

# CM04M-03S26-MD-6

 Rev. 2-2023  
 RoHS3 & REACH  
 Omni Directional Microphones


## Operating Characteristics

### ELECTRICAL

Type	Digital
Rated Voltage	1.8 VDC
Operating Voltage	1.6 to 3.6 VDC
Max Short Circuit Current	20 mA
Capacitance	N/A

### ACOUSTIC - General

Technology	MEMS
Directionality	Omni Directional

### ACOUSTIC-Standard Mode @ 94dB;1000 Hz;Rated Voltage;CLK Freq.-2.4 MHz

Clock Frequency Range	1.024 - 4.8 MHz
Supply Current	920 uA
Sensitivity	-26 ± 1 dBFS
Signal-to-Noise	59 dB(A)
Power Supply Rejection*	-87 dBFS
PSR Ratio**	54 dBV/FS
Acoustic Overload Point	115 dBSPL
Total Harmonic Distortion	0.1 % Max

### ACOUSTIC-Low Power Mode @ 94dB;1000 Hz;Rated Voltage;CLK Freq.-768 kHz

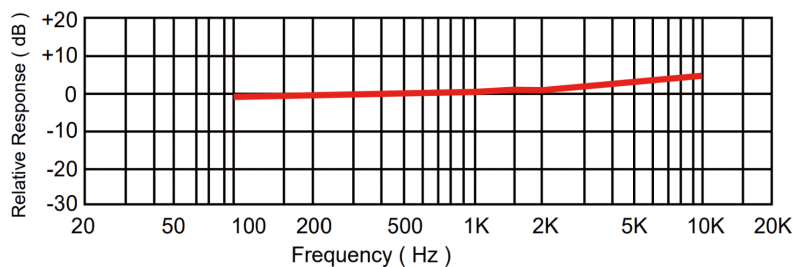
Clock Frequency Range	250-900 kHz
Supply Current	380 uA
Sensitivity	-26 ± 1 dBFS
Signal-to-Noise	59 dB(A)
Power Supply Rejection*	-87 dBFS
PSR Ratio**	54 dBV/FS
Acoustic Overload Point	115 dBSPL
Total Harmonic Distortion	0.1 % Max

### ACOUSTIC - Sleep Mode @ 94dB; 1000 Hz; Rated Voltage

Clock Frequency Range	0 - 50 kHz
Sleep Current	32 uA

\*Tested At 100mVpp Square wave at 217Hz, A-weighted, VDD=2V  
 \*\*Tested At 200mVpp Square wave at 1KHz, A-weighted, VDD=2V

### Typical Frequency Response Curve



Revision	Description	By	Date
1-2023	Updated Operating Characteristics Table.	AL	2023-06-21
2-2023	Supply Current from 800 to 920uA, CLK Freq change from 1.8 to 2.4MHz, PSR from -80 to -87dBFS, PSRR from 50 to 54dBV/FS, Acoustic Overload Point from 120 to 115dBSPL, THD from 1 to 0.1%, Low Power Range from 350-800 to 250-900kHz, Sleep Range from 0-250 to 0-50kHz, Added Low Power Mode Changes, New Timing Chart and Table, Operating Temp from -40-105 to -40-85°C, Storage Temp from -40-105 to -40-125°C, Weight from 0.024 to 0.029g, Mechanical Tolerance from 0.5 to 0.1mm, Height 1.1 to 1mm, and New Interface Circuit, New Footprint, New Profile, and New Packing Details.	AL	2023-07-07

