SMD Antenna Specification Document

OverAir ® SMD Antenna Series
Complies with RoHS standards

PN: OA-W01

2.4G/5G WIFI Frequency Band Antenna

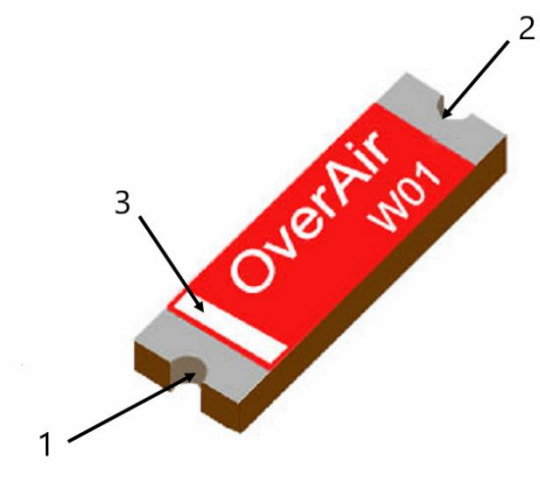
Characteristic

1. A compact SMD surface-mount antenna with dimensions of only 8.0 × 3.0 × 1.0 mm ^{3}.
2. Low energy loss and high antenna efficiency.
3. It exhibits high stability under variations in temperature and humidity.

Apply

1. Antenna applications for the 2.4G/5G Wi-Fi frequency bands.
2. Other applications include antennas operating in the 2.4 GHz or 5 GHz frequency bands.

Structure

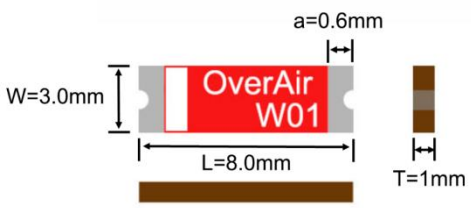


1、 Antenna signal feed terminal

2、 Fixed end of the antenna after welding

3、 Antenna Power Supply Side Label

size

three views	symbol	size (mm)
	L	8.0±0.1
	W	3.0±0.1
	T	1.0±0.1
	a	0.6±0.1

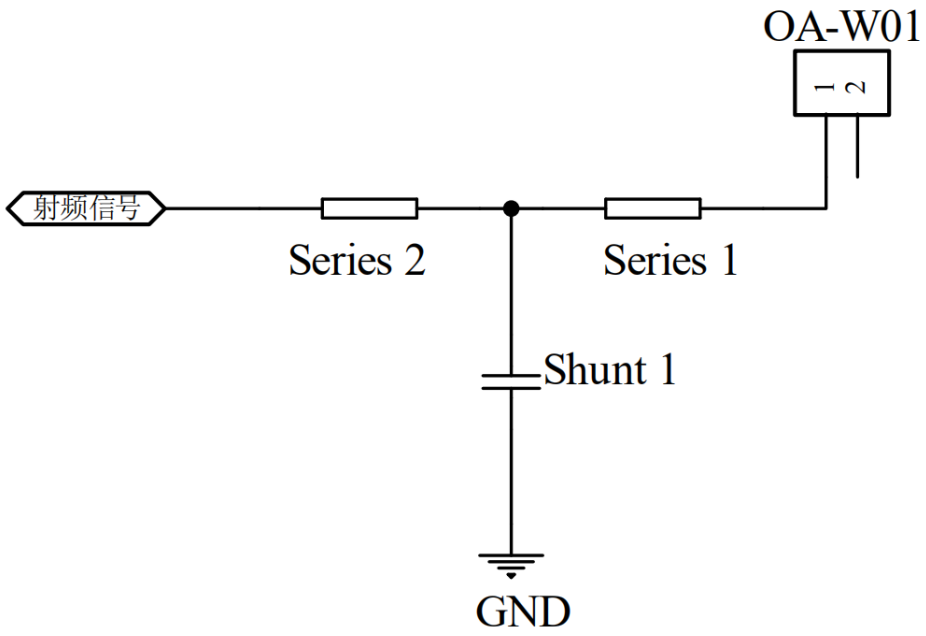
Electrical Character

OA-W01	Specification
Working Frequency Range Working Frequency	2400-2500MHz，5200-6000MHz
Impedance	50Ω
Gain (dBi)	5.5dBi（2.45GHz），3.5dBi（5.5Ghz）
Standing Wave Ratio (VSWR)	<2
Working Temperature	-40℃~+85℃
Power Capacity	3W

