

SMD Antenna Specification

**OverAir[®] SMD Antenna Series
Complies with RoHS regulations**

PN: OA-C07

2.4 GHz ISM Band Antenna

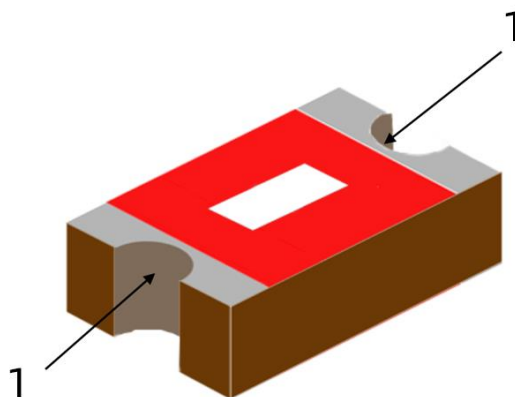
Characteristic

1. A small SMD patch antenna with a size of only 3.5 X 1.7 X 1.2 mm³.
2. Low energy loss and high antenna efficiency.
3. It has high stability under the condition of temperature and humidity change.

Apply

1. 2.4GHz ISM Band Antenna Applications
2. Bluetooth, ZigBee, wireless applications, smart home applications, etc.
3. WIFI (2.4G only)

structure



Do Not Distinguish Between Feed Pads and Fixed Pads at Both Ends of the Antenna

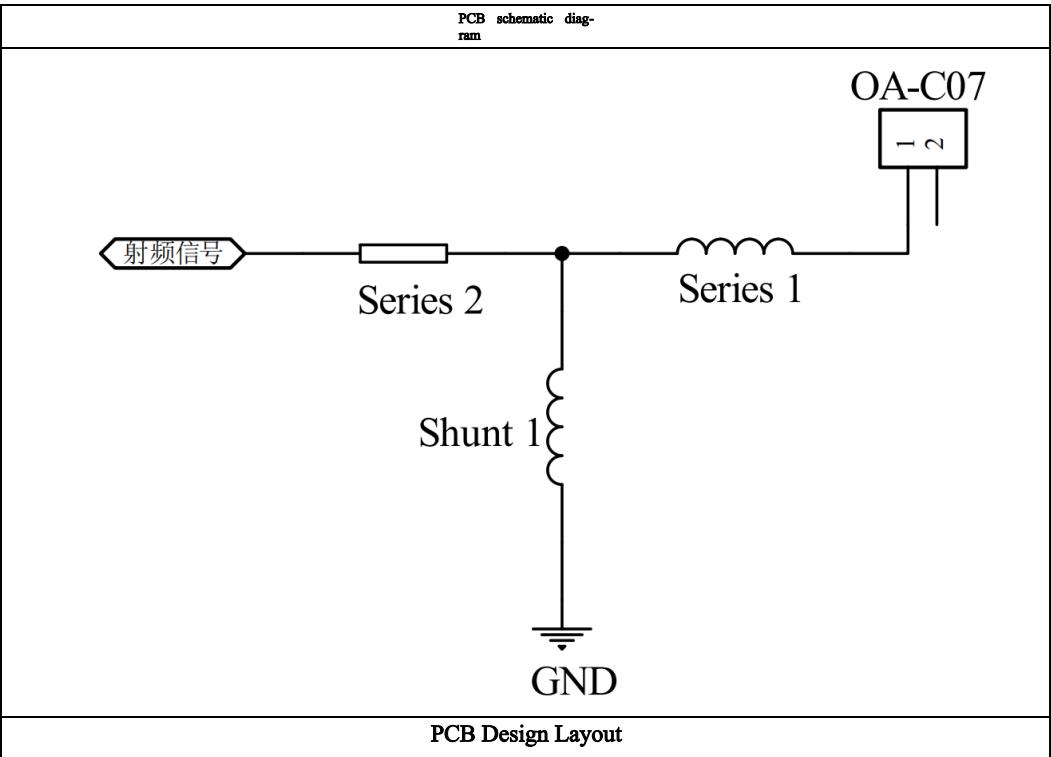
Size		
Three views	Symbol	Size (mm)
	L	3.5 ± 0.2
	w	1.7 ± 0.1
	T	1.2 ± 0.1
	a	0.4 ± 0.1

