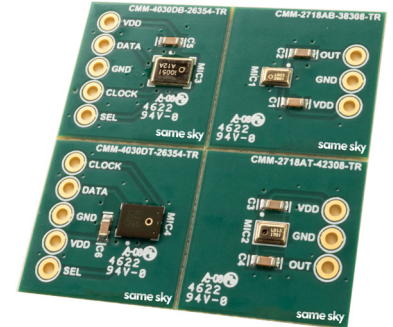


**MODEL:** DEVKIT-MEMS-001 | **DESCRIPTION:** MICROPHONE DEVELOPMENT KIT**FEATURES**

- 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<br>port | size<br>[mm] | sensitivity<br>typ<br>[dB] | current<br>typ<br>[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                    |

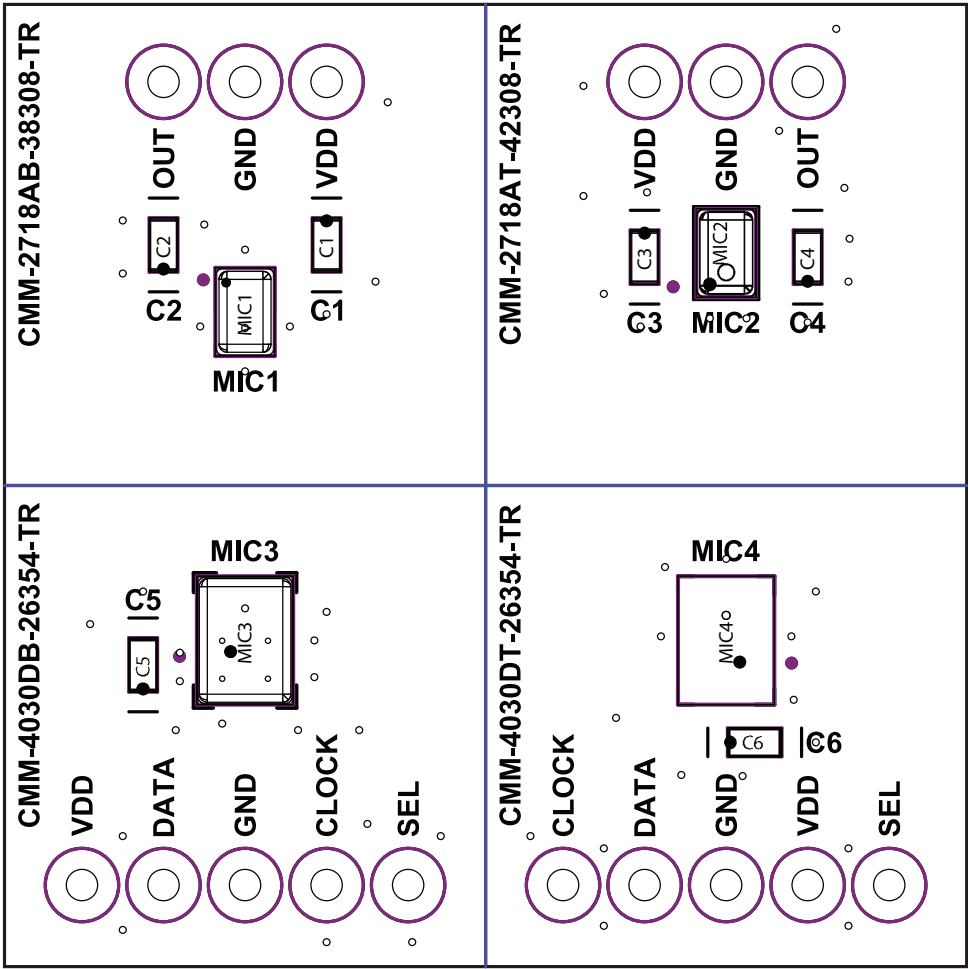
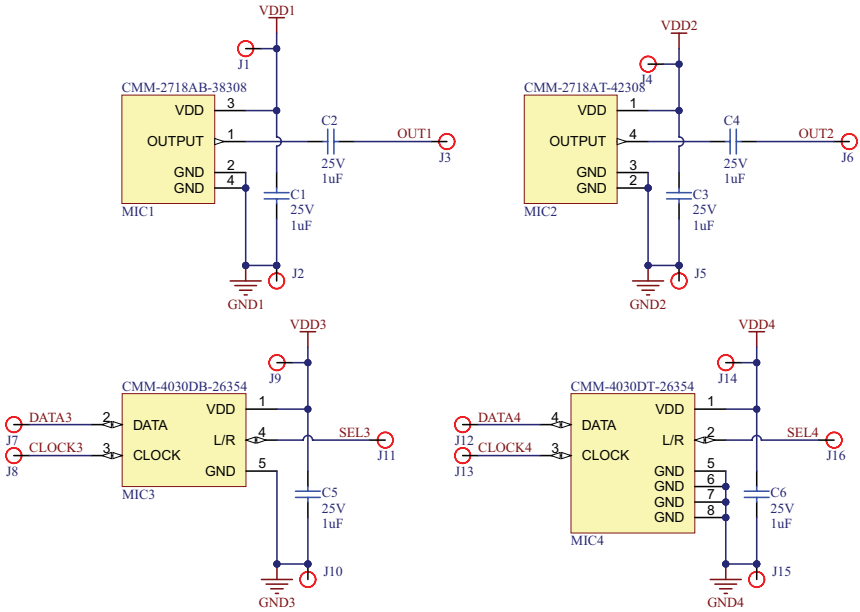
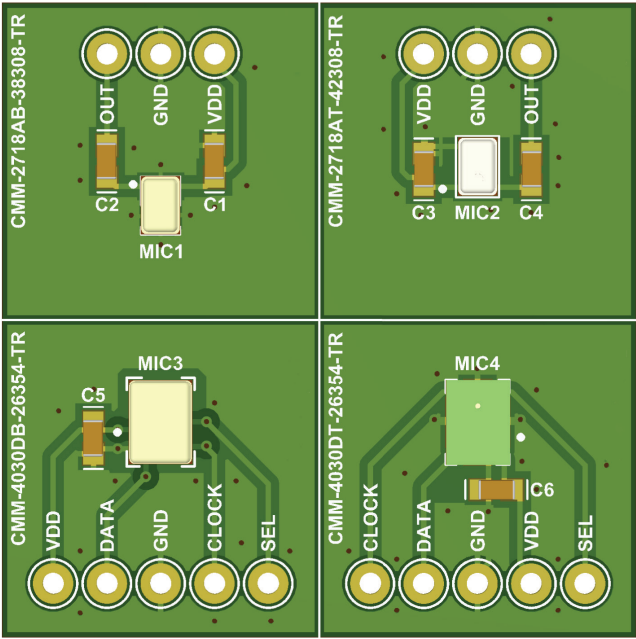
**OPERATIONAL INSTRUCTIONS**

The Samesky Devices 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

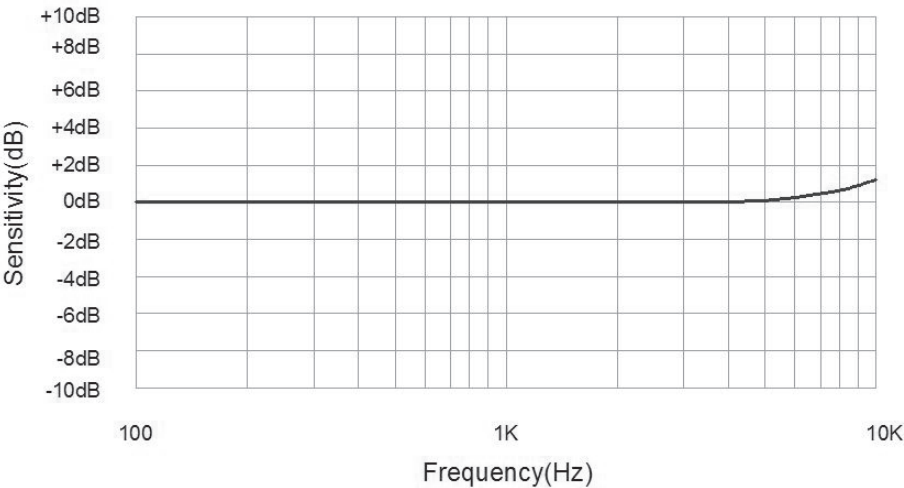
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ELECTRICAL

| parameter                               | conditions/description           | min | typ  | max    | units  |
|-----------------------------------------|----------------------------------|-----|------|--------|--------|
| directivity                             | omnidirectional                  |     |      |        |        |
| sensitivity (S)                         | at 94 dB SPL, 1 kHz              | -41 | -38  | -35    | dB     |
| supply voltage (V <sub>DD</sub> )       |                                  | 1.6 | 2.0  | 3.6    | V      |
| current consumption (I <sub>oss</sub> ) | V <sub>DD</sub> = 2.0 V          |     | 80   |        | μA     |
| sensitivity reduction                   | V <sub>DD</sub> = 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   |        | dBA    |
| 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 <sub>out</sub> )    | 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

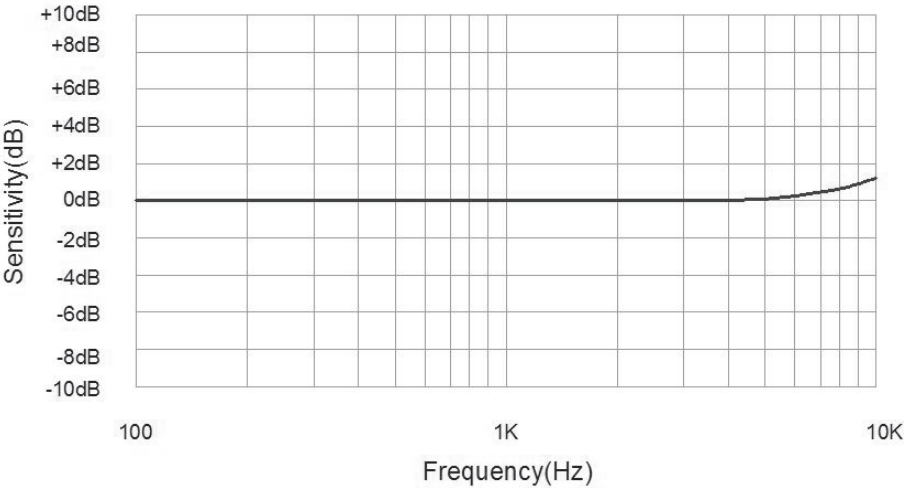
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ELECTRICAL

| parameter                               | conditions/description           | min | typ  | max    | units           |
|-----------------------------------------|----------------------------------|-----|------|--------|-----------------|
| directivity                             | omnidirectional                  |     |      |        |                 |
| sensitivity (S)                         | at 94 dB SPL, 1 kHz              | -45 | -42  | -39    | dB              |
| supply voltage (VDD)                    |                                  | 1.6 | 2.0  | 3.6    | V               |
| current consumption (I <sub>oss</sub> ) | VDD = 2.0 V                      |     | 80   |        | μA              |
| sensitivity reduction                   | VDD = 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 <sub>A</sub> |
| 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 <sub>out</sub> )    | 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

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ELECTRICAL

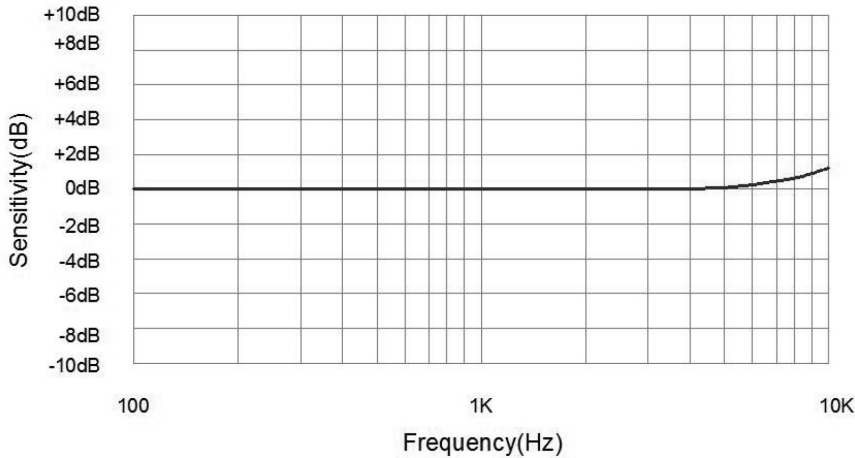
| parameter                       | conditions/description                       | min | typ  | max    | units  |
|---------------------------------|----------------------------------------------|-----|------|--------|--------|
| directivity                     | omnidirectional                              |     |      |        |        |
| sensitivity (S)                 | at 94 dB SPL, 1 kHz                          | -29 | -26  | -23    | dB FS  |
| supply voltage (VDD)            |                                              | 1.6 | 2.0  | 3.6    | V      |
| current consumption (IDD)       |                                              |     | 0.54 |        | mA     |
| sensitivity reduction           | VDD = 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 [ADP]   | at 10% THD, 1 kHz                            |     | 120  |        | dB SPL |
| output impedance [Zout]         | 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 (ISLEEP)          | FCLOCK < 1 kHz         |          | 3   | 4        | μA    |
| fall-asleep time                | FCLOCK < 1 kHz         |          |     | 50       | μs    |
| wake-up time                    | FCLOCK ≥ 1 MHz         |          |     | 52       | ms    |
| short circuit current (ISC)     | grounded data pin      |          | 1   | 10       | mA    |
| output load (CLOAD)             |                        |          |     | 100      | pF    |
| data format                     | 1-Bit PDM              |          |     |          |       |
| clock frequency (FCLOCK)        |                        | 1.0      | 2.4 | 3.2      | MHz   |
| clock duty cycle (FDC)          |                        | 40       |     | 60       | %     |
| clock rise time (tCR)           |                        |          |     | 10       | ns    |
| clock fall time (tCF)           |                        |          |     | 10       | ns    |
| logic input/output low (VIOL)   | IOUT = 1 mA            | -0.30    |     | 0.35xVDD | V     |
| logic input/output high (VIOH)  | IOUT = 1 mA            | 0.65xVDD |     | VDD+0.3  | V     |
| delay time for valid data (tov) |                        | 18       |     | 60       | ns    |
| delay time for high z (toH)     |                        | 0        |     | 16       | ns    |

Notes: 1. All specifications measured at 23±2°C, humidity at 55±20%, VDD = 2.0 V, FCLOCK = 2.4 MHz, unless otherwise noted.

FREQUENCY RESPONSE CURVE



CMM-4030DT-26354-TR

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ELECTRICAL

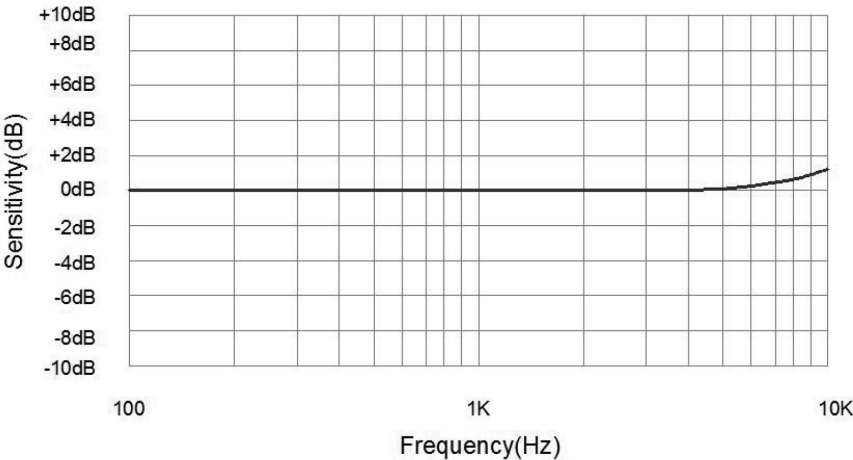
| parameter                       | conditions/description                       | min | typ  | max    | units  |
|---------------------------------|----------------------------------------------|-----|------|--------|--------|
| directivity                     | omnidirectional                              |     |      |        |        |
| sensitivity (S)                 | at 94 dB SPL, 1 kHz                          | -29 | -26  | -23    | dB FS  |
| supply voltage (VDD)            |                                              | 1.6 | 2.0  | 3.6    | V      |
| current consumption (IDD)       |                                              |     | 0.54 |        | mA     |
| sensitivity reduction           | VDD = 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 [ADP]   | at 10% THD, 1 kHz                            |     | 120  |        | dB SPL |
| output impedance [Zout]         | 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 (ISLEEP)                      | FCLOCK < 1 kHz          |          | 3   | 4        | μA    |
| fall-asleep time                            | FCLOCK < 1 kHz          |          |     | 50       | μs    |
| wake-up time                                | FCLOCK ≥ 1 MHz          |          |     | 52       | ms    |
| short circuit current (ISC)                 | grounded data pin       |          | 1   | 10       | mA    |
| output load (CLOAD)                         |                         |          |     | 100      | pF    |
| data format                                 | 1-Bit PDM               |          |     |          |       |
| clock frequency (FCLOCK)                    |                         | 1.0      | 2.4 | 3.2      | MHz   |
| clock duty cycle (FDC)                      |                         | 40       |     | 60       | %     |
| clock rise time (tCR)                       |                         |          |     | 10       | ns    |
| clock fall time (tCF)                       |                         |          |     | 10       | ns    |
| logic input/output low (VIO <sub>L</sub> )  | I <sub>OUT</sub> = 1 mA | -0.30    |     | 0.35xVDD | V     |
| logic input/output high (VIO <sub>H</sub> ) | I <sub>OUT</sub> = 1 mA | 0.65xVDD |     | VDD+0.3  | V     |
| delay time for valid data (tOV)             |                         | 18       |     | 60       | ns    |
| delay time for high z (tOH)                 |                         | 0        |     | 16       | ns    |

Notes: 1. All specifications measured at 23±2°C, humidity at 55±20%, VDD = 2.0 V, FCLOCK = 2.4 MHz, unless otherwise noted.

FREQUENCY RESPONSE CURVE



REVISION HISTORY

| rev. | description                       | date       |
|------|-----------------------------------|------------|
| 1.0  | initial release                   | 05/14/2019 |
| 1.01 | brand update                      | 04/06/2020 |
| 1.02 | logo, datasheet style update      | 08/05/2022 |
| 1.03 | modified board design             | 04/13/2023 |
| 1.04 | 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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