

Specification Sheet

Manufacturer: Guangzhou Hanwuji Electronic Technology Co., Ltd

Address: Room 1120, 11th Floor, Building 1, Hongda Creative Park, Yuanxiang Road, Yunpu Subdistrict, Huangpu District, Guangzhou City

Antenna type: Internal Antenna

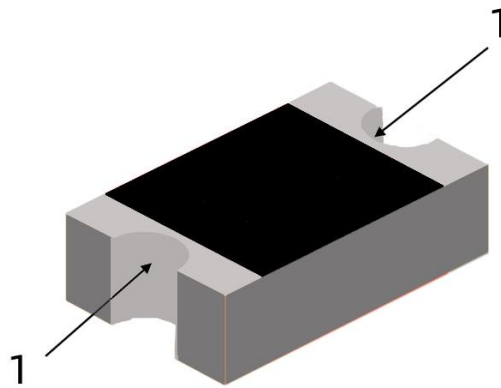
Characteristic

1. A compact SMD surface-mount antenna measuring only $3.3 \times 1.7 \times 1.2 \text{ mm}^3$.
2. Low energy consumption, high antenna efficiency.
3. Exhibits high stability under varying temperature and humidity conditions.

Apply

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

structure



Does Not Distinguish Between the Feedthrough Pad and the Fixed Pad at Both Ends of the Antenna.

Size

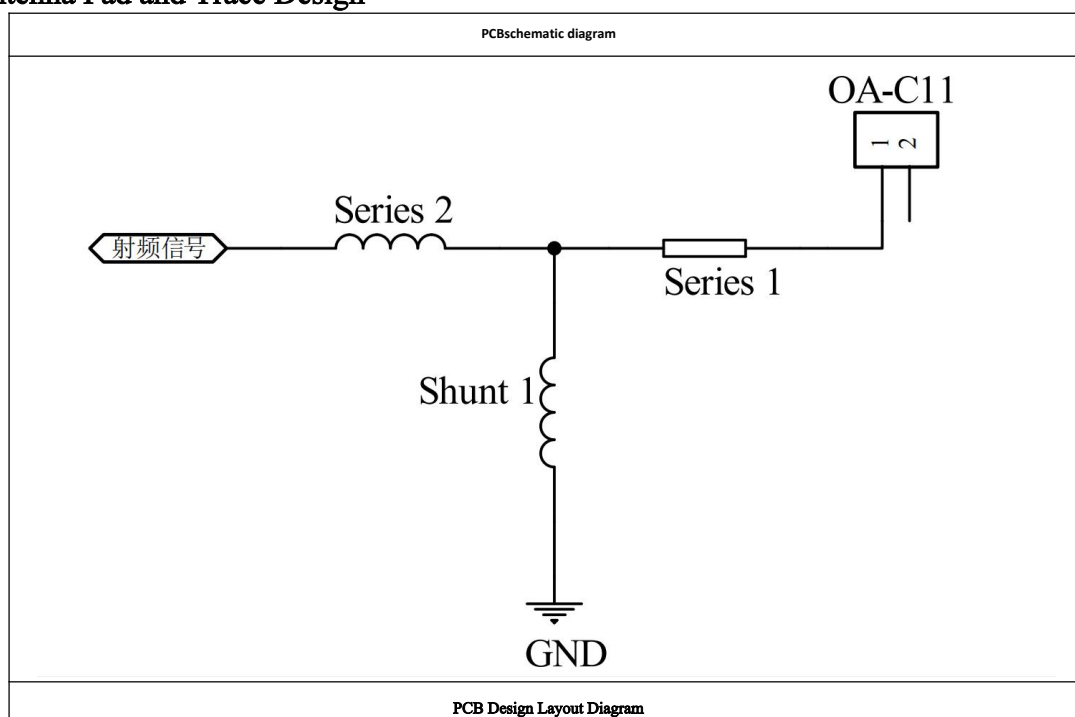
Three views	Symbol	Size(mm)
	L	3.3 ± 0.2
	w	1.7 ± 0.1
	T	1.2 ± 0.1
	a	0.5 ± 0.1

