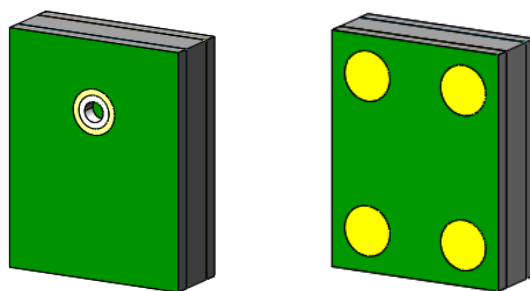


## Specification of MEMS Microphone

**RoHS Compliance & Halogen Free**

**LinkMems P/N: LMA3729T381-Y3S**



| Designed by | Checked by | Approved by |
|-------------|------------|-------------|
| Kevin       | Thomas     | Hary        |

**Customer Approval**

**Approved by:\_\_\_\_\_**



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## MEMS Microphone

### 1. Introduction

The LMA3729T MEMS Microphones are integrated with specialized Pre-amplification ASIC to provide high sensitivity, high SNR output from a capacitive audio sensor. It's packaged for surface mounting and high temperature reflow assembly.

### 2. Electrical Characteristics

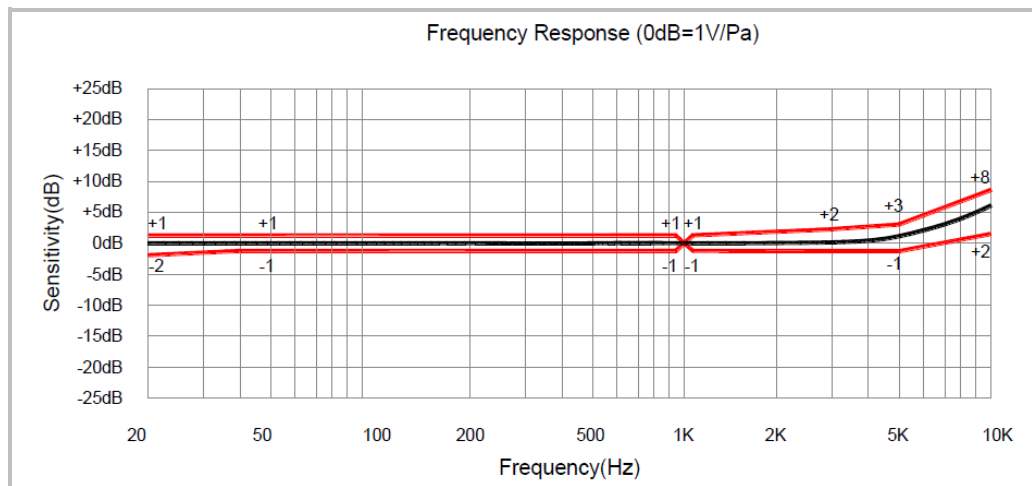
| Parameter                      | Absolute Maximum Rating | Unit |
|--------------------------------|-------------------------|------|
| Voltage Range of VDD to Ground | -0.3 to +3.9            | V    |
| Voltage Range of OUT to Ground | -0.3 to +3.9            | V    |
| Input Current to Any Pin       | $\pm 5$                 | mA   |
| Temperature Range              | -40 to +85              | °C   |

Test Condition:  $V_{DD}=2.0V$ ,  $23\pm 2^{\circ}C$ ,  $55\pm 20\%R.H.$ , unless otherwise specified.

