

Part name	MEMS Micphones	Date	2026-03-09
Part number	MIC-EMM3125-423	Edition	V1
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1 Scope

This specification is applicable to AI voice-controlled microphones.

2 AI voice-controlled microphone models

MIC-EMM3125-423

3 Electrical characteristics

Test Temperature: 15°C ~ 35°C.

Test Room Humidity: 45% ~ 85 %R.H.

NO	Parameter	Condition	Limits			Unit
			Min	Nom	Max	
1	Directivity	Omnidirectional				
2	Sensitivity	1kHz(0dB=1V/Pa)	-39	-36	-33	dB
3	Output impedance	f=1kHz			2.2	kΩ
4	Current Consumption	VCC=2.0V, RL =2.2kΩ			0.5	mA
5	Operating Voltage		2.0		5.0	V
6	Total Harmonic Distortion	f=1kHz, Pin=94dB			1	%
7	S/N Ratio	f=1kHz, Pin=1Pa (A-Weighted curve)		65		dB
8	Acoustical Overload Point	<10% THD @1kHz			115	dB SPL

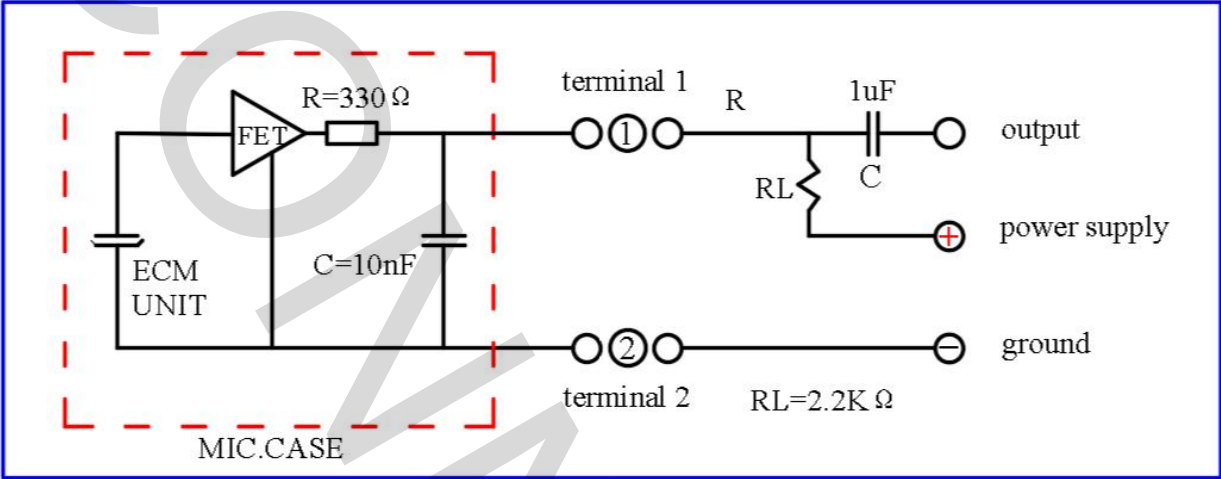
Temperature conditions

Storage temperature -10°C ~ 60°C With 40% ~ 85% R.H. humidity

Operating temperature -10°C ~ 60°C With 40% ~ 85% R.H. humidity

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4 Measurement circuit



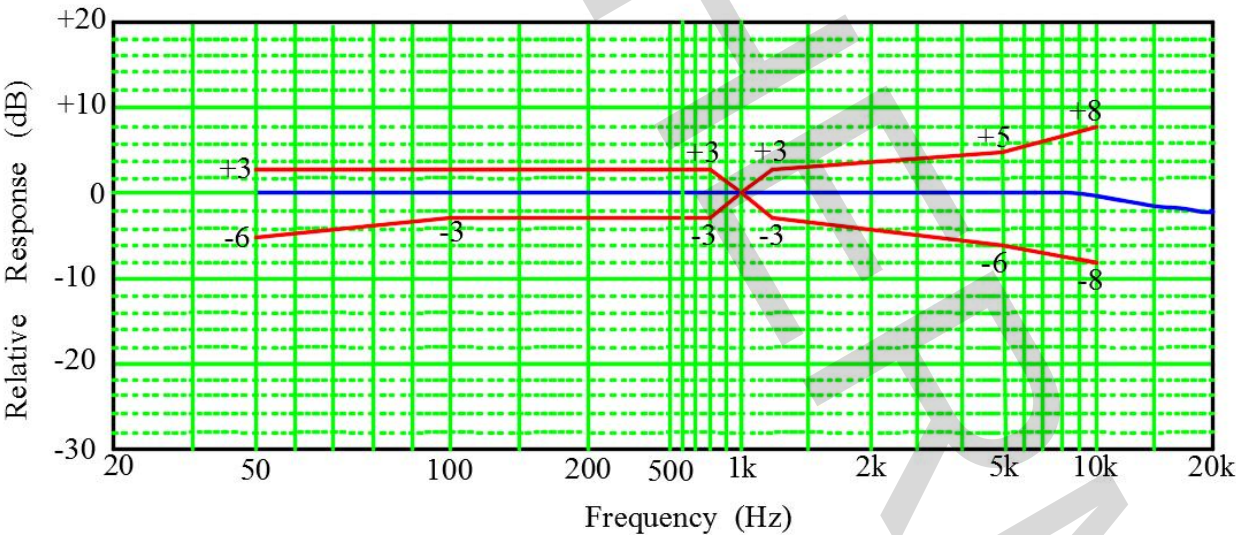
5 Typical frequency response curve

Test temperature: 15°C ~ 35 °C.

Acoustic stimulus: 1Pa (94dB SPL at 1kHz) at 50cm from the loud-speaker.

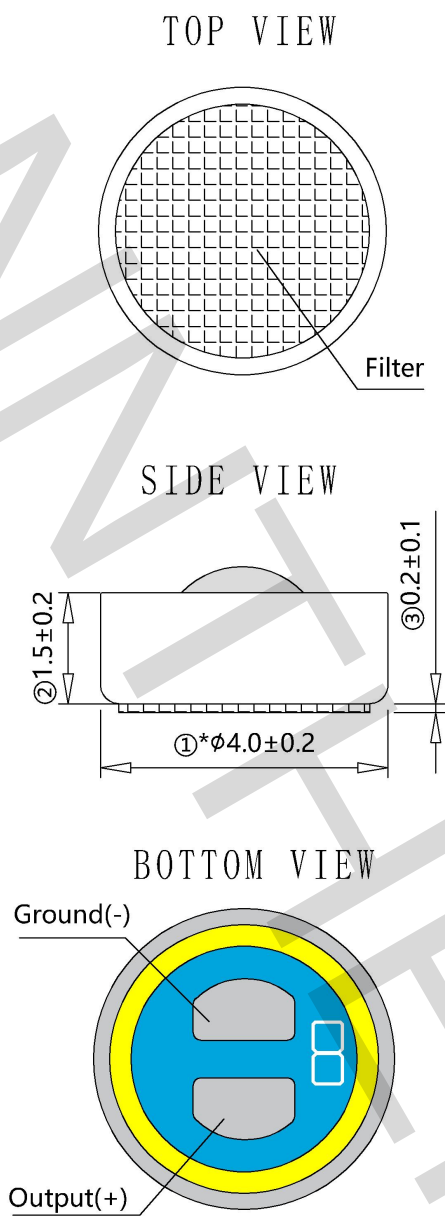
The loud-speaker must be calibrated to make a flat frequency response curve input signal.

Placement Location: The frequency response of microphone unit measured at 50cm from the loud-speaker.



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6 Microphone outline dimensions

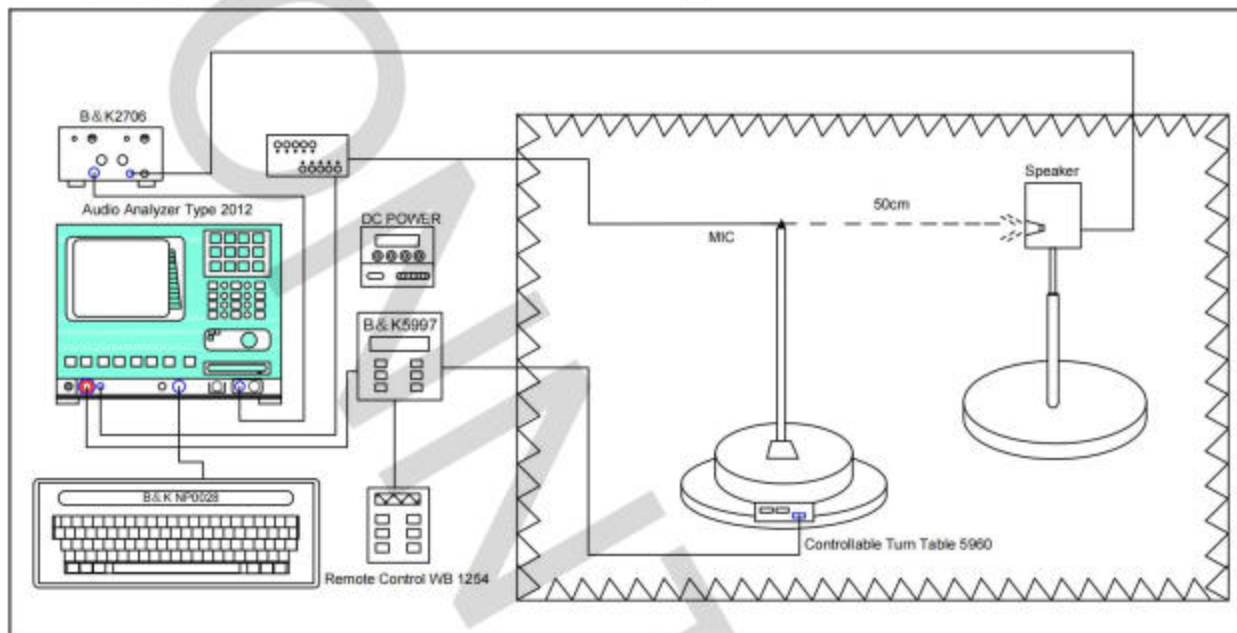


Note:
 All dimensions are in millimeter(mm).
 Tolerance: +/-0.1mm unless otherwise specified.
 The dimensions marked with * are the key controlled dimensions.

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7 Measurement system

The specification for the far-field measurement system conforms to IEC60268-4.



8 Reliability test

Sensitivity difference shall be within $\pm 3\text{dB}$ (at 1kHz) between before and after the experiment, Wait for 2 hours to test after completing experiment.

Ambient temperature: $15^{\circ}\text{C} \sim 35^{\circ}\text{C}$.

8.1 Drop Test

Height: 1m.

Drop Face: 2cm hardwood board.

Duration: 3 times in each of three directions in state of packing.

8.2 Vibration Test

Frequency range: $55\text{Hz} \pm 5\text{Hz}$.

Duration: 30minutes .

8.3 High Temperature Test

Temperature: 80°C .

Duration: 200 hours.

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8.4 Low Temperature Test

Temperature: -40°C.

Duration: 200 hours.

8.5 Temperature Cycle Test

Low temperature: -25±2°C X 30min ->

Normal temperature: 20°C±2°C X 10min ->

High temperature: 70°C±2°C X 30min ->

Normal temperature: 20°C±2°C X 10min)

No. of repetitions: 5

8.6 Humidity Test

Temperature: 70°C.

Humidity: 90~95% R.H.

Duration: 200 hours.

8.7 Soldering Heat Shock Test

350±10°C within 3 second Max for each terminal.

8.8 Electrostatic discharge

Tested to IEC61000-4-2 level 3:

a) Contact discharge

The microphone shall operate normally after 10 discharges to the output. The charge voltage is ±6000VDC and the discharge network is 150pF and 330Ω.

b) Air discharge

The microphone shall operate normally after 10 discharges to the sound hole. The charge voltage is ±8000VDC and the discharge network is 150pF and 330Ω.

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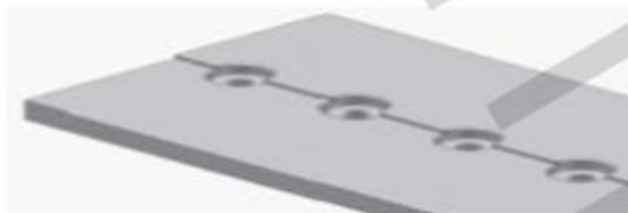
9 Regarding the soldering operation

9.1 Soldering Condition

Every ECM contains a FET with microphone body. This FET is easy to damageable from excessive heat and electrical shock. Proper attention for the soldering work is required same as followings.

