

Specification of Microphone

RoHS Compliance & Halogen Free

LinkMems P/N: LOE4013TNN383UT-OAM02

Designed by	Checked by	Approved by
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Customer Approval

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Electret Condenser Microphone

1. Introduction

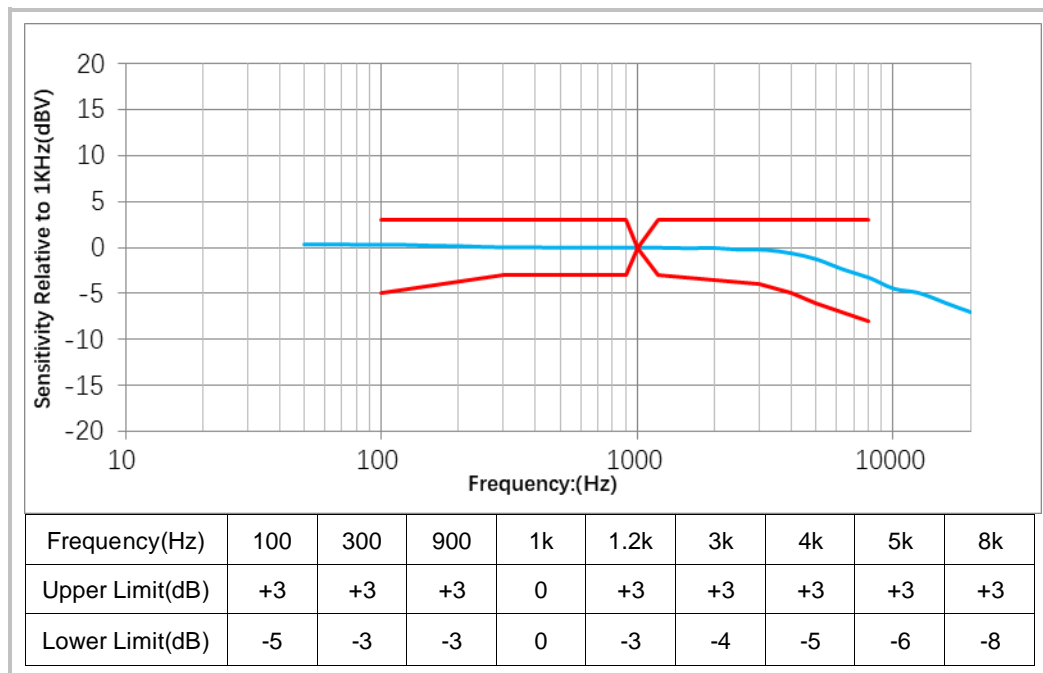
This document is the technical specification of electret condenser (ECM) Omni-Directional Microphone.

2. Electrical Characteristics

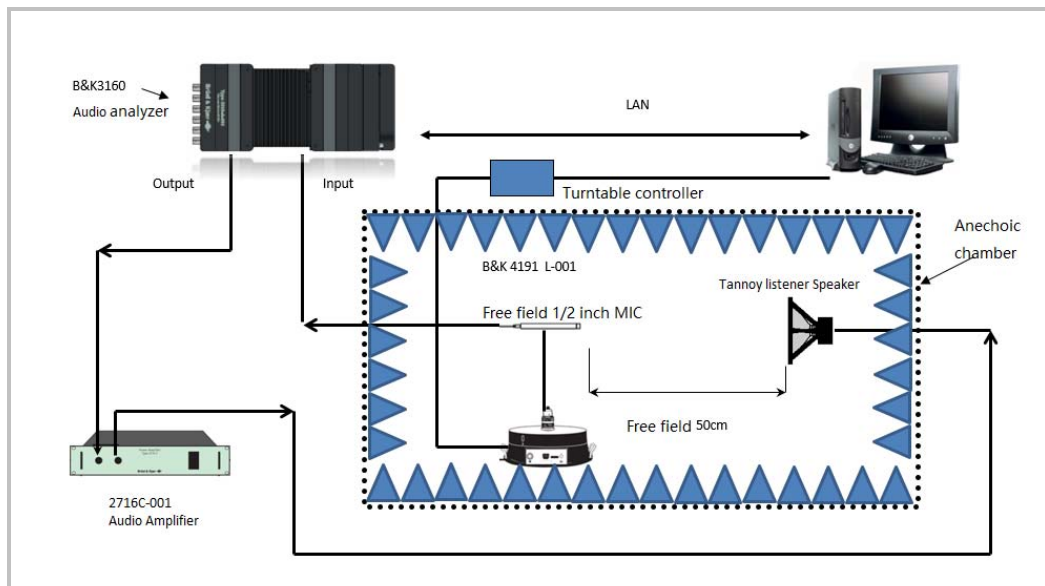
Test Condition: $V_{DD}=2.0V$, $R_L=2.2\text{ k}\Omega$, $23\pm 2^\circ\text{C}$, $55\pm 20\%\text{R.H.}$, unless otherwise specified.

