

Preliminary

# **SPECIFICATION**

## **MULTILAYER CHIP ANTENNA**

**Model No. : ALA621C2  
ALA621C3  
ALA621C4**

| WRITTEN | CHECKED | APPROVED |
|---------|---------|----------|
|         |         |          |
|         |         |          |

**February 19, 2005**

**AMOTECH Co., LTD.**

**Notes**

The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

# 1. SPECIFICATIONS

## 1.1 Electrical Specifications

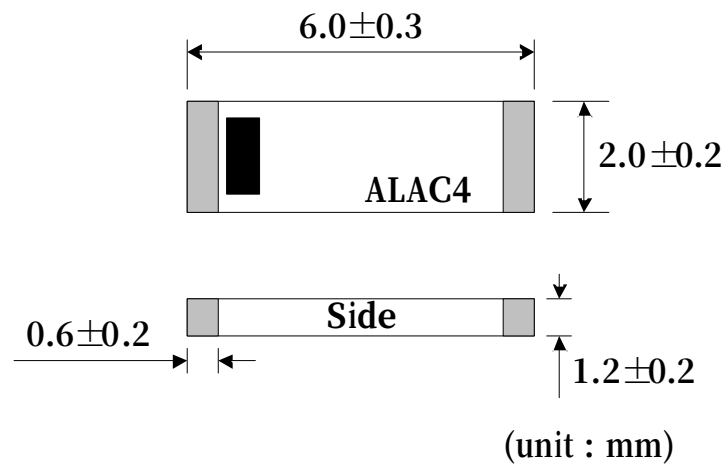
| ITEM                 | SPEC.            |      | Unit     |
|----------------------|------------------|------|----------|
| Center Frequency     | ALA621C2         | 2.51 | GHz      |
|                      | ALA621C3         | 2.85 |          |
|                      | ALA621C4         | 3.35 |          |
| Gain                 | 0 max.           |      | dBi      |
| VSWR                 | 2.5 : 1 max.     |      |          |
| Polarization         | Linear           |      |          |
| Azimuth Beam Pattern | Omni-directional |      |          |
| Impedance            | 50               |      | $\Omega$ |

※ These values are measured on the matched reference test board.

## 1.2 Mechanical Specifications

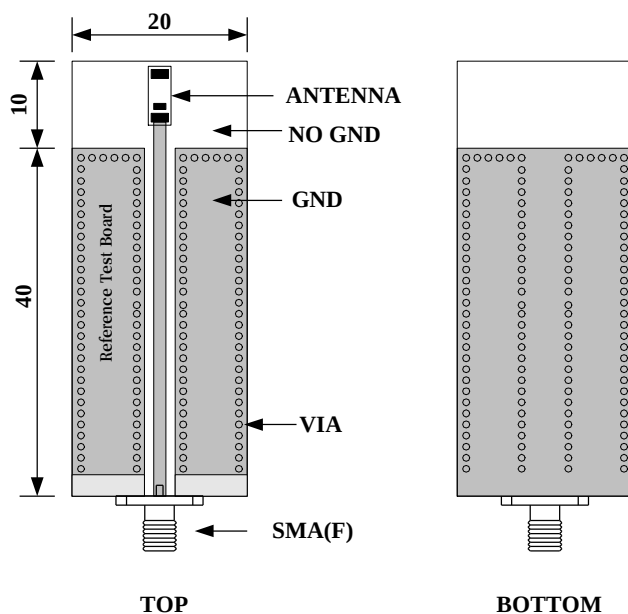
|                        |            |    |
|------------------------|------------|----|
| Internal Electrode     | Ag         |    |
| External Electrode     | Ag/Ni/Sn   |    |
| Dimensions (L x W x H) | 6 x 2 x 1  | mm |
| Unit Weight            | 46 $\pm$ 2 | mg |
| Operating Temperature  | -35 ~ +85  | °C |