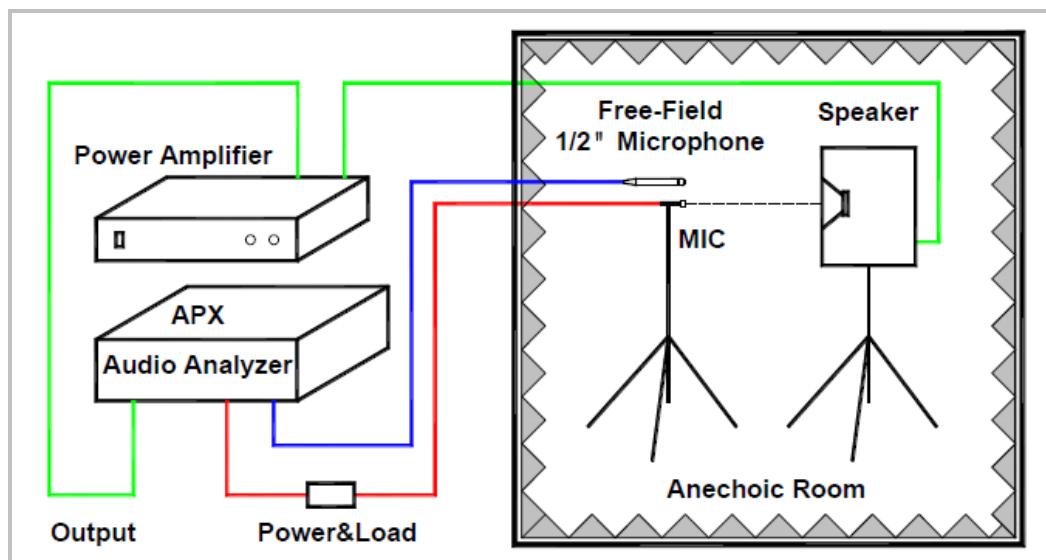
| Specification                | Symbol    | Test Conditions                                     | Min.             | Typ. | Max. | Unit     |
|------------------------------|-----------|-----------------------------------------------------|------------------|------|------|----------|
| Directivity                  |           |                                                     | Omni-directional |      |      |          |
| Sensitivity Range            | S         | 94dB SPL @1kHz                                      | -39              | -38  | -37  | dB       |
| Output Impedance             | $Z_{out}$ | 94dB SPL @1kHz                                      |                  |      | 400  | $\Omega$ |
| Current Consumption          | I         |                                                     |                  | 75   |      | $\mu A$  |
| S/N Ratio                    | SNR       | 94dB SPL @1kHz<br>A-Weighted                        |                  | 63   |      | dB(A)    |
| Operating Voltage            | $V_{DD}$  |                                                     | 1.6              | 2.0  | 3.6  | V        |
| Total Harmonic Distortion    | THD       | 94dB SPL @1kHz                                      |                  | 0.15 |      | %        |
| Acoustic Overload Point      | AOP       | 10% THD @1kHz                                       |                  | 125  |      | dB SPL   |
| Power Supply Rejection Ratio | PSRR      | 200mVpp Sine wave@1kHz, $V_{DD}=2V$                 |                  | 60   |      | dB       |
| Power Supply Rejection       | PSR       | 100mVpp Square wave@217Hz, $V_{DD}=2V$ , A-weighted |                  | -90  |      | dBV      |

