

Preliminary

# **SPECIFICATION**

## **MULTILAYER CHIP ANTENNA**

**Model No. : ALA621C2  
ALA621C3  
ALA621C4**

| <b>WRITTEN</b> | <b>CHECKED</b> | <b>APPROVED</b> |
|----------------|----------------|-----------------|
|                |                |                 |
|                |                |                 |

**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

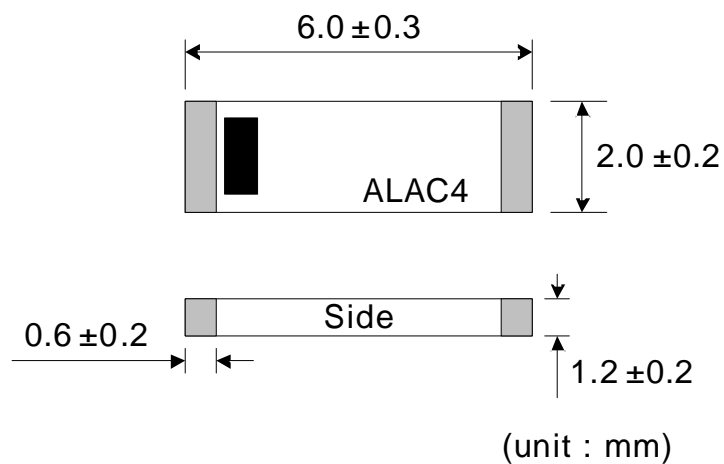
| ITEM                 | SPEC.            |      | Unit |
|----------------------|------------------|------|------|
| Center Frequency     | ALA621C2         | 2.51 | GHz  |
|                      | ALA621C3         | 2.85 |      |
|                      | ALA621C4         | 3.35 |      |
| Gain    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

These values are measured on the matched reference test board.

## 1.2 Mechanical Specifications

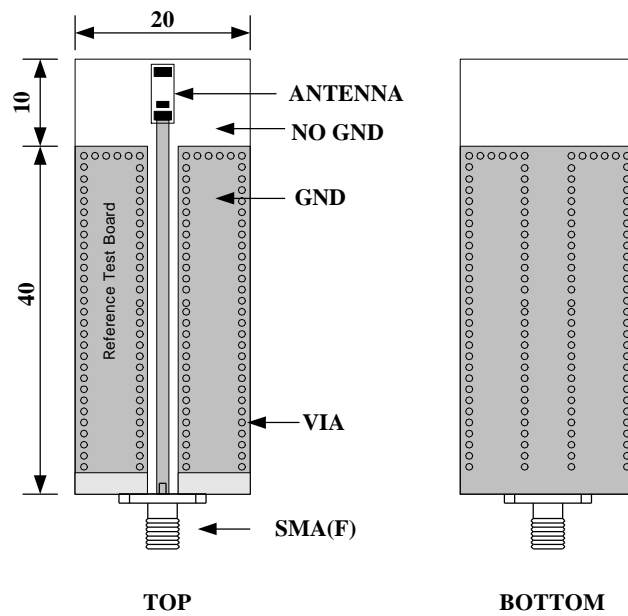
|                        |           |    |
|------------------------|-----------|----|
| Internal Electrode     | Ag        |    |
| External Electrode     | Ag/Ni/Sn  |    |
| Dimensions (L x W x H) | 6 x 2 x 1 | mm |
| Unit Weight            | 46 ± 2    | mg |
| Operating Temperature  | -35 ~ +85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

