



PRODUCT INFORMATION

Part Numbers

CM04OS-0326-D1

Revision

3-2018

Type

Digital Omni-directional MEMS Microphone

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.



1. Acoustic and Electrical Characteristics

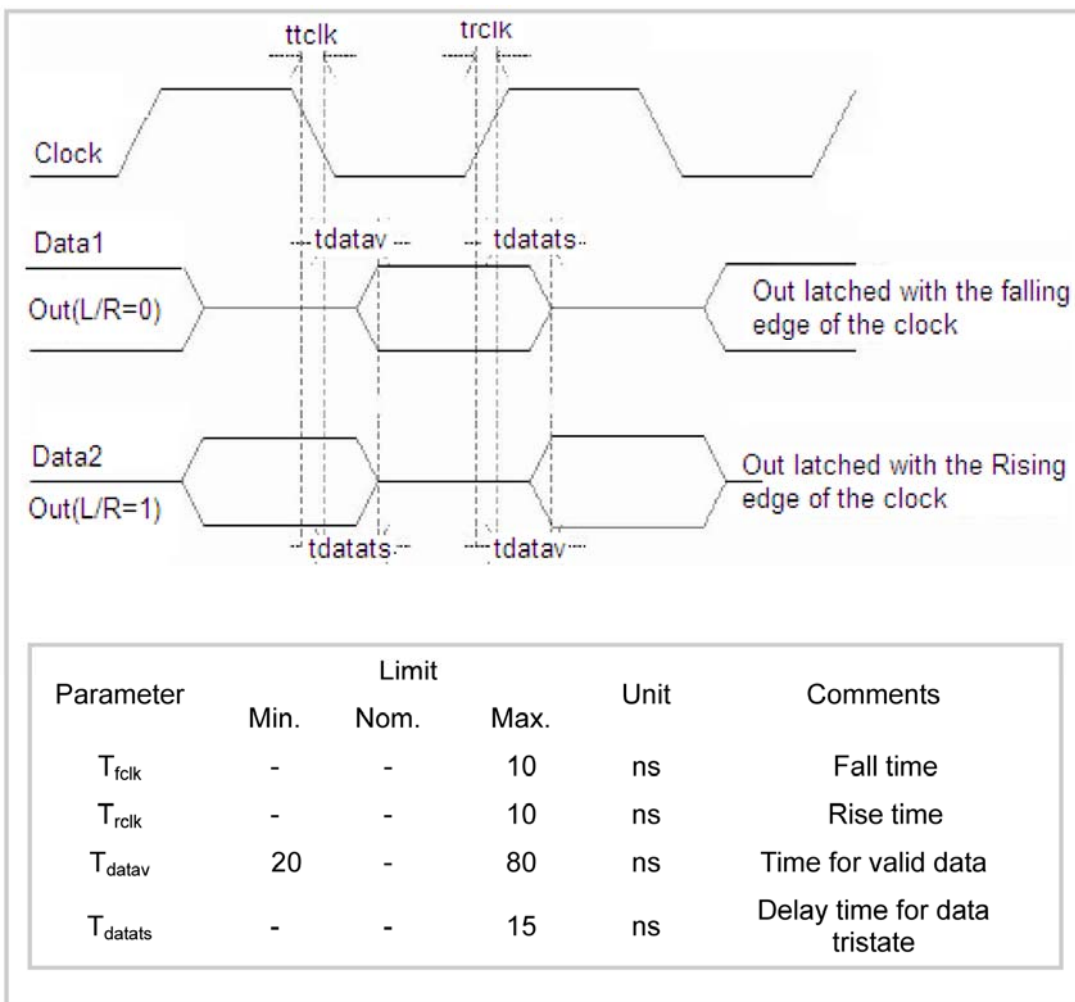
General Microphone Specifications

Test condition: V_{DD} = 2.0 V, at 23±2°C, L = 50 cm, Relative Humidity 55±10% unless otherwise specified

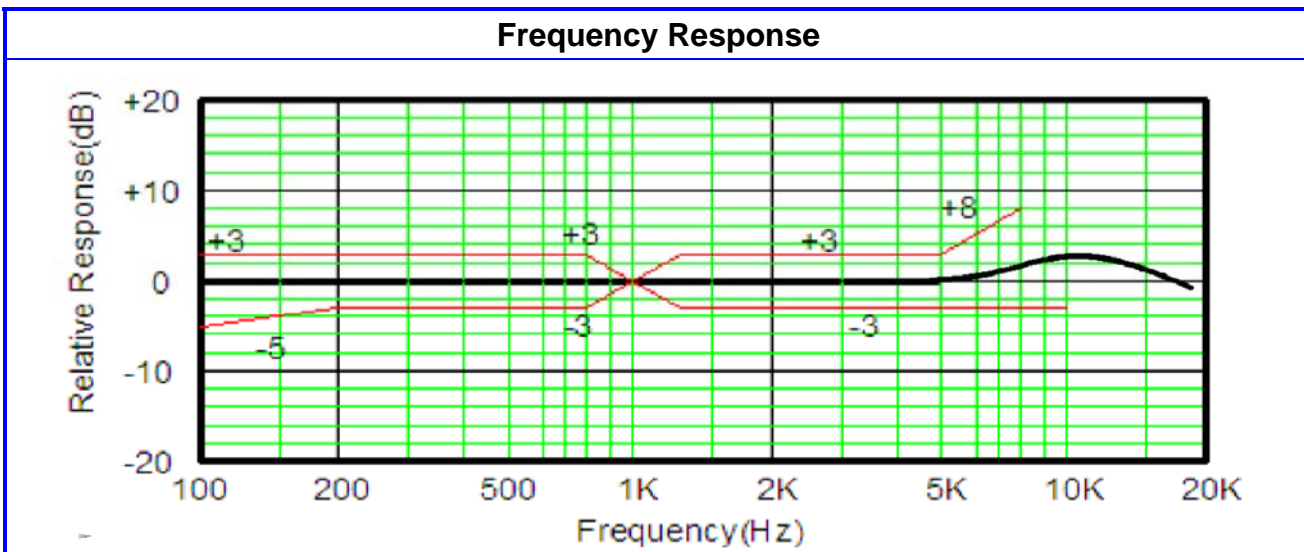
Parameter	Symbol	Condition	Limits			Unit
			Min.	Rated	Max.	
Directivity			Omni-directional			
Operating Voltage	V_{DD}		1.6	2.0	3.6	V
Total Harmonic Distortion		At 94dB SPL		0.2		%
Acoustic Overload Point	AOP	10% THD @ 1 kHz		120		dB SPL
Sensitivity	S	F = 1 kHz	-29	-26	-23	dBFS
Current Consumption	I	Normal Mode at 2.1 V		660		uA
		Sleep Mode, f _{clock} ≤ 50 kHz		100		uA
Signal to Noise Ratio		A-Weighted		64		dB(A)
Power Supply Rejection				-80		dBFS
Load Capacitance for Data Output					100	pF
Sensitivity Variation over Operation Range				0.5		dB



