soberton inc.

EM ELECTRET CONDENSER MICROPHONE

Acoustic Product Specification

Product Number: EM-4015P

Release | Revision: B/2018

CONTENTS

This document contains the technical specifications for the omni directional back electret condenser microphone.

Electrical Characteristics

Sensitivity

Symbol: S **Unit:** dB

Condition: 0dB=1V/Pa at 1kHz

Limits: Min: -45 **Center: -42** Max: -39

Output impedance

Symbol: Z out **Unit:** KΩ

Condition: f= 1kHz

Limits: Max: 2.2

Current Consumption

Symbol: IDSS **Unit:** μA

Condition: Vcc = 2.0V, RL= 2.2KΩ

Limits: Max: 500

Signal to Noise Ratio

Symbol: S/N **Unit:** dB

Condition: at 1kHz S.P.L = 1Pa (A-Weighted Curve)

Limits: Min: 58

Decreasing Voltage

Symbol: ΔS -VS **Unit:** dB

Condition: Vcc= 3.0V to 2.0V

Limits: Max: -3

Operating Voltage

Unit: V

Limits: Min: 1.0 Max: 10

Maximum input S.P.L

Unit: dB

Condition: THD<3% at kHz

Limits: Max: 110

Testing condition

Temperature: 20±2℃

Humidity: 65±5%

Air Pressure: 86 ~ 106KPa

Dimension

Ø4.0 x 1.5mm

IP Level

IP50

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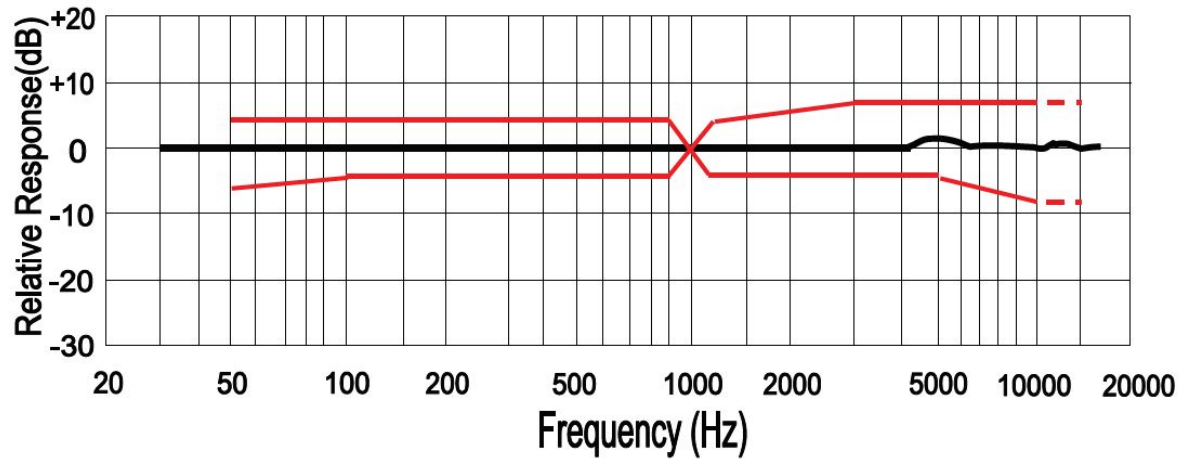
Typical Frequency Response Curve

Frequency Response

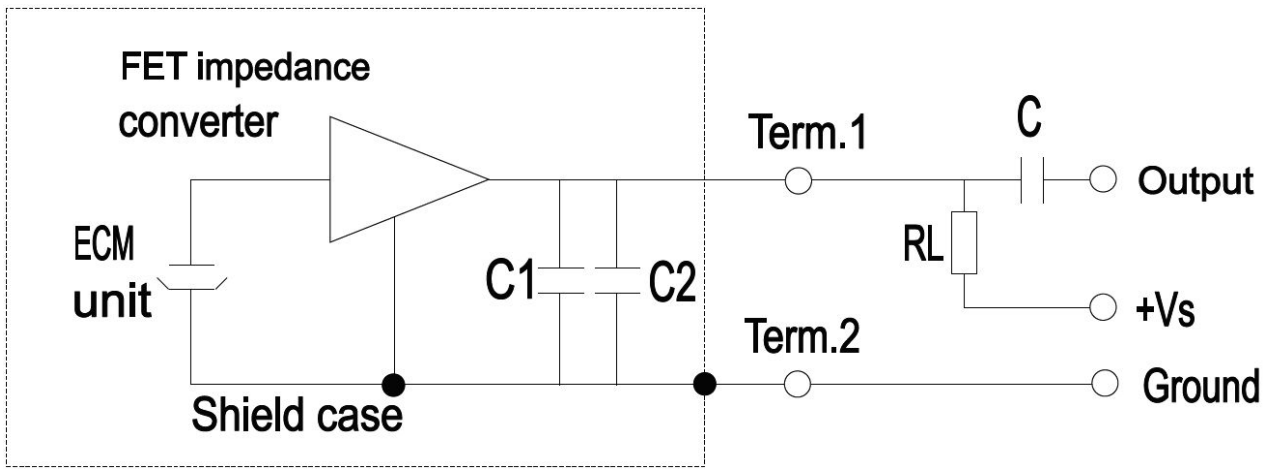


Standard Test Fixture

Frequency(Hz)	Lower Limit(dB)	Upper Limit(dB)
50	-6	+3
100	-3	+3
800	-3	+3
1000	0	0
1200	-3	+3
3000	-3	+8
5000	-3	+8
10000	-8	+8

Measurement Circuit

RL = 2.2KΩ Vs = 2.0V C1 = 10pF C2 = 33pF C = 1μF



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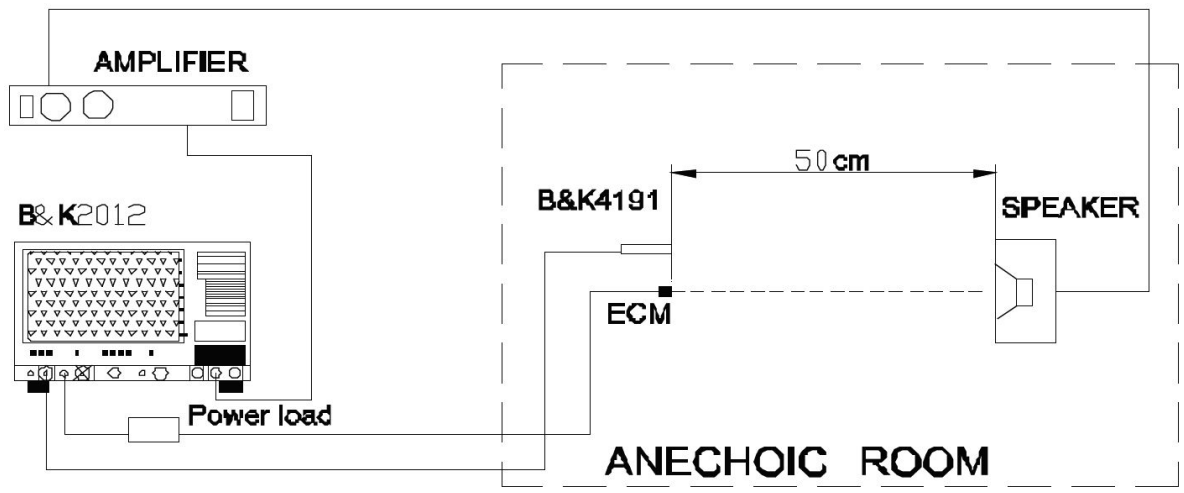
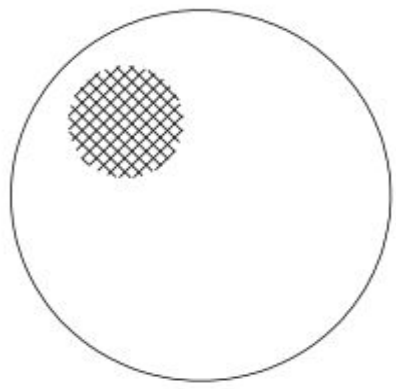
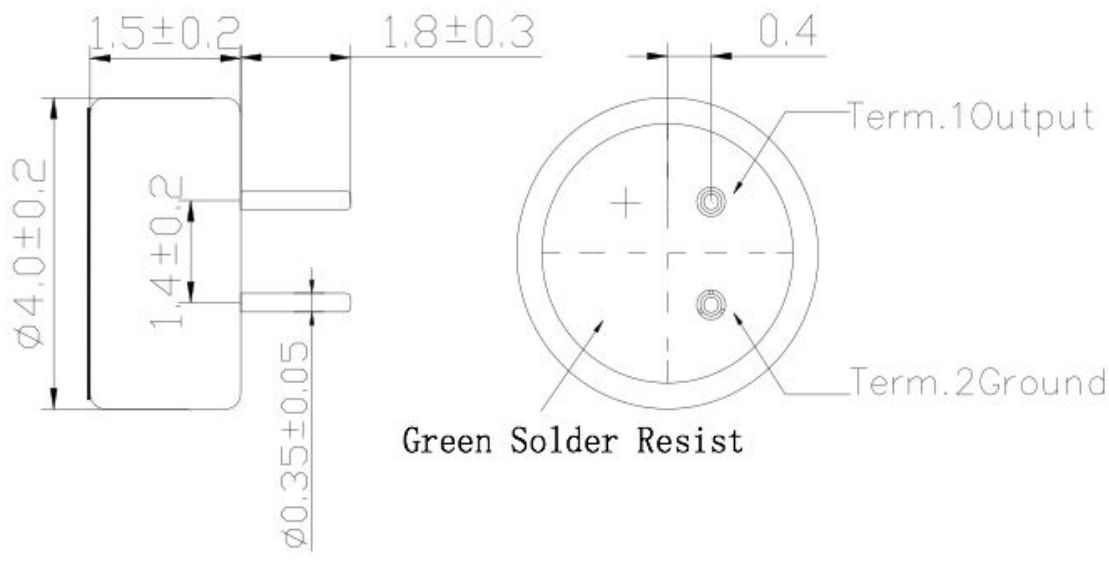
Measurement Setup Drawing

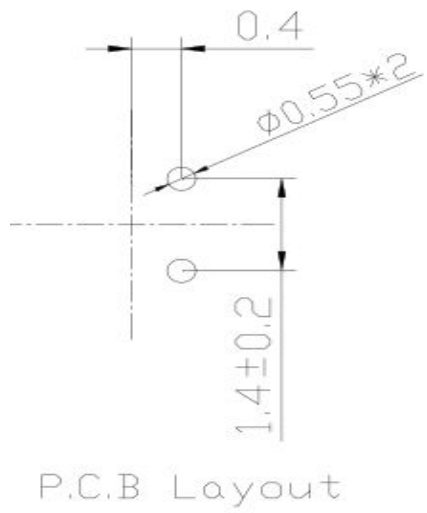


Product External and Dimension

Unit: mm







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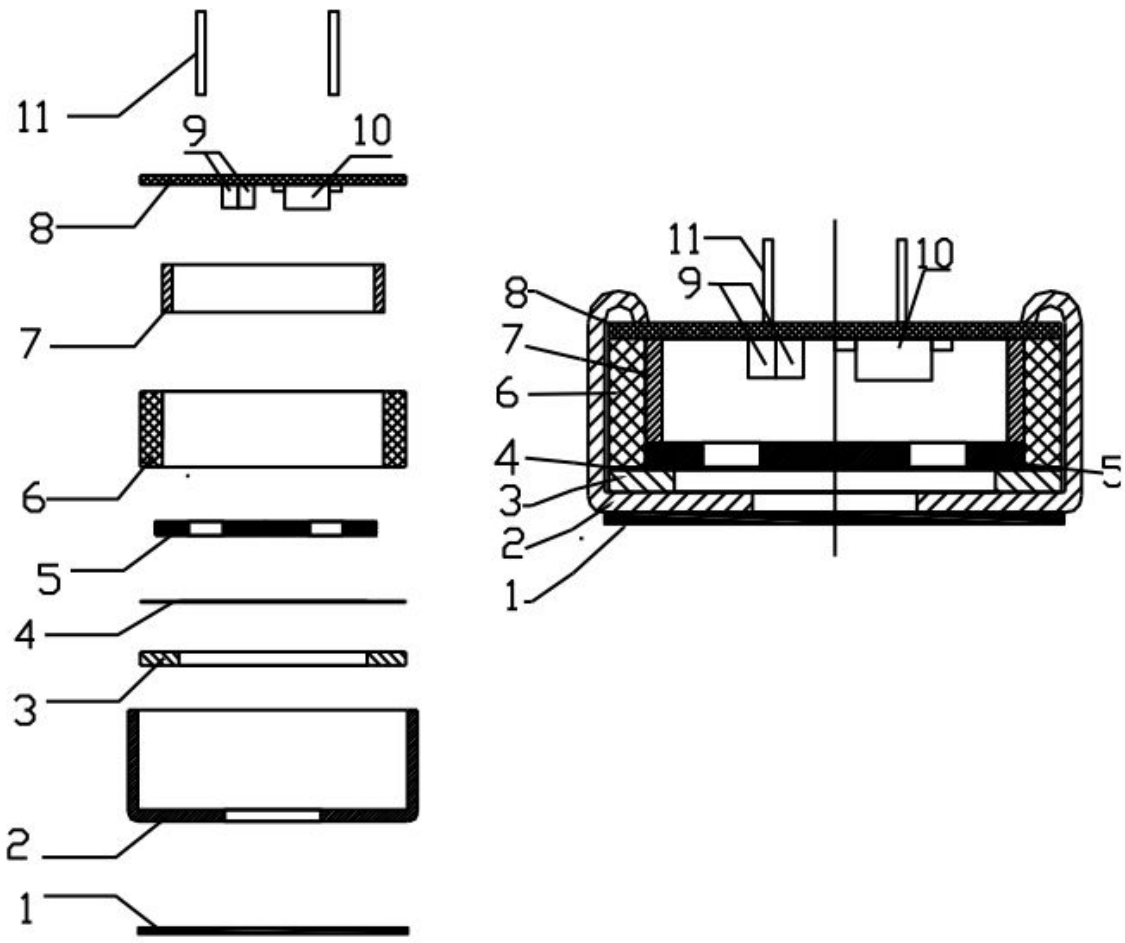
Exploded Drawing and Material Table



No.	Part Name	Material	Quantity	Remark
1	Dustproof Gauze	Non Weave Cloth	1	
2	Case	Copper	1	
3	Diaphragm		1	
4	Spacer		1	
5	Electret Plate		1	
6	Chamber		1	
7	Copper Ring		1	
8	PCB	FR-4	1	
9	Chip Capacitor		2	**10pF+33pF**
10	FET		1	
11.	PIN	Copper	2	

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Temperature Conditions

Operating Temperature Range

-40℃~+85℃

Storage Temperature Range

-40℃~+85℃

Note: Store in electronic warehouse.

Reliability Test

Terminal Mechanical Strength

Test by pulling the terminal with 1kg pressure for 1 minute. No performance defects will be shown.

After each of the following tests, the sensitivity of the microphone should be within ±3dB of initial sensitivity after 3 hours of conditioning at 20℃.

Vibration Test

Frequency : 10Hz~55Hz

Amplitude: 1.52mm

Change of Frequency : 1 octave/min

2 hours in each of axis

High Temperature Test

+85℃ for 240 hours.

Low Temperature Test

-40℃ for 240 hours.

Humidity Test

90%～95%RH, +60℃ for 240 hours.

Thermal Shock Test

–40°C, 30 minutes ↔ +80°C, 30 minutes, repeated 32 cycles → room temperature, 3 hours.

Temperature Cycles

-40℃ ↔ +20℃ ↔ +85℃ ↔ +20℃ ↔ -40˚C
(2h) (0.5h) (2h) (0.5h) (2h) (0.5h) (2h) (0.5h) (2h) for 5 cycles.

Packing Drop Test

Height: 1.5m

Procedure: 5 times from each of axis

Electrostatic Discharge

Tested to IEC61000-4-2 Level 3:

a)Contact Discharge
The microphone shall operate normally after 10 discharges to is 6KV DC and the discharge network is 150pF and 330Ω.

b)Air Discharge
The microphone shall operate normally after 10 discharges to is 8KV DC and the discharge network is 150pF and 330Ω.

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Soldering Condition

We suggest using anti-static welding machine which can control soldering temperature automatically.

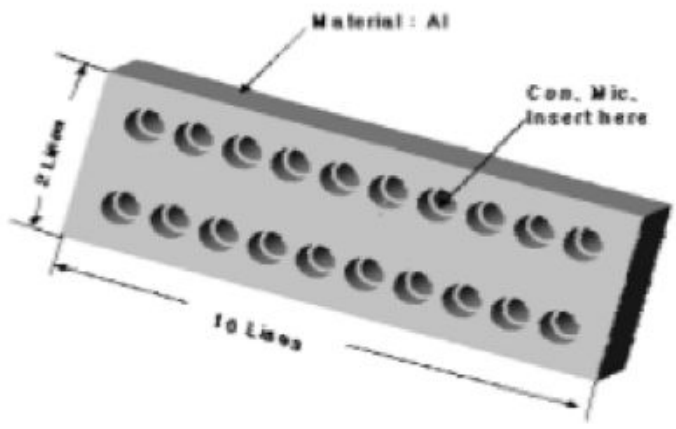
Soldering temperature should be controlled under 320℃ and soldering time for each terminal should be 1~2 seconds.

Microphone should be fixed on the metal block (heat sink), which has high radiation effects, and heat sink shall contact with MIC tightly.

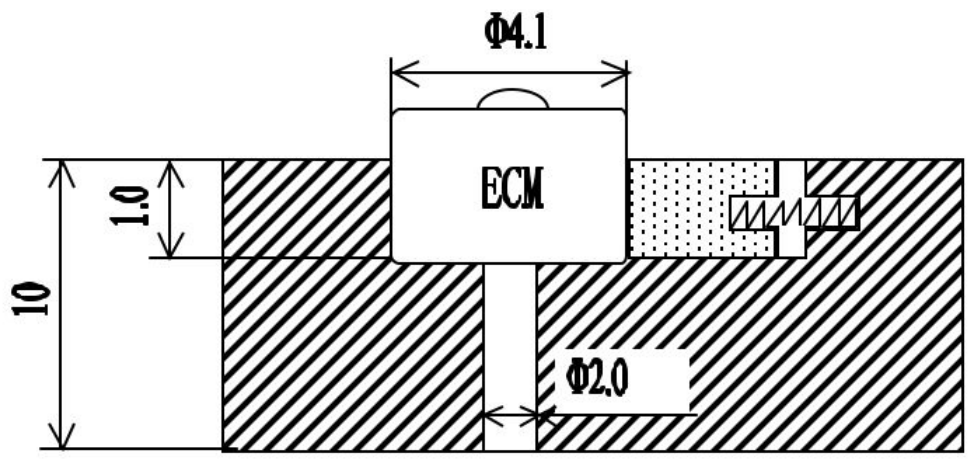
Microphone may easily be destroyed by the static electricity. The countermeasure for eliminating the static electricity shall be by grounding the worktable and operator.

Heat Sink

Shape of heat sink



Shape of hole at fixed part



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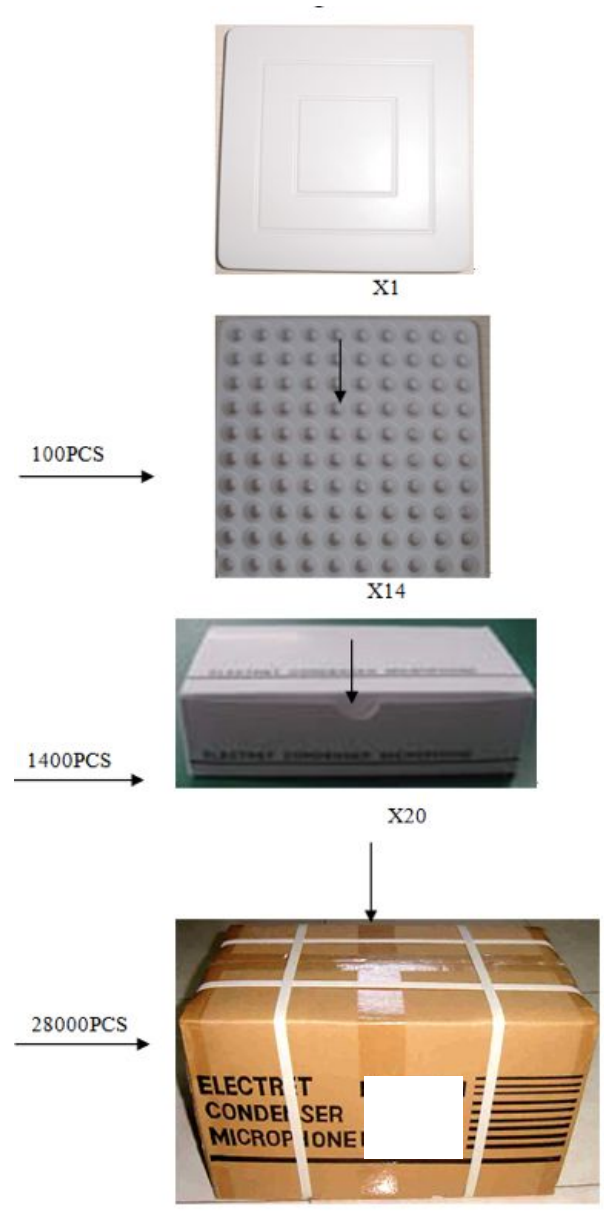
Packing



Details

Dimension: (length x width x height) Unit: mm

Plastic Tray:
100 x 100 x 10mm
Small Packet:
205 x 105 x 50mm
Carton Size:
550 x 230 x 235mm

Quantity and Weight:

Plastic Tray: 100 pcs
Middle Packet: 1,400 pcs
Carton: 28,000 pcs
1PC: 0.1g
Net Weight: 2.8kg
Gross Weight: 5.0kg