

SMD Antenna Specification Document

CrossAir[™] SMD Antenna Series
Complies with RoHS standards

PN: CA-C03

2.4 GHz ISM Band Antenna

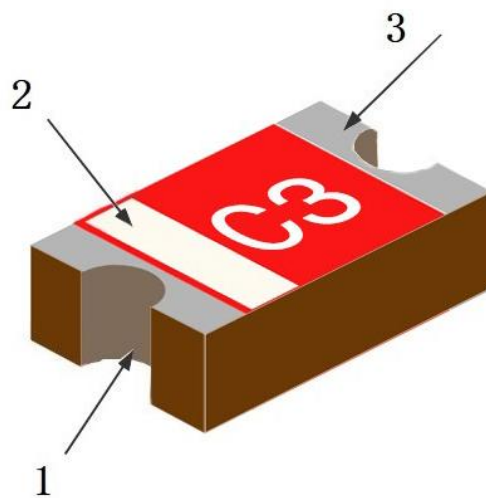
Features

1. Size only 5.5X2.0X1.0mm³ for a small size SMD Patch Antenna.
2. Low energy loss, high antenna efficiency.
3. High stability under temperature and humidity variations.

Applications

1. 2.4GHz ISM Band Antenna Applications
2. Bluetooth, ZigBee, Wireless Applications, Smart Home Applications, etc.
3. WIFI (only 2.4G)

Structure



1 Antenna Feed Point

2 Feed Identification Mark

3 Antenna Soldering Fixing Point

Dimensions

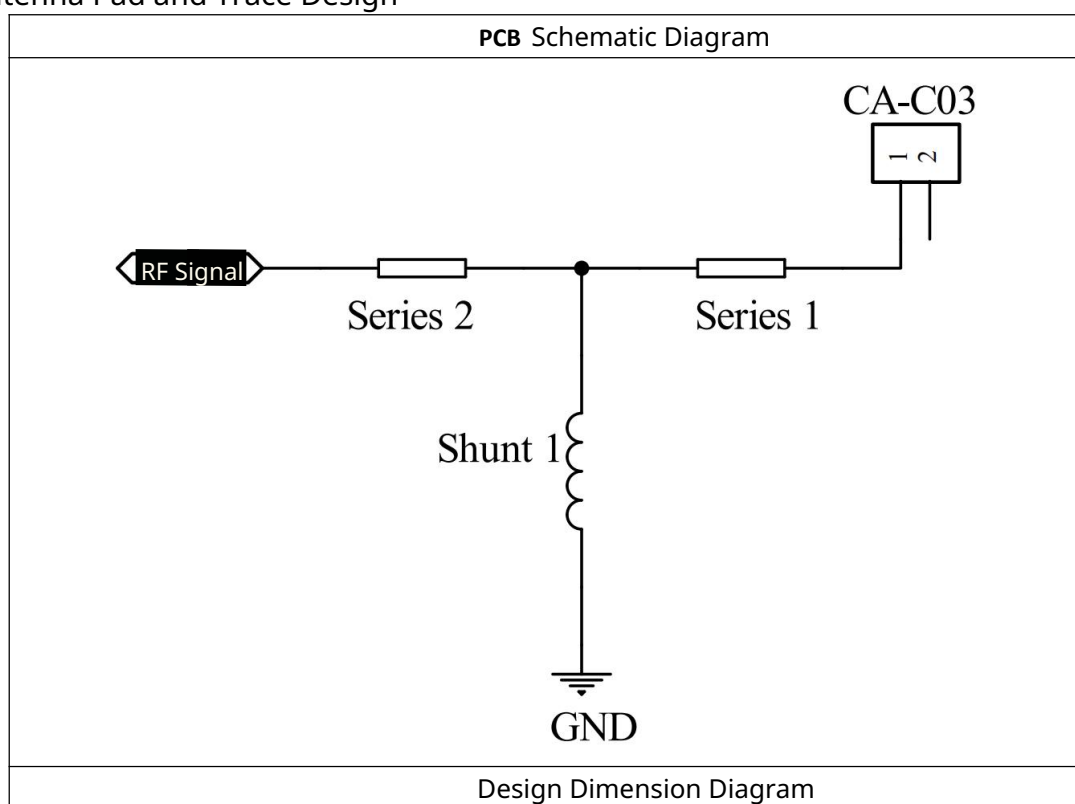
Three Views	Symbols	Dimensions(mm)
	L	5.5 ± 0.2
	w	2.0 ± 0.1
	T	1.0 ± 0.1
	a	0.5 ± 0.1

