

| | |
|------------|---------------------|
| Data Sheet | DMM-4026-B-I2S-EB-R |
|------------|---------------------|

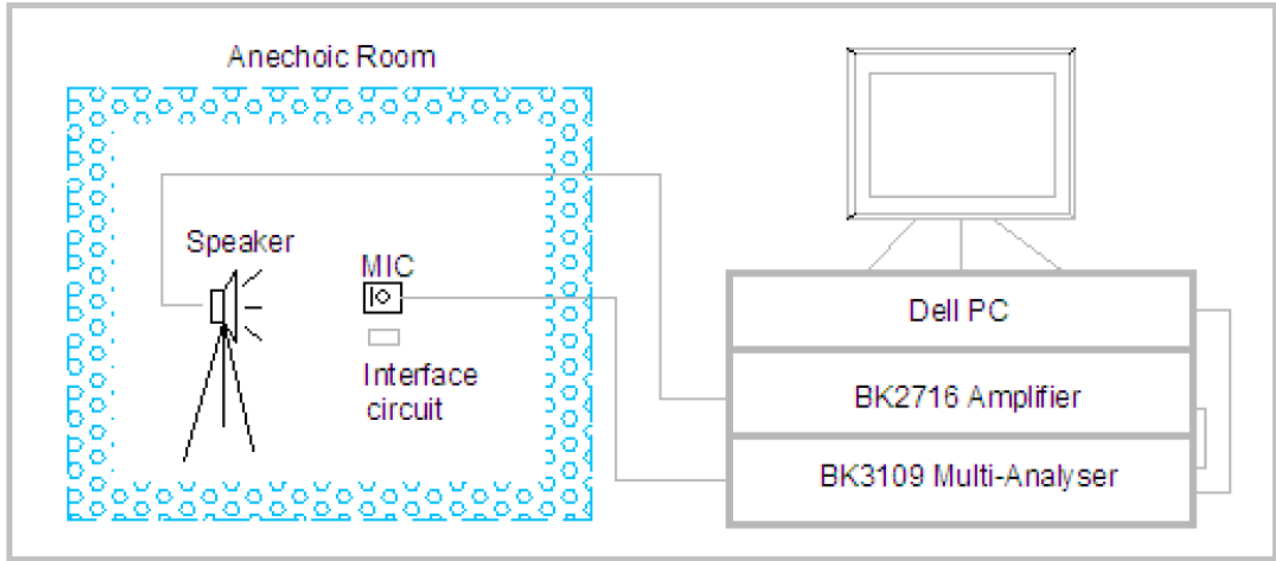
PUI Audio is proud to release a line of high-fidelity MEMS wide-band microphones that cover the entire audio band from 20 Hz up to 18 kHz—and up to 20 kHz on some models—while featuring an industry-best consistency of ± 1 dB across the entire frequency response.

Quickly test and prototype the I²S **DMM-4026-B-I2S-R** with this evaluation board. Solder pads make wiring to the evaluation board quick-and-easy!