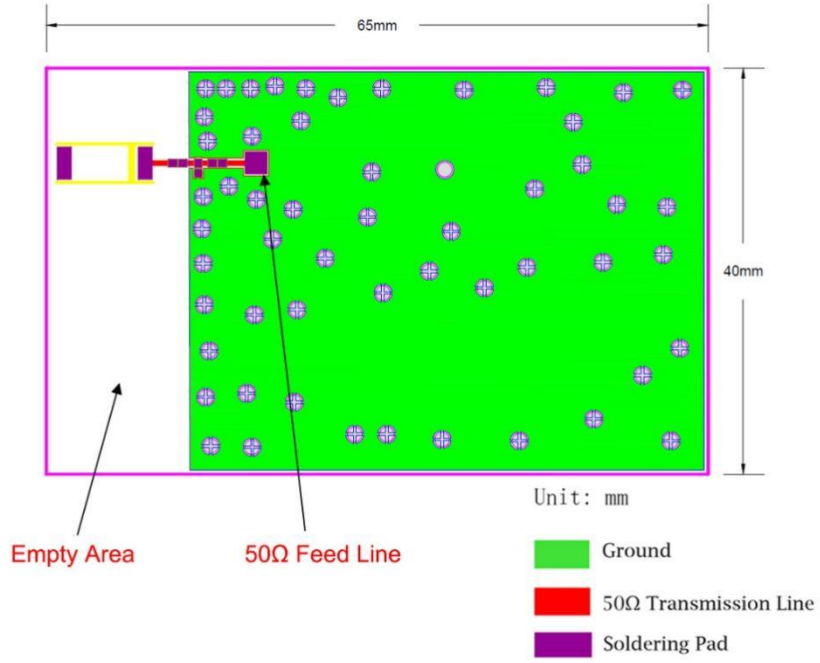
The antenna operating frequency must be achieved through debugging with impedance matching components.

