***ANTENNA PRODUCTS***

# DATA SHEET

# 5010 Ceramic Chip Antenna for Bluetooth/Wimax Application

Feb, 2008 Ver.5

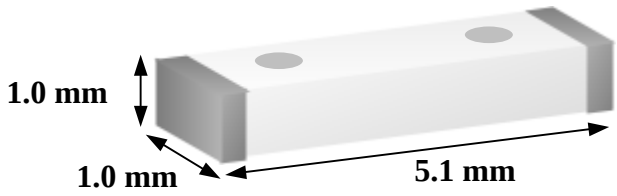
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| R&D | Print date 09/02/24 | | | | | | | | |
| | **5010 Ceramic Chip Antenna for Bluetooth/Wimax Application** | | | **CAN4311 851 XX 245 3K** | | | | June, 2008 v3 | |
| | | | | | | | | Sept, 2008 v4 | |
| | | | | | | | | Feb, 2009 v5 | |
| Justin Liu<br>Oscar Lu | Tommy Chen | | | Page 1 | sheet 190-1 | | | | A4 |
| | Yageo Taiwan / High Frequency | | | | | | | | |

# 5010 Ceramic Chip Antenna for Bluetooth/Wimax Application

## Quick Reference Data

| | |
|---|---|
| Centre Frequency | 2.45 GHz |
| Bandwidth | 2.38 ~ 2.59 GHz |
| VSWR | 2.0 (Max.) |
| Polarization | Linear |
| Azimuth Beamwidth | Omni-directional |
| Peak Gain | 2.45 dBi |
| Impedance | 50Ω |
| Operating Temperature | -25~85 $^{o}$C |
| Termination | Ni / Sn (Environmentally-Friendly Leadless) |
| Resistance to soldering heats | 260℃ , 10sec. |
| Maximum Power | 1W |

## 1. Mechanical Data (5.1 x 1x 1 mm³)

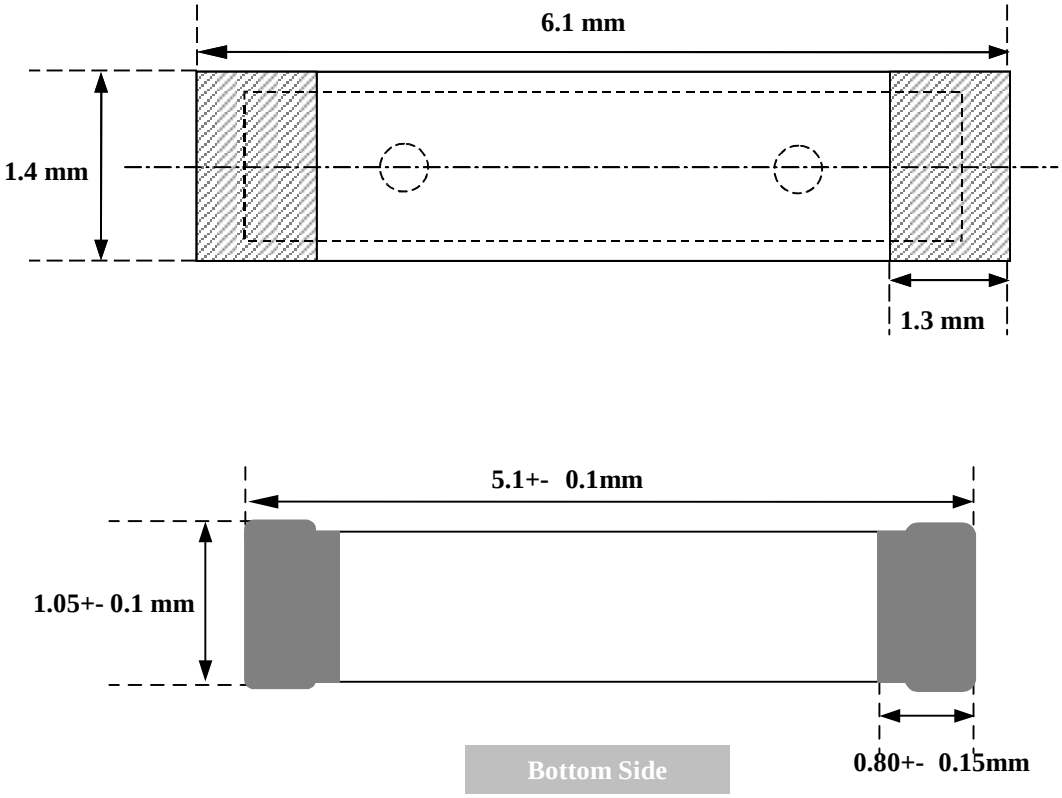



Top-Side View

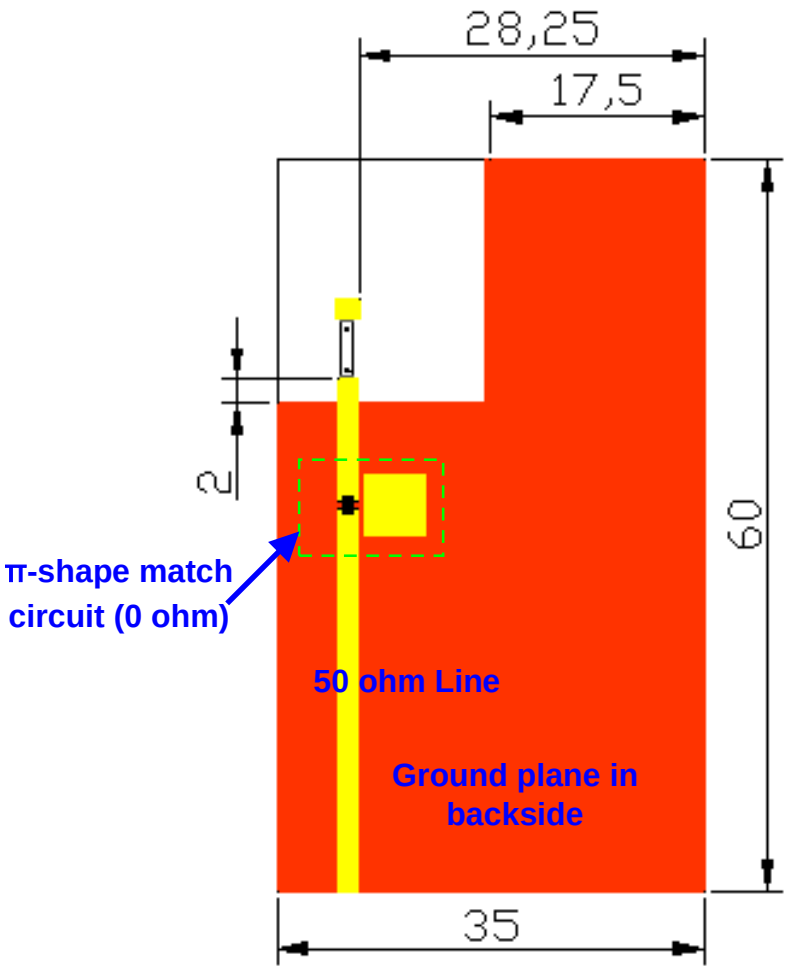
Bottom-Side View

**CAN4311851002453K**

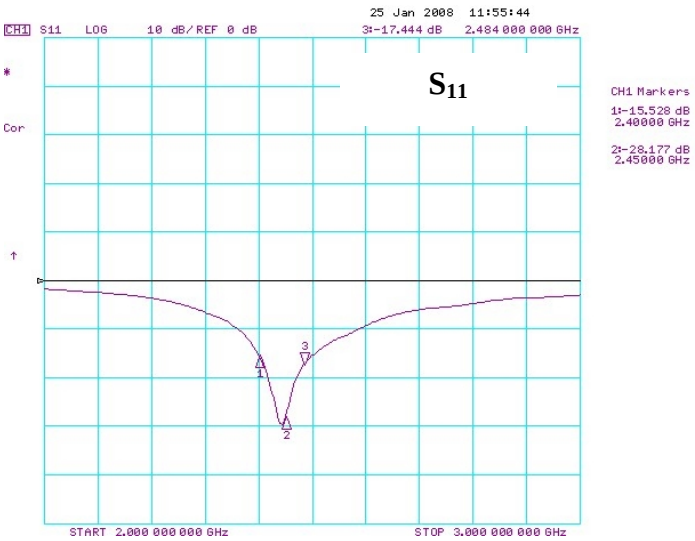
## 2. Dimension of Footprint

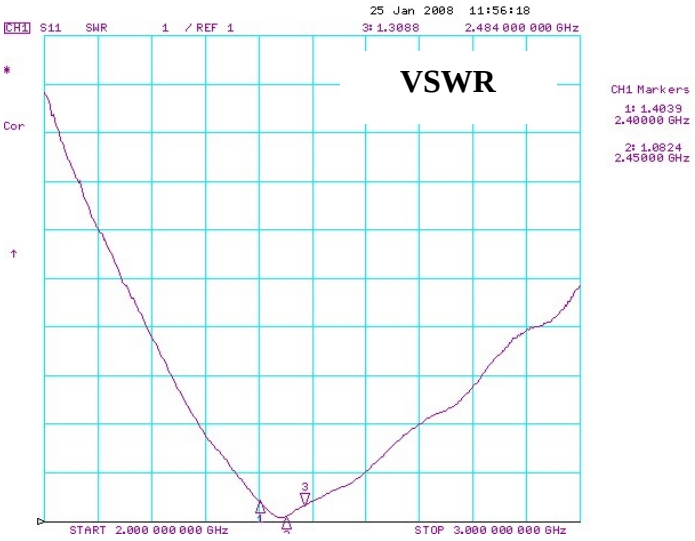


## 3. Evaluation Board Dimension and Outlook

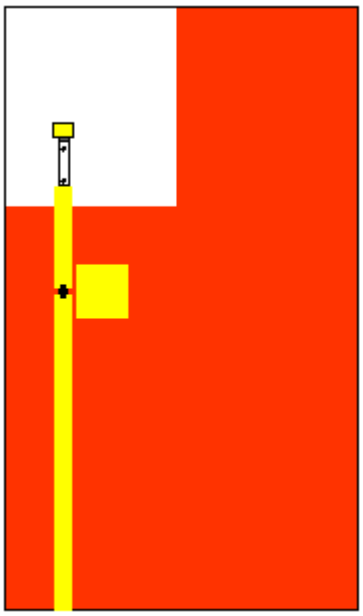


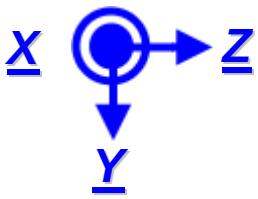
## 4. Measured S-parameter



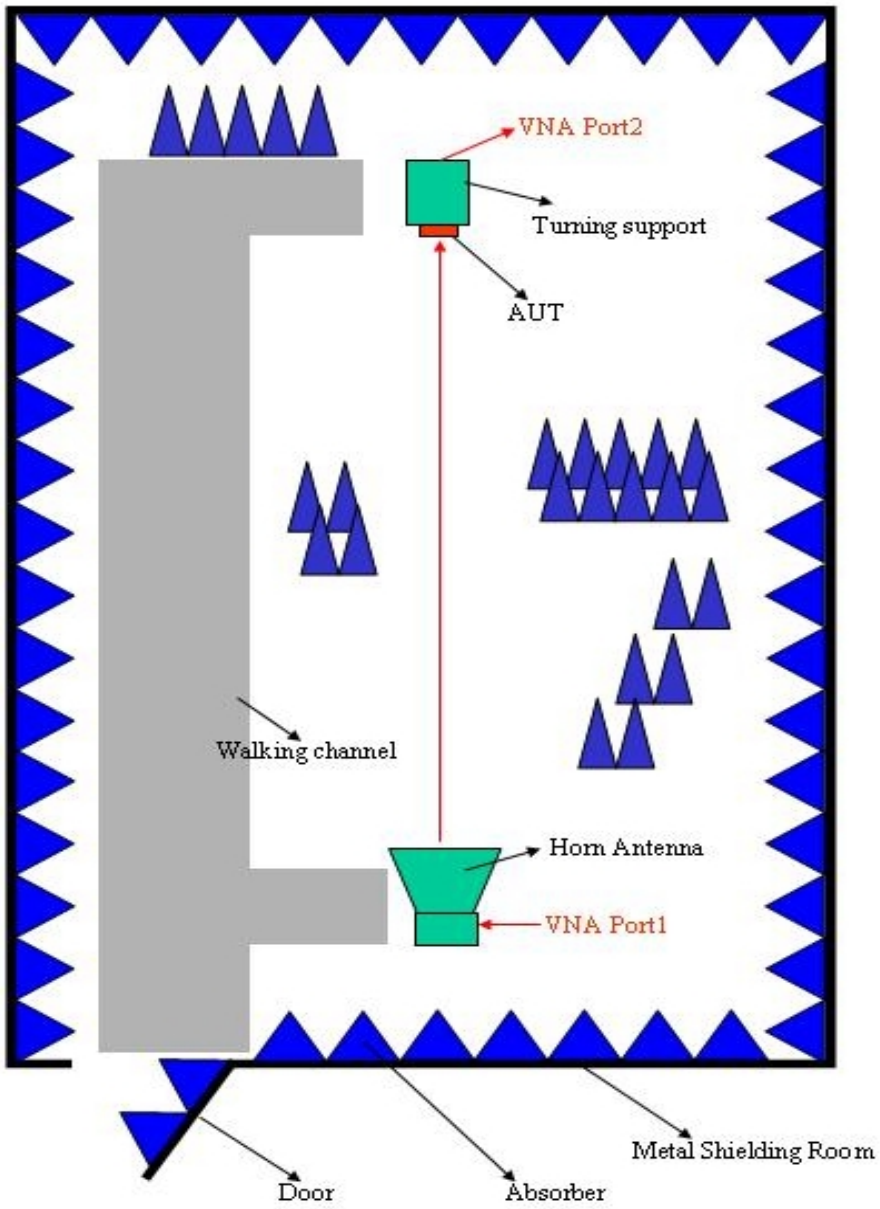



## 5.The Definition of X-Y-Z Plane

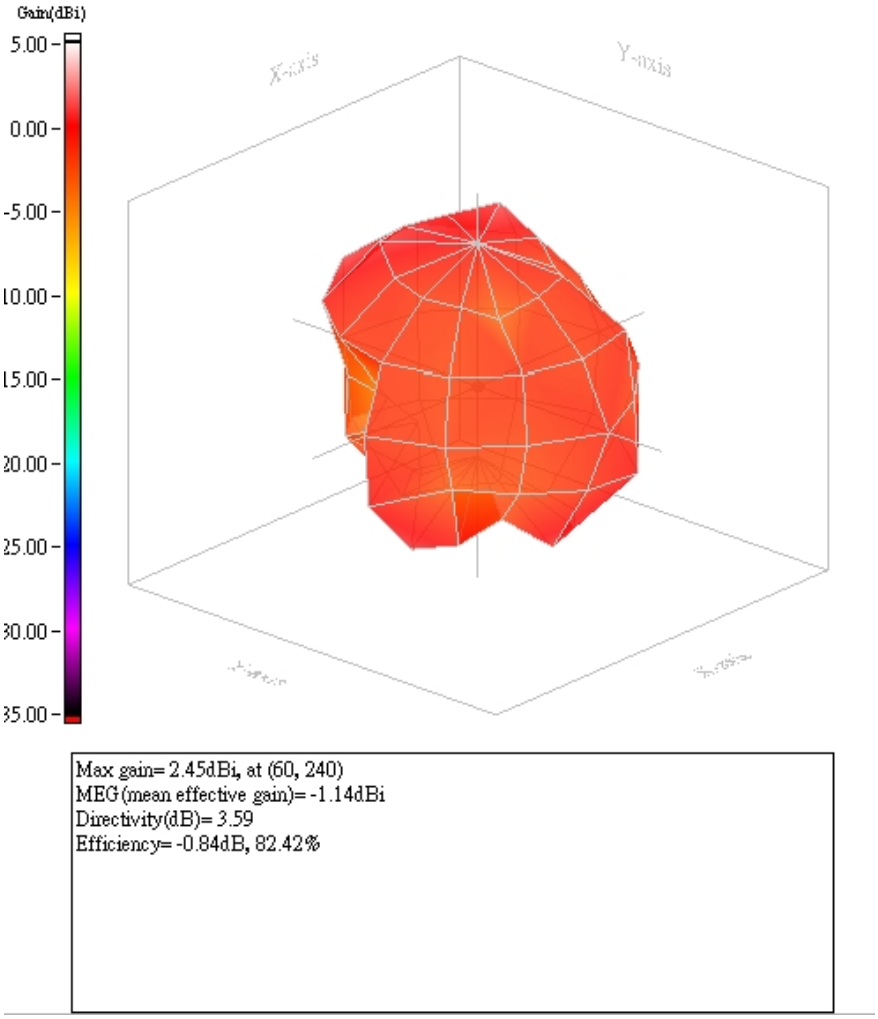




## 6. The Environment of Antenna Radiation Pattern
## Anechoic Chamber Dimension=10(m) × 6(m) × 6(m)



## 7. Radiation Pattern



## 8. Reliability Test

| IEC 384-10/ CECC 32 100 CLAUSE | IEC 60068-2 TEST METHOD | TEST | PROCEDURE | REQUIREMENTS |
|---|---|---|---|---|
| 4.4 | | Mounting | The antenna can be mounted on printed-circuit boards or ceramic substrates by applying wave soldering, reflow soldering (including vapour phase soldering) or conductive adhesive | No visible damage |
| 4.5 | | Visual inspection and dimension check | Any applicable method using ´ 10 magnification | In accordance with specification (chip off 4mm) |
| 4.6.1 | | Antenna | Central Frequency at 20 $^{o}$C | Standard test board in page 4 |
| 4.8 | | Adhesion | A force of 3 N applied for 10 s to the line joining the terminations and in a plane parallel to the substrate | No visible damage |
| 4.9 | | Bond strength of plating on end face | Mounted in accordance with CECC 32 100, paragraph 4.4 | No visible damage |
| | | | Conditions: bending 0.5 mm at a rate of 1mm/s, radius jig. 340 mm, 2mm warp on FR4 board of 90 mm length | No visible damage |
| 4.10 | 20(Tb) | Resistance to soldering heat | 260 ± 5 °C for 10 ± 0.5 s in a static solder bath | Satisfy the original electrical specification after soldering. |
| | | Resistance to leaching | 260 ± 5 °C for 30 ± 1 s in a static solder bath | Using visual enlargement of ´ 10, dissolution of the termination shall not exceed 10% |

| IEC 384-10/ CECC 32 100 CLAUSE | IEC 60068-2 TEST METHOD | TEST | PROCEDURE | REQUIREMENTS |
|---|---|---|---|---|
| 4.11 | 20(Ta) | Solderability | Zero hour test, and test after storage (20 to 24 months) in original atmosphere; un-mounted chips completely immersed for 2 ± 0.5 s in 235 ± 5°C. | The termination must be well tinned, at least 75% is well tinned at termination |
| 4.12 | 4(Na) | Rapid change of temperature | -25 °C (30 minutes) to +85 °C (30 minutes); 100 cycles | No visible damage Central Freq. Change ± 6% |
| 4.14 | 3(Ca) | Damp heat | 500 ± 12 hours at 60 °C; 90 to 95 % RH | No visible damage 2 hours recovery Central Freq. Change ± 6% |
| 4.15 | | Endurance | 500 ± 12 hours at 85 °C; | No visible damage 2 hours recovery Central Freq. Change ± 6% |

■ **Notice (shipping and storage during transportation)**

**In order to ensure some quality, it is suggested to follow the condition during shipping :**

- **Temperature : -40~70℃**
- **Humidity : 45~75%**

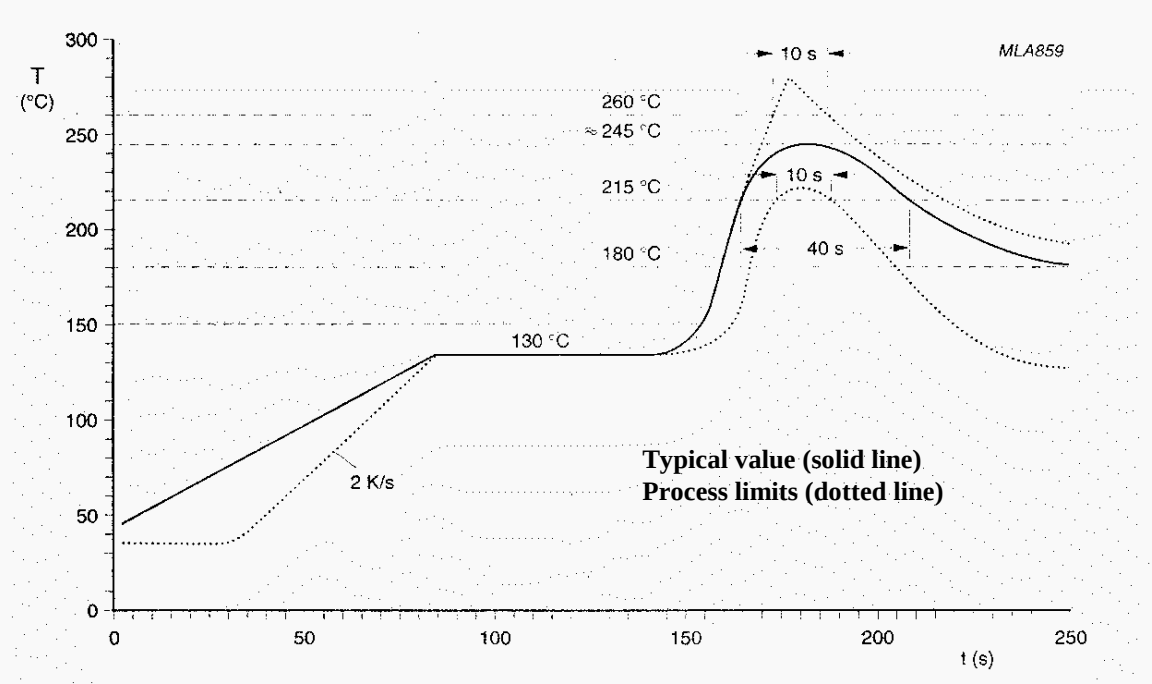
■ **Notice (storage condition)**

**In order to ensure the solderability of the termination, it is suggested to follow the condition for storage :**

- **Temperature : 15~30℃**
- **Humidity : 45~75%**
- **Prevent corrosive gas ($SO_2$, $NO_X$, $NH_3$, $Cl_2$, ..etc)**
- **It is better to use products within 6 months. Solderability should be confirmed again if exceed 6 months.**

## 9. Soldering Condition (Suggestion)

* Customers should alter the profile according to realistic tin paste in use.



## 10. Ordering Information

The antennas may be ordered by using the Yageo ordering code. These code numbers can be determined by the following rules:

**CAN43 11 8 51 04 245 3K**

Family Code
**CAN 43** = Yageo Part No. for Antenna

Packing Type Code
**11** = 180 mm/ 7" reel , blister taping

Materials Code
**8** = High Frequency Material (White)

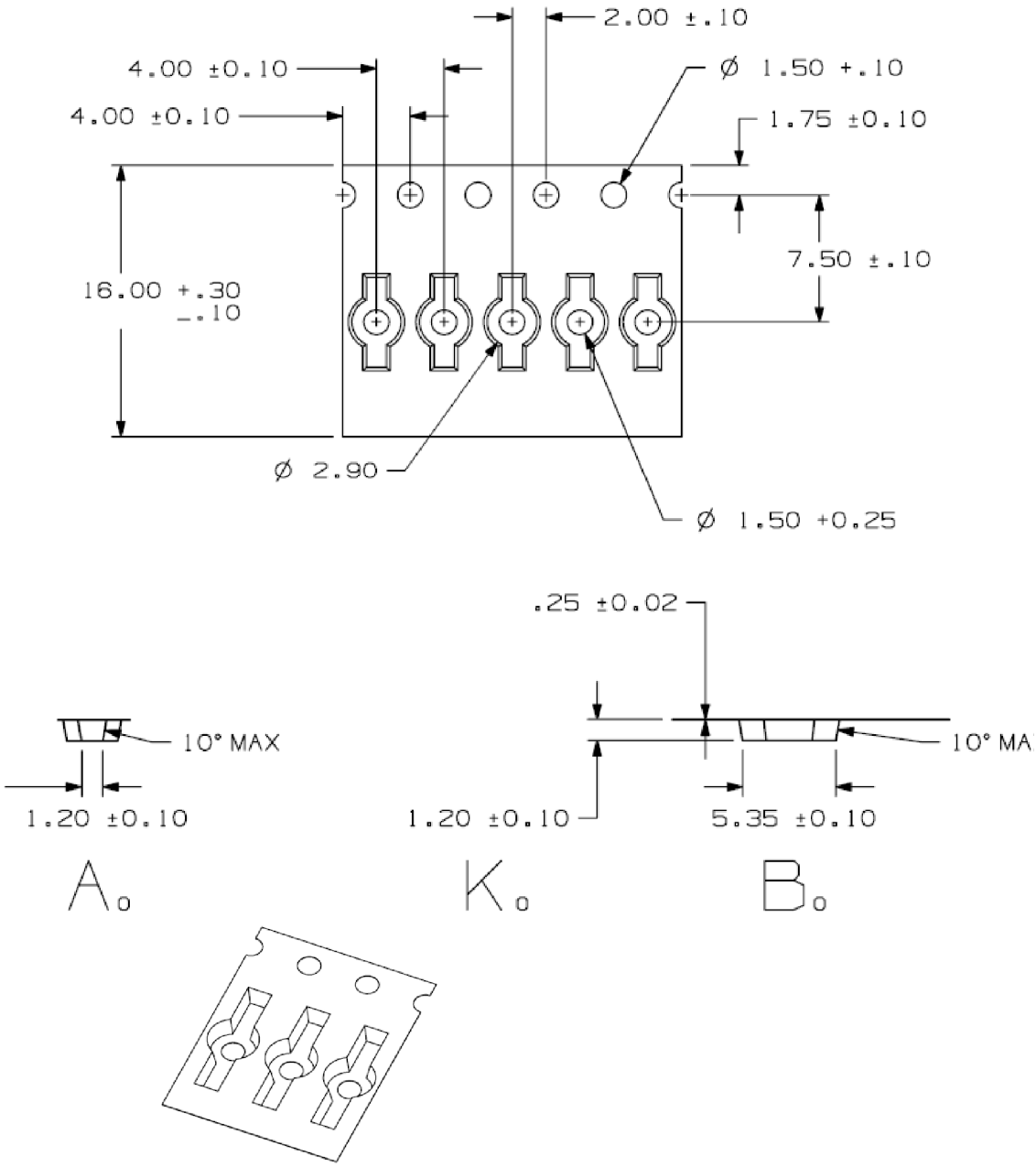
Size Code
**51** = 5.0 * 1.0 * 1.0 mm

Antenna type
**00 = Normal type**
**01 = type 01**
**02 = type 02**
**03 = type 03**
**04 = type 04**
**05 = type 05**
**06 = type 06**
**07 = type 07**
**08 = type 08**

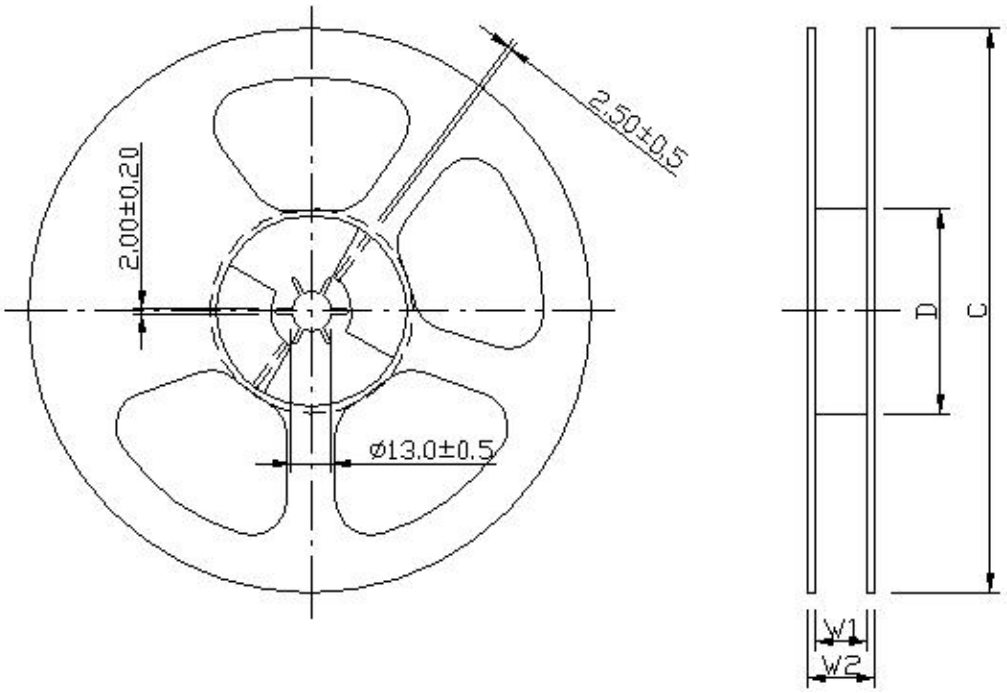
Working Frequency
**245 =** 2.45 GHz

Packing Type Code
**3K =** 3000 pcs for taping per reel

## 11. Taping Blister Tape



## 12. Taping Reel - 7”(180mm) Specifications




| Product size code | Units per Reel | Tape Width (mm) | C (mm) | D (mm) | $W_1$ (mm) | $W_2$ (mm) |
|---|---|---|---|---|---|---|
| Antenna | 1000 | 16 | 180.0±1.0 | 62±0.5 | 16.0±1.0 | 20.5±1.0 |

## 11. Tape Revision Control:

| Revision | Date | Content | Remark |
|---|---|---|---|
| V1 | Jan, 2008 | New Issue | |
| V2 | May, 2008 | Increase type 1~4, 8. | |
| V3 | June, 2008 | Increase normal type | |
| V4 | Sept, 2008 | To modify the spec of end-termination | |
| V5 | Feb,2009 | To modify the suggestion of footprint | |
| | | | |