

SMD Antenna Specification Document

OverAir[®] SMDAntenna series

PN: OA-C11

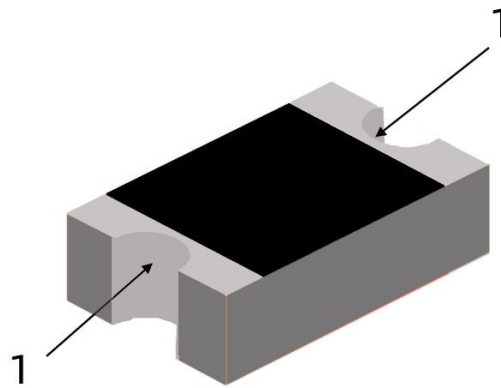
2.4 GHz ISM Frequency band antenna

feature

1. A small-sized SMD patch antenna with dimensions of only 3.3X1.7X1.2mm³
2. Low energy loss, high antenna efficiency.
3. Has high stability under changes in temperature and humidity.

application

1. 2.4GHz ISM band antenna application
2. Bluetooth ZigBee、 Wireless applications, smart home applications, etc
3. WIFI (only 2.4G)

structure

Not distinguishing between the feeding pads and fixed pads at both ends of the antenna

size

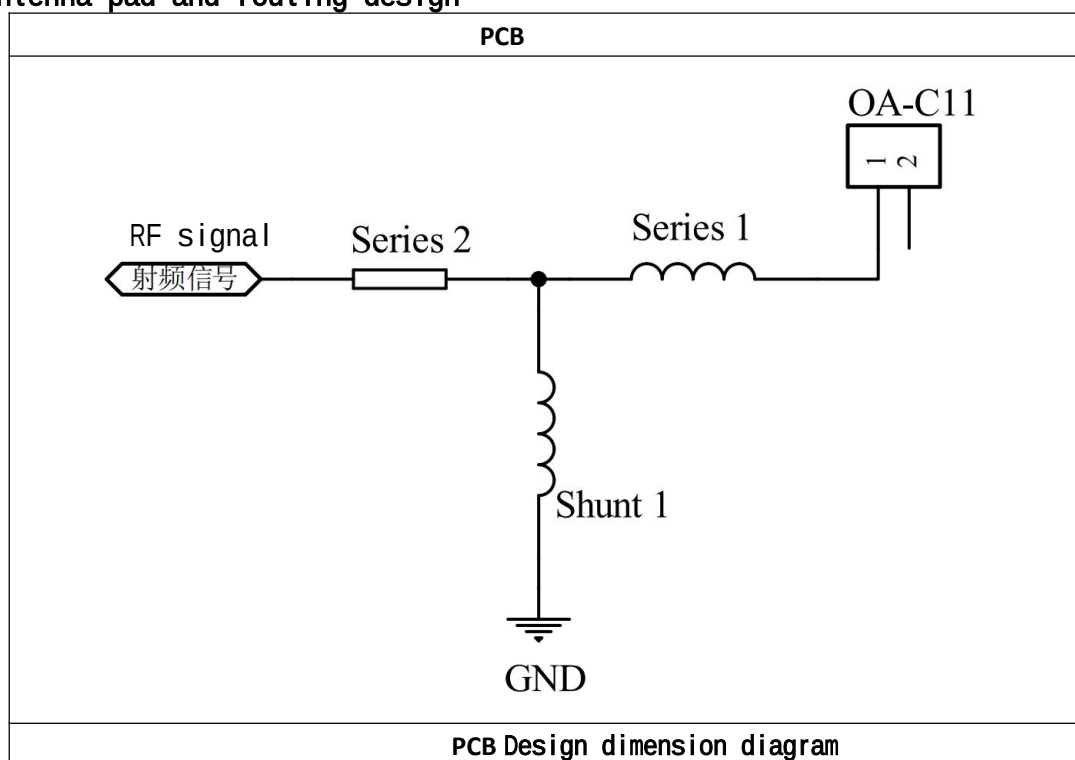
three-view drawing	symbol	size(mm)
	L	3.3±0.2
	w	1.7±0.1
	T	1.2±0.1
	a	0.5±0.1

