

**Application:**

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

**Features**

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

**Part number**

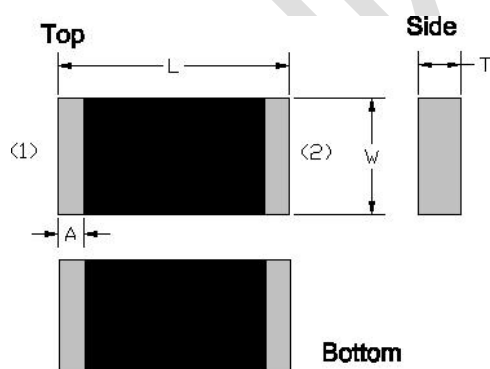
RANT   2012   F   245   C02  
 (1)        (2)        (3)        (4)        (5)

|                  |              |
|------------------|--------------|
| (1)Product Type  | Chip Antenna |
| (2)Size Code     | 2.0x1.2mm    |
| (3)Type Code     | F            |
| (5)Frequency     | 2.45GHz      |
| (6)Internal code | C02          |

**Electrical Specification**

|                           |                  |
|---------------------------|------------------|
| Working Frequency Range   | 2400 ~2484 MHz   |
| Peak Gain                 | 1.06 dBi (Typ.)  |
| Impedance                 | 50 Ohm           |
| Return loss               | 10 dB ( Min)     |
| Polarization              | Linear           |
| Azimuth Beamwidth         | Omni-directional |
| Operation Temperature(°C) | -40 ~85°C        |

The specification is defined on EVB.

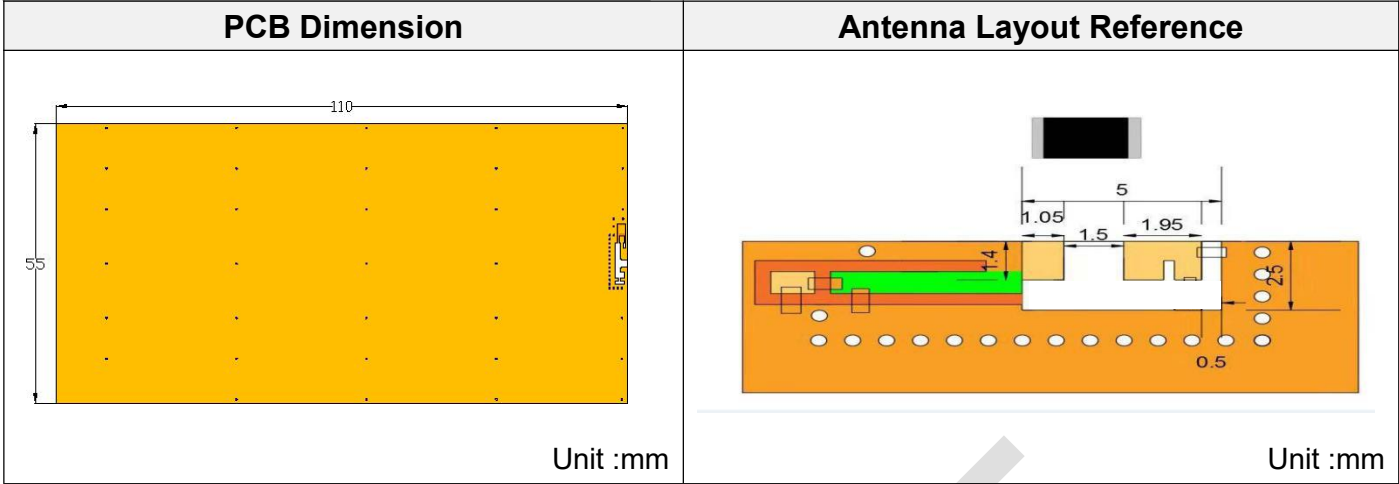
**Dimension and Terminal Configuration**

| Dimension (mm) |             |
|----------------|-------------|
| L              | 2.05+/-0.15 |
| W              | 1.20+/-0.15 |
| T              | 0.50+/-0.10 |
| A              | 0.20+/-0.10 |

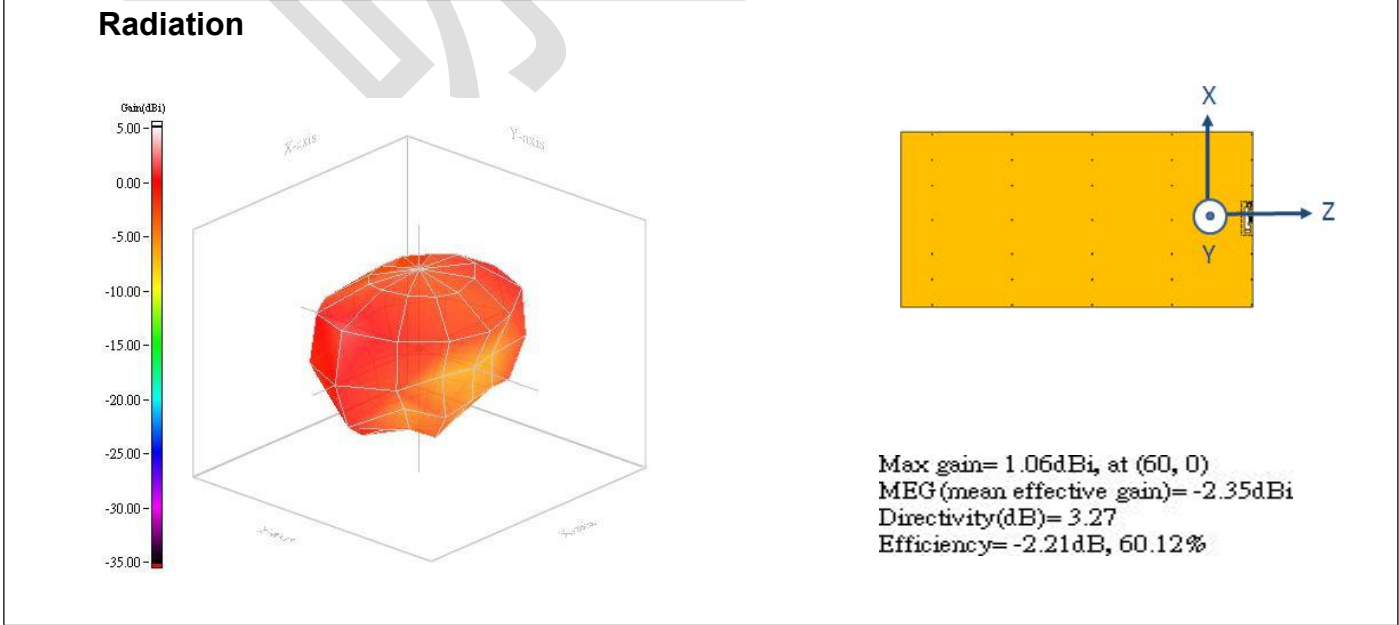
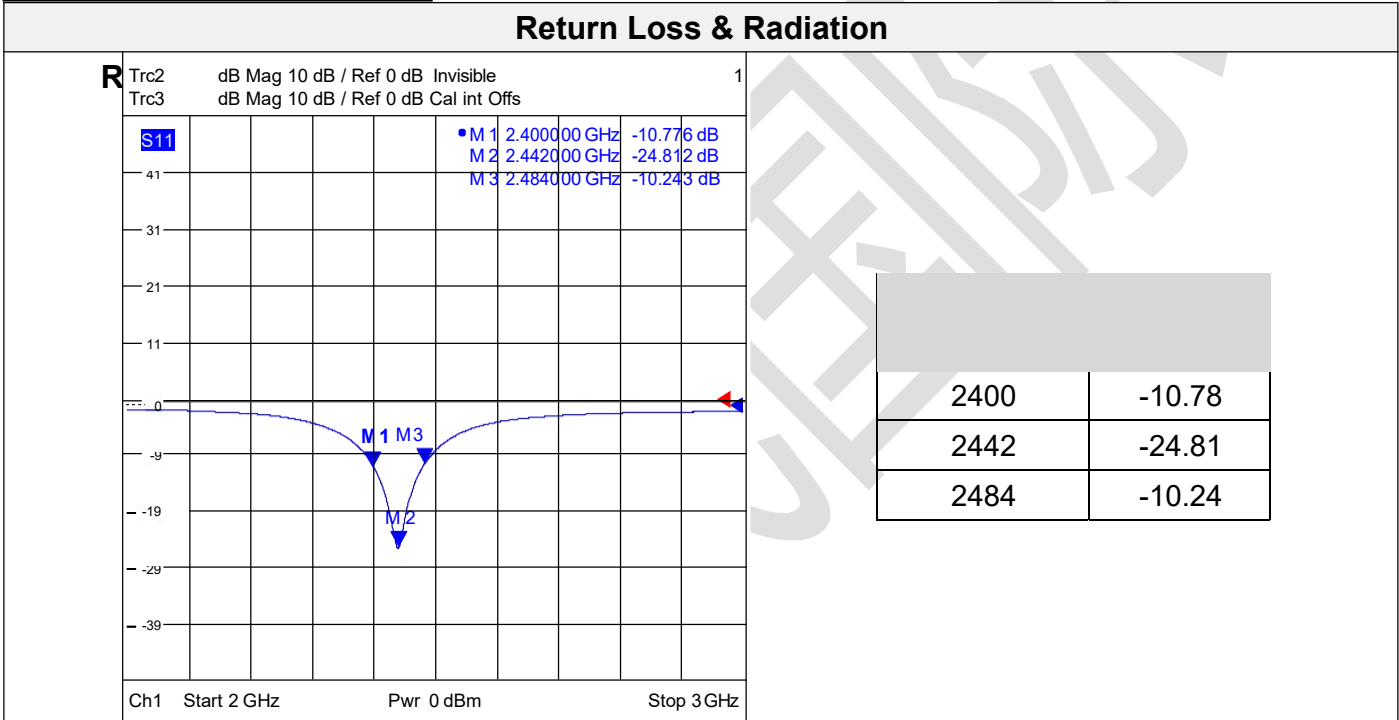
| No. | Terminal Name |
|-----|---------------|
| 1   | Feeding/GNG   |
| 2   | GND/Feeding   |

P.S : Top & down and left & right side are symmetrical, No direction

Evaluation Board Reference



Electrical Characteristics

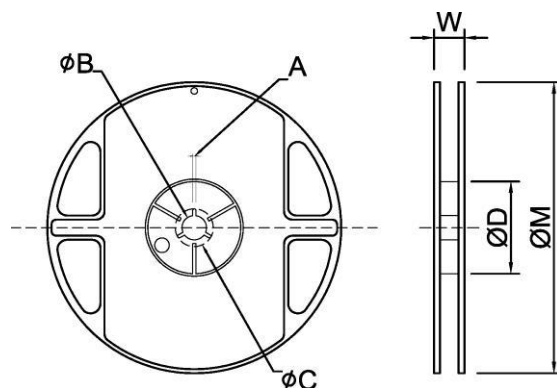


## 2.4GHz 2012 Chip Antenna:2012F245C02

### Taping Specifications

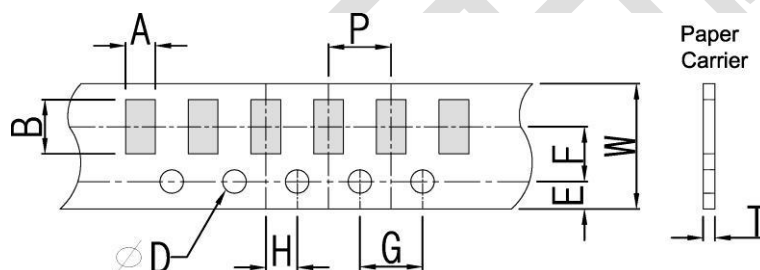
#### Reel and Taping Specification

##### Reel Specification



| TYPE | SIZE |         | A             | $\psi B$       | $\psi C$     | $\psi D$     | W              | $\psi M$      |
|------|------|---------|---------------|----------------|--------------|--------------|----------------|---------------|
| 2012 | 7"   | 5K/Reel | $2.0 \pm 0.5$ | $13.5 \pm 1.0$ | $21 \pm 1.0$ | $60 \pm 1.0$ | $11.5 \pm 2.0$ | $178 \pm 2.0$ |

##### Tapping Specification



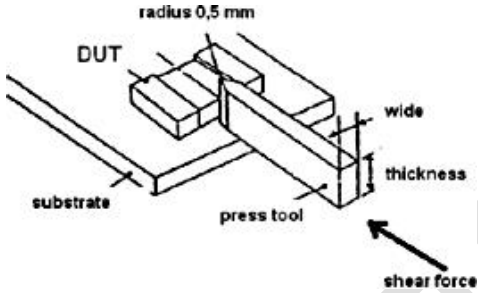
| Packaging  | Type | A               | B               | W              | E               | F              | G              | H              | T               | $\psi D$            | P             |
|------------|------|-----------------|-----------------|----------------|-----------------|----------------|----------------|----------------|-----------------|---------------------|---------------|
| Paper Type | 3216 | $1.90 \pm 0.20$ | $3.50 \pm 0.20$ | $8.0 \pm 0.20$ | $1.75 \pm 0.10$ | $3.5 \pm 0.05$ | $4.0 \pm 0.10$ | $2.0 \pm 0.05$ | $0.75 \pm 0.10$ | $1.50^{+0.10}_{-0}$ | $4.0 \pm 0.1$ |

## 2.4GHz 2012 Chip Antenna:2012F245C02

### Reliability Table

| Test Item                              | Procedure                                                                                                                                                                                                                                                                                                                                                | Requirements<br>Ceramic Type                                          | Remark<br>(Reference)     |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------|
| <b>Electrical Characterization</b>     |                                                                                                                                                                                                                                                                                                                                                          | Fulfill the electrical specification                                  | User Spec.                |
| <b>Thermal Shock</b>                   | 1. Preconditioning:<br>$50 \pm 10^{\circ}\text{C}$ / 1 hr , then keep for $24 \pm 1$ hrs at room temp.<br>2. Initial measure: Spec: refer Initialspec.<br>3. Rapid change of temperature test:<br>$-30^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ ; 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        |
| <b>Temperature Cycling</b>             | 1. Initial measure: Spec: refer Initialspec.<br>2. 100 Cycles ( $-30^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ ), Soak Mode=1 (2 Cycle/hours).<br>3. Measurement at $24 \pm 2$ Hours after test condition.                                                                                                                                               | No Visible Damage.<br>Fulfill the electrical specification.           | JESD22<br>JA104           |
| <b>High Temperature Exposure</b>       | 1. Initial measure: Spec: refer Initialspec.<br>2. Unpowered; 500hours @ $T=+85^{\circ}\text{C}$ .<br>3. Measurement at $24 \pm 2$ hours after test.                                                                                                                                                                                                     | No Visible Damage.<br>Fulfill the electrical specification.           | MIL-STD-202<br>108        |
| <b>Low Temperature Storage</b>         | 1. Initial measure: Spec: refer Initialspec.<br>2. Unpowered: 500hours @ $T=-30^{\circ}\text{C}$ .<br>3. Measurement at $24 \pm 2$ hours after test.                                                                                                                                                                                                     | No Visible Damage.<br>Fulfill the electrical specification.           | MIL-STD-202<br>108        |
| <b>Solderability (SMD Bottom Side)</b> | Dipping method:<br>a. Temperature: $235 \pm 5^{\circ}\text{C}$<br>b. Dipping time: $3 \pm 0.5\text{s}$                                                                                                                                                                                                                                                   | The solder should cover over 95% of the critical area of bottom side. | IEC 60384-21/22<br>4.10   |
| <b>Soldering Heat Resistance (RSH)</b> | Preheating temperature: $150 \pm 10^{\circ}\text{C}$ .<br>Preheating time: 1~2 min.<br>Solder temperature: $260 \pm 5^{\circ}\text{C}$ .<br>Dipping time: $5 \pm 0.5\text{s}$                                                                                                                                                                            | No Visible Damage.                                                    | IEC 60384-21/22<br>4.10   |
| <b>Vibration</b>                       | 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 |
| <b>Mechanical Shock</b>                | 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 |
| <b>Humidity Bias</b>                   | 1. Humidity: 85% R.H., Temperature: $85 \pm 2^{\circ}\text{C}$ .<br>2. Time: $500 \pm 24$ hours.<br>3. Measurement at $24 \pm 2$ hrs after test condition.                                                                                                                                                                                               | No Visible Damage.<br>Fulfill the electrical specification.           | MIL-STD-202<br>Method 106 |

## 2.4GHz 2012 Chip Antenna:2012F245C02

|                           |                                                                                                                                                                                        |                                                                                                                                                                          |              |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <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        | 2015/8/20 | New issue                                 |
| 2        | 2017/4/20 | Update detail dimension on antenna layout |
| 3        | 2018/2/1  | Part number and coding rule updated       |

咏成國際科技有限公司

電話: 13530576606

RAIN International Technology Co., Ltd. TEL: 13530576606