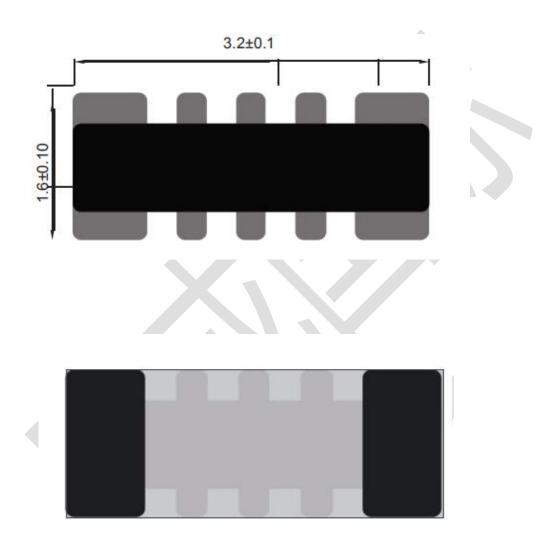


3216 Chip antenna

For Bluetooth / WLAN Applications



Manufacturer: RAIN International Technology Co., Ltd.

Address: Building F 709, Yuxing Science and Technology Industrial Park, Nanchang Third Industrial Zone, Nanchang Community, Xixiang Street, Bao 'an District, Shenzhen

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Part Number Information

RA	NT <u>3216</u>	E	<u>245</u>	M	<u>0X</u>		
Α	B	С	D	Е	F		
Α	Product Se	ries	Antenna				
B	Dimension L	. x W	3.2X1.	6mm (+-0).2mm)		
C	Materia	I	Hig	gh K mate	erial		
D	Working Freq	uency	2	.4 ~ 2.5G	Hz		
E	Feeding mo	ode	Monopole & Single Feedir				
F	Antenna ty	/pe		Type=0X			

1. Electrical Specification

	Type on							
1. Electrical Specification								
Specification								
Part Number	RANT3216F245M0X							
Central Frequency	2450	MHz						
Bandwidth	120 (Min.)	MHz						
Return Loss	-10(Max)	dB						
Peak Gain	3.28	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	Cu / Sn (Leadless)							

Remark : Bandwidth & Peak Gain was measured under evaluation board of next page

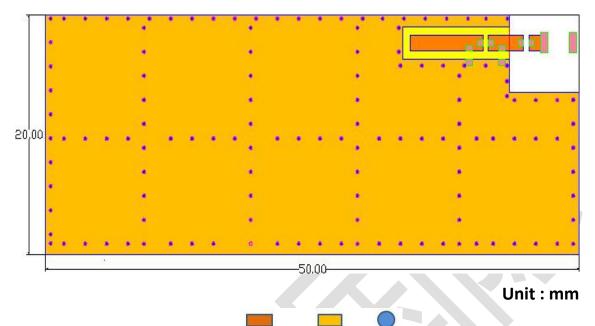
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2. Recommended PCB Pattern

1. Evaluation Board Dimension

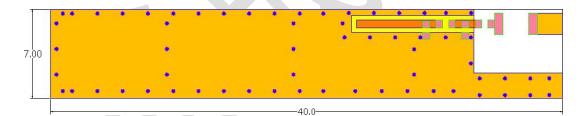
(若淨空區夠大,建議在天線尾段加 Trace,效能更佳)



2.Evaluation Board Dimension

(若淨空區夠大,建議在天線尾段加Trace,效能更佳)

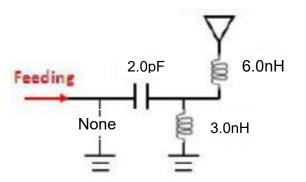
Feed Line



TOP Copper

VIA

Suggested Matching Circuit

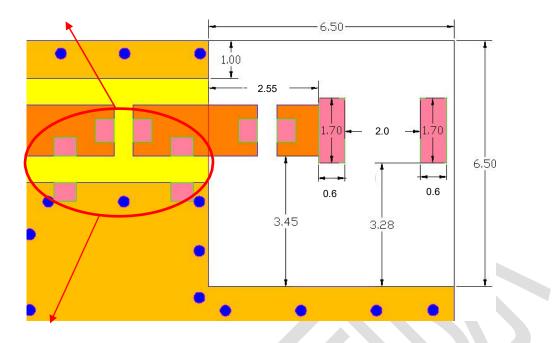


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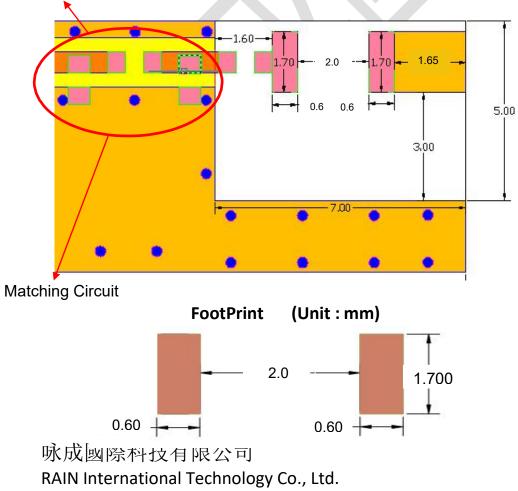
1. Layout Dimensions in Clearance area(Size=6.5*6.5mm)

50 ohm transmission Line



Matching Circuit

2. Layout Dimensions in Clearance area(Size=7.0*5mm)

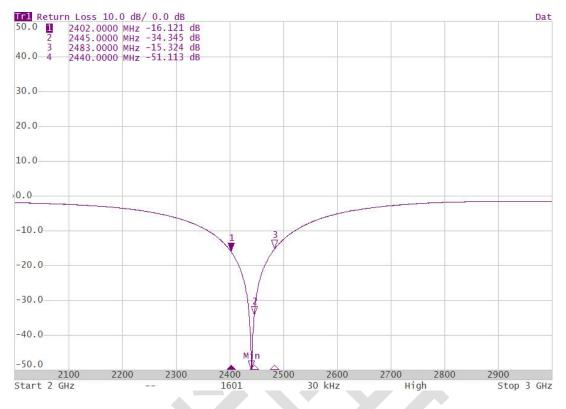


50 ohm transmission Line

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3. Measurement Results

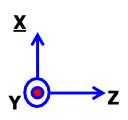
Return Loss

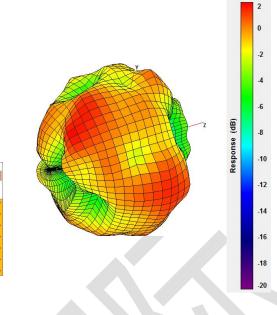


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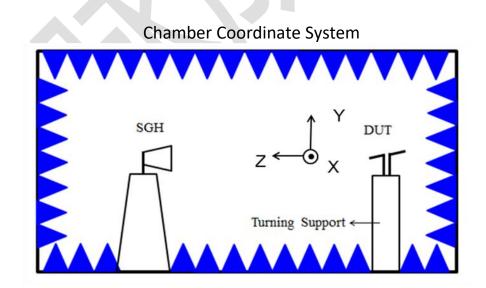
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Radiation Pattern





	Efficiency	Peak Gain	Directivity
2400MHz	71.05 %	2.80 dBi	3.95 dBi
2450MHz	79.87 %	3.28 dBi	4.42 dBi
2500MHz	71.82 %	2.77 dBi	4.15 dBi



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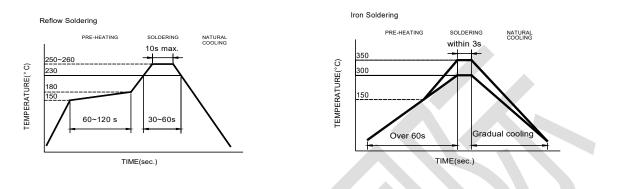
4. Reliability and Test Condictions

ITEM	REQUIREMENTS	TEST CONDITION			
Solderability	 Wetting shall exceed 90% coverage No visible mechanical damage 	Pre-heating temperature:150°C/60sec. Solder temperature:230±5°C			
	TEMP (°C)	Duration:4±1sec. Solder:Sn-Ag3.0-Cu0.5			
	230°C 4±1 sec. 150°C	Flux for lead free: rosin			
	60sec				
Solder heat	1. No visible mechanical damage	Pre-heating temperature:150°C/60sec.			
Resistance	2. Central Freq. change :within ±6%	Solder temperature:260±5℃			
	TEMP (°C)	Duration:10±0.5sec. Solder:Sn-Ag3.0-Cu0.5			
	260°C10±0.5 sec.	Flux for lead free: rosin			
	150℃				
Component	1. No visible mechanical damage	The device should be reflow			
Adhesion (Push test)	J	soldered(230±5°C for 10sec.) to a tinned copper substrate A dynometer force gauge should be applied the side of the component. The device must with-ST-F 0.5 Kg without failure of the termination			
0	1. No visible mechanical damage	attached to component.			
Component Adhesion		Insert 10cm wire into the remaining oper eye bend ,the ends of even wire lengths			
(Pull test)		upward and wind together.			
、 ,		Terminal shall not be remarkably			
		damaged.			
Thermal shock	1. No visible mechanical damage	+85°C=>30±3min -40°C=>30±3min			
	2. Central Freq. change :within ±6%	Test cycle:10 cycles The chip shall be stabilized at normal condition for 2~3 hours before			
	Phase Temperature(°C) Time(min)				
	1 +85±5℃ 30±3				
	2 Room Within Temperature 3sec	measuring.			
	3 -40±2℃ 30±3				
	4 Room Within				
	4 Temperature 3sec				
Resistance to	1. No visible mechanical damage	Temperature: 85±5℃			
High	2. Central Freq. change :within ±6%	Duration: 1000±12hrs			
Temperature	3. No disconnection or short circuit.	The chip shall be stabilized at normal			
		condition for 2~3 hours before			
Resistance to		measuring. Temperature:-40±5°C			
Resistance to	1. No visible mechanical damage	Duration: 1000 ± 12 hrs			
Temperature	2. Central Freq. change :within ±6%	The chip shall be stabilized at normal			
·	3. No disconnection or short circuit.	condition for 2~3 hours before			
		measuring.			
Humidity	1. No visible mechanical damage	Temperature: 40±2°C			
	2. Central Freq. change :within ±6%	Humidity: 90% to 95% RH Duration: 1000±12hrs			
	3. No disconnection or short circuit.	The chip shall be stabilized at normal			
		condition for 2~3 hours before			
	1	measuring.			

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5. Soldering and Mounting

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. The terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.



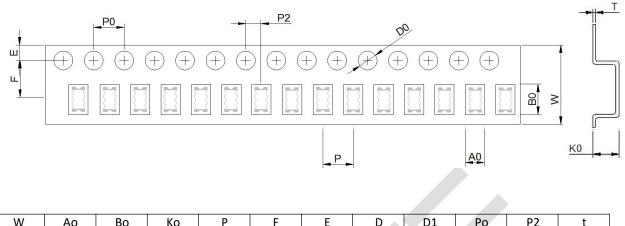
Recommended temperature profiles for re-flow soldering in Figure 1.

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 280°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 3 sec.

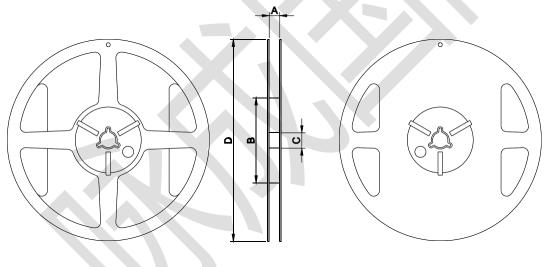
6. Packaging Information

• Tape Specification:



W	Ao	Во	Ко	Р	F	E	D	D1	Ро	P2	t
8.0	1.80	3.51	1.59	4.00	3.50	1.75	1.50	0.00	4.00	2.00	0.25
±0.30	±0.05	±0.10	±0.10	±0.05	±0.05	±0.10	±0.10	±0.10	±0.10	±0.05	±0.05

Reel Specification: (7", Φ180 mm)





Tape Width(mm)	A(mm)	B(mm)	C(mm)	D(mm)	Chip/Reel(pcs)
3216F245M0X	9.0±0.5	60±2	13.5±0.5	178±2	5000

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7. 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.