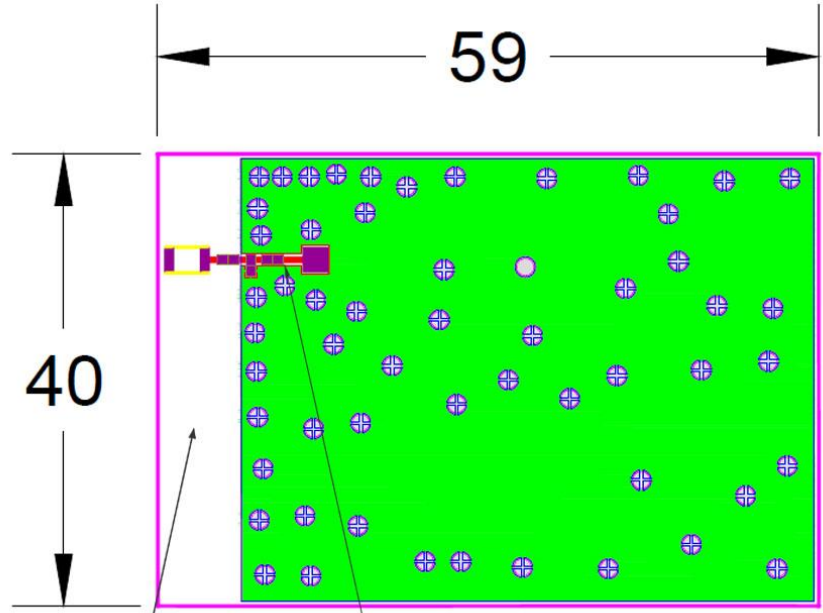
Electrical Characteristics

OA-C11	Specification
Working Frequency	$2450 \pm 50\text{MHz}$
Band Width	$>100\text{MHz}$
Impedance	$50\ \Omega$
Gain(dBi)	3.85 (peak)
VSWR	<2
Operation Temperature	$-40^{\circ}\text{C} \sim +95^{\circ}\text{C}$
Power Capacity	3W

The 2.4G working frequency of the antenna needs to be adjusted through impedance matching devices

Antenna pad and routing design



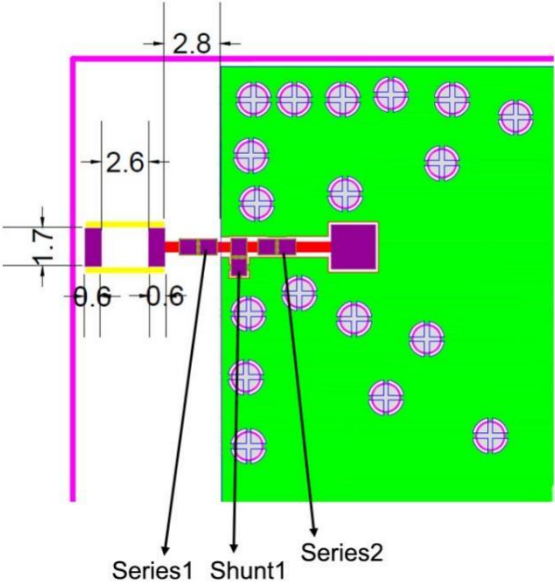


Unit: mm

Ground

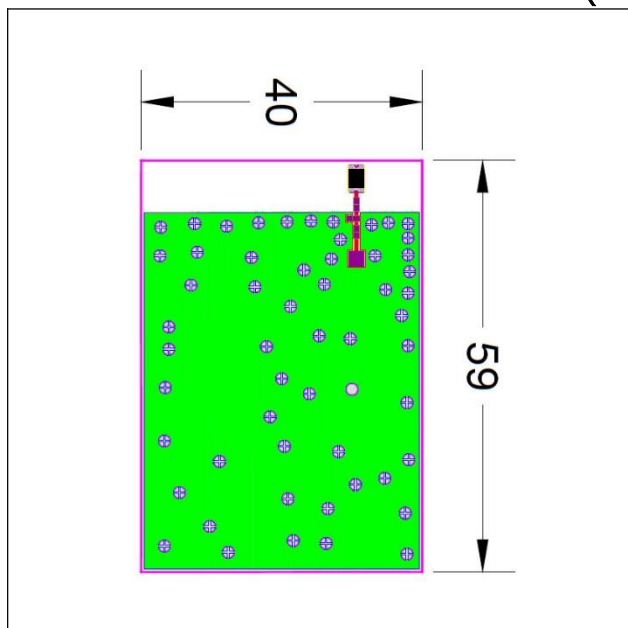
50Ω Transmission Line

Soldering Pad



Matching device values	Series 1	inductor2.2nh
	Shunt 1	inductor3.9nh
	Series 2	Resistance 0 ohms

