

SPECIFICATION

Electret Condenser Microphone

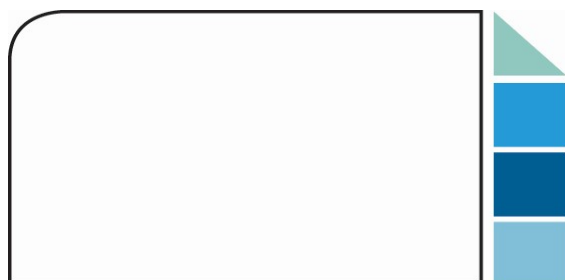
RoHS Compliance & Halogen Free

Product : Uni directional ECM $\Phi 16.0\text{mm} \times 5.2\text{mm}$

GETTOP P/N: BUM1652FL-J453ARC-HF

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
06-13-2025	V3.0	Initial Release	Flora Guo
08-02-2025	V4.0	Added company contact information	Flora Guo

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1. Scope

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

2. Product Type

BUM1652FL-J453ARC-HF

3. Electro-Acoustic Specifications

Table 3-1 Electrical Specifications

(Test Condition: $+23^{\circ}\text{C} \pm 2.63\% \sim 67\% \text{ RH}$, $86 \sim 106\text{Kpa}$, $V_s=3.0\text{V}$, unless specified differently)

No.	Parameter	Symbol	Condition	Limits			Unit
				Min	Nom.	Max	
3.1	Sensitivity	S	$f=1\text{kHz}$, $\text{Pin}=1\text{Pa}$, $0\text{dB}=1\text{V/Pa}$	-48	-45	-42	dB
3.2	Sensitivity $\Delta 0^{\circ} \sim 180^{\circ}$	S	$f=1\text{kHz}$, $\text{Pin}=1\text{Pa}$, $0\text{dB}=1\text{V/Pa}$				dB
3.3	Output Impedance	ZOUT	$f=1\text{kHz}$			2.2	$\text{k}\Omega$
3.4	Current Consumption	IDSS	$\text{RL}=2.2\text{k}\Omega$, $V_s=3.0\text{V}$			500	μA
3.5	S/N Ratio	S/N	$f=1\text{kHz}$, $\text{Pin}=1\text{Pa}$, (A-Weighted)		74		dB
3.6	Operating Voltage			1.2	3	5.0	V
3.7	Sensitivity vs. Voltage	ΔS	$V_s=3.0\text{V}$ to 2.0V			3	dB
3.8	Total Harmonic Distortion	THD	94dB SPL at 1kHz			1	%
3.9	Acoustic Overload Point	AOP	THD 10% @ 1KHz		135		dB SPL

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

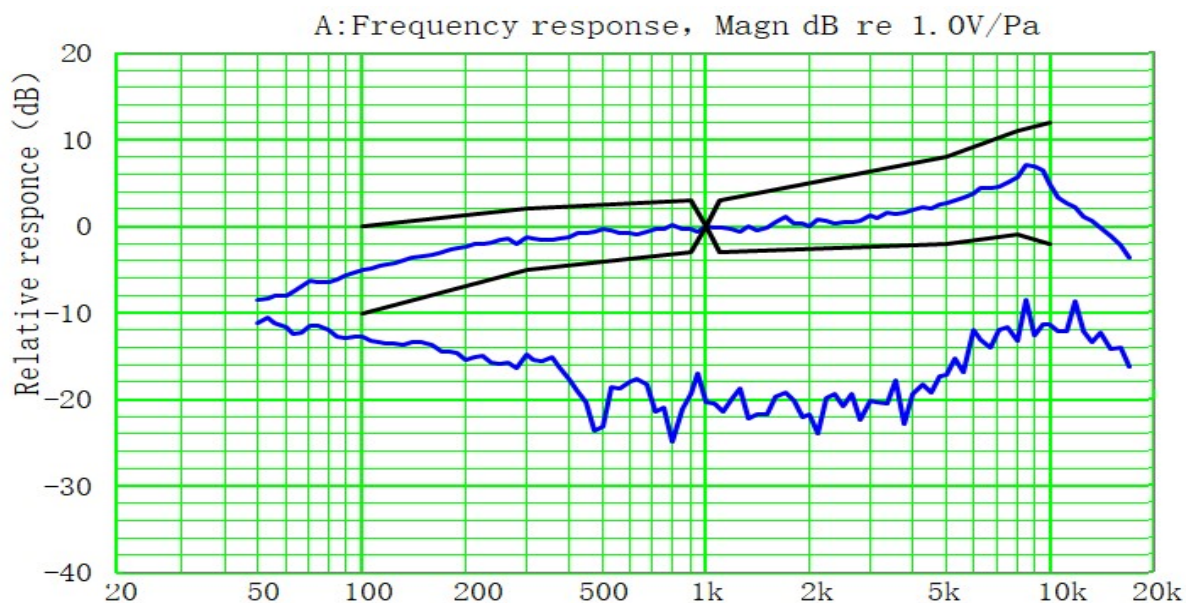


Fig. 4-1 Typical Frequency Response

Table 4-1 Frequency Response Limit Template

Frequency [Hz]	100	300	900	1K	1.1K	5K	7K	10K
Upper limit [dB]	0	2	3	0	3	8	11	12
Frequency [Hz]	100	300	900	1K	1.1K	5K	7K	10K
Lower limit [dB]	-10	-5	-3	0	-3	-2	-1	-2

