

# **SMD antenna specification**

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**CrossAir™ SMD antenna  
series is RoHS compliant.**

**PN: CA-C03**

**2.4 GHz ISM band antenna**

## CA-C03 Specification

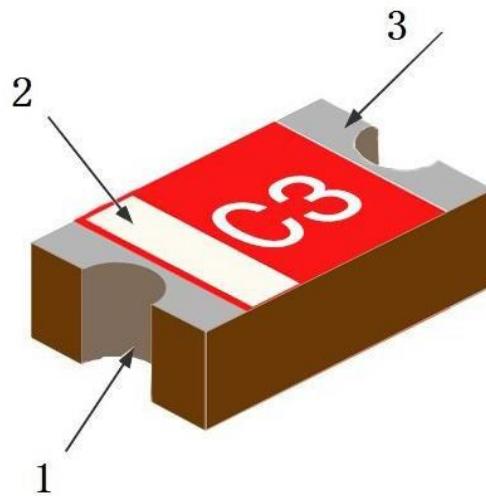
### characteristic

1. Small SMD patch antenna with a size of only 5.5 X 2.0 X 1.0 mm<sup>3</sup>.
2. Low energy loss and high antenna efficiency.
3. It has high stability under the condition of temperature and humidity change.

### app; application

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

### structure



1. Antenna feed end

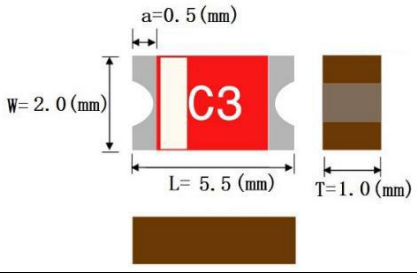
2, feed  
identification  
mark

3, antenna welding

### measure

three-view drawing	symbol	Size (mm)
	L	5.5±0.1
	w	2.0±0.1
	T	1.0±0.1

## CA-C03 Specification

 <p>The diagram illustrates the CA-C03 component. The main view shows a red rectangular component with a white vertical stripe on the left side containing the text 'C3'. Dimensions are indicated: <math>a = 0.5 \text{ (mm)}</math> for the width of the white stripe, <math>W = 2.0 \text{ (mm)}</math> for the total width, <math>L = 5.5 \text{ (mm)}</math> for the total length, and <math>T = 1.0 \text{ (mm)}</math> for the thickness. A cross-sectional view to the right shows a brown rectangular block with a white stripe of thickness <math>T = 1.0 \text{ (mm)}</math>. Below the main view is a solid brown rectangular block.</p>	<b>a</b>	<b><math>0.5 \pm 0.1</math></b>
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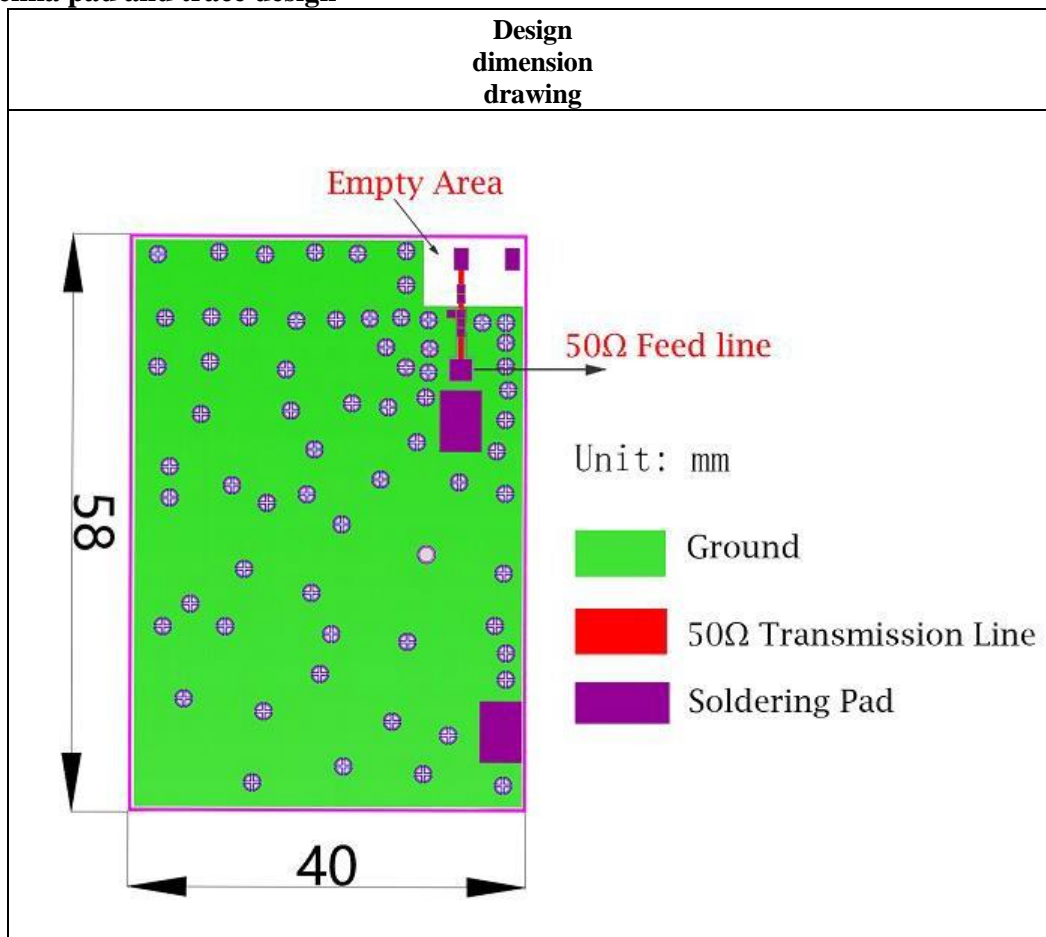
## CA-C03 Specification

### electrical specification

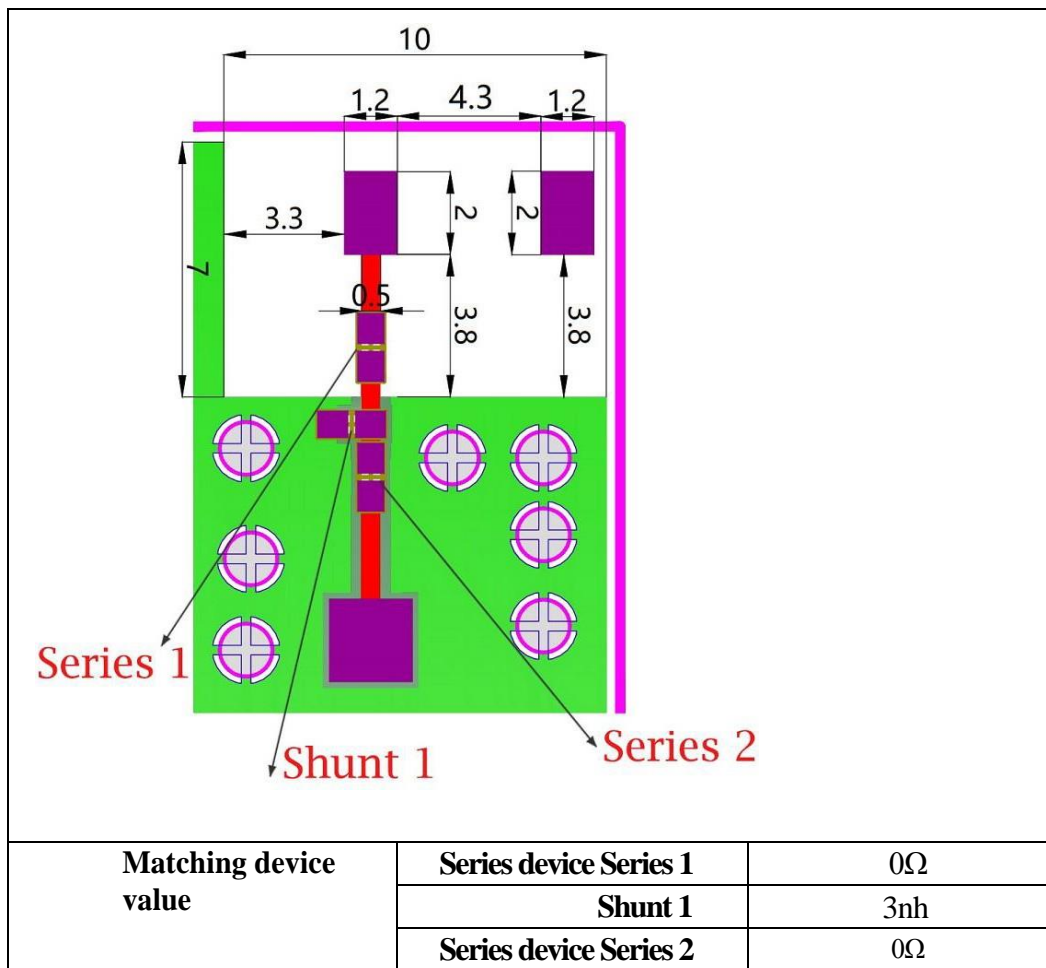
CA-C03	Specification
Working Frequency range	2450±50MHz
Initial frequency band (GHz)	2.7GHz
Band Width	>100MHz
Impedance impedance	50Ω
Gain Gain(dBi)	4.3 (peak)
Standing wave ratio VSWR	<2
Operating temperature Operation Temperature	-40℃~+95℃
Acceptable Power Capacity	3W

The working frequency of antenna 2.4G needs to be realized by debugging impedance matching devices.

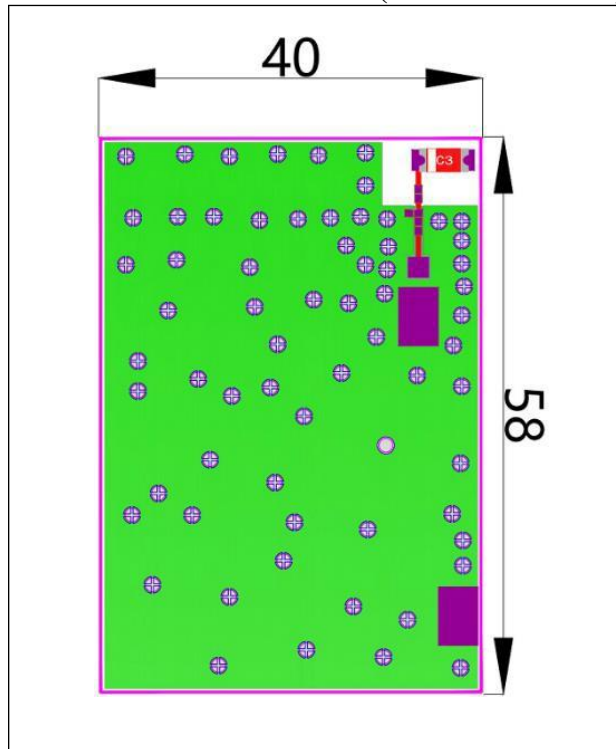
### Antenna pad and trace design



## CA-C03 Specification

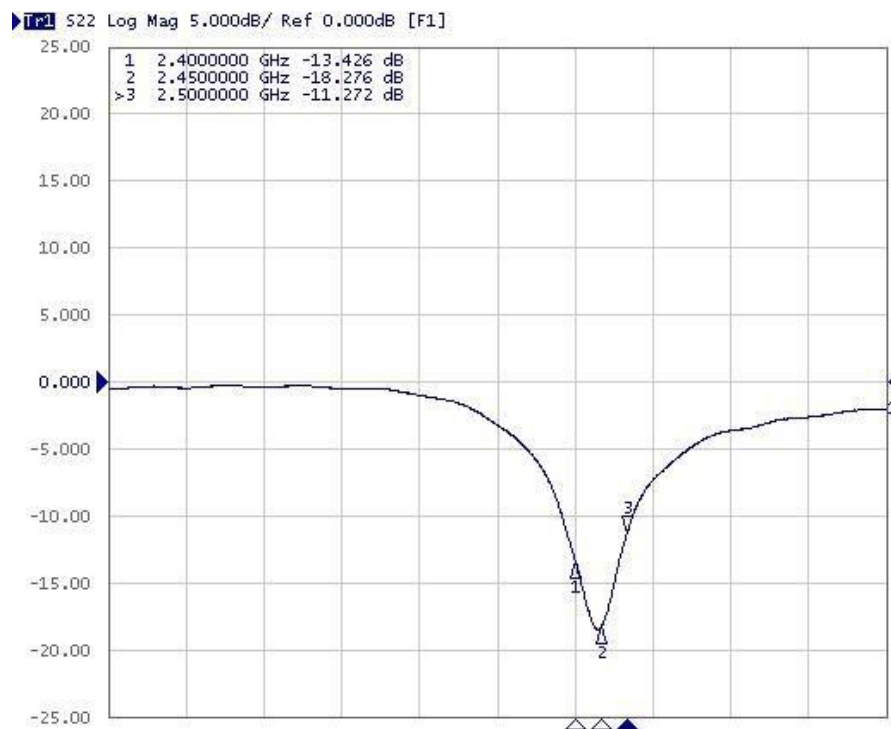


Antenna test on test board (thickness 1.0mm)

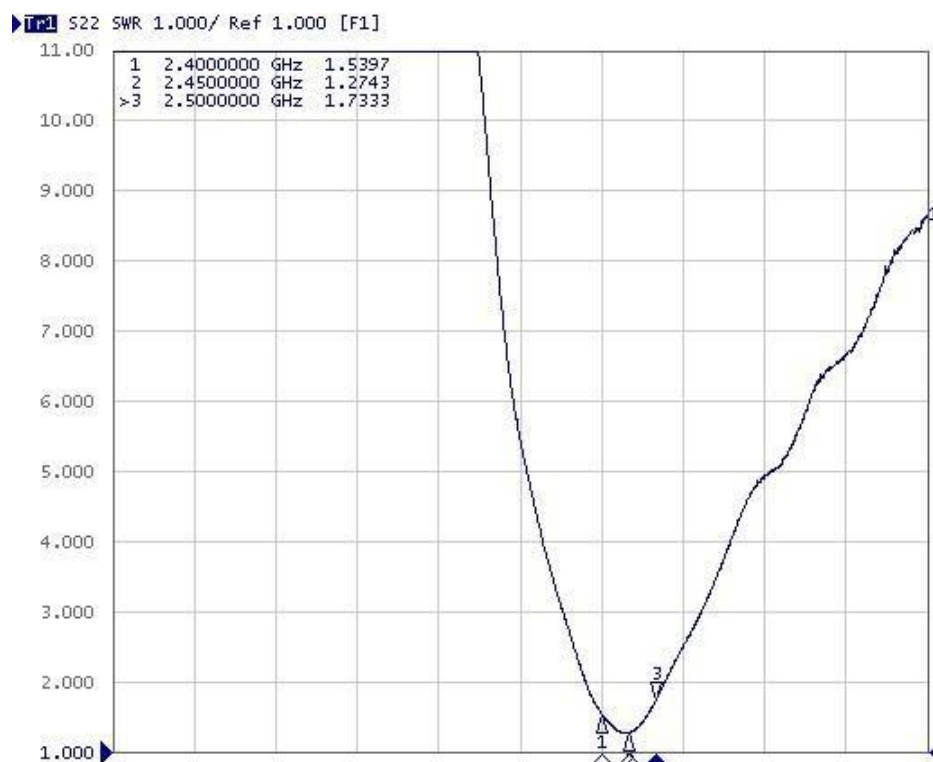


## CA-C03 Specification

### Characteristics of antenna S11



### Antenna VSWR characteristics



### Efficiency and radiation diagram

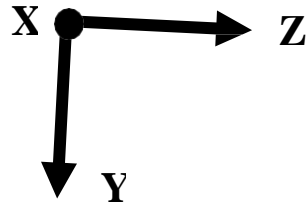
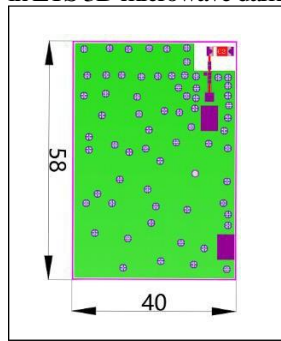
## CA-C03 Specification

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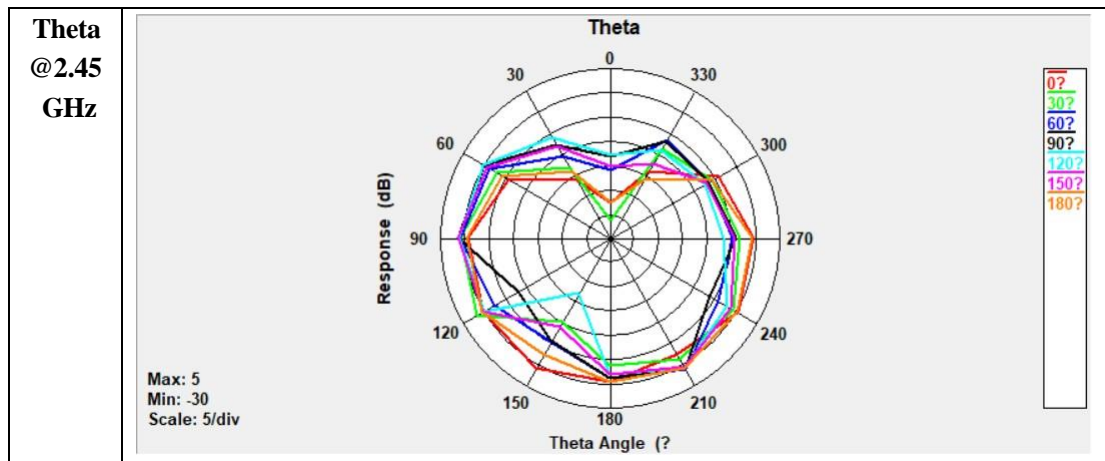
Efficiency, radiation pattern, gain and other performances are based on the design of the test board. The specification and characteristic test data of CA-C03 antenna are

## CA-C03 Specification

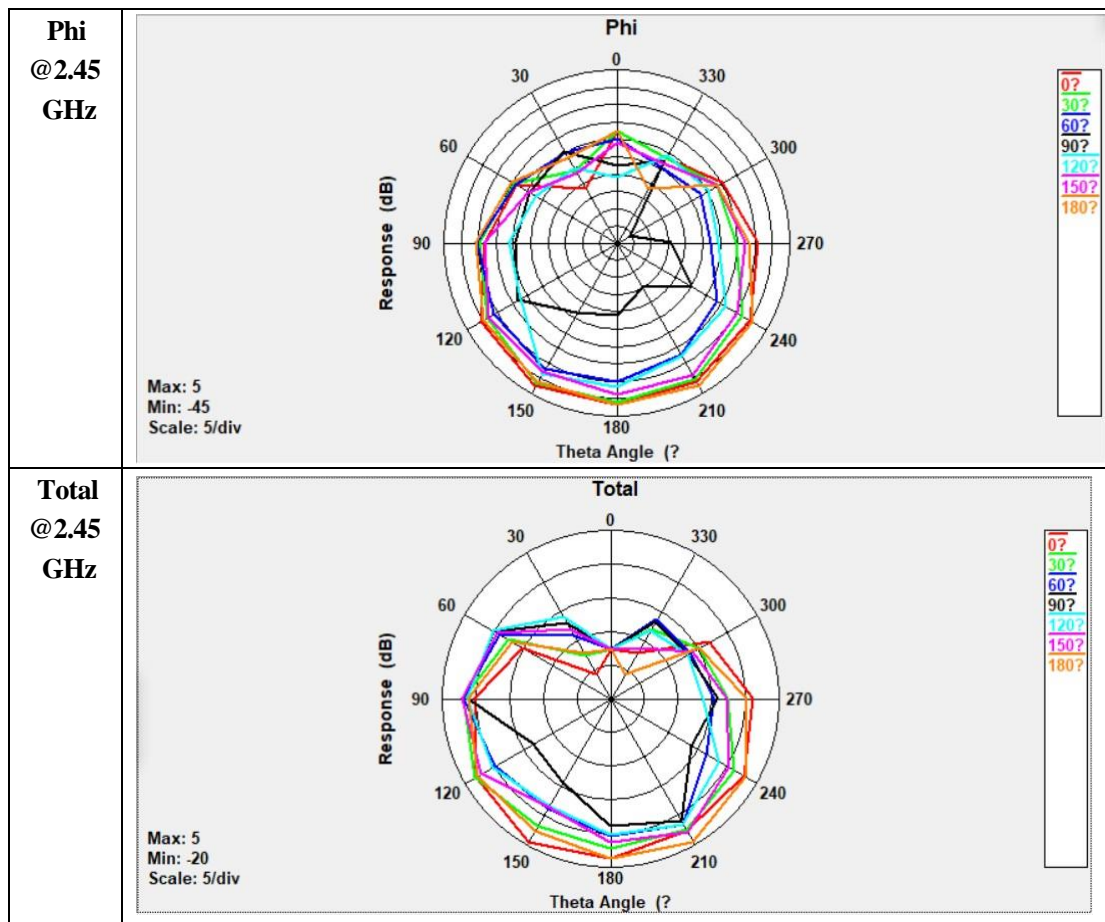
Based on the test PCB board size and the test direction shown in the figure below. The following data were tested in ETS 3D microwave darkroom.