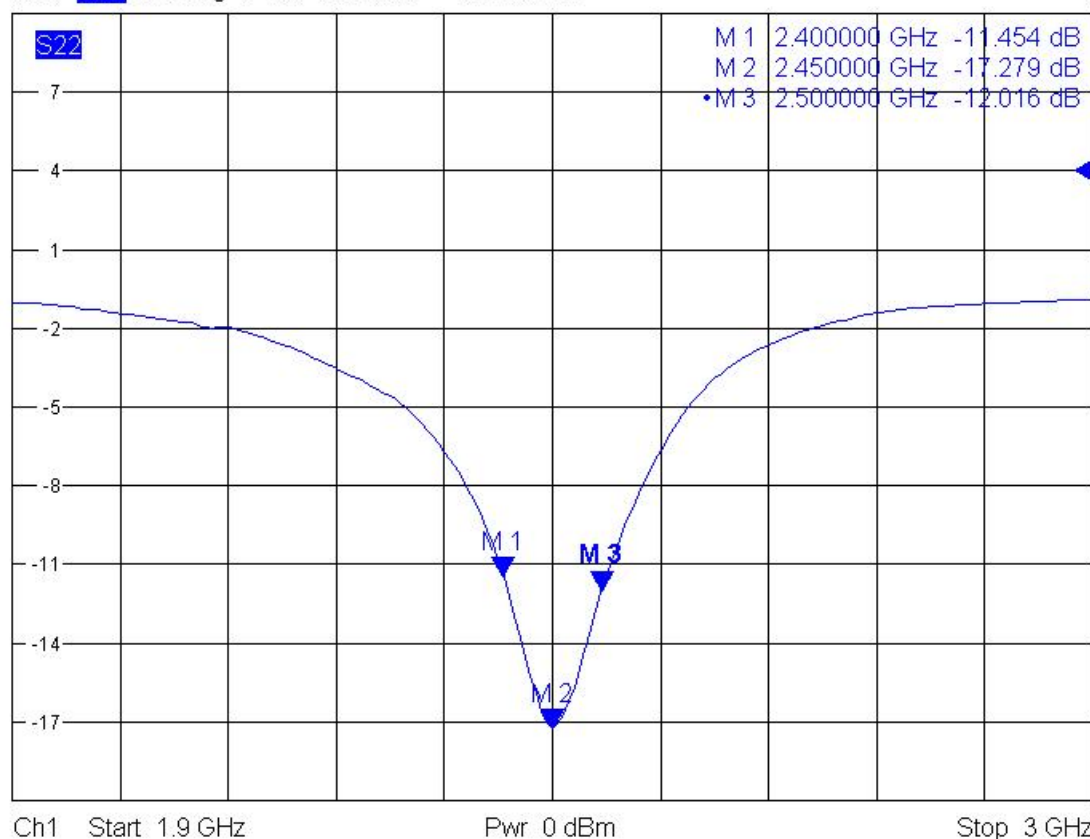
Test the antenna on the test board (board thickness 1.0mm)



