

# **AN2051**

## **Multilayer Chip Antenna for 2.4GHz Wireless Communication**

## AN2051 Multilayer Chip Antenna

### ◆ Features

- Light weight and low profile 5.05mm(L)X2.0mm(W)X1.07mm(H)
- Omni-directional in azimuth
- Lead (Pb) Free

### ◆ Applications

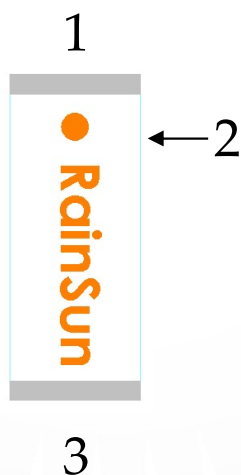
- 2.4GHz wireless communications
- 2.4GHz Modules
- Bluetooth System
- 802.11b/g Wireless LAN System

## Specifications

|                       |                  |
|-----------------------|------------------|
| Center frequency      | 2.45GHz          |
| Peak gain             | 2.84 dBi         |
| Operation temperature | -40 ~ +85 °C     |
| Storage temperature   | -40 ~ +85 °C     |
| VSWR                  | 2.0 (max)        |
| Input Impedance       | 50 Ohm           |
| Power handling        | 2W (max)         |
| Bandwidth             | 110MHz           |
| Azimuth beamwidth     | Omni-directional |
| Polarization          | Linear           |

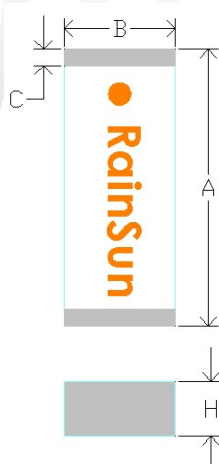
## Pin configuration

Top view



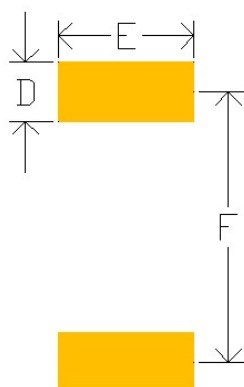
| Pin No | Pin assignment     |
|--------|--------------------|
| 1      | Feed termination   |
| 2      | Feed point mark    |
| 3      | Solder termination |

## Dimensions



| Symbol | Dimensions (mm) |
|--------|-----------------|
| A      | $5.05 \pm 0.10$ |
| B      | $2.00 \pm 0.10$ |
| C      | $0.50 \pm 0.05$ |
| H      | $1.07 \pm 0.20$ |

## PCB Foot Print



| Symbol | Dimensions(mm) |
|--------|----------------|
| D      | 1.5            |
| E      | 2.0            |
| F      | 5.1            |

## Recommended Test Board Pattern

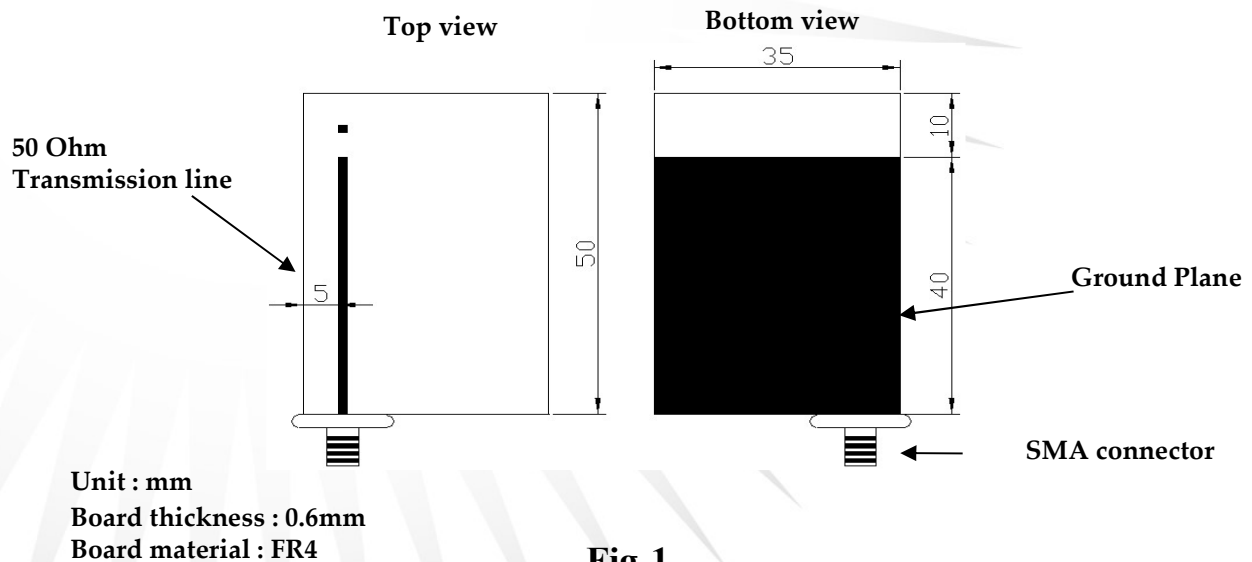
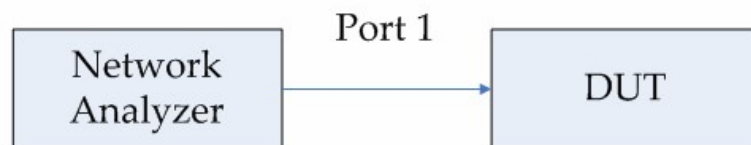


Fig-1

## Testing Setup



## Measurement



### Testing Instrument:

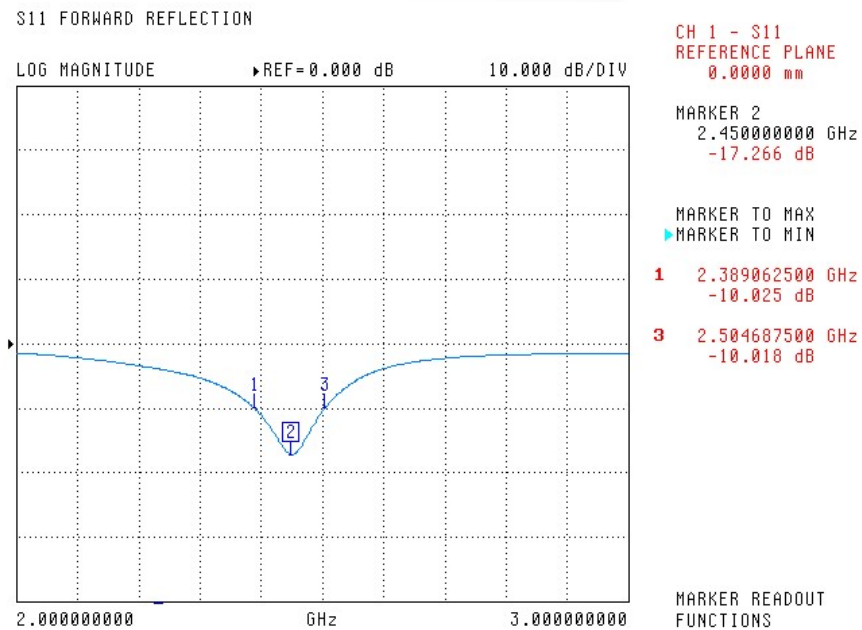
Anritsu 37369C VNA(Vector Network Analyzer)

VNA calibrate with 1 path reflection only calibration sequence on test board feed point.

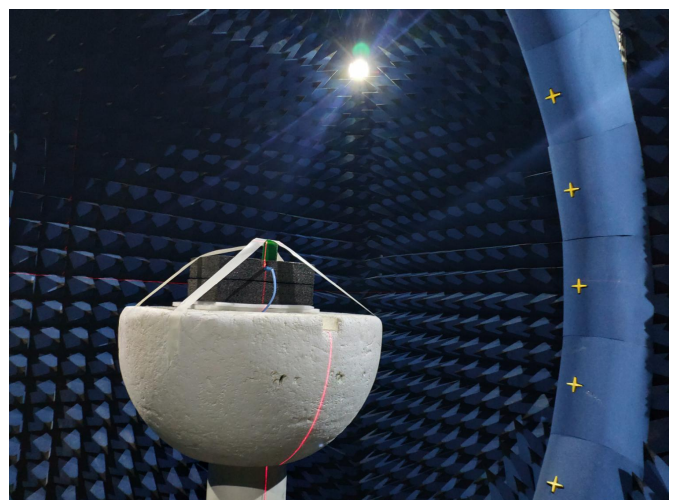
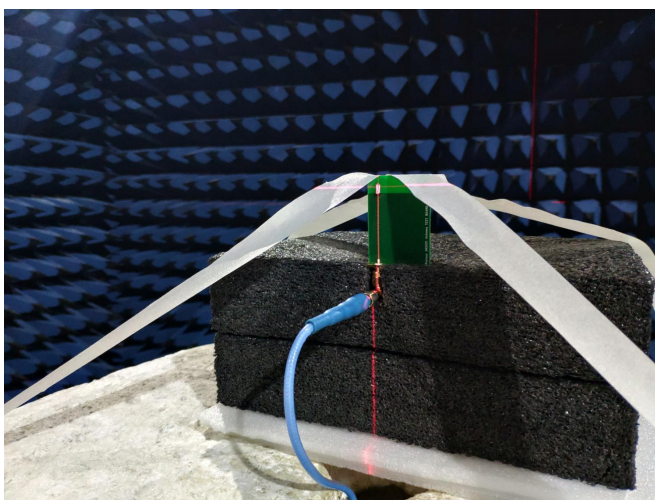
The test board dimension and it's layout is the same as Fig-1.

## Typical Electrical Characteristics

### Return loss

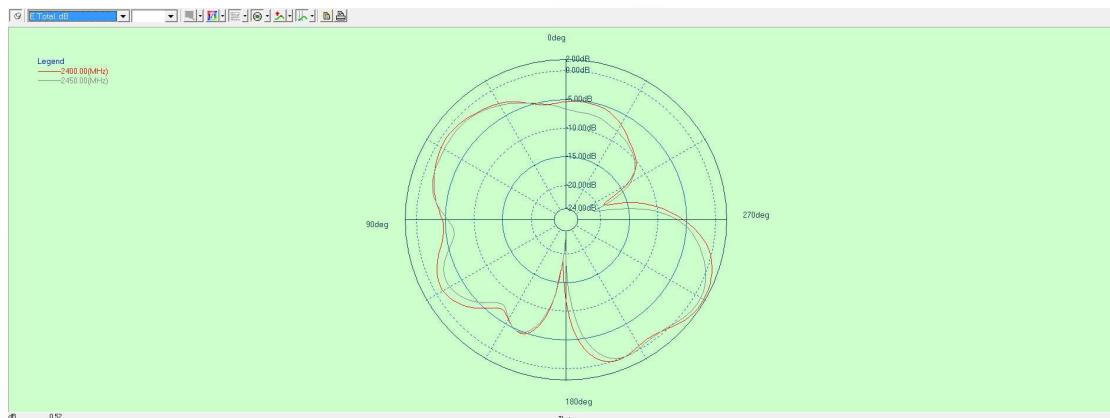


### Test setting

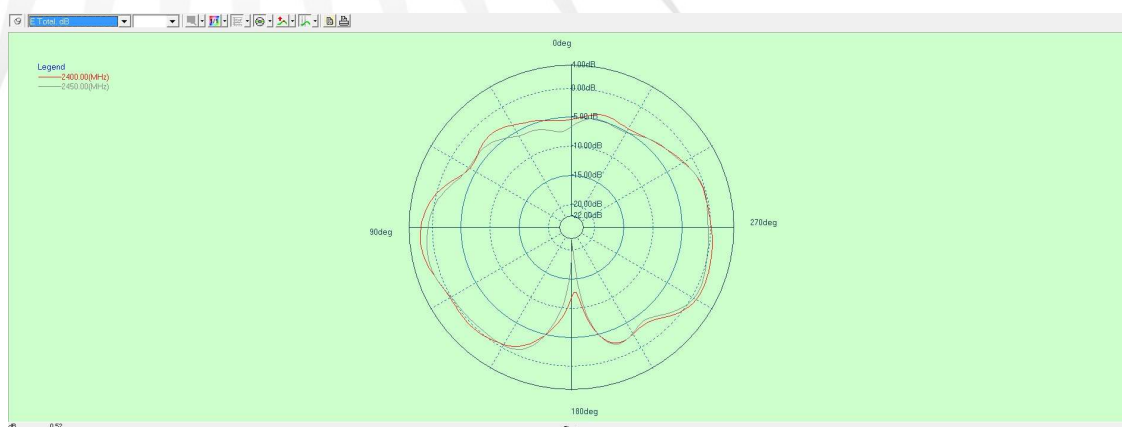


## Typical Radiation Patterns

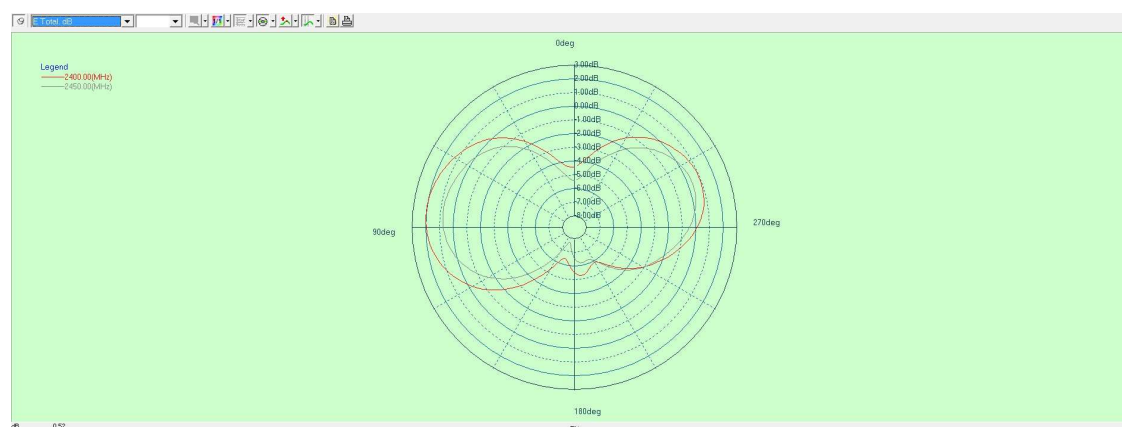
### 2.45 GHz Phi=0



### 2.45 GHz Phi=90

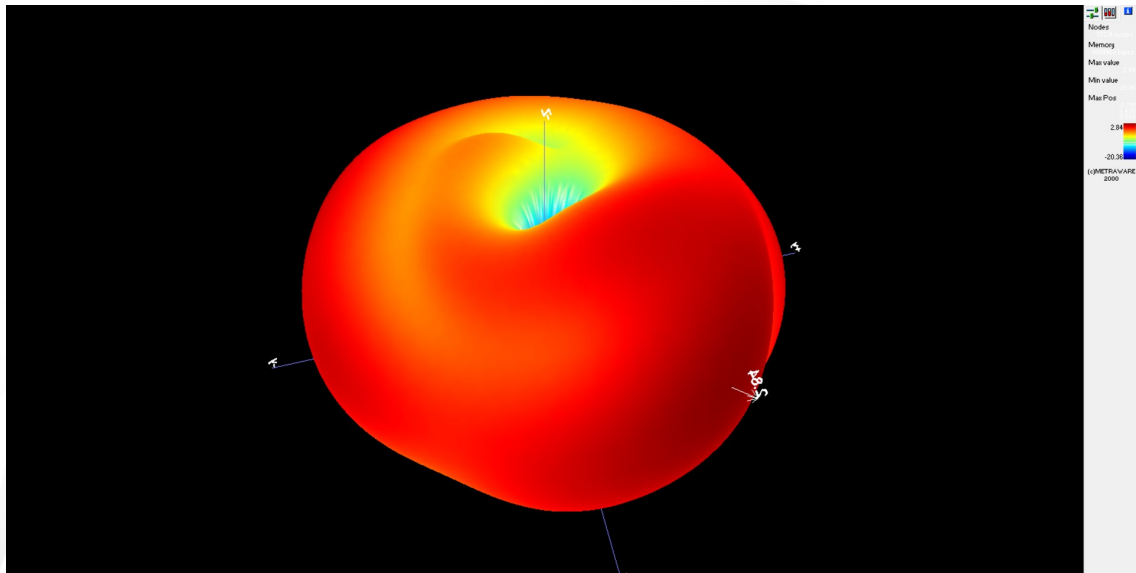


### 2.45 GHz Theta=90

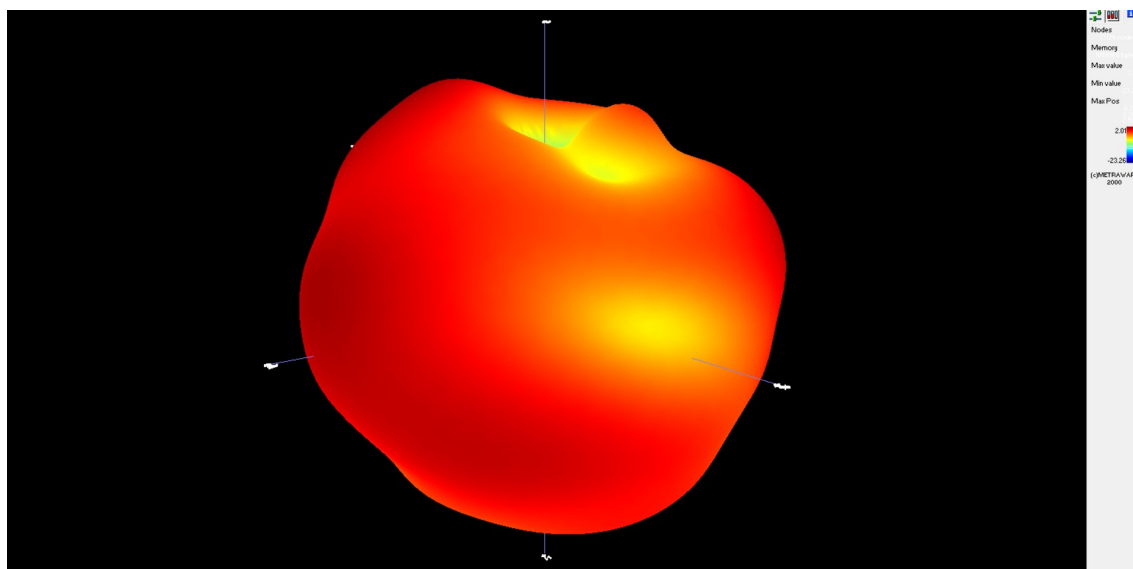


## Typical Radiation Patterns

### 2.4 GHz E plan total radiation

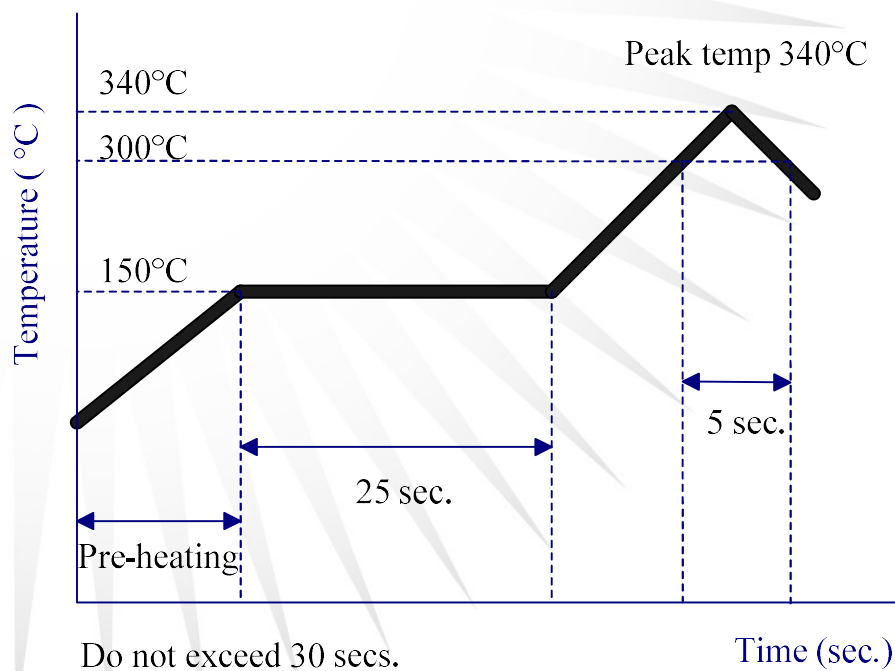


### 2.45 GHz E plan total radiation

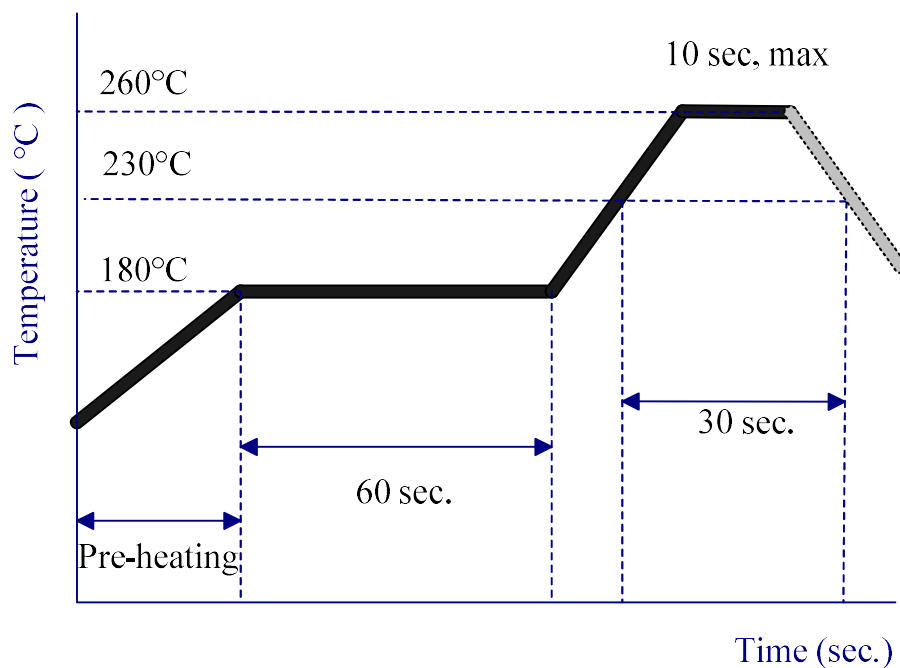




## Typical Soldering Profile for Lead-free Process



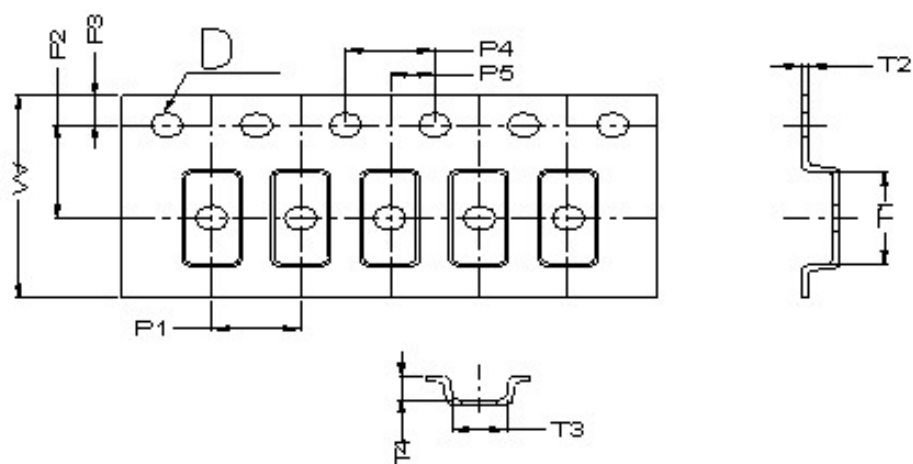
### Reflow Soldering





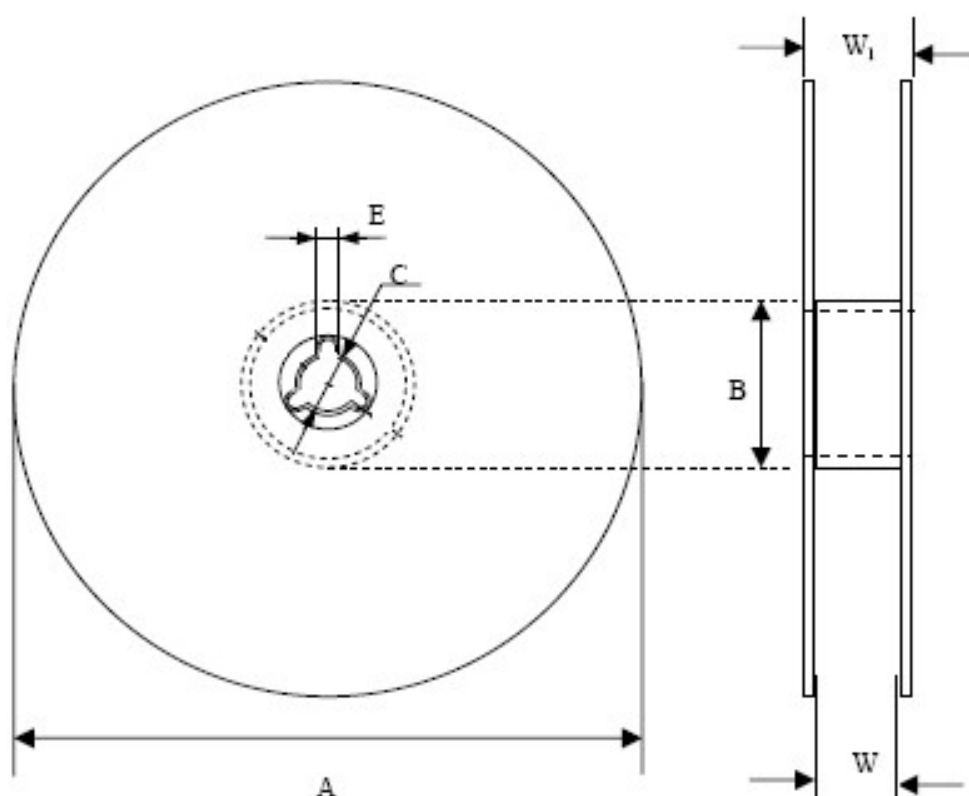
# Packing

## Blister Tape Specifications



| Symbol | Dimension | Tolerance  | Unit |
|--------|-----------|------------|------|
| W      | 12.00     | $\pm 0.30$ | mm   |
| P1     | 4.00      | $\pm 0.10$ | mm   |
| P2     | 5.50      | $\pm 0.10$ | mm   |
| P3     | 1.75      | $\pm 0.10$ | mm   |
| P4     | 4.00      | $\pm 0.10$ | mm   |
| P5     | 2.00      | $\pm 0.10$ | mm   |
| D      | 1.50      | $\pm 0.10$ | mm   |
| T1     | 5.40      | $\pm 0.10$ | mm   |
| T2     | 0.30      | $\pm 0.05$ | mm   |
| T3     | 2.40      | $\pm 0.10$ | mm   |
| T4     | 1.40      | $\pm 0.10$ | mm   |

## Reel Specifications



| Quantity<br>Per Reel | Tape Width<br>(mm) | A<br>(mm) | C<br>(mm) | B<br>(mm) | E<br>(mm) | W<br>(mm) | W <sub>1</sub><br>(mm) |
|----------------------|--------------------|-----------|-----------|-----------|-----------|-----------|------------------------|
| 3,000                | 12                 | 180±1     | 13.0±0.2  | 62±0.5    | 2.2±0.5   | 12±0.5    | 16±0.2                 |