### 3. Response Curve

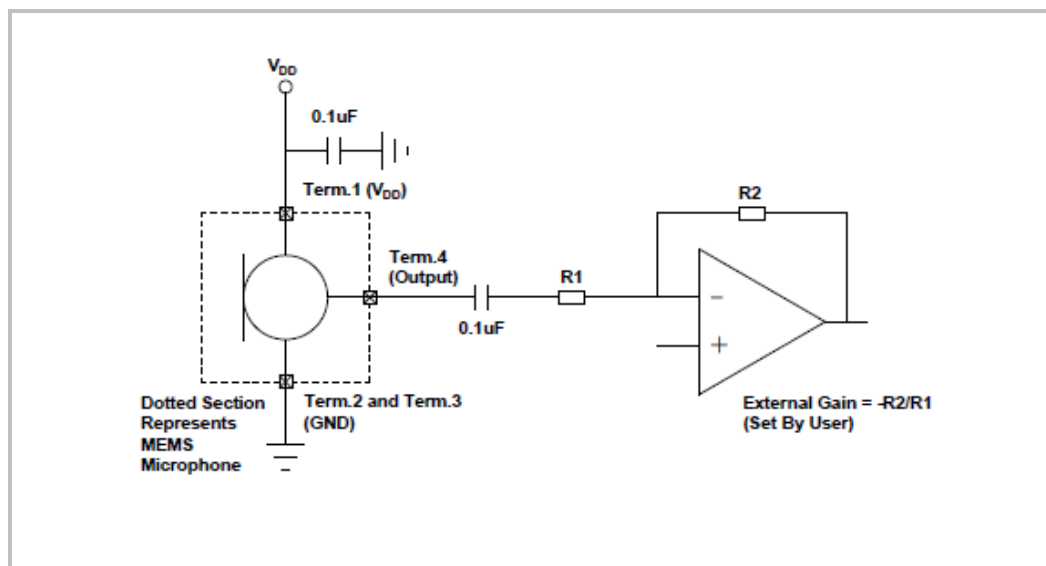
#### 3.1 Frequency Response Curve



### 4. Test Setup (Sensitivity Test in Anechoic Room)



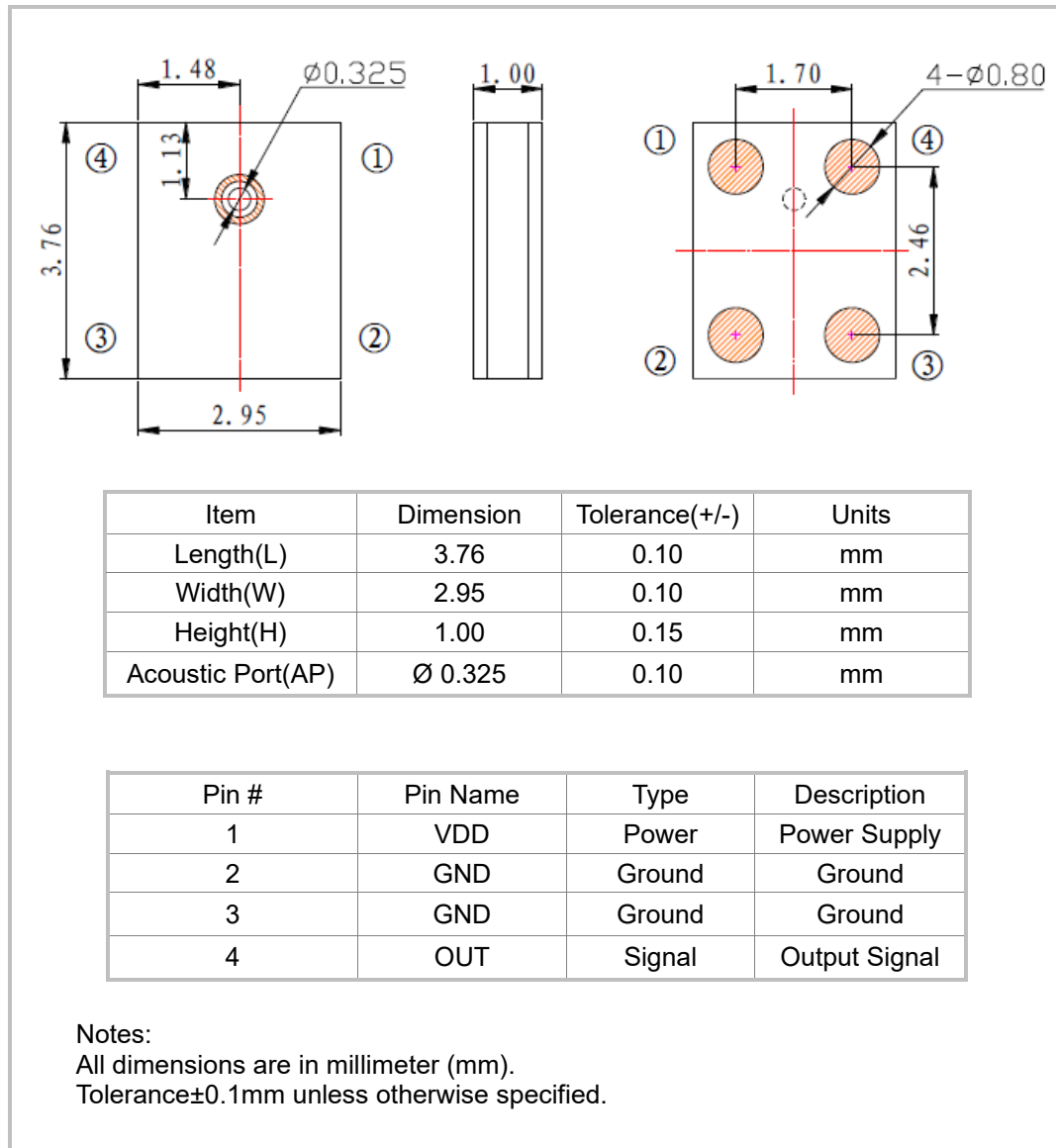
### 5. Measurement Circuit



## 6. Mechanical Characteristics

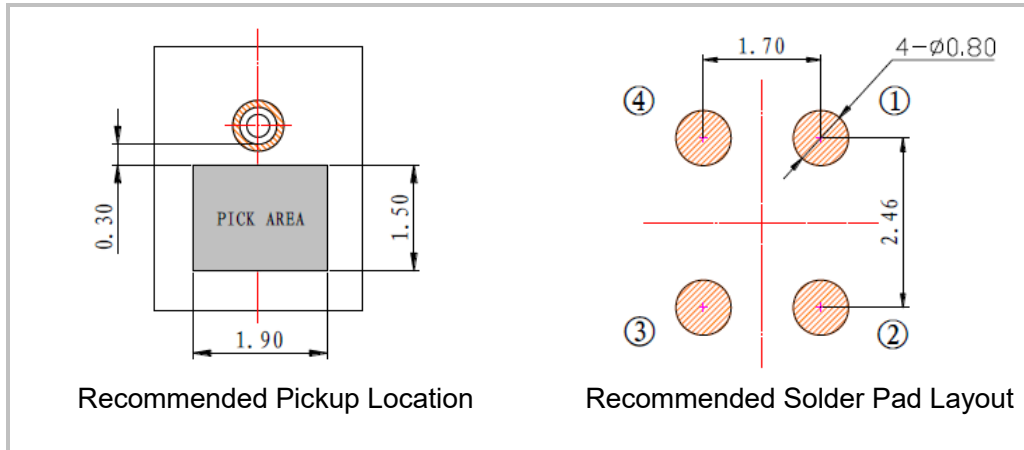
6.1 Weight: Less than 0.03g

6.2 Appearance Drawing(unit: mm)

