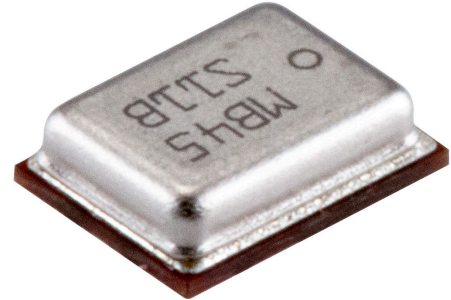


**MODEL:** CMM-3526D-261-I2S-TR | **DESCRIPTION:** MEMS MICROPHONE**FEATURES**

- I<sup>2</sup>S technology
- digital
- omnidirectional

**ELECTRICAL**

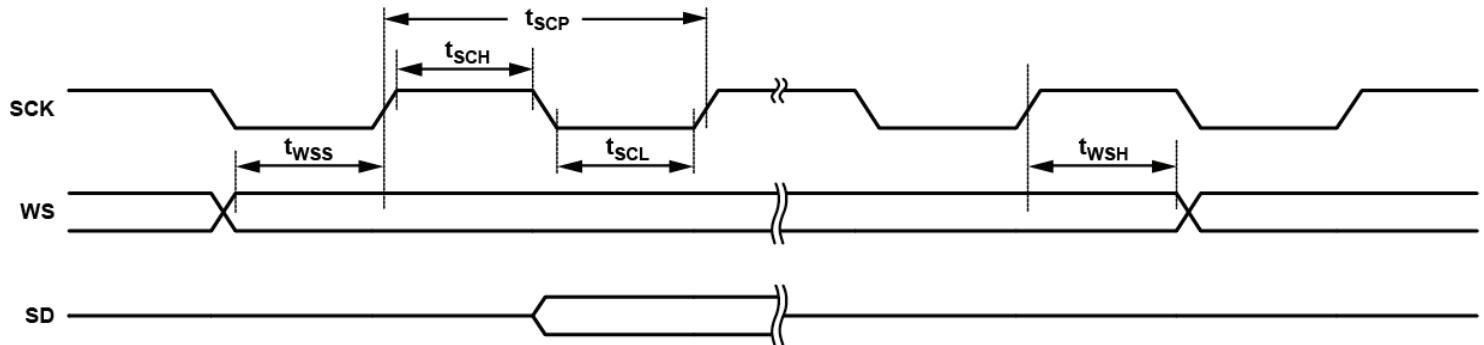
| parameter                              | conditions/description              | min        | typ          | max        | units      |
|----------------------------------------|-------------------------------------|------------|--------------|------------|------------|
| directivity                            | omnidirectional                     |            |              |            |            |
| sensitivity (S)                        | at 1 kHz, 1 Pa                      | -27        | -26          | -25        | dB FS      |
| supply voltage (V <sub>DD</sub> )      |                                     | 1.6        | 1.8          | 3.6        | V          |
| current consumption (I <sub>DD</sub> ) | at normal mode<br>at low power mode |            | 0.75<br>0.40 | 1.0        | mA<br>mA   |
| clock frequency (F <sub>CLOCK</sub> )  | at normal mode<br>at low power mode | 1.0<br>150 | 3.0          | 4.0<br>600 | MHz<br>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)    |            | 64           |            | dBA        |
| total harmonic distortion (THD)        | at 94 dB SPL, 1 kHz, Rload > 2 kΩ   |            | 0.2          |            | %          |
| acoustic overload point (AOP)          | at 94 dB SPL, 1 kHz, Rload > 2 kΩ   |            | 120          |            | 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 <sub>DD</sub> | V     |
| high voltage input (L/R, WS, SCK) (VIH) |                        | 0.7xV <sub>DD</sub> |     | V <sub>DD</sub>      | V     |
| high voltage output (SD) (VOL)          |                        | 0.1xV <sub>DD</sub> |     | 0.3xV <sub>DD</sub>  | V     |
| high voltage output (SD) (VOH)          |                        | 0.7xV <sub>DD</sub> |     | 0.9xV <sub>DD</sub>  | V     |

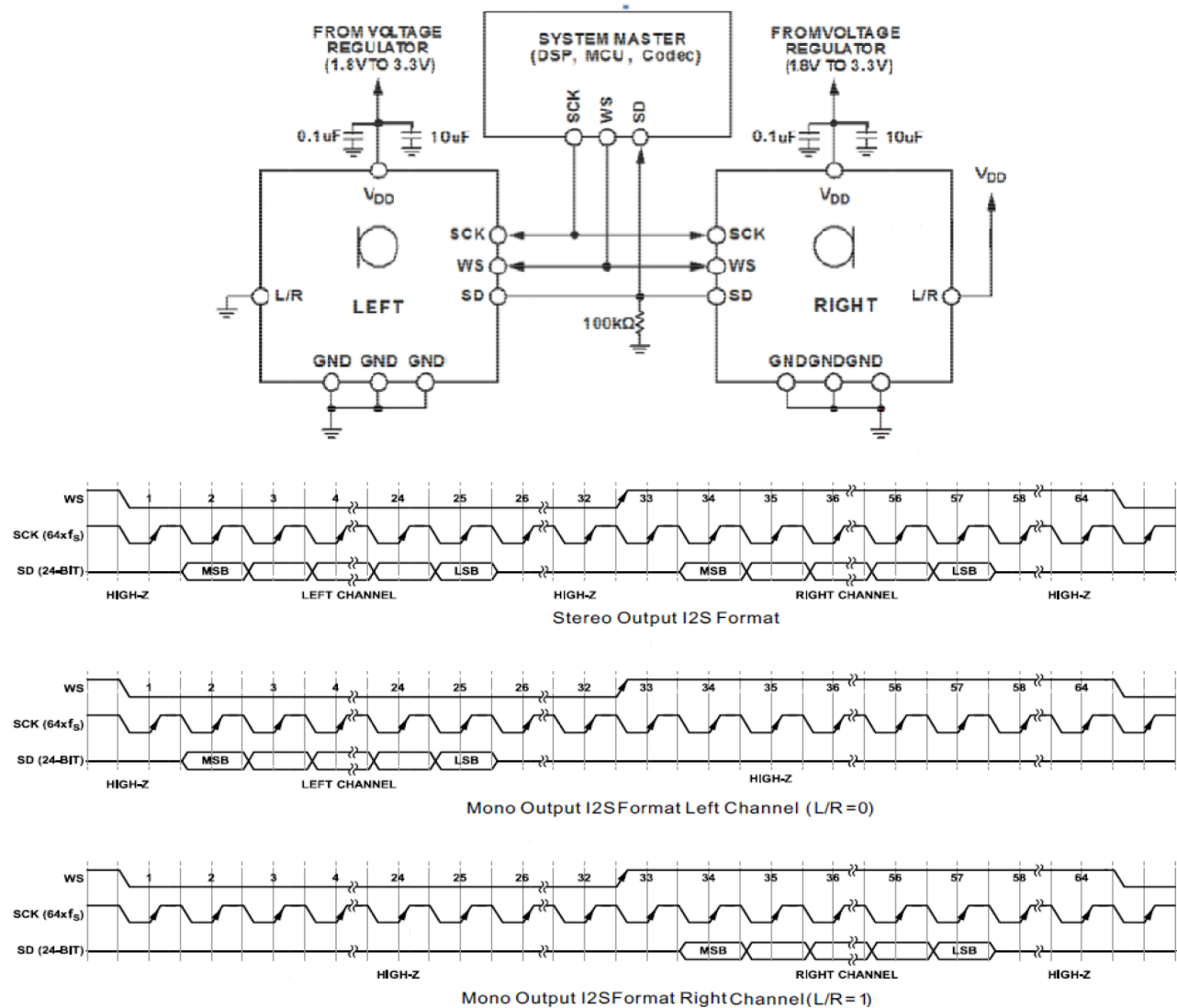
Notes: 1. All specifications measured at 25°C, humidity at 45±5%, L/R pins grounded, V<sub>DD</sub> = 1.8 V, F<sub>CLOCK</sub> = 3.072 MHz, unless otherwise noted.

## 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



## I<sup>2</sup>S DATA INTERFACE

The serial data is in slave mode I<sup>2</sup>S 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 is in the left channel, while L/R=VDD, data is 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 I<sup>2</sup>S, MSB-first. In this format, the MSB of each word is 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    | 3.50 x 2.65 x 0.98     |     |      |     | mm    |
| acoustic port | bottom                 |     |      |     |       |
| terminals     | surface mount          |     |      |     |       |
| weight        |                        |     | 0.03 |     | g     |

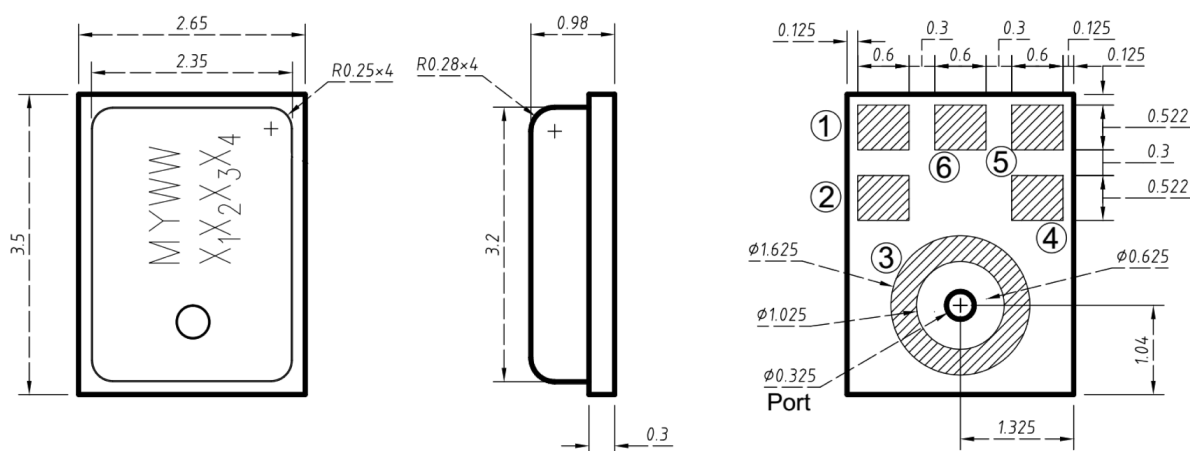
## MECHANICAL DRAWING

units: mm

tolerance:

length, width, height:  $\pm 0.10$  mmacoustic port:  $\pm 0.05$  mmunless otherwise specified:  $\pm 0.15$  mm

| TERMINAL CONNECTIONS |     |          |                                                                                                                                                                                                                                                                                                  |
|----------------------|-----|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TERM.                | SYM | FUNCTION | DESCRIPTION                                                                                                                                                                                                                                                                                      |
| 1                    | VDD | power    | 1.8 to 3.3 V. This pin should be decoupled to Pin 3 with a 0.1 $\mu$ F capacitor and a 10 $\mu$ F capacitor.                                                                                                                                                                                     |
| 2                    | SCK | input    | Serial Data Clock for I <sup>2</sup> S Interface.                                                                                                                                                                                                                                                |
| 3                    | GND | ground   | Connect to ground on the PCB.                                                                                                                                                                                                                                                                    |
| 4                    | L/R | input    | Left/Right Channel Select. When set low, the microphone outputs its signal in the left channel of the I <sup>2</sup> S frame; when set high, the microphone outputs its signal in the right.                                                                                                     |
| 5                    | WS  | input    | Serial Data-Word Select for I <sup>2</sup> S Interface.                                                                                                                                                                                                                                          |
| 6                    | SD  | output   | Serial Data Output for I <sup>2</sup> S Interface. This pin tristates when not actively driving the appropriate output channel. The SD trace should have a 100 k $\Omega$ pull-down resistor to discharge the line during the time that all microphones on the bus have tristated their outputs. |