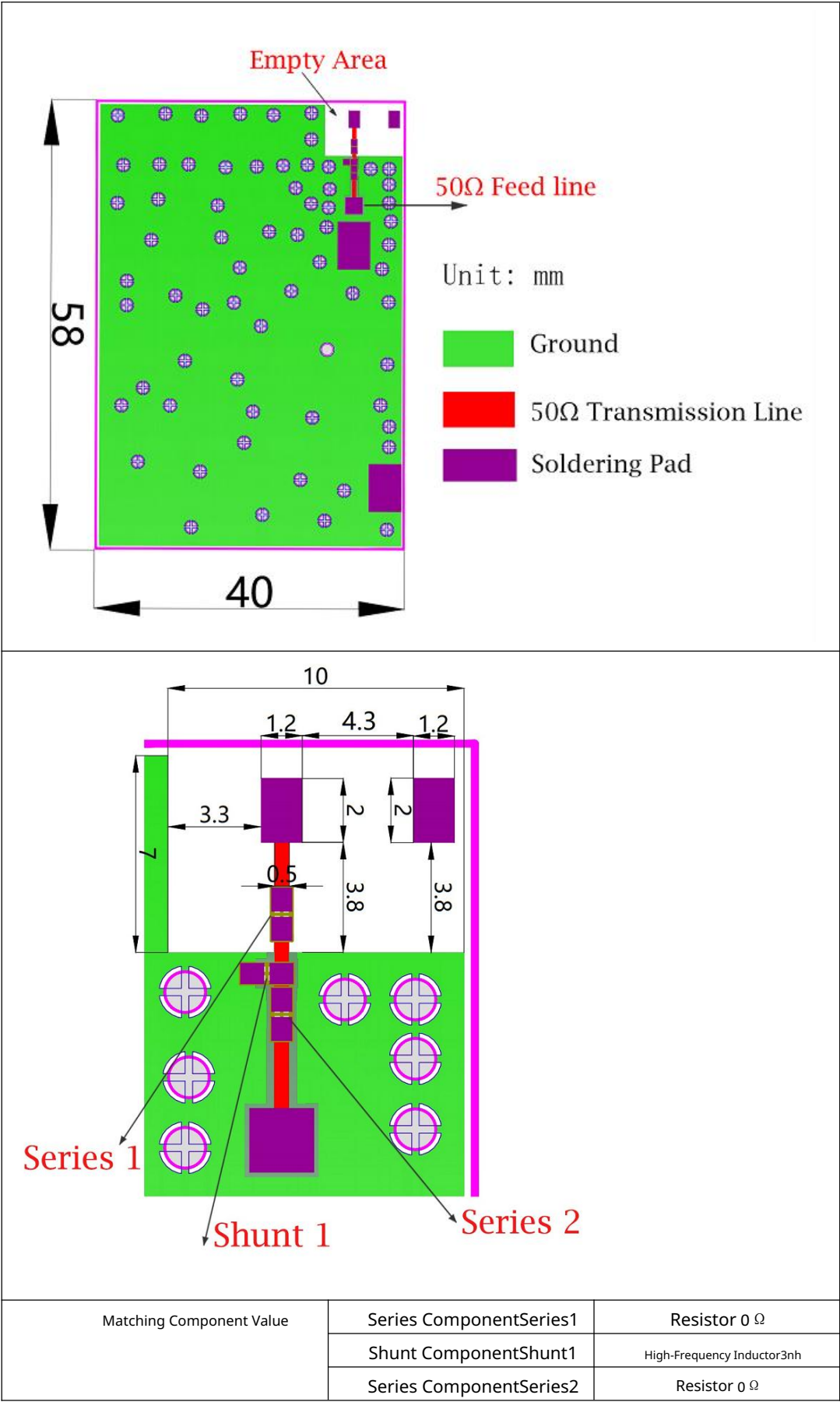
Electrical Characteristics

CA-C03	Specification
Operating Frequency Range WorkingFrequency	$2450 \pm 50\text{MHz}$
Bandwidth BandWidth	$>100\text{MHz}$
Impedance Impedance	$50\ \Omega$
Gain Gain(dBi)	4.3 (peak)
Voltage Standing Wave Ratio VSWR	<2
Operating Temperature OperationTemperature	$-40\ ^\circ\text{C} \sim +95\ ^\circ\text{C}$
Power Capacity PowerCapacity	3W

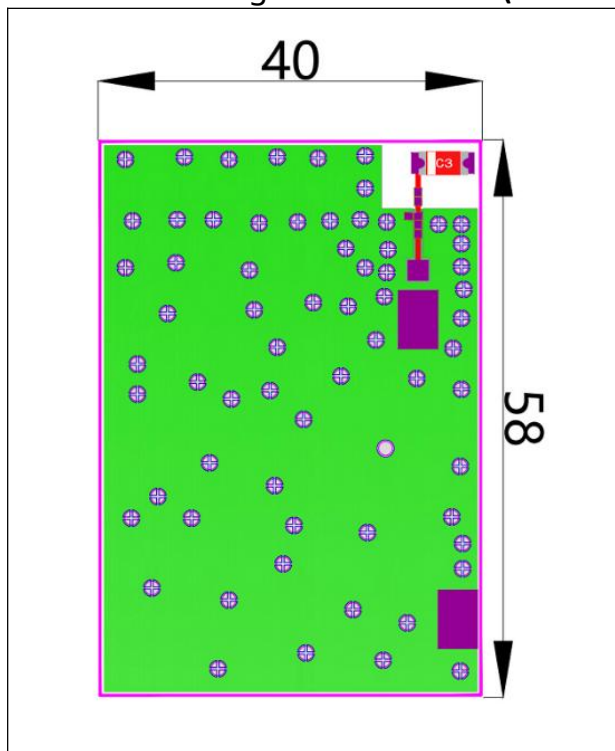
Antenna 2.4G The operating frequency needs to be adjusted through impedance matching devices.

Antenna Pad and Trace Design

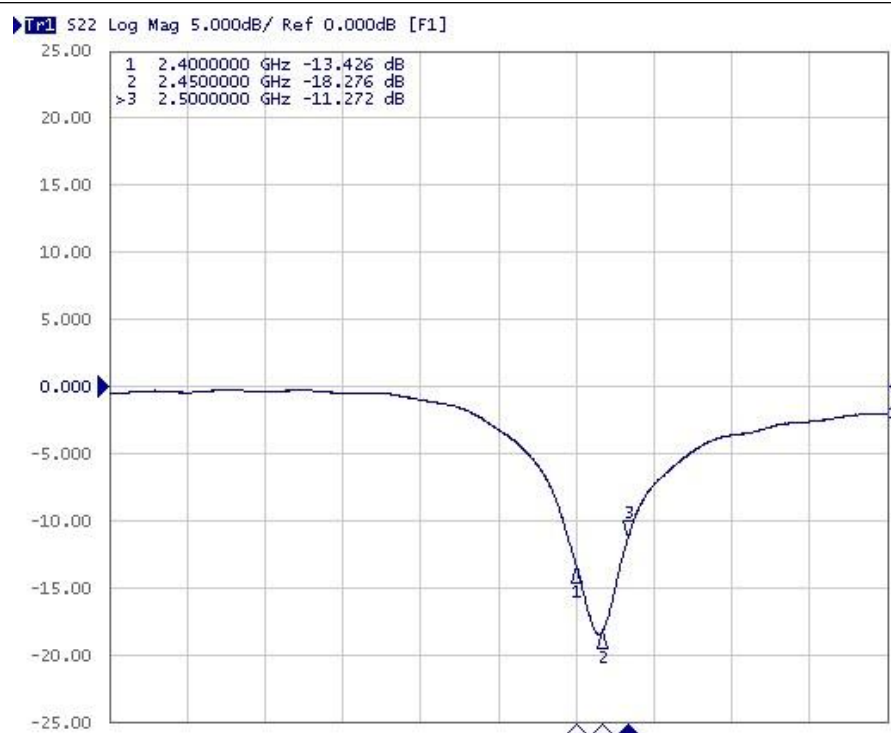




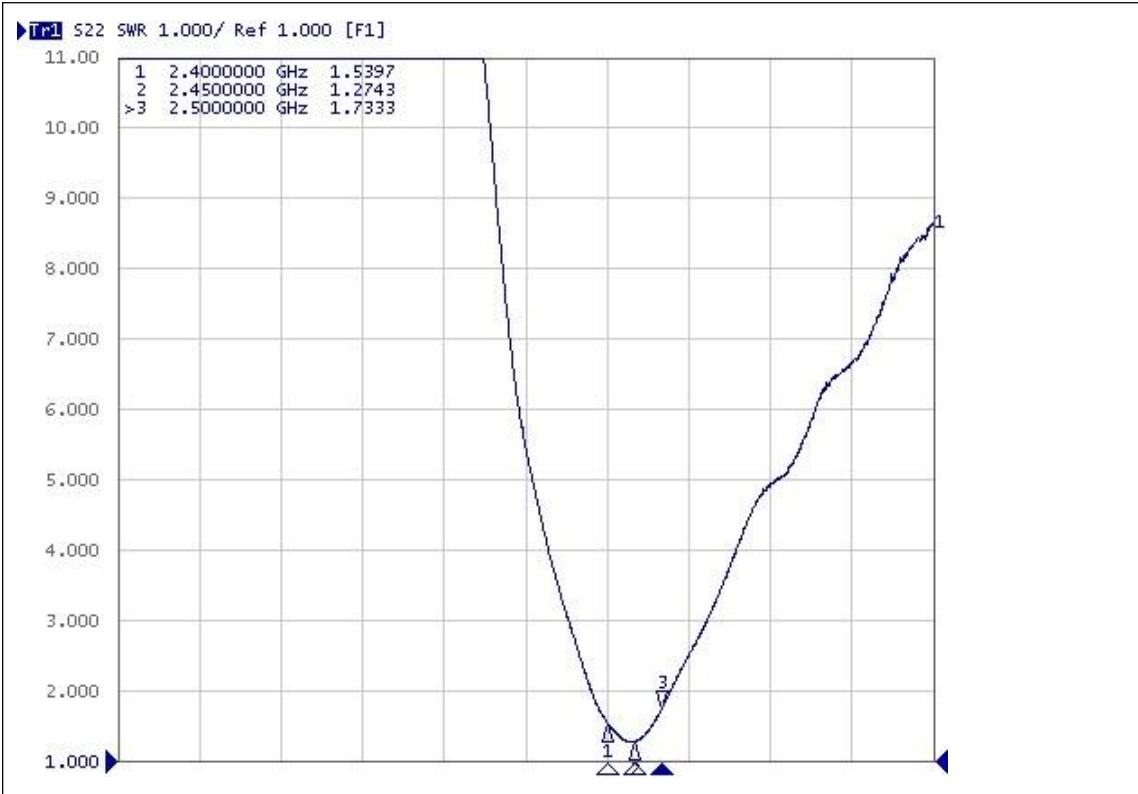
Antenna Testing on Test Board (Board Thickness 1.0mm)



Antenna **S11** Characteristics

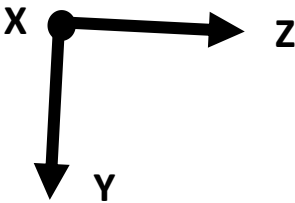
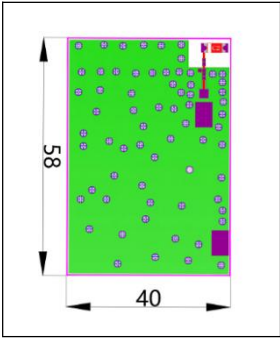


Antenna **VSWR** Characteristics

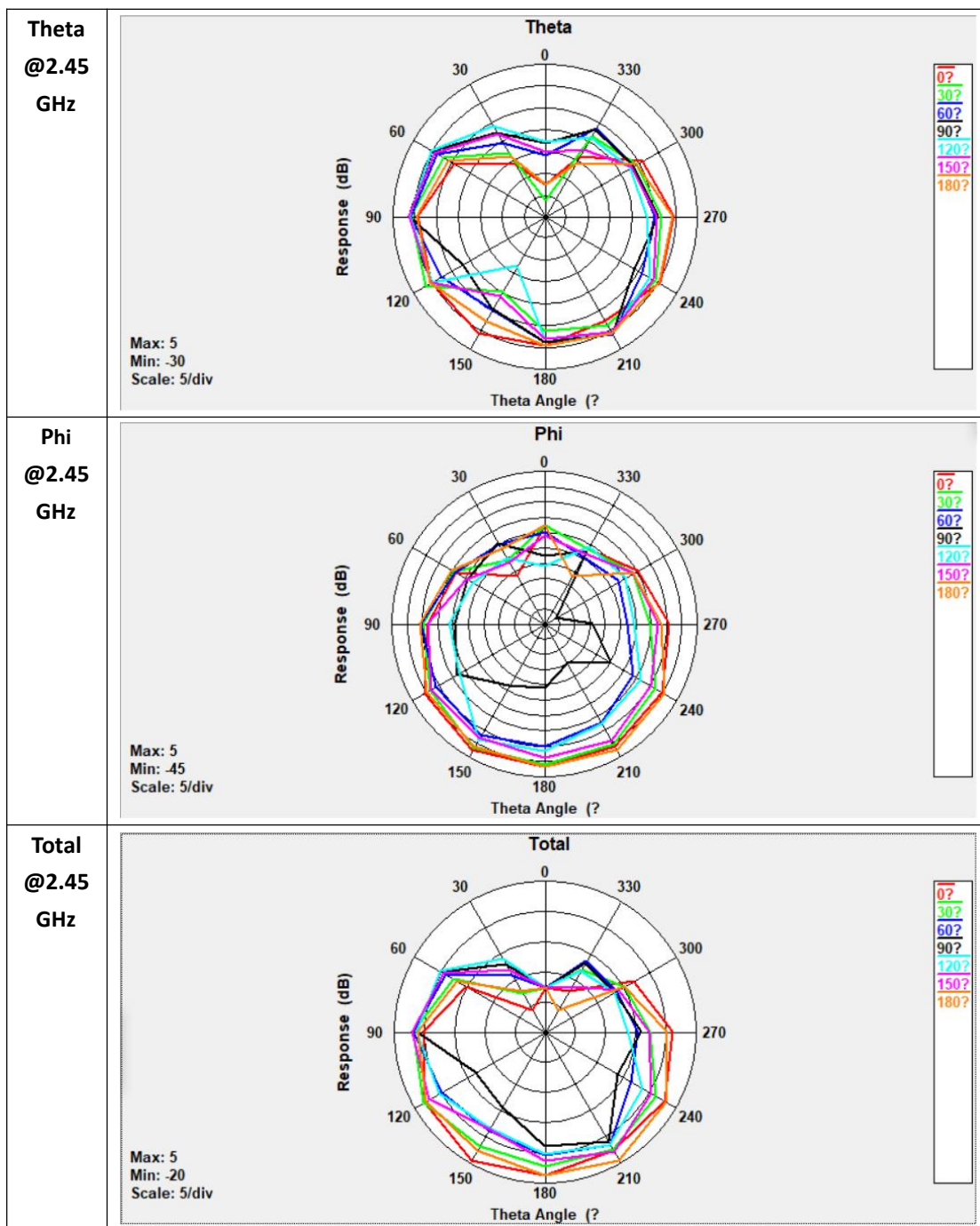


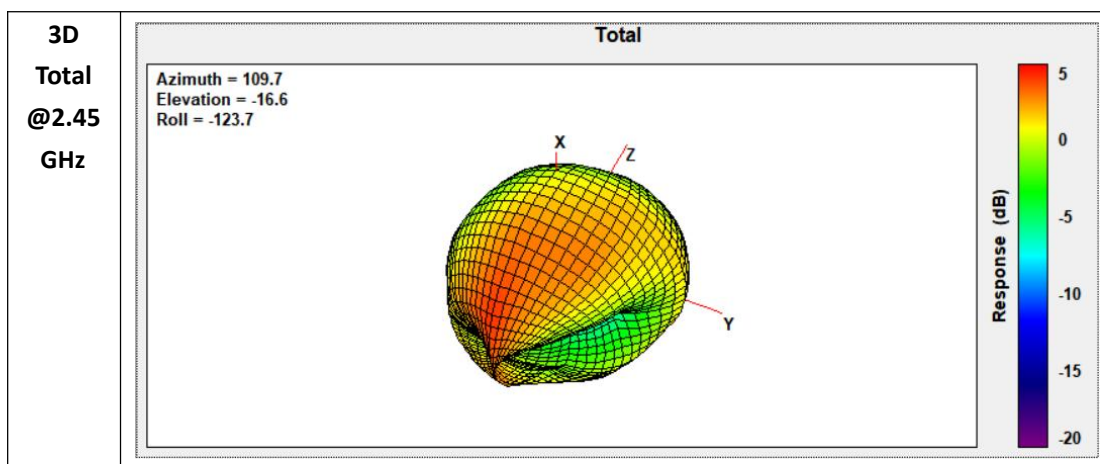
Efficiency and Radiation Pattern

Performance metrics such as efficiency, radiation pattern, and gain are based on the design of the test board. CA-C03 The specification characteristic test data of the antenna is based on the test PCB board dimensions and the test directions shown in the figure below. The following data was completed in the ETS3D microwave anechoic chamber.



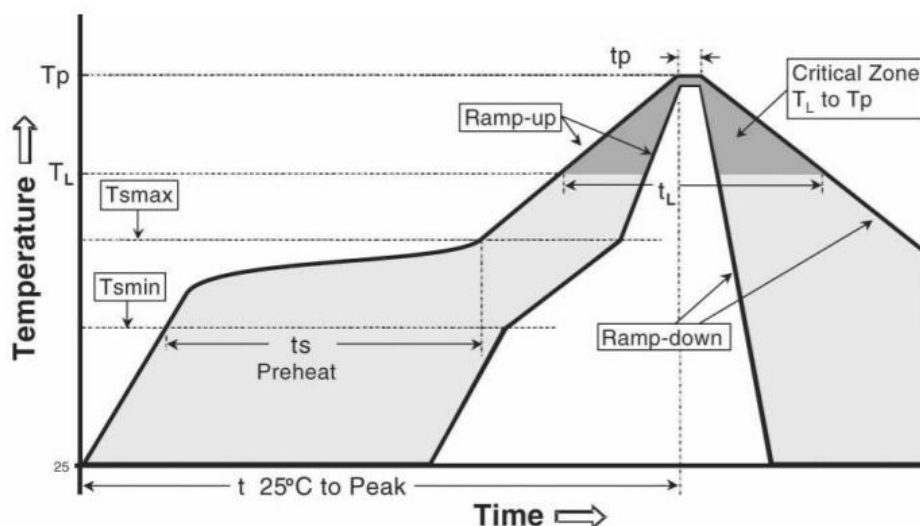
Gain and Efficiency	Bandwidth 2.4G-2.5GHz
Peak GainPeakGain	4.3dBi
In-Band Average Gain	4.1dBi
Average Gain across the band	
In-Band Gain Range	3.9dBi~4.3dBi
Gain Range across the band	
Peak Efficiency PeakEfficiency	81.7%
In-Band Average Efficiency	80.2%
Average Efficiency across the band	
In-Band Efficiency Range	78.6%~81.7%
Efficiency Range across the band	





