

# SMD Antenna Specification

**CrossAir™ SMD antenna series**

**RoHS compliant \_**

**PN: CA-C03**

**2.4 GHz ISM band antenna**

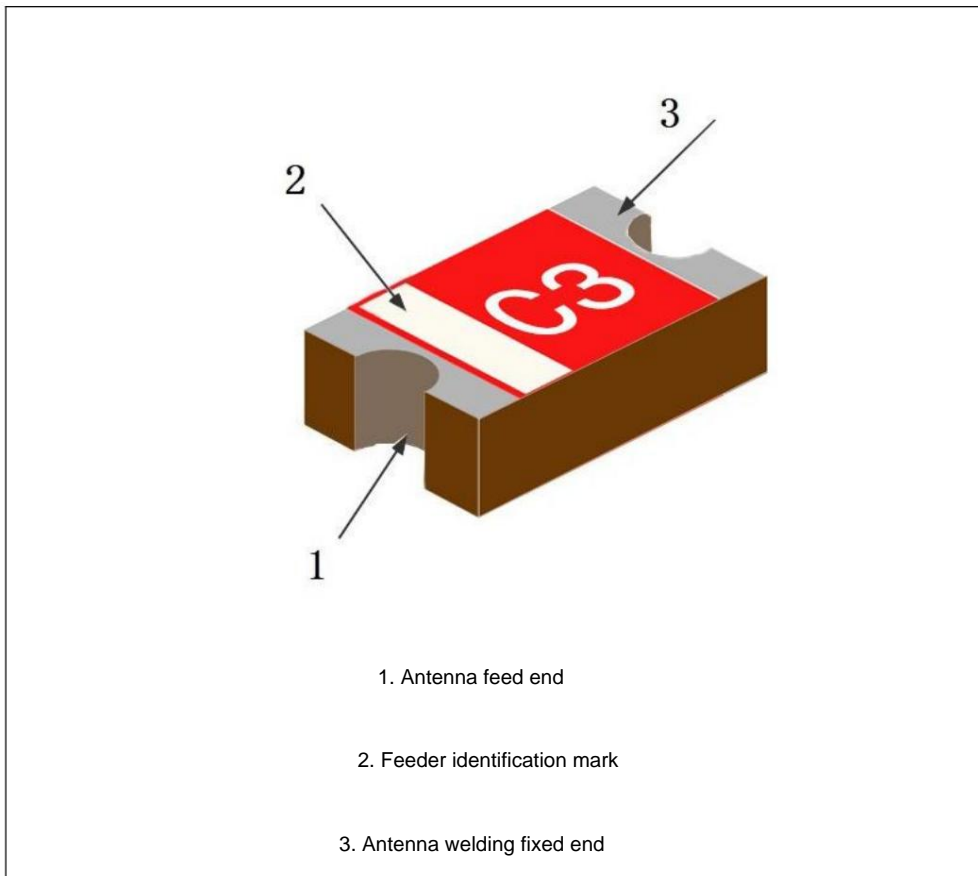
Features

1. Small size SMD patch antenna with dimensions of only 5.5 X 2.0 X 1.0 mm<sup>3</sup> . 2. Low energy loss, high antenna efficiency.
3. 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 (2.4G only)

