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SMD Antenna Specification Document

**CrossAir™ SMD Antenna Series
Complies With RoHS Standards**

PN: CA-C03

Antenna Type: Internal Antenna

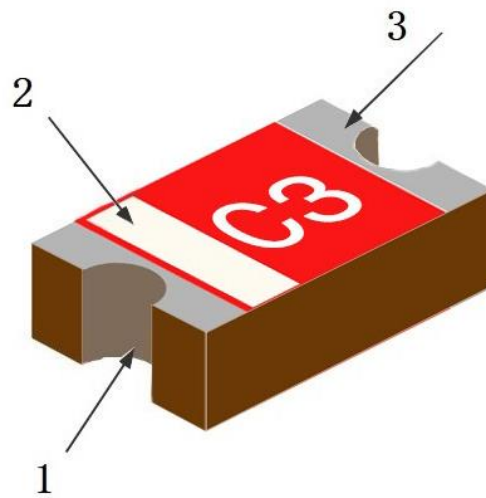
Characteristic

1. A compact SMD surface-mount antenna with dimensions of only $5.5 \times 2.0 \times 1.0 \text{ mm}^3$.
2. Low energy loss and high antenna efficiency.
3. It exhibits high stability under variations in temperature and humidity.

Apply

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

structure



1、 Antenna Power Supply Port

2、 Power Supply Identification Symbol

3、 Fixed End of the Antenna Welded for Fixation

Size

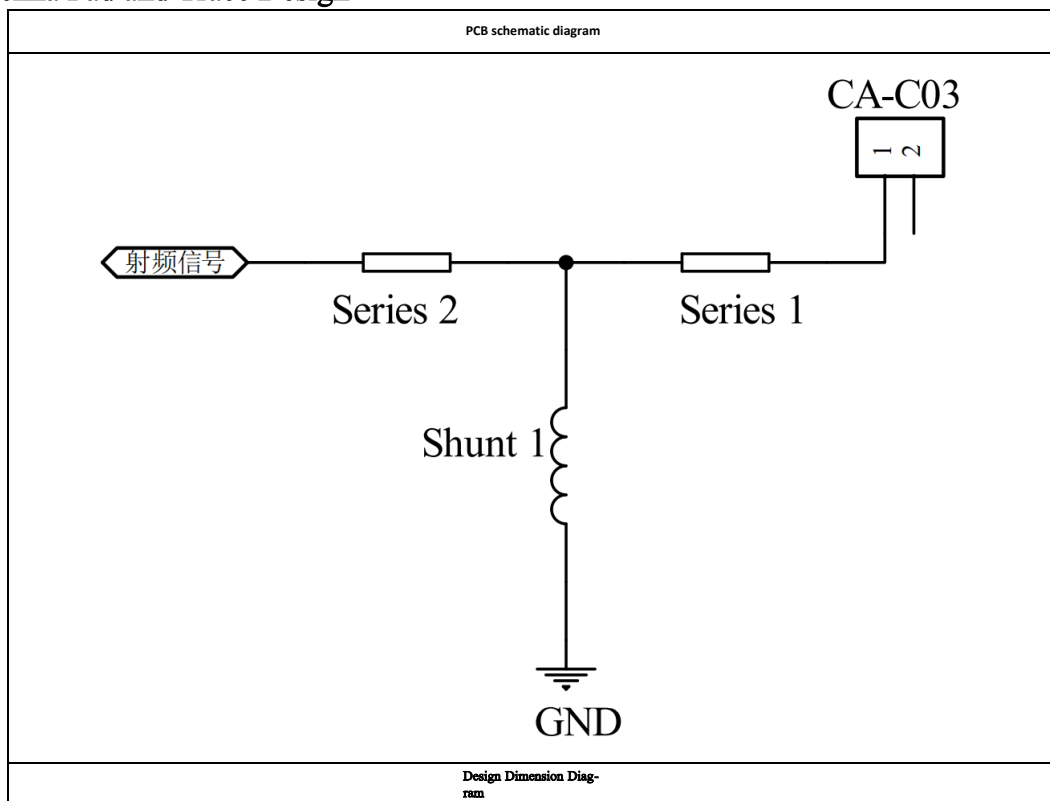
Three views	Symbol	Size (mm)
	L	5.5 ± 0.2
	w	2.0 ± 0.1
	T	1.0 ± 0.1
	a	0.5 ± 0.1

