

## 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)

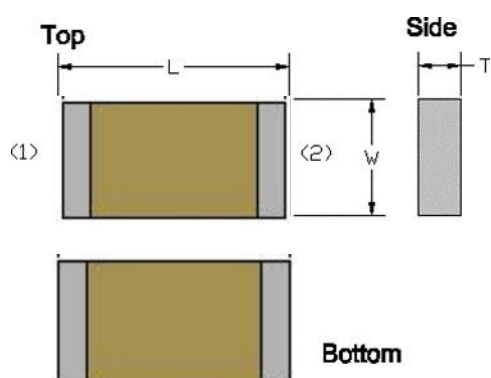
|                  |                       |
|------------------|-----------------------|
| (A)Product Type  | Chip Antenna          |
| (B) Size Code    | 1.6x0.8mm(±0.1mm)     |
| (C) Material     | High K material       |
| (D) Frequency    | 2.4 ~ 2.5GHz          |
| (E) Feeding mode | PIFA & Single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

### PCB Dimension

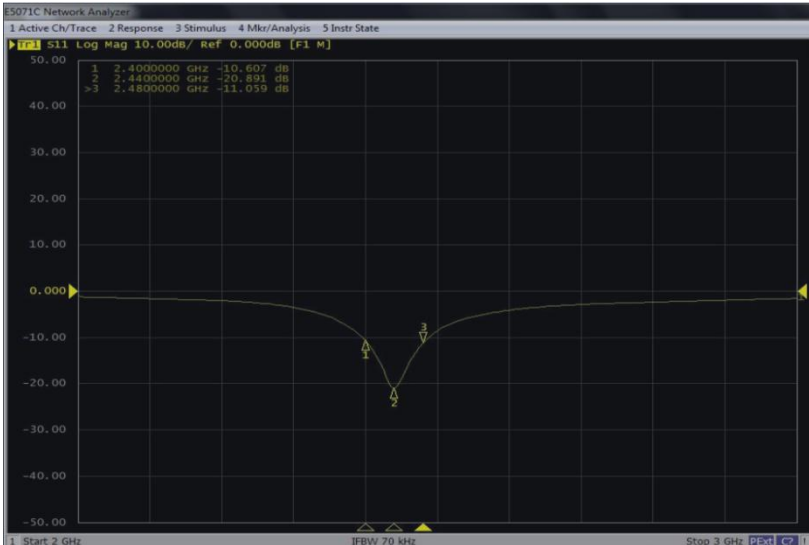
PCB Dimension diagram showing a detailed layout of a PCB with dimensions in millimeters. The layout includes a central white area with a yellow horizontal strip and a yellow vertical strip. Dimensions are provided for various components and their spacing.

### Antenna Layout Reference

Antenna Layout Reference diagram showing a simplified layout of the same PCB with dimensions in millimeters. The layout includes a central white area with a yellow horizontal strip and a yellow vertical strip. Dimensions are provided for various components and their spacing.

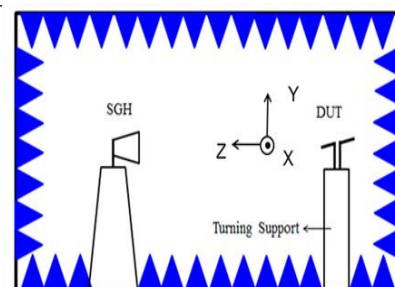
# Return Loss & Radiation

## ELECTRICAL CHARACTERISTICS



1

| Freq (GHz) | Log Mag (dB) |
|------------|--------------|
| 2.400000   | -10.607      |
| 2.440000   | -20.891      |
| 2.480000   | -11.059      |



| Frequen-<br>cy | Efficacy | 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 dimensions of a reel. The top view shows a circular reel with a central hub and four spokes. The side view shows the reel's profile with dimensions A (total width), B (inner diameter), C (thickness), and D (outer diameter). The bottom view shows the reverse side of the reel.

7" x 8 mm

| 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 dimensions of a carrier tape. The main view shows a carrier tape with dimensions A (pitch), B (width), P (pitch), W (width), E (height), F (height), G (height), H (height), D (hole diameter), and T (thickness). A detail view of the paper carrier is shown on the right.

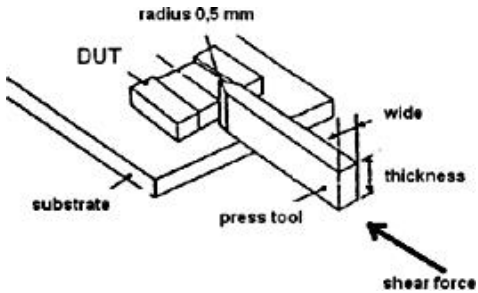
| Packaging  | Type | A         | B         | W        | E         | F        | G        | H        | T         | $\psi D$  | P       |
|------------|------|-----------|-----------|----------|-----------|----------|----------|----------|-----------|-----------|---------|
| Paper Type | 1608 | 1.90±0.20 | 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 |

## 2.4GHz 1608 Chip Antenna: RANT1608F245C04

### Reliability Table

| Test Item                             | Procedure                                                                                                                                                                                                                                                                                         | Requirements<br>Ceramic Type                                                | Remark<br>(Reference)     |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------|
| Electrical<br>Characterization        |                                                                                                                                                                                                                                                                                                   | Fulfill the electrical<br>specification                                     | User Spec.                |
| Thermal<br>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. Rapid 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<br>specification.              | MIL-STD-202<br>107        |
| Temperature<br>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 test condition.                                                                                                                               | No Visible Damage.<br>Fulfill the electrical<br>specification.              | JESD22<br>JA104           |
| High Temperature<br>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<br>specification.              | MIL-STD-202<br>108        |
| Low Temperature<br>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<br>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<br>over 95% of the critical<br>area of bottom side. | IEC 60384-21/22<br>4.10   |
| Soldering Heat<br>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<br>side and 2 secure points at corners of opposite sides. Parts<br>mounted within 2" from any secure point. Test from 10-2000<br>Hz.                                           | No Visible Damage.                                                          | MIL-STD-202<br>Method 204 |
| Mechanical<br>Shock                   | Three shocks in each direction shall be applied along the three<br>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<br>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<br>specification.              | MIL-STD-202<br>Method 106 |

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

|                           |                                                                                                                                                                                        |                                                                                                                                                                          |              |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Board Flex (SMD)</b>   | 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 |
| <b>Adhesion</b>           | 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 |
| <b>Physical Dimension</b> | 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 |