structure



size

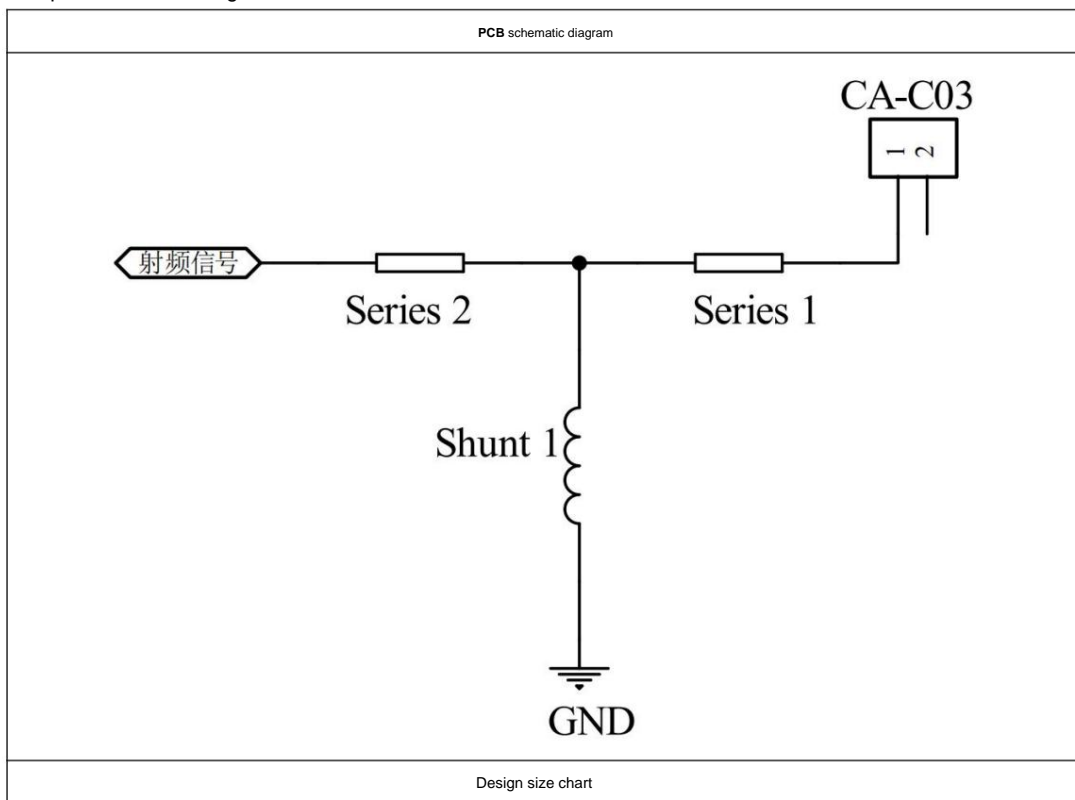
Three View	symbol	Dimensions(mm)
	L	5.5±0.2
	In	2.0±0.1
	T	1.0±0.1
	a	0.5±0.1