Recommend to use high temperature soldering iron and apply $350\pm 10^{\circ}\text{C}$ temperature range, Soldering should be accomplished within 1-3 seconds at each terminal so as not to be overheated. Do not make a cavity at the surface on the PCB and wiring board (Opened cavity will influence to the sensitivity of ECM MIC). Optimal design for heat sink pad is same as below.

9.2 Soldering fixture



ECM eject hole.

Solder pad jig hole size: microphone diameter + 0.05mm.

Solder pad jig hole height: microphone height -0.2mm.

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10 Precautions for microphone installation

10.1 The thickness of each microphone PCB board is about 0.3mm, and there are capacitors, resistors, FET and other components mounted inside the PCBA. If the PCB solder joint surface is subjected to uneven external force or metal material pressure when installing the microphone, there is a risk of PCB board cracking and component cracking. Therefore, the installation fixture, force, and angle should be used in a standardized manner.

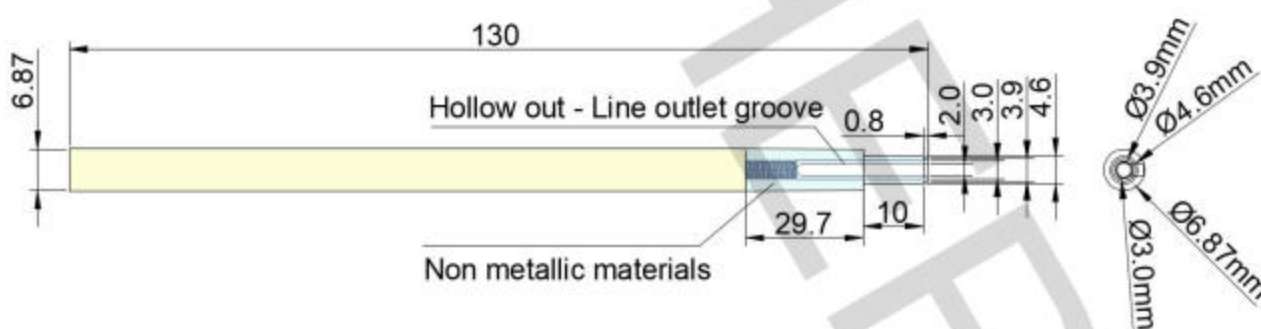
10.2 It is recommended to use a dedicated fixture for installation, with a hollow shape in the middle and retaining the outlet slot.

10.3 Align the hollow part in the middle with one end of the microphone lead, and apply pressure only around the outer shell. the applied pressure should be uniform and vertical.

10.4 The specific contact surface material can be changed by the customer according to actual application. do not use metal materials.

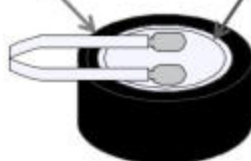
10.5 As shown in the following figure:

Unit: mm



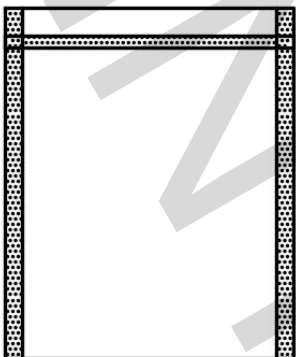
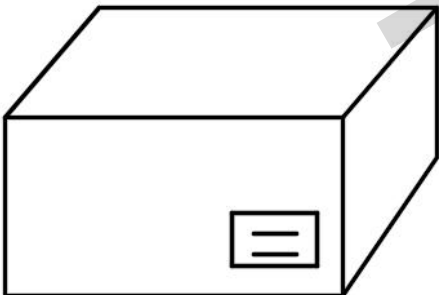
PCB solder joint surface lead end.

Microphone casing.



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11 The graphic of packing method as follows

	Drawing(Unit: mm)	Packing (PCS)	Qty (PCS)	Material
Packing		1*100	100	PE transparent self sealing bag
Middle bag		30*100	3000	Anti static bag
Carton		10*3000	30000	Paper

Special note:

The above packaging method is universal packaging. If the actual shipment order quantity is less than the full box quantity or there is a slight surplus, the carton size and product packaging quantity will be adjusted. we won't notice again, if you have any questions, please contact our marketing department.