2. Microphone Interface Timing Chart



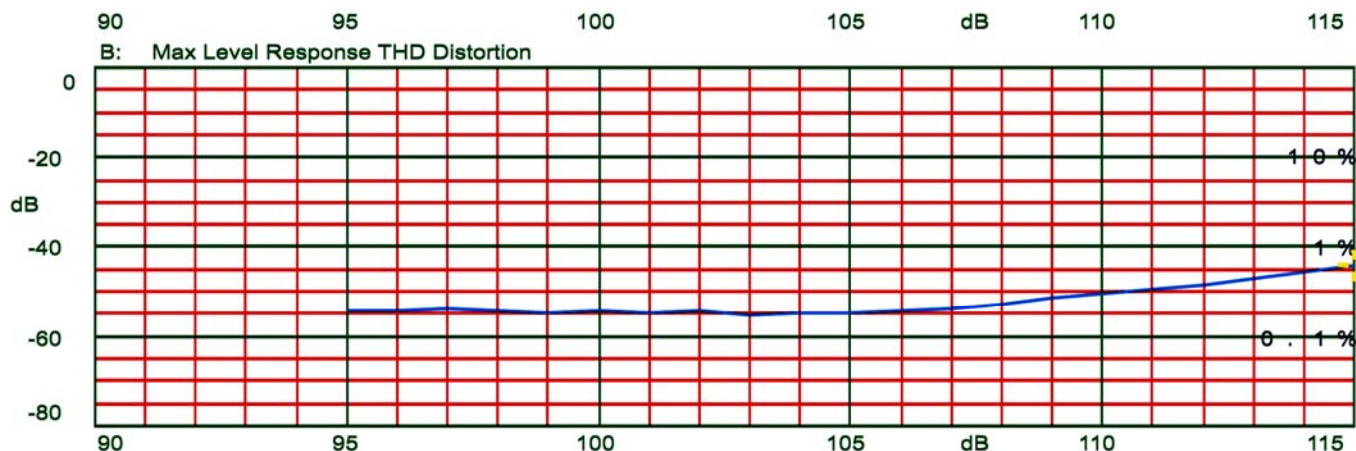
3. Frequency Response Curve



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)



4. THD Curve



5. Operating and Storage Application

5.1. Temperature Condition

5.1.a. Storage temperature range: $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$.

