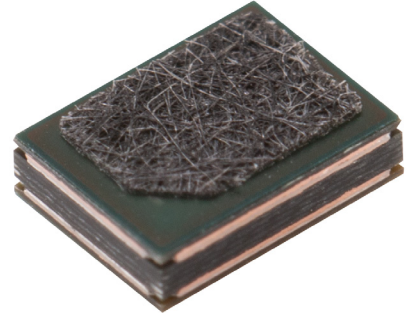


MODEL: CMM-3424DT-26165-TR | **DESCRIPTION:** MEMS MICROPHONE**FEATURES**

- IPX7 rated
- top port
- digital
- omnidirectional

**ELECTRICAL**

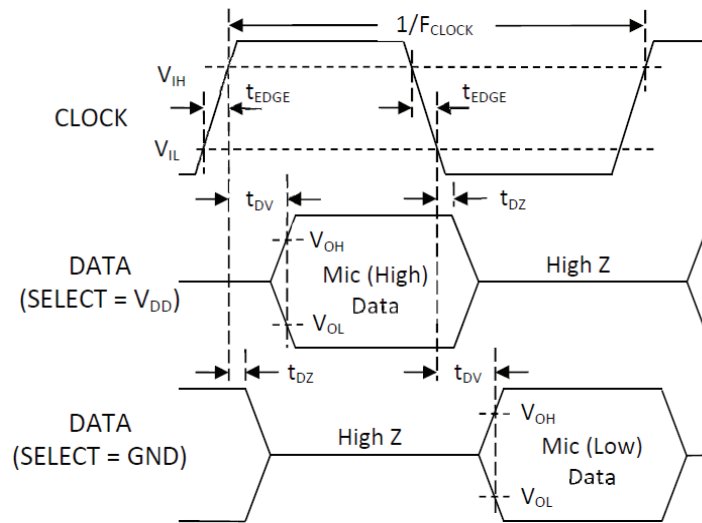
| parameter | conditions/description | min | typ | max | units |
|---|----------------------------------|-----|-----|-----|---------------------------|
| directivity | omnidirectional | | | | |
| sensitivity [S] ¹ | at 94 dB SPL, 1 kHz | -27 | -26 | -25 | dB FS |
| supply voltage [V _{DD}] ¹ | | 1.6 | | 3.6 | V |
| current consumption [I _{DD}] ^{1, 6} | standard mode | | 600 | 700 | μA |
| | low-power mode | | 250 | 300 | μA |
| standby current [I _{STANDBY}] ^{5, 6} | F _{CLOCK} < 250 kHz | | 50 | | μA |
| signal to noise ratio [S/N] | at 94 dB SPL, 1 kHz [A-weighted] | | 65 | | dB |
| total harmonic distortion [THD] | at 115 dB SPL, 1 kHz | | | 2 | % |
| | at 120 dB SPL, 1 kHz | | | 10 | % |
| power supply rejection ratio [PSSR] | 200 mVp-p sine wave @ 1 kHz | | | | |
| | V _{DD} =1.8 V | | 65 | | dB |
| | V _{DD} =3.3 V | | 65 | | dB |
| power supply rejection [PSR] | 100 mVp-p square wave @ 217 Hz | | | | |
| | V _{DD} =1.8 V | | -80 | | dB FS |
| | V _{DD} =3.3 V | | -80 | | dB FS |
| polarity | increasing sound pressure | | | | increasing density of 1's |

DIGITAL INTERFACE

| parameter | conditions/description | min | typ | max | units |
|--|---|----------------------|------|----------------------|-------|
| clock frequency | standard mode | 1 | | 4.8 | MHz |
| | low-power mode | 350 | | 800 | kHz |
| fall-asleep time ^{2,3} | $F_{CLOCK} < 1 \text{ kHz}$, $V_{DD} = \text{On}$ | | | 10 | ms |
| wake-up time ^{2,4} | $F_{CLOCK} \geq 1 \text{ MHz}$, $V_{DD} = \text{On}$ | | | 10 | ms |
| data format | 1/2 cycle PDM | | | | |
| short circuit output current (I _{sc}) | grounded output pin | | 1 | 10 | mA |
| output load (C _{LOAD}) | | | | 100 | pF |
| logic input high (V _{IH}) | | 0.65xV _{DD} | | | V |
| logic input low (V _{IL}) | | | | 0.35xV _{DD} | V |
| logic output high (V _{OH}) | I _{OUT} = 2 mA | | | V _{DD} +0.3 | V |
| logic output low (V _{OL}) | I _{OUT} = 2 mA | -0.3 | | | V |
| clock duty cycle | | 40 | | 60 | % |
| clock rise time | t _{cr} | | | 10 | ns |
| clock fall time | t _{ct} | | | 10 | ns |
| delay time for valid data (t _{dv}) CLK=3.072 MHz oscilloscope | data trans high VDD=1.8 V | 26 | | 82 | ns |
| | VDD=3.3 V | 20 | | 80 | ns |
| | data trans low VDD=1.8 V | 25 | | 80 | ns |
| | VDD=3.3 V | 21 | | 81 | ns |
| delay time to for high Z (t _{dz}) CLK=3.072 MHz oscilloscope | data trans high VDD=1.8 V | 0 | | 25 | ns |
| | VDD=3.3 V | 0 | | 24 | ns |
| | data trans low VDD=1.8 V | 0 | | 26 | ns |
| | VDD=3.3 V | 0 | | 25 | ns |
| settling time (t _s) | VDD=1.8 V | | 2.65 | 5.5 | ms |
| | VDD=3.3 V | | 2.65 | 5.5 | ms |
| startup time | powered down => active mode | | | | |
| | VDD=1.8 V | | 2.65 | 5.5 | ms |
| | VDD=3.3 V | | 2.45 | 5.3 | ms |

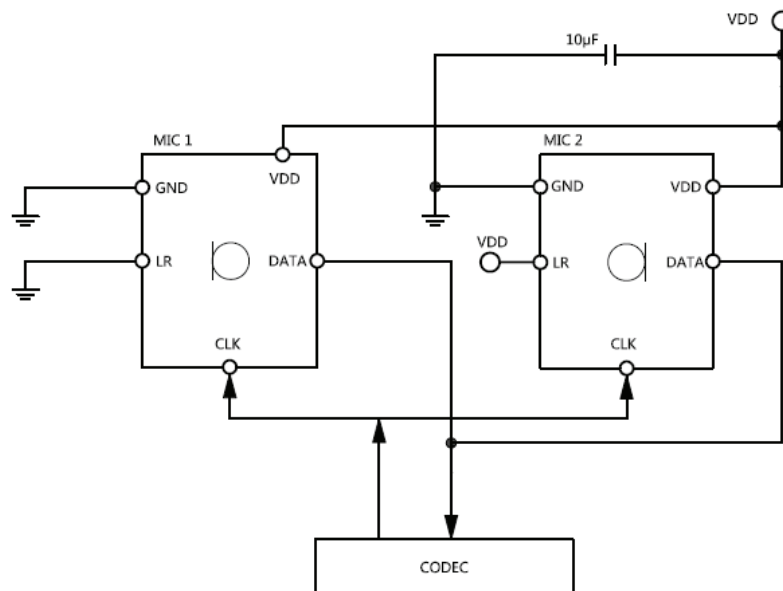
- Notes:
- 100% tested.
 - Valid microphone states are: Power Down Mode (mic off), Sleep Mode (low current, no output, fast start-up), and Active Mode (normal operation).
 - Time from f_{clock} < 1kHz to sleep current specification is met when transitioning from Active to Sleep Mode.
 - Time from f_{clock} ≥ 1MHz to all applicable specifications when transitioning from Sleep to Active Mode.
 - $\Delta I_{DD} = 0.5 \times V_{DD} \times C_{LOAD} \times f_{clock}$.
 - Specified max values are measured at V_{DD} = +3.6V
 - All specifications measured at 15-25°C, humidity at 60-70%, V_{DD} = 1.8 V, F_{CLOCK} = 3.072 MHz (768 kHz in low-power mode), no load, unless otherwise noted.

TIMING CHARACTERISTICS



| Label | Select | Drives Data After | High-Z After |
|--------|--------------|--------------------|--------------------|
| Data_H | High | rising clock edge | falling clock edge |
| Data_L | Low(default) | falling clock edge | rising clock edge |

RECOMMENDED INTERFACE CIRCUIT



ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|-----|-------|
| operating temperature | | -40 | | 100 | °C |
| storage temperature | in packaging | -40 | | 100 | °C |
| RoHS | yes | | | | |
| IP level | IPX7 | | | | |

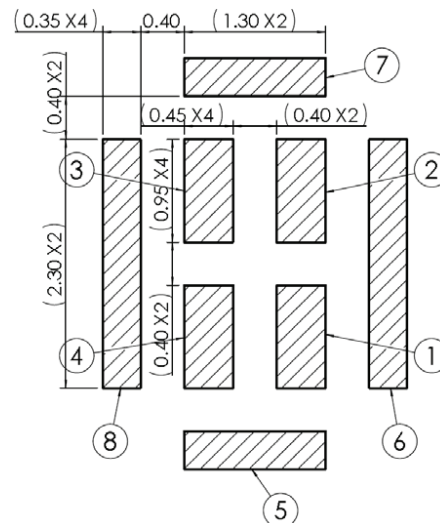
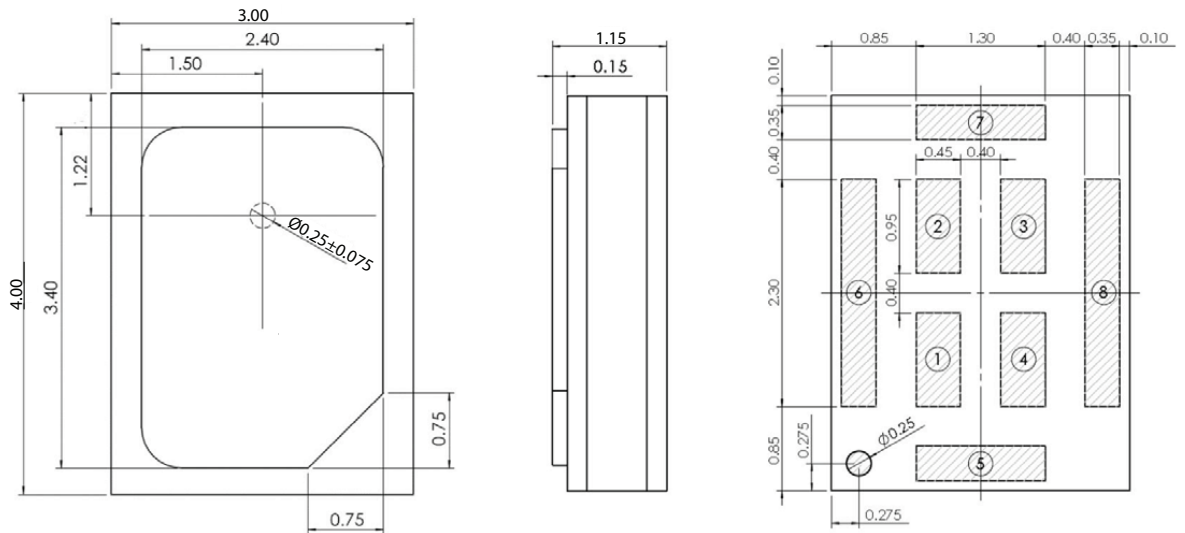
MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|---------------|------------------------|-----|------|-----|-------|
| dimensions | 4.00 x 3.00 x 1.15 | | | | mm |
| acoustic port | top | | | | |
| terminals | surface mount | | | | |
| weight | | | 0.03 | | g |

MECHANICAL DRAWING

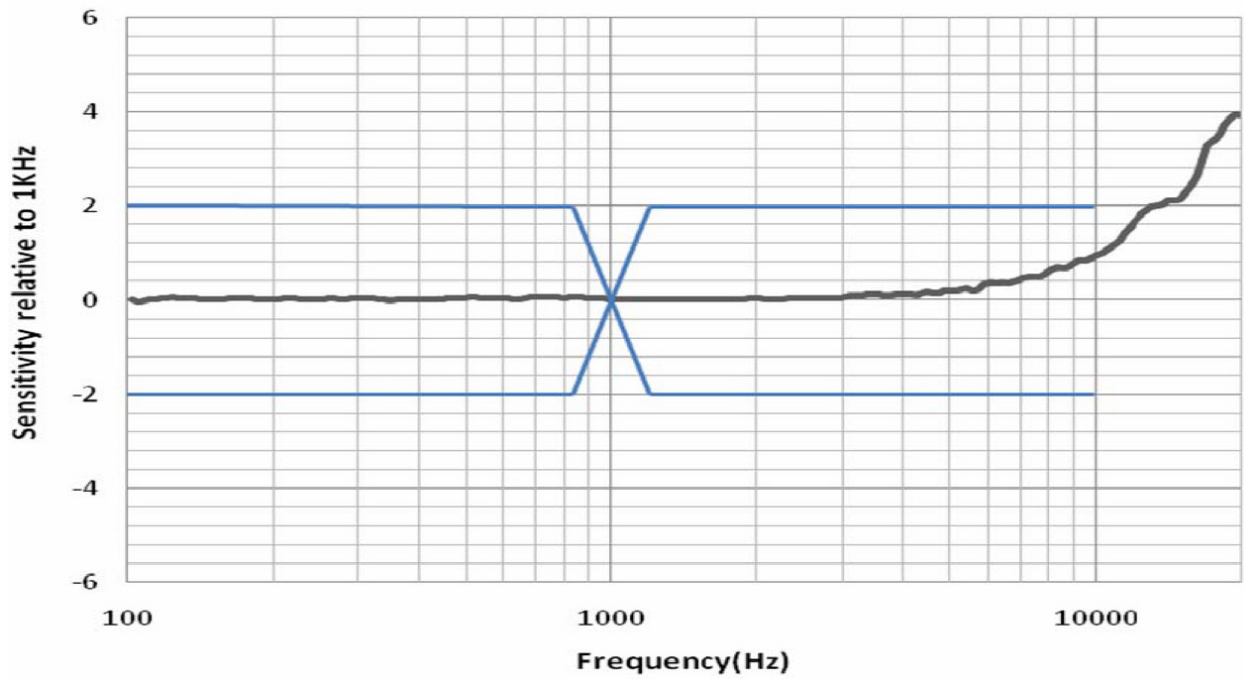
units: mm
tolerance: ±0.10 mm

| TERMINAL CONNECTIONS | |
|----------------------|----------|
| TERM. | FUNCTION |
| 1 | VDD |
| 2 | select |
| 3 | CLOCK |
| 4 | DATA |
| 5 | GND |
| 6 | GND |
| 7 | GND |
| 8 | GND |

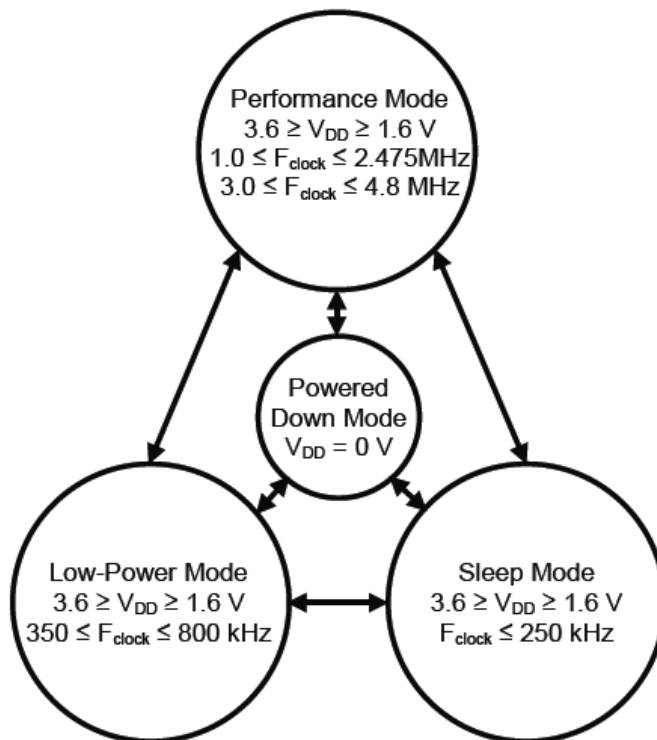


Recommended PCB Layout
Top View

FREQUENCY RESPONSE CURVE



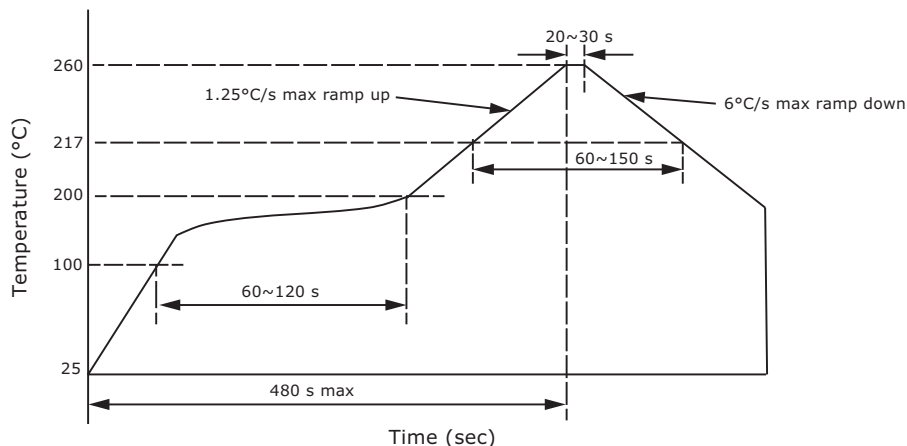
MICROPHONE STATE DIAGRAM



SOLDERABILITY

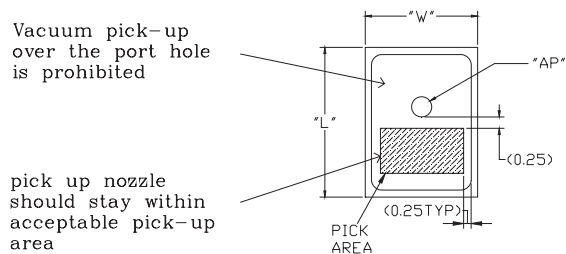
| parameter | conditions/description | min | typ | max | units |
|-------------------------------|------------------------|-----|-----|-----|-------|
| reflow soldering ^B | see reflow profile | | | 260 | °C |

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



HANDLING RECOMMENDATIONS

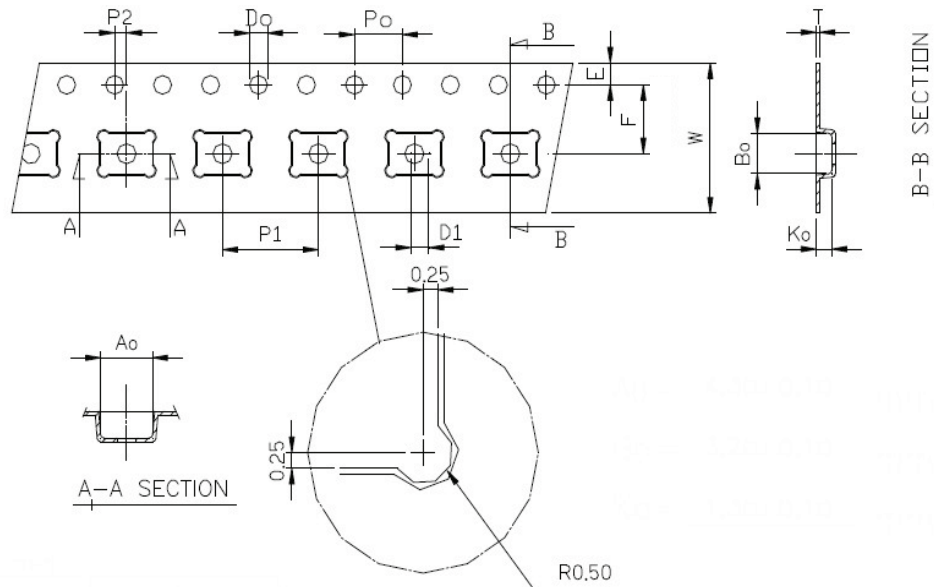
1. Not recommended to blow air heavily over acoustic port as debris could impact mic function.
2. Not suitable for wash process after reflow.
3. Not recommended to brush board with or without solvents after reflow process.
4. Not recommended to directly expose to ultrasonic processing or cleaning.
5. 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 carried plate with air guarding system that could induce particle floating inside mic.