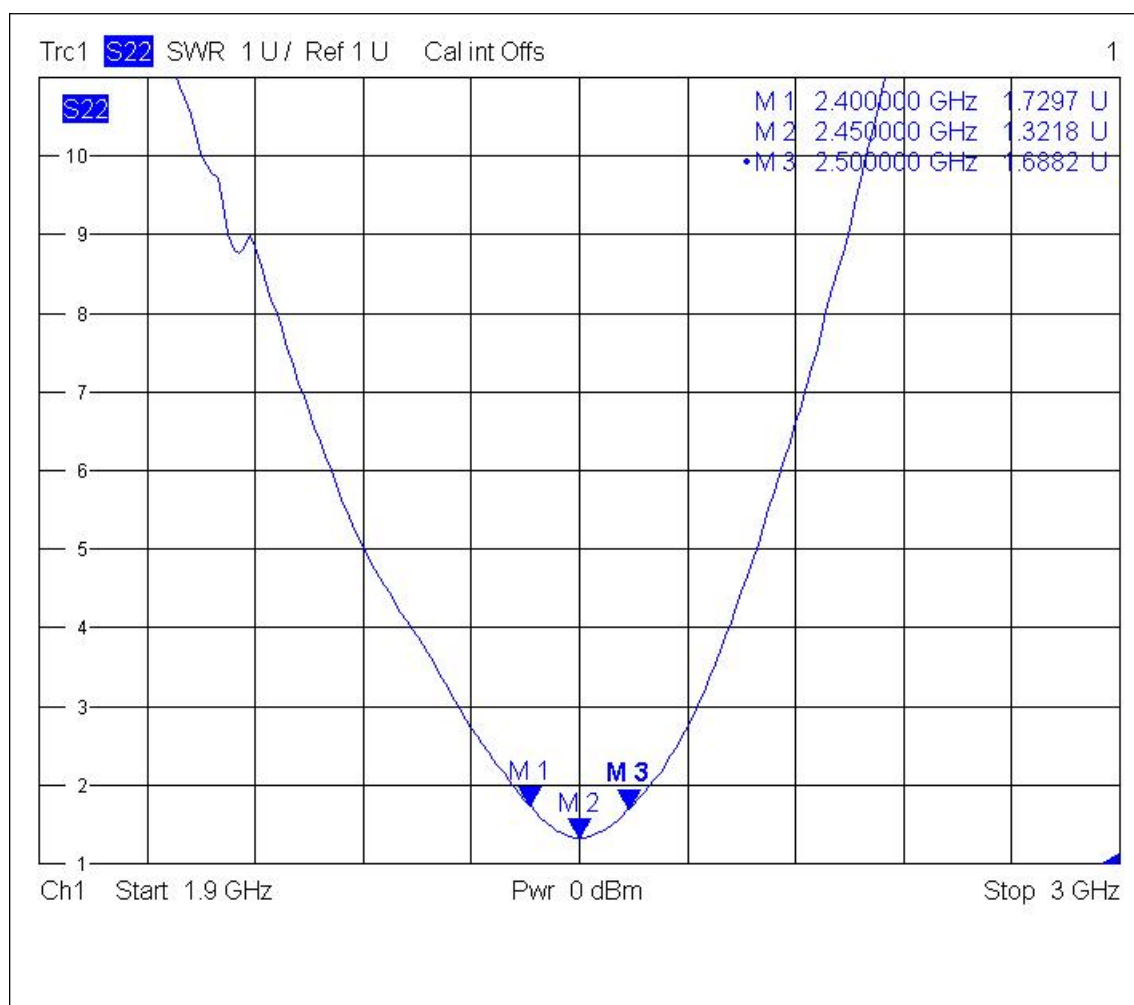
Characteristics of antenna S11

Trc1 S22 dB Mag 3 dB / Ref 4 dB Cal int Offs

1

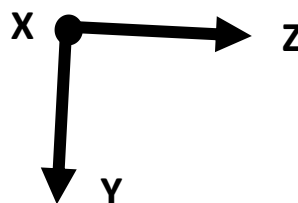
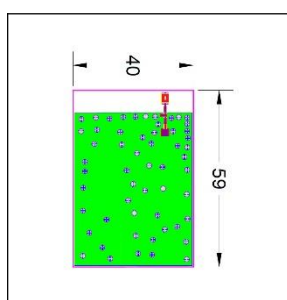