5. Schematic Diagram

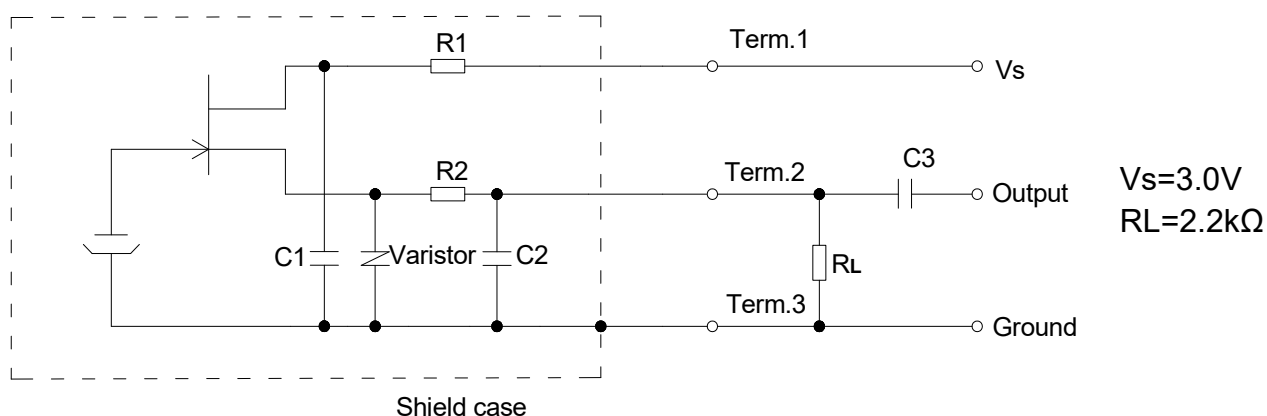


Fig. 5-1 Schematic Diagram

6. Measurement System Setup

Test signal: Sinusoid, Sweep,

Frequency Range: 50Hz-17KHz

Step: 1/12 octave

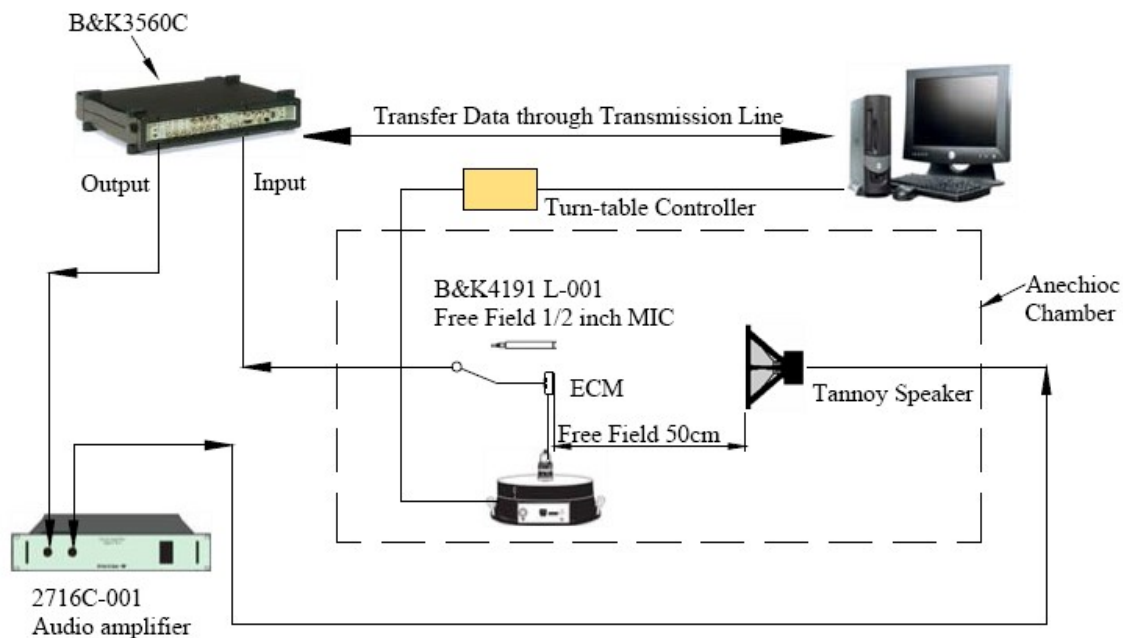
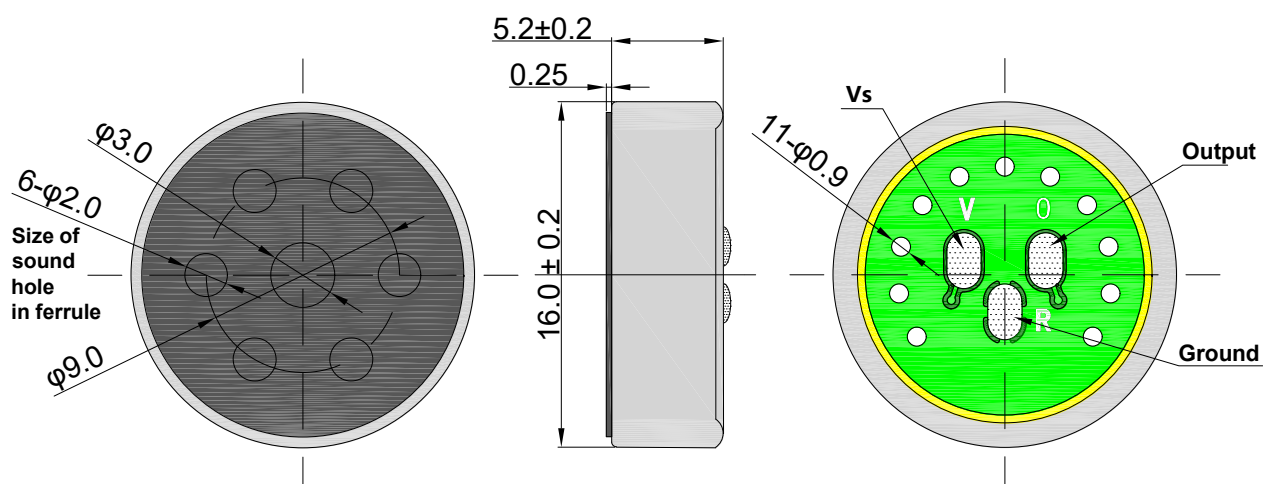


Fig. 6-1 Measurement System Setup

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 $\pm 3\text{dB}$ from its initial value and shall keep its initial operation and appearance.

The measurement to be done after 3 hours of conditioning at $+15\text{ }^{\circ}\text{C} \sim +35\text{ }^{\circ}\text{C}$, R.H 45%~75%

8.1 Hi-Temperature Test

Temperature: $+60\text{ }^{\circ}\text{C}$
Duration: 96 hours

8.2 Low-Temperature Test

Temperature: $-25\text{ }^{\circ}\text{C}$
Duration: 96 hours

8.3 Humidity & Heat Test

Temperature: $+40\text{ }^{\circ}\text{C}$
Humidity: 93% RH
Duration: 96 hours

8.4 Thermal Shocking Test

Temperature & duration: $-25\text{ }^{\circ}\text{C}$, 30 minutes
Temperature & duration: $+60\text{ }^{\circ}\text{C}$, 30 minutes,
Cycles: 5 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: 1.0m
Reference surface: slippery marble floor
Duration: 3 times

8.7 Soldering Heat Test

Place microphones in the metallic fixture.
Soldering Heat: $360\text{ }^{\circ}\text{C}$
Duration: 5S

9. Packaging

TBD

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 $360^{\circ}\text{C} \pm 10^{\circ}\text{C}$. 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.

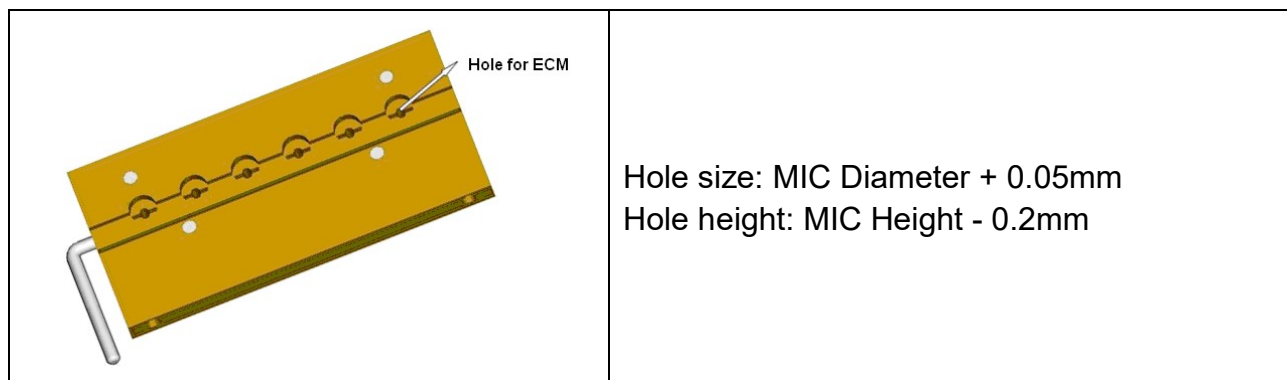


Fig. 10-1 Soldering Fixture

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).