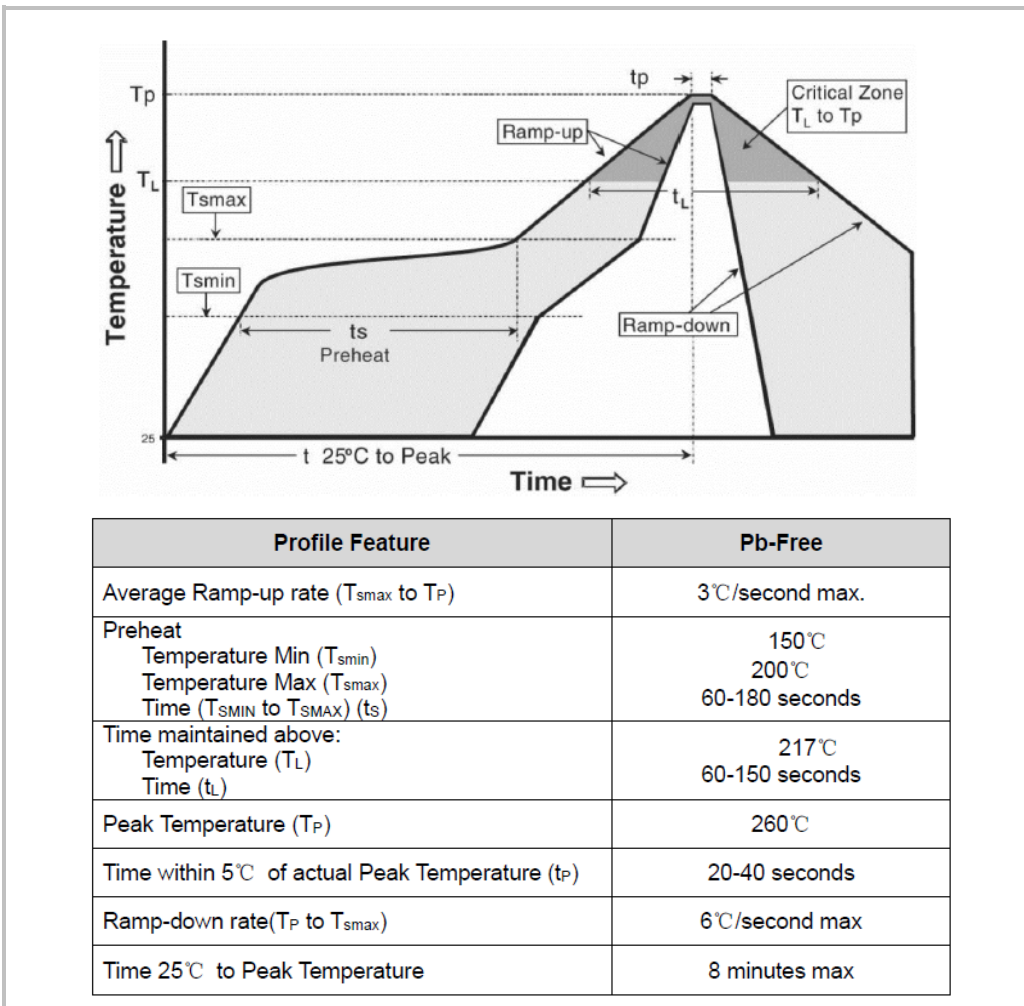


## 7. Application

### 7.1 Pickup Tool Pick Location& PCB Solder Pad Layout



### 7.2 Recommended Reflow Process Condition



#### Important Notes

1. Pulling vacuum over acoustical hole of the microphone is not allowed, because the device can be damaged by vacuum.