## 1.3 Appearance and Dimensions

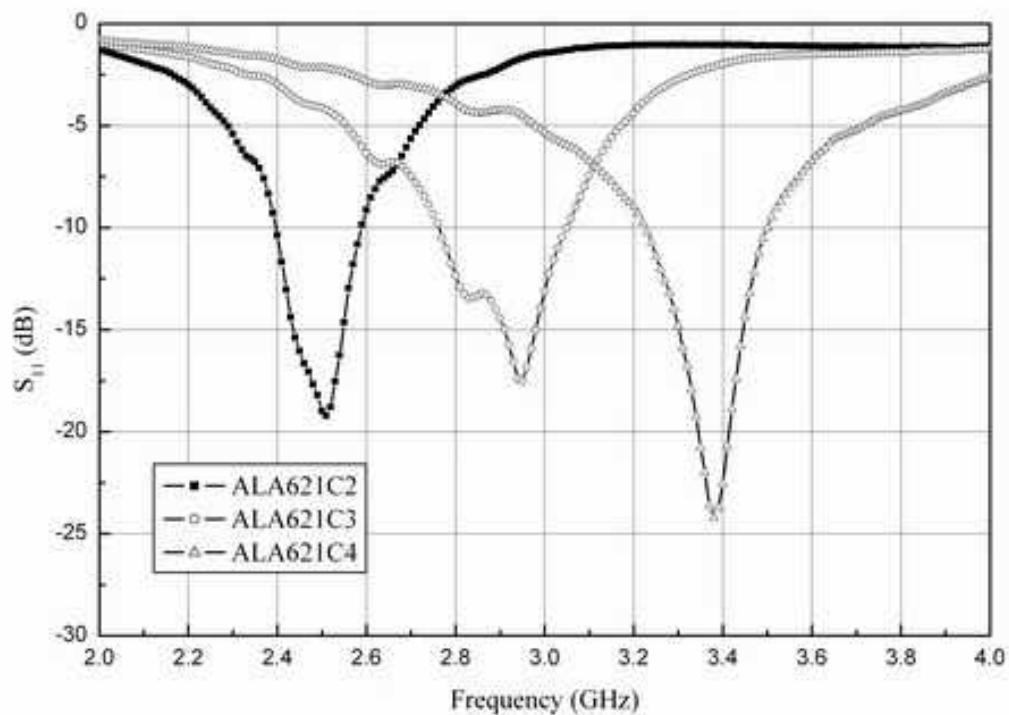


## 2. MEASUREMENT

### 2.1 Reference Test Board for Measurement