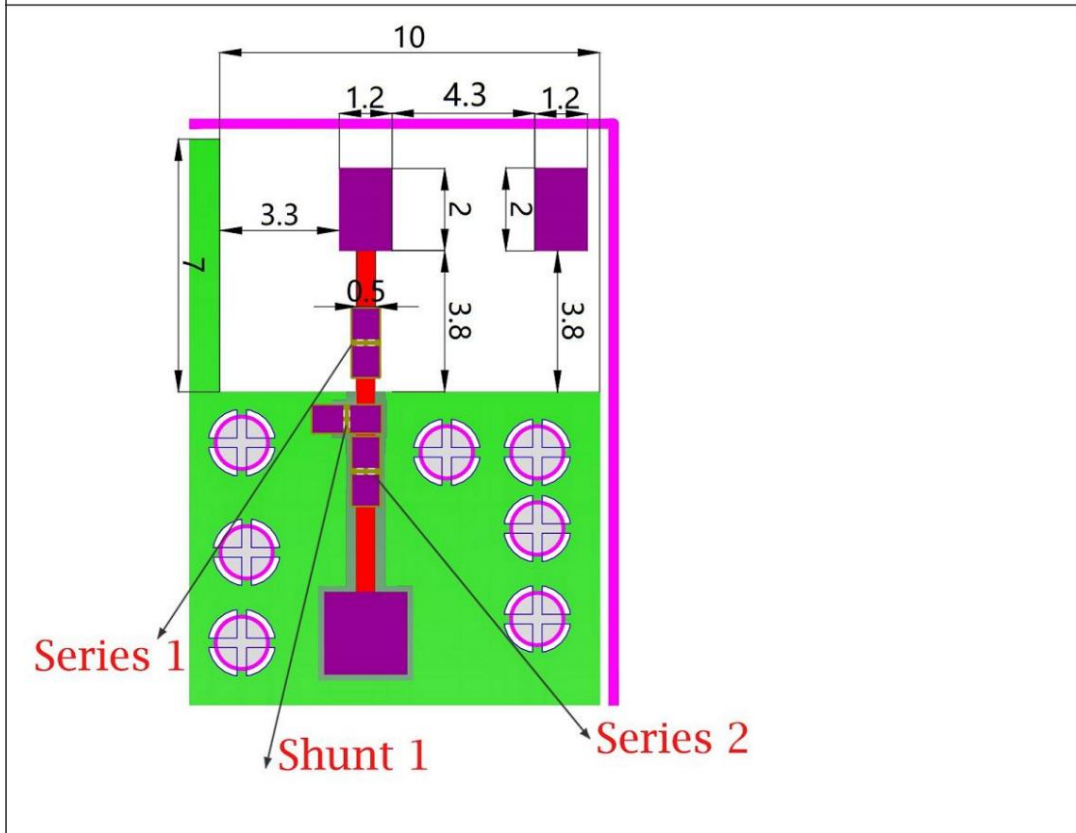
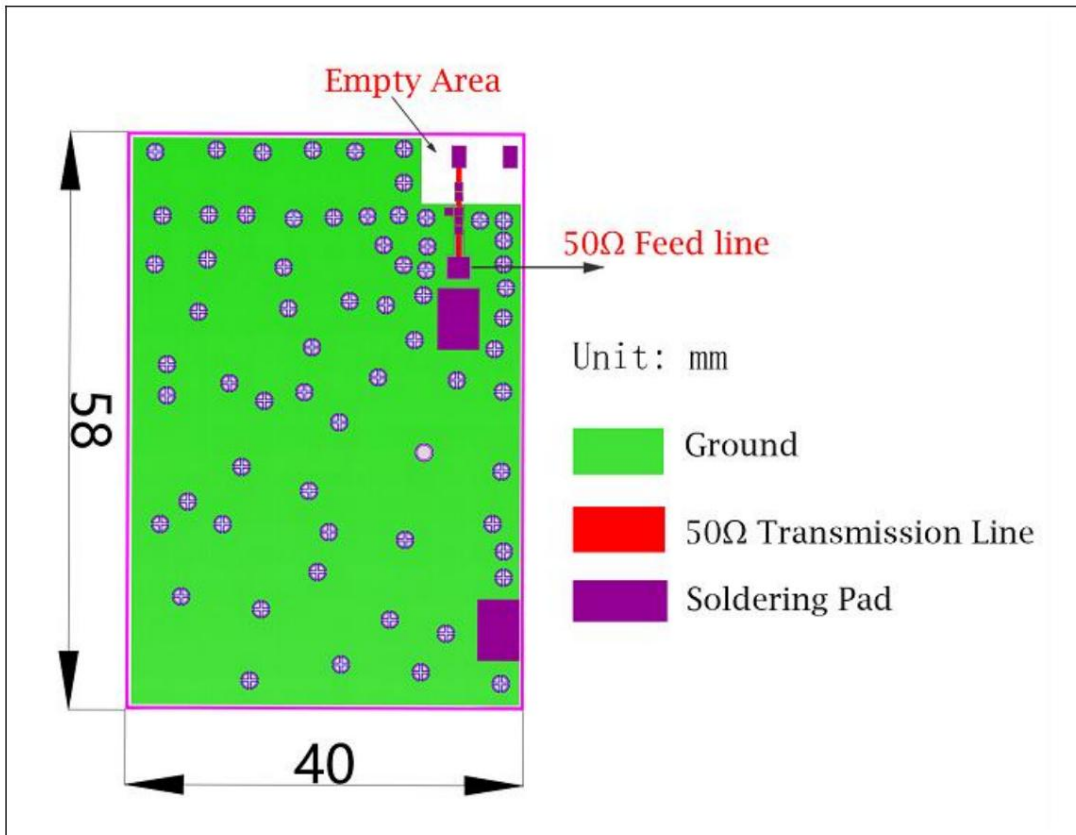
Electrical characteristics

CA-C03	Specification
<b>Working Frequency Band Width Impedance</b>	2450±50MHz
Impedance	50Ω
<b>Gain ( dBi)</b>	4.3 (peak)
<b>VSWR</b>	<2
Temperature	-40℃ ~+95℃
<b>Operation Power Capacity</b>	3W
Antenna 2.4G The working frequency	2450±50MHz

needs to be realized by debugging the impedance matching device.

