

# 2.4GHz 1608 Chip Antenna: RANT1608F245C04



## Application:

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

## Features

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



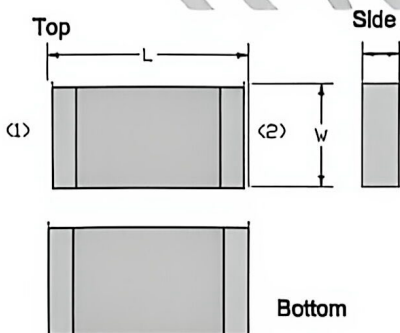
## Part number Information

| RANT             | 1608                  | F   | 245 | C   | 04  |
|------------------|-----------------------|-----|-----|-----|-----|
| (A)              | (B)                   | (C) | (D) | (E) | (F) |
| (A)Product Type  | Chip Antenna          |     |     |     |     |
| (B) Size Code    | 1.6x0.8mm(±0.1mm)     |     |     |     |     |
| (C) Material     | High K material       |     |     |     |     |
| (D) Frequency    | 2.4 ~ 2.5GHz          |     |     |     |     |
| (E) Feeding mode | PIFA & Single Feeding |     |     |     |     |
| (F) Antenna type | Type=04               |     |     |     |     |

## Electrical Specification

|                               |                    |
|-------------------------------|--------------------|
| Working Frequency Range       | 2400 ~2500 MHz     |
| Bandwidth                     | 120 MHz (Min.)     |
| Peak Gain                     | 2.7 dBI (Typ.)     |
| Impedance                     | 50 Ohm             |
| Return loss                   | 10 dB ( Min)       |
| Polarization                  | Linear             |
| Azimuth Beamwidth             | Omni-directional   |
| Operation Temperature(°C)     | -40 ~85°C          |
| Resistance to Soldering Heats | 10sec. ( @ 280°C)  |
| Termination                   | NI / Au (Leadless) |

## Dimension and Terminal Configuration



| Dimension (mm) |             |
|----------------|-------------|
| L              | 1.60 ± 0.10 |
| W              | 0.80 ± 0.10 |
| T              | 0.80 ± 0.10 |

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

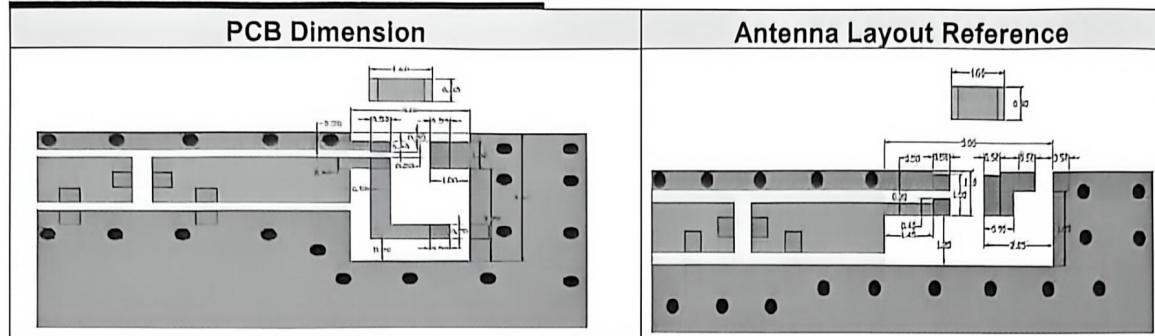
咏成國際科技有限公司 RAIN International Technology Co., Ltd. TEL: 13530576606  
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CS 扫描全能王