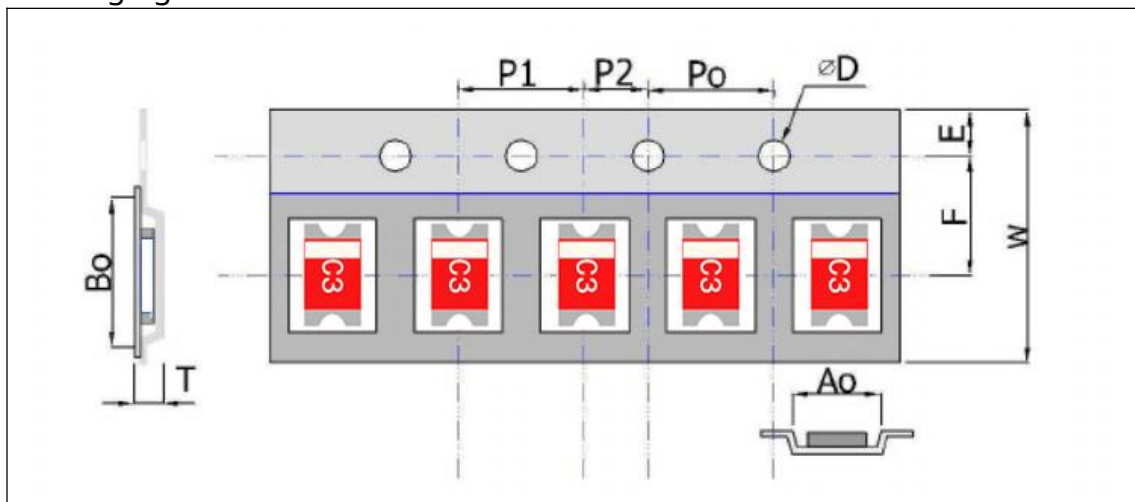
Soldering Conditions

The typical soldering specifications for reliable and damage-free soldering are shown in the figure below:



Phase	Profile features	Pb-Free assembly (SnAgCu)
RAMP-UP	Avg. Ramp-up Rate (T _{sm} to T _{pm})	3 °C / second (max.)
PREHEAT	- Temperature Min (T _{sm}) - Temperature Max (T _{sm}) - Time (t _{sm} to t _{sm})	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

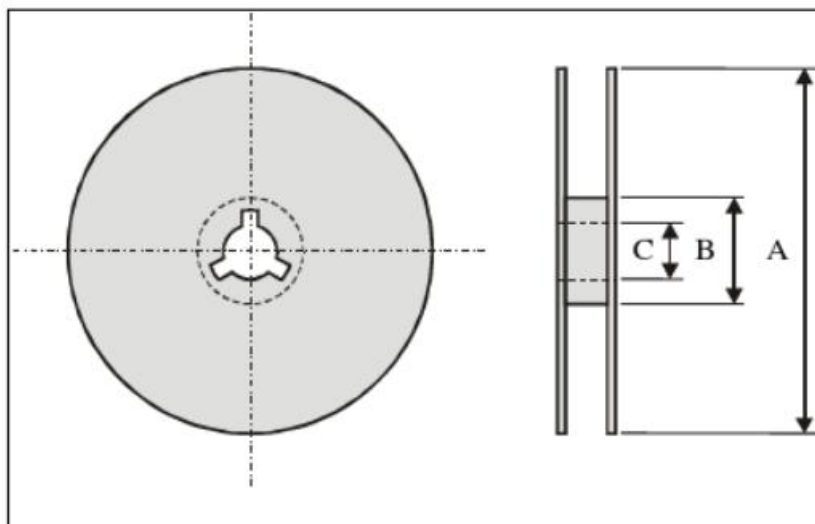
Packaging



Plastic Carrier Tape Specifications (Unit:mm)

Index	Ao	Bo	ΦD	T	W
Dimension (mm)	3.0 ± 0.1	6.0 ± 0.1	1.55 ± 0.05	1.6 ± 0.1	16 ± 0.2
Index	E	F	Po	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: 3000PCS/Reel.

Storage Environment

The product should meet the following conditions during storage:

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

Humidity : 30% to 70% relative humidity

The product placement should not come into contact with corrosive gases, such as sulfur. Chlorine or acids may cause oxidation of the product electrodes, resulting in poor solderability.

The product should be placed in a 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.

Manufacturer Information:

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