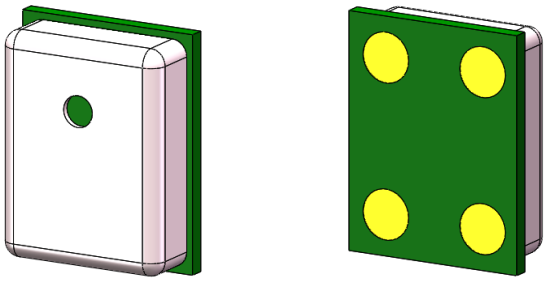
# Specification of MEMS Microphone

**RoHS Compliance & Halogen Free**

**LinkMems P/N:** LMA3729T421-OA1



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

**Customer Approval**

**Approved by:**_____

IATF16949 ISO9001

# Contents

# MEMS Microphone

## 1. Introduction

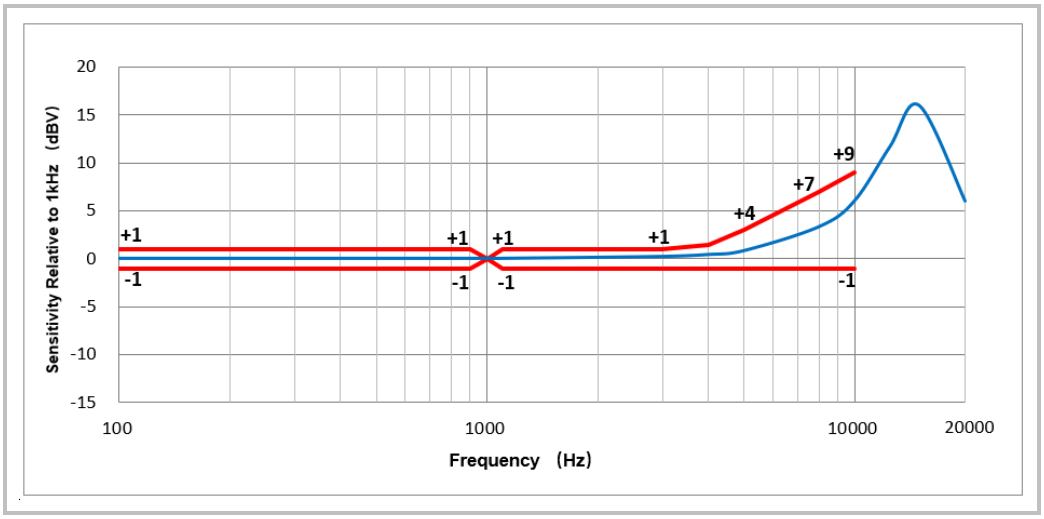
The LMA3729T MEMS Microphones are integrated with specialized Pre-amplification ASIC to provide high sensitivity, high SNR output from a capacitive audio sensor. It's packaged for surface mounting and high temperature reflow assembly.

## 2. Electrical Characteristics

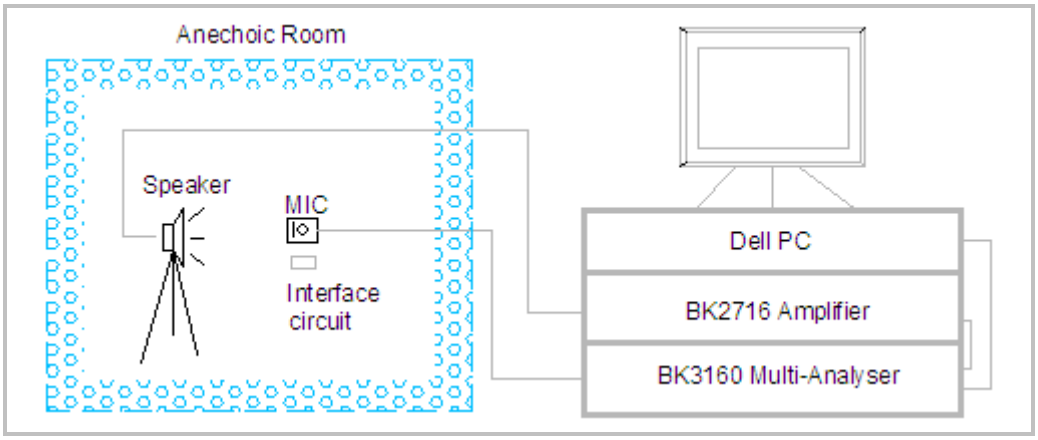
Test Condition: $V_{DD}$=2.0V, 23+/-2℃, 55+/-10%R.H., unless otherwise specified.