2. Wash the board after reflow process is not allowed, because board washing and cleaning agents can damage the device. Device should not be exposed to ultrasonic processing or cleaning.
3. Recommended number of reflow is no more than 3 times.

### 7.3 Storage Condition

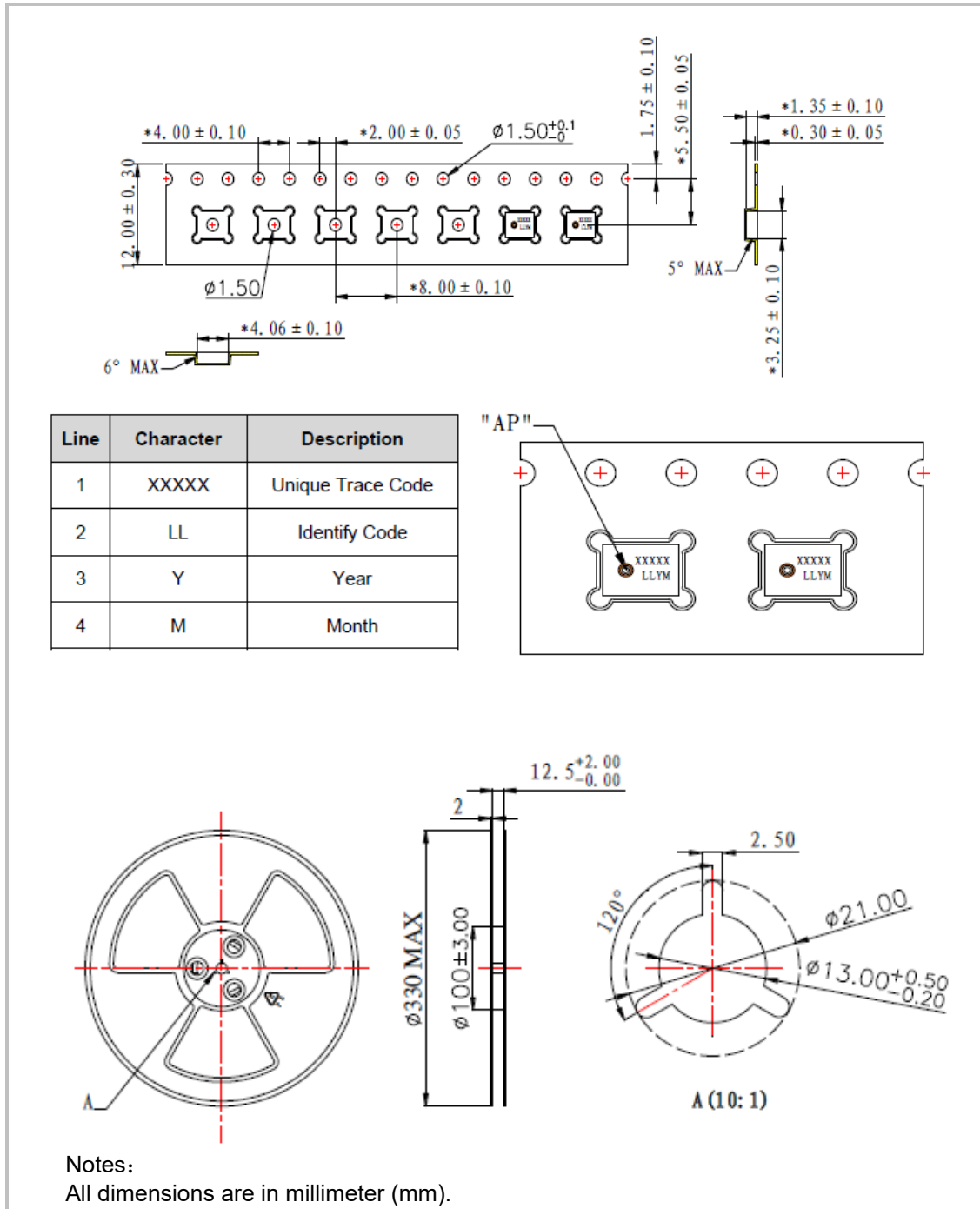
7.3.1 Storage temperature range:-40~+100℃,and humidity is less than 75%.

