SPECIFICATION

Electret Condenser Microphone

RoHS Compliance

Product : Omni directional ECM Φ9.7mmx4.5mm

GETTOP P/N: BOM9745CP4.5-V403D

Version : V4.0

Designed by	Checked by	Approved by	Released Date
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CUSTOMER APPROVAL

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Revision History

Date	Version	Description	Controller
03-04-2022	V3.0	Initial Release	Sophia Liu
10-20-2023	V3.1	Update the operating voltage range	Sophia Liu
08-02-2025	V4.0	Added company contact information	Frank Liu

Contents

1. Scope

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

2. Product Type

BOM9745CP4.5-V403D

3. Electro-Acoustic Specifications

Table 3-1 Electrical Specifications

（Test Condition: +23℃±2,63%～67% RH, 86~106Kpa, Vs=5.0V, unless specified differently）

No.	Parameter	Symbol	Condition	Limits			Unit
				Min	Nom.	Max	
3.1	Sensitivity	S	f=1kHz, Pin=1Pa, 0dB=1V/Pa	-43	-40	-37	dB
3.2	Directivity			Omni-directional			
3.3	Output Impedance	ZOUT	f=1kHz			1.5	kΩ
3.4	Current Consumption	IDSS	RL=1.5kΩ, Vs=5.0V			500	μA
3.5	S/N Ratio	S/N	f=1kHz, Pin=1Pa, (A-Weighted)		68		dB
3.6	Operating Voltage	Vmic		1.0		5	V
3.7	Sensitivity vs. Voltage	ΔS	Vs= 5.0V to 4.5V			3	dB
3.8	Total Harmonic Distortion	THD	94dB SPL at 1kHz			1	%
			115dB SPL at 1kHz			5	

Note：Considering tester and testing difference between each other, sensitivity 0.5 dB out of specification will be acceptable by customer for an acceptance.

4. Typical Frequency Response

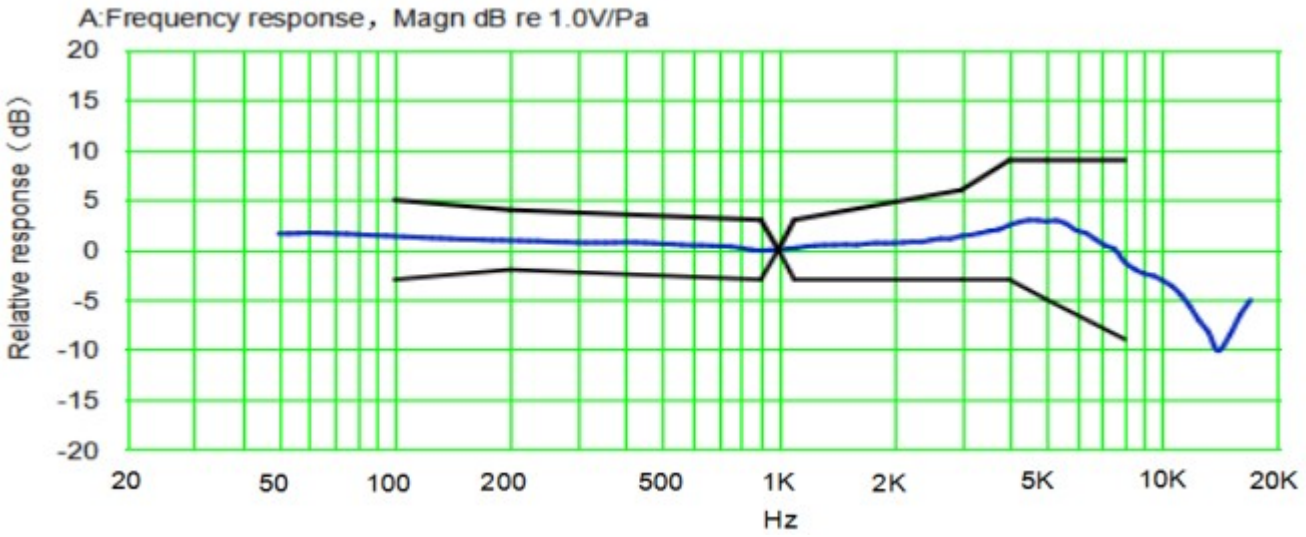


Fig. 4-1 Typical Frequency Response

Table 4-1 Frequency Response Limit Template

Frequency [Hz]	100	200	900	1K	1.1K	3K	4K	5K	8K
Upper limit [dB]	5	4	3	0	3	6	9	9	9
Frequency [Hz]	100	200	900	1K	1.1K	3K	4K	5K	8K
Lower limit [dB]	-3	-2	-3	0	-3	-3	-3	-5	-9

