

# SPECIFICATION

## Electret Condenser Microphone

### RoHS Compliance

**Product** : Omni directional ECM  $\Phi 6\text{mm} \times 2.7\text{mm}$   
**GETTOP P/N:** BOM6027BL-G363CX  
**Version** : V4.1

| Designed by | Checked by | Approved by | Released Date |
|-------------|------------|-------------|---------------|
| Mason Yu    | Jack Liu   | Jessica Sun | 08-13-2025    |



CUSTOMER APPROVAL

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# Revision History

| Date       | Version | Description                       | Controller |
|------------|---------|-----------------------------------|------------|
| 09-25-2024 | V3.0    | Initial Release                   | Yang Yu    |
| 09-25-2024 | V3.1    | Add phase control                 | Yang Yu    |
| 08-13-2025 | V4.1    | Added company contact information | Mason Yu   |
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## 1. Scope

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

## 2. Product Type

BOM6027BL-G363CX

## 3. Electro-Acoustic Specifications

**Table 3-1 Electrical Specifications**

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

| No. | Parameter                 | Symbol | Condition                        | Limits           |      |     | Unit |
|-----|---------------------------|--------|----------------------------------|------------------|------|-----|------|
|     |                           |        |                                  | Min              | Nom. | Max |      |
| 3.1 | Sensitivity               | S      | f=1kHz, Pin=1Pa,<br>0dB=1V/Pa    | -39              | -36  | -33 | dB   |
| 3.2 | Directivity               |        |                                  | Omni-directional |      |     |      |
| 3.3 | Output Impedance          | ZOUT   | f=1kHz                           |                  |      | 2.2 | kΩ   |
| 3.4 | Current Consumption       | IDSS   | RL=2.2kΩ, Vs=2.0V                |                  |      | 500 | μA   |
| 3.5 | S/N Ratio                 | S/N    | f=1kHz, Pin=1Pa,<br>(A-Weighted) |                  | 70   |     | dB   |
| 3.6 | Operating Voltage         | Vmic   |                                  | 1.0              |      | 5   | V    |
| 3.7 | Sensitivity vs. Voltage   | ΔS     | Vs= 2.0V to 1.5V                 |                  |      | 3   | dB   |
| 3.8 | Total Harmonic Distortion | THD    | 94dB SPL at 1kHz                 |                  |      | 1   | %    |
|     |                           |        | 115dB SPL at 1kHz                |                  |      | 5   | %    |
| 3.9 | Phase                     | ψ      | 30Hz                             | ±15              |      |     | Deg  |

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

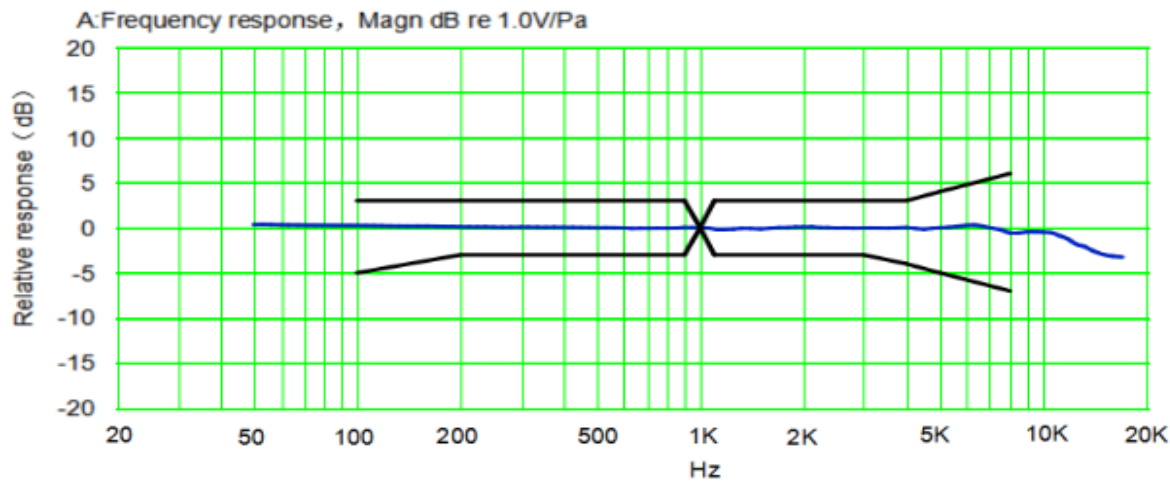


Fig. 4-1 Typical Frequency Response

Table 4-1 Frequency Response Limit Template

|                  |     |     |     |    |      |    |    |    |    |
|------------------|-----|-----|-----|----|------|----|----|----|----|
| Frequency [Hz]   | 100 | 200 | 900 | 1K | 1.1K | 3K | 4K | 5K | 8K |
| Upper limit [dB] | 3   | 3   | 3   | 0  | 3    | 3  | 3  | 4  | 6  |
| Frequency [Hz]   | 100 | 200 | 900 | 1K | 1.1K | 3K | 4K | 5K | 8K |
| Lower limit [dB] | -5  | -3  | -3  | 0  | -3   | -3 | —  | -5 | -7 |

5. Schematic Diagram

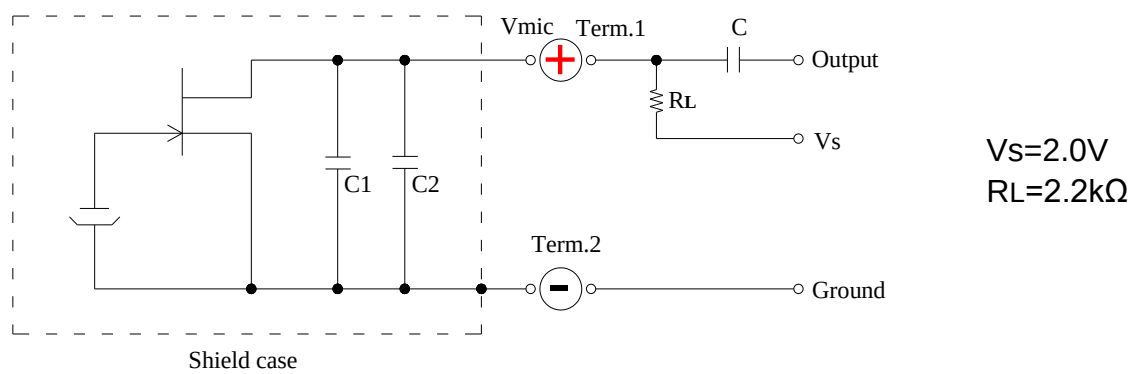


Fig. 5-1 Schematic Diagram

## 6. Measurement System Setup

**Test signal:** Sinusoid, Sweep,

**Frequency Range:** 50Hz-17KHz

**Step:** 1/12 octave

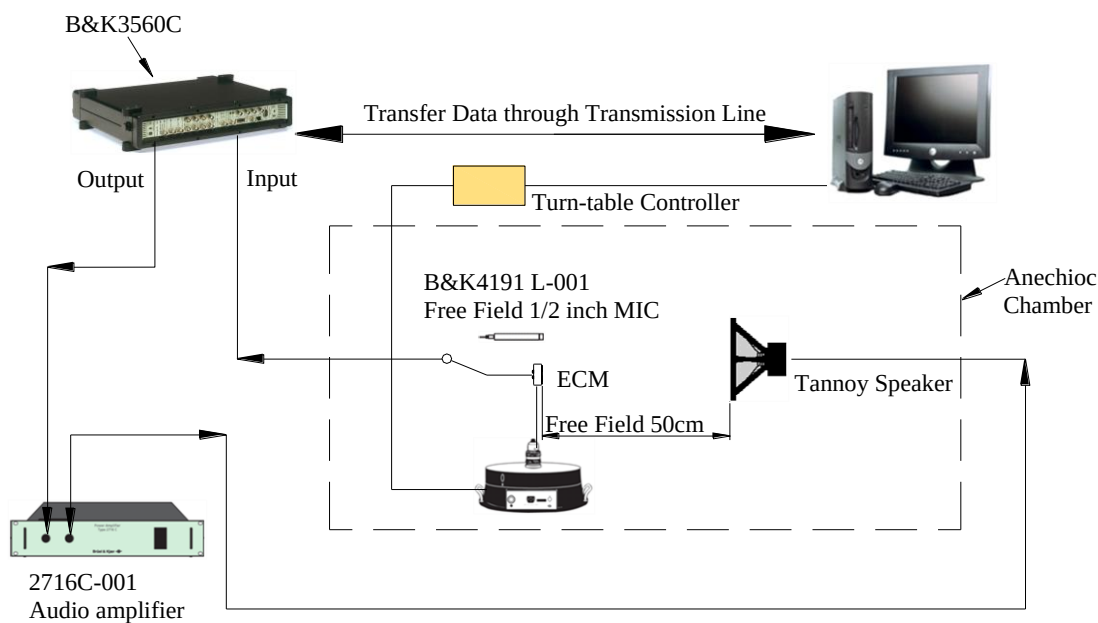
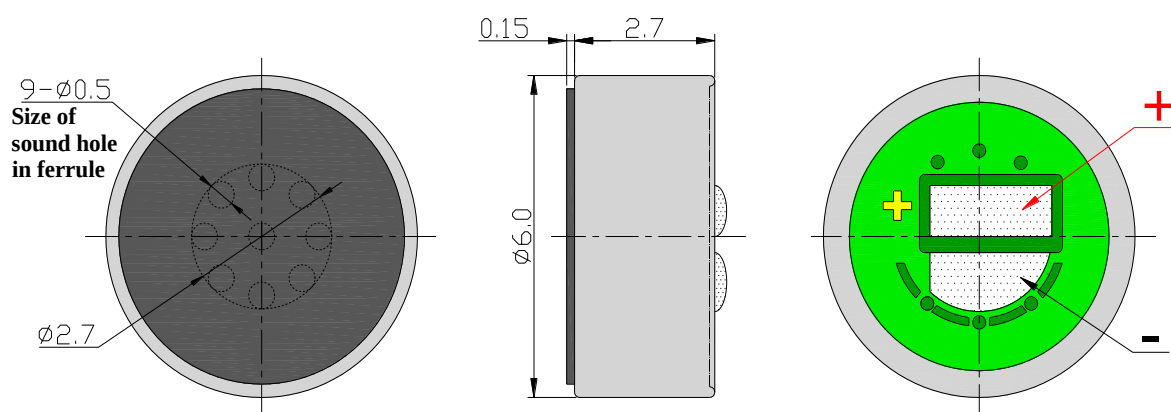


Fig. 6-1 Measurement System Setup

## 7. Mechanical Specification



Unmarked Tolerance:  $\pm 0.1$  (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  $\pm 3\text{dB}$  from its initial value and shall keep its initial operation and appearance.

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

### 8.1 Hi-Temperature Test

Temperature: +85°C  
Duration: 240 hours

### 8.2 Low-Temperature Test

Temperature: -40°C  
Duration: 240 hours

### 8.3 Humidity & Heat Test

Temperature: +60°C  
Humidity: 93% RH  
Duration: 240 hours

### 8.4 Thermal Shocking Test

Temperature & duration: -40°C, 30 minutes  
Temperature & duration: +80°C, 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  
Height: 1.5m  
Reference surface: slippery marble floor  
Duration: 3 times

### 8.7 Soldering Heat Test

Place microphones in the metallic fixture.  
Soldering Heat: 350°C  
Duration: 5S  
Recover: 1h

### 8.8 ESD

The tests are performed acc. to IEC61000-4-2 level 3

#### a. Contact discharge

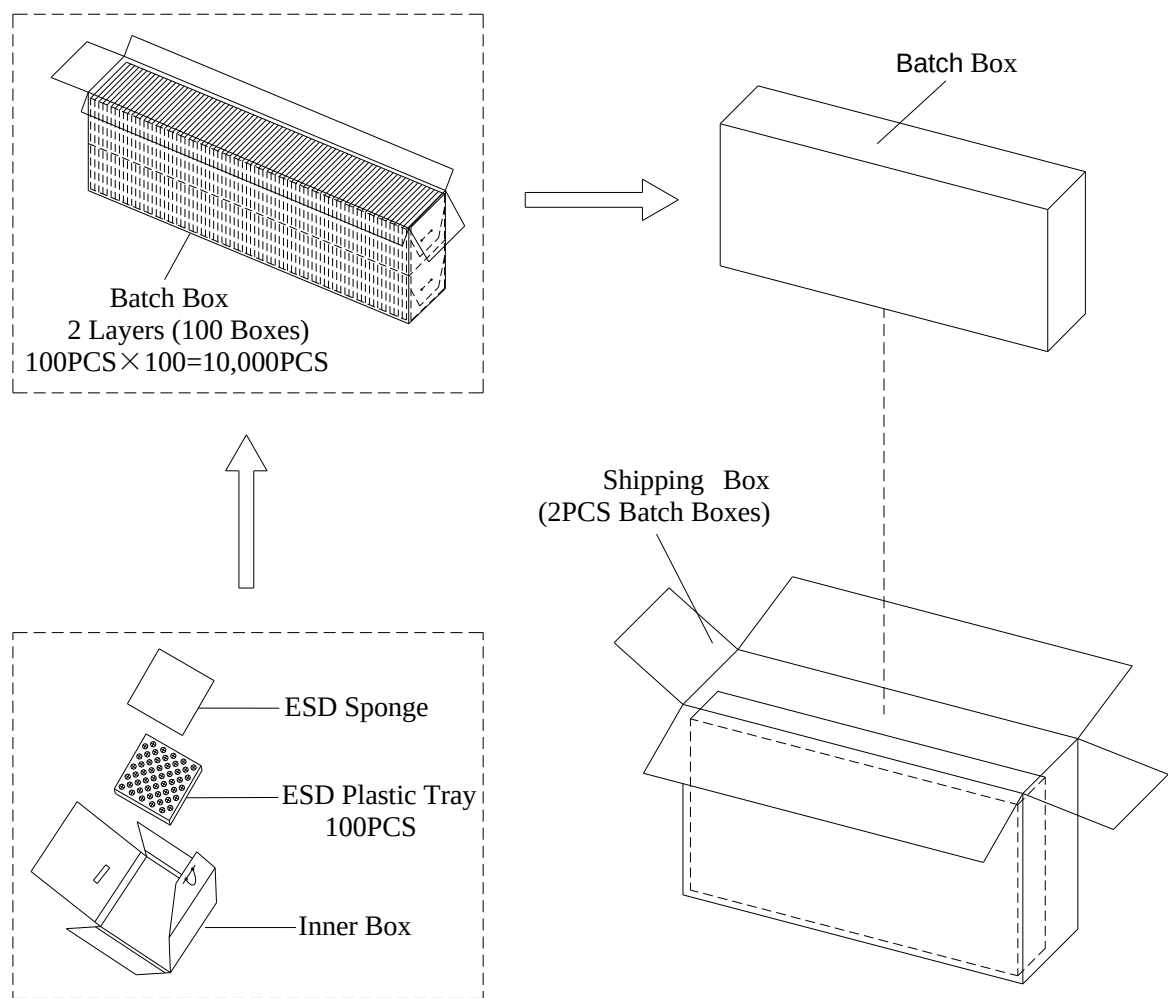
Discharge position: Output of microphone  
Charge voltage: ±6000VDC  
Discharge network: 150pF & 330Ω

#### b. Air discharge

Discharge position: Sound hole

Charge voltage:            $\pm 8000\text{VDC}$   
Discharge network:        $150\text{pF} \ \& \ 330\Omega$

9. Packaging



|              |                   |                       |
|--------------|-------------------|-----------------------|
| Inner Box    | 82mm×82mm×8mm     | 100PCS×1=100PCS       |
| Batch Box    | 435mm×100mm×185mm | 100PCS×100=10,000PCS  |
| Shipping Box | 455mm×233mm×211mm | 10,000PCS×2=20,000PCS |

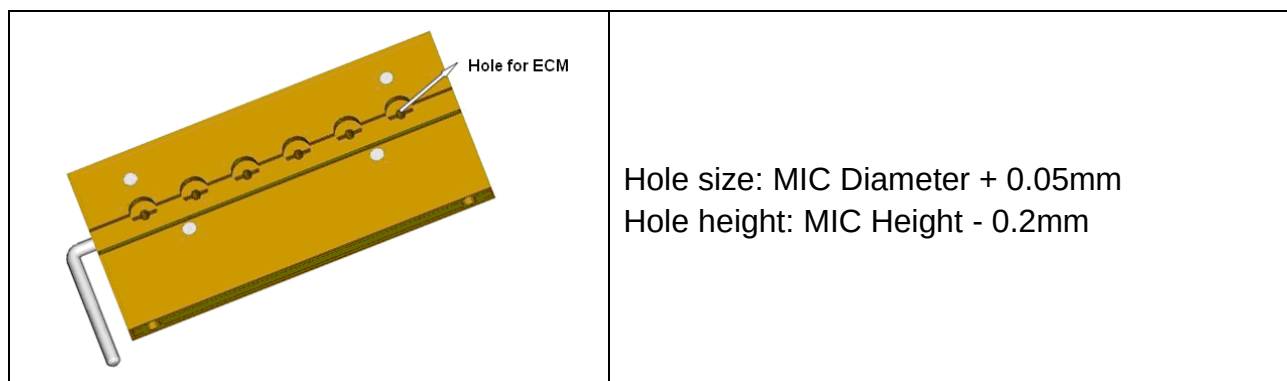


## 10. Usage Suggestions

### 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  $350^{\circ}\text{C} \pm 10^{\circ}\text{C}$ . 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.



**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:  $-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$ .

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

Arbitration Condition:  $23^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , 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).