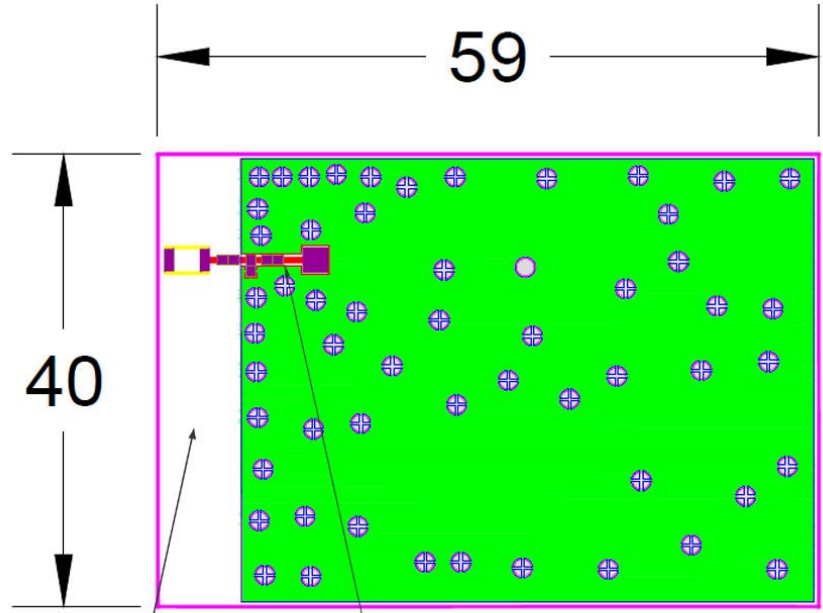
Electrical Character

OA-C11	Specification
Operating Frequency Range	$2450 \pm 50\text{MHz}$
Bandwidth	$>100\text{MHz}$
Impedance	$50\ \Omega$
Gain (dBi)	3.85 (peak)
Standing Wave Ratio (VSWR)	<2
Operating Temperature	$-40^{\circ}\text{C} \sim +95^{\circ}\text{C}$
Power Capacity	3W

The 2.4 GHz operating frequency of the antenna must be tuned using an impedance matching device.

Antenna Pad and Trace Design



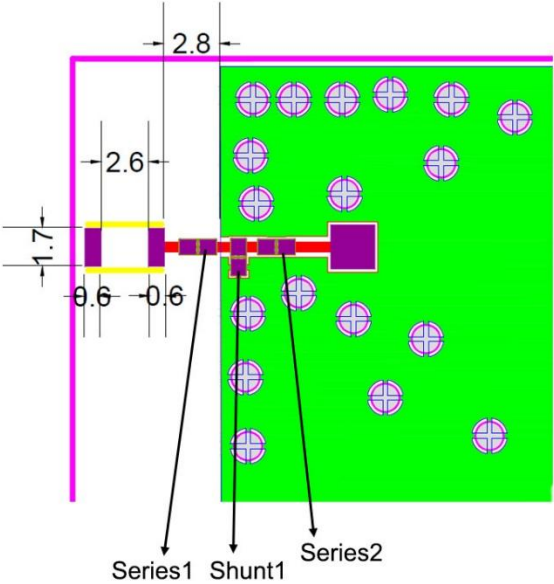


50Ω Feed Line

Empty Area

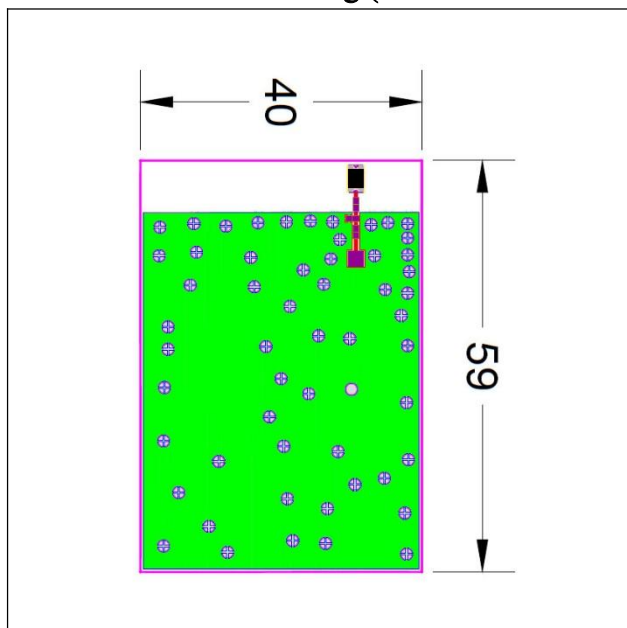
Unit: mm

- Ground
- 50Ω Transmission Line
- Soldering Pad

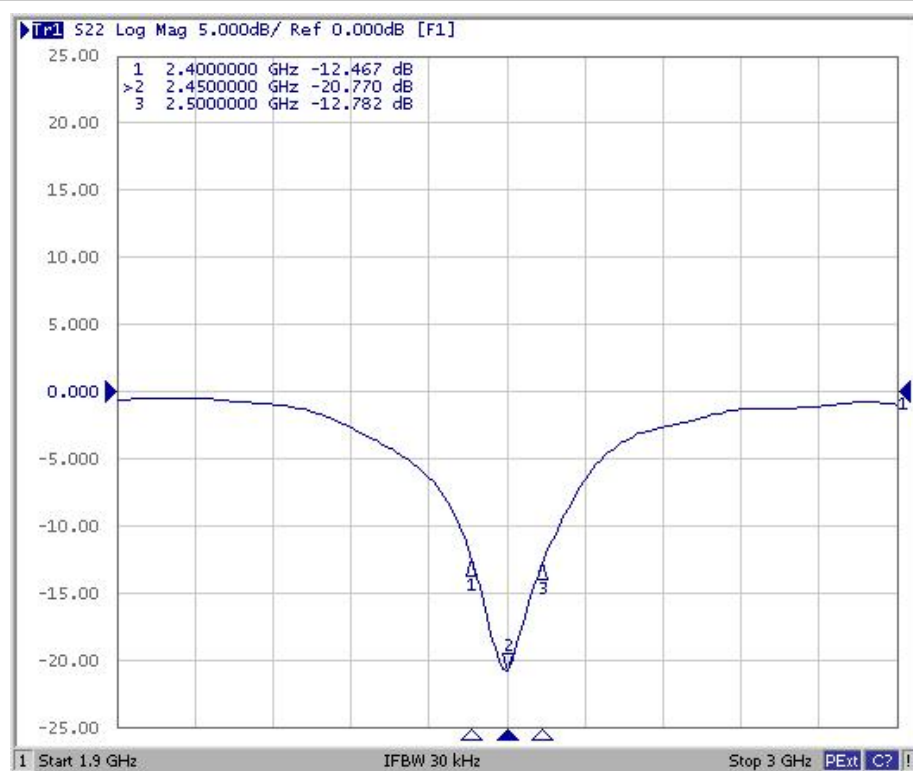


Matched device value	Series Device 1	Resistance 0 Ω
	Shunt device Shunt 1	High-frequency inductor: 9 nH
	Series 2 Device	High-frequency inductor: 2.3 nH