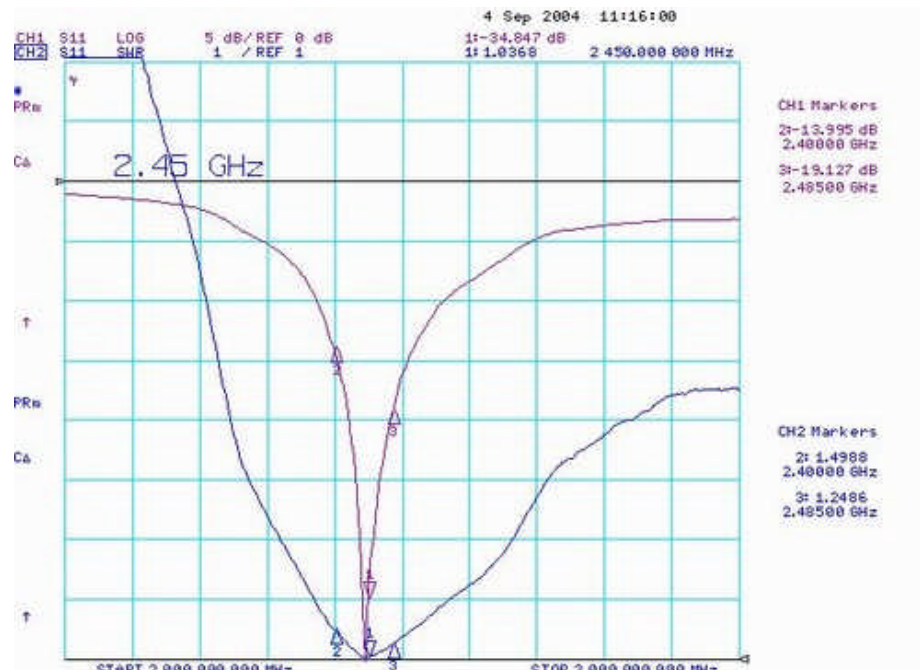
### 2.2 Electrical Characteristic



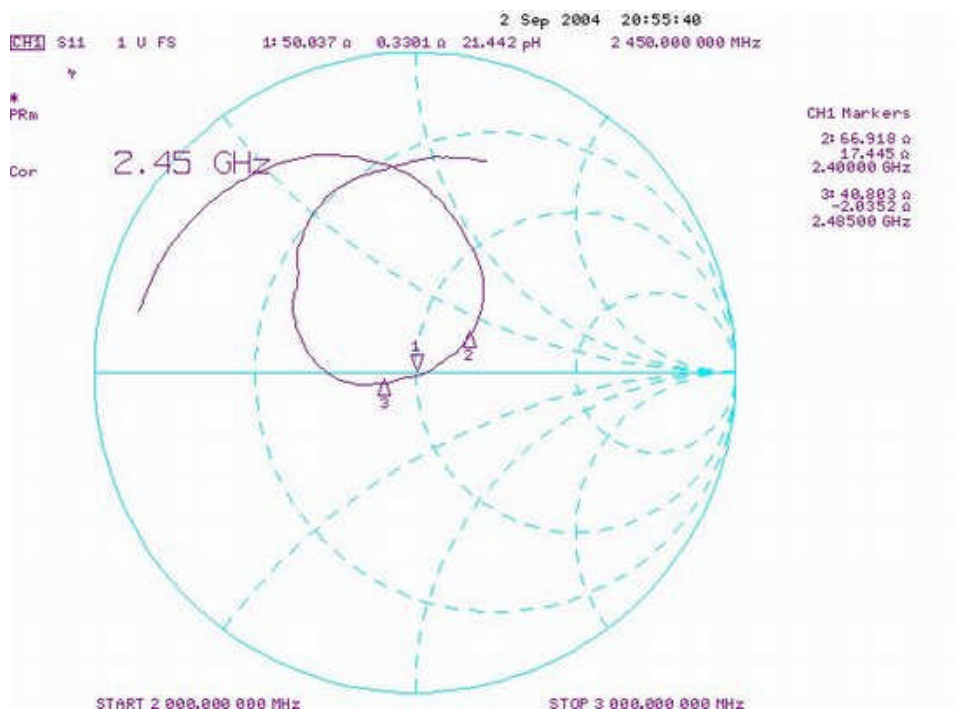
## 2.3 Electrical Characteristic (ALA621C2)

- Bluetooth matching on the reference test board

### A. $S_{11}$ (Return Loss)

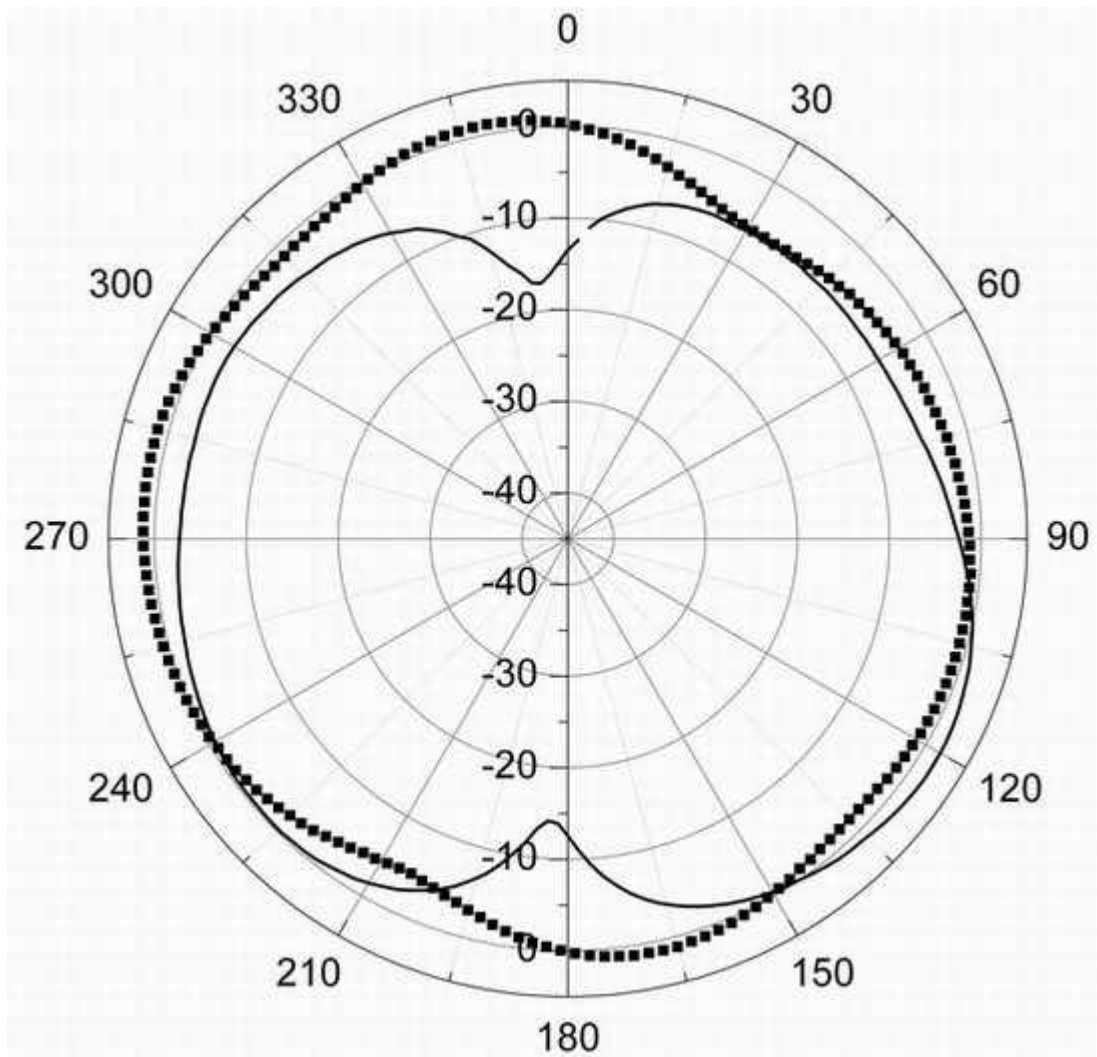


### B. $S_{11}$ (Smith chart)



## 2.4 Radiation Characteristic (ALA621C2)

- Bluetooth matching on the reference test board



- Measurement Setup

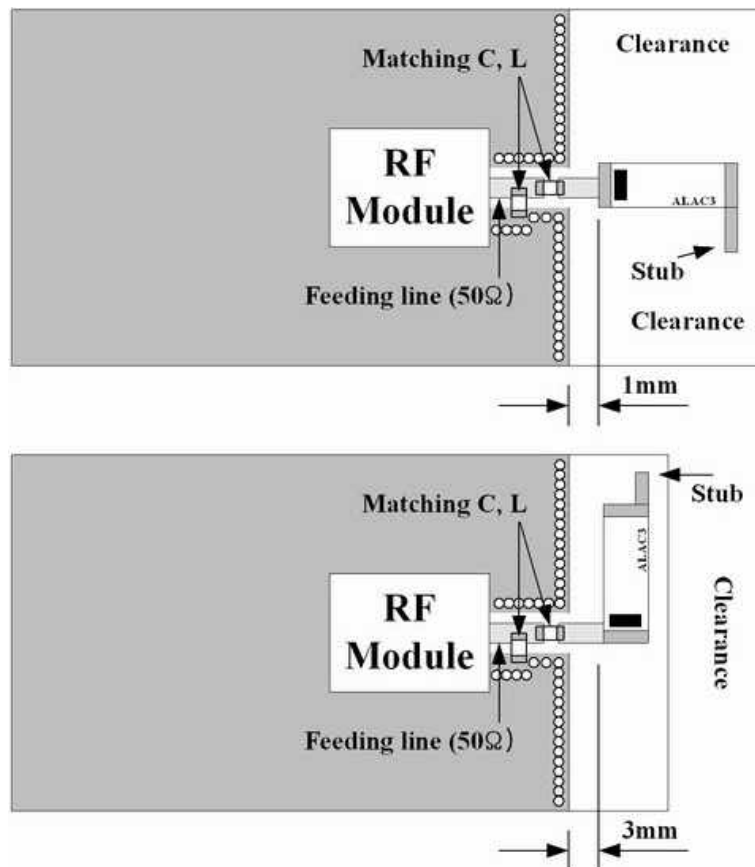
- 8x4x4 Anechoic Chamber
- Matching on the standard test board
- Temp. : 25°C / Humidity : 50~55%

- Measurement Result (@2.45GHz)

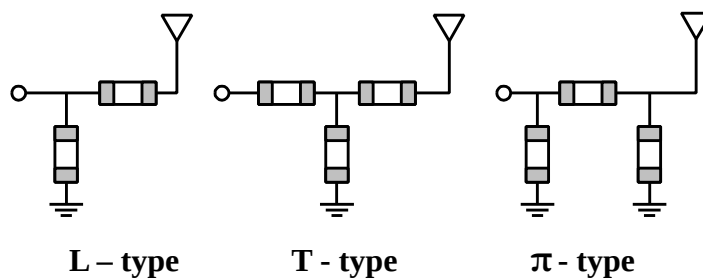
|           | Avg. (dBi) | Min. (dBi) | Max. (dBi) |
|-----------|------------|------------|------------|
| Azimuth   | -1.30      | -5.87      | 1.29       |
| Elevation | -4.29      | -16.98     | 1.84       |

### 3. SUGGESTED LAYOUT & MATCHING CIRCUIT

#### 3.1 Layout (recommended only)

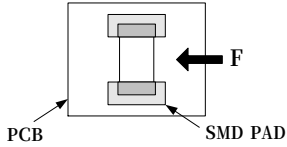
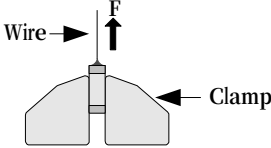


#### 3.2 Matching Circuit (recommended only)



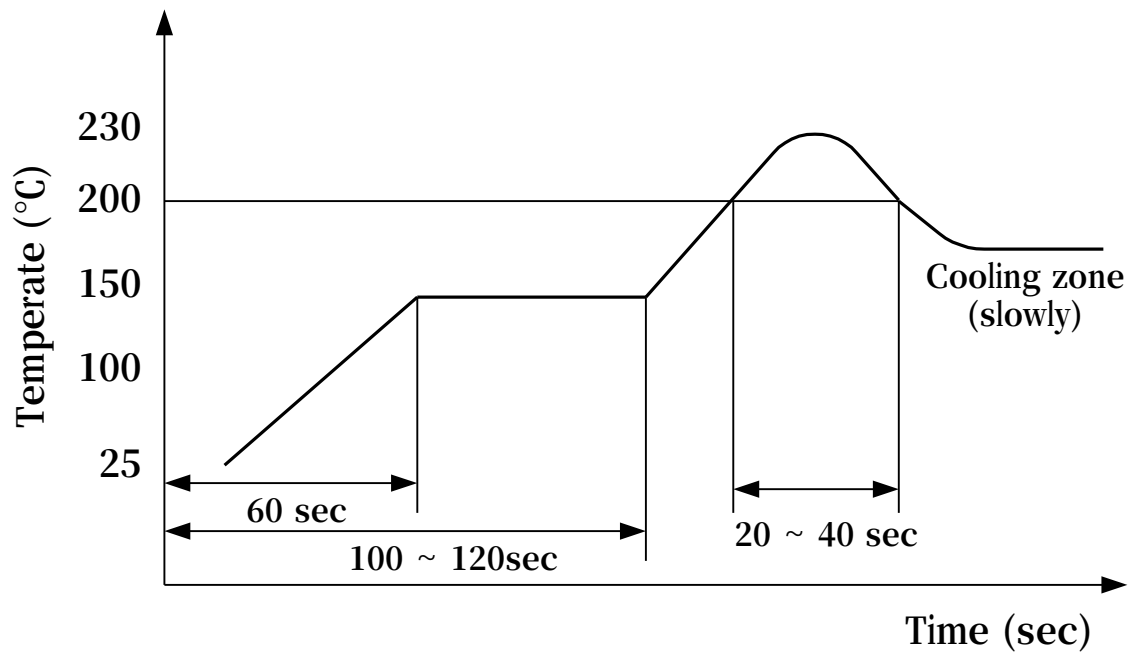
For usable matching, the **ground stability** must be guaranteed with **sufficient via holes** and the **case effects** should be considered. Finally, using one or more lumped chip elements and a tuning stub are recommended for better results.

## 4. RELIABILITY TEST

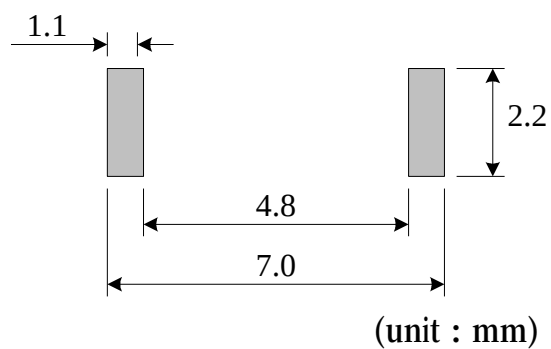
| No | ITEM                              | TEST CONDITION                                                                                                                                                 | TEST REQUIREMENTS                                                                                                                                                                                                  |
|----|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Adhesive Strength of Termination  | 1. Applied force on SMD chip till detached point from PCB.<br>                | 1. No mechanical damage by forces applied on the right.<br>2. Strength (F) > 5 kgf                                                                                                                                 |
| 2  | Tensile Strength                  | 1. Wire : 0.6~0.8 tined Cu wire<br>                                           | 1. No mechanical damage by forces applied on the right.<br>2. Strength (F) > 3 kgf                                                                                                                                 |
| 3  | Thermal Shock (Temperature Cycle) | 1. 1 cycle / step 1 : -40 ± 3°C, 30 min<br>step 2 : +125 ± 3°C, 30 min<br>2. Number of cycle : 30<br>3. Measure after left for 48 hrs min. at room temperature | 1. No visual damage<br>2. $\Delta f_c < 1.5 \%$<br>( $\Delta f_c =  f_{Ci} - f_{Cf}  / f_{Ci}$ )<br>$f_{Ci}$ : center frequency of initial condition (room temp)<br>$f_{Cf}$ : center frequency after being cycled |
| 4  | High Temperature Resistance       | 1. Temperature : +125 ± 5°C<br>2. Time : 1000 ± 24 hrs<br>3. Measure $f_c$ after left for 24 hrs min. at room temperature                                      | 1. No visual damage<br>2. $\Delta f_c < 1.5 \%$                                                                                                                                                                    |
| 5  | Low Temperature Resistance        | 1. Temperature : -40 ± 5°C<br>2. Time : 1000 ± 24 hrs<br>3. Measure $f_c$ after left for 48 hrs min. at room temperature                                       | 1. No visual damage<br>2. $\Delta f_c < 1.5 \%$                                                                                                                                                                    |
| 6  | Humidity (Steady Condition)       | 1. Humidity : 85 % RH<br>1. Temperature : +85 ± 3°C<br>2. Time : 1000 ± 24 hrs<br>3. Measure $f_c$ after left for 48 hrs min. at room temperature              | 1. No visual damage<br>2. $\Delta f_c < 1.5 \%$                                                                                                                                                                    |

## 5. SOLDERING RECOMMENDATIONS

### 5.1 Reflow Soldering Profile

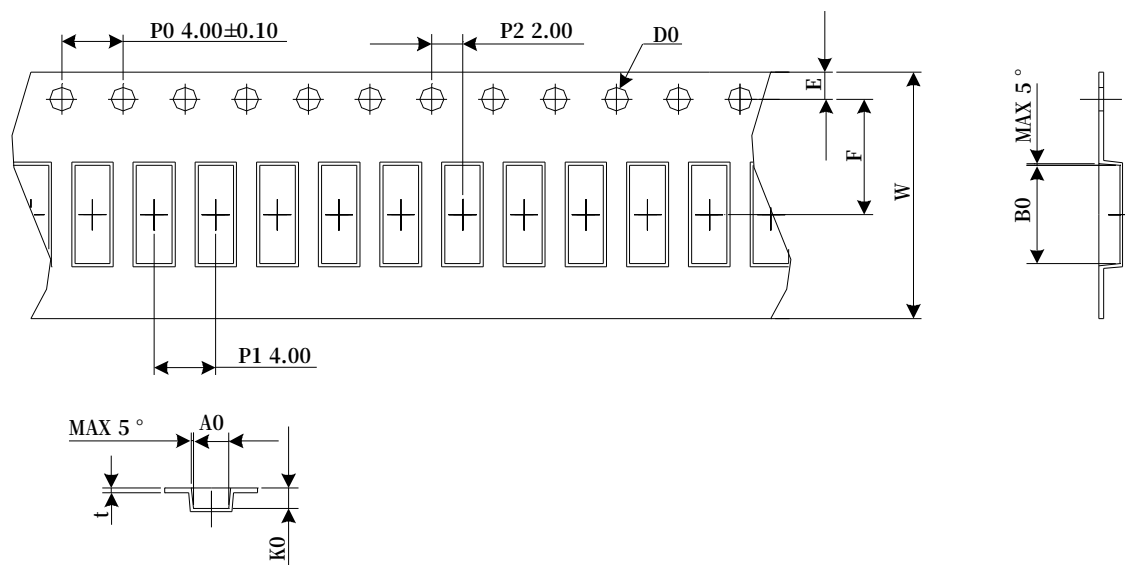


### 5.2 Soldering Land Pattern



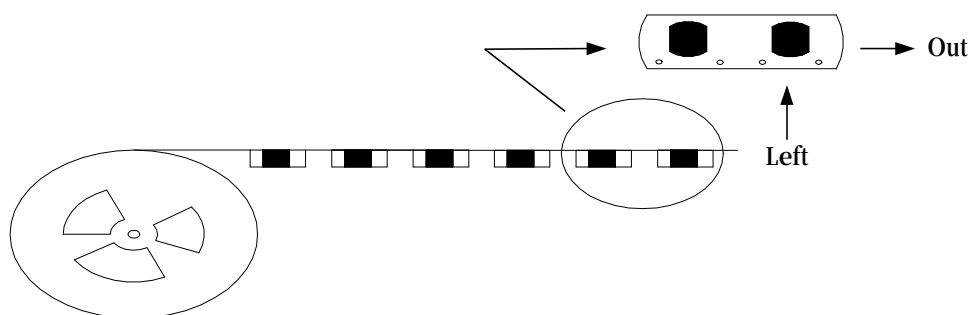
## 6. PACKING

### 6.1 Tape Dimension (unit : mm)



|    |                 |   |                  |
|----|-----------------|---|------------------|
| A0 | $2.30 \pm 0.10$ | E | $1.75 \pm 0.10$  |
| B0 | $6.40 \pm 0.10$ | F | 7.50             |
| K0 | $1.35 \pm 0.10$ | t | $0.30 \pm 0.05$  |
| D0 | $1.55 \pm 0.05$ | W | $16.00 \pm 0.30$ |

### 6.2 Taping style



### 6.3 Packing quantity

2,000 pcs /Reel