## 1.3 Appearance and Dimensions

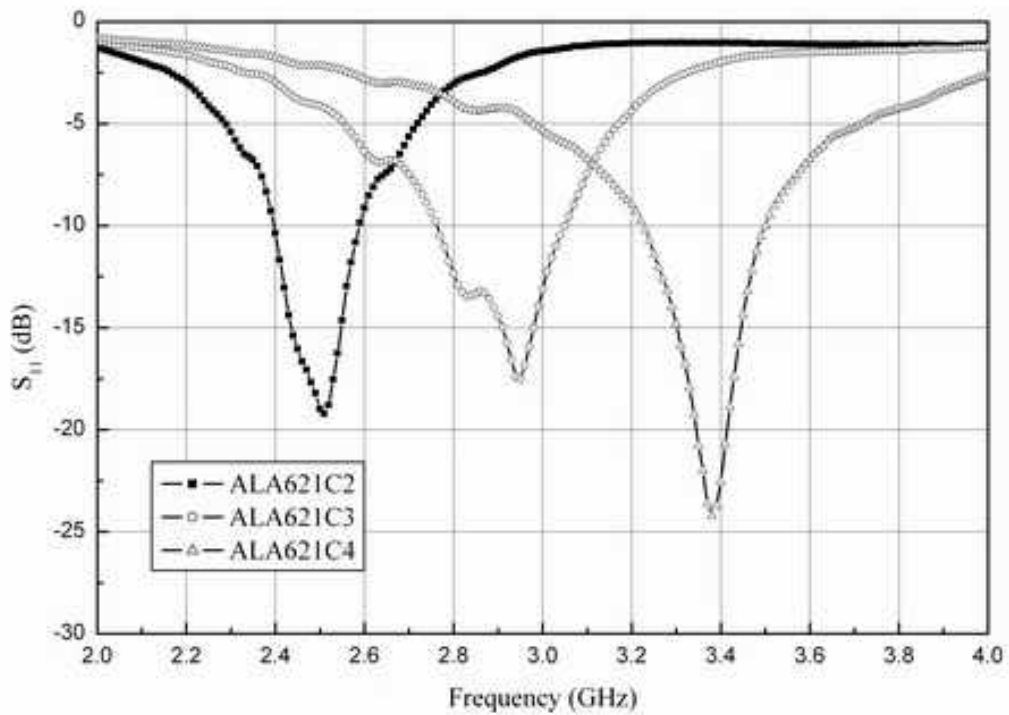


## 2. MEASUREMENT

### 2.1 Reference Test Board for Measurement



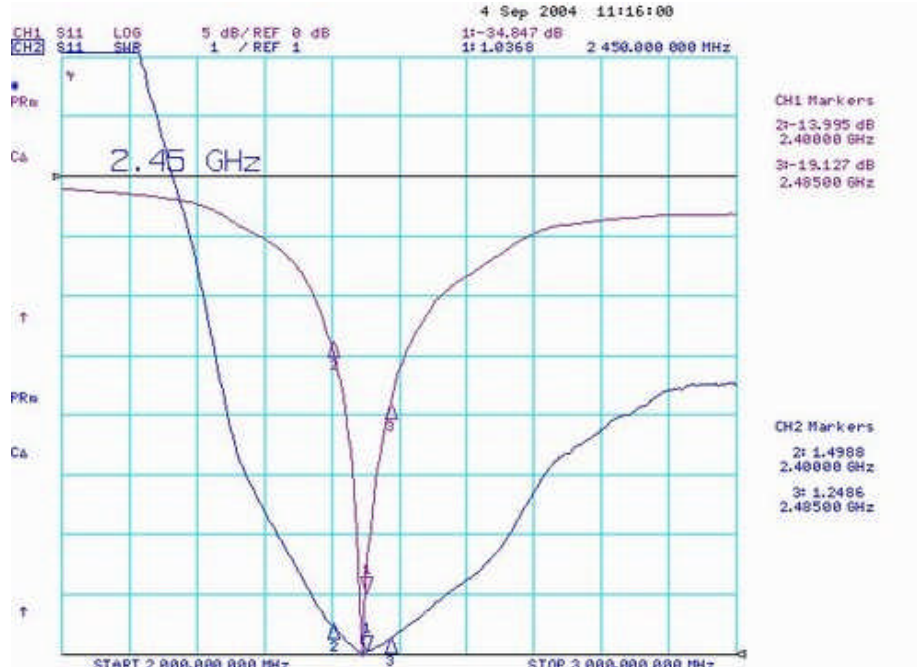
### 2.2 Electrical Characteristic



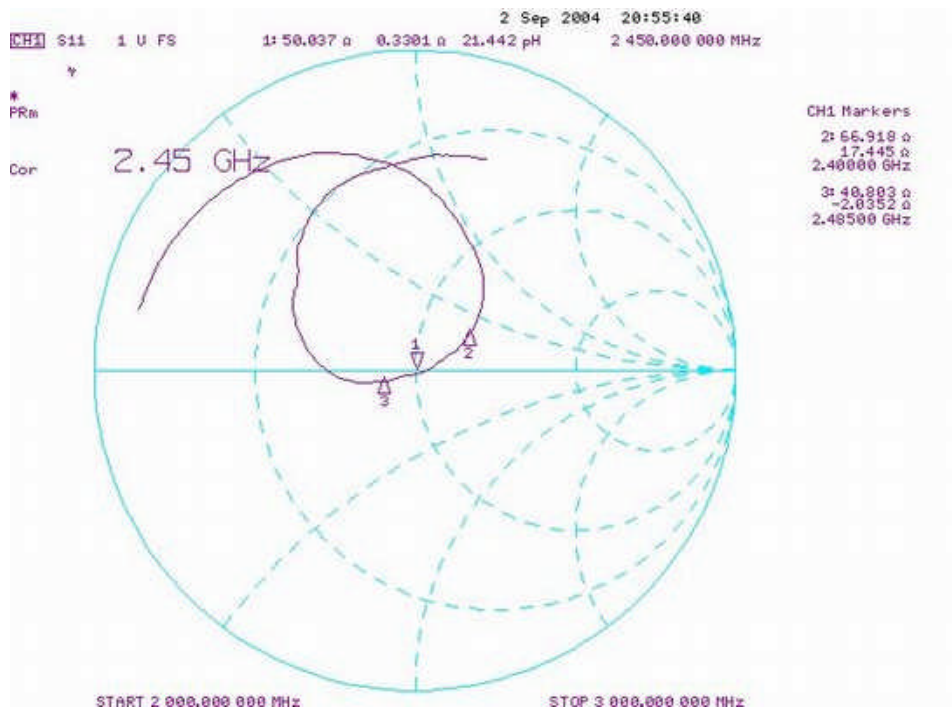
## 2.3 Electrical Characteristic (ALA621C2)