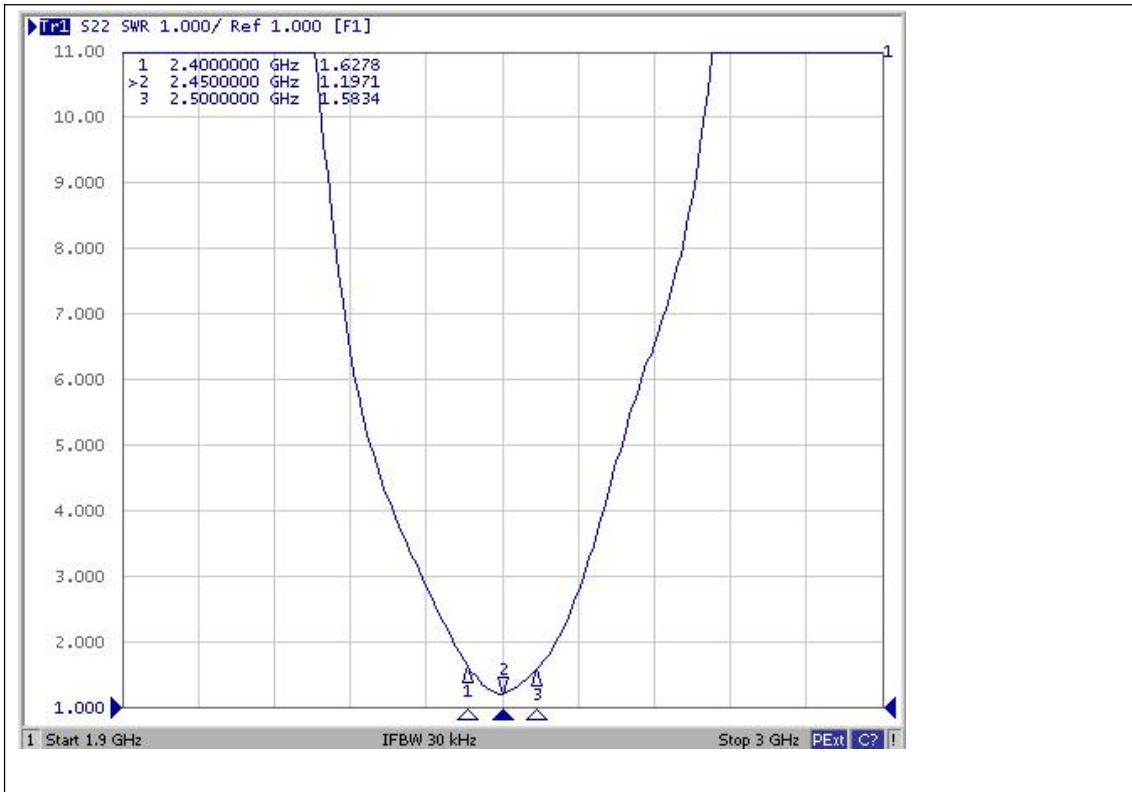
Test board antenna testing (board thickness: 1.0 mm)



Antenna S11 characteristics

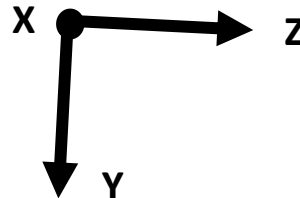
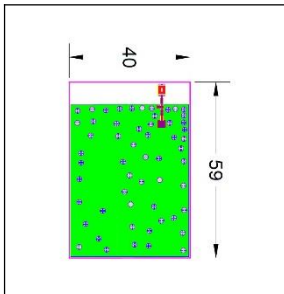