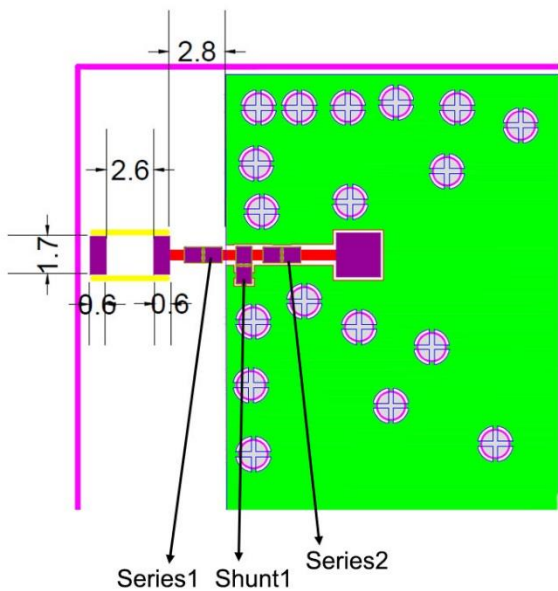
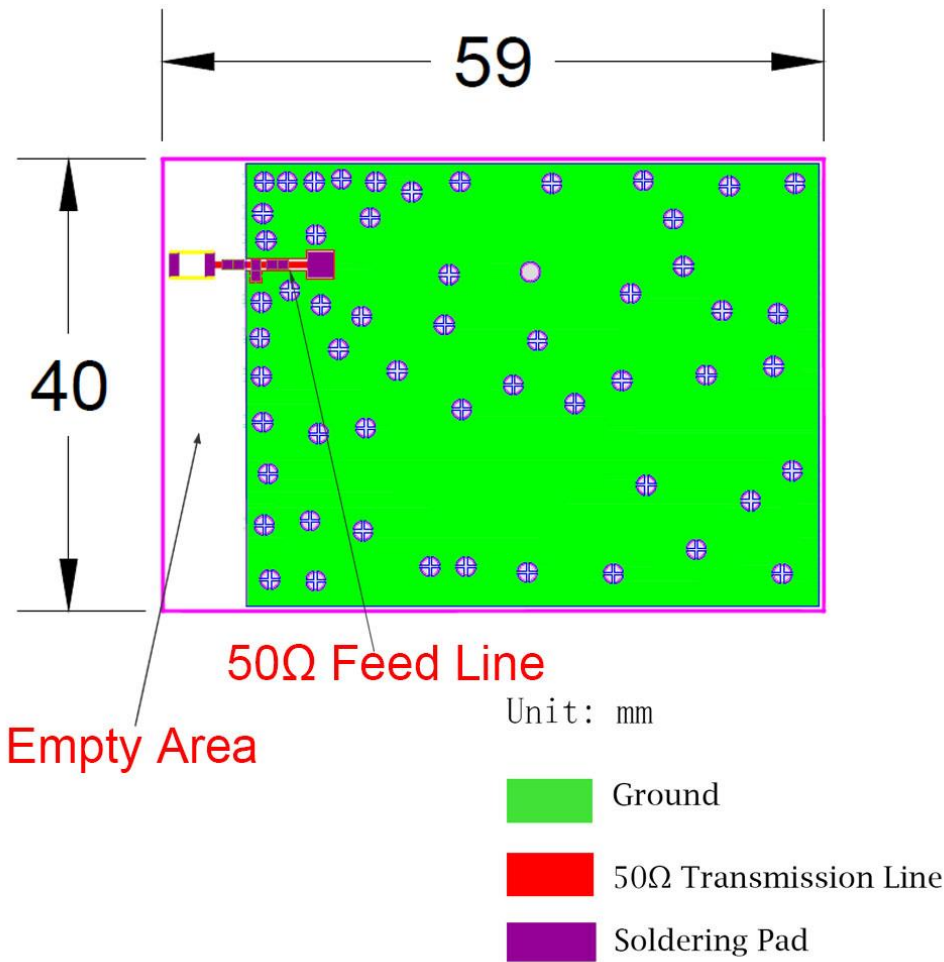
Electrical Character

OA-C07	Specification
Working Frequency Range	2450 ± 50MHz
Bandwidth	>100MHz
Impedance	50 Ω
Gain (dBi)	3.74 (peak)
Standing-wave ratio VSWR	<2
Operating Temperature	-40℃~+95℃
Power Capacity	3W

The 2.4G antenna operating frequency requires impedance matching device debugging.

Design of Antenna Pad and Tracing

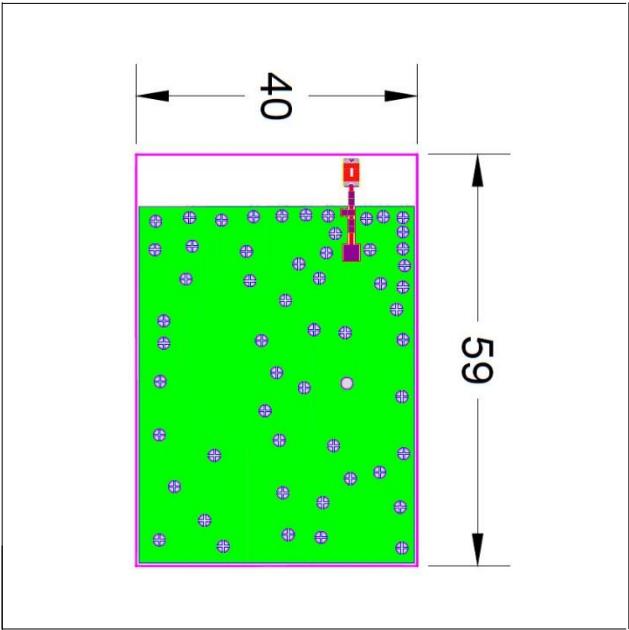




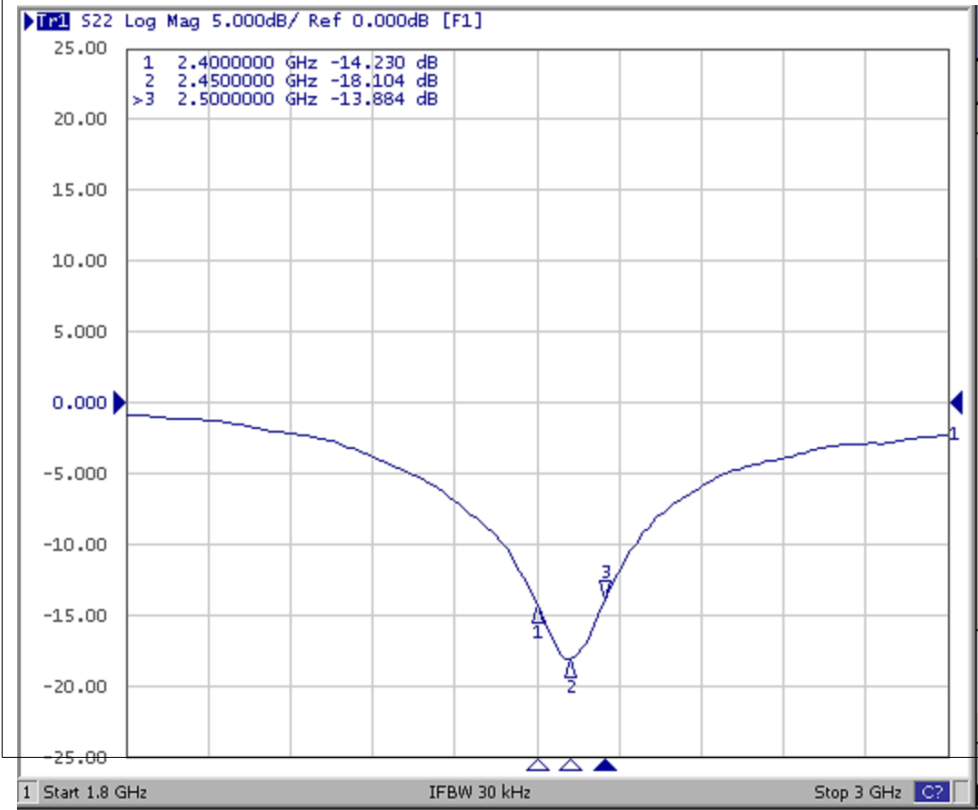
Matched device value	Series 1	High-frequency indu- ctor 5.6NH
	Shunt 1	High-frequency indu-

		ctor 4.7NH
	Series 2	Resistance 0 Ω

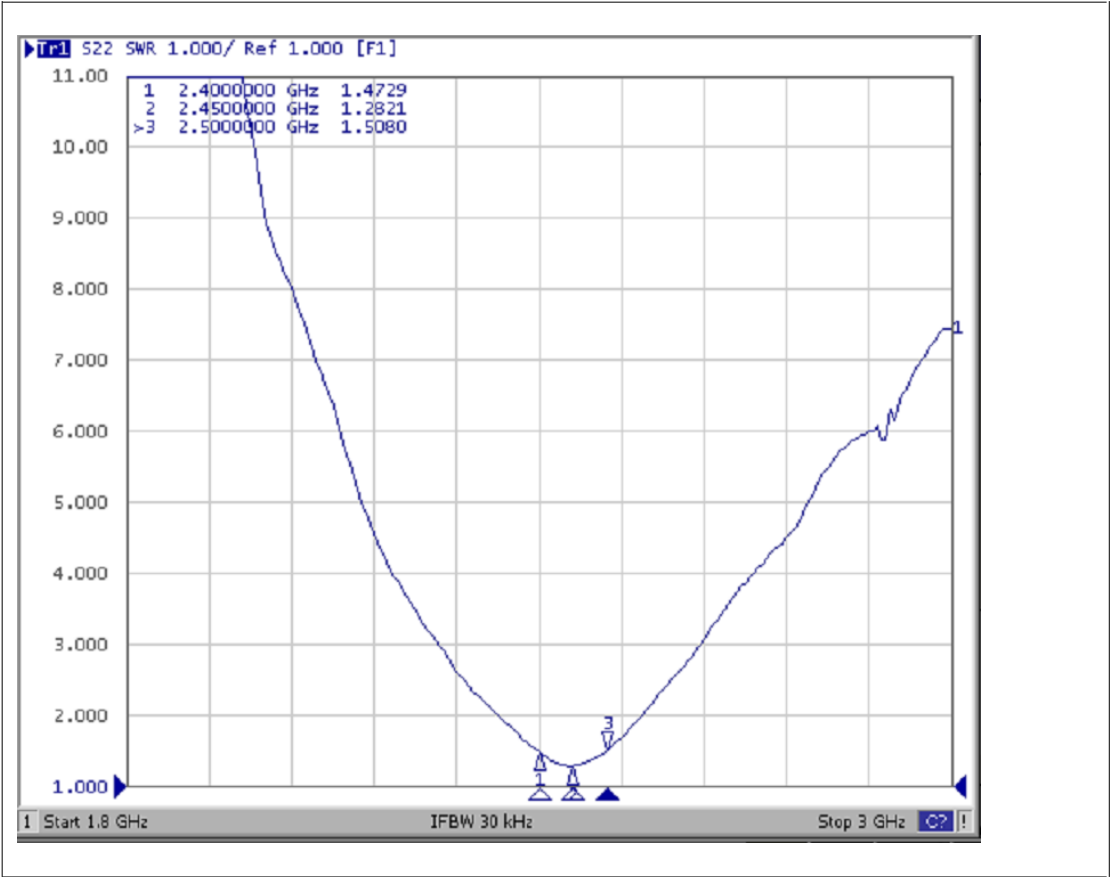
Antenna test on test board (board thickness 1.0mm)



Antenna S11 characteristics

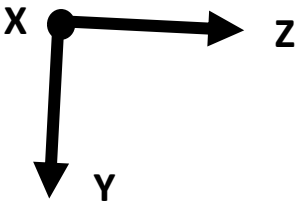
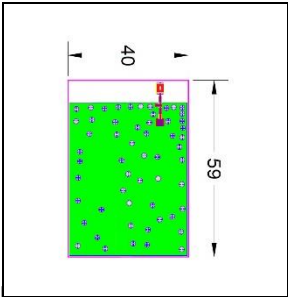


Antenna VSWR characteristics



Efficiency and Radiation Diagram

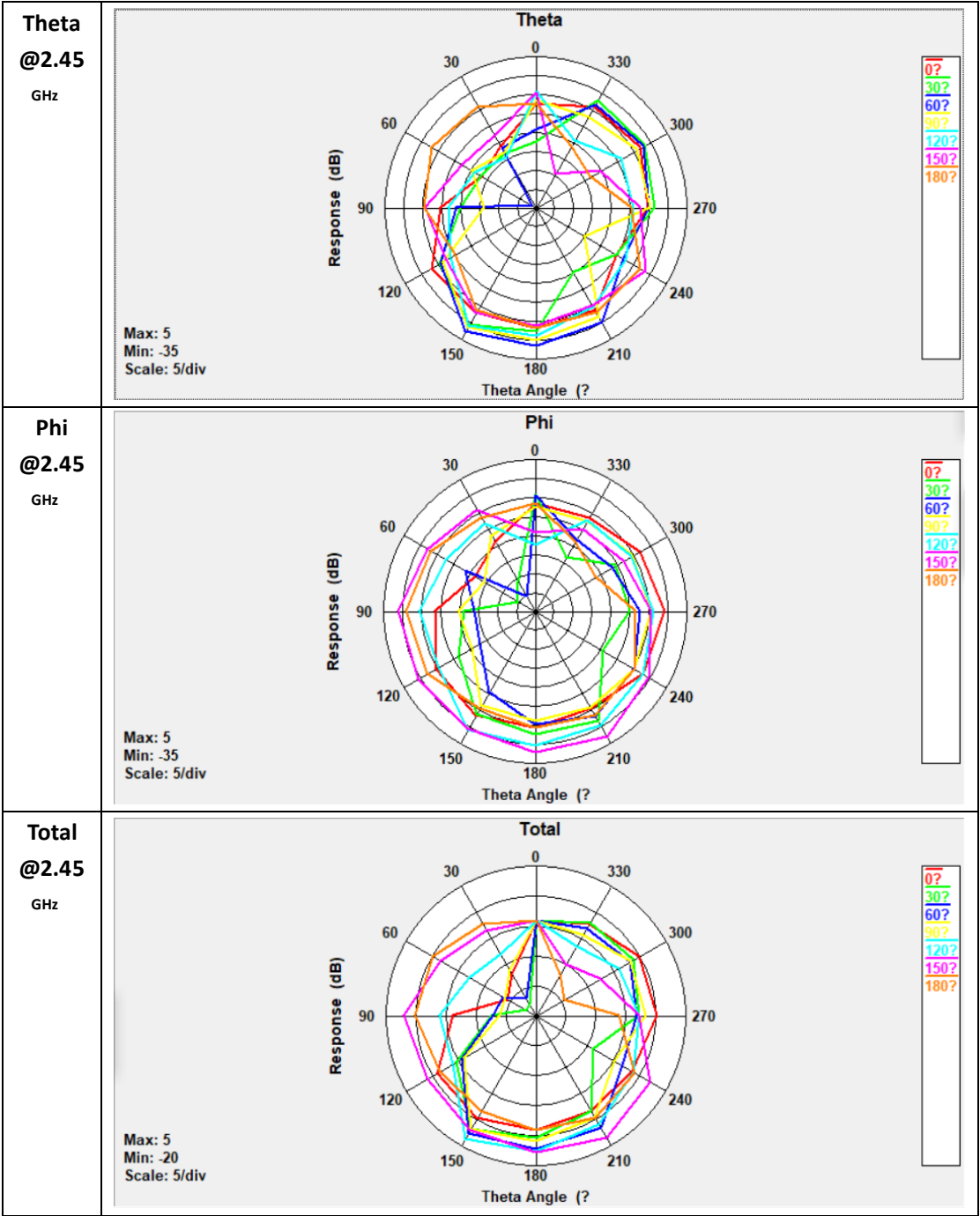
The performance metrics including efficiency, radiation pattern, and gain were derived from the test board design. The test data for the OA-C07 antenna's specifications were obtained based on the test PCB dimensions and the test orientation shown in the figure below. These measurements were completed in an ETS 3D microwave anechoic chamber.



Gain and efficiency	Bandwidth 2.4G-2.5GHz
Peak Gain	3.74dBi
Average gain within band	3.66dBi
Average Gain across the band	3.42dBi~3.74dBi
Band gain range	3.42dBi~3.74dBi
Gain Range across the band	3.42dBi~3.74dBi
Peak Efficiency	58.9%

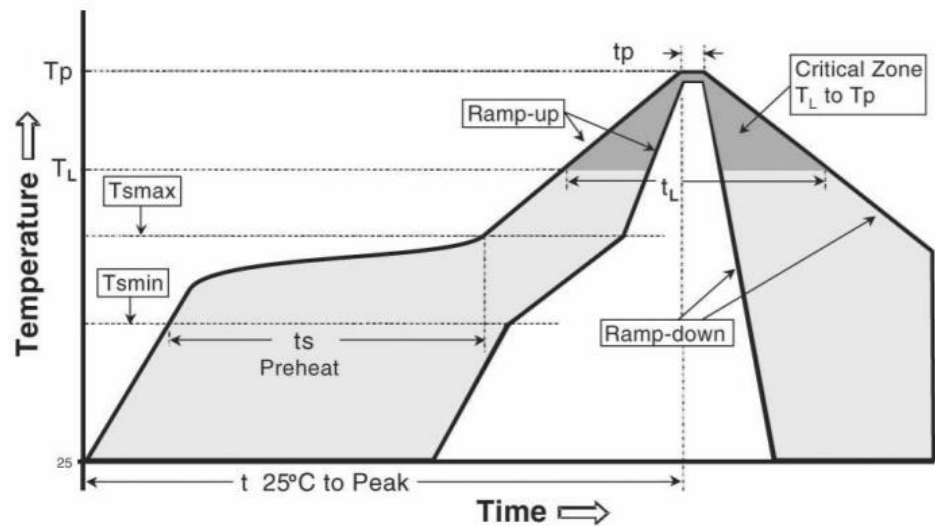
Average efficiency within band	55.9%
Average Efficiency across the band	55.9%

Band efficiency range	53.0%~58.9%
Efficiency Range across the band	



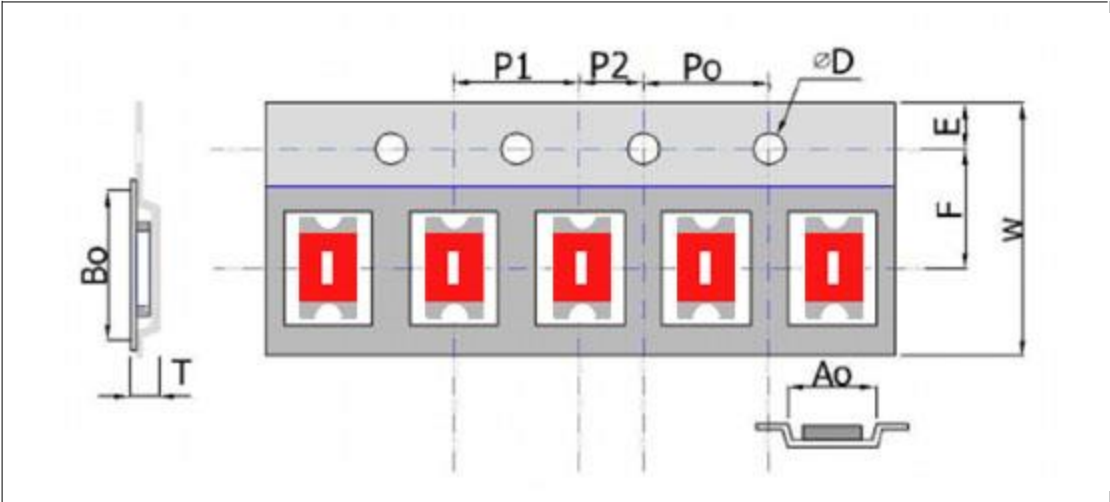
Welding Condition

The following figure shows the typical weld specifications for reliable and non-destructive testing.



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

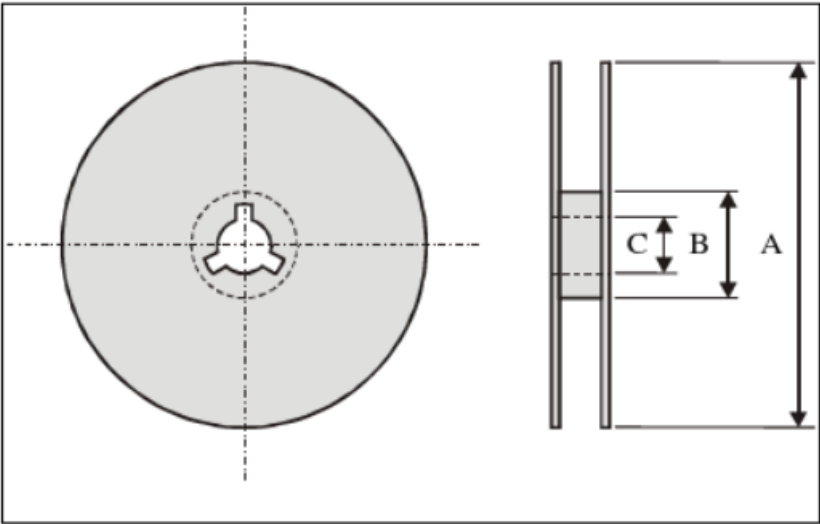
pack



Plastic carrier specification (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

Spool Size



Index	A	B	C
Dimension(mm)	330	100	13.5

Standard quantity: 3000 PCS per tray.

Storage Environment

- The product must meet the following conditions when stored:
temperature : -10°C~+40°C
Humidity: 30% to 70% relative humidity
- The product should be placed in a location free from corrosive gases such as sulfur. Chlorine or acids may cause electrode oxidation, leading to reduced weldability.
- The product should be stored in a tool box and protected from moisture and dust.
- The product should be stored in the warehouse and avoid heat, vibration, direct sunlight.
- The product should be stored under closed conditions.

Acting as agent for Hangzhou Minda Electronics Co., Ltd.
Address: 6th Floor, Block A, Meidu Plaza, 789 Moganshan Road, Gongshu District, Hangzhou
Tel: 0571-87383136 13906705608
Fax: 0571-85060021
Website:www.mindaele.com

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