

# SPECIFICATION

## Electret Condenser Microphone

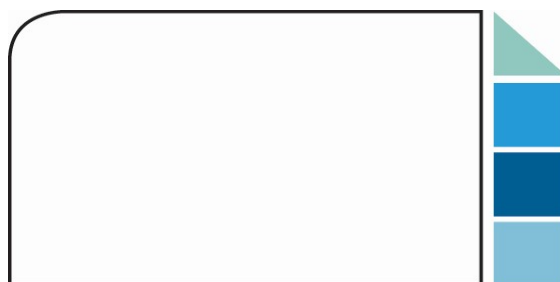
### RoHS Compliance

**Product** : Omni directional ECM  $\Phi$ 4mmx1.5mm

**GETTOP P/N**: BOM4015HL-J323TX1

**Version** : V4.0

Designed by	Checked by	Approved by	Released Date
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CUSTOMER APPROVAL

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## 1. Scope

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

## 2. Product Type

BOM4015HL-J323TX1

## 3. Electro-Acoustic Specifications

**Table 3-1 Electrical Specifications**

(Test Condition: +23°C±2,63%~67% RH, 86~106Kpa, Vs=3V, unless specified differently)

No.	Parameter	Symbol	Condition	Limits			Unit
				Min	Nom.	Max	
3.1	Sensitivity	S	f=1kHz, Pin=1Pa, 0dB=1V/Pa	-35	-32	-29	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=3.0V			500	μA
3.5	S/N Ratio	S/N	S:f=1kHz, Pin=1Pa, N:A-Weighted, 20-5KHz		65		dB
3.6	Operating Voltage	Vmic		2		5	V
3.7	Sensitivity vs. Voltage	ΔS	Vs= 3V to 2V			3	dB
3.8	Total Harmonic Distortion	THD	94dB SPL at 1kHz			1	%
			110dB SPL at 1kHz			3	