Antenna VSWR characteristics

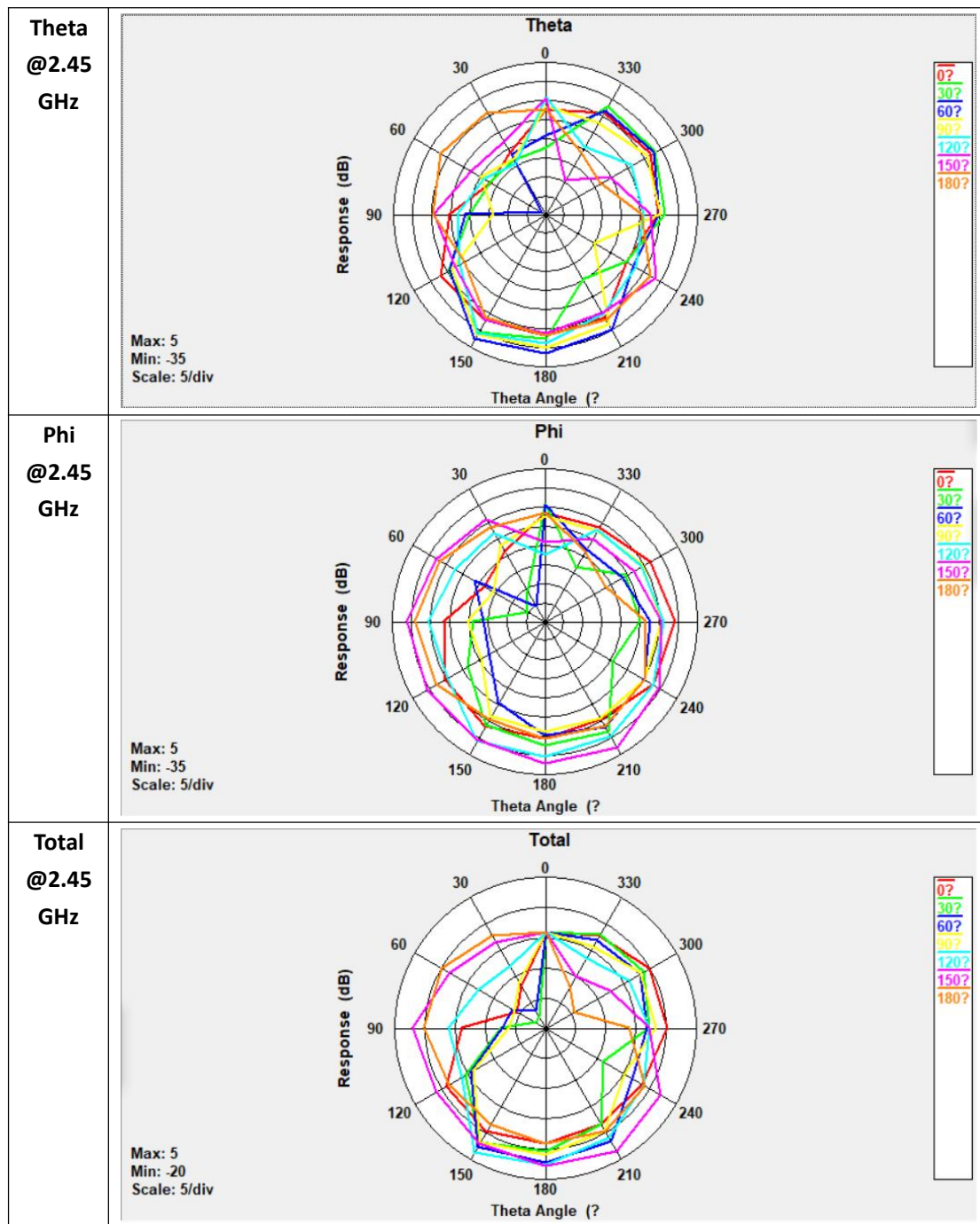


Efficiency and Radiation Diagram

Performance parameters such as efficiency, radiation pattern, and gain were derived from the test board design. The specification characterization test data for the OA-C11 antenna were obtained based on the dimensions of the test PCB board and the test direction illustrated in the figure below. The following data were acquired during testing in an ETS 3D microwave anechoic chamber.

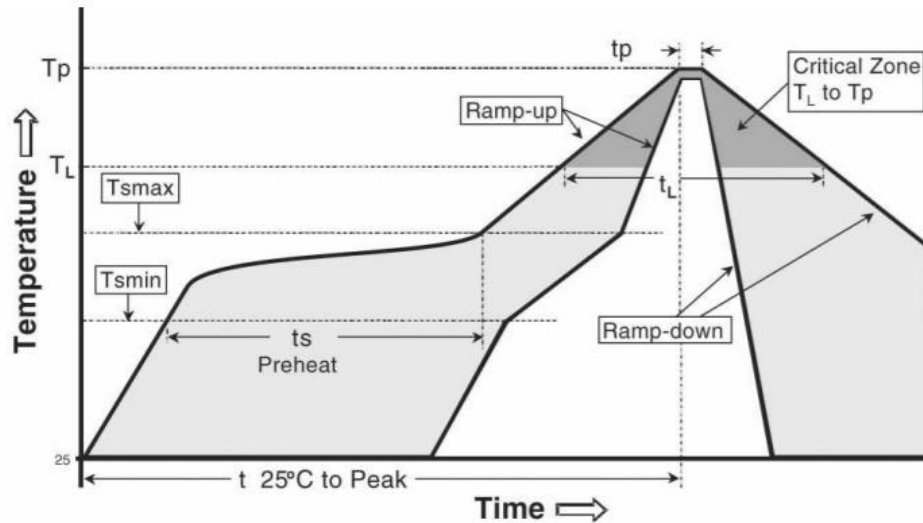


Gain and Efficiency	Bandwidth: 2.4 GHz–2.5 GHz
Peak Gain	3.85dBi
In-band average gain	3.76dBi
Average Gain across the band	
Bandwidth gain range	3.53dBi~3.85dBi
Gain Range across the band	
Peak Efficiency	63.2%
In-band average efficiency	58.8%
Average Efficiency across the band	
In-band efficiency range	54.1%~63.2%
Efficiency Range across the band	



