



PRODUCT INFORMATION

Part Numbers

CM03OS-0342-A4

Revision **2-2018**

Type

**Analog MEMS Microphone
Waterproof**

Compliance

- **RoHS, Lead Free**
- **ISO 9001:2000**
- **REACH: SUBSTANCE OF VERY HIGH CONCERN (SVHC)** This product does NOT contain any of the REACH Substances of Very High Concern (SVHC), and is in compliance with European Union REACH Regulation No.1907/2006 regarding chemical substances which must be registered or disclosed.
- **IP-67 Rated**

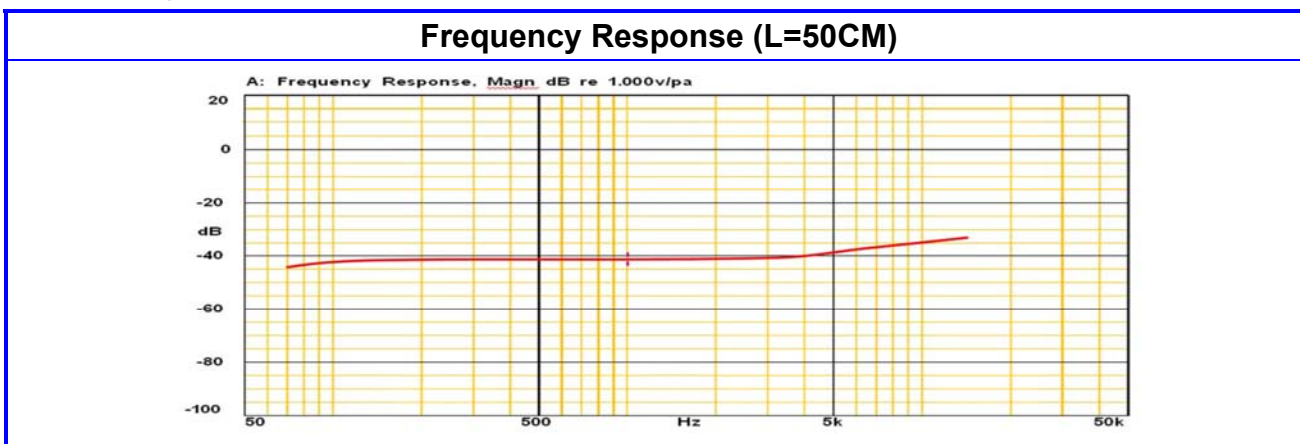


1. Electrical Characteristics

Test condition: Vs = 2.0 V at 23±2°C, L = 50cm, Relative Humidity 65±5% unless otherwise specified

Parameter	Symbol	Condition	Limits			Unit
			Min.	Center	Max.	
Directivity		Omnidirectional				
Sensitivity ¹	S	Vdd = 2V, F = 1 kHz, SPL = 1 Pa 0 dB = 1 V/Pa	-45	-42	-39	dBV/Pa
Output impedance	Z out	F = 1 kHz			300	Ω
Current Consumption	I_{DSS}	Vdd = 2.0 V		70	100	μ A
Signal to Noise Ratio	S/N	F = 1 kHz SPL = 1 Pa N (A-Weighted)	59	-	-	dB
Sensitivity Change Across Voltage	SC/V	Vdd = 1.5 – 3.6 V	0.5	-	0.5	dB
Operating Voltage	Vdd		1.5	2.0	3.6	V
Total Harmonic Distortion	THD	At 100 dB SPL	-	-	1.0	%
		At 115 dB SPL	-	-	10.0	
Acoustic Overload Point	AOP	10% THD @ 1 kHz, S = Typ	-	120	-	dB SPL

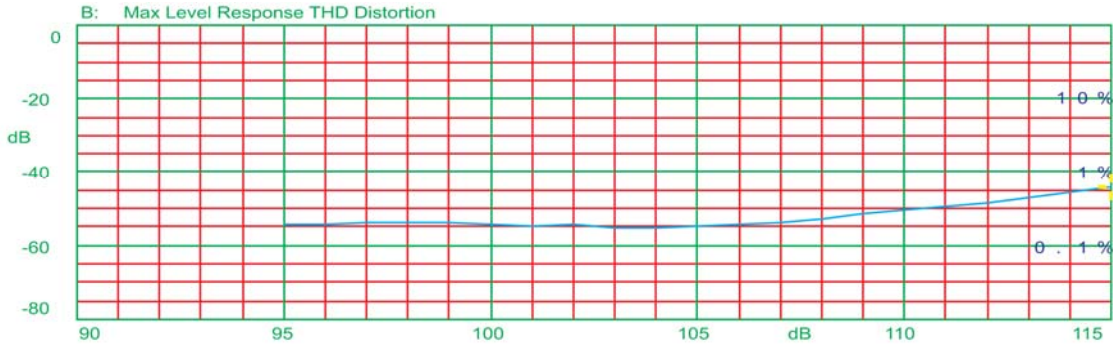
2. Frequency Response Curve



¹ 0dB = 1V/Pa, per I.E.C. (International Electrotechnical Commission) recommendation. To convert to a 0dB "ubar" reference, subtract 20 dB. Example: -40dB (1V/Pa) = -60dB (0dB = 1V/ubar)



3. THD Curve



4. Operating and Storage Application

4.1. Temperature Condition

4.1.a. Storage temperature range: $-40^{\circ}\text{C} \sim +100^{\circ}\text{C}$.

4.1.b. Operating temperature range: $-40^{\circ}\text{C} \sim +100^{\circ}\text{C}$.