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

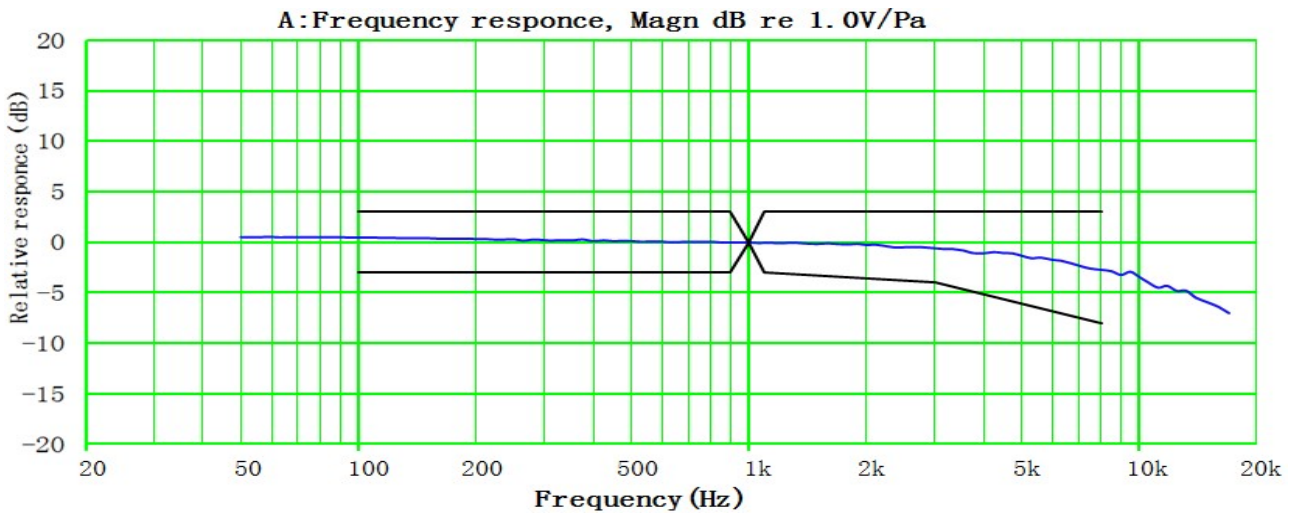


Fig. 4-1 Typical Frequency Response

Table 4-1 Frequency Response Limit Template

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

## 5. Schematic Diagram

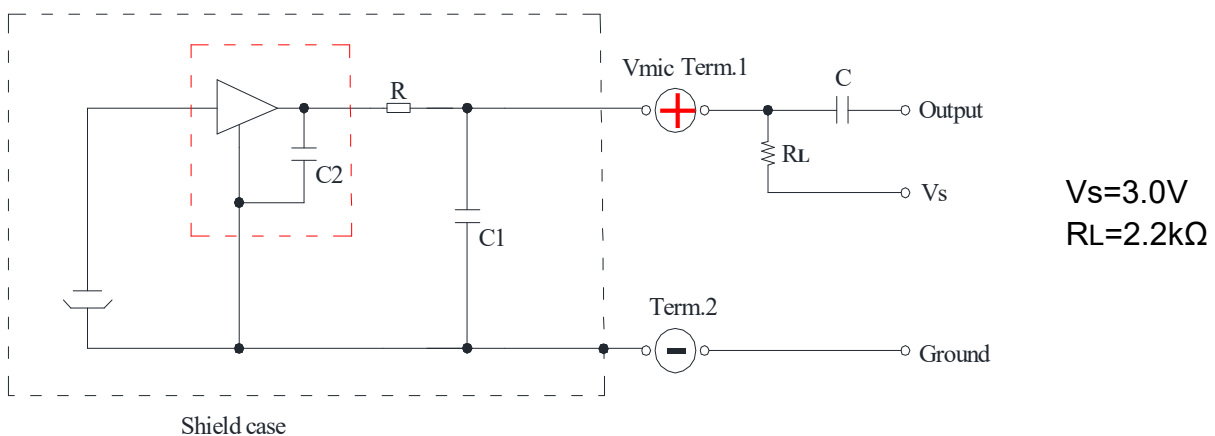


Fig. 5-1 Schematic Diagram

## 6. Measurement System Setup

Test signal: Sinusoid, Sweep,

Frequency Range: 50Hz-17KHz

Step: 1/12 octave

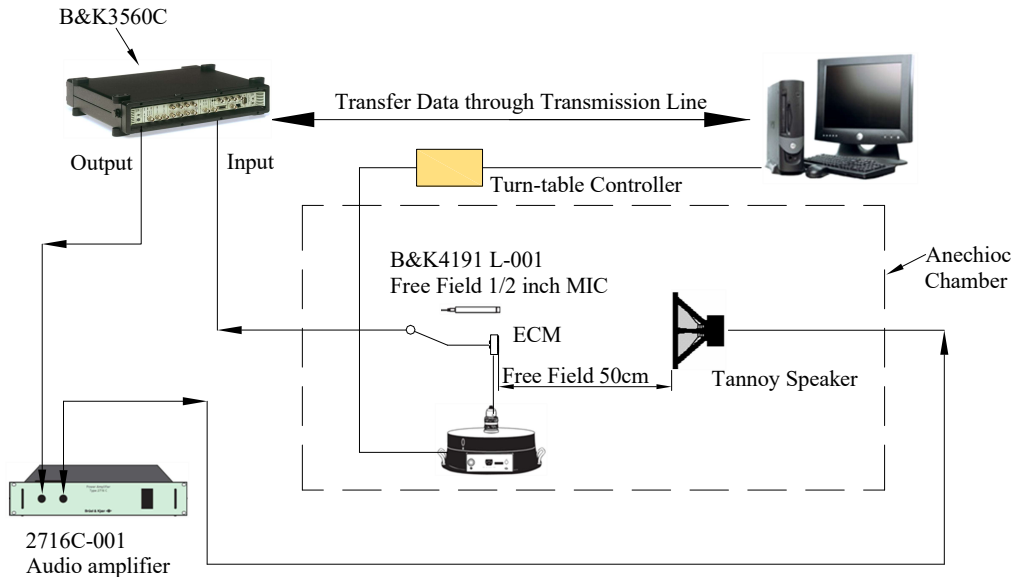
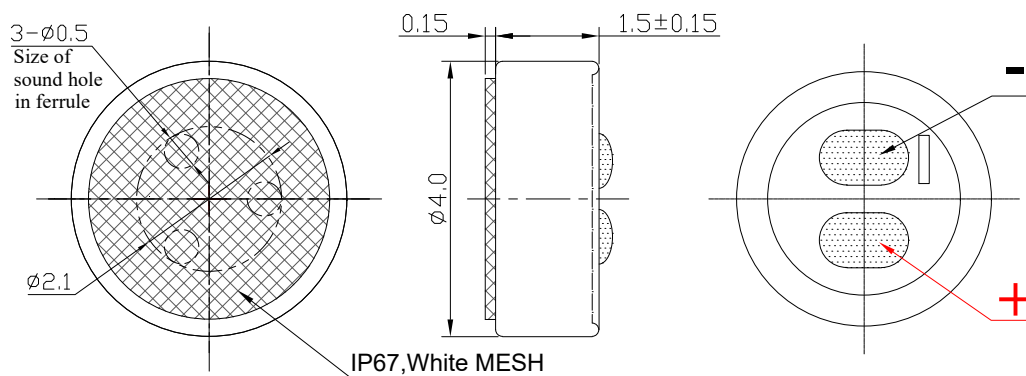


Fig. 6-1 Measurement System Setup

## 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  $\pm 3$ dB from its initial value and shall keep its initial operation and appearance.

