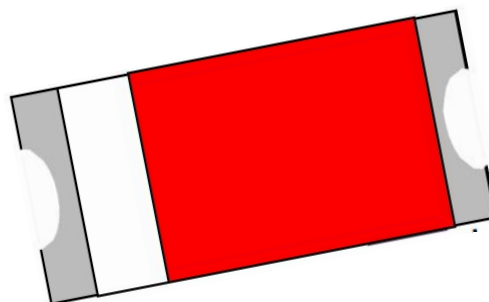


2.4GHz 5221 Chip Antenna: RANT5221F245M02

1. Applications

WLAN, 802.11b/g, Bluetooth, WLAN, etc...



2. Features

SMD, high reliability, ultra Impact, Omni-directional...

3. Part Number Information

RANT 5221 F 245 M 02
 (A) (B) (C) (D) (E) (F)

(A)Product Type	Chip Antenna
(B) Size Code	5.0x2.0mm(±0.2mm)
(C) Material	High K material
(D) Frequency	2.4 ~ 2.5GHz
(E) Feeding mode	PIFA & Single Feeding
(F) Antenna type	Type=02

4. 产品尺寸
5020单极天线

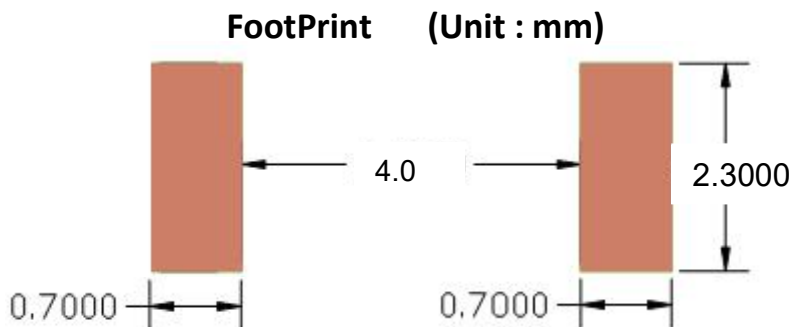


Figure	Symbol	Dimension (mm)
	L (长)	5.00 ± 0.20
	W (宽)	2.00 ± 0.30
	T (厚度)	1.0 ± 0.30
	A (电极宽度)	0.50 ± 0.20

5. Electrical Specification

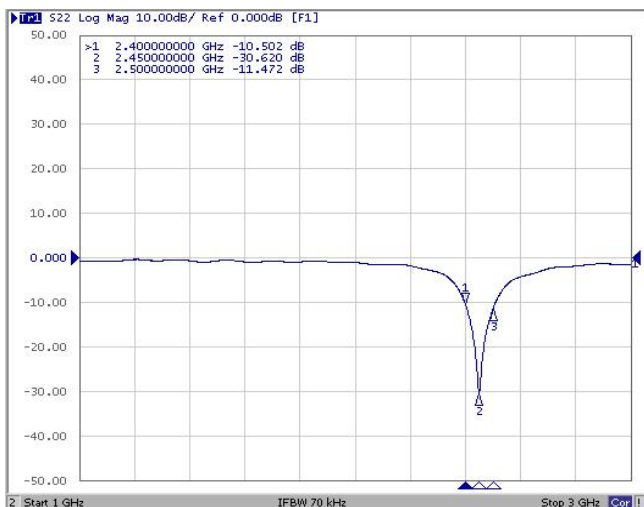
Specification		
Part Number	RANT 5221 F245 M02	
Central Frequency	2450	MHz
Bandwidth	120 (Min.)	MHz
Return Loss	-10 (Max)	dB
Peak Gain	3.59	dBi
Impedance	50	Ohm
Operating Temperature	-40~+85	°C
Maximum Power	4	W
Resistance to Soldering Heats	10 (@ 260°C)	sec.
Polarization	Linear	
Azimuth Beamwidth	Omni-directional	
Termination	Sn (Leadless)	