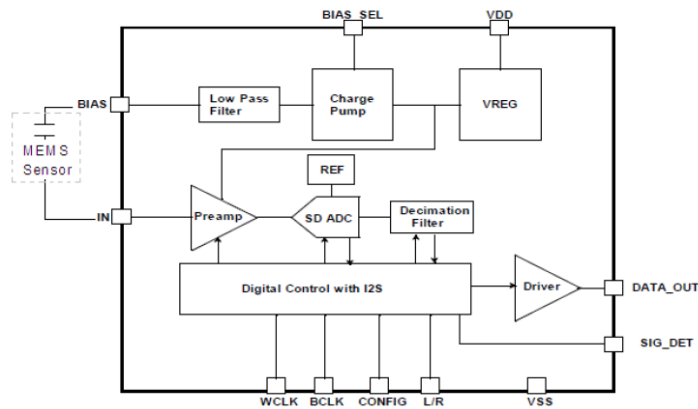
Specifications

| Parameters | Condition | Values | Units |
|-------------------------------------|---|---------------|---------|
| Directivity | Omnidirectional | | |
| Data Format | I ² S 24-bit data size with 18-bit precision, 32-bit word size | | |
| Sensitivity | 1 kHz @ 50cm with 94 dB source 0 dB=1V/Pa | -26 \pm 1 | dB |
| Rated Voltage | - | 1.8 | VDC |
| Operating Voltage Range | - | 1.5 to 3.6 | VDC |
| Supply Current | Normal Mode | 820 ~ 1000 | μ A |
| | Sleep Mode (clock off) | 5 | μ A |
| Signal-to-Noise Ratio | 1kHz, 94 dB input, A-weighted | 64 | dB |
| Frequency Range | 20~20,000 | | Hz |
| Total Harmonic Distortion (typical) | 110 dB @ 50cm, 1 kHz acoustic source | 1% | - |
| Startup Time | Sensitivity reaching 90% of listed value from initial power-up | 20 | mS |
| | From Sleep Mode | 20 | mS |
| | From Normal Mode to Sleep Mode | 20 | mS |
| Input Clock Frequency | Normal Mode | 2.048 ~ 4.096 | MHz |
| | Sleep Mode | 320 | kHz |
| Clock Jitter | Long Term RMS | 500 | pS |
| Load Capacitance | - | 140 | pF |
| Pass Band | Fs=48 kHz | 18 | kHz |
| Pass Band Attenuation | - | 0.5 | dB |
| Environmental Compliances | RoHS/Halogen Free | | |
| Power Supply Rejection | 100 mVpp Square Wave @ 217 Hz, A-weighted | -86 | dBFS |
| Operating Temperature | -40 ~ +100 | | °C |
| Storage Temperature | -40 ~ +125 | | °C |

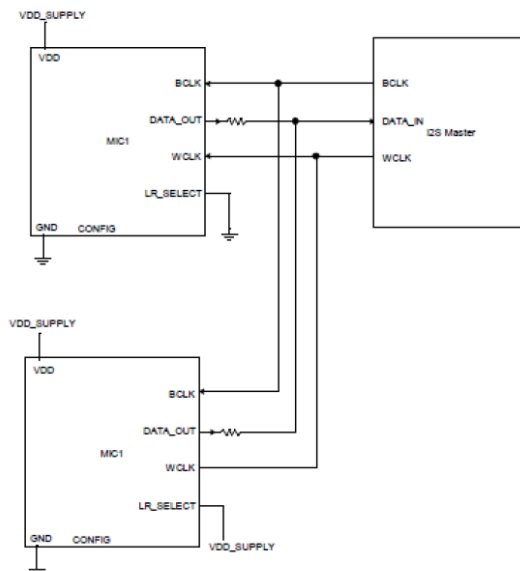
Measurement Method



Measurement Interface Circuit



Functional Block Diagram

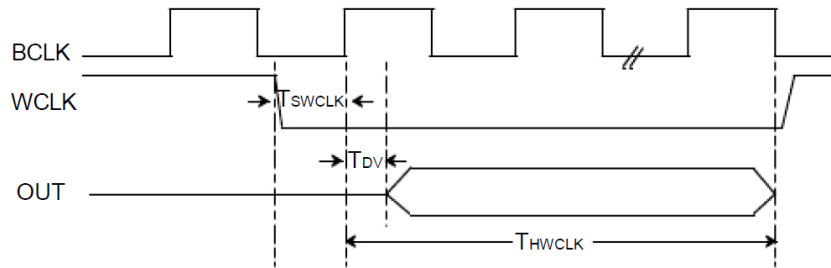


Interface diagram between I2S Master and 2 Microphones

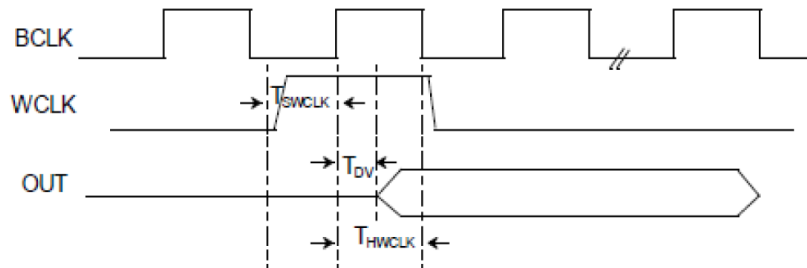
Digital Interface Specifications

In order to properly use this microphone, the I2S converter must support a 32-bit word size for mono operation and 64-bit word size for stereo operation with two microphones. Each microphone outputs 24-bit data with 18-bit precision. Six bits are null (0) value.

| Parameters | Symbol | Condition | Value | | | Units |
|-----------------|--------|----------------|----------------|---------|--------|-------|
| | | | MIN | Typical | MAX | |
| BCLK Frequency | BCLK | - | - | 3.072 | 12.288 | MHz |
| BCLK Duty Cycle | - | - | 45 | - | 55 | % |
| Data Valid | TDV | - | - | - | 18 | nS |
| WCLK Hold Time | THWCLK | Two mic mode | 32 (1/BCLK) | - | - | nS |
| | | Array mic mode | 20 | - | - | nS |
| WCLK Setup Time | TSWCLK | - | 20 | - | - | nS |

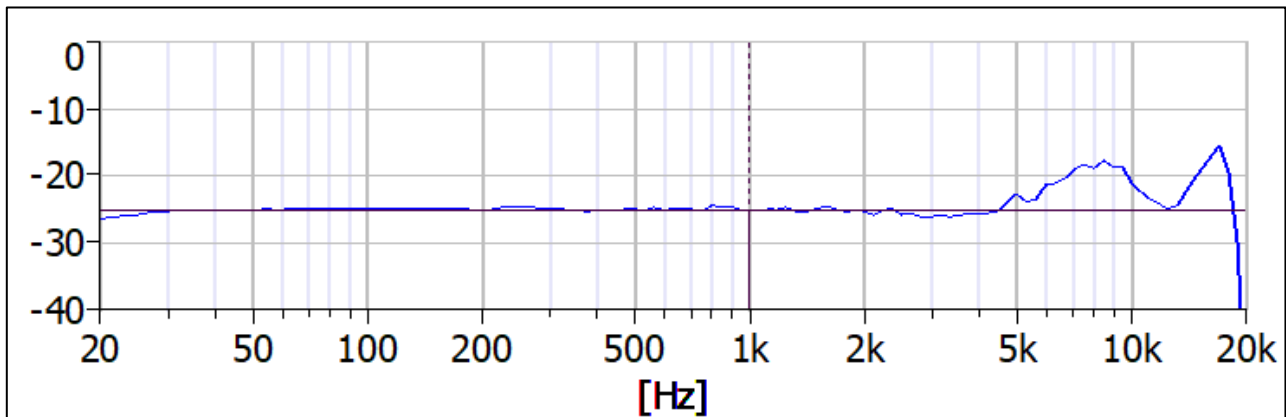


Interface timing diagram for two microphone Mode



Interface timing diagram for Array microphone Mode

Typical Frequency Response (Microphone spaced 50cm from 94 dB acoustic source)

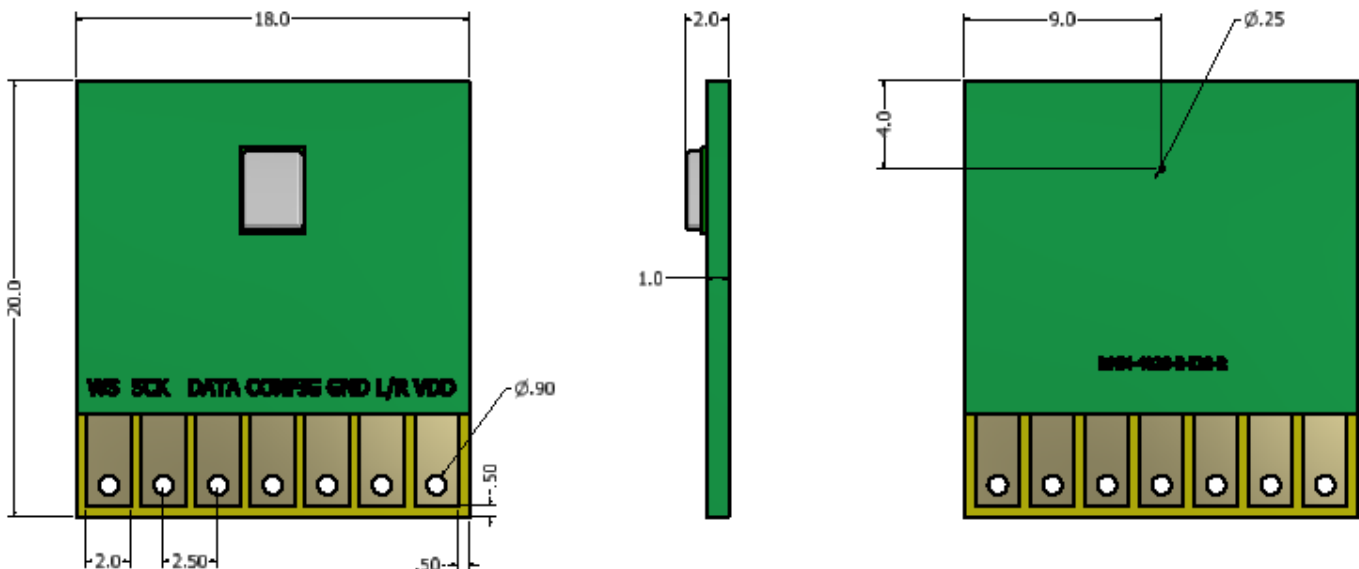


Reliability Testing

| Type of Test | Test Specifications |
|-----------------------------------|--|
| Simulated Reflow (Without Solder) | Samples for qualification testing require 3 passes 260±5 °C reflow solder profiles. 2 hours of setting time is required between each reflow profile test. |
| Static Humidity | Precondition at +25°C for 1 hour. Expose to +85°C with 85% relative humidity for 1000 hours. Dry at room ambient for 3±1 hour before taking final measurement. |
| Temperature Shock | Each cycle shall consist of 30 minutes at -40°C, 30 minutes at +125°C with 5 minutes transition time. Test duration is for 30 cycles, starting from cold to hot temperature. |
| ESD Sensitivity | Perform ESD sensitivity threshold measurements for each contact according to MIL-STD-883G, Method 3015.7 for Human Body Model. Identify the ESD threshold levels indicating passage of 8000V Human Body Model. |
| Vibration Test | Vibrate randomly along three perpendicular directions for 30 minutes in each direction, 4 cycles from 20~2000 Hz with a peak acceleration of 20 Gs. |
| Shock Test | Subject samples to half-sine shock pulses (3000±15% Gs for 0.3ms) in each direction, for a total of 18 shocks. |
| Drop Test | Drop samples from 1.5m height onto a steel surface, total 18 times and inspected for mechanical damage. |
| Operation Life | Subject samples to +125°C for 168 hours under full maximum rated voltage. |

Microphone frequency response and sensitivity shall not deviate more than ±3 dB.

Dimensions



Specifications Revisions

| Revision | Description | Date |
|-----------------|----------------------------|-------------|
| - | Released from Engineering | 1/31/2020 |
| A | Added I2S data information | 5/26/2021 |

Note:

- Unless otherwise specified:
 - All dimensions are in millimeters.
 - Default tolerances are $\pm 0.5\text{mm}$ and angles are $\pm 3^\circ$.
- Specifications subject to change or withdrawal without notice.

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