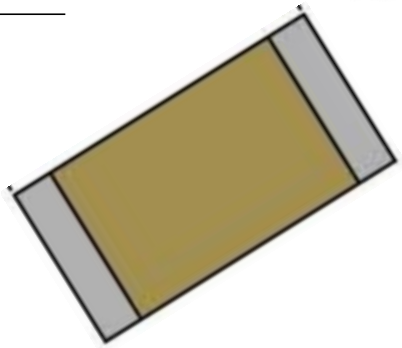
2.4GHz 0603 Chip Antenna: RANT0603F245C01

RAIN



Application:

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

Features

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

Part number Information

RANT	0603	F	245	C	01
(A)	(B)	(C)	(D)	(E)	(F)

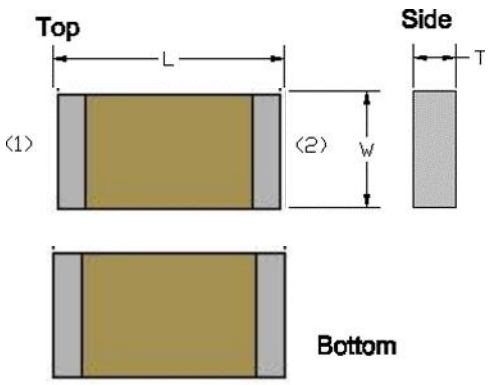
(A)Product Type	Chip Antenna
(B) Size Code	0.6x0.3mm(±0.1mm)
(C) Material	High K material
(D) Frequency	2.4 ~ 2.5GHz
(E) Feeding mode	PIFA & Single Feeding
(F) Antenna type	Type=01

Electrical Specification

Working Frequency Range	2400 ~2500 MHz
Bandwidth	120 MHz (Min.)
Peak Gain	3.35 dBi (Typ.)
Impedance	50 Ohm
Return loss	10 dB (Min)
Polarization	Linear
Azimuth Beamwidth	Omni-directional
Operation Temperature(℃)	-40 ~85℃
Resistance to Soldering Heats	10sec. (@ 280℃)
Termination	Ni / Au (Leadless)

The specification is defined on EVB.

Dimension and Terminal Configuration



Dimension (mm)	
L	0.60 ± 0.10
W	0.30 ± 0.10
T	0.30 ± 0.10

No.	Terminal Name
1	Feeding/GNG
2	GND/Feeding

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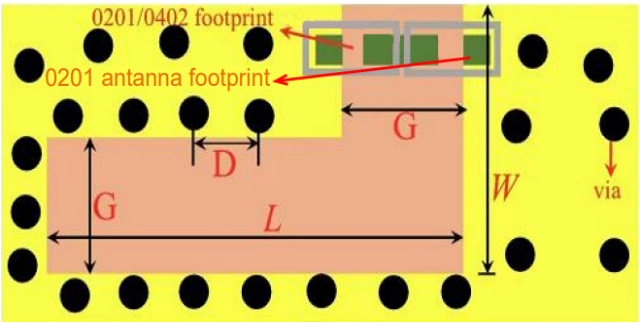
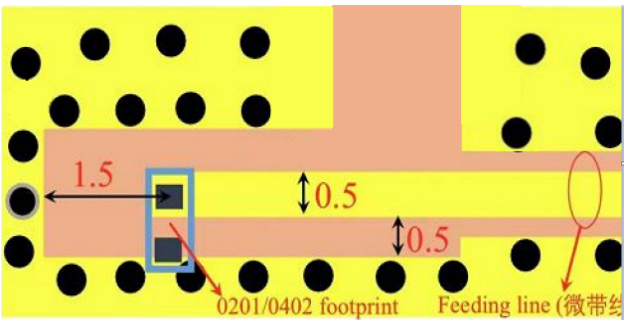
RAIN International Technology Co., Ltd. TEL: 13530576606
Room 601, Building F, Room 611, Building F, Yuxing Technology Industrial Park, Nanchang Third Industrial Zone, Nanchang Community, Xixiang Sub-district, Bao 'an District, Shenzhen City

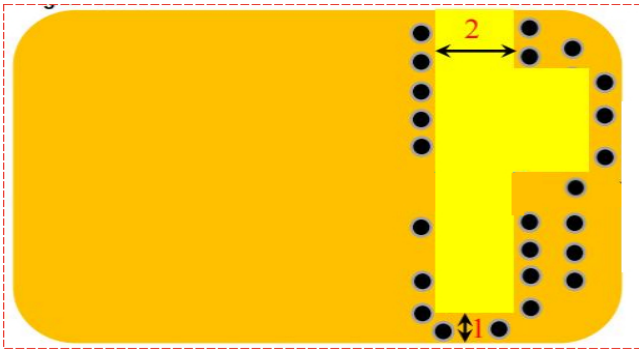
lead-free RoHS compliant

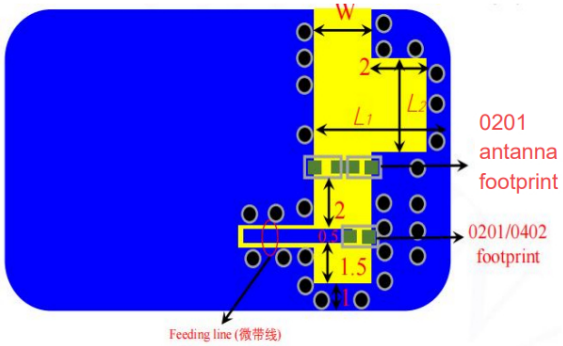
2.4GHz 0603 Chip Antenna:

RANT0603F245C01Evaluation Board Reference









设计标准：

1. 图示中的尺寸为标准封装，仅作为参考；净空区的尺寸会根据每个版型进行调整和优化。
2. 天线最优放置于PCBA的中间区域；天线及其板后的匹配物料最优放置于板边缘。
3. 净空区周围需一排过孔，与PCBA上的其它回路或物料进行隔离。
4. G最优为1.5~2mm, W最优为3~5mm，L最优为4~6mm，D最优为0.5~1mm。
5. 天线性能与版型、组装、佩戴等相关，因而各版型的性能会有所不同。

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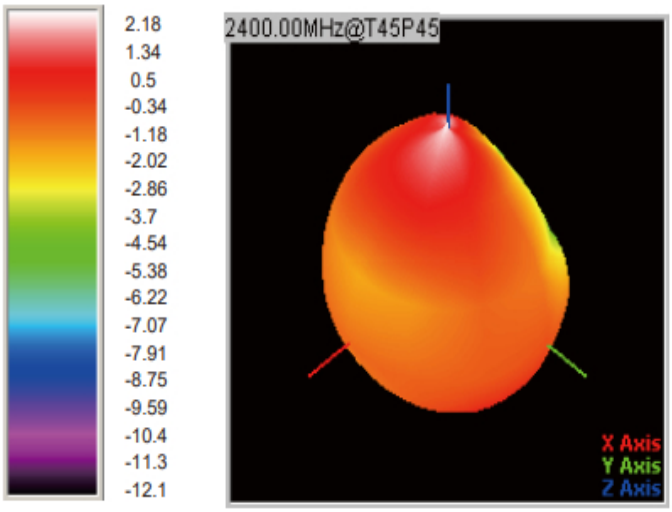
Electrical Characteristics

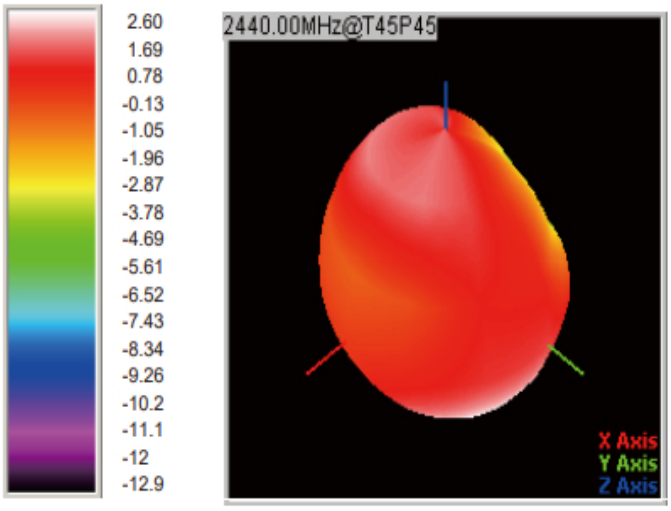
■ 辐射模式 Radiation Patterns

□ 2.4GHz WLAN BAND

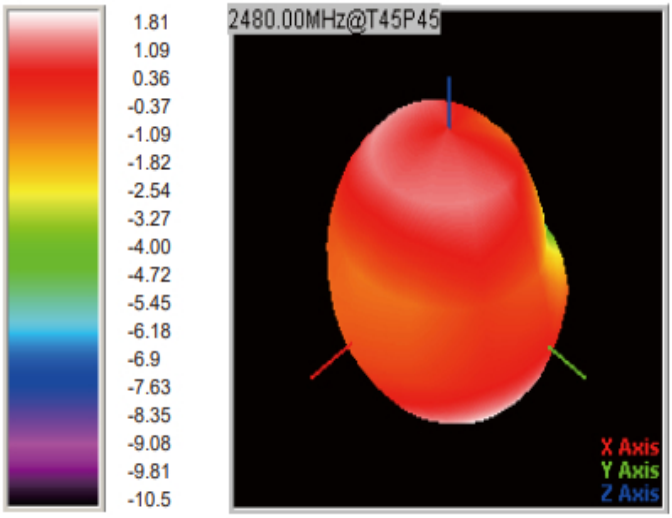
◎ 3D Gain Pattern (2400 MHz)



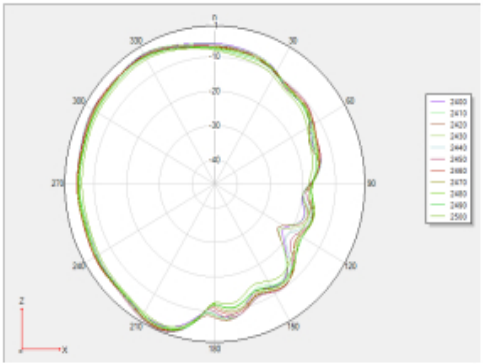
◎ 3D Gain Pattern (2440 MHz)



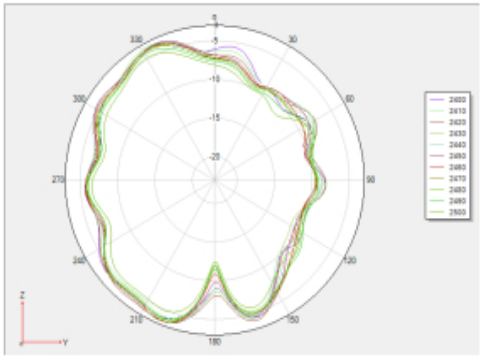
◎ 3D Gain Pattern (2480 MHz)



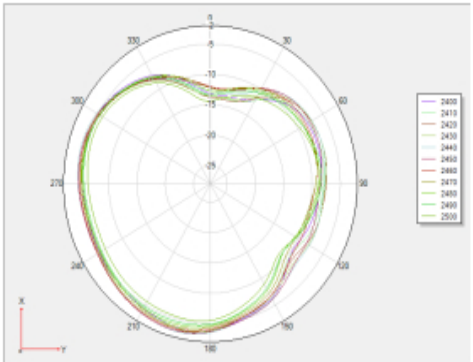
◎ 2D Gain Pattern Phi 0



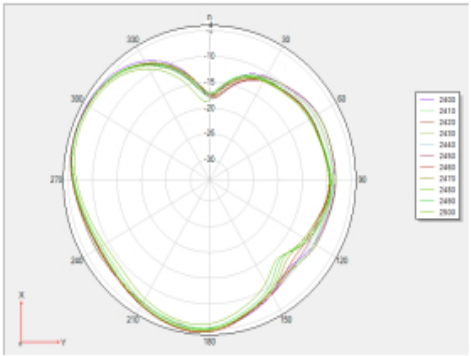
◎ 2D Gain Pattern Phi 90



◎ 2D Gain Pattern Theta 60



◎ 2D Gain Pattern Theta 90



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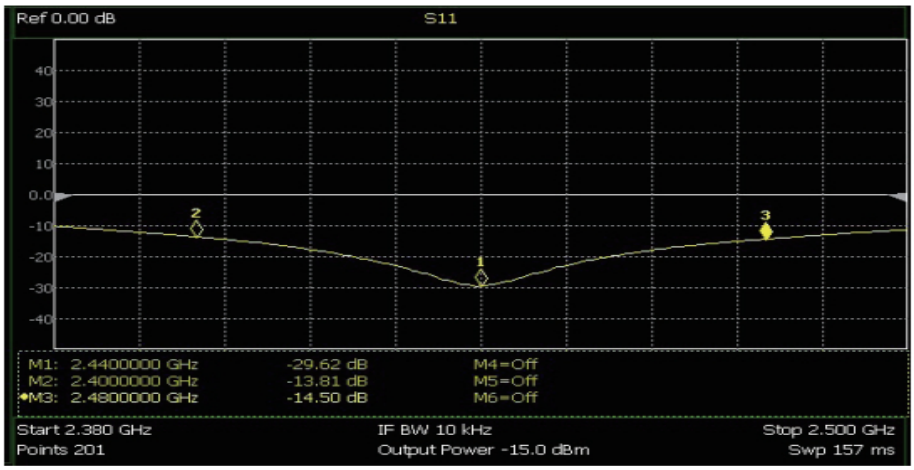
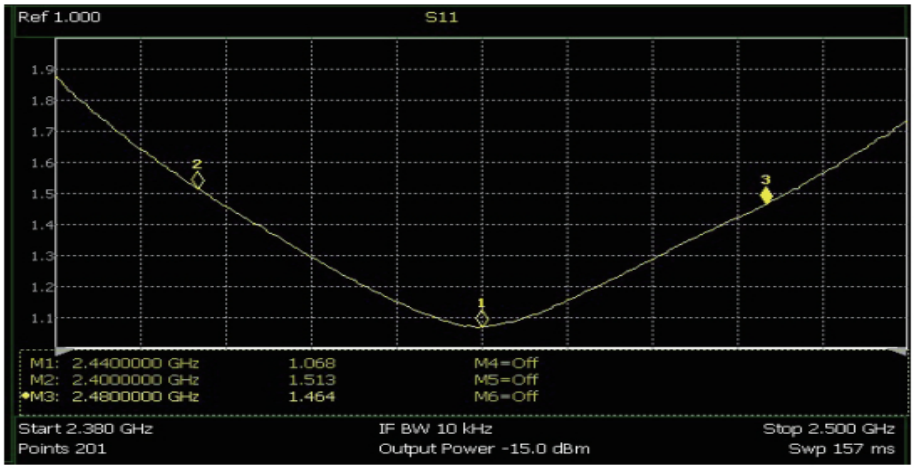
RAIN

Radiation

- EFFICIENCY AND VSWR





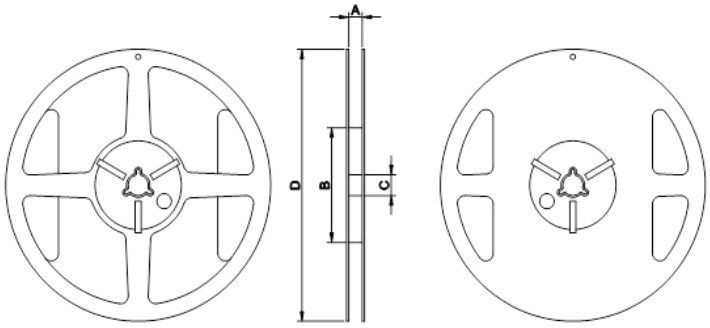
Electrical Characteristics

	Feature	Specification
1	Central frequency	2445MHz
2	Bandwidth	>100MHz
3	Peak gain	>3dBi
4	VSWR	<2
5	Polarization	Linear
6	Azimuth beamwidth	Omnidirectional
7	Impedance	50 Ω

Taping Specifications

Reel and Taping Specification

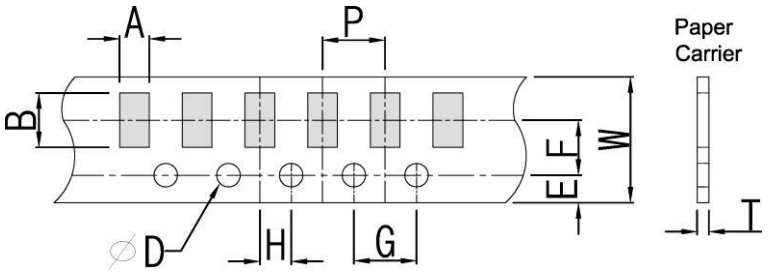
Reel Specification



7" x 8 mm

TYPE	SIZE		A	B	C	D
0603	7”	15K/Reel	4.0±0.5	4.0±2	13.5±0.5	178±2

Tapping Specification



Packaging	Type	A	B	W	E	F	G	H	T	ψD	P
Paper Type	0603	0.38±0.20	0.68±0.20	8.0±0.20	1.75±0.10	3.5±0.05	4.0±0.10	2.0±0.05	0.5±0.10	1.50±0.10	2.0±0.1

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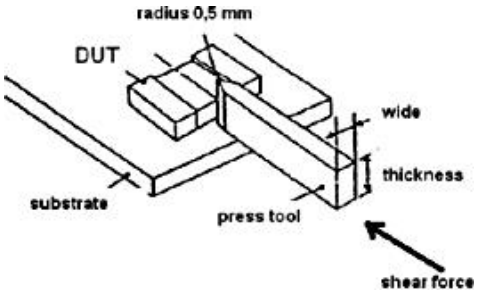
RAIN

Reliability Table

Test Item	Procedure	Requirements Ceramic Type	Remark (Reference)
Electrical Characterization		Fulfill the electrical specification	User Spec.
Thermal Shock	1. Preconditioning: 50 ± 10℃ / 1 hr , then keep for 24 ± 1 hrs at room temp. 2. Initial measure: Spec: refer Initial spec. 3. Rapid change of temperature test: -30℃ to +85℃; 100 cycles; 15 minutes at Lower category temperature; 15 minutes at Upper category temperature.	No Visible Damage. Fulfill the electrical specification.	MIL-STD-202 107
Temperature Cycling	1. Initial measure: Spec: refer Initial spec. 2. 100 Cycles (-30℃ to +85℃), Soak Mode=1 (2 Cycle/hours). 3. Measurement at 24 ± 2Hours after test condition.	No Visible Damage. Fulfill the electrical specification.	JESD22 JA104
High Temperature Exposure	1. Initial measure: Spec: refer Initial spec. 2. Unpowered; 500hours @ T=+85℃. 3. Measurement at 24 ± 2 hours after test.	No Visible Damage. Fulfill the electrical specification.	MIL-STD-202 108
Low Temperature Storage	1. Initial measure: Spec: refer Initial spec. 2. Unpowered: 500hours @ T=-30℃. 3. Measurement at 24 ± 2 hours after test.	No Visible Damage. Fulfill the electrical specification.	MIL-STD-202 108
Solderability (SMD Bottom Side)	Dipping method: a. Temperature: 235 ±5°C b. Dipping time: 3 ±0.5s	The solder should cover over 95% of the critical area of bottom side.	IEC 60384-21/22 4.10
Soldering Heat Resistance (RSH)	Preheating temperature: 150 ± 10°C. Preheating time: 1~2 min. Solder temperature: 260 ± 5°C. Dipping time: 5 ± 0.5s	No Visible Damage.	IEC 60384-21/22 4.10
Vibration	5g's for 20 min., 12 cycles each of 3 orientations Note: Use 8"X5" PCB .031" thick 7 secure points on, one long side and 2 secure points at corners of opposite sides. Parts mounted within 2" from any secure point. Test from 10-2000 Hz.	No Visible Damage.	MIL-STD-202 Method 204
Mechanical Shock	Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks) Peak value: 1,500g's Duration: 0.5ms Velocity change: 15.4 ft/s Waveform: Half-sine	No Visible Damage.	MIL-STD-202 Method 213
Humidity Bias	1. Humidity: 85% R.H., Temperature: 85 ± 2 °C. 2. Time: 500 ± 24 hours. 3. Measurement at 24 ± 2hrs after test condition.	No Visible Damage. Fulfill the electrical specification.	MIL-STD-202 Method 106

Board Flex (SMD)	1. Mounting method: IR-Reflow. PCB Size (L:100 × W:40 × T:1.6mm) 2. Apply the load in direction of the arrow until bending reaches 2 mm.	No Visible Damage.	AEC-Q200 005
Adhesion	Force of 1.8Kg for 60 seconds.  	No Visible Damage Magnification of 20X or greater may be employed for inspection of the mechanical integrity of the device body terminals and body/terminal junction.	AEC-Q200 006
Physical Dimension	Any applicable method using x10 magnification, micrometers, calipers, gauges, contour projectors, or other measuring equipment, capable of determining the actual specimen dimensions.	In accordance with specification.	JESD22 JB100

Revision History

Revision	Date	Content
1	2024/08/01	New Datasheet
2	2024/09/02	Add 2D radiation characteristic