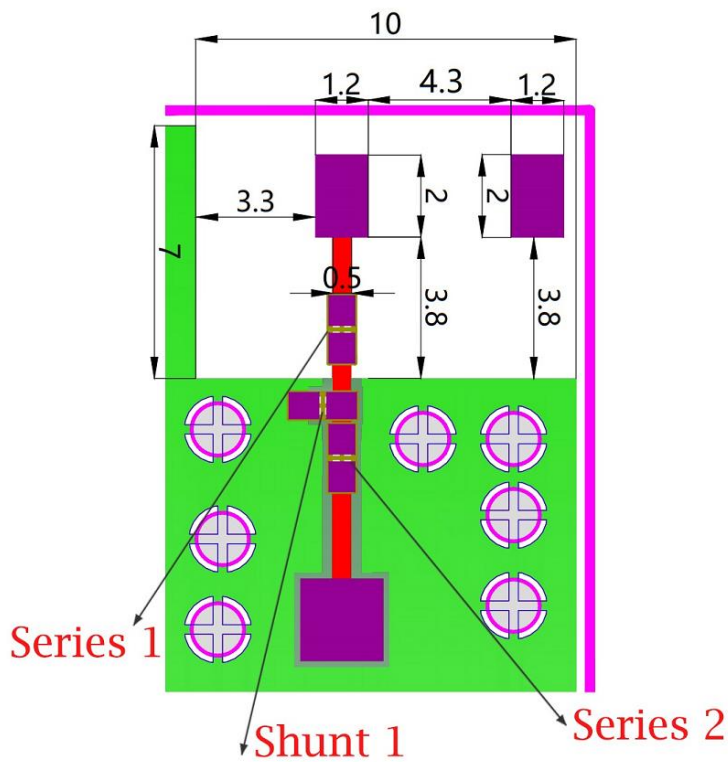
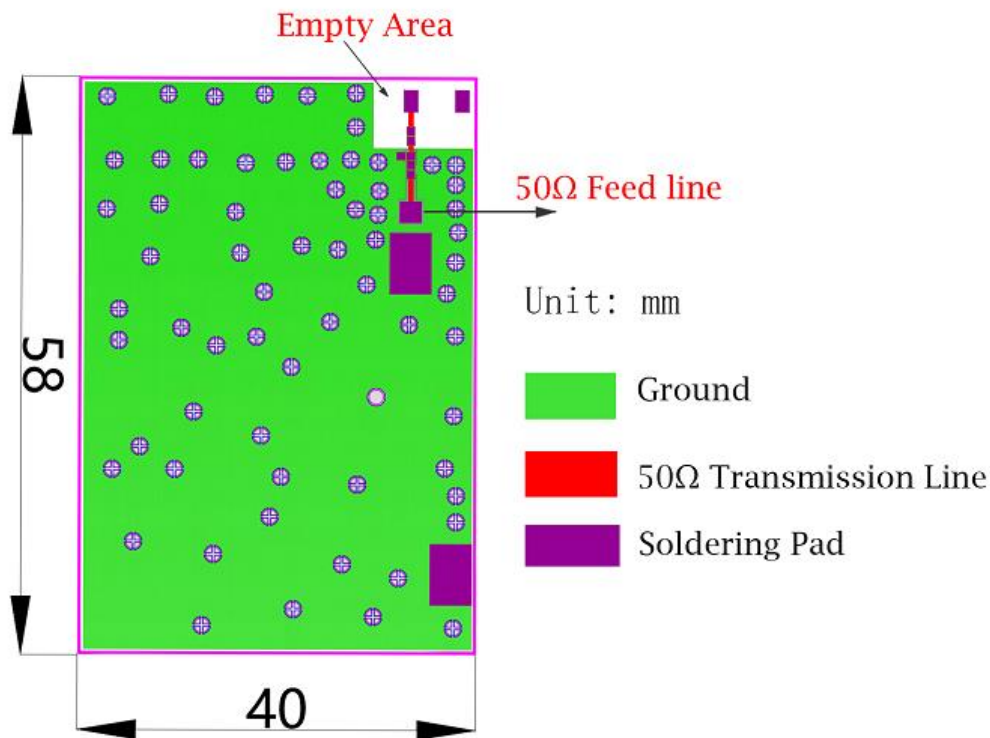
Electrical Character

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

The operating frequency of the 2.4 GHz antenna must be calibrated using impedance matching components.