- Bluetooth matching on the reference test board

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

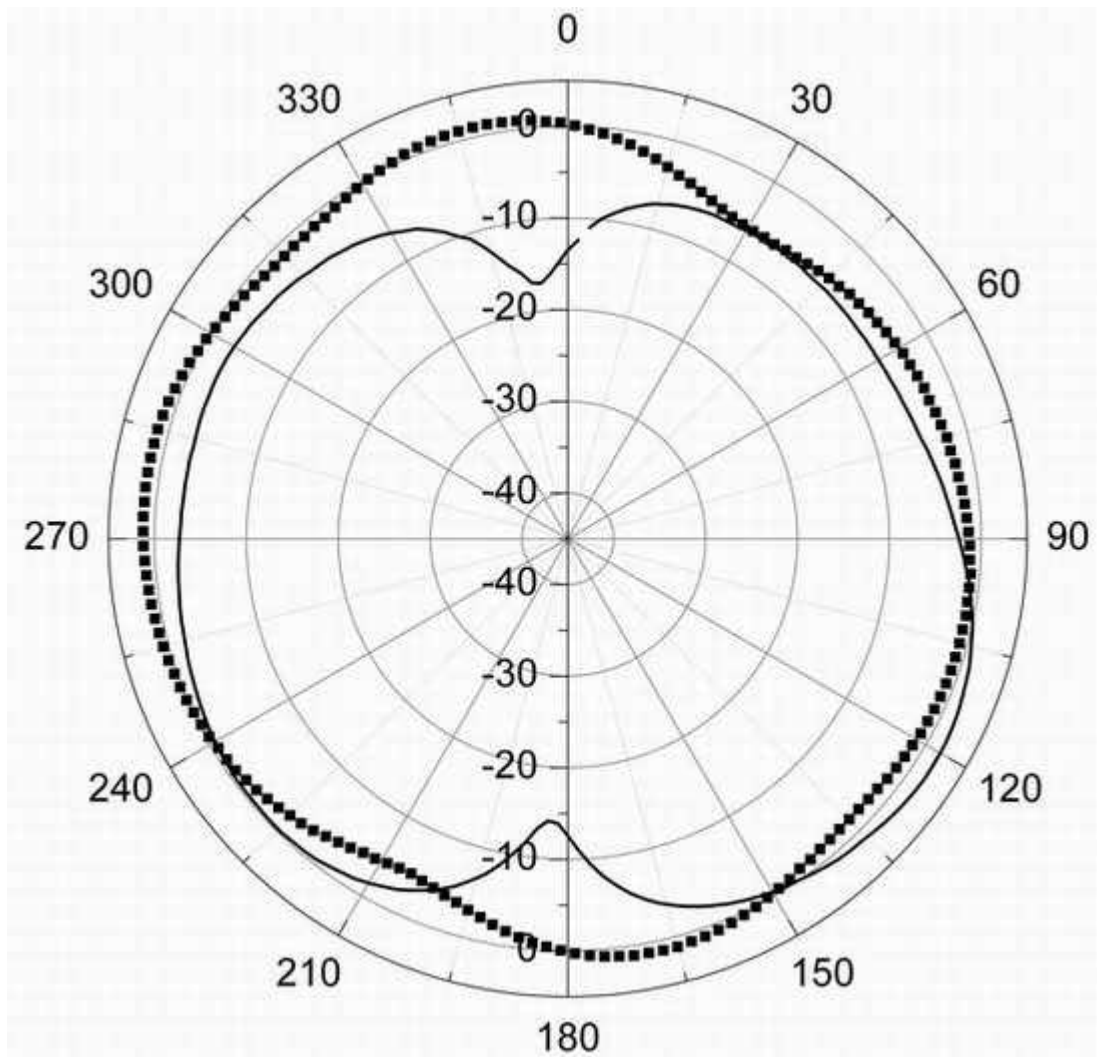


### B. $S_{11}$ (Smith chart)



## 2.4 Radiation Characteristic (ALA621C2)

- Bluetooth matching on the reference test board



- Measurement Setup

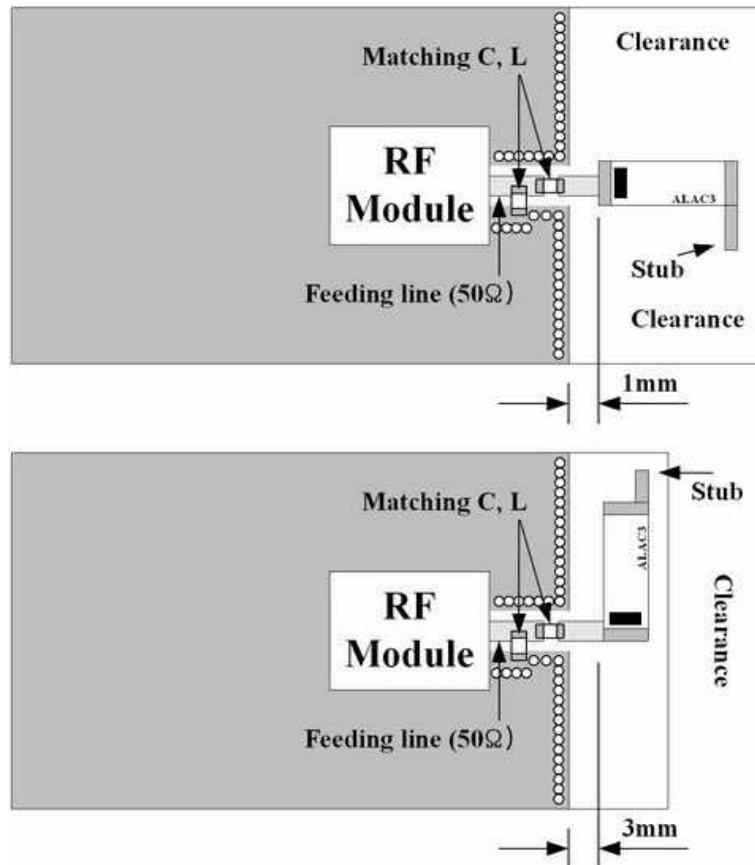
- 8x4x4 Anechoic Chamber
- Matching on the standard test board
- Temp. : 25 / Humidity : 50~55%

- Measurement Result (@2.45GHz)

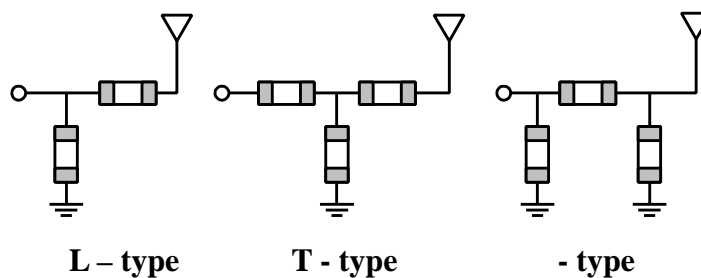
|           | Avg. (dBi) | Min. (dBi) | Max. (dBi) |
|-----------|------------|------------|------------|
| Azimuth   | -1.30      | -5.87      | 1.29       |
| Elevation | -4.29      | -16.98     | 1.84       |

### 3. SUGGESTED LAYOUT & MATCHING CIRCUIT

#### 3.1 Layout (recommended only)

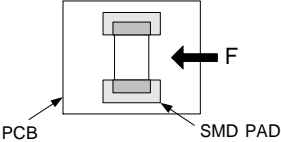
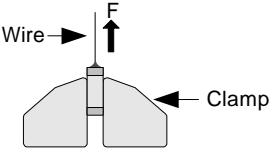


#### 3.2 Matching Circuit (recommended only)



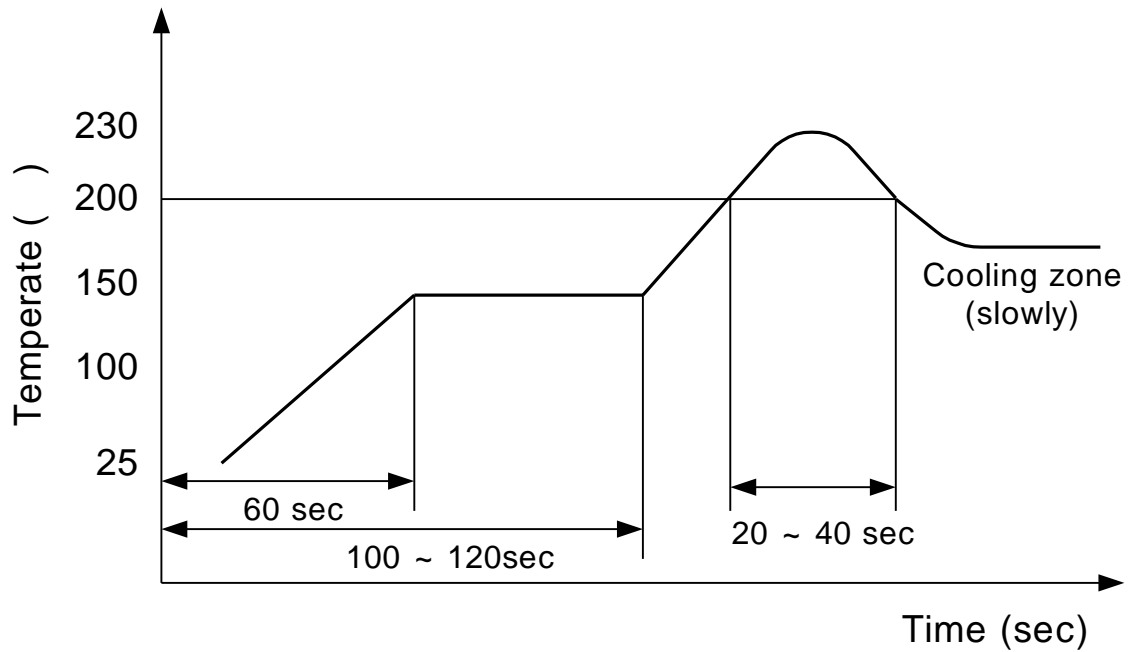
For usable matching, the **ground stability** must be guaranteed with **sufficient via holes** and the **case effects** should be considered. Finally, using one or more lumped chip elements and a tuning stub are recommended for better results.

## 4. RELIABILITY TEST

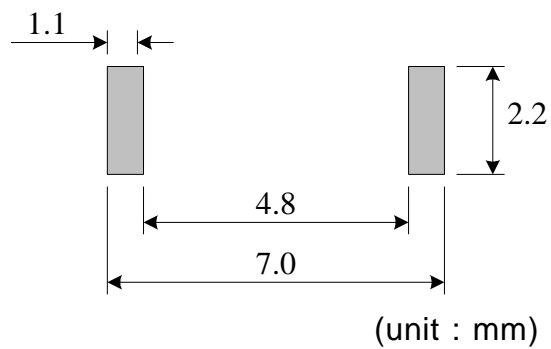
| No | ITEM                              | TEST CONDITION                                                                                                                                                       | TEST REQUIREMENTS                                                                                                                                                                                    |
|----|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 : $-40 \pm 3$ , 30 min<br>step 2 : $+125 \pm 3$ , 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. $f_c < 1.5 \%$<br>( $f_c =  f_{Ci} - f_{Cf}  / f_{Ci}$ )<br>$f_{Ci}$ : center frequency of initial condition (room temp)<br>$f_{Cf}$ : center frequency after being cycled |
| 4  | High Temperature Resistance       | 1. Temperature : $+125 \pm 5$<br>2. Time : $1000 \pm 24$ hrs<br>3. Measure $f_c$ after left for 24 hrs min. at room temperature                                      | 1. No visual damage<br>2. $f_c < 1.5 \%$                                                                                                                                                             |
| 5  | Low Temperature Resistance        | 1. Temperature : $-40 \pm 5$<br>2. Time : $1000 \pm 24$ hrs<br>3. Measure $f_c$ after left for 48 hrs min. at room temperature                                       | 1. No visual damage<br>2. $f_c < 1.5 \%$                                                                                                                                                             |
| 6  | Humidity (Steady Condition)       | 1. Humidity : 85 % RH<br>1. Temperature : $+85 \pm 3$<br>2. Time : $1000 \pm 24$ hrs<br>3. Measure $f_c$ after left for 48 hrs min. at room temperature              | 1. No visual damage<br>2. $f_c < 1.5 \%$                                                                                                                                                             |