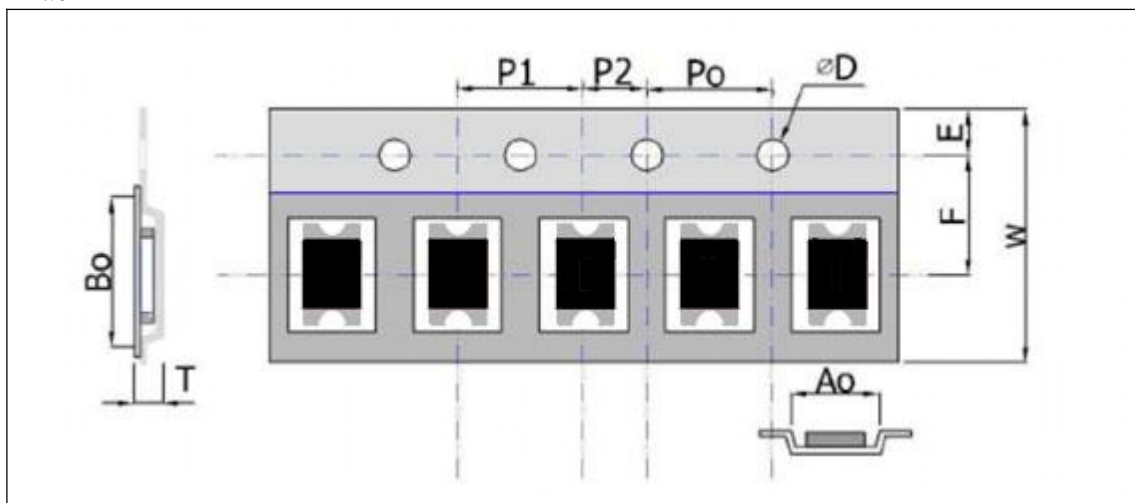
Welding Condition

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



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

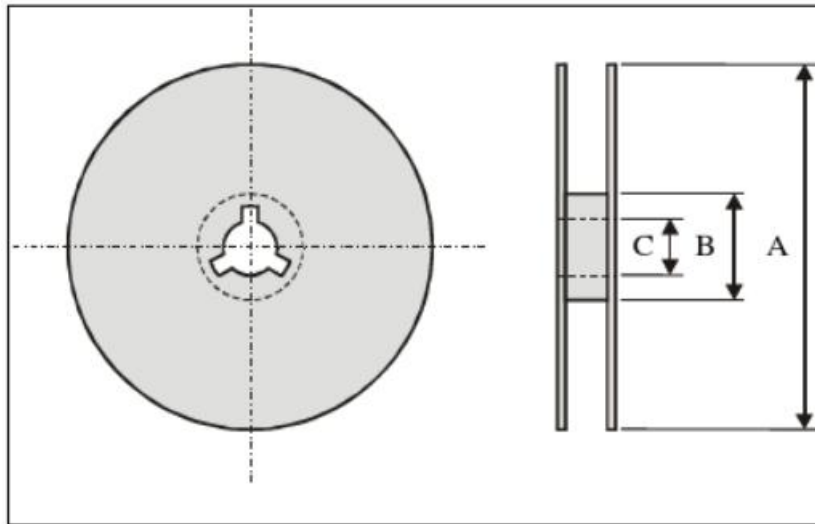
Pack



Plastic 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

Reel Dimensions



Index	A	B	C
Dimension(mm)	178	60	13.5

Standard quantity: 2500 PCS/box.

Storage Environment

Product storage shall comply with the following conditions:

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. Exposure to chlorine or acids may cause oxidation of the product's electrodes, thereby reducing its weldability.

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

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

The product should be stored under a sealed condition.