The measurement to be done after 2 hours of conditioning at  $+15\text{ }^{\circ}\text{C} \sim +35\text{ }^{\circ}\text{C}$ , R.H 45%  $\sim$  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

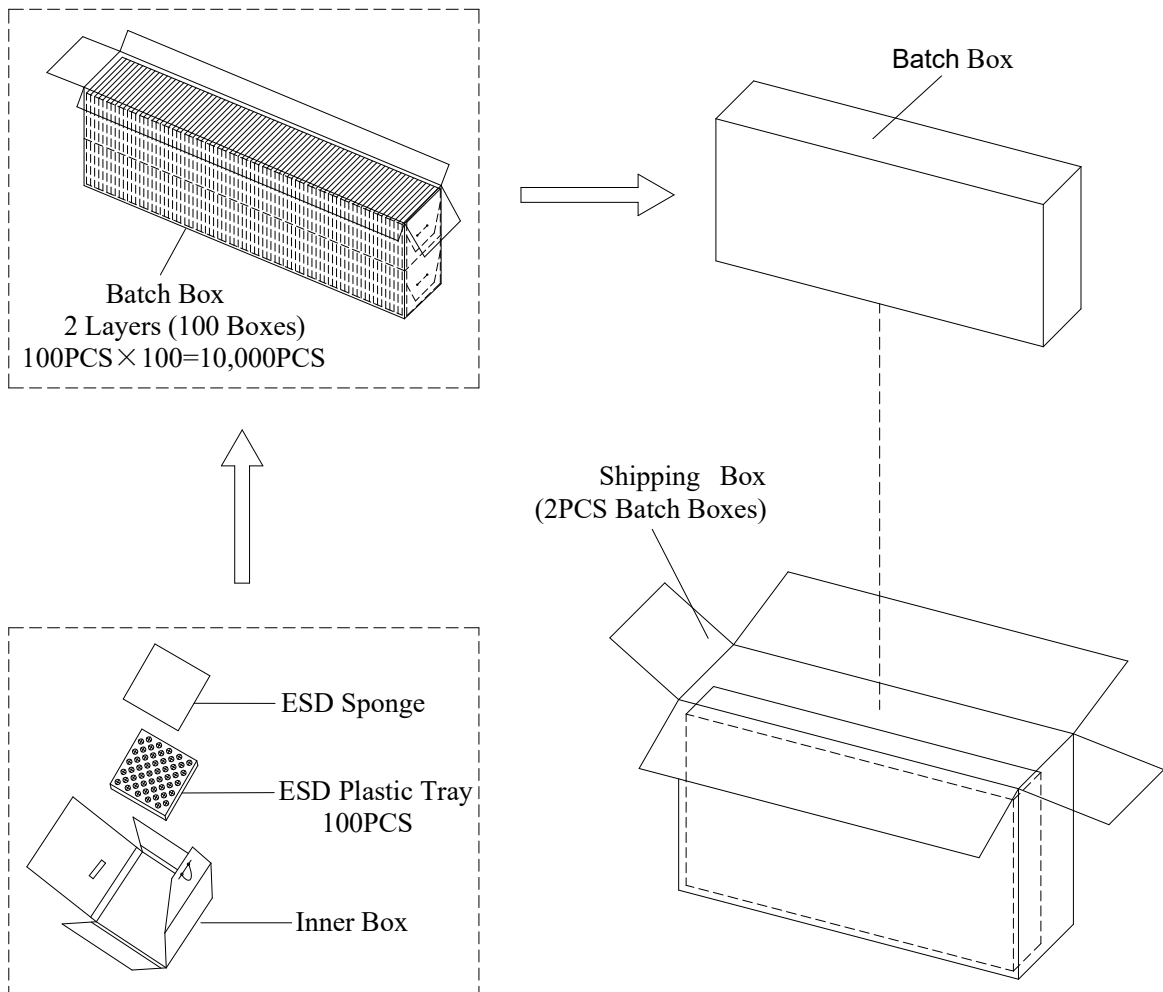
#### a. Contact discharge

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

#### b. Air discharge

Discharge position: Sound hole  
Charge voltage: ±8000VDC  
Discharge network: 150pF & 330Ω

## 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

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