# APPROVAL SHEET

## CrossAir™ SMD Antenna series
## RoHS Compliance

## PN: CA-C03

## 2.4 GHz ISM band antenna

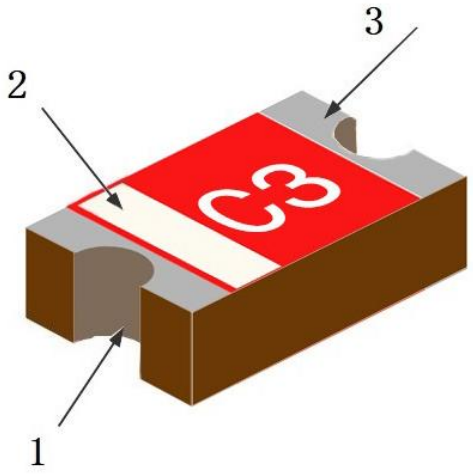
## FEATURES

1. Surface Mounted Devices (SMD) with a small dimension of 5.5 X 2.0 X 1.0 $mm^3$ meet miniaturization trend.
2. Low power loss and high antenna efficiency.
3. High stability in Temperature and Humidity Change.

## APPLICATIONS

1. 2.4GHz ISM band RF applications
2. Bluetooth,ZigBee, Wireless, HomeRF
3. WIFI（2.4G only）

## CONSTRUCTION

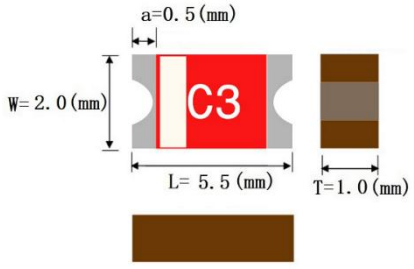



**1、Antenna Feeding**

**2、Identification Mark**

**3、Soldering terminal**

## DIMENSIONS

| Figure | Symbol | Dimension(mm) |
|---|---|---|
|  | L | 5.5±0.1 |
| | w | 2.0±0.1 |
| | T | 1.0±0.1 |
| | a | 0.5±0.1 |

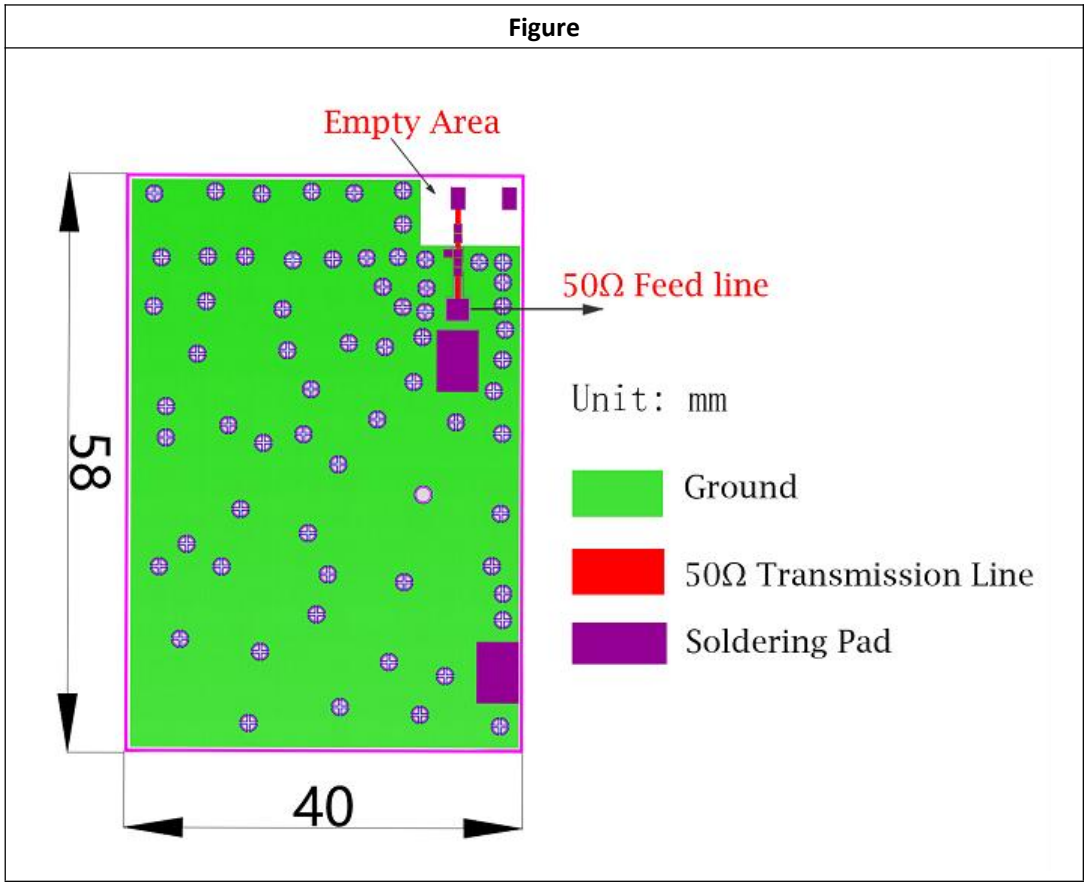
## ELECTRICAL CHARACTERISTICS

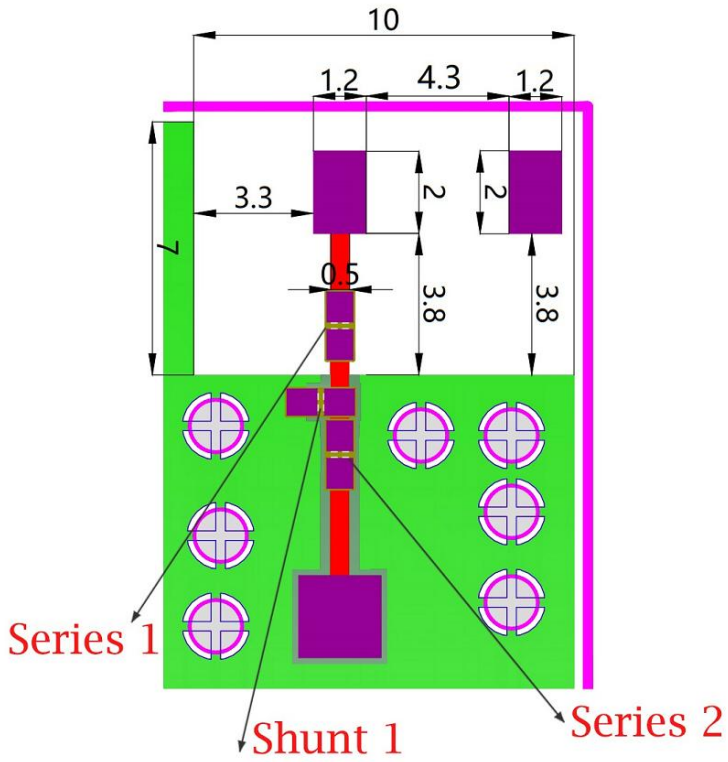
| CA-C03 | Specification |
|---|---|
| Working Frequency Range | 2450±50MHz |
| Band Width | >100MHz |
| Impedance | 50Ω |
| Gain(dBi) | 4.3（peak） |
| VSWR | <2 |
| Operation Temperature | -40℃~+95℃ |
| Power Capacity | 3W |

The working frequency need be adjusted to 2.45GHz with matching circuit.

## SOLDER LAND PATTERN DESIGN

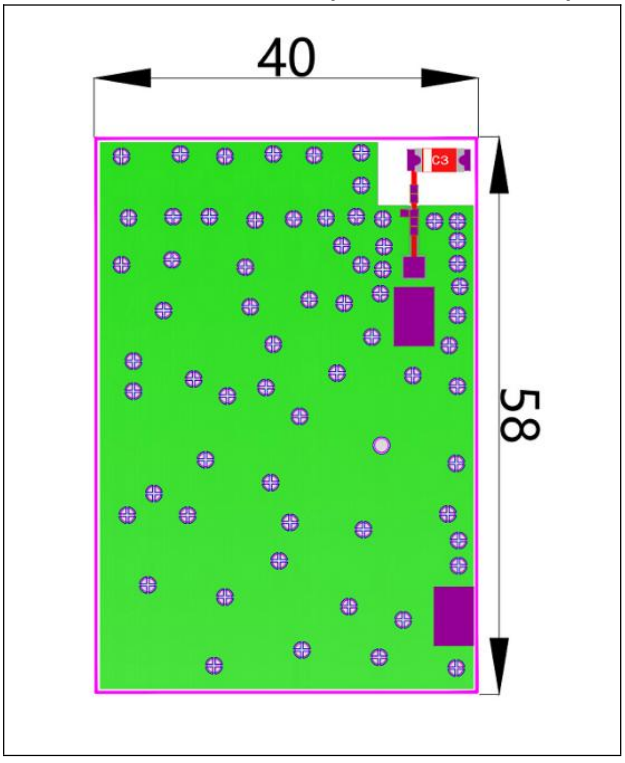
**Figure**



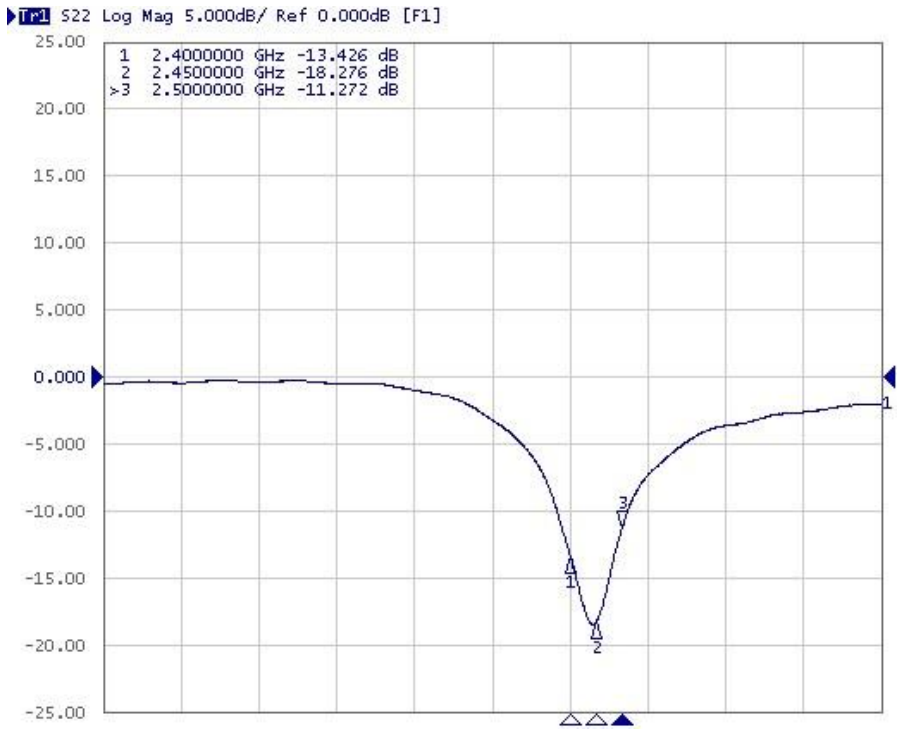



| | | |
|---|---|---|
| **Matching component value** | **Series 1** | 0 Ω |
| | **Shunt 1** | 3nh |
| | **Series 2** | 0 Ω |

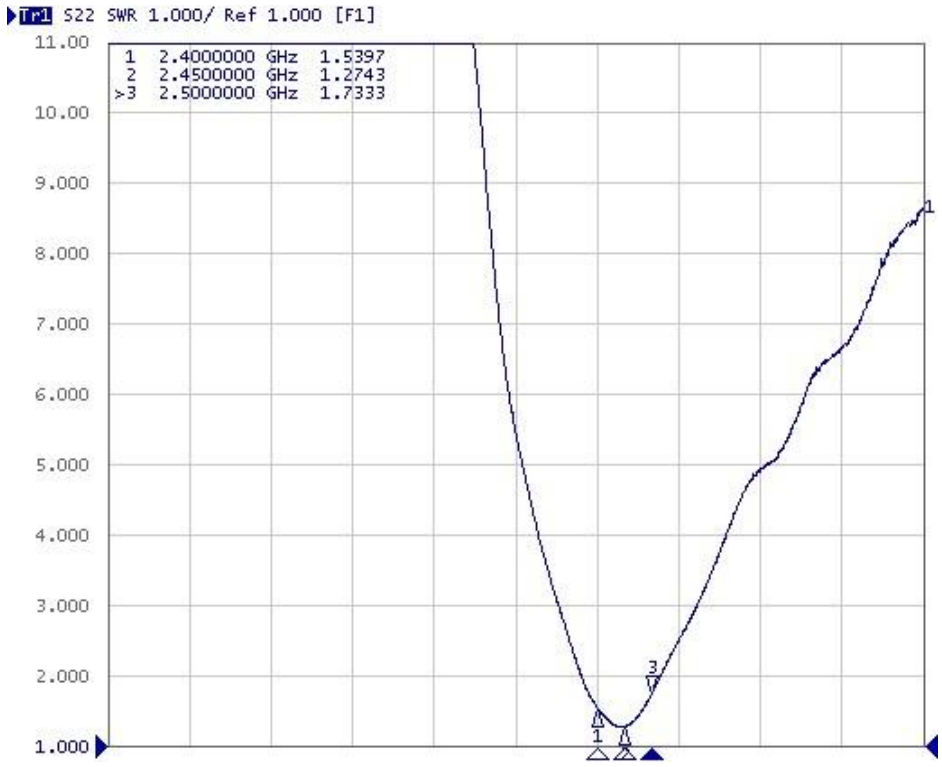
**Antenna on Test Board (Thickness 1.0mm)**