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

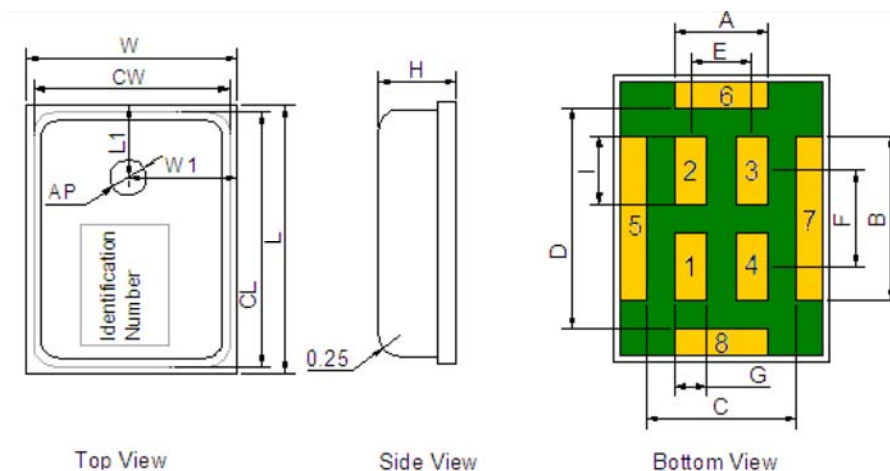
6. Mechanical Characteristics

6.1. Weight: Less than 0.3 grams

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

6.3. Tolerance: ± 0.15 mm unless otherwise specified.

6.4. Microphone Dimensions: 4 mm x 3 mm x 1.06 mm



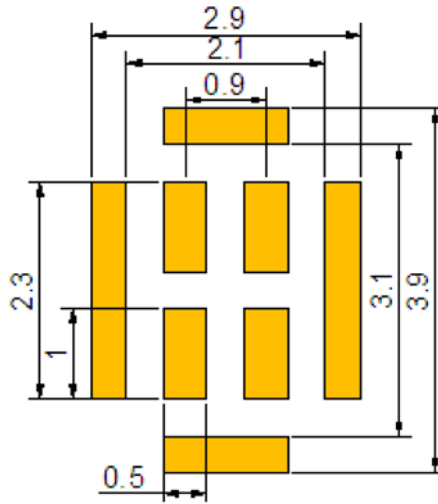


Item	Symbol	Tol.(±@mm)	Dimension(mm)	Item	Symbol	Tol.(±@mm)	Dimension(mm)
Unit Length	L	±0.1	4	Pad Open Size1	A	±0.1	1.3
Unit Width	W	±0.1	3	Pad Open Size2	B	±0.1	2.3
Unit Height	H	±0.1	1.06	Pad Open Size3	G	±0.1	0.45
Acoustic Port Hole	AP	±0.15	0.65	Pad Open Size4	I	±0.1	0.95
AP Hole to L Edge	W1	±0.1	1.5	Terminal Pad Pitch 1	C	±0.1	2.1
AP Hole to W Edge	L1	±0.1	1.4	Terminal Pad Pitch 2	D	±0.1	3.1
Cap Length	CL	±0.15	3.8	Terminal Pad Pitch 3	E	±0.1	0.85
Cap Width	CW	±0.15	2.8	Terminal Pad Pitch 4	F	±0.1	1.35

Pin#	Function	Pin#	Function
Pin1	Voltage	Pin5	Ground
Pin2	LR SEL	Pin6	Ground
Pin3	Clock	Pin7	Ground
Pin4	Data	Pin8	Ground

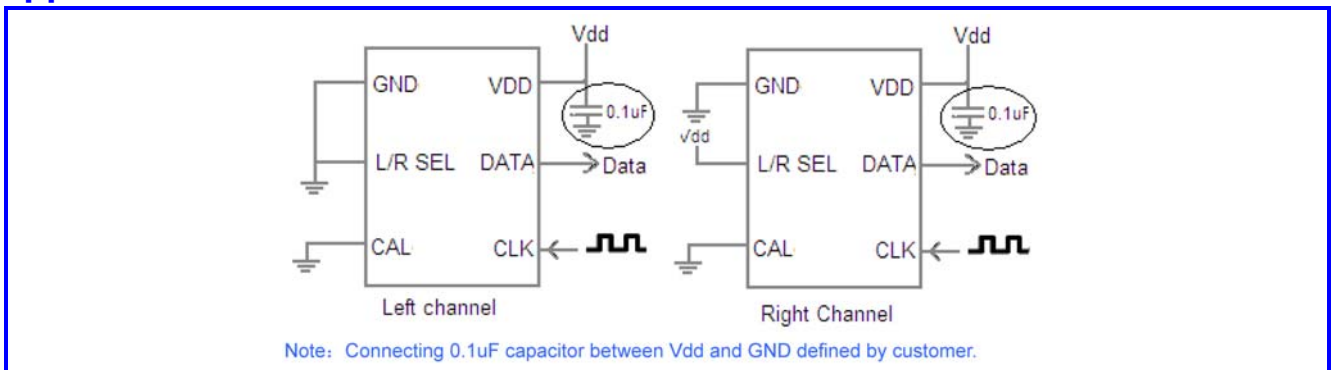
Notes
 Pin1: Input Voltage (Max 3.6V).
 Pin2: Clock polarity for sampling the output determined by the L/R signal.
 Pin3: The clock input terminal.
 Pin4: The output terminal, where the electrical signal equivalent to applied pressure is available.
 Pin5, Pin6, Pin7, Pin8: The terminal where the supply negative is connected to MEMS microphone.

7. Recommended Land Pattern



Recommended solder pad layout

8. Application Circuit





Measurement Set Up	Measurement Conditions
	<p>In Normal Weather</p> <p>Environment Temperature: 15~35°C Relative Humidity: 25 ~ 75% 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>

9. Part Number Description

ID	Description
C	Challenge Electronics
M	Microphone
4	4.00 mm Length
O	Omni-directional
S	SMD Termination
-	dash
03	3.6 V Maximum Voltage
26	-26 dB Typical Sensitivity
-	Dash
D	Digital Signal
1	Version 1

10. 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	Corrected mechanical drawing and recommended land pattern's pad layout	JL	2018-08-01
3-2018	Reverted back to previous revision's mechanical drawing and land pattern layout	JL	2018-08-10