

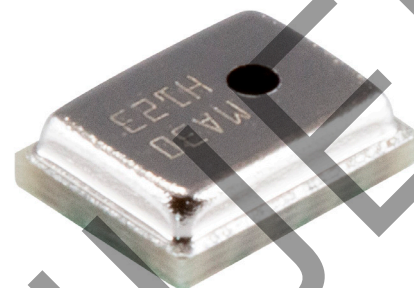


**THE DATASHEET OF
CMM-4030D-261-I2S-TR**



MODEL: CMM-4030D-261-I2S-TR | **DESCRIPTION:** MEMS MICROPHONE**FEATURES**

- I²S technology
- digital
- omnidirectional

**ELECTRICAL**

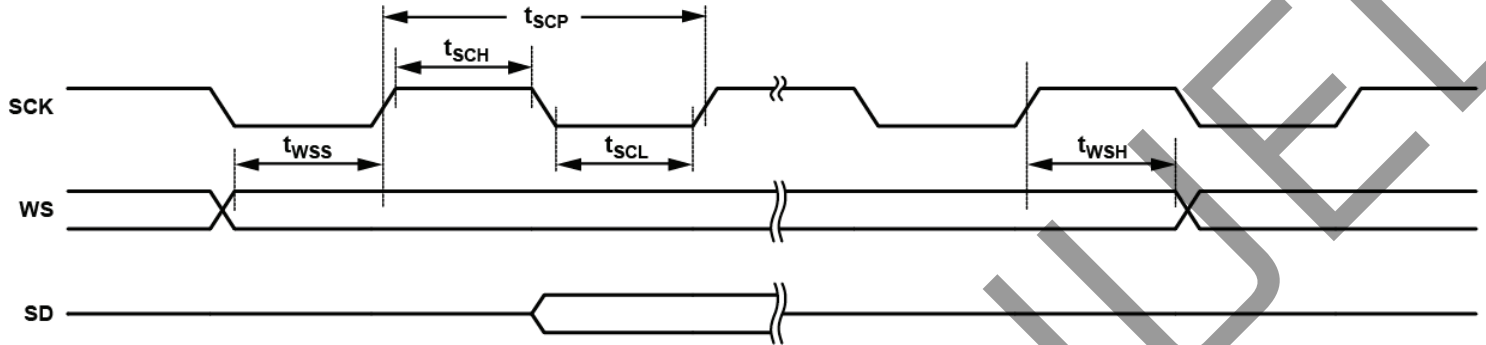
parameter	conditions/description	min	typ	max	units
directivity	omnidirectional				
sensitivity [S]	at 1 kHz, 1 Pa	-27	-26	-25	dB FS
supply voltage [V _{DD}]		1.6	1.8	3.6	V
current consumption [I _{DD}]	at normal mode at low power mode		0.75 0.40	1.0	mA mA
clock frequency [F _{clock}]	at normal mode at low power mode	1.0 150	3.0	4.0 800	MHz kHz
sensitivity reduction	no change across voltage range				
frequency [f]		100		10,000	Hz
signal to noise ratio [S/N]	at 20 kHz bandwidth (A-weighted)		59		dBA
total harmonic distortion [THD]	at 94 dB SPL, 1 kHz, Rload > 2 kΩ		0.1		%
acoustic overload point [AOP]	at 94 dB SPL, 1 kHz, Rload > 2 kΩ		124		dB SPL
power supply rejection [PSR]			-72		dB FS(A)
power-up time			6	20	ms

DIGITAL INTERFACE

parameter	conditions/description	min	typ	max	units
low voltage input [L/R, WS, SCK] [VIL]		0		0.25xV _{DD}	V
high voltage input [L/R, WS, SCK] [VIH]		0.7xV _{DD}		V _{DD}	V
high voltage output [SD] [VOL]		0.1xV _{DD}		0.3xV _{DD}	V
high voltage output [SD] [VOH]		0.7xV _{DD}		0.9xV _{DD}	V

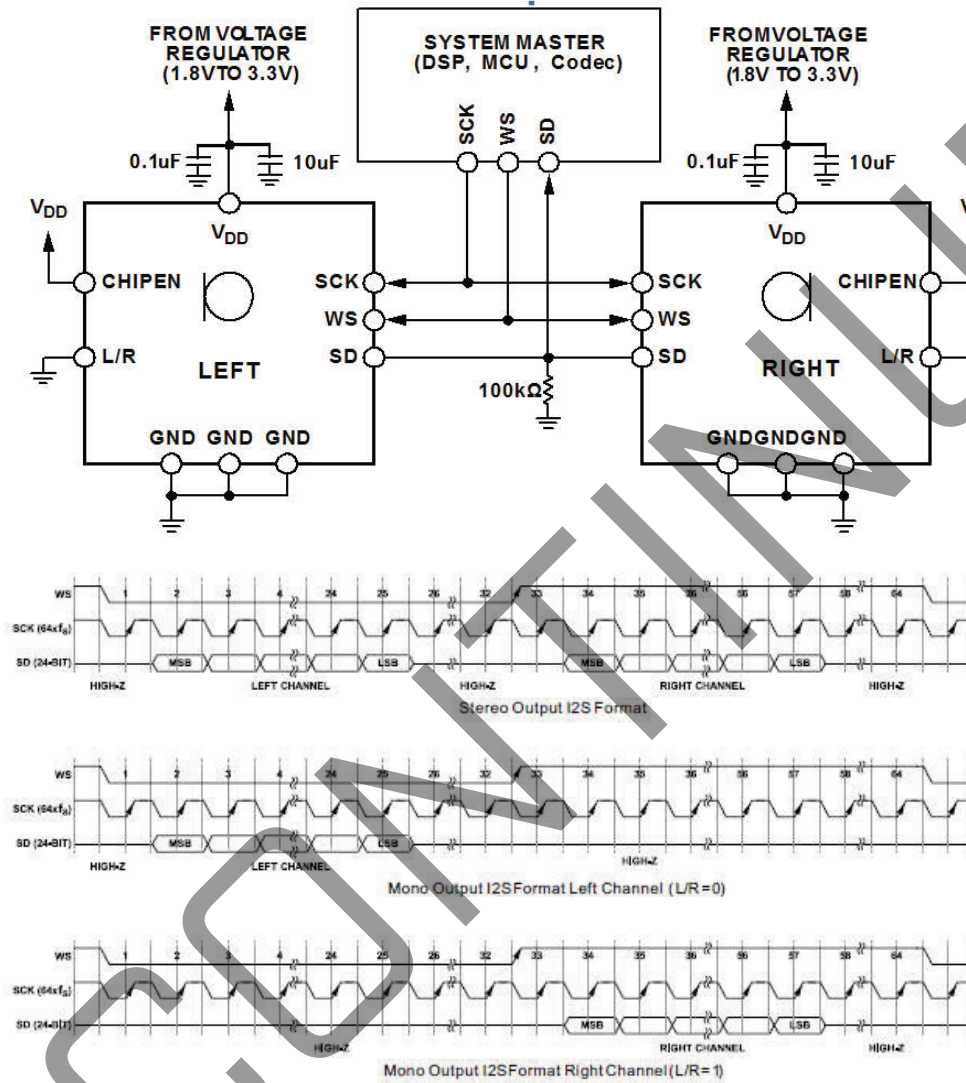
Notes: 1. All specifications measured at 25°C, humidity at 45±5%, L/R pins grounded, V_{DD} = 1.8 V, F_{clock} = 3.072 MHz, unless otherwise noted.

TIMING CHARACTERISTICS



Parameter	Description	Min	Normal	Max.	Unit
t_{SCH}	SCK high	--	50	--	ns
t_{SCL}	SCK low	--	50	--	ns
t_{SCP}	SCK period	--	325	--	ns
f_{SCK}	SCK frequency	--	3.072	--	MHz
t_{WSS}	WS setup	--	0	--	ns
t_{WSH}	WS hold	--	20	--	ns
f_{WS}	WS frequency	--	48	--	kHz

RECOMMENDED INTERFACE CIRCUIT



I²S DATA INTERFACE

The serial data is in slave mode I²S format, which has 24-bit depth in a 32 bit word. In a stereo frame there are 64 SCK cycles, or 32 SCK cycles per data-word. When L/R=0, the output data in the left channel, while L/R=VDD, data in the right channel. The output data pin [SD] is tri-stated after the LSB is output so that another microphone can drive the common data line.

DATA WORD LENGTH

The output data-word length is 24 bits per channel. The Mic must always have 64 clock cycles for every stereo data-word ($f_{SCK} = 64 \times f_{WS}$).

DATA WORD FORMAT

The default data format is I²S, MSB-first. In this format, the MSB of each word delayed by one SCK cycle from the start of each half-frame.

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature		-20		70	°C
storage temperature	in packaging	-40		100	°C
RoHS	yes				

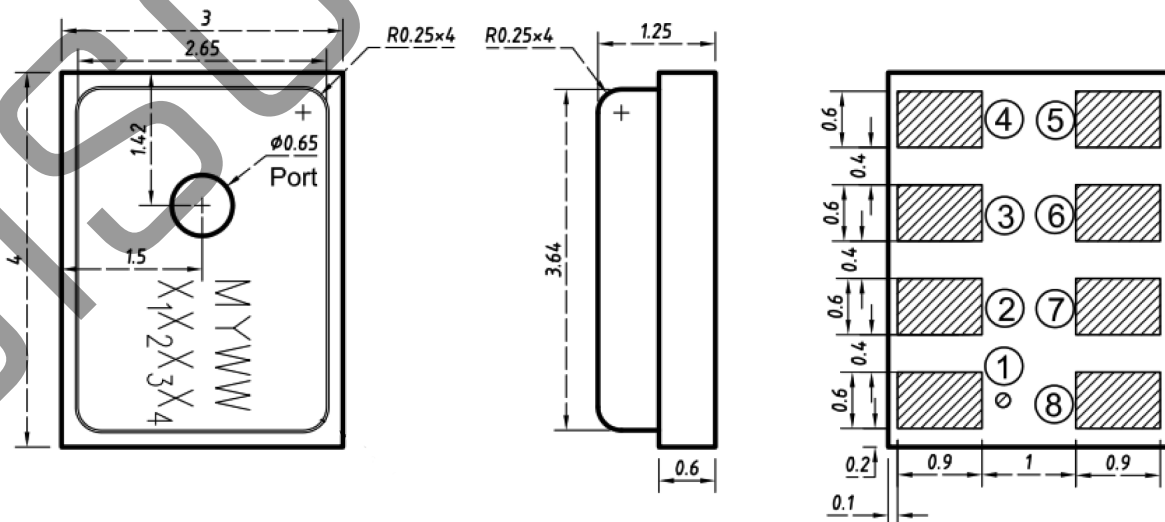
MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	4.0 x 3.0 x 1.25				mm
acoustic port	top				
terminals	surface mount				
weight			0.03		g

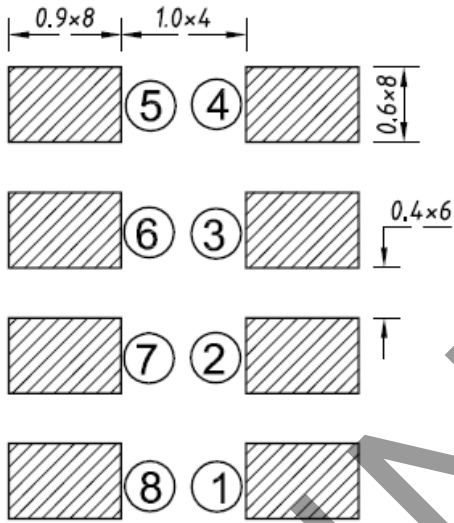
MECHANICAL DRAWING

units: mm
tolerance:
length, width, height: ± 0.10 mm
acoustic port: ± 0.05 mm
unless otherwise specified: ± 0.15 mm

TERMINAL CONNECTIONS			
TERM.	SYM	FUNCTION	DESCRIPTION
1	GND	ground	Connect to ground on the PCB.
2	N/C	--	Do not connect
3	WS	input	Serial Data-Word Select for I ² S Interface.
4	CHIPEN	input	Microphone enable. When set low[ground], the microphone is disabled and put in power-down mode. When set high (VDD), the microphone is enabled.
5	L/R	input	Left/Right Channel Select. When set low, the microphone outputs its signal in the left channel of the I ² S frame; when set high, the microphone outputs its signal in the right channel.
6	SCK	input	Serial Data Clock for I ² S Interface.
7	SD	output	Serial Data Output for I ² S Interface. This pin tristates when not actively driving the appropriate output channel. The SD trace should have a 100 k Ω pull-down resistor to discharge the line during the time that all microphones on the bus have tristated their outputs.
8	VDD	power	1.8 to 3.3 V. This pin should be decoupled to Pin 1 with a 0.1 μ F capacitor and a 10 μ F capacitor.

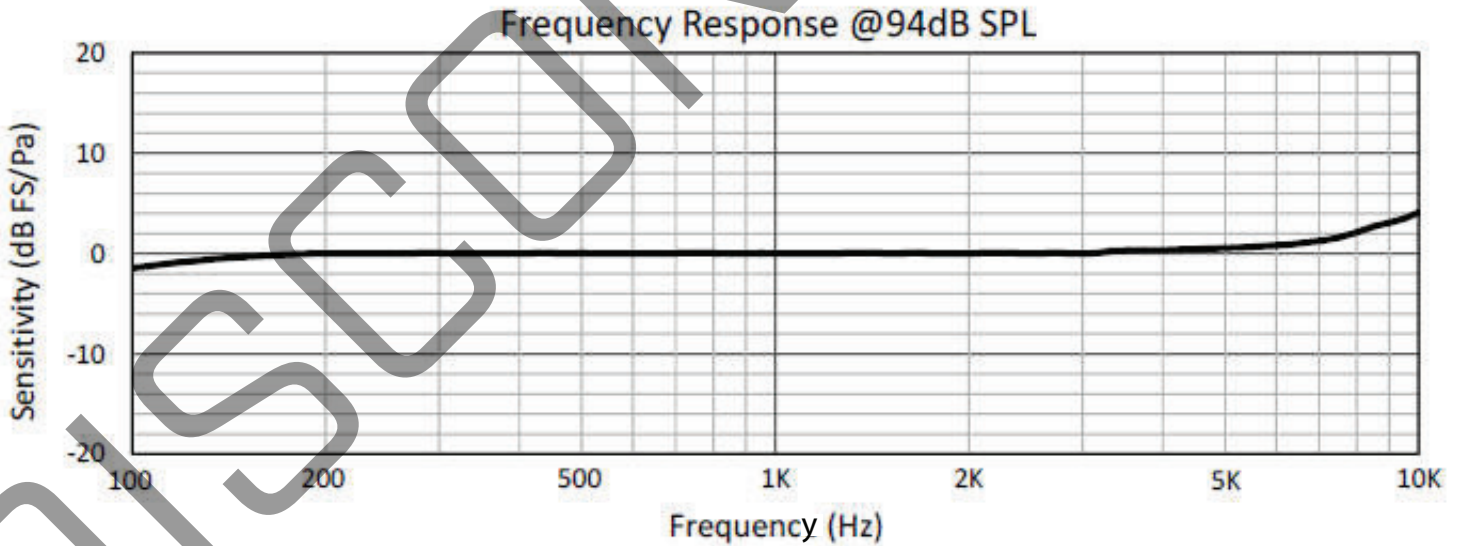


MECHANICAL DRAWING (CONTINUED)



Recommended PCB Layout
Top View

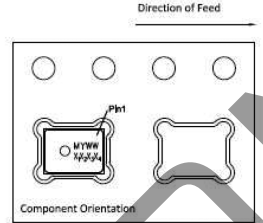
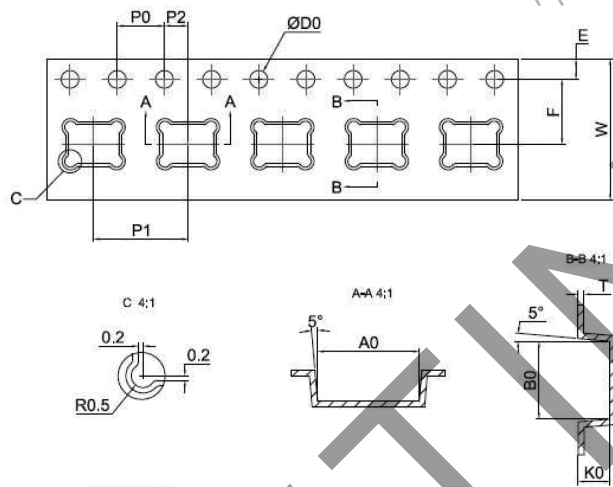
FREQUENCY RESPONSE CURVE



PACKAGING

parameter	conditions/description	min	typ	max	units
MSL	Class 2a				
reel size	Ø7 inches				
reel QTY ³	1,100 pcs per reel				
carton size	310 x 210 x 165 mm				
carton QTY	5,500 pcs				

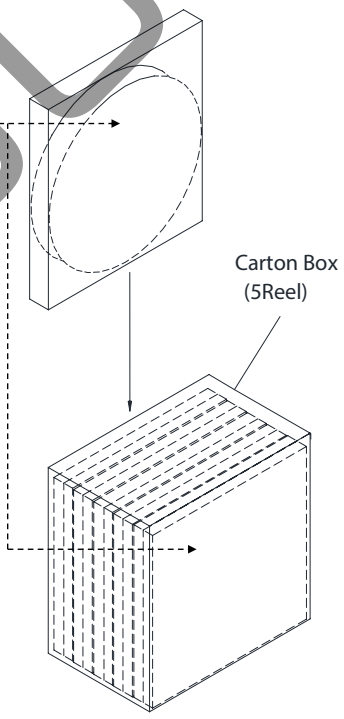
Note: 3. The leader tape of the reel, and the beginning tape fixed into the reel center, will leave 25 blank cavities each.



Item	W	E	F	ØD0	K0
DIM[mm]	12.0±0.30	1.75±0.10	5.50±0.10	1.50+0.10/-0	1.25±0.10
Item	P0	10P0	P1	A0	B0
DIM[mm]	4.0±0.10	40.0±0.20	8.0±0.10	3.80±0.10	2.95±0.10
Item	P2	T	--	--	--
DIM[mm]	2.0±0.10	0.25±0.05	--	--	--

Lot No.	XXXXXXXXXX
Part No.	CUI Invt: CUI Part#:
Quantity:	XXXX Pcs
Date:	DD MM YY
	MADE IN CHINA
	CUI DEVICES

RoHS Compliant



REVISION HISTORY

rev.	description	date
1.0	initial release	08/12/2020
1.01	updated datasheet	11/01/2021
1.02	logo, datasheet style update	08/05/2022

The revision history provided is for informational purposes only and is believed to be accurate.



CUI Devices offers a one (1) year limited warranty. Complete warranty information is listed on our website.

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