7.3.2 Operating temperature range:-40~+85℃.

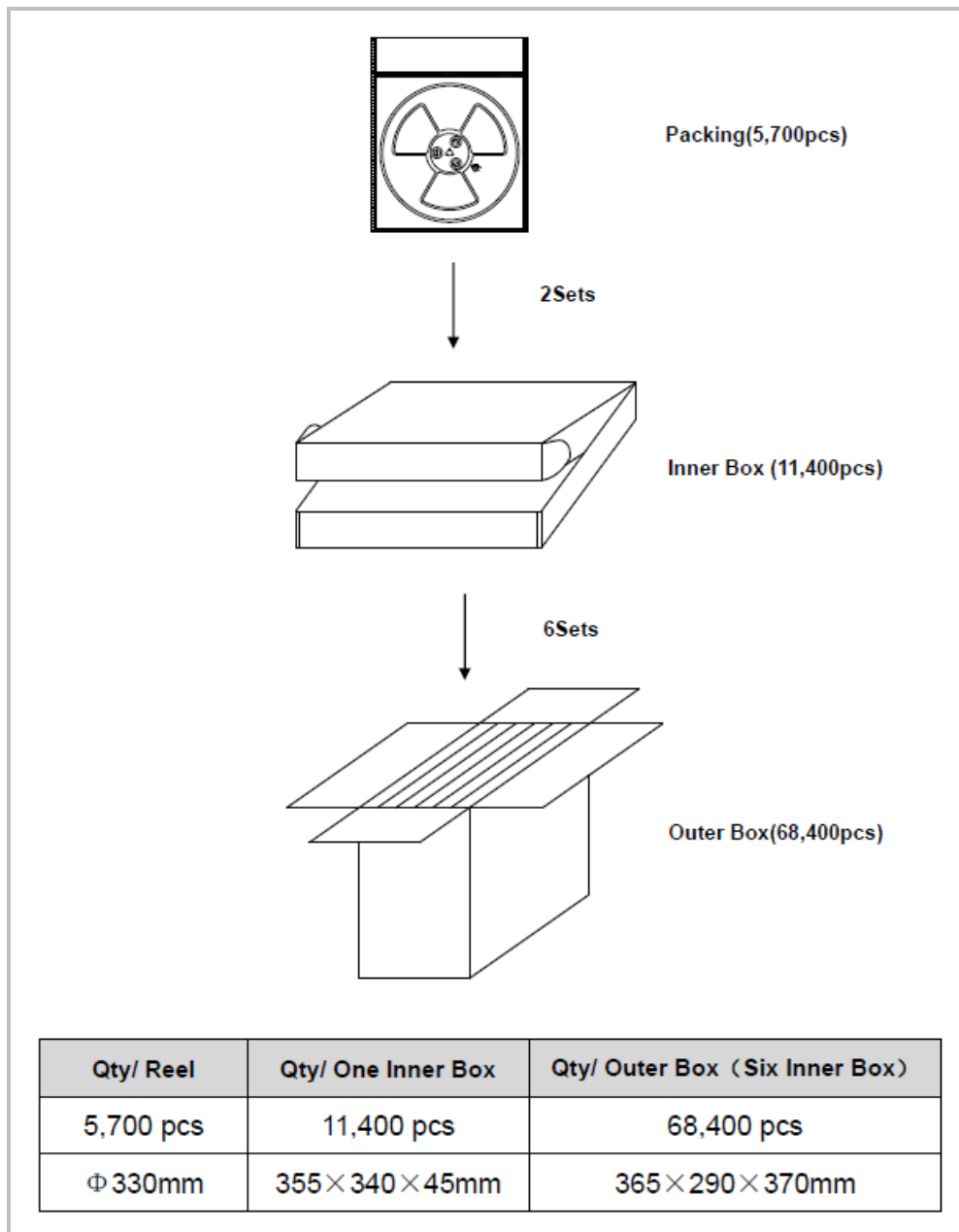
7.3.3 MSL (moisture sensitivity Level) is Class 1.