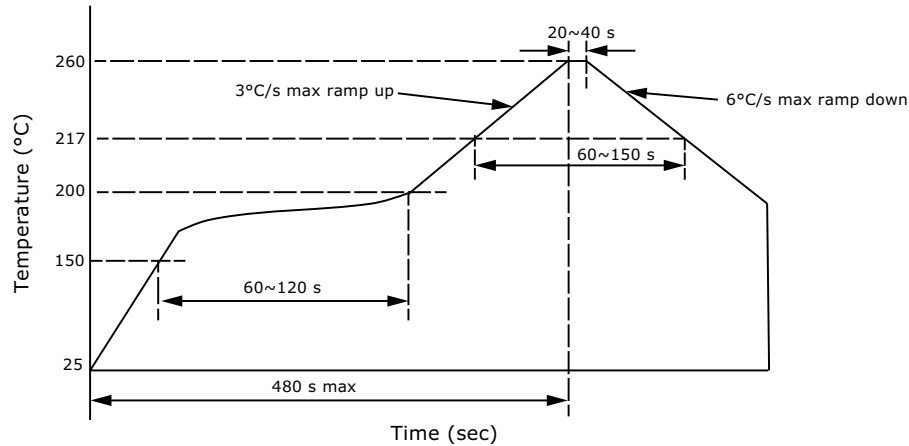




## SOLDERABILITY

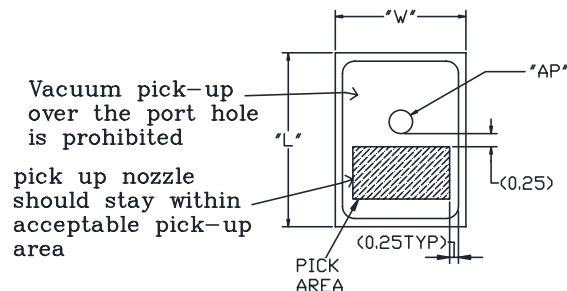
| parameter                     | conditions/description | min | typ | max | units |
|-------------------------------|------------------------|-----|-----|-----|-------|
| reflow soldering <sup>2</sup> | see reflow profile     |     |     | 260 | °C    |

Note: 2. Not recommended to exceed 3 reflow cycles.



## HANDLING RECOMMENDATIONS

1. Not recommended to blow air heavily over acoustic port as debris could impact mic function.
2. Not suitable for wash process after reflow.
3. Not recommended to brush board with or without solvents after reflow process.
4. Not recommended to directly expose to ultrasonic processing or cleaning.
5. Not recommended to insert any object in port of device at any time.
6. Not recommended to apply over 30 psi of air pressure into the port hole.
7. Not recommended to pull a vacuum over port hole.
8. Not recommended to apply a vacuum when repackaging into sealed bag a rate faster than 0.5 atm/sec.
9. Not recommended to clean table or carrier plate with air guarding system that could induce particle floating inside mic.

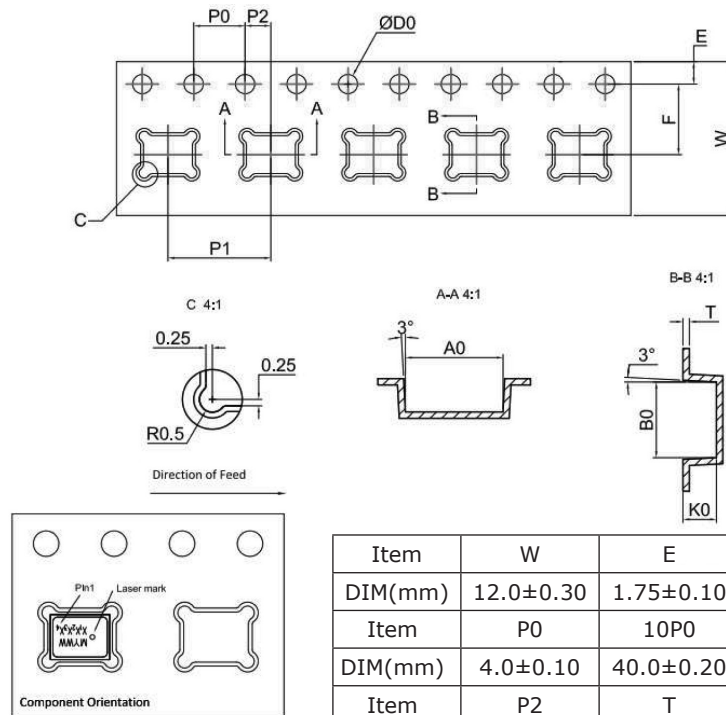


Recommended Vacuum Nozzle Pickup  
Top View

## PACKAGING

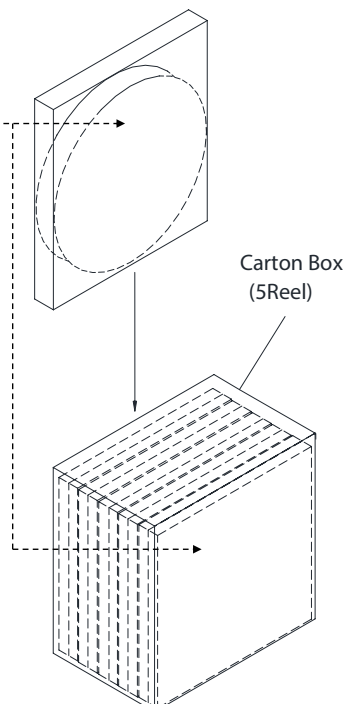
| parameter             | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|-----|-------|
| MSL                   | Class 2a               |     |     |     |       |
| reel size             | Ø7 inches              |     |     |     |       |
| reel QTY <sup>3</sup> | 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.



|           |                         |
|-----------|-------------------------|
| Lot No.   | XXXXXXXXXX              |
| Part No.  | CUI Inv#:<br>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 |

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

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# CUI DEVICES

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