Antenna Pad and Trace Design

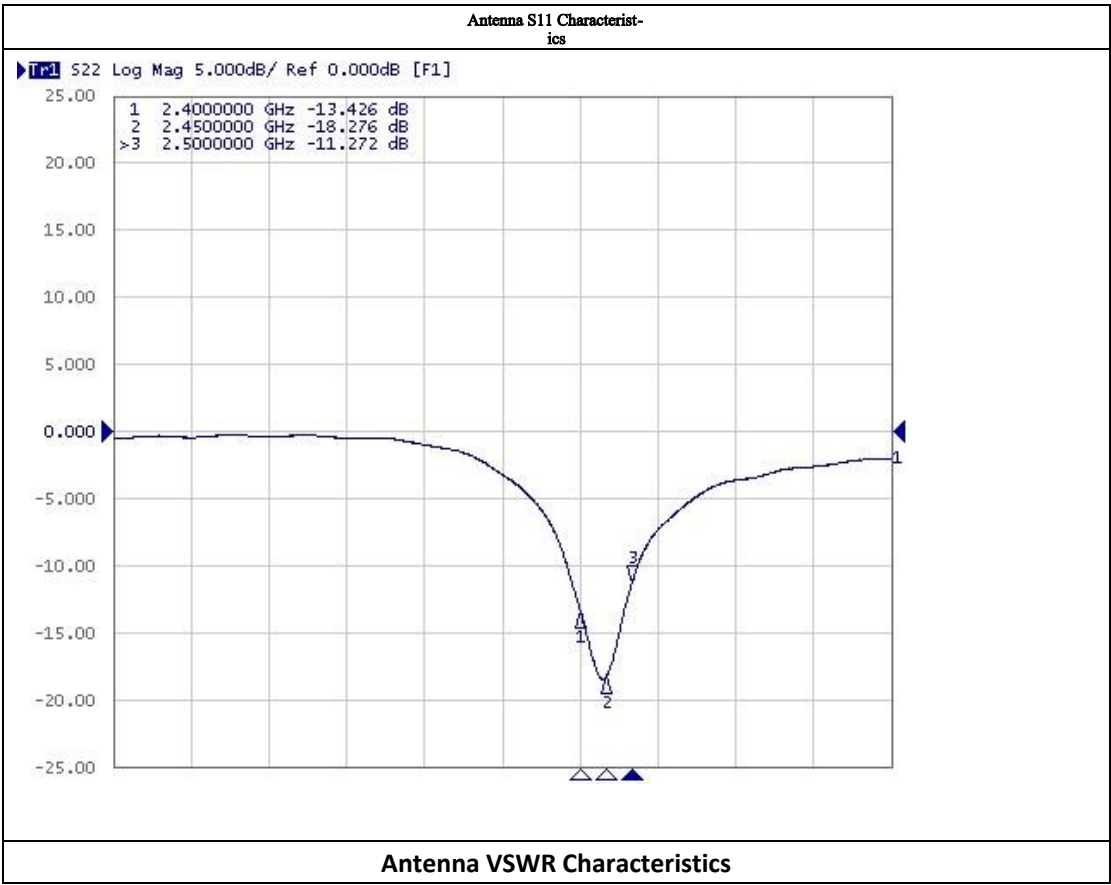
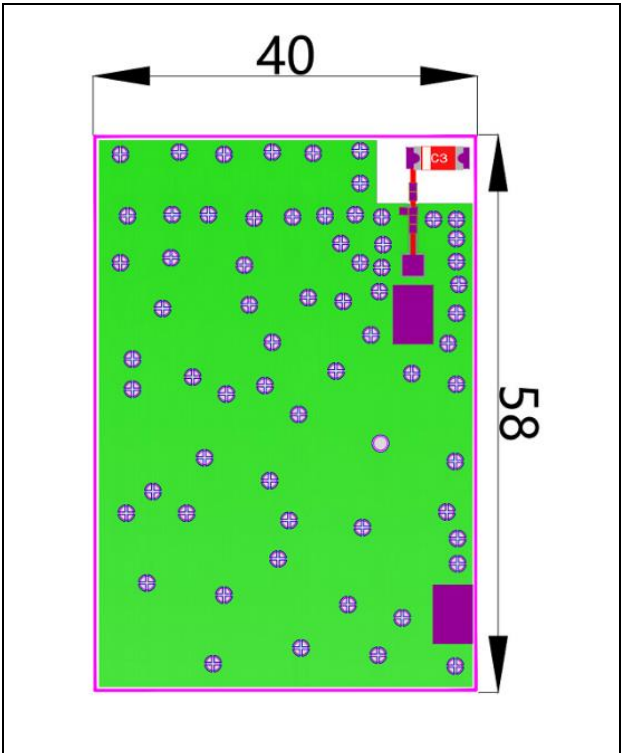