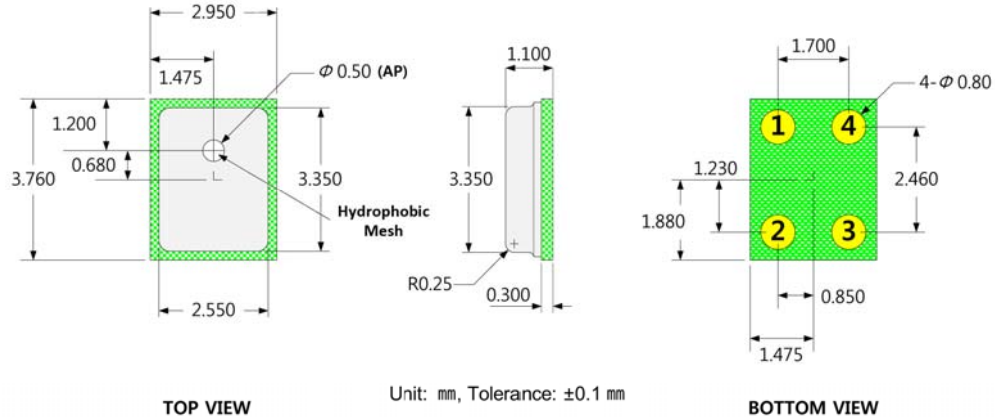
5. Mechanical Characteristics

5.1. Weight: 0.03 grams

5.2. All dimensions are: in millimeter (mm).

5.3. Tolerance: ± 0.1 mm unless otherwise specified.

5.4. Microphone Dimensions: 3.76 mm x 2.95 mm x 1.1 mm



TOP VIEW

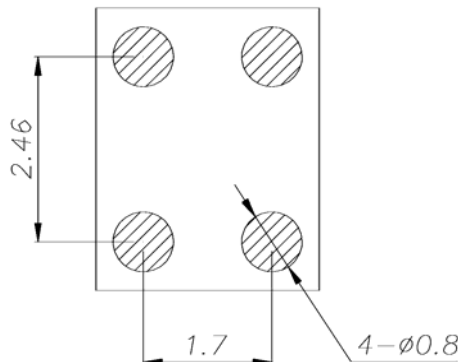
Unit: mm, Tolerance: ± 0.1 mm

BOTTOM VIEW

Pick Area only extends to 0.25 mm of any edge or hole unless otherwise specified

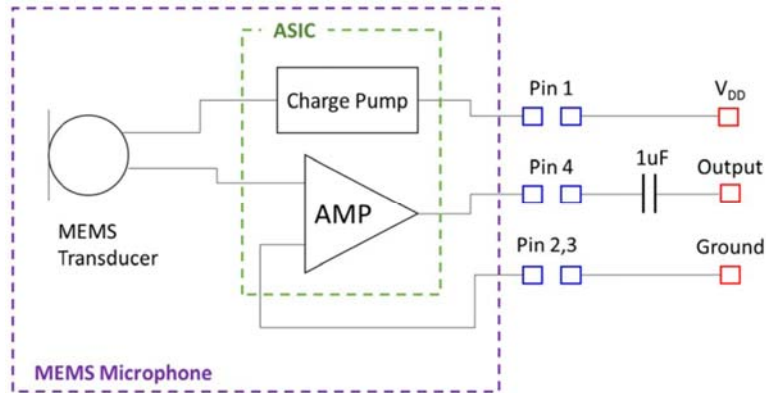
Pin 1	Pin 2	Pin 3	Pin 4
VDD	GND	GND	DAT

6. Recommended Land Pattern





7. Measurement Circuit



Measurement Set Up	Measurement Conditions
<p>The diagram shows the measurement setup. A B&K2012 microphone is connected to an AMPLIFIER. A B&K4191 microphone is connected to an ECM (Electromechanical Coupler). A SPEAKER is connected to the ECM. The distance between the sound source (speaker) and the microphone & standard microphone is 50 cm. The setup is in an ANECHOIC ROOM. A Power Load is also shown.</p>	<p>In Normal Weather</p> <p>Environment Temperature: 5~+35°C Relative Humidity: 45 ~ 85% Air Pressure: 86 ~ 106Kpa</p> <p>In Arbitrate Weather</p> <p>Environment Temperature: 20±2°C Relative Humidity: 60 ~ 70% Air Pressure: 86 ~ 106Kpa</p>
Testing Procedure	
<ol style="list-style-type: none"> 1. Measure the microphones under standard operating condition. 2. Put the microphone and standard microphone face to the sound source (speaker), the distance between sound source and microphone & standard microphone is 50 cm. And keep the center distance 5cm between them to ensure that the change of sound pressure should be kept within ± 1 dB. 3. Keep the sound source pressure within ± 1 dB from speaker Measured by standard microphone. 4. The sensitivity of microphone can obtain its output voltage when sound source kept within 1,000 Hz. & 0.1 Pa. 	

8. Soldering Condition

- 8.1. We suggest using anti-static welding machine which can control soldering temperature automatically.
- 8.2. Soldering temperature should be controlled under 320°C and soldering time for each terminal should be 1~2 seconds
- 8.3. Microphone should be fixed on the metal block (heat sink), which has high radiation effects, and heat sink shall contact with MIC tightly.
- 8.4. Microphone may easily be destroyed by the static electricity and the countermeasure for eliminating the static electricity shall be executed (worktable and human body shall be ground connection)

9. Concept of Unit

The difference between concept of “PASCAL” unit and the one unit “µbar” can be explained as follows:
In calibrating the sensitivity of ECMs, the sensitivity is manifested differently according as the units “PASCAL” or “µbar”. For example: **-60 dB (0 dB = 1 V / µbar) - -42 dB (0 dB = 1 V / Pa)**



10. Part Number Description

ID	Description
C	Challenge Electronics
M	Microphone
03	3 mm diameter
O	Omnidirectional
S	SMD Termination
-	dash
03	3 V Maximum
42	-42 Typical Sensitivity
-	Dash
A	Analog
4	Version 4

11. Warranty

For a period of one (1) year from date of shipping under normal handling and operations conditions

This warranty does not apply to products damaged through misuse, abuse, improper installation, alteration, rework, or attempt to repair

Revision	Description	By	Date
0-2018	Initial Specification Sheet	JL	2018-06-04
1-2018	Added Recommended Land Pattern	JL	2018-07-23
2-2018	Removed Orientation Feature from Mechanical Drawing	JL	2018-08-30