**Antenna S11 on Test Board**



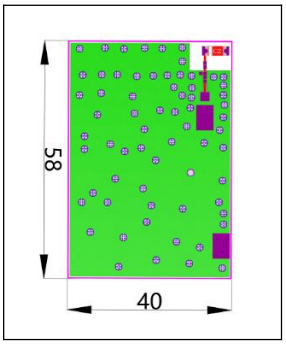

**Antenna VSWR on Test Board**

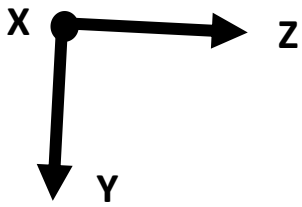



**Efficiency and RADIATION PATTERN**

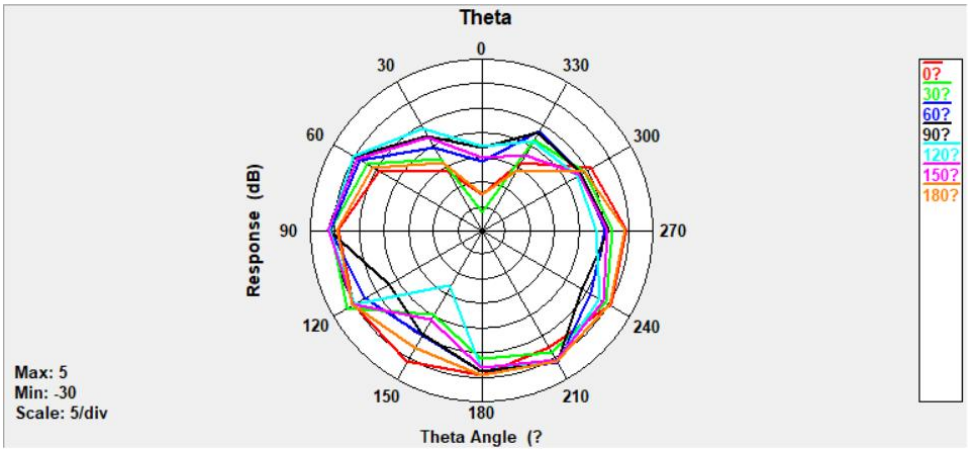
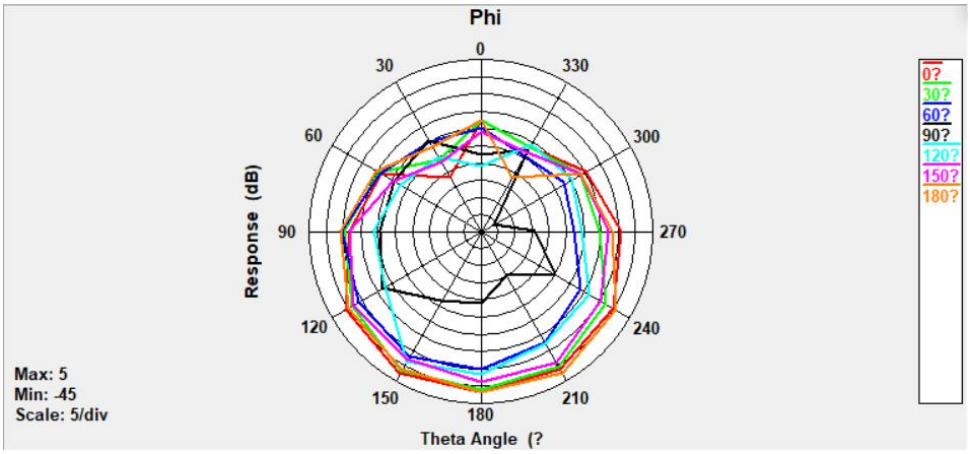
Efficiency， Radiation Pattern and Gain were dependent on measurement board design. The

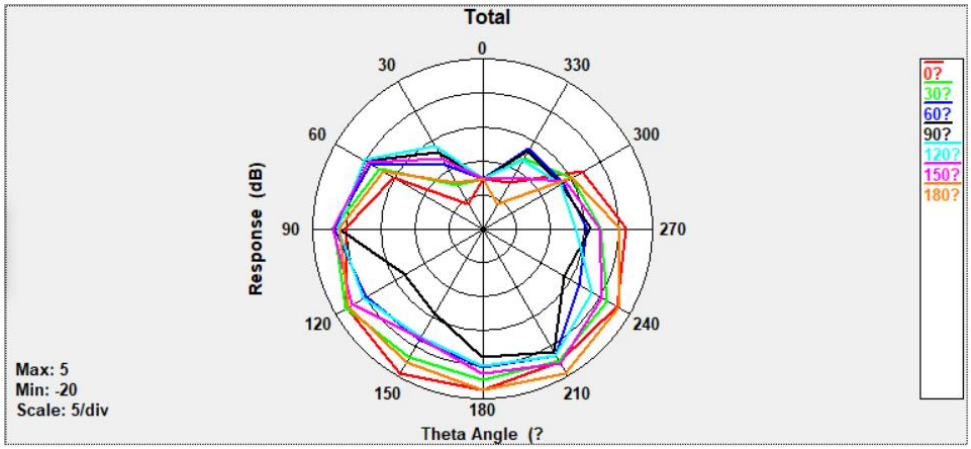
specification of CA-C03 antenna was measured based on the PCB size and installation position as shown in the below figure test board. The test results were tested in ETS 3D Chamber.