| Specification | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Directivity | | | Omni-directional | | | |
| Sensitivity Range | S | 94dB SPL @1kHz | -43 | -42 | -41 | dB |
| Output Impedance | $Z_{out}$ | 94dB SPL @1kHz | | | 300 | Ω |
| Current Consumption | I | | | 120 | | μA |
| S/N Ratio | SNR | 94dB SPL @1kHz A-Weighted | | 58 | | dB(A) |
| Operating Voltage | $V_{DD}$ | | 1.6 | 2.0 | 3.6 | V |
| Total Harmonic Distortion | THD | 94dB SPL @1kHz | | 0.1 | 0.5 | % |
| Sensitivity Drop | △S | 94dB SPL @1kHz $V_{DD}$=3.6V--1.6V | | | 0.5 | dB |
| Acoustic Overload Point | AOP | 10% THD @1kHz | | 130 | | dBSPL |
| Power Supply Rejection | PSR | 100mVpp Square wave@217Hz, A-weighted | | -100 | | dB |

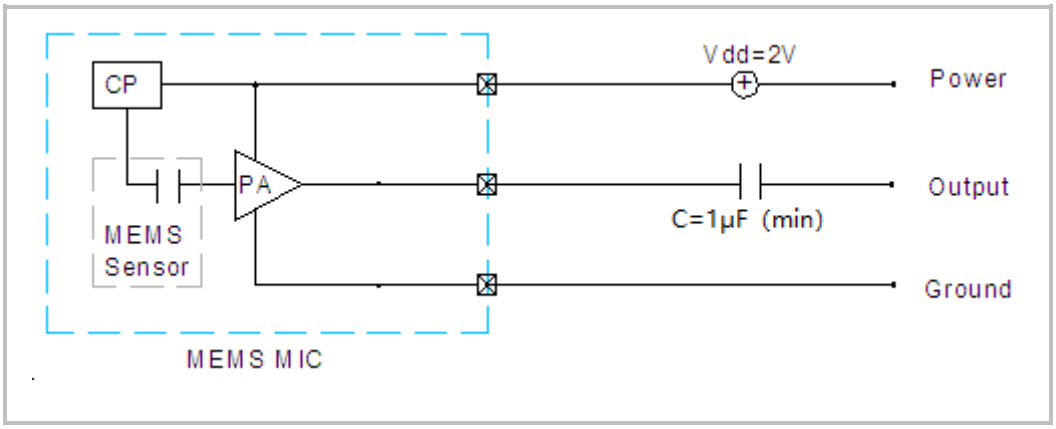
## 3. Frequency Response Curve




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



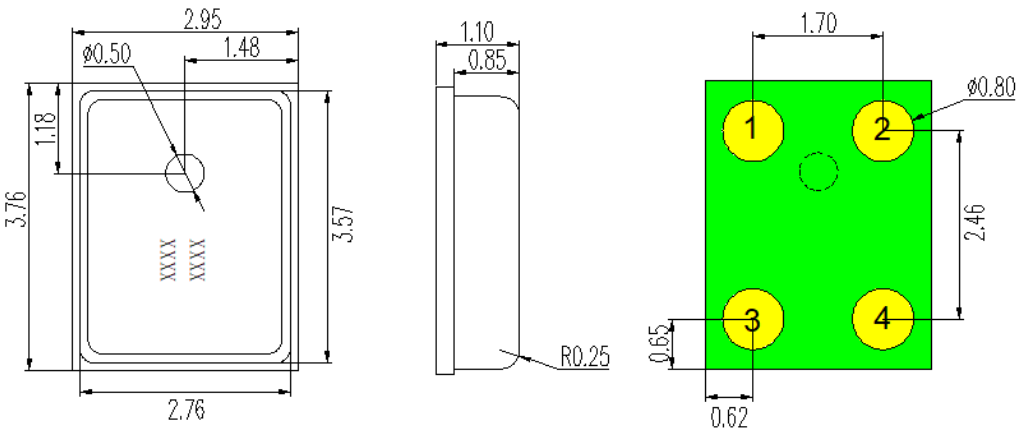

## 5. Measurement Circuit



# 6. Mechanical Characteristics

## 6.1 Weight： Less than 0.03g

## 6.2 Appearance Drawing(unit: mm)




Top View Side View Bottom View