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

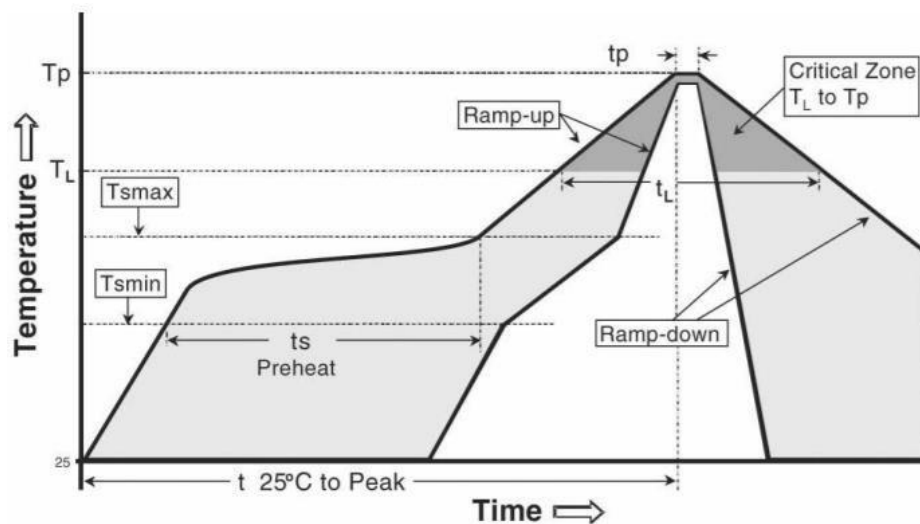


## CA-C03 Specification



### Welding conditions

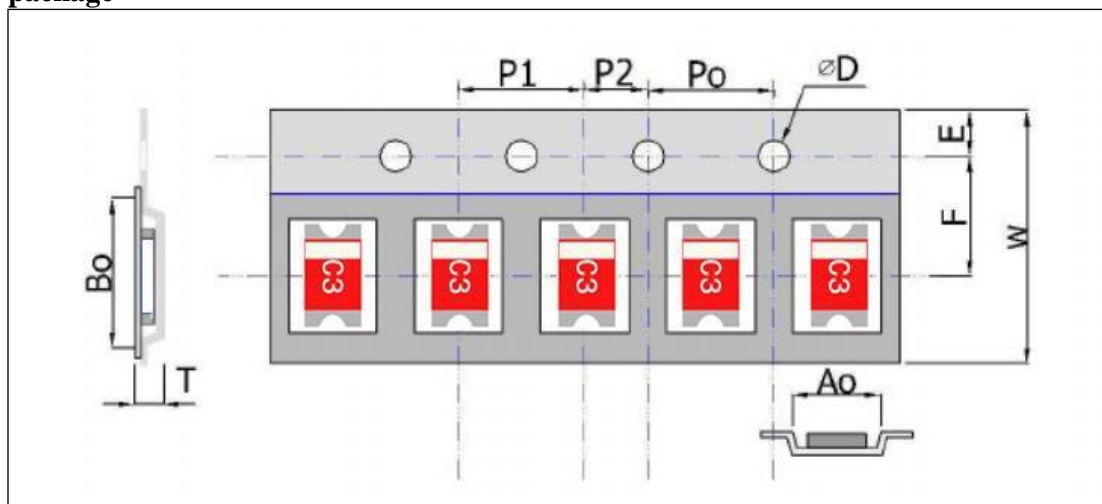
Typical welding specifications that are reliable and nondestructive are shown in the following figure:



## CA-C03 Specification

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>	- Temperature Min (T <sub>smin</sub> )	150 °C
	- Temperature Max (T <sub>smax</sub> )	200 °C
	- Time (t <sub>smin</sub> to t <sub>smax</sub> )	60-180 seconds
<b>REFLOW</b>	- Temperature (T <sub>L</sub> )	217 °C
	- Total Time above T <sub>L</sub> (t <sub>L</sub> )	60-150 seconds
<b>PEAK</b>	- Temperature (T <sub>p</sub> )	260 °C
	- Time (t <sub>p</sub> )	20-40 seconds
<b>RAMP-DOWN</b>	Rate	6 °C/second max
Time from 25 °C to Peak Temperature		8 minutes max

### package

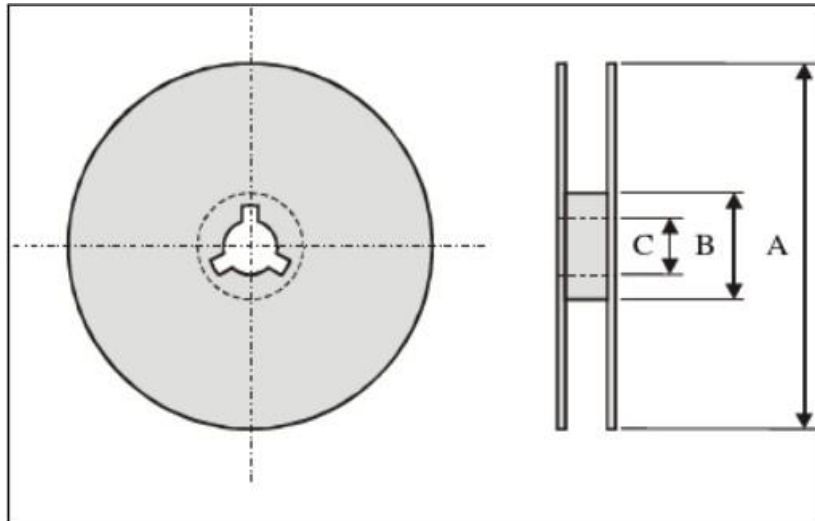


### Specification of plastic carrier tape (unit: mm)

Index	Ao	Bo	$\Phi D$	T	W
Dimension (mm)	3.0±0.1	6.0±0.1	1.55±0.05	1.2±0.1	11.8±0.1
Index	E	F	Po	P1	P2
Dimension (mm)	1.75±0.1	4.6±0.1	4.0±0.1	4.0±0.1	2.0±0.1

### Reel size

## CA-C03 Specification



Index	A	B	C
Dimension(mm)	178	60	13.5

Standard quantity: 3000 PCS/ plate.

### Storage environment

The product shall meet the following conditions during storage: temperature: -10℃~+40℃

Humidity: 30% to 70% relative humidity

Do not touch corrosive gases, such as sulfur, where the product is placed. Chlorine gas or acid may lead to oxidation of product electrode, resulting in poor weldability.

Products should be placed in the toolbox and protected from moisture and dust. Products should be stored in warehouses and protected from heat, vibration and direct sunlight. The product should be stored under closed conditions.