## 8. Packaging

### 8.1 Tape & Reel Specification



## 8.2 Packaging Information



## 9. Reliability Test

The samples should be placed in the room with  $23\pm 2^{\circ}\text{C}$ ,  $55\pm 10\%\text{R.H.}$  for 2 hours at least before final measurement, unless otherwise specified.

| Item                     | Detail                                                                                                                                                                       | Standard          |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Thermal Shock            | 100 cycles of air-air thermal shock from $-40^{\circ}\text{C}$ to $+105^{\circ}\text{C}$ with 15 minute soaks.                                                               | $\pm 3\text{ dB}$ |
| High Temperature Storage | $+105^{\circ}\text{C}$ environment for 240 hours.                                                                                                                            | $\pm 3\text{ dB}$ |
| Low Temperature Storage  | $-40^{\circ}\text{C}$ environment for 240 hours.                                                                                                                             | $\pm 3\text{ dB}$ |
| High Temperature Test    | $+105^{\circ}\text{C}$ environment while under bias for 240 hours.                                                                                                           | $\pm 3\text{ dB}$ |
| Low Temperature Test     | $-40^{\circ}\text{C}$ environment while under bias for 240 hours.                                                                                                            | $\pm 3\text{ dB}$ |
| Humidity Test            | $+85^{\circ}\text{C}/85\%\text{ R.H.}$ environment while under bias for 240 hours.                                                                                           | $\pm 3\text{ dB}$ |
| Vibration Test           | 16 minutes in each X, Y, Z axis from 20 to 2,000 Hz with peak acceleration of 20G.                                                                                           | $\pm 3\text{ dB}$ |
| Drop Test                | 1.5-meter height onto a concrete surface each time at three directions in state of packaging.                                                                                | $\pm 3\text{ dB}$ |
| Reflow Test              | 5 reflow cycles with peak temperature of $+260^{\circ}\text{C}$ .                                                                                                            | $\pm 3\text{ dB}$ |
| ESD Test                 | Under $C=150\text{pF}$ , $R=330\text{ohm}$ .<br>Tested to $\pm 8\text{kV}$ contact to the case and tested to $\pm 2\text{kV}$ contact to I/O terminals. 10 times. Grounding. | $\pm 3\text{ dB}$ |

## Specification Revisions

| Revision | Description                        | Approved | Date       |
|----------|------------------------------------|----------|------------|
| 1.0      | New Version Released               | Hary     | 30/06/2023 |
| 2.0      | Update Operating temperature range | Hary     | 13/12/2024 |
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