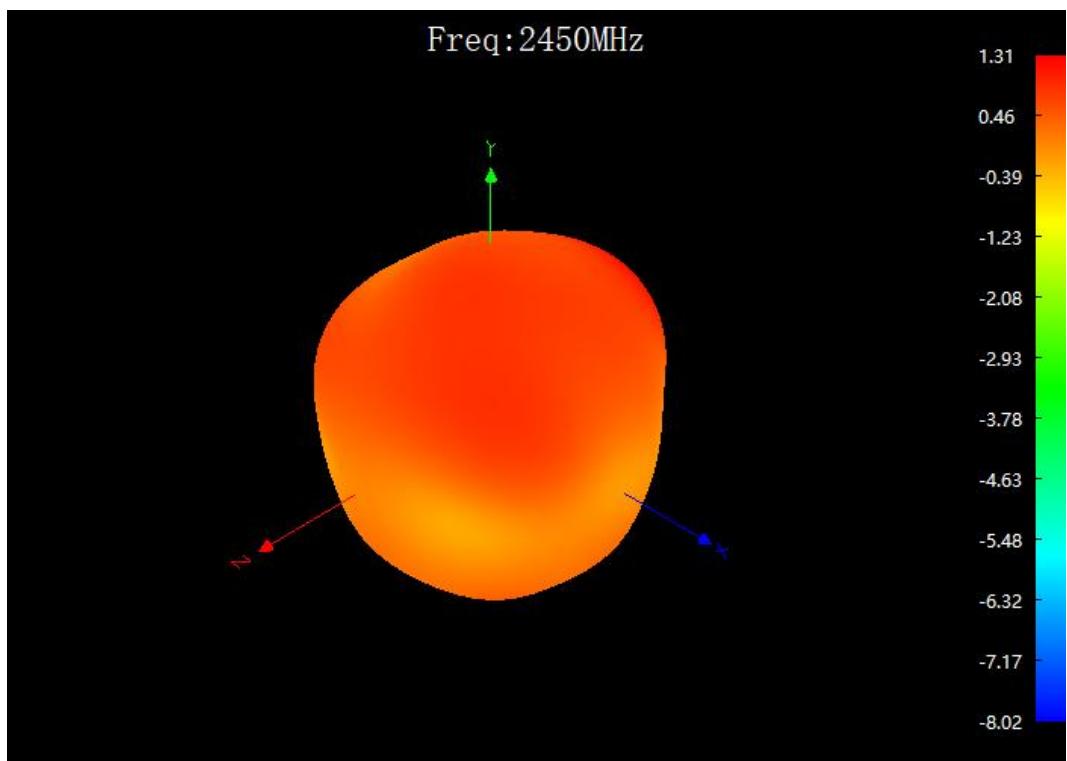
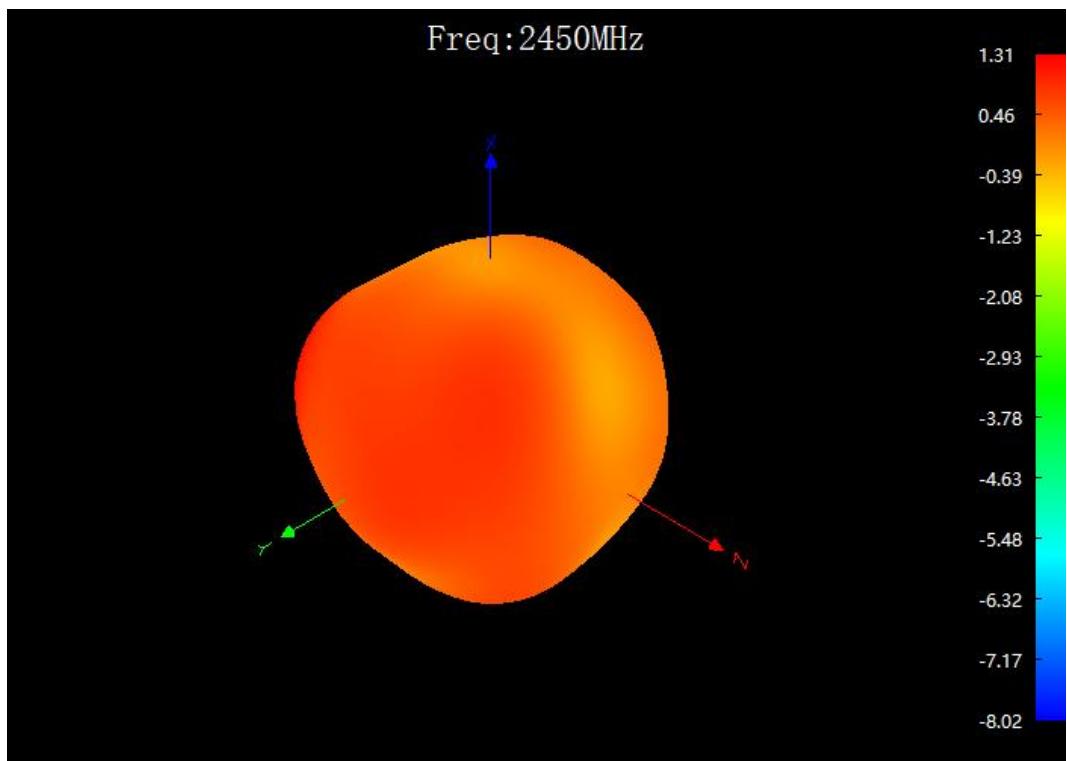
**Efficiency and radiation diagram**

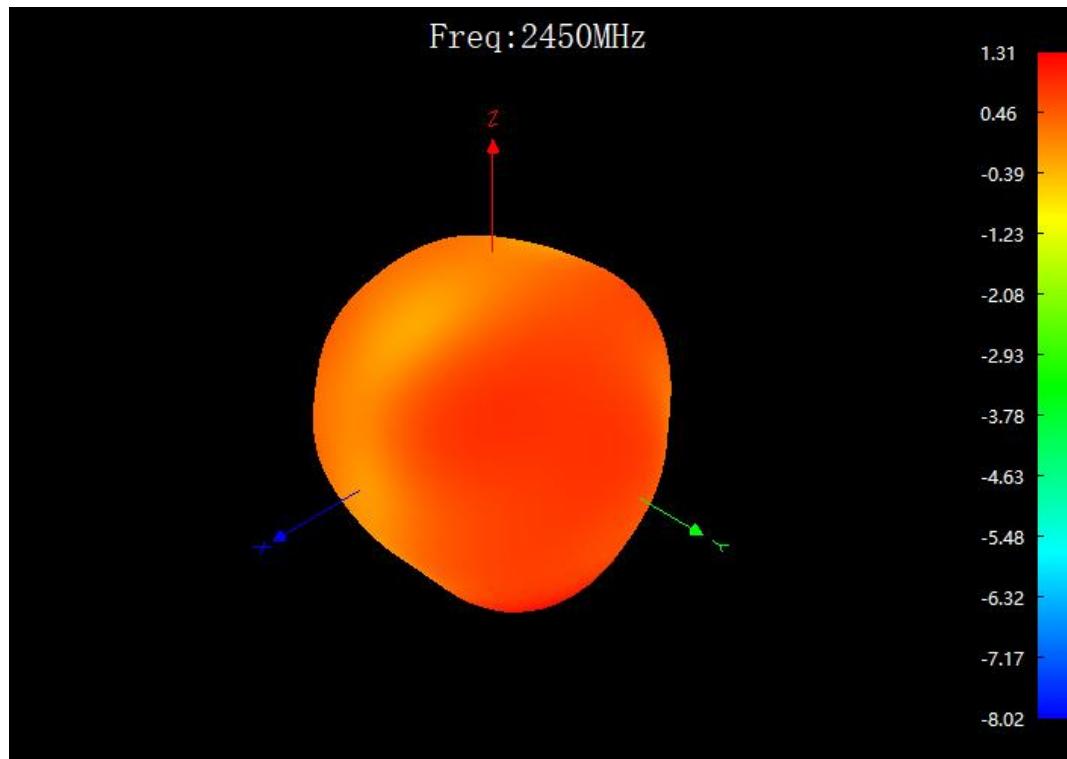
The efficiency, radiation diagram, gain and other performance parameters are based on the test of the PCB board design. The test data of the OA-C15 antenna specification characteristics are based on the test PCB board size and the test direction shown in the following figure. The following data are based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

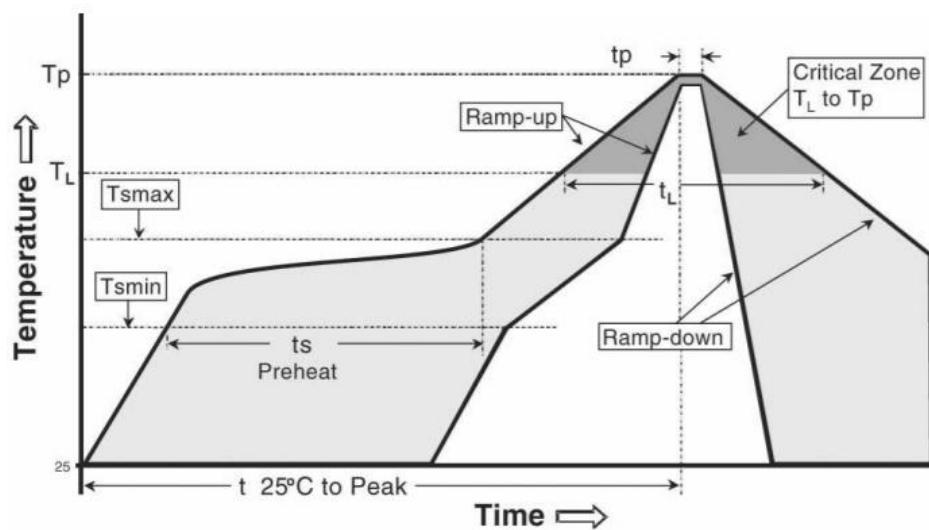
**2.45GHz 3D Direction Diagram**





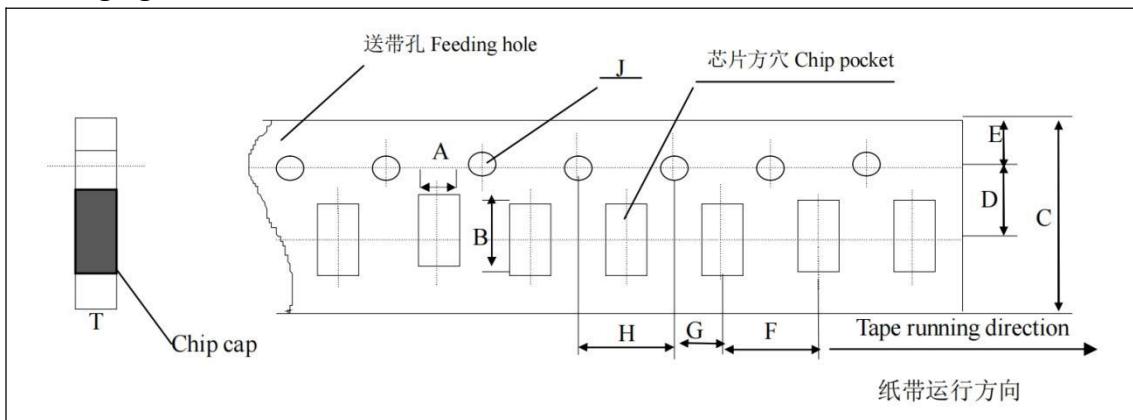
## Welding conditions

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 (Tsmax to Tp)	3 °C / second (max.)
PREHEAT	<ul style="list-style-type: none"> <li>- Temperature Min (Tsmin)</li> <li>- Temperature Max (Tsmax)</li> <li>- Time (tsmin to tsmax)</li> </ul>	150 °C 200 °C 60-180 seconds
REFLOW	<ul style="list-style-type: none"> <li>- Temperature (TL)</li> <li>- Total Time above TL (tL)</li> </ul>	217 °C 60-150 seconds
PEAK	<ul style="list-style-type: none"> <li>- Temperature (Tp)</li> <li>- Time (tp)</li> </ul>	260 °C 20-40 seconds
RAMP-DOWN	Rate	6 °C/second max
Time from 25 °C to Peak Temperature		8 minutes max

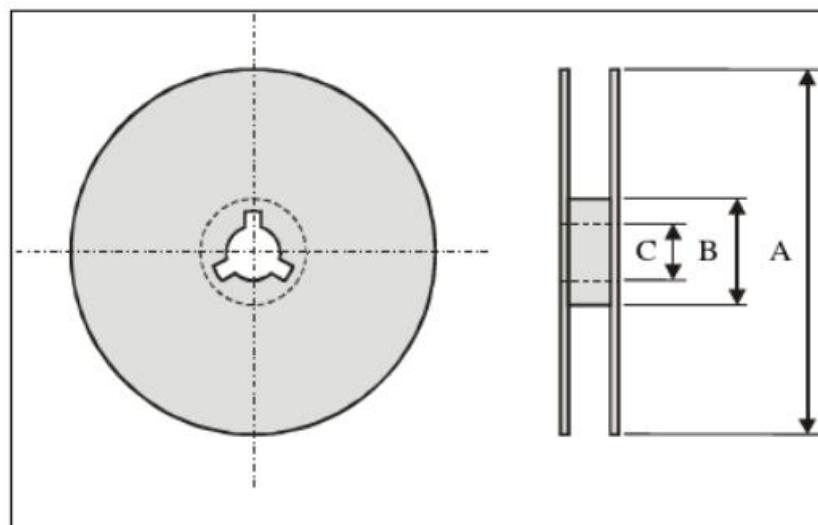
## Packaging



Plastic carrier tape specifications (Unit: mm)

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

## 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°C to +40°C

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.