## 5. SOLDERING RECOMMENDATIONS

### 5.1 Reflow Soldering Profile



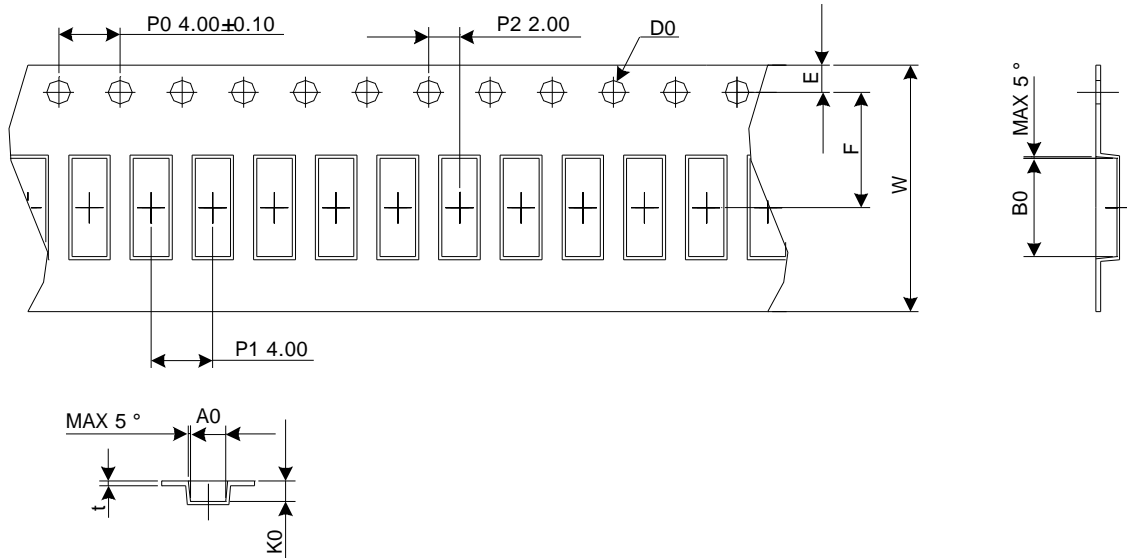
### 5.2 Soldering Land Pattern





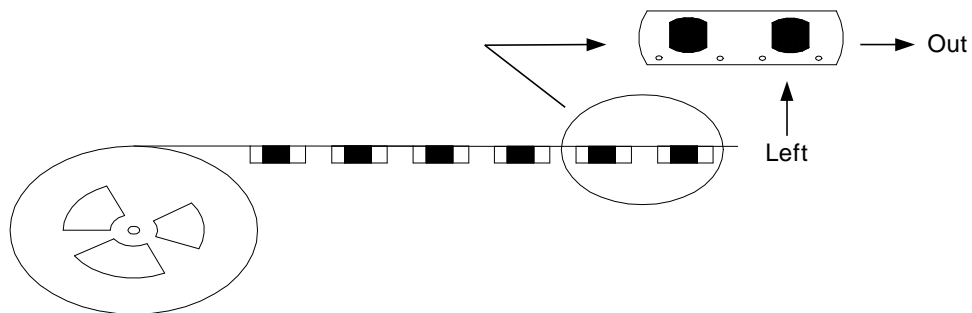
## 6. PACKING

### 6.1 Tape Dimension (unit : mm)



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

### 6.2 Taping style



### 6.3 Packing quantity

2,000 pcs /Reel