| Laser Mark | Description |
|---|---|
| XXXX<br>XXXX | Date Code |

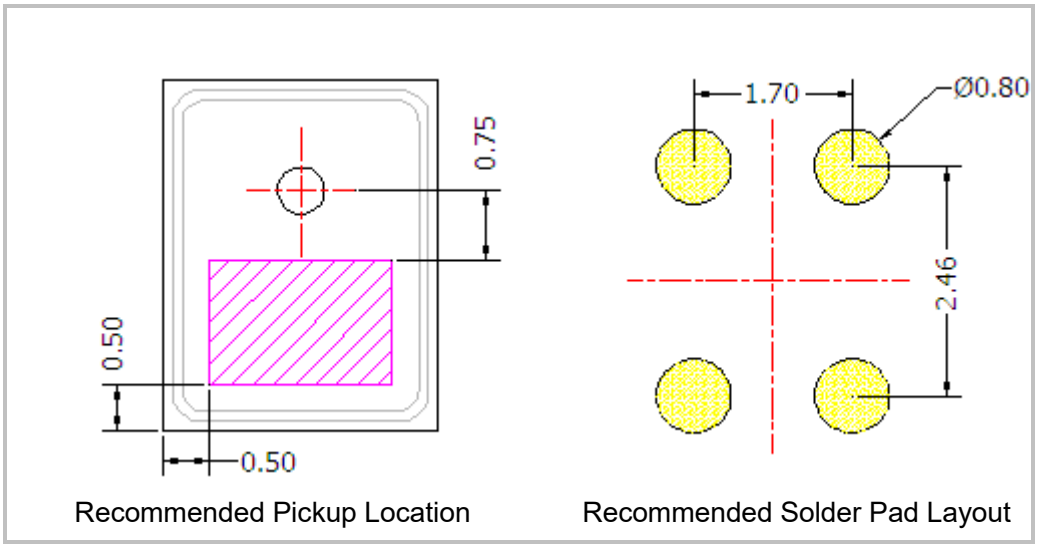
| Item | Dimension | Tolerance(+/-) | Units |
|---|---|---|---|
| Length(L) | 3.76 | 0.10 | mm |
| Width(W) | 2.95 | 0.10 | mm |
| Height(H) | 1.10 | 0.10 | mm |
| Acoustic Port(AP) | Ø0.5 | 0.05 | mm |

| Pin # | Pin Name | Type | Description |
|---|---|---|---|
| 1 | VDD | Power | Power Supply |
| 2 | OUT | Signal | Output Signal |
| 3 | GND | Ground | Ground |
| 4 | GND | Ground | Ground |

Notes:
All dimensions are in millimeter (mm).
Tolerance±0.1mm unless otherwise specified.

# 7. Application

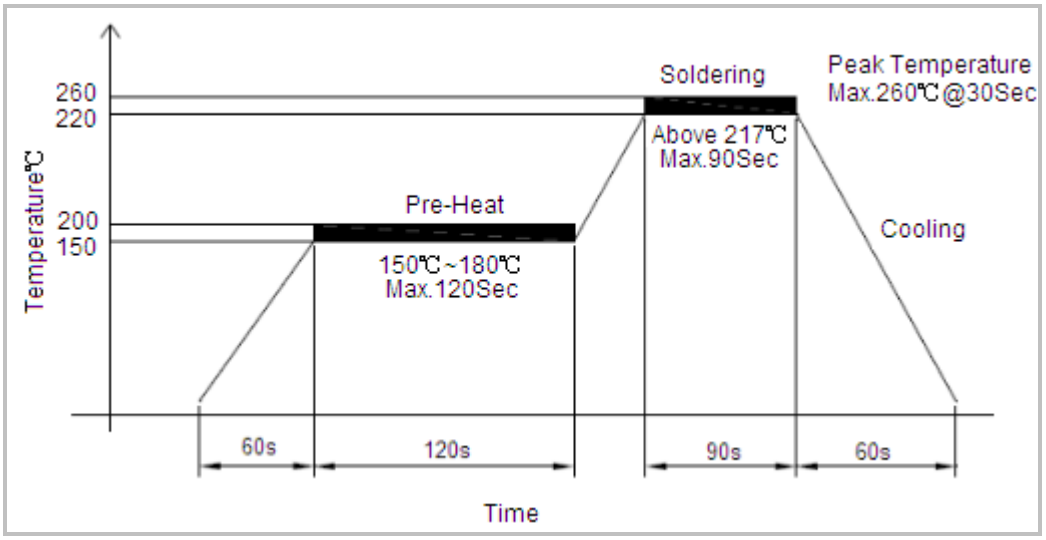
## 7.1 Pickup Tool Pick Location& PCB Solder Pad Layout




Recommended Pickup Location　　Recommended Solder Pad Layout

## 7.2 Recommended Reflow Process Condition

Recommend reflow profile, solder reflow <=260℃ (for 30s Max of peak temperature).