Specification	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Directivity			Omni-directional			
Sensitivity Range	S	94dB SPL @1kHz	-41	-38	-35	dB
Output Impedance	Z_{out}	94dB SPL @1kHz			2.2	$\text{k}\Omega$
Current Consumption	I	$V_S=2.0V$ $R_L=2.2\text{ k}\Omega$			500	μA
S/N Ratio	SNR	94dB SPL @1kHz A-Weighted	60			dB(A)
Operating Voltage	V_S		1.5	2.0	10.0	V
Sensitivity vs. Voltage	ΔS	94dB SPL @1kHz $V_S=2.0V$ to $1.5V$			-3	dB

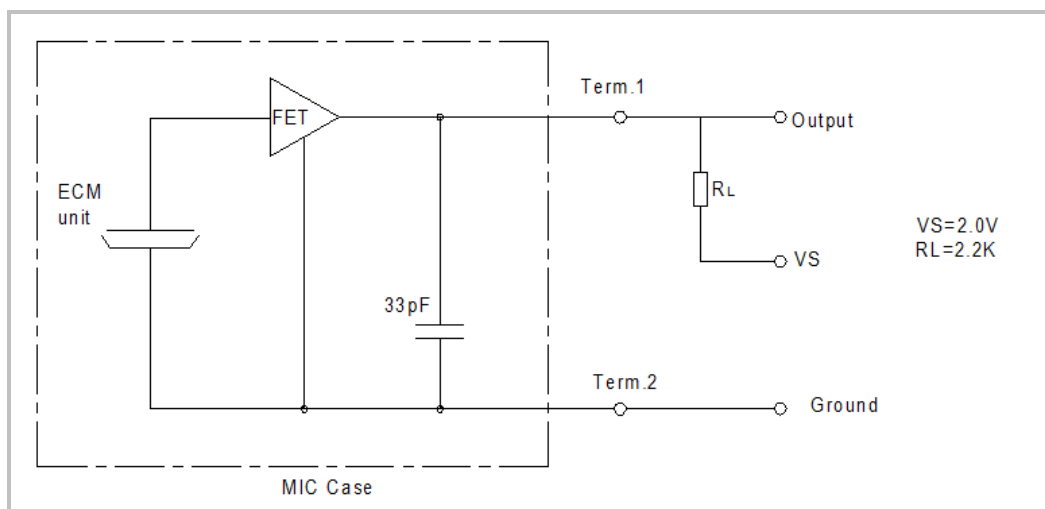
3. Frequency Response Curve



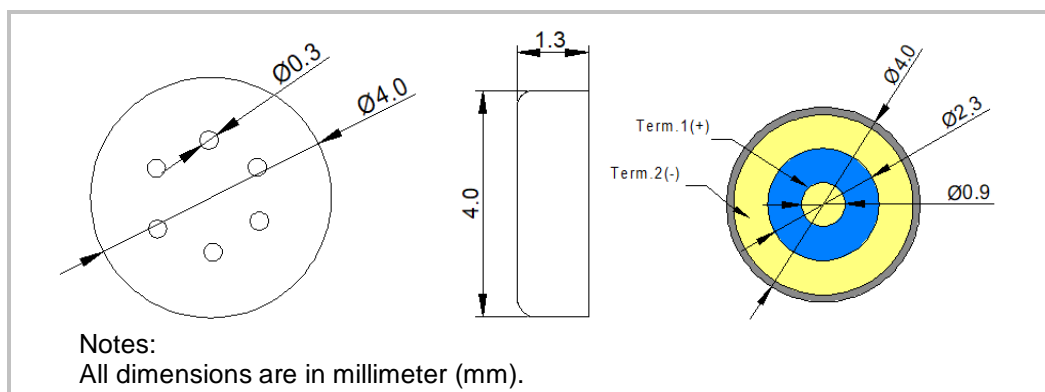
4. Test Setup (Sensitivity Test in Anechoic Room)



5. Measurement Circuit

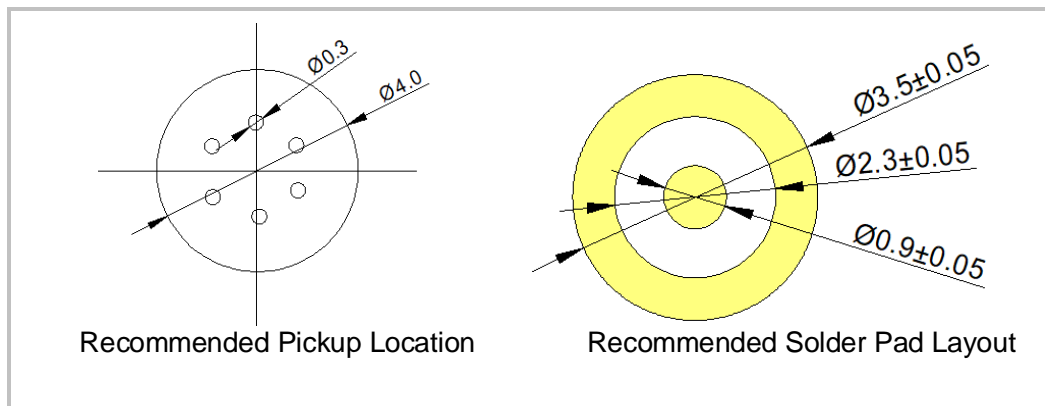


6. Mechanical Characteristics

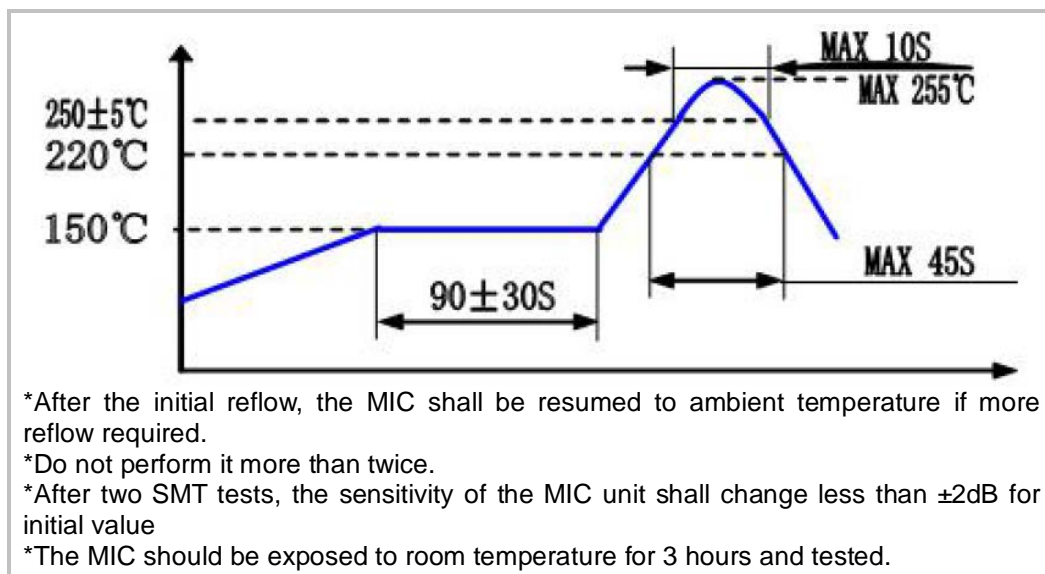


7. Application

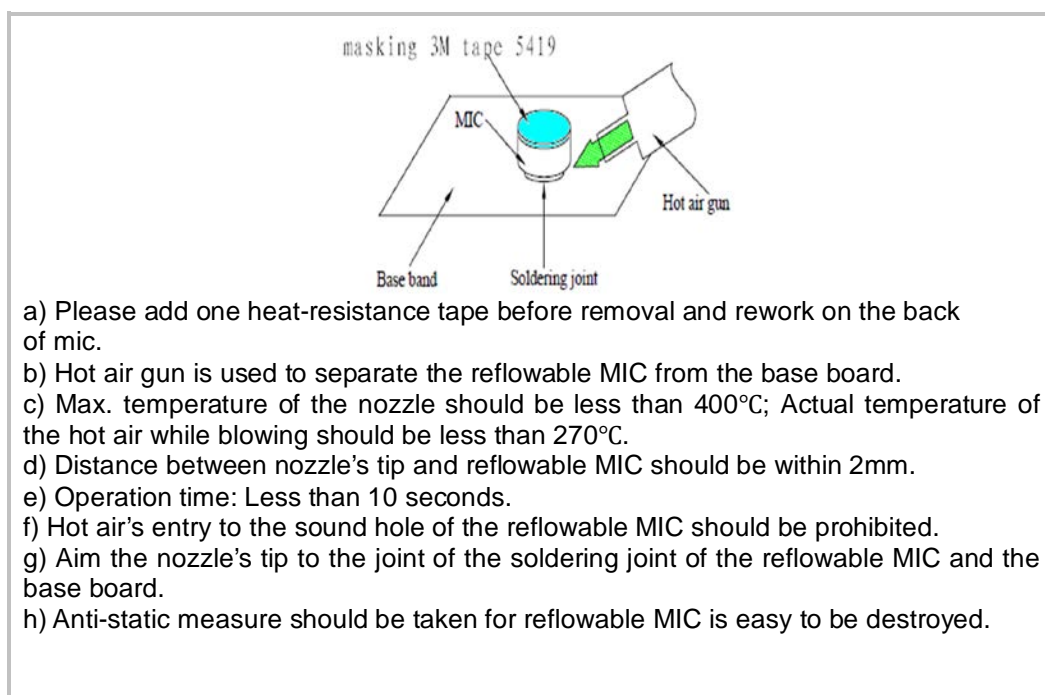
7.1 Pick Location & PCB Solder Pad Layout



7.2 Temperature restrictions during the reflow process



7.3 Hot air gun using instruction



8. Special Cautions

8.1 Environmental Condition

8.1.1 Storage Condition: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$.

8.1.2 Operating Condition: $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$.

8.1.3 Arbitration Condition: $20 \pm 1^{\circ}\text{C}$, R.H.63~67%, Air pressure:86~106Kpa.

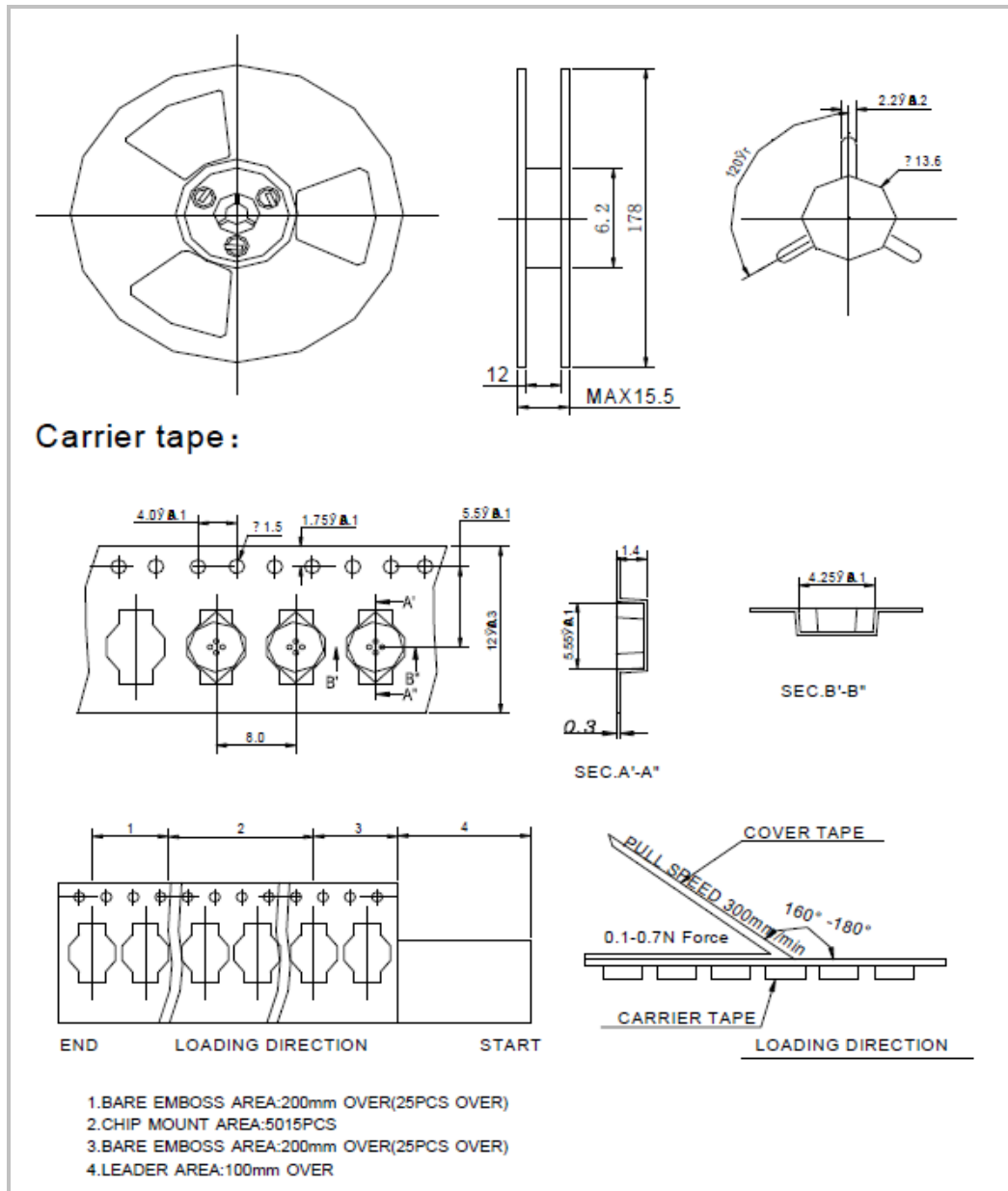
8.2 Storage Condition

8.2.1 Keep ECM in warehouse with humidity less than 75%R.H. and without sudden temperature change, acid air, any other harmful air or strong magnetic field.

8.2.2 Please protect products against moist, shock, sunburn and pressure.

8.2.3 MSL Please take proper measures against ESD in the process. Please use the shipment package for long-term storage.

9. Packaging Information



10. Reliability Test

The samples should be placed in the room with $20 \pm 2^{\circ}\text{C}$, $65 \pm 5\%\text{R.H.}$ for 3 hours at least before final measurement, unless otherwise specified.

Item	Detail	Standard
High temperature Test	After exposure at $+85^{\circ}\text{C}$ for 200 hours.	$\pm 3 \text{ dB}$
Low temperature Test	After exposure at -40°C for 200 hours.	$\pm 3 \text{ dB}$
Humidity & Heat Test	After exposure at $+40^{\circ}\text{C}$ and 93% relative humidity for 200 hours.	$\pm 3 \text{ dB}$
Thermal Shock	After exposure at -25°C for 30 minutes, at 20°C for 10 minutes, at $+70^{\circ}\text{C}$ for 30 minutes, at 20°C for 10 minutes, 32 cycles.	$\pm 3 \text{ dB}$
Vibration Test	To be no interference in operation after vibrations, 10-55Hz for 2 hours at three axes with 2mm-high amplitude	$\pm 3 \text{ dB}$
Drop Test	The microphone without packaged must be subjected to each 3 drops from the height of 100cm to 1cm thick ceramic tile.	$\pm 3 \text{ dB}$
Soldering Heat Shock	After soldering heat shock temperature $300 \pm 5^{\circ}\text{C}$ for 3 ± 1 seconds.	$\pm 3 \text{ dB}$

Specification Revisions

Revision	Description	Approved	Date
1.1	New Version Released	Hary	30/05/2025
2.1	Update the circuit diagram	Hary	11/06/2025