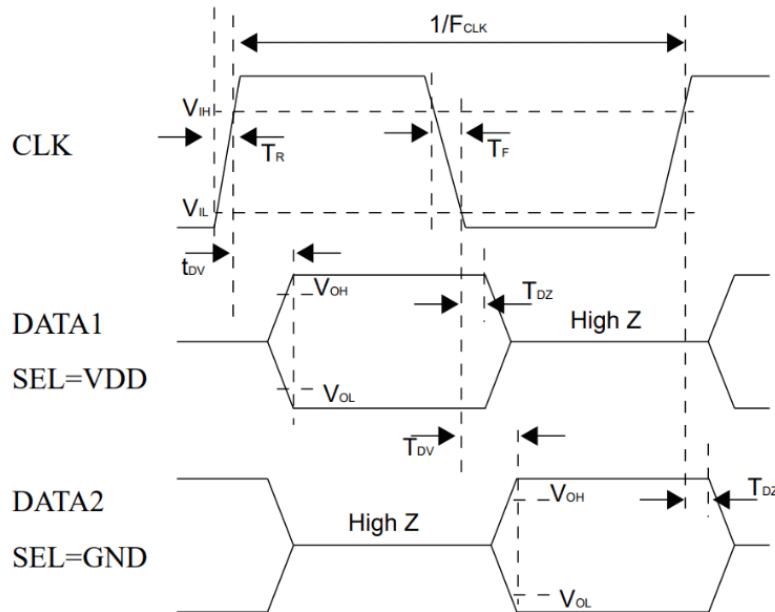
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## Operating Characteristics



Test Conditions: TA=23°C, 55% R.H., VDD=1.8V, Fclk=2.4 MHz, L/R=GND, no load

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Logic Input High	Vih	-	0.65* VDD	-	VDD +0.3	V
Logic Input Low	Vil	-	-0.3	-	0.35* VDD	V
Logic Output High	Voh	-	VDD -0.45	-	-	V
Logic Output Low	Vol	-	-	-	0.45	V
Clock Duty Cycle	-	-	40	50	60	%
Data Format	-	-	1/2 Cycle 1-bit PDM			
Fall Asleep Time	Tslp	Fclock≤50KHz	-	5	-	µs
Wake-up Time	Twk	Fclock>150KHz	-	30	-	µs
Power-up Time	Tpu	-	-	35	-	µs
Mode Change Time	Tmc	-	-	-	10	µs

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## Physical Characteristics

### MATERIAL

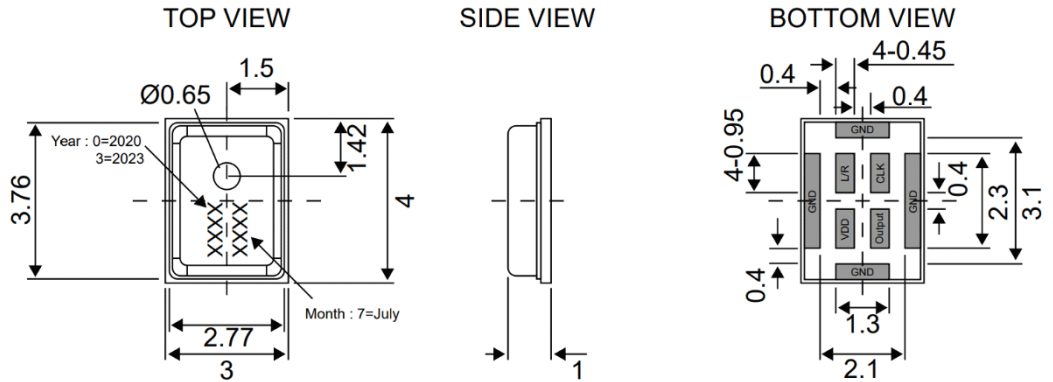
Solder Pads Gold Plated Copper

### TEMPERATURE RANGES

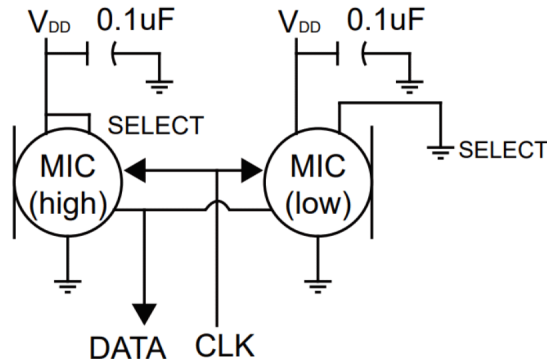
Operating -40 to +105 °C

Storage -40 to +105 °C

Weight 0.029 g


 General tolerance =  $\pm 0.1$  mm and all measurements in mm unless otherwise noted.