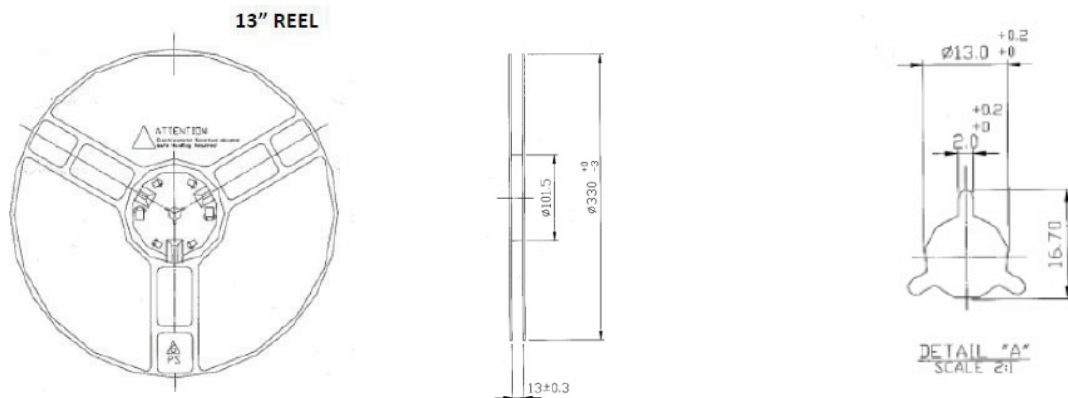
Recommended Vacuum Nozzle Pickup
Top View

PACKAGING

| parameter | conditions/description | min | typ | max | units |
|-------------|------------------------|-----|-----|-----|-------|
| MSL | Class 1 | | | | |
| reel size | Ø330 mm | | | | |
| reel QTY | 5,200 pcs per reel | | | | |
| carton size | 350 x 175 x 355 mm | | | | |
| carton QTY | 26,000 pcs | | | | |



| | | | | | | | |
|---------|-----------|-----------|-----------|-----------|------------|-----------|-----------|
| Item | W | E | F | Ø00 | D1 | Ao | Ko |
| DIM(mm) | 12.0±0.30 | 1.75±0.10 | 5.50±0.10 | 1.55±0.05 | 1.50 (min) | 4.30±0.10 | 1.30±0.10 |
| Item | P0 | 10P0 | P1 | P2 | T | B0 | -- |
| DIM(mm) | 4.0±0.10 | 40.0±0.10 | 8.0±0.10 | 1.0±0.10 | 0.30±0.05 | 3.20±0.10 | -- |



REVISION HISTORY

| rev. | description | date |
|------|-----------------------------------|------------|
| 1.0 | initial release | 05/17/2023 |
| 1.01 | CUI Devices rebranded to Same Sky | 09/11/2024 |

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



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

Same Sky reserves the right to make changes to the product at any time without notice. Information provided by Same Sky is believed to be accurate and reliable. However, no responsibility is assumed by Same Sky for its use, nor for any infringements of patents or other rights of third parties which may result from its use.

Same Sky products are not authorized or warranted for use as critical components in equipment that requires an extremely high level of reliability. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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