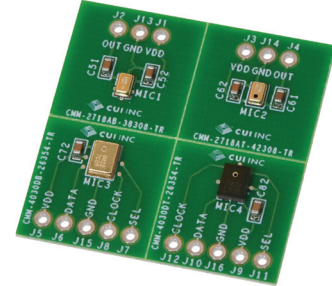


MODEL: DEVKIT-MEMS-001 | **DESCRIPTION:** MICROPHONE DEVELOPMENT KIT

FEATURES

- 4 detachable evaluation boards
- 2 digital MEMS, one top port & one bottom port
- 2 analog MEMS, one top port & one bottom port
- plated through hole I/O terminals for multiple testing options


EVAL BOARD

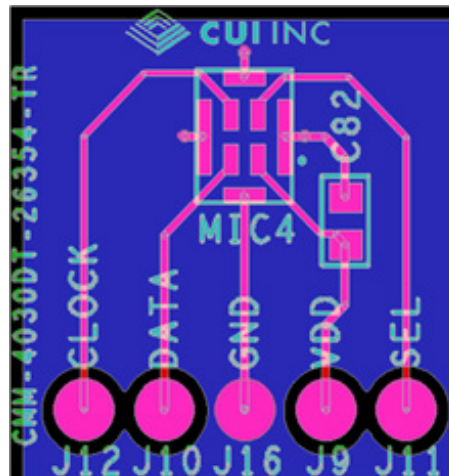
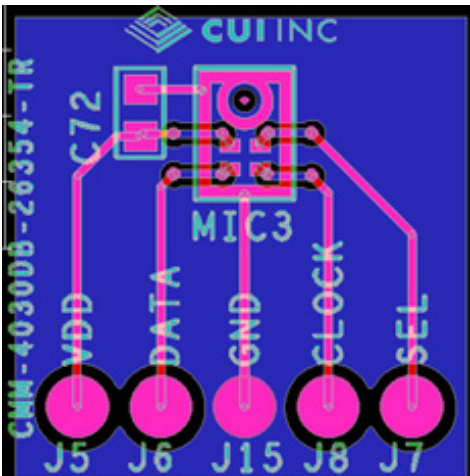
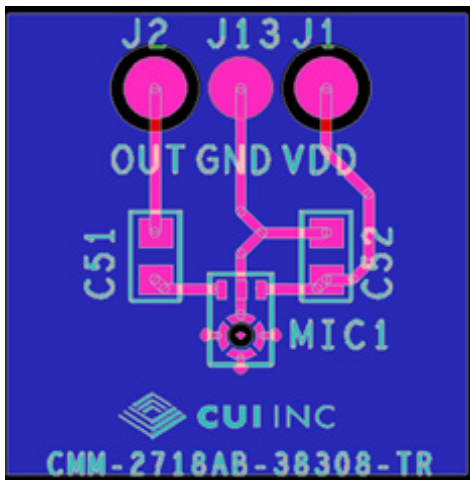
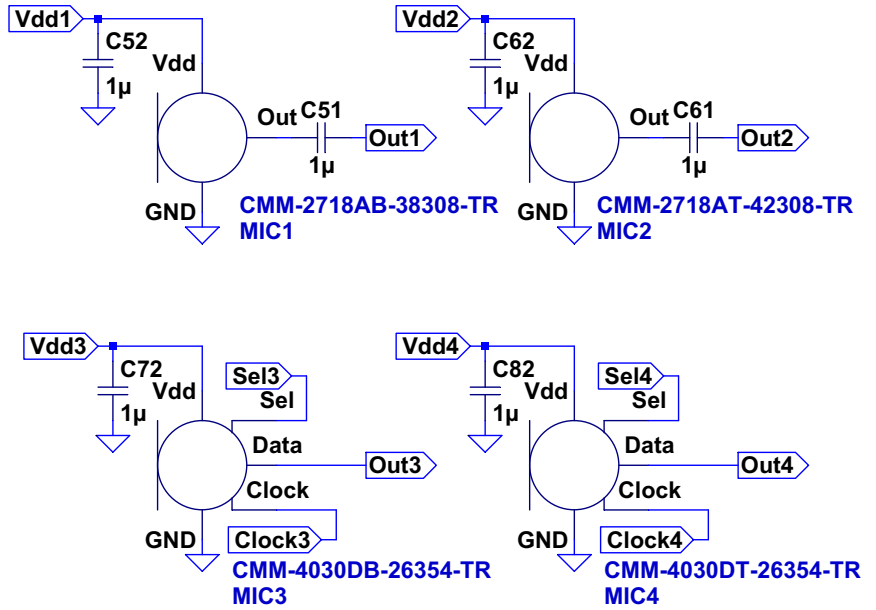
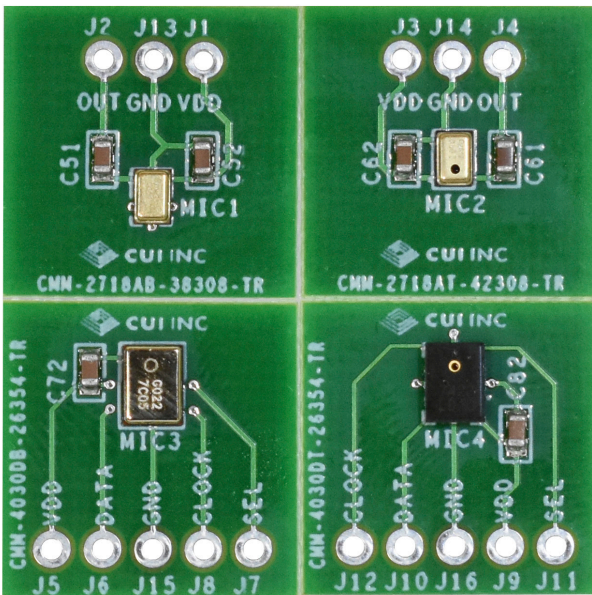
| | circuit | technology | output | acoustic port | size (mm) | sensitivity typ (dB) | current typ (μA) |
|---------------------|---------|------------|---------|---------------|-------------|----------------------|------------------|
| CMM-2718AB-38308-TR | MIC1 | MEMS | analog | bottom | 2.75 x 1.85 | -38 | 80 |
| CMM-2718AT-42308-TR | MIC2 | MEMS | analog | top | 2.75 x 1.85 | -42 | 80 |
| CMM-4030DB-26354-TR | MIC3 | MEMS | digital | bottom | 4.0 x 3.0 | -26 | 540 |
| CMM-4030DT-26354-TR | MIC4 | MEMS | digital | top | 4.0 x 3.0 | -26 | 540 |

OPERATIONAL INSTRUCTIONS

The CUI MEMS microphone evaluation board consists of four independent microphone evaluation circuits. Two of the microphones provide analog output signals and two of the microphones provide digital output signals. Top and bottom sound port options are provided for both the analog and the digital output microphones. External bypass capacitors are included on the power supply rails of the evaluation boards and DC blocking capacitors are placed in the analog output signal paths.

A DC power supply of 1.6~3.6 Volts should be connected between the VDD and GND pins of the board to be evaluated. Please refer to the respective data sheets for proper connections to the remaining signal pins.

CIRCUIT DIAGRAMS & BOARD LAYOUTS



CMM-2718AB-38308-TR

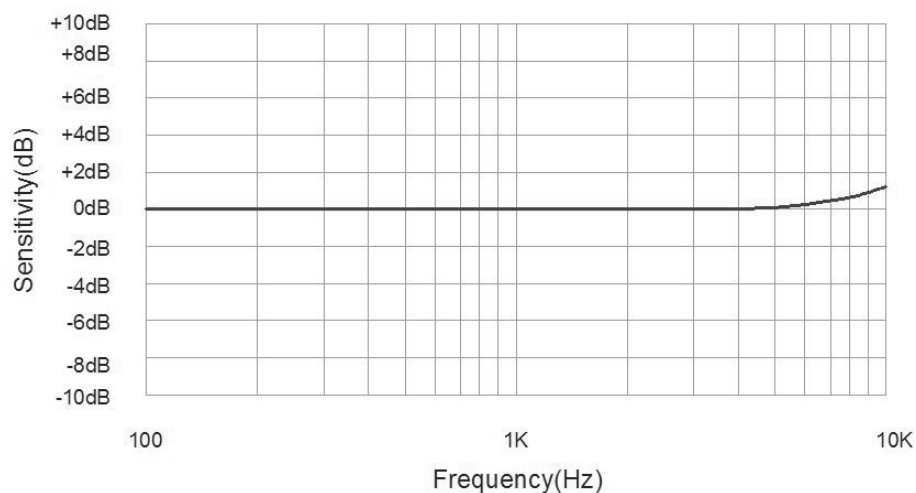
WWW.CUI.COM/PRODUCT/AUDIO/MICROPHONES/MEMS-MICROPHONES/CMM-2718AB-38308-TR

ELECTRICAL

| parameter | conditions/description | min | typ | max | units |
|---|----------------------------------|-----|------|--------|--------|
| directivity | omnidirectional | | | | |
| sensitivity (S) | at 94 dB SPL, 1 kHz | -41 | -38 | -35 | dB |
| supply voltage (V _{DD}) | | 1.6 | 2.0 | 3.6 | V |
| current consumption (I _{DSS}) | V _{DD} = 2.0 V | | 80 | | μA |
| sensitivity reduction | V _{DD} = 3.6 ~ 1.6 V | | -0.5 | | dB |
| frequency (f) | | 100 | | 10,000 | Hz |
| signal to noise ratio (S/N) | at 94 dB SPL, 1 kHz (A-weighted) | | 65 | | dB |
| total harmonic distortion (THD) | at 94 dB SPL, 1 kHz | | 0.2 | | % |
| acoustic overload point (AOP) | at 10% THD, 1 kHz | | 130 | | dB SPL |
| output impedance (Z _{out}) | at 1 kHz | | | 300 | Ω |

Notes: 1. All specifications measured at 23±2°C, humidity at 55±20%, unless otherwise noted.

FREQUENCY RESPONSE CURVE



CMM-2718AT-42308-TR

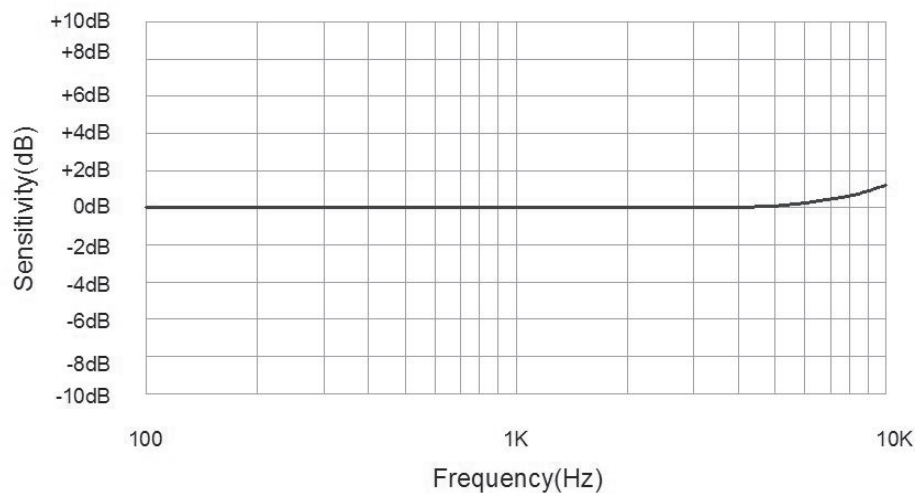
WWW.CUI.COM/PRODUCT/AUDIO/MICROPHONES/MEMS-MICROPHONES/CMM-2718AT-42308-TR

ELECTRICAL

| parameter | conditions/description | min | typ | max | units |
|---|----------------------------------|-----|------|--------|--------|
| directivity | omnidirectional | | | | |
| sensitivity (S) | at 94 dB SPL, 1 kHz | -45 | -42 | -39 | dB |
| supply voltage (V _{DD}) | | 1.6 | 2.0 | 3.6 | V |
| current consumption (I _{DSS}) | V _{DD} = 2.0 V | | 80 | | μA |
| sensitivity reduction | V _{DD} = 3.6 ~ 1.6 V | | -0.5 | | dB |
| frequency (f) | | 100 | | 10,000 | Hz |
| signal to noise ratio (S/N) | at 94 dB SPL, 1 kHz (A-weighted) | | 60 | | dB |
| total harmonic distortion (THD) | at 94 dB SPL, 1 kHz | | 0.2 | | % |
| acoustic overload point (AOP) | at 10% THD, 1 kHz | | 130 | | dB SPL |
| output impedance (Z _{out}) | at 1 kHz | | | 300 | Ω |

Notes: 1. All specifications measured at 23±2°C, humidity at 55±20%, unless otherwise noted.

FREQUENCY RESPONSE CURVE



CMM-4030DB-26354-TR

WWW.CUI.COM/PRODUCT/AUDIO/MICROPHONES/MEMS-MICROPHONES/CMM-4030DB-26354-TR

ELECTRICAL

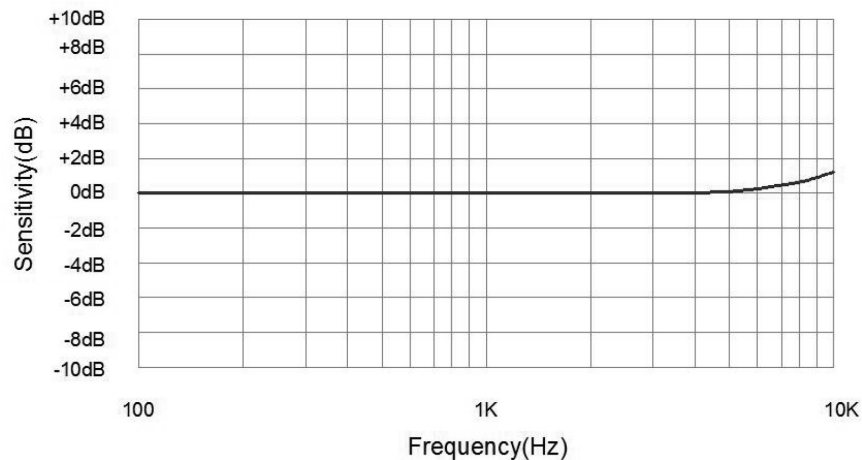
| parameter | conditions/description | min | typ | max | units |
|--|--|-----|------|--------|--------|
| directivity | omnidirectional | | | | |
| sensitivity (S) | at 94 dB SPL, 1 kHz | -29 | -26 | -23 | dB FS |
| supply voltage (V _{DD}) | | 1.6 | 2.0 | 3.6 | V |
| current consumption (I _{DD}) | | | 0.54 | | mA |
| sensitivity reduction | V _{DD} = 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 _{out}) | 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 _{SLEEP}) | F _{CLOCK} < 1 kHz | | 3 | 4 | μA |
| fall-asleep time | F _{CLOCK} < 1 kHz | | | 50 | μs |
| wake-up time | F _{CLOCK} ≥ 1 MHz | | | 52 | ms |
| short circuit current (I _{sc}) | grounded data pin | | 1 | 10 | mA |
| output load (C _{LOAD}) | | | | 100 | pF |
| data format | 1-Bit PDM | | | | |
| clock frequency (F _{CLOCK}) | | 1.0 | 2.4 | 3.2 | MHz |
| clock duty cycle (F _{DC}) | | 40 | | 60 | % |
| clock rise time (t _{CR}) | | | | 10 | ns |
| clock fall time (t _{CF}) | | | | 10 | ns |
| logic input/output low (V _{IOL}) | I _{OUT} = 1 mA | -0.30 | | 0.35xV _{DD} | V |
| logic input/output high (V _{IOH}) | I _{OUT} = 1 mA | 0.65xV _{DD} | | V _{DD} +0.3 | V |
| delay time for valid data (t _{DV}) | | 18 | | 60 | ns |
| delay time for high z (t _{DH}) | | 0 | | 16 | ns |

Notes: 1. All specifications measured at 23±2°C, humidity at 55±20%, V_{DD} = 2.0 V, F_{CLOCK} = 2.4 MHz, unless otherwise noted.

FREQUENCY RESPONSE CURVE



CMM-4030DT-26354-TR

WWW.CUI.COM/PRODUCT/AUDIO/MICROPHONES/MEMS-MICROPHONES/CMM-4030DT-26354-TR

ELECTRICAL

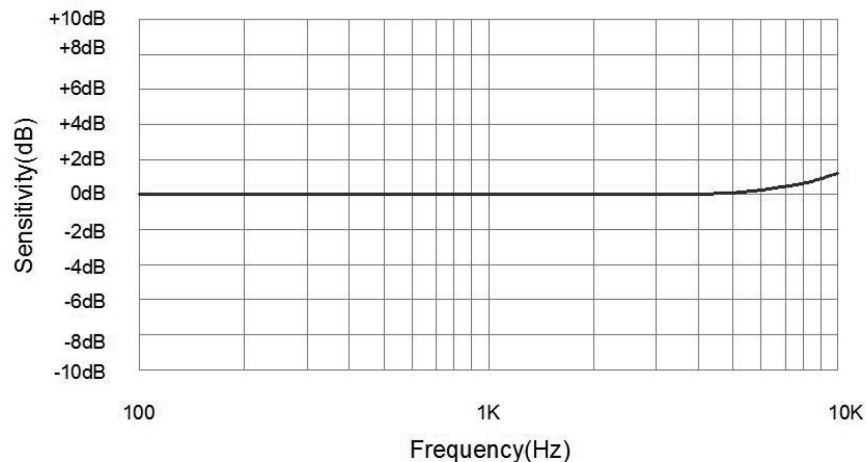
| parameter | conditions/description | min | typ | max | units |
|--|--|-----|------|--------|--------|
| directivity | omnidirectional | | | | |
| sensitivity (S) | at 94 dB SPL, 1 kHz | -29 | -26 | -23 | dB FS |
| supply voltage (V _{DD}) | | 1.6 | 2.0 | 3.6 | V |
| current consumption (I _{DD}) | | | 0.54 | | mA |
| sensitivity reduction | V _{DD} = 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) | | 65 | | 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 _{out}) | 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 _{SLEEP}) | F _{CLOCK} < 1 kHz | | 3 | 4 | μA |
| fall-asleep time | F _{CLOCK} < 1 kHz | | | 50 | μs |
| wake-up time | F _{CLOCK} ≥ 1 MHz | | | 52 | ms |
| short circuit current (I _{sc}) | grounded data pin | | 1 | 10 | mA |
| output load (C _{LOAD}) | | | | 100 | pF |
| data format | 1-Bit PDM | | | | |
| clock frequency (F _{CLOCK}) | | 1.0 | 2.4 | 3.2 | MHz |
| clock duty cycle (F _{DC}) | | 40 | | 60 | % |
| clock rise time (t _{CR}) | | | | 10 | ns |
| clock fall time (t _{CF}) | | | | 10 | ns |
| logic input/output low (V _{IOL}) | I _{OUT} = 1 mA | -0.30 | | 0.35xV _{DD} | V |
| logic input/output high (V _{IOH}) | I _{OUT} = 1 mA | 0.65xV _{DD} | | V _{DD} +0.3 | V |
| delay time for valid data (t _{DV}) | | 18 | | 60 | ns |
| delay time for high z (t _{DH}) | | 0 | | 16 | ns |

Notes: 1. All specifications measured at 23±2°C, humidity at 55±20%, V_{DD} = 2.0 V, F_{CLOCK} = 2.4 MHz, unless otherwise noted.

FREQUENCY RESPONSE CURVE



REVISION HISTORY

| rev. | description | date |
|------|-----------------|------------|
| 1.0 | initial release | 05/14/2019 |

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



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- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
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(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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