## Interface Circuit



Revision	Description	By	Date
1-2023	Updated Operating Characteristics Table.	AL	2023-06-21
2-2023	Supply Current from 800 to 920 $\mu$ A, CLK Freq change from 1.8 to 2.4MHz, PSR from -80 to -87dBFS, PSRR from 50 to 54dBV/FS, Acoustic Overload Point from 120 to 115dB SPL, THD from 1 to 0.1%, Low Power Range from 350-800 to 250-900kHz, Sleep Range from 0-250 to 0-50kHz, Added Low Power Mode Changes, New Timing Chart and Table, Operating Temp from -40-105 to -40-85°C, Storage Temp from -40-105 to -40-125°C, Weight from 0.024 to 0.029g, Mechanical Tolerance from 0.5 to 0.1mm, Height 1.1 to 1mm, and New Interface Circuit, New Footprint, New Profile, and New Packing Details.	AL	2023-07-07

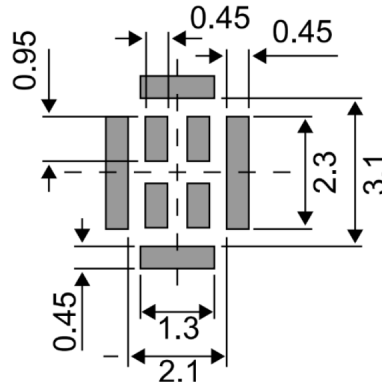
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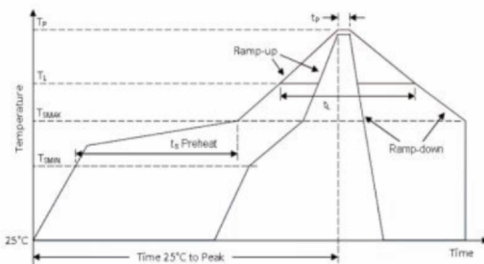
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## Recommended Footprint



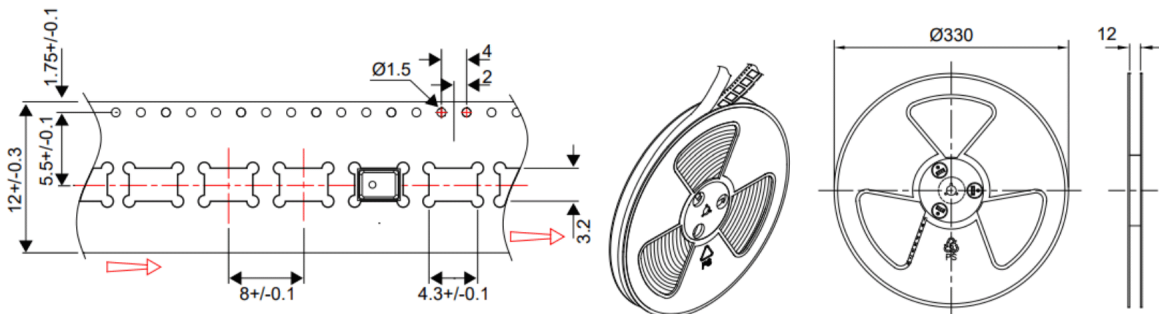
## Recommended Reflow Profile



Description		Parameter (lead-free)
Average temperature change rate ( $T_{max}$ to $T_p$ )		3°C/second max.
Preheat	Minimum temperature ( $T_{min}$ )	150°C
	Maximum temperature ( $T_{max}$ )	200°C
	Time ( $T_{min}$ to $T_{max}$ ) ( $t_s$ )	60-180 seconds
Reflow	Temperature ( $T_i$ )	217°C
	Time ( $t_c$ )	60-150 seconds
Peak temperature	Temperature ( $T_p$ )	260°C
	Time ( $t_r$ )	20-40 seconds
Cooling rate ( $T_p$ to $T_{min}$ )		6°C/second max
Time required from 25°C to peak temperature		8 minutes max

Recommended leadless solder reflow temperature profile

## Tape & Reel Packaging



5000 pieces per reel, 2 reels per box, 5 boxes per carton, 50,000 pieces per carton

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