Antenna VSWR characteristics



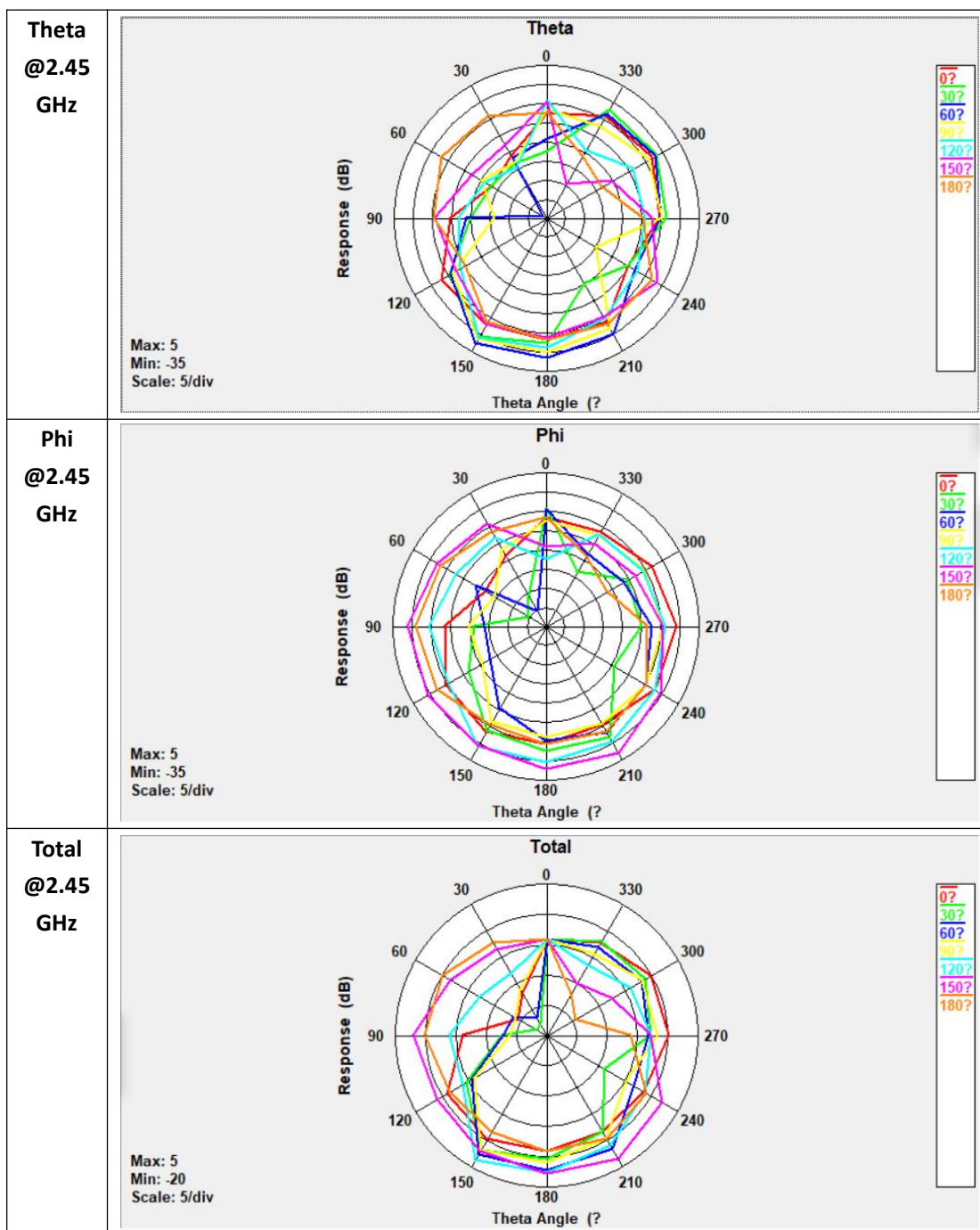
Efficiency and radiation diagram

Efficiency, radiation pattern, gain and other performance are based on the design of the test board. The specification and characteristic test data of OA-C11 antenna are obtained based on the size of the tested PCB board and the testing direction shown in the following figure. The following data was tested in the ETS3D microwave anechoic chamber



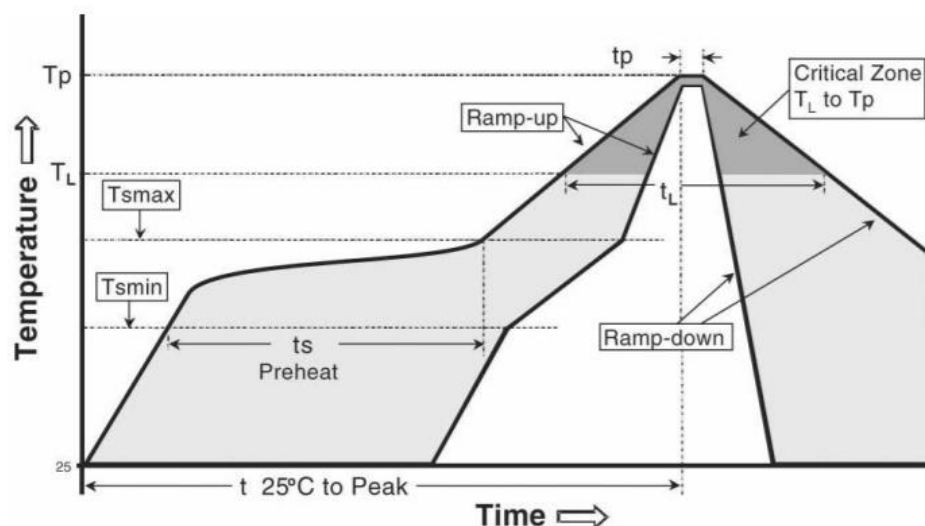
Gain and efficiency	2.4G-2.5GHz
Peak Gain	3.85dBi
Average Gain across the band	3.76dBi
Gain Range across the band	3.53dBi~3.85dBi
Peak Efficiency	63.2%
	58.8%

Average Efficiency across the band	
Efficiency Range across the band	54.1%~63.2%



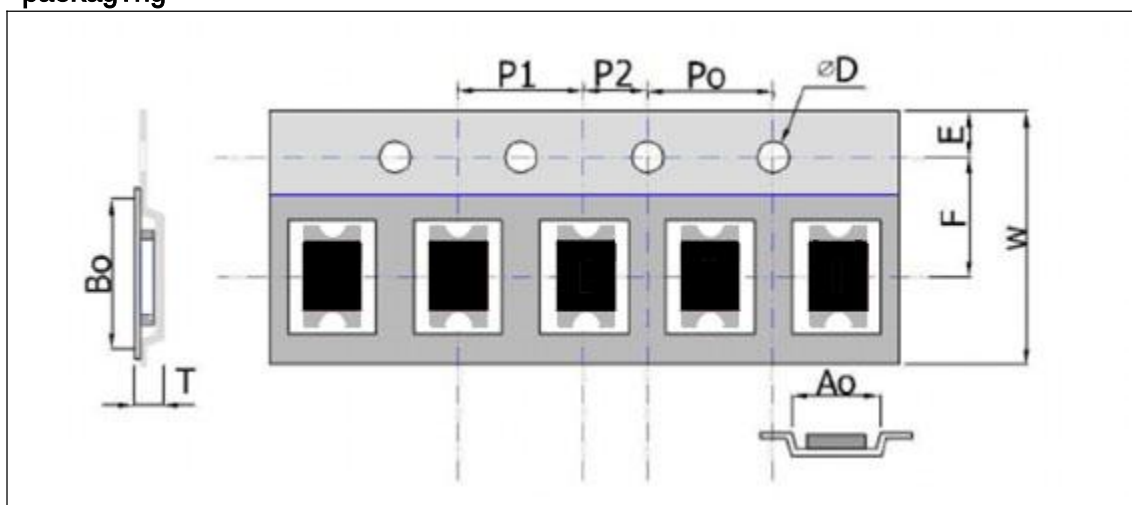
Welding conditions

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

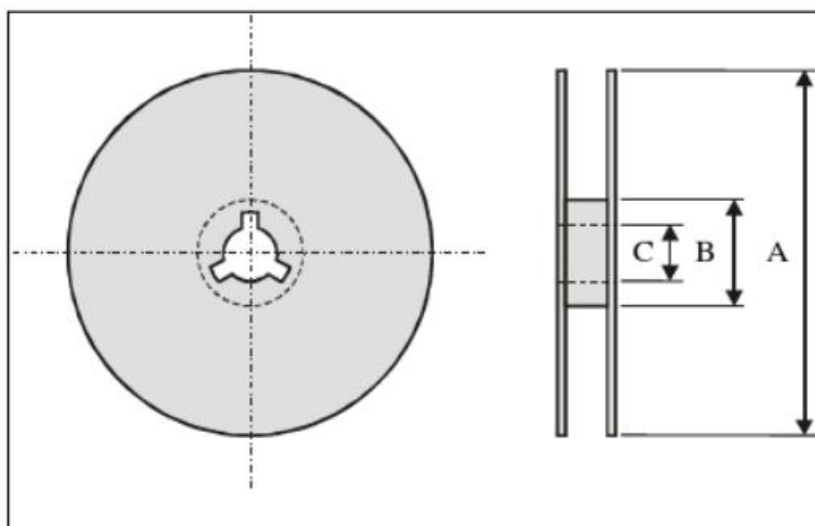
packaging



Plastic carrier tape specifications(unit:mm)

Index	Ao	Bo	ΦD	T	W
Dimension (mm)	2.0 ± 0.1	4.0 ± 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

Roll size



Index	A	B	C
Dimension(mm)	178	60	13.5

standard quantity: 2500 PCS/盘.

storage environment

The following conditions should be met when storing the product:

Temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$

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, resulting in decreased 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.