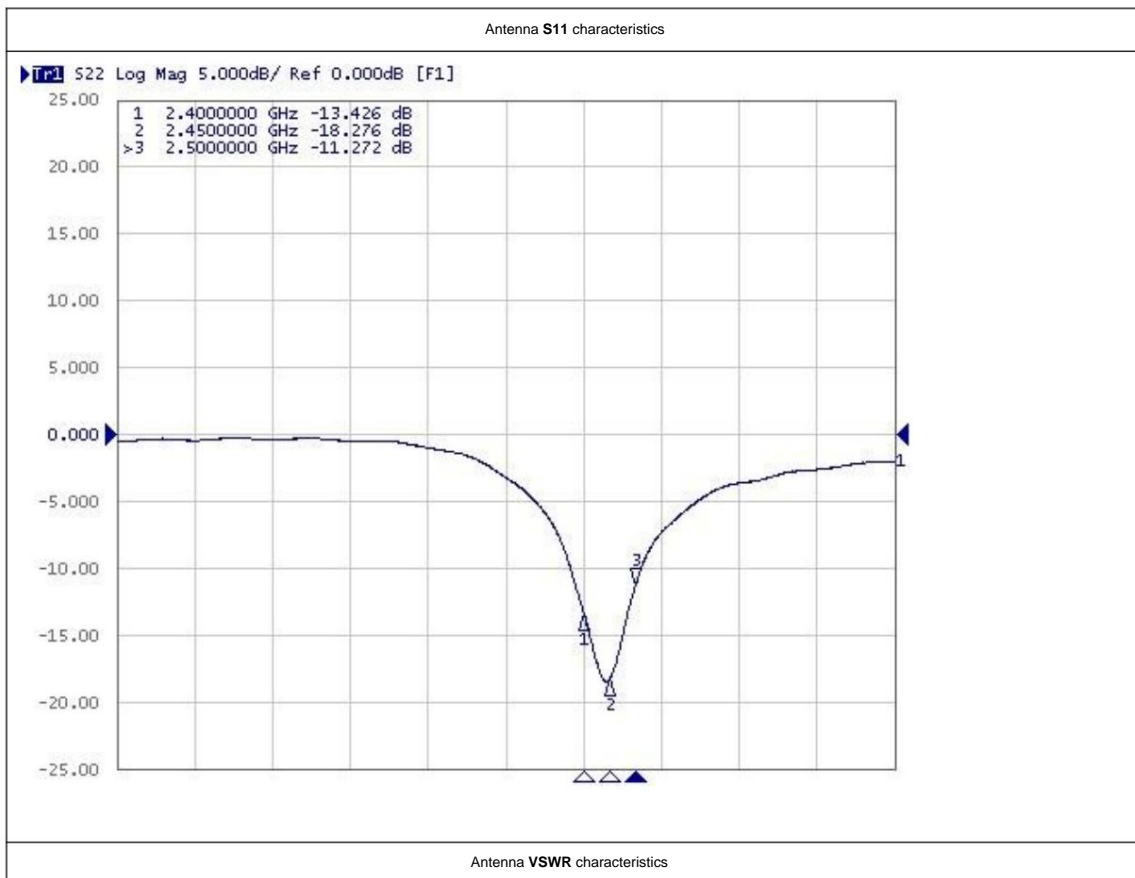
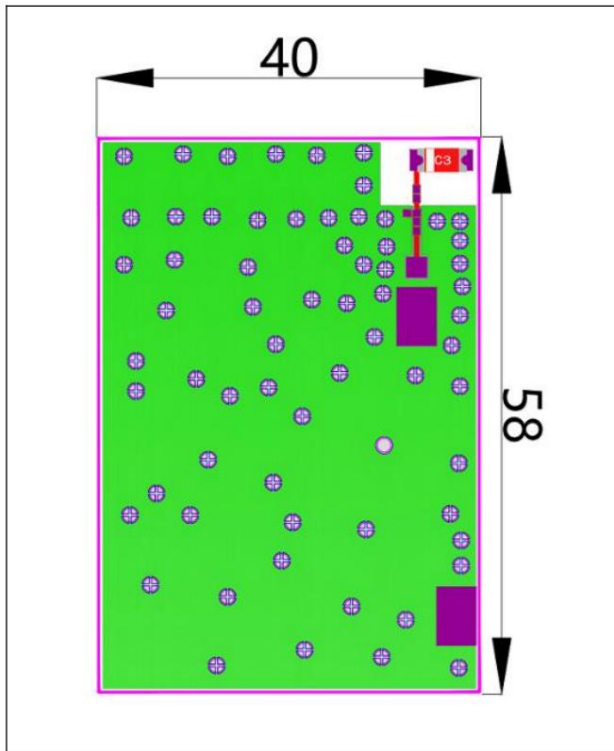
Antenna pad and trace design

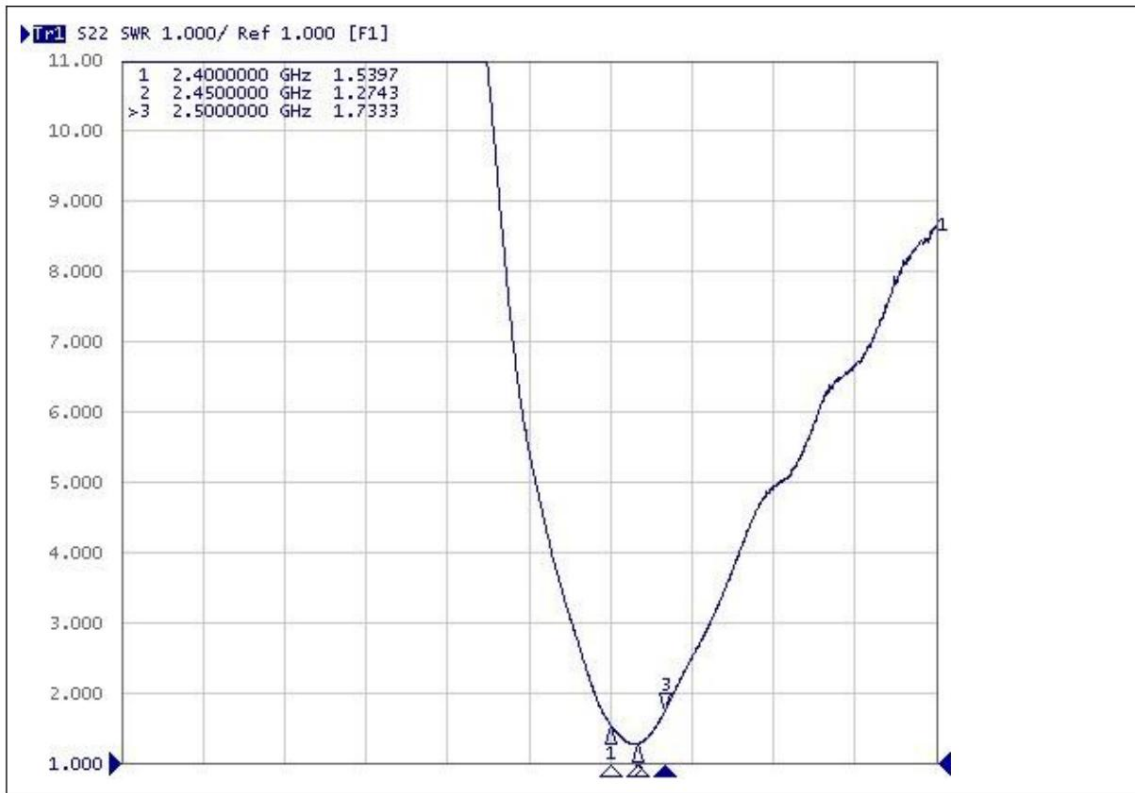




Match device values	Series device <b>Series 1</b> resistance 0 $\Omega$	
	Parallel device <b>Shunt 1</b> high frequency inductor 3nh	
	Series Device <b>Series 2</b> Resistor 0 $\Omega$	

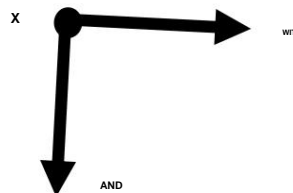
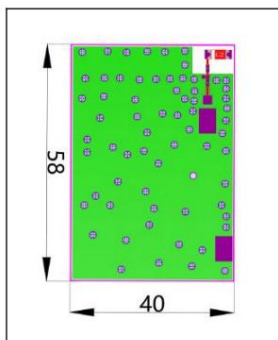
Antenna test on test board (board thickness 1.0mm)



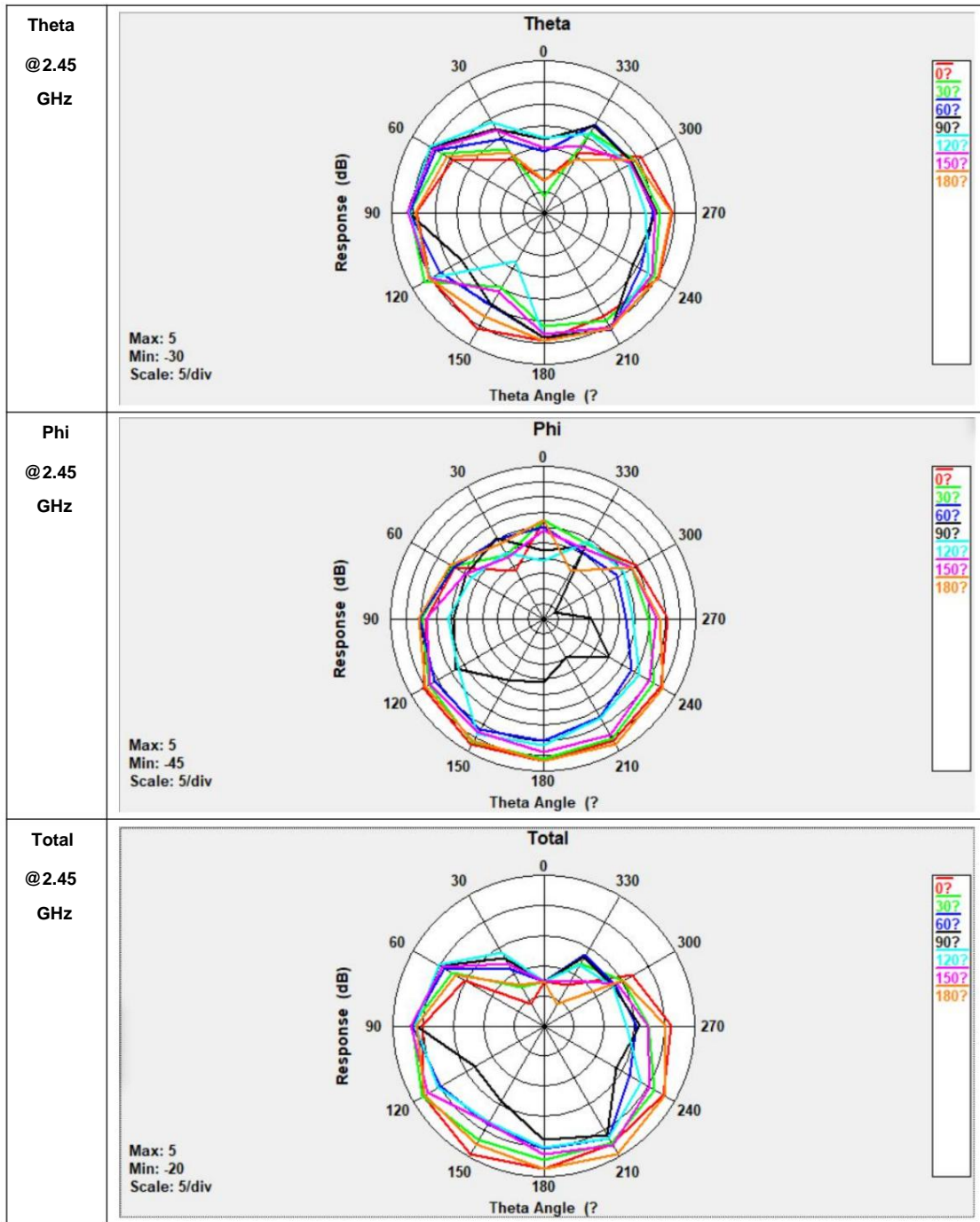


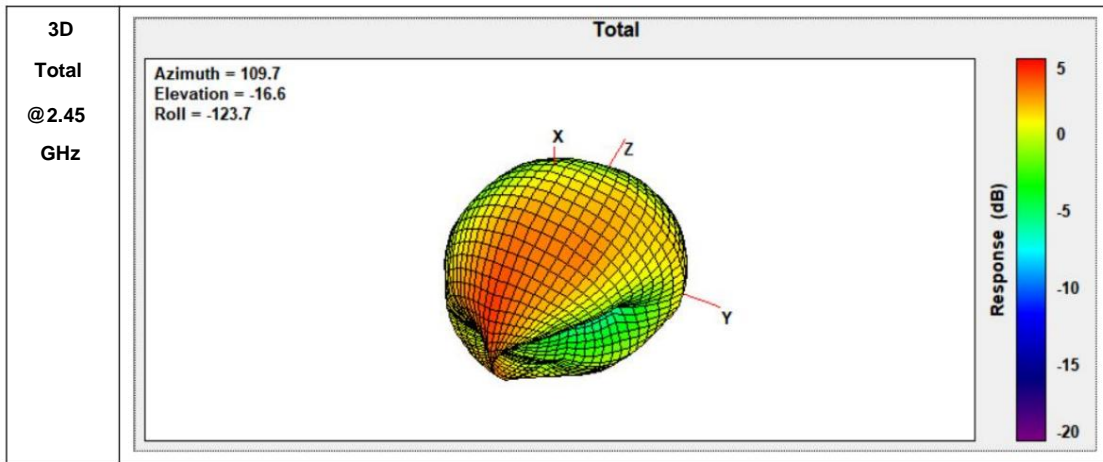
Efficiency and radiation

pattern Efficiency, radiation pattern, gain and other performances are obtained based on the test board design. The specification and characteristic test data of the CA-C03 antenna are obtained based on the test PCB board size and the test direction shown in the figure below. The following data were tested in the ETS 3D microwave anechoic chamber.



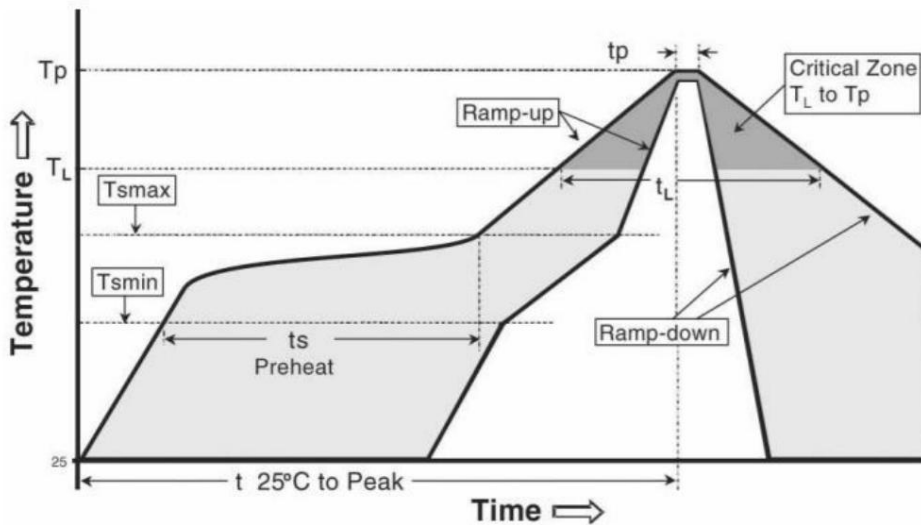
