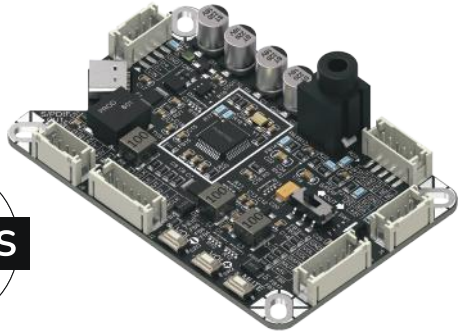
# UCM-PCM2706C

## Stereo Audio DAC with USB Interface, Single-Ended Analog and S/PDIF Output Module - PCM2706C

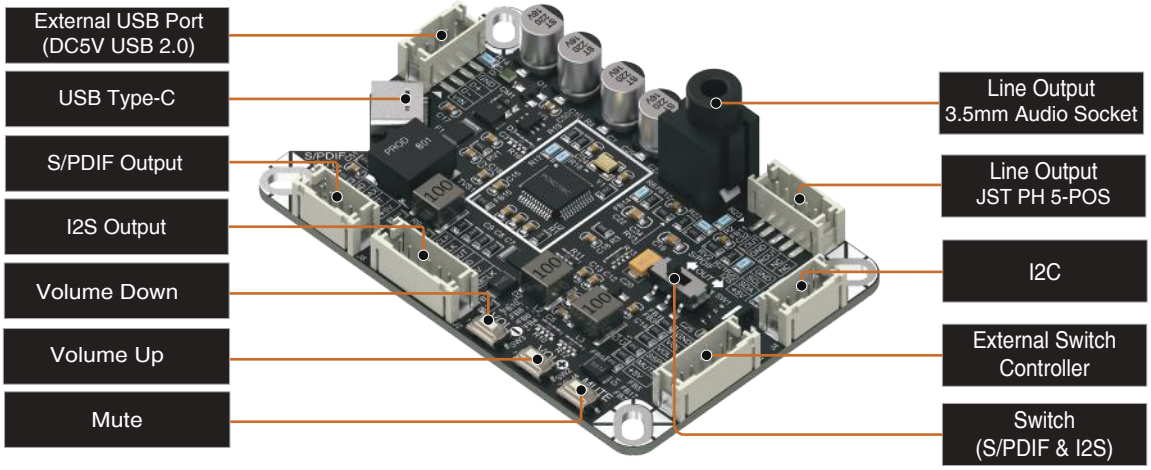
The UCM-PCM2706C is a compact audio digital to analog board featuring the PCM2706C IC from Texas Instruments. UCM-PCM2706C supports single-ended analog and S/PDIF signals.



**Features:**

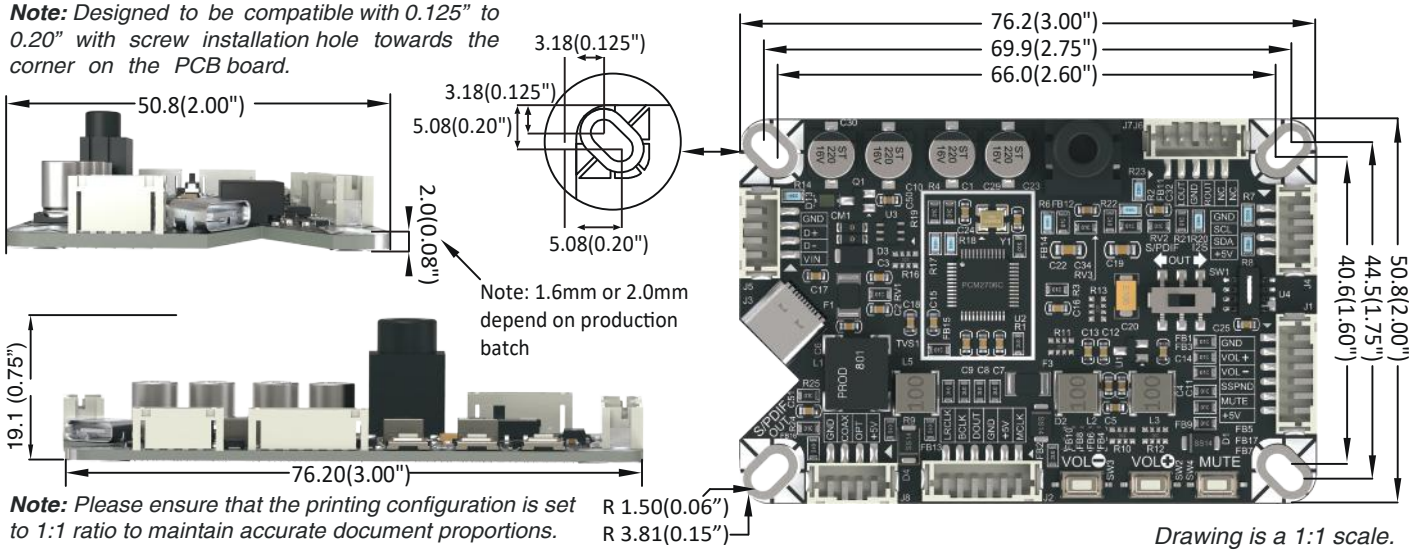
- Powered by TI's single-chip USB stereo audio digital-to-analog converters (DACs) feature S/PDIF and a full-speed protocol controller that is compatible with USB 2.0.
- Reverse polarity protection.
- Operating temperature between -20°C and 65°C.
- Certified with FCC and CE.
- Long Term Manufacturing Plan (10 Years).