3亿人都在用的扫描App

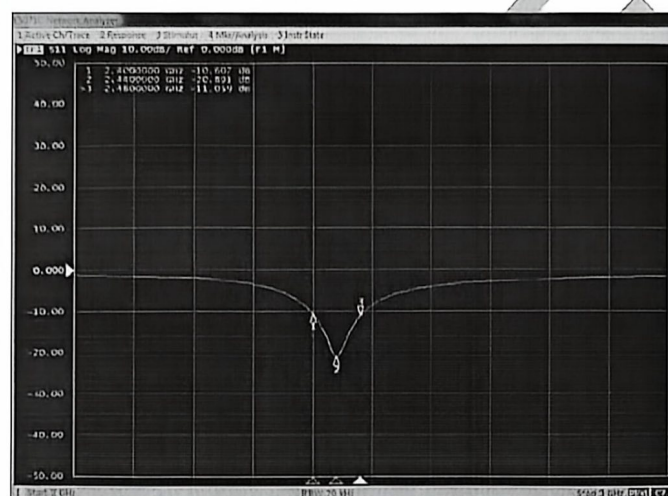
## Evaluation Board Reference



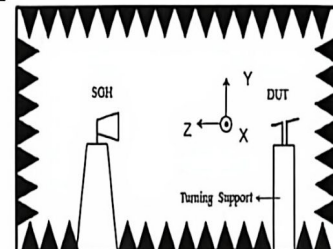
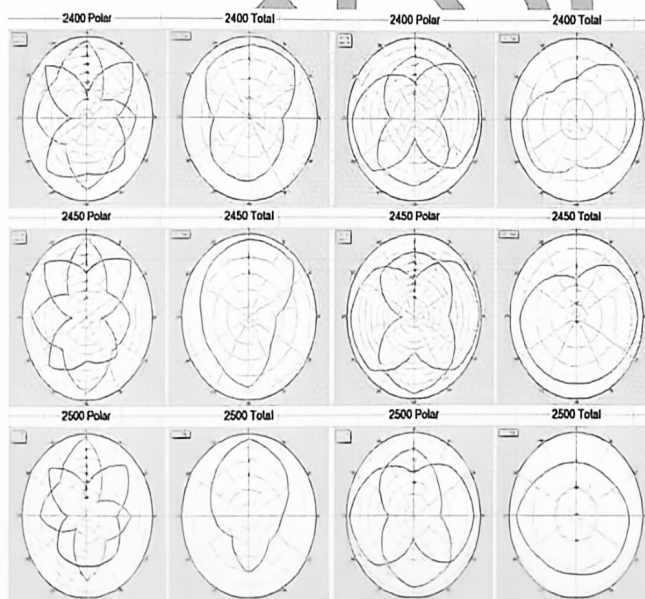
## Electrical Characteristics

## Return Loss &amp; Radiation

## ELECTRICAL CHARACTERISTICS



## Radiation



## Electrical Characteristics

| Frequency | Efficiency | Percentage | Gain |
|-----------|------------|------------|------|
| 2400      | -1.64      | 72.27%     | 2.38 |
| 2450      | -1.33      | 75.34%     | 2.7  |
| 2500      | -1.59      | 72.98%     | 2.59 |



Taping Specifications

Reel and Taping Specification

Reel Specification

The diagram illustrates the physical dimensions of a 7-inch reel. It includes three views: a top view showing a circular reel with eight spokes, a side view showing the reel's profile with a central hub and a width of 7 x 8 mm, and an end view showing the reel's face with a central hub and eight spokes.

| TYPE | SIZE |         | A       | B     | C        | D     |
|------|------|---------|---------|-------|----------|-------|
| 1608 | 7"   | 4K/Reel | 4.0±0.5 | 4.0±2 | 13.5±0.5 | 178±2 |

Tapping Specification

The diagram illustrates the physical dimensions of a chip antenna on a paper carrier. It includes a top view showing the chip antenna with dimensions A, B, P, W, E, F, G, H, T, ψD, and I, and a side view showing the chip antenna's profile with dimensions I and T. The chip antenna is labeled "Paper Carrier".

| Packaging  | Type | A         | B         | W        | E         | F        | G        | H        | T         | ψD        | P       |
|------------|------|-----------|-----------|----------|-----------|----------|----------|----------|-----------|-----------|---------|
| Paper Type | 1608 | 1.90±0.20 | 3.50±0.20 | 8.0±0.20 | 1.75±0.10 | 3.5±0.05 | 4.0±0.10 | 2.0±0.05 | 0.75±0.10 | 1.50±0.10 | 4.0±0.1 |

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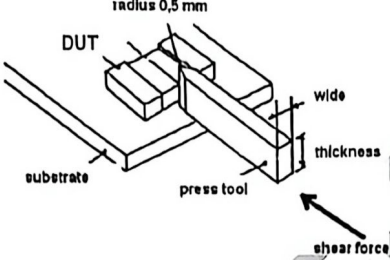


### Reliability Table

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

## 2.4GHz 1 6 0 8 Chip Antenna: RANT1608F245C04



|                    |                                                                                                                                                                                        |                                                                                                                                                                          |              |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Board Flex (SMD)   | 1. Mounting method:<br>IR-Reflow. PCB Size (L:100 × W:40 × T:1.6mm)<br>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.<br>                                                                    | No Visible Damage<br>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        | 2019/03/01 | New Datasheet                   |
| 2        | 2020/02/22 | Add 2D radiation characteristic |

Tang Pei tao