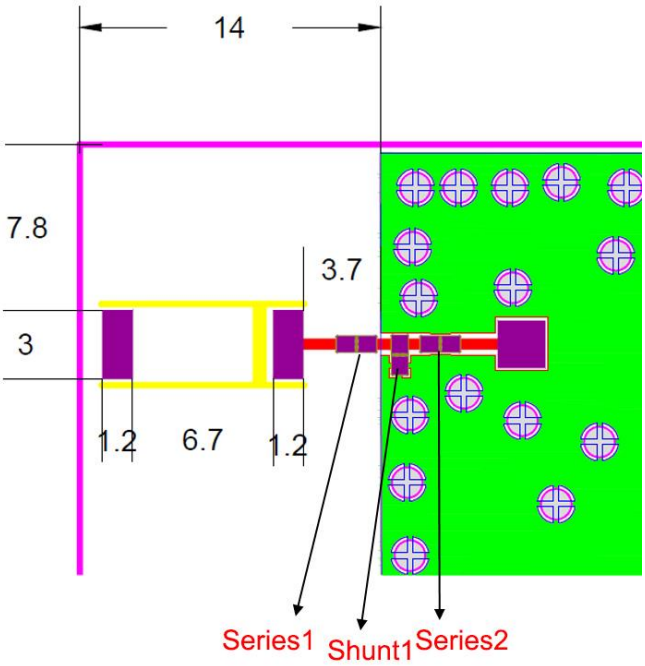
Antenna Pad and Trace Design

PCB 原理图



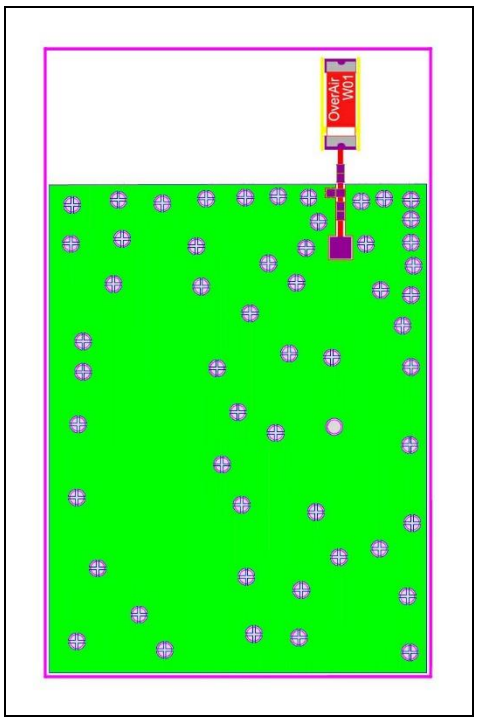
PCB 设计尺寸图



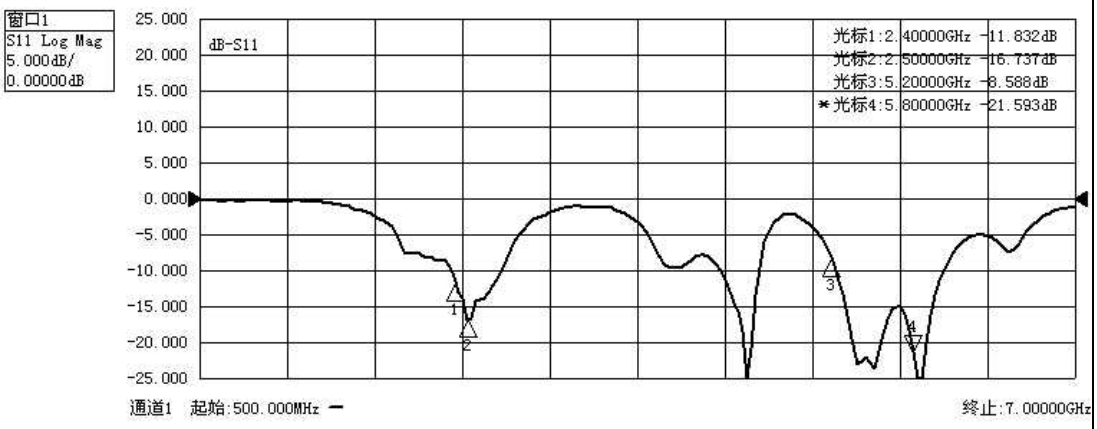


Matched Device Value		
	Series 1 Series of Connected Devices	Resistance: 0 Ω
	Shunt Device 1 (Parallel)	Vacancy NC
	Series 2 Series of Connected Devices	Resistance: 0 Ω

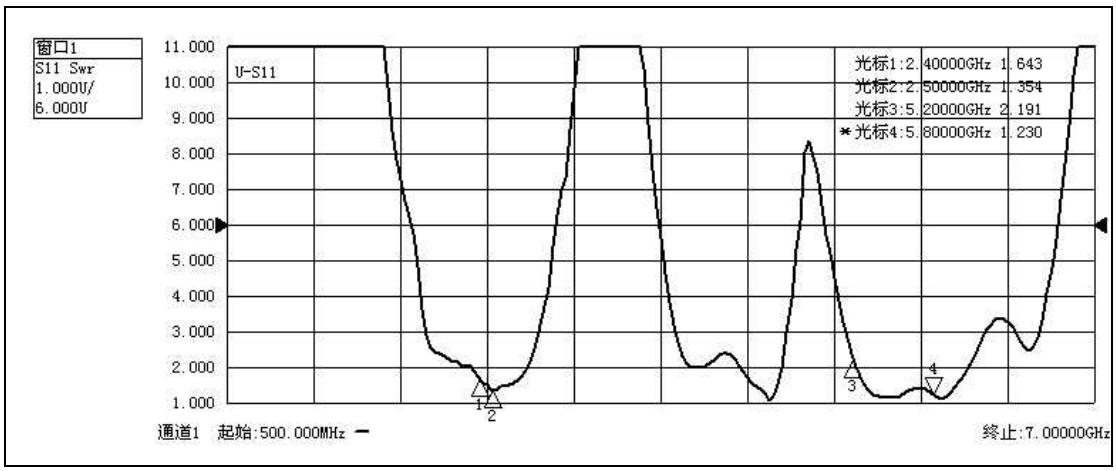
Antenna testing on the test board (board thickness: 1.0 mm)



Antenna S11 Characteristics

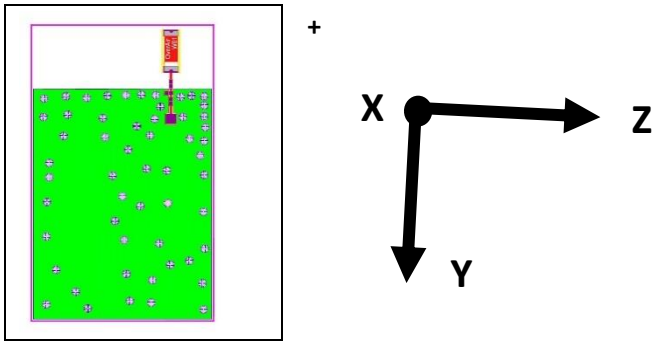


Antenna VSWR Characteristics

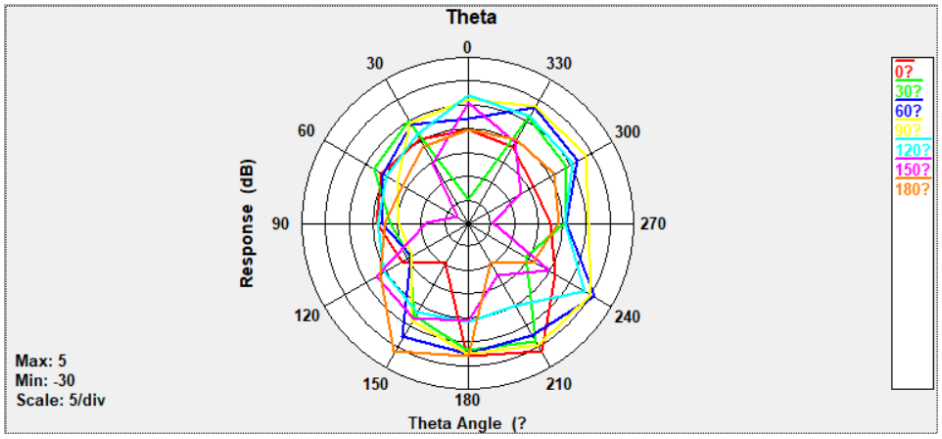
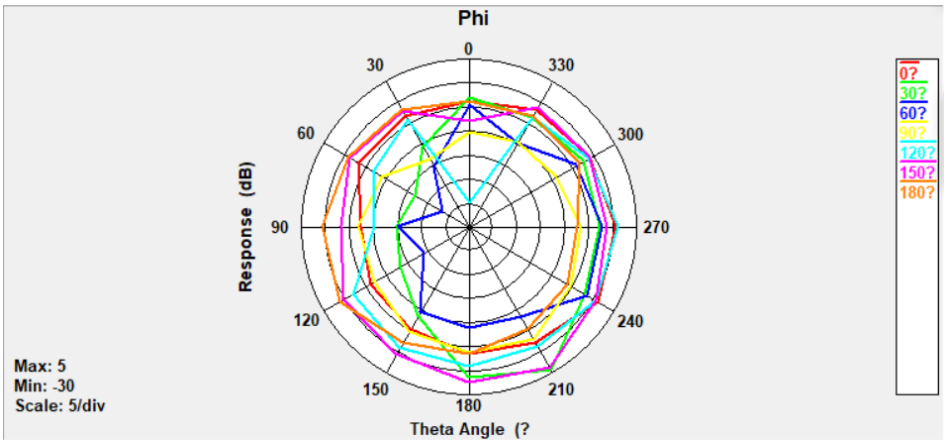
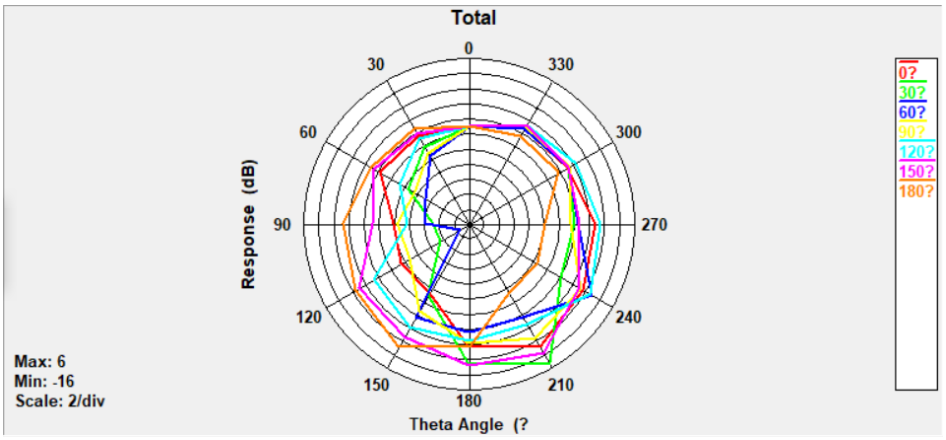
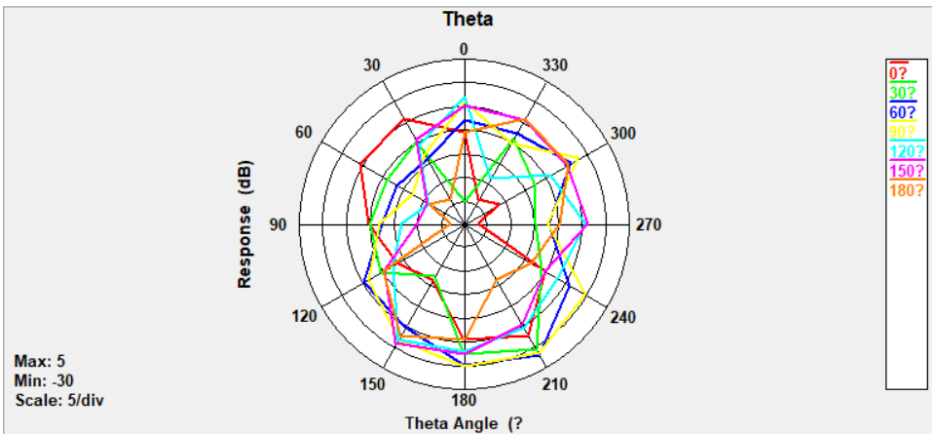


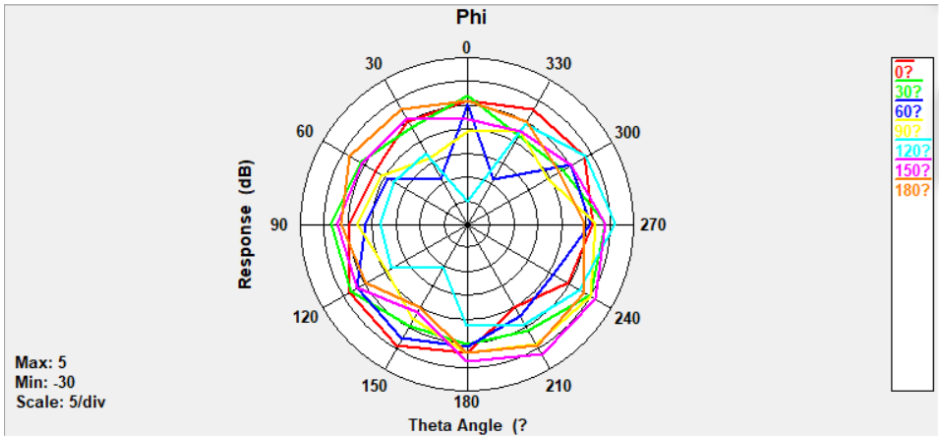
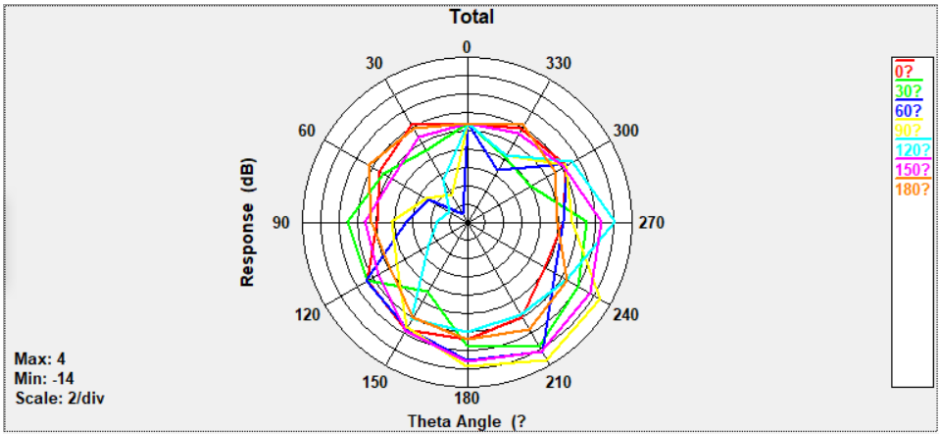
Efficiency and Radiation Diagram

Performance parameters such as efficiency, radiation pattern, and gain were derived from the test board design. The specification characteristic test data for the OA-W01 antenna were obtained based on the dimensions of the test PCB and the testing orientation shown in the figure below. All measurements were completed in an ETS 3D microwave anechoic chamber.



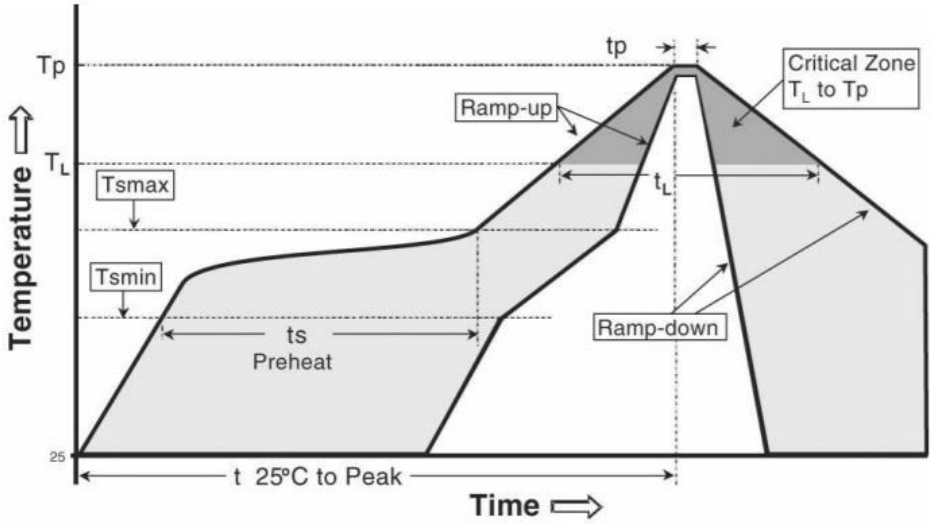
Gain and Efficiency	Bandwidth: 2.4 GHz–2.5 GHz	Bandwidth: 5.2–5.8 GHz
Peak Gain	6.1dBi	3.67dBi
Average gain within the band Average Gain across the band	5.7dBi	2.63dBi
Band gain range Gain Range across the band	5.5dBi~6.1dBi	1.33dBi~3.67dBi
Peak Efficiency	82.5%	62.4%
Average efficiency within the band Average Efficiency across the band	79%	51%
Band Internal Efficiency Range Efficiency Range across the band	74.8%~82.5%	30.77%~62.4%

Theta @2.45 GHz	
Phi @2.45 GHz	
Total @2.45 GHz	
Theta @5.5 GHz	

Phi @5.5 GHz	
Total @5.5 GHz	

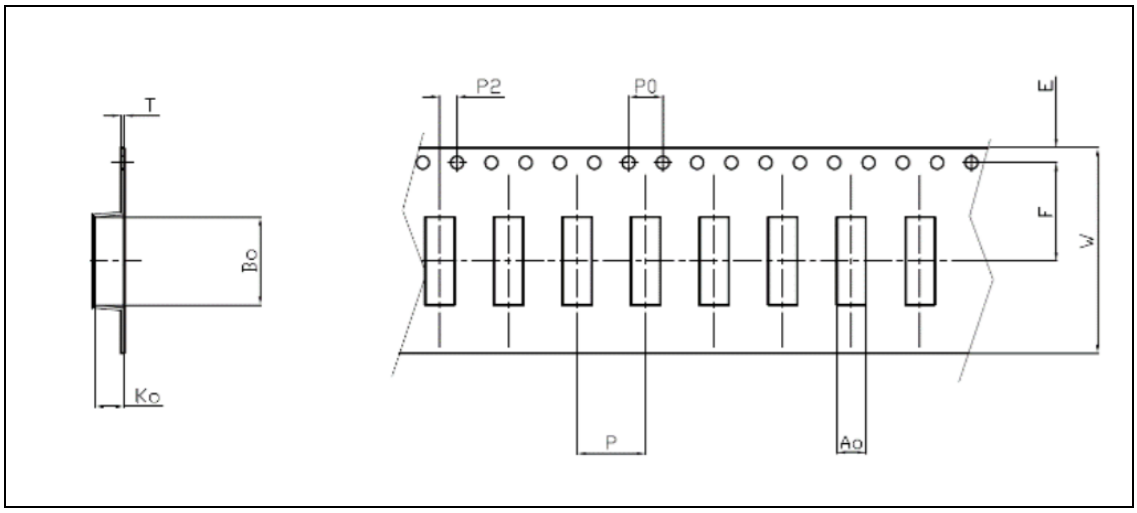
Welding Condition

The typical reliable and non-destructive welding specification is shown in the figure below:



Phase	Profile features	Pb-Free assembly (SnAgCu)
RAMP-UP	Avg. Ramp-up Rate (Tsmax to Tp)	3 °C / second (max.)
PREHEAT	- Temperature Min (Tsmin) - Temperature Max (Tsmax) - 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

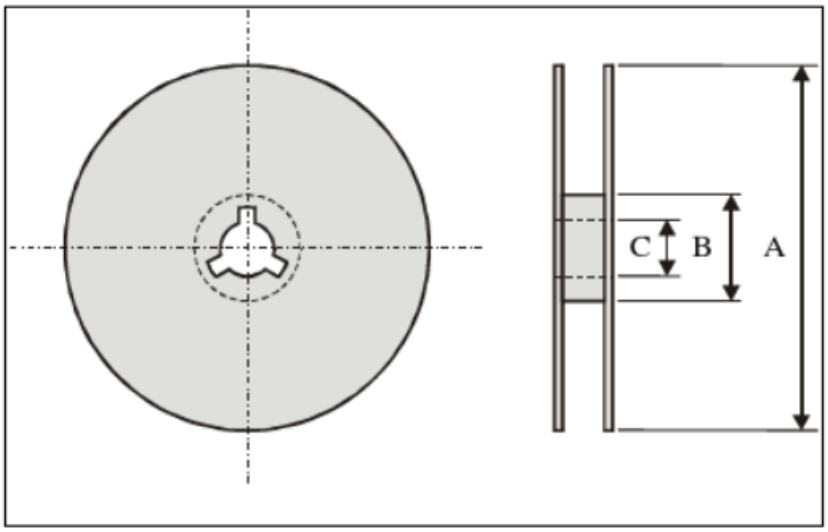
Pack



Plastic Carrier Specifications (Unit: Mm)

Index	Ao	Bo	Ko	T	W
Dimension (mm)	3.3±0.1	8.4±0.1	1.3±0.1	0.3±0.05	16.0±0.3
Index	E	F	P	P0	P2
Dimension (mm)	1.75±0.1	7.0±0.1	8.0±0.1	4.0±0.1	2.0±0.1

Spool Size



Index	A	B	C
Dimension(mm)	**330**	**100**	**13.5**

Standard quantity: 2000 PCS per disc.

Storage Environment

Products must meet the following storage conditions:

Material storage temperature: -10°C to +40°C (not the antenna operating temperature)

Material tray storage humidity: 30% to 70% relative humidity (not the antenna operating humidity)

The product should be stored away from corrosive gases such as sulfur. Chlorine or acids may cause oxidation of the product electrodes, leading to reduced weldability.

The product should be stored in a tool box and protected from moisture and dust.

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

The product should be stored under sealed conditions.