| Specification(s) : | | | |
|---|---|---|---|
| Supply Voltage | : DC 5V, USB Bus Powered, 0.2A or less | Product Size | : 76.2 (W) x 50.8 (D) x 19.1 (H) mm |
| Analog Output(s) | : Line-level Analog | | : 3.00 (W) x 2.00 (D) x 0.75 (H) Inch |
| Digital Output(s) | : S/PDIF and I2S | Net Weight | : 25 g ± 2 g / 0.85 oz ± 0.10 oz |




## Mechanical Drawing (Nominal Dimension, mm(inch))

***Note:*** *Designed to be compatible with 0.125" to 0.20" with screw installation hole towards the corner on the PCB board.*




***Note:*** *Please ensure that the printing configuration is set to 1:1 ratio to maintain accurate document proportions.*

*Drawing is a 1:1 scale.*

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## Precautions

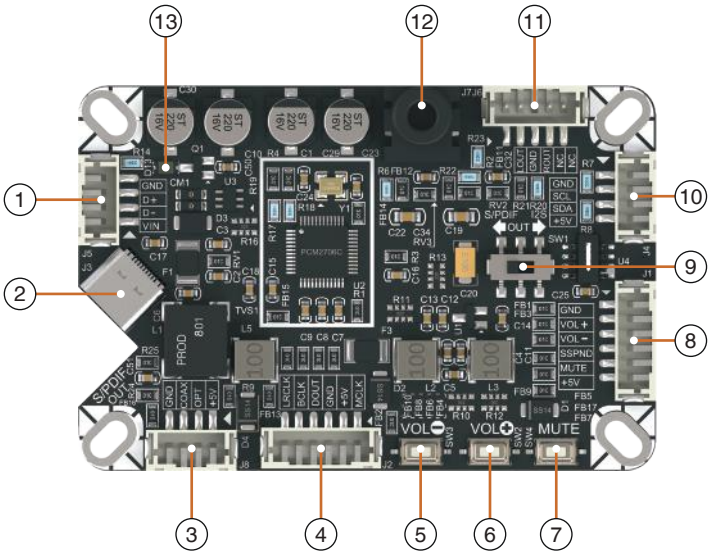
Safety Precautions

**⚠ CAUTION** Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.

When using the UCM-PCM2706C is a compact audio digital to analog board, prioritize safety for the board, connected devices, and user well-being. Verify power supply voltage and current meet specifications to prevent damage or hazards. Disconnect power before handling cables to avoid electric shock. When connecting external audio sources, ensure they're powered off to prevent surges or interference. Verify compatibility with board's input specs to avoid overload or distortion. Handle the board carefully to avoid damage from moisture or dust. Follow assembly instructions closely, checking connections to prevent issues, ensuring safe operation, and maximizing performance and lifespan.

## Connector(s), LED(s) & Switch(s) Layout

UCM-PCM2706C Audio DAC Board




**SW1**

| AUDIO OUTPUT MODE | |
|---|---|
| S/PDIF | I2S |
| ← | → |

| SWITCH | SETTING |
|---|---|
| SW4 | MUTE |
| SW3 | VOLUME DOWN |
| SW2 | VOLUME UP |

**Connector(s):**

**1. USB Connectors (JST PH-4 Circuits):**
- External USB connectors.
- Serve as a connection for USB interface.

**2. USB Connectors (USB Type-C):**
- Enables the board to be powered with 5V over via USB connection.
- Allows for digital audio data to be received via USB
- Support USB 2.0 full speed.

**3. S/PDIF Audio Output (JST PH 4-Circuits):**
- Serves as an output connection to an S/PDIF(Optical) converter to transmit audio signals in a digital format.

**4. I2S Audio Output (JST PH 6-Circuits):**
- Used for digital Inter-Integrated Circuit Sound (I2S) output.
- High-quality digital audio data.

**8. Control Port (JST PH 6-Circuits):**
- Serve as an interface for the external audio controller.
- Allows for connection of an external button which can be used for audio control functions .

**10. I2C (JST PH 4-Circuits):**
- Serve as Inter-Intergrated Circuit interface.
- Used to communicate between peripheral and microcontroller.

**11. Audio Line Output (JST PH 5-Circuits):**
- Panel mount solutions.
- Allows for connecting the board to the external audio devices such as amplifiers and other equipment.

**12. Audio Line Output(3.5mm Audio Jack):**
- Serves as a standard analog audio output connection, used for connecting external audio devices such as amplifier and other equipments.

**LED Indicator(s):**

**13. I2S Output LED Indicator:**
- Used to indicate when I2S output is connected.

**Button (s) & Switch (s):**

**5. Dedicated Volume Down Push Button (SW3):**
- Used to decrease the volume level of the analog output of the UCM-PCM2706C module.

**6. Dedicated Volume Up Push Button (SW3):**
- Used to increase the volume level of the analog output of the UCM-PCM2706C module.

**7. Dedicated Mute Push Button (SW4):**
- Used to mute the volume level of the UCM-PCM2706C module.

**9. DPDT Switch (Double Pole Double Throw):**
- Able to operate the audio output selection mode between S/PDIF and I2S.
- Slide Left for S/PDIF mode.
- Slide Right for I2S mode.

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