| Gain and Efficiency | 2.4G-2.5GHz |
|---|---|
| Peak Gain | 4.3dBi |
| Average Gain across the band | 4.1dBi |
| Gain Range across the band | 3.9dBi~4.3dBi |
| Peak Efficiency | 81.7% |
| Average Efficiency across the band | 80.2% |
| Efficiency Range across the band | 78.6%~81.7% |

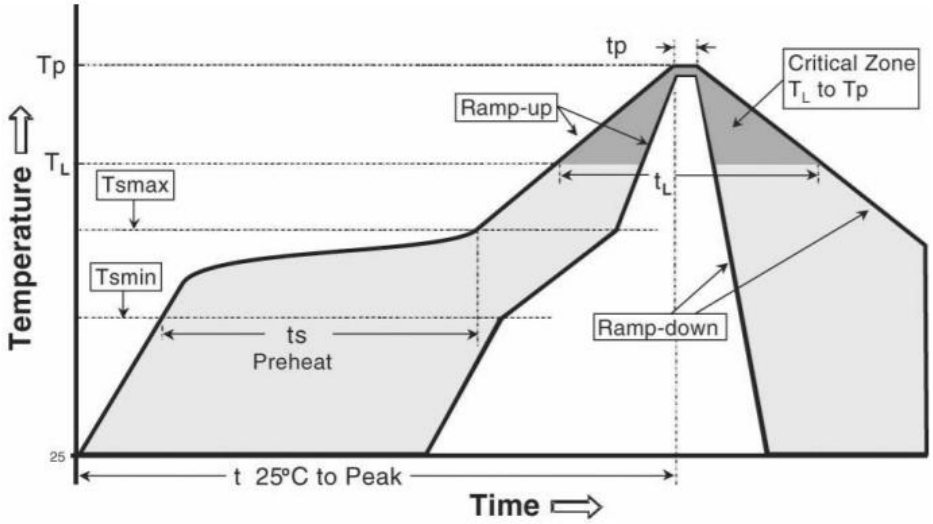
| | |
|---|---|
| Theta @2.45 GHz |  |
| Phi @2.45 GHz |  |

| | |
|---|---|
| **Total @2.45 GHz** |  |



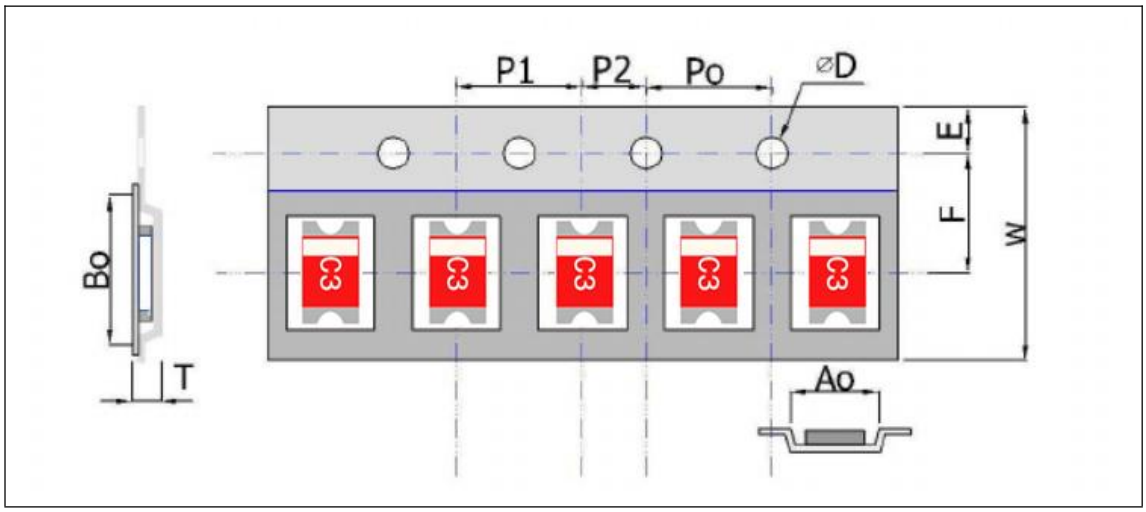
## SOLDERING CONDITION

Typical examples of soldering processes that provide reliable joints without any damage is as follows:




| Phase | Profile features | Pb-Free assembly (SnAgCu) |
|---|---|---|
| **RAMP-UP** | Avg. Ramp-up Rate (Tsmax to Tp) | 3 °C / second (max.) |
| **PREHEAT** | - Temperature Min (Tsmin)<br>- Temperature Max (Tsmax)<br>- Time (tsmin to tsmax) | 150 °C<br>200 °C<br>60-180 seconds |
| **REFLOW** | - Temperature (TL)<br>- Total Time above TL (tL) | 217 °C<br>60-150 seconds |
| **PEAK** | - Temperature (Tp)<br>- Time (tp) | 260 °C<br>20-40 seconds |
| **RAMP-DOWN** | Rate | 6 °C/second max |
| **Time from 25 °C to Peak Temperature** | | 8 minutes max |

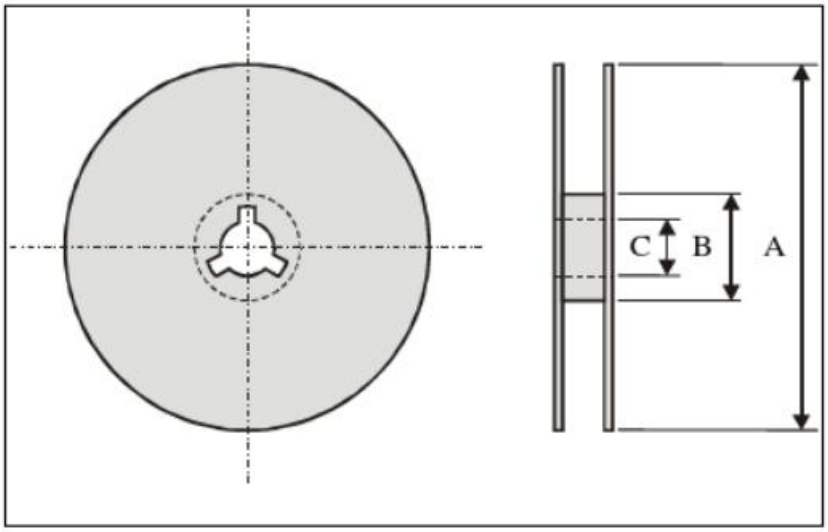
## PACKAGING




**Plastic Tape specification (**unit:mm**)**

| Index | **Ao** | **Bo** | **ΦD** | **T** | **W** |
|---|---|---|---|---|---|
| Dimension (mm) | **3.0±0.1** | **6.0±0.1** | **1.55±0.05** | **1.2±0.1** | **11.8±0.1** |
| Index | **E** | **F** | **Po** | **P1** | **P2** |
| Dimension (mm) | **1.75±0.1** | **4.6±0.1** | **4.0±0.1** | **4.0±0.1** | **2.0±0.1** |

**Reel dimensions**




| Index | **A** | **B** | **C** |
|---|---|---|---|
| Dimension(mm) | **178** | **60** | **13.5** |

Typing Quantity: 3000 pieces per reel.

## CAUTION OF HANDLING

**Storage environment condition**

Products shoud be storage in the warehouse on the following conditions:

Temperature : -10℃~+40℃

Humidity : 30% to 70% relative humidity

Don’t keep products in corrosive gases such as sulfur. Chlorine gas or acid or it may cause oxidization of electrode, resulting in poor solderability.

Products should be storage on the palette for the prevention of the influence from humidity, dust and so on.

Products should be storage in the warehouse without heat shock, vibration, direct sunlight and so on.

Products should be storage under the airtight packaged condition.