Important Notes

In order to minimize device damage:

1. Do not wash or clean the boards after the reflow process.
2. Do not apply the airflow which pressure over 0.3MPa blow into the port hole within a distance of less than 5 cm.
3. Do not exposed to ultrasonic processing or cleaning.
4. Do not pull a vacuum over port hole of the microphone.

## 7.3 Storage Condition

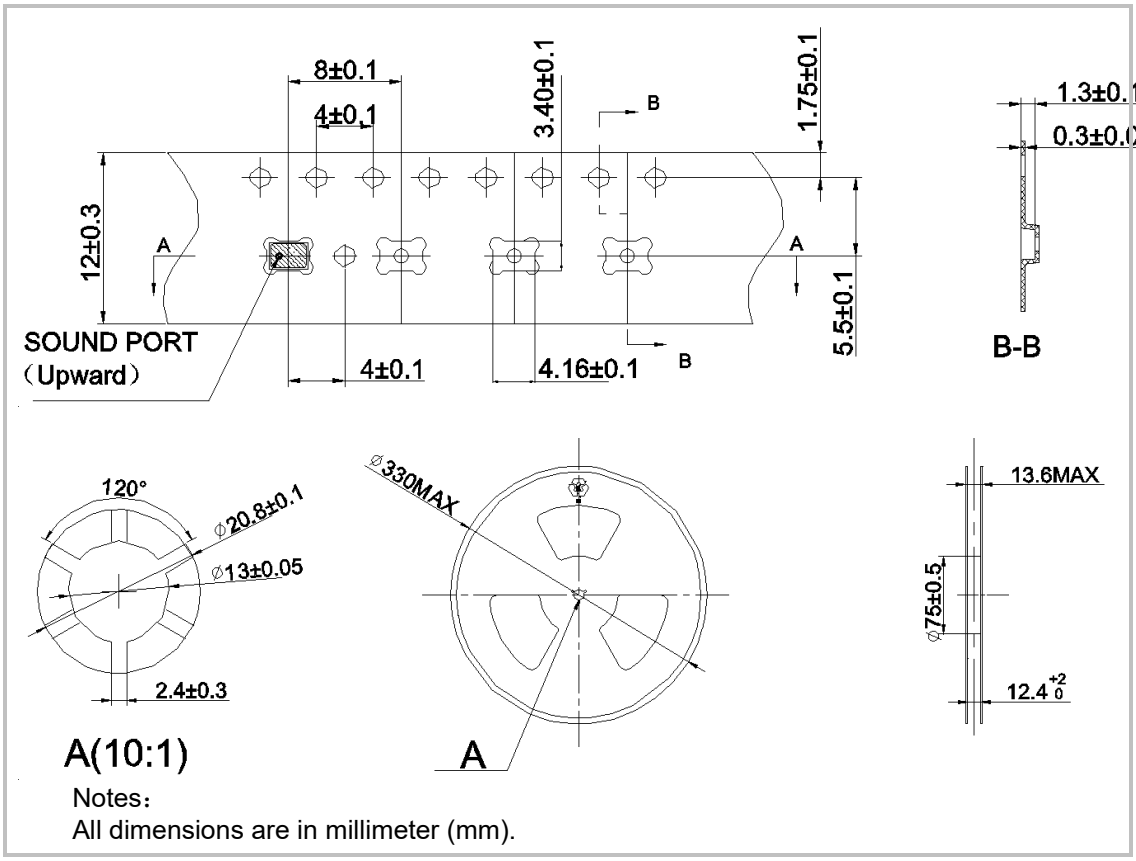
7.3.1 Storage temperature range:-40～+100℃,and humidity is less than 75%.