6. 推荐PCB

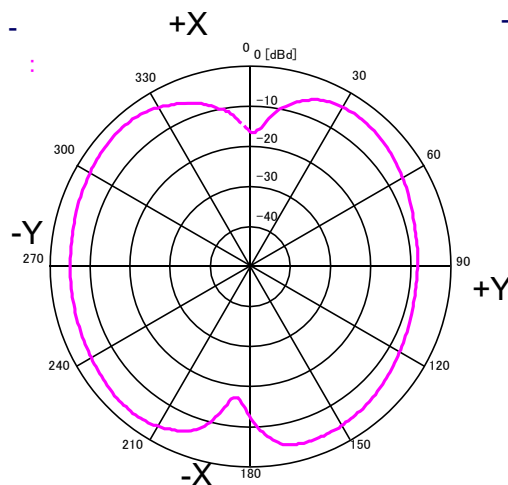
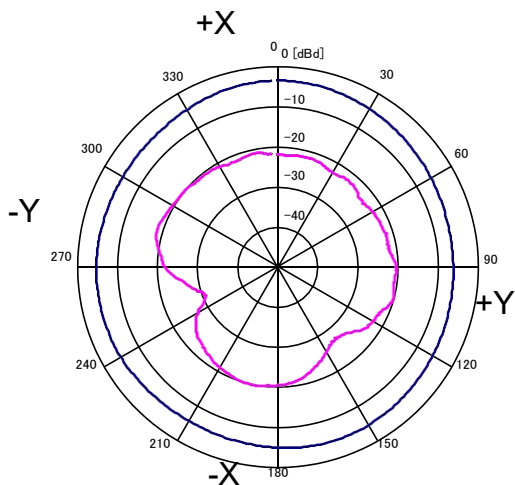
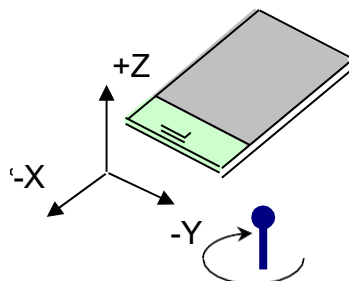
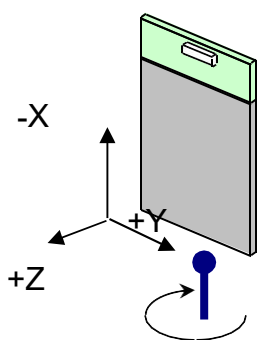


7. Measurement Results

Return Loss



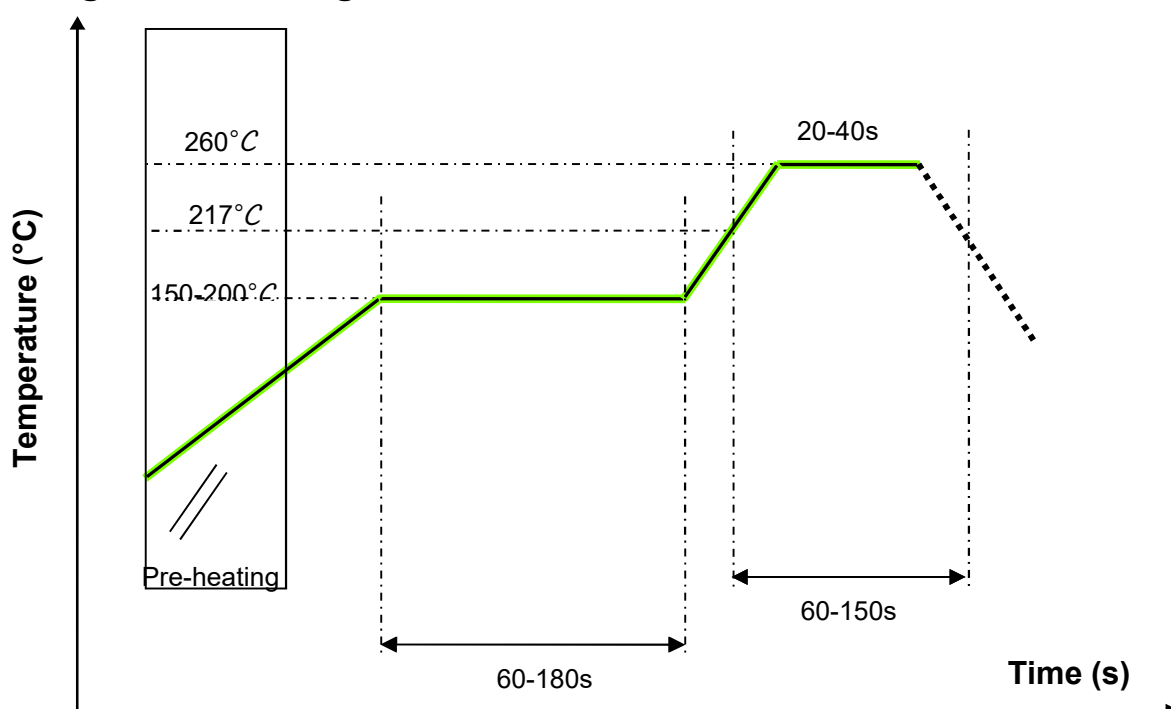
7.2 Radiation Pattern



8. Reliability and Test Conditions

Test item	Test condition / Test method	Specification
Solderability JIS C 0050-4.6 JESD22-B102D	*Solder bath temperature: $235 \pm 5^{\circ}\text{C}$ *Immersion time: 2 ± 0.5 sec Solder: Sn3Ag0.5Cu for lead-free	At least 95% of a surface of each terminal electrode must be covered by fresh solder.
Leaching (Resistance to dissolution of metallization) IEC 60068-2-58	*Solder bath temperature: $260 \pm 5^{\circ}\text{C}$ *Leaching immersion time: 30 ± 0.5 sec Solder : SN63A	Loss of metallization on the edges of each electrode shall not exceed 25%.
Bending test JIS C 0051- 7.4.1	The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of about 1 mm/s per second until the deflection becomes 1mm/s and then pressure shall be maintained for 5 ± 1 sec. Measurement to be made after keeping at room temperature for 24 ± 2 hours	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-40 \sim 85^{\circ}\text{C}$.
Resistance to soldering heat JIS C 0050-5.4	*Preheating temperature: $120 \sim 150^{\circ}\text{C}$, 1 minute. *Solder temperature: $270 \pm 5^{\circ}\text{C}$ *Immersion time: 10 ± 1 sec Solder: Sn3Ag0.5Cu for lead-free Measurement to be made after keeping at room temperature for 24 ± 2 hrs	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within $-40 \sim 85^{\circ}\text{C}$. Loss of metallization on the edges of each electrode shall not exceed 25%.

9. Soldering and Mounting



10. Antenna application precautions

If space permits, it is best not to choose an antenna that is too small.

It is best to have a large clearance area between the antenna and nearby objects; otherwise matching and adjustment will become difficult and the radiation pattern will be severely distorted.

There should be no circuit layout or ground layer below the antenna.

The antenna should not be placed too close to metal objects, such as batteries, chips, etc., and should not overlap with metal objects such as batteries.

Note that internal cables (such as battery power cables) should not be too close to the antenna.

Monopole antennas require a reasonable ground plane to work best.

Antenna matching on the final product solution can shorten the adjustment cycle; while on the light board, repeated adjustments are often required.

Without matching, the same antenna placed on a completely different layout board may not work properly.

Do not use a metal casing or metal-clad plastic casing to cover the antenna.

Do not use very thin antenna feed lines. The feed lines should have a certain width, not less than 0.1mm.

Calculate feeder impedance based on PCB thickness and dielectric constant, 50 ohms will make antenna adjustment easier

The chip antenna assembly should be as far away as possible from batteries, EMI protective materials, folding speakers, metal screws, LCD displays, etc.

11. Storage and Transportation Information

Storage Conditions

To maintain the solderability of terminal electrodes:

1. Temperature and humidity conditions: -10~ 40°C and 30~70% RH.
2. Recommended products should be used within 6 months from the time of delivery.
3. The packaging material should be kept where no chlorine or sulfur exists in the air.

Transportation Conditions

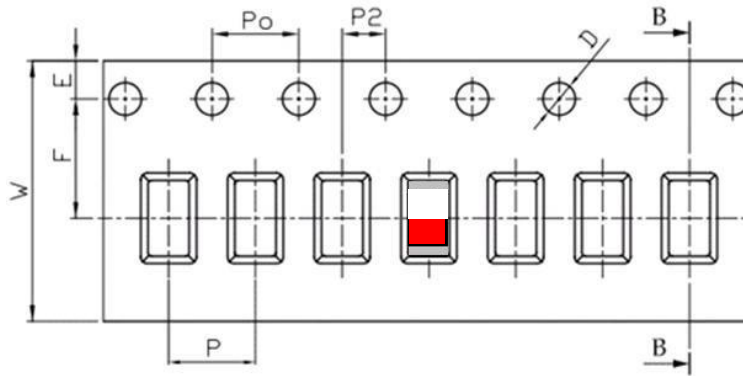
1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

12. Packing

(1) Quantity/Reel: 2000 pcs/Reel

(2) Plastic tape:

a. Tape Drawing



b. Tape Dimensions (unit: mm)

Feature	Specifications	Tolerances
W	12.00	±0.30
P	4.00	±0.10
E	1.75	±0.10
F	5.50	±0.10
P2	2.00	±0.10
D	1.50	+0.10 -0.00
P0	4.00	±0.10
10P0	40.00	±0.20

c. Reel Drawing