5. Schematic Diagram

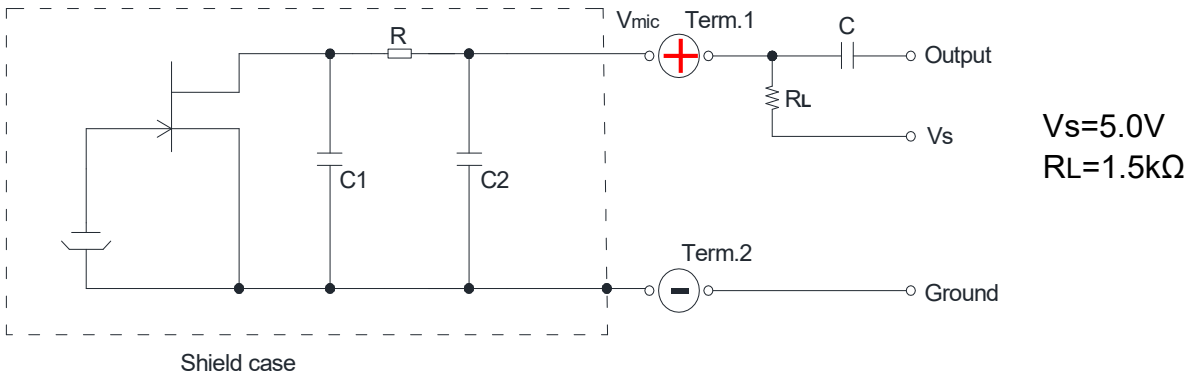


Fig. 5-1 Schematic Diagram

6. Measurement System Setup

Test signal: Sinusoid, Sweep,

Frequency Range: 50Hz-17KHz

Step: 1/12 octave

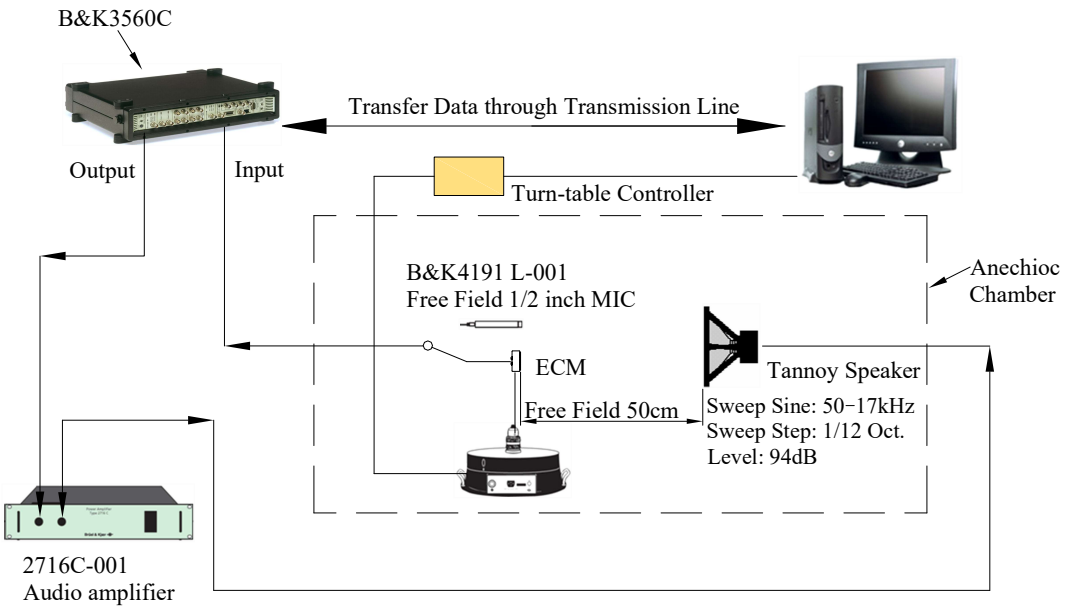
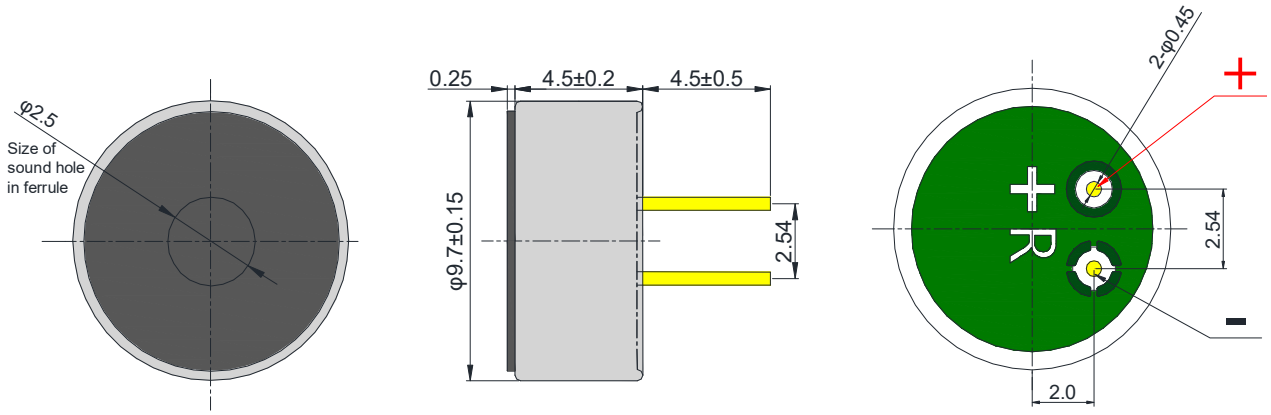


Fig. 6-1 Measurement System Setup

7. Mechanical Specification



Unmarked Tolerance: ± 0.1 (mm)

Fig. 7-1 Microphone Capsule

8. Reliability Tests

After conducting any of the following tests, the sensitivity change of DUT shall be less than ±3dB from its initial value and shall keep its initial operation and appearance.

The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 45%～75%

8.1 Hi-Temperature Test

Temperature: +85℃
Duration: 240 hours

8.2 Low-Temperature Test

Temperature: -40℃
Duration: 240 hours

8.3 Humidity & Heat Test

Temperature: +60℃
Humidity: 93% RH
Duration: 240 hours

8.4 Thermal Shocking Test

Temperature & duration: -40℃, 30 minutes
Temperature & duration: +80℃, 30 minutes,
Cycles: 32 cycles

8.5 Vibration Test

Frequency: 10-55Hz
Amplitude: 1.52mm
Direction: 2 directions
Duration: 2 hours

8.6 Drop Test

Drop the microphones to the floor without package
Height: 1.5m
Reference surface: slippery marble floor
Duration: 3 times

8.7 PIN Firmness Test

Pull Strength: 10N
Strength Direction: Vertical
Duration: 1minutes

8.8 ESD

The tests are performed acc. to IEC61000-4-2 level 3
a. Contact discharge
Discharge position: Output of microphone
Charge voltage: ±6000VDC
Discharge network: 150pF & 330Ω
b. Air discharge
Discharge position: Sound hole
Charge voltage: ±8000VDC
Discharge network: 150pF & 330Ω

9. Packaging

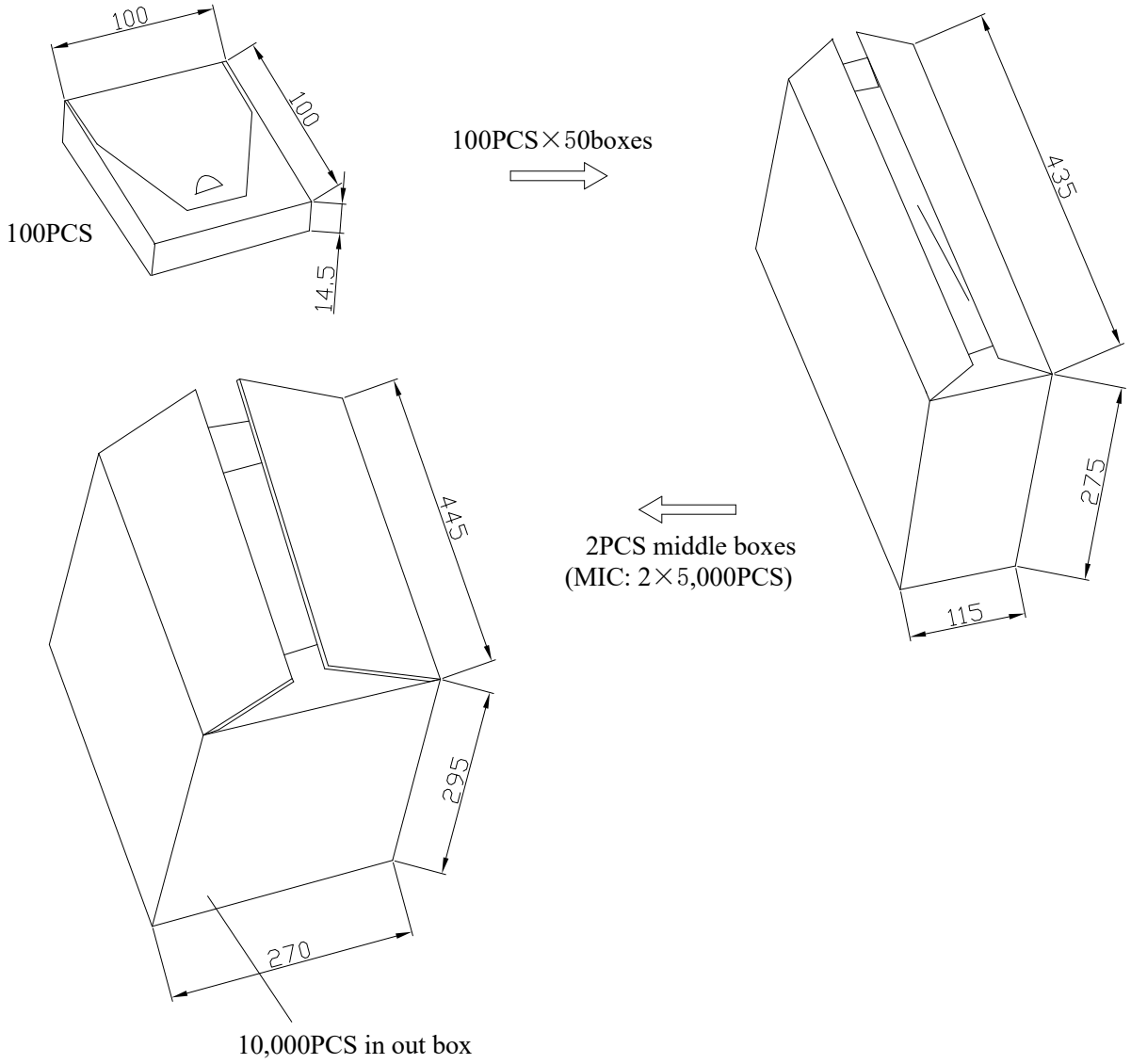


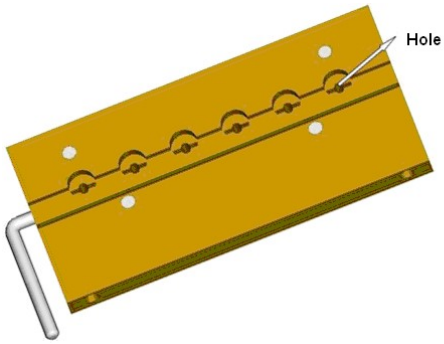
Fig. 9-1 Packaging

10. Usage Suggestions

10.1 Soldering Suggestions

All the soldering process should be completed in a metallic fixture. Based on a 90-watt soldering iron, the temperature of the soldering iron suggest be limited to 360℃± 10℃. Soldering time on each pad should not exceed 1 second. If other welding method is used, to evaluate its influence on microphone is necessary.

Operators, the solder fixture and the soldering iron must be statically grounded under each soldering process.



Hole size: MIC Diameter + 0.05mm
Hole height: MIC Height - 0.2mm

Fig. 10-1 Soldering Fixture

10.2 Others

Avoid volatilization of harmful substance that affects the performances of microphone, such as volatile glue and so on.

11. Special Cautions

11.1 Environmental Condition

Storage Condition: -40°C ~+70°C.
Operation Condition: -20°C ~+60°C.
Arbitration Condition: 23°C ±1°C, R.H. 63%~67%, Air pressure: 86~106Kpa.

11.2 Storage

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.

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

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

12. Discard Suggestions

For microphones to be wasted, customer shall follow the regulation of Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC).