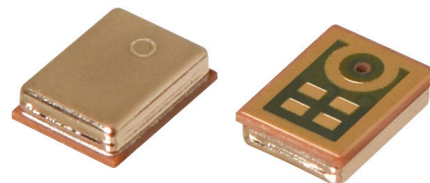


**MODEL:** CMM-4030DB-26354-TR | **DESCRIPTION:** MEMS MICROPHONE**FEATURES**

- digital (PDM)
- small package
- reflow solder compatible
- omnidirectional

**ELECTRICAL**

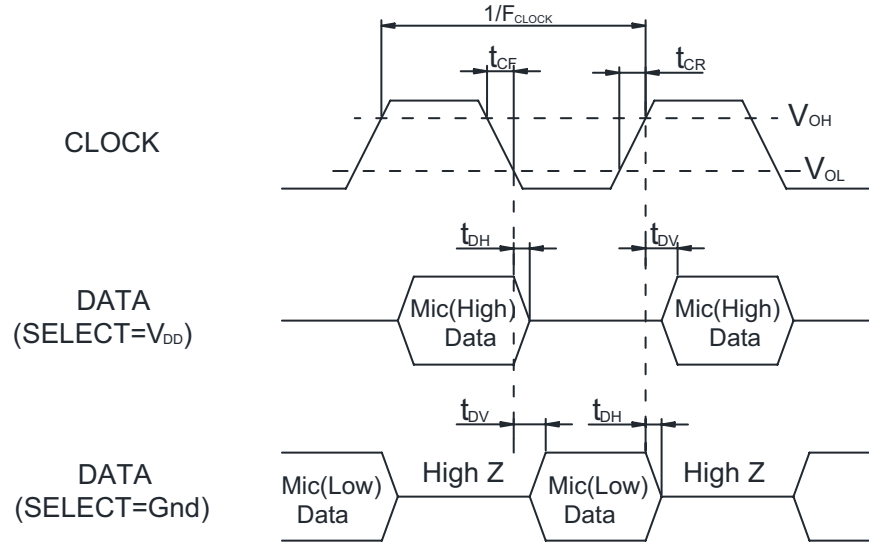
| parameter                              | conditions/description                       | min | typ  | max    | units  |
|--|--|-----|------|--------|--------|
| directivity                            | omnidirectional                              |     |      |        |        |
| sensitivity (S)                        | at 94 dB SPL, 1 kHz                          | -29 | -26  | -23    | dB FS  |
| supply voltage (V <sub>DD</sub> )      |  | 1.6 | 2.0  | 3.6    | V      |
| current consumption (I <sub>DD</sub> ) |  |     | 0.54 |        | mA     |
| sensitivity reduction                  | V <sub>DD</sub> = 3.6 ~ 1.6 V                |     | -0.5 |        | dB FS  |
| frequency (f)                          |  | 100 |      | 10,000 | Hz     |
| signal to noise ratio (S/N)            | at 94 dB SPL, 1 kHz (A-weighted)             |     | 64   |        | dBA    |
| total harmonic distortion (THD)        | at 94 dB SPL, 1 kHz                          |     | 0.2  |        | %      |
| acoustic overload point (AOP)          | at 10% THD, 1 kHz                            |     | 120  |        | dB SPL |
| output impedance (Z <sub>out</sub> )   | at 1 kHz                                     |     |      | 300    | Ω      |
| power supply rejection (PSR)           | 100 mVp-p square wave at 217 Hz (A-weighted) |     | -90  |        | dB FS  |

**DIGITAL INTERFACE**

| parameter                                    | conditions/description     | min                  | typ | max                  | units |
|--|----------------------------|----------------------|-----|----------------------|-------|
| sleep current (I <sub>SLEEP</sub> )          | F <sub>CLOCK</sub> < 1 kHz |                      | 3   | 4                    | μA    |
| fall-asleep time                             | F <sub>CLOCK</sub> < 1 kHz |                      |     | 50                   | μs    |
| wake-up time                                 | F <sub>CLOCK</sub> ≥ 1 MHz |                      |     | 52                   | ms    |
| short circuit current (I <sub>sc</sub> )     | grounded data pin          |                      | 1   | 10                   | mA    |
| output load (C <sub>LOAD</sub> )             |                            |                      |     | 100                  | pF    |
| data format                                  | 1-Bit PDM                  |                      |     |                      |       |
| clock frequency (F <sub>CLOCK</sub> )        |                            | 1.0                  | 2.4 | 3.2                  | MHz   |
| clock duty cycle (F <sub>DC</sub> )          |                            | 40                   |     | 60                   | %     |
| clock rise time (t <sub>CR</sub> )           |                            |                      |     | 10                   | ns    |
| clock fall time (t <sub>CF</sub> )           |                            |                      |     | 10                   | ns    |
| logic input/output low (V <sub>IOL</sub> )   | I <sub>OUT</sub> = 1 mA    | -0.30                |     | 0.35xV <sub>DD</sub> | V     |
| logic input/output high (V <sub>IOH</sub> )  | I <sub>OUT</sub> = 1 mA    | 0.65xV <sub>DD</sub> |     | V <sub>DD</sub> +0.3 | V     |
| delay time for valid data (t <sub>DV</sub> ) |                            | 18                   |     | 60                   | ns    |
| delay time for high z (t <sub>DH</sub> )     |                            | 0                    |     | 16                   | ns    |

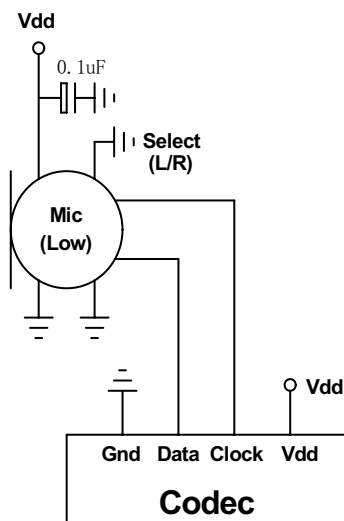
Notes: 1. All specifications measured at 23±2°C, humidity at 55±20%, V<sub>DD</sub> = 2.0 V, F<sub>CLOCK</sub> = 2.4 MHz, unless otherwise noted.

## TIMING CHARACTERISTICS

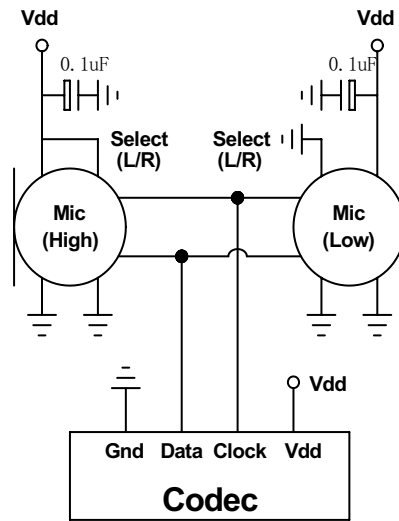


| Microphone | Select (L/R)    | Asserts Data On    | Latch Data On      |
|------------|-----------------|--------------------|--------------------|
| Mic (High) | V <sub>DD</sub> | rising clock edge  | falling clock edge |
| Mic (Low)  | GND             | falling clock edge | rising clock edge  |

## RECOMMENDED INTERFACE CIRCUIT



Single MIC



Double MIC

## ENVIRONMENTAL

| parameter             | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|-----|-------|
| operating temperature |                        | -40 |     | 105 | °C    |
| storage temperature   | in packaging           | -40 |     | 85  | °C    |
| RoHS                  | yes                    |     |     |     |       |

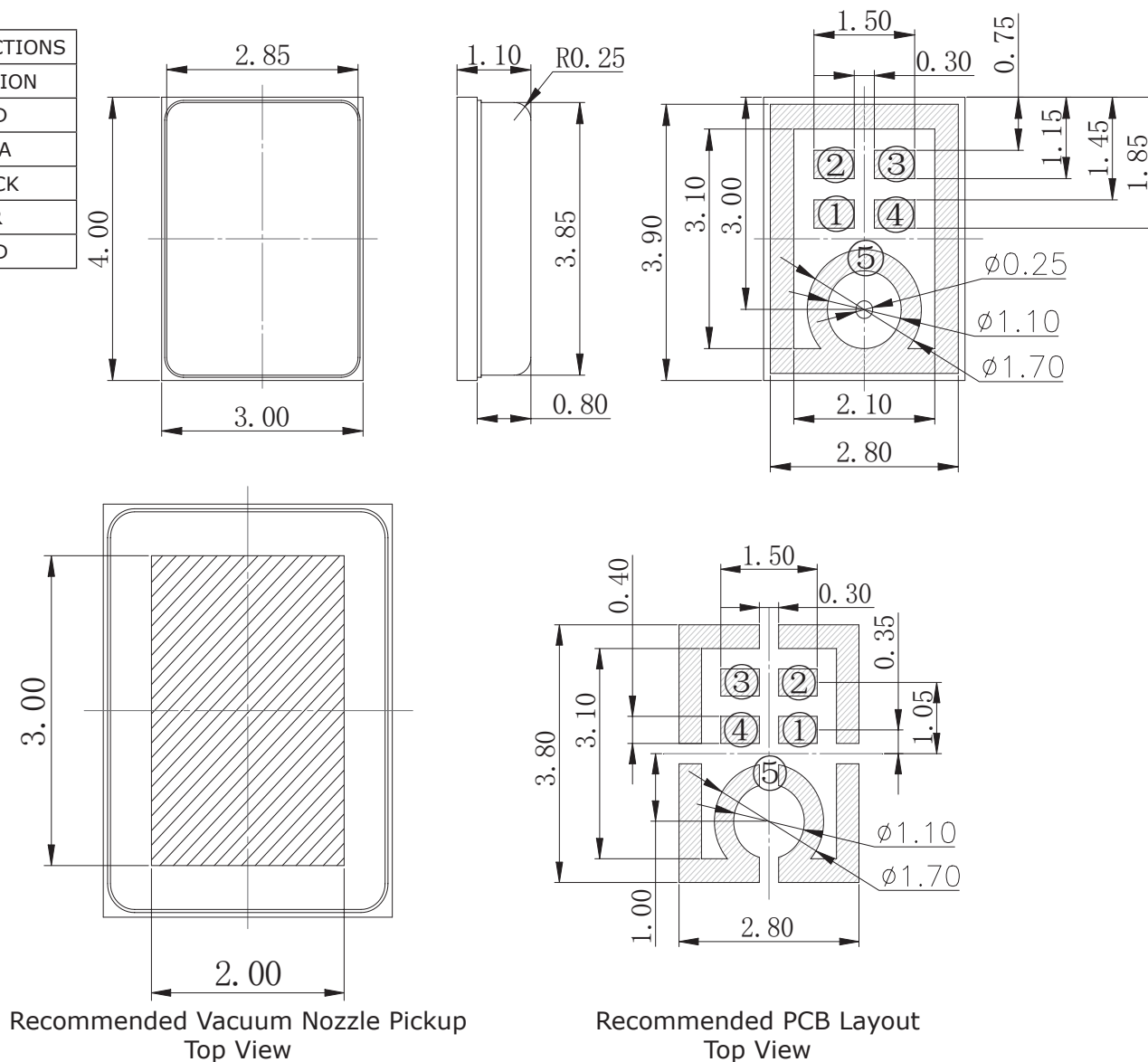
## MECHANICAL

| parameter     | conditions/description | min | typ   | max | units |
|---------------|------------------------|-----|-------|-----|-------|
| dimensions    | 4.00 x 3.00 x 1.10     |     |       |     | mm    |
| acoustic port | bottom                 |     |       |     |       |
| terminals     | surface mount          |     |       |     |       |
| weight        |                        |     | 0.024 |     | g     |

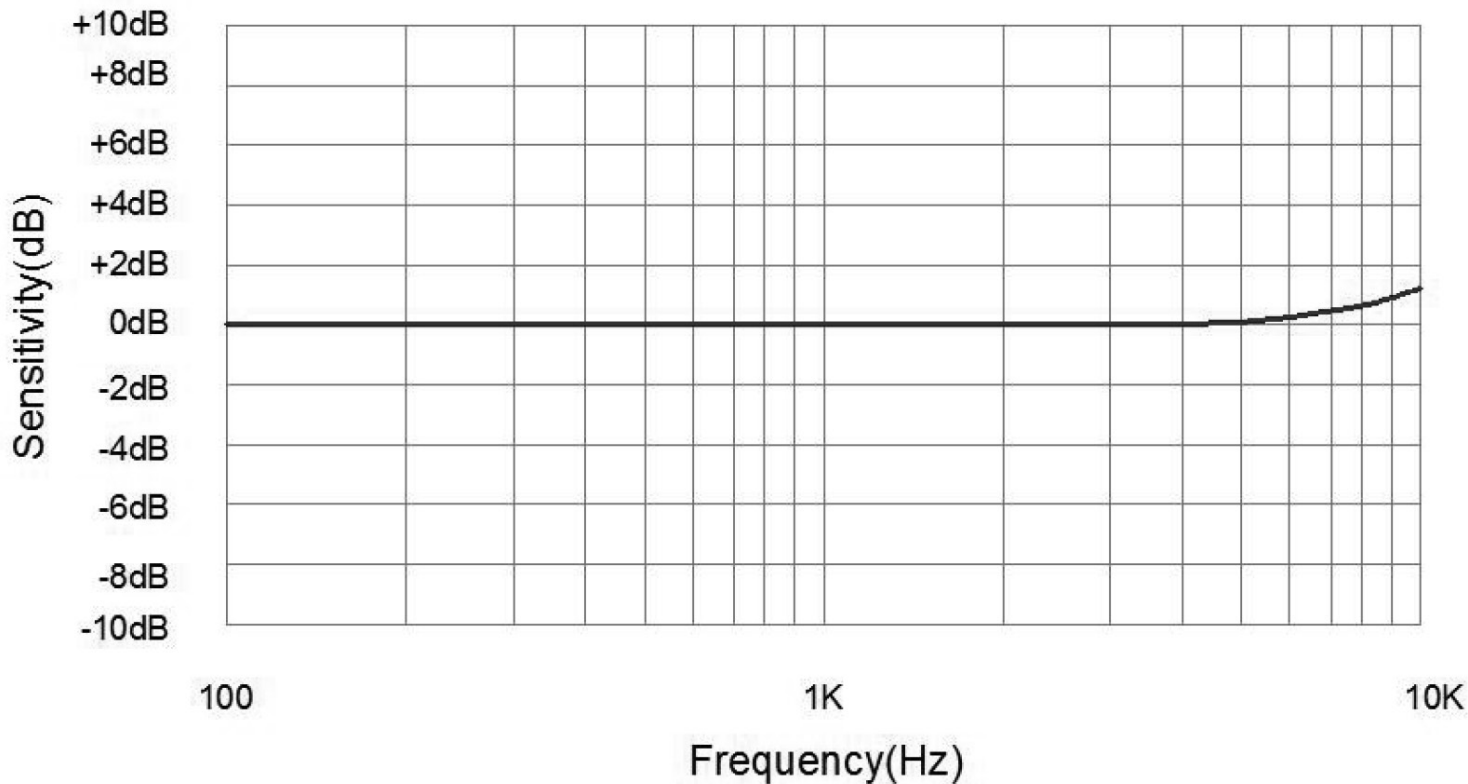
## MECHANICAL DRAWING

units: mm  
tolerance: ±0.1 mm

| TERMINAL CONNECTIONS |          |
|----------------------|----------|
| TERM.                | FUNCTION |
| 1                    | VDD      |
| 2                    | DATA     |
| 3                    | CLOCK    |
| 4                    | L/R      |
| 5                    | GND      |



## FREQUENCY RESPONSE CURVE



## SOLDERABILITY

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

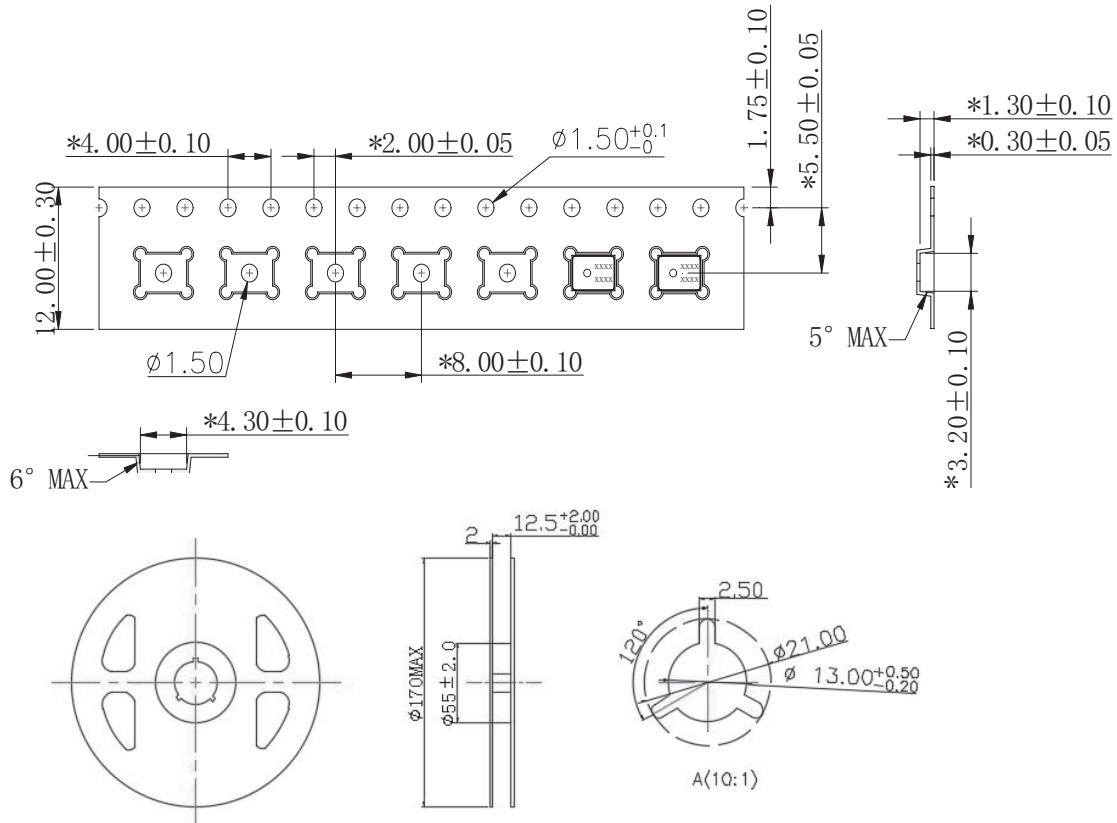
- Note:
1. Vacuuming over acoustical hole is not allowed.
  2. Not suitable for wash process.
  3. Not recommended to exceed 5 reflow cycles.



## PACKAGING

| parameter                 | conditions/description    | min | typ | max | units |
|---------------------------|---------------------------|-----|-----|-----|-------|
| reel storage <sup>4</sup> | at relative humidity <75% | -40 |     | 85  | °C    |
| MSL                       | Class 1                   |     |     |     |       |
| reel size                 | Ø170 mm max               |     |     |     |       |
| reel QTY                  | 1,000 pcs per reel        |     |     |     |       |

- Note:
4. Recommended storage period no more than 1 year. Floor life (out of bag) no more than 4 weeks.



## REVISION HISTORY

---

| rev. | description     | date       |
|------|-----------------|------------|
| 1.0  | initial release | 11/12/2018 |
| 1.01 | brand update    | 01/16/2020 |

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

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