Gain and	Bandwidth 2.4G-2.5GHz
Efficiency Peak Gain Peak	4.3dBi
Gain In-band Average Gain	4.1dBi
Average Gain across the band In-band	
gain range	3.9dBi~4.3dBi
Gain Range across the band Peak	
Efficiency Peak Efficiency Average	81.7%
efficiency within the band	80.2%
Average Efficiency across the band	
Efficiency Range across the band	78.6%~81.7%





Typical welding

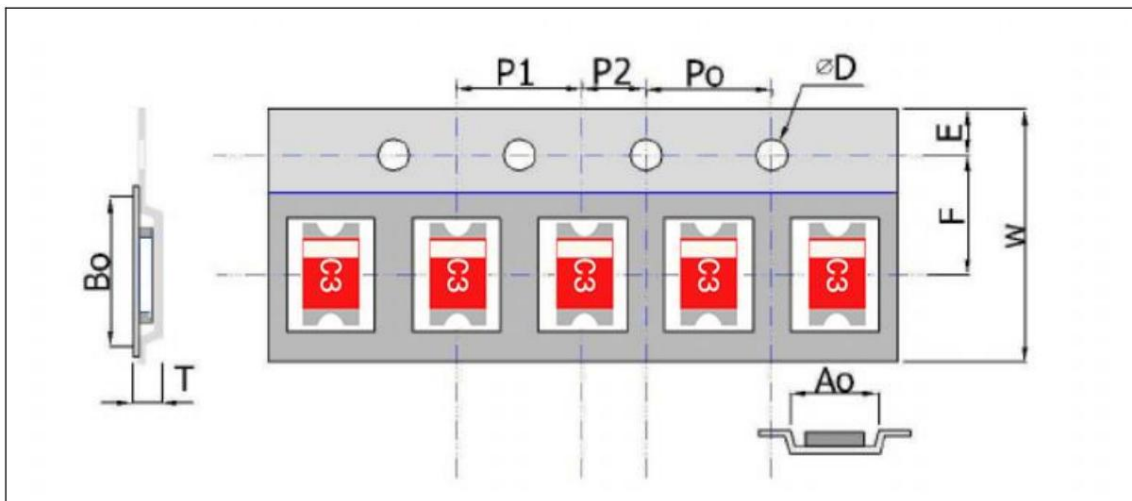
specifications for reliable and damage-free welding conditions are shown in the figure below:



Phase	Profile features	Pb-Free assembly (SnAgCu)
<b>RAMP-UP</b>	Avg. Ramp-up Rate (T <sub>smax</sub> to T <sub>p</sub> )	3 °C / second (max.)
<b>PREHEAT</b>	<ul style="list-style-type: none"> <li>- Temperature Min (T<sub>smin</sub>)</li> <li>- Temperature Max (T<sub>smax</sub>)</li> <li>- Time (t<sub>smin</sub> to t<sub>smax</sub>)</li> </ul>	150 °C 200 °C 60-180 seconds
<b>REFLOW</b>	<ul style="list-style-type: none"> <li>- Temperature (T<sub>L</sub>)</li> <li>- Total Time above T<sub>L</sub> (t<sub>L</sub>)</li> </ul>	217 °C 60-150 seconds
<b>PEAK</b>	<ul style="list-style-type: none"> <li>- Temperature (T<sub>p</sub>)</li> <li>- Time (t<sub>p</sub>)</li> </ul>	260 °C 20-40 seconds
<b>RAMP-DOWN</b>	Rate	6 °C/second max
<b>Time from 25 °C to Peak Temperature</b>		8 minutes max



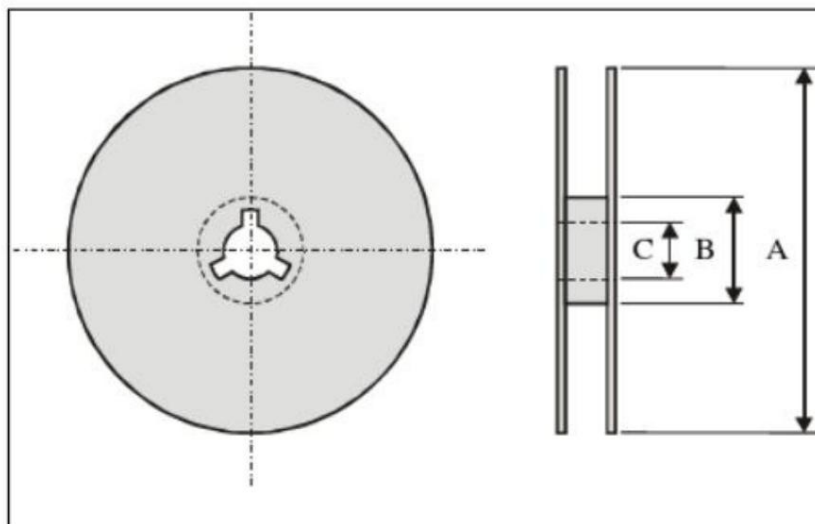
Package



Plastic carrier tape specifications (unit: mm)

Index	To the	Bo	øD	T	IN
Dimension (mm)	3.0±0.1	6.0±0.1	1.55±0.05	1.6±0.1	16±0.2
Index	AND	F	After	P1	P2
Dimension (mm)	1.75±0.1	7.0±0.1	4.0±0.1	4.0±0.1	2.0±0.1

Reel size



Index	A	B	C
Dimension(mm)	330	100	13.5

Standard quantity: 3000 PCS/disk.

Storage environment

The following conditions should be met when the product is stored:

Temperature: -10y~+40y

Humidity: 30% to 70% relative humidity. Do not place the product in a location that is exposed to corrosive gases such as sulfur. Chlorine or acid may cause oxidation of the product's electrodes, resulting in poor weldability. The product should be placed in the tool box and protected from moisture and dust. Products should be stored in warehouses away from heat, vibration, and direct sunlight. Products should be stored under closed conditions.