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

7.3.3 MSL (moisture sensitivity Level) is Class 1.

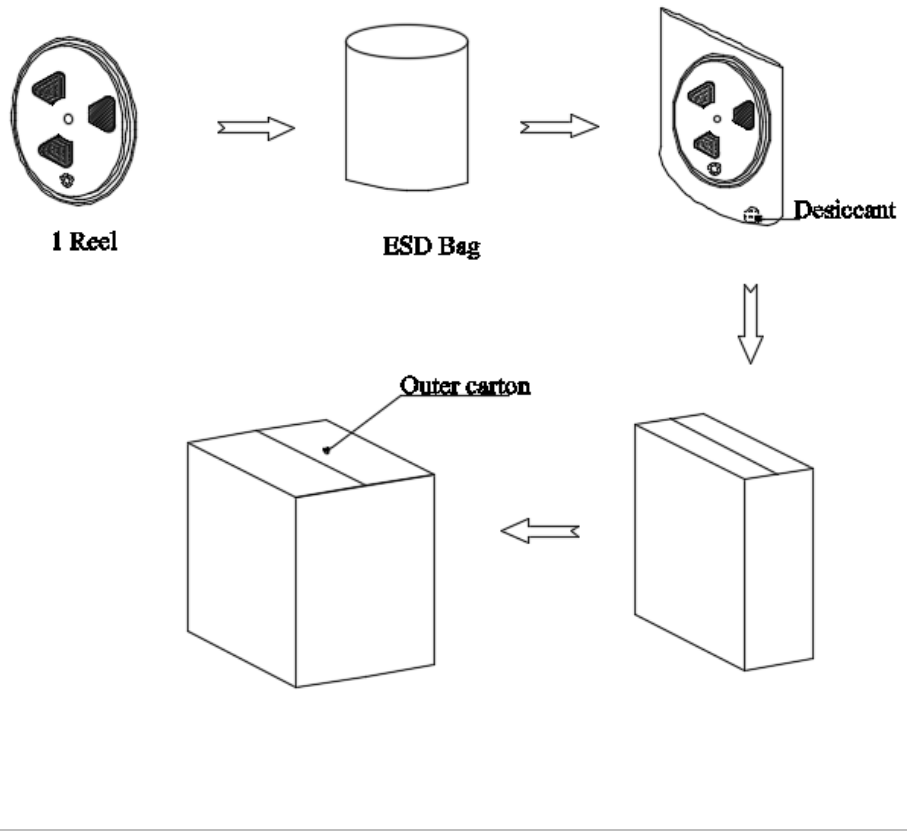
# 8. Packaging

## 8.1 Tape &Reel Specification




Notes：
All dimensions are in millimeter (mm).

## 8.2 Packaging Information




| Packaging Quantity： |
| --- |
| 1 Reel=5000pcs |
| 1 Outer Carton =50000pcs |

## 9. Reliability Test

The samples should be placed in the room with 23+/-2℃, 55+/-10%R.H. for 2 hours at least before final measurement, unless otherwise specified.

| Item | Detail | Standard |
|---|---|---|
| Simulated Reflow (Without Solder) | Samples for qualification testing require 3 times 260±5℃ reflow solder profiles. 2 hours of setting time is required between each reflow profile test. | ±3 dB |
| Static Humidity | Precondition at +25℃ for 1 hour. Then expose to +85℃ with 85% relative humidity for 240 hours. | ±3 dB |
| Temperature Shock | Each cycle shall consist of 30 minutes at -40℃, 30 minutes at +125℃ with 5 minutes transition time. Test duration is for 30 cycles, starting from cold to hot temperature. | ±3 dB |
| ESD Sensitivity | According to MIL-STD-883G, Method 3015.7 for Human Body Model.<br>Discharge Position: I/O pins<br>Charge Voltage: ±2000V<br>Discharge Network: 100pF & 1500Ω | ±3 dB |
| Random Vibrations | Vibrate randomly along three perpendicular directions for 30 minutes in each direction, 4 cycles from 20Hz~2000Hz with a peak acceleration 20g. | ±3 dB |
| Mechanical Shock | Subject samples to half sine shock pulses (3000g±15% for 0.3ms) in each direction, totally 18 shocks. | ±3 dB |
| High temperature Storage | Microphone unit must maintain sensitivity after storage at +105℃ for 240 hours. | ±3 dB |
| Low temperature Storage | Microphone unit must maintain sensitivity after storage at –40℃ for 240 hours. | ±3 dB |
| Drop Test | The test was repeated in six directions for 3 times, Dropped from 1.5m height on to a steel surface, total 18 times and inspected for mechanical damage. | ±3 dB |

# Specification Revisions

| Revision | Description | Approved | Date |
|---|---|---|---|
| 1.3 | New Version Released | Hary | 17/05/2024 |
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