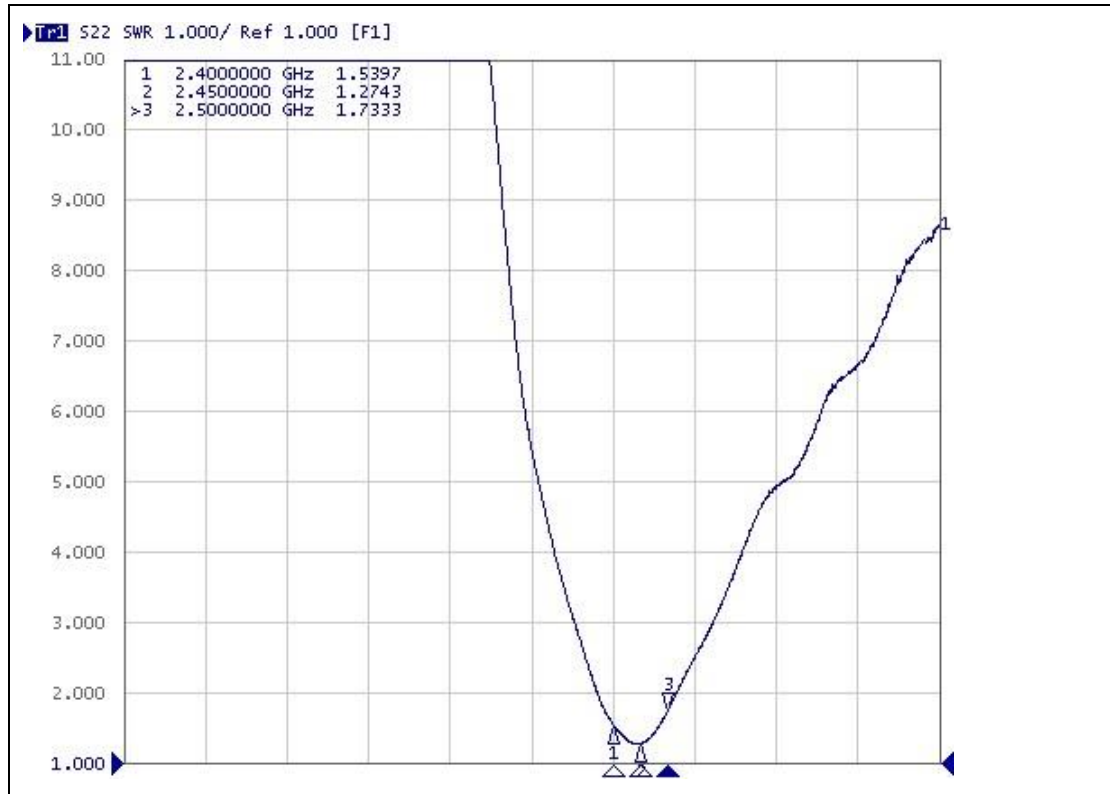


Matched Device Value

Series 1 Series of Connected Devices	Resistance: 0 Ω
Shunt Device 1 (Parallel)	High-frequency inductor: 3 NH
Series 2 Series of Connected Devices	Resistance: 0 Ω

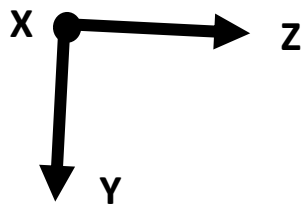
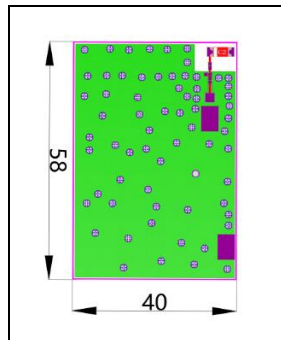
Antenna Testing on the Test Board, Board Thickness.



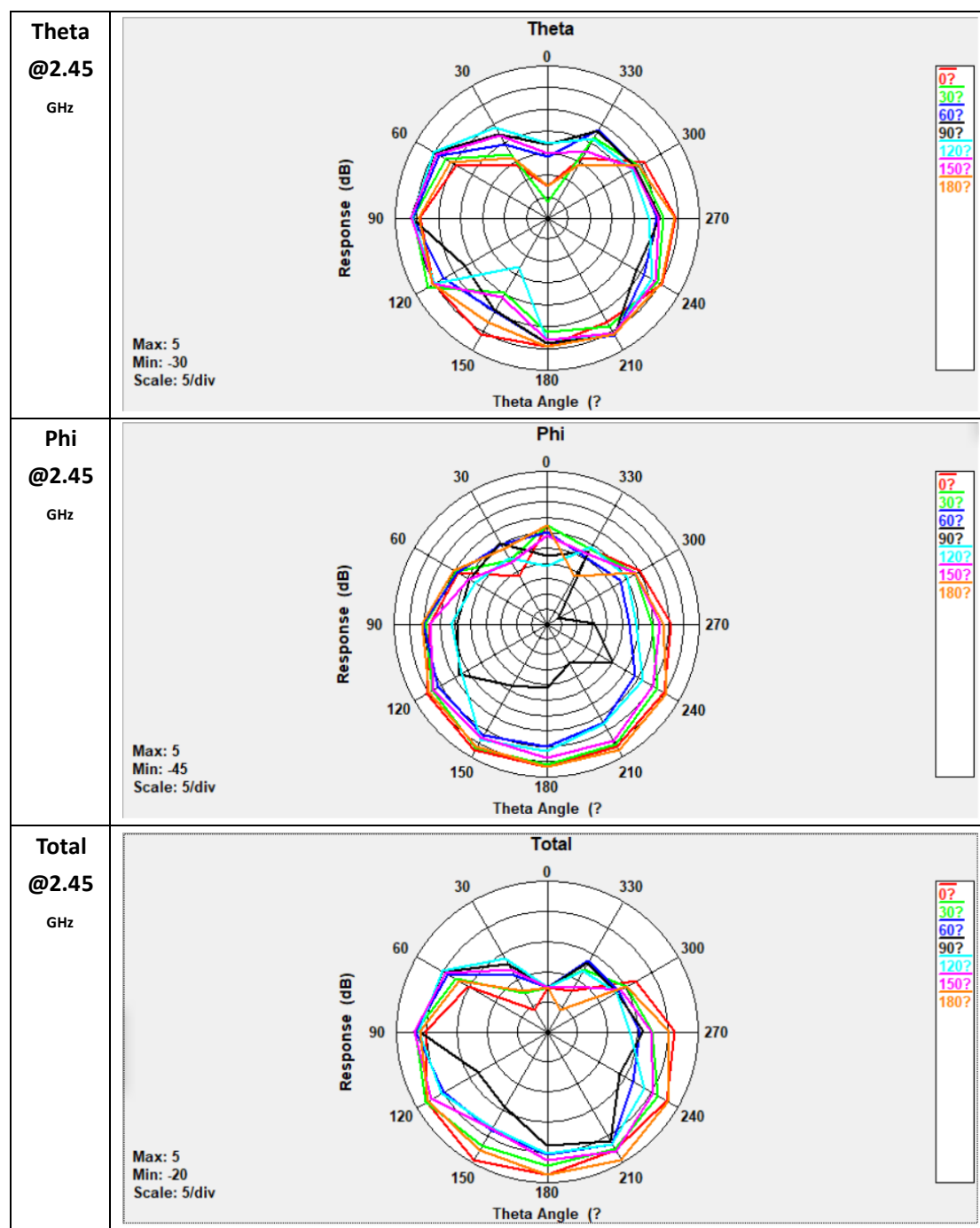


Efficiency and Radiation Diagram

Performance parameters such as efficiency, radiation pattern, and gain were derived from the test board design. The specification characteristic test data for the CA-C03 antenna were obtained based on the dimensions of the test PCB and the testing orientation shown in the figure below. All data were measured in an ETS 3D microwave anechoic chamber.



Gain and Efficiency	Bandwidth: 2.4 GHz–2.5 GHz
Peak Gain	4.3dBi
Average gain within the band	4.1dBi
Average Gain across the band	
Band gain range	3.9dBi~4.3dBi
Gain Range across the band	
Peak Efficiency	81.7%
Average efficiency within the band	80.2%
Average Efficiency across the band	
Band Internal Efficiency Range	78.6%~81.7%
Efficiency Range across the band	



Welding Condition

The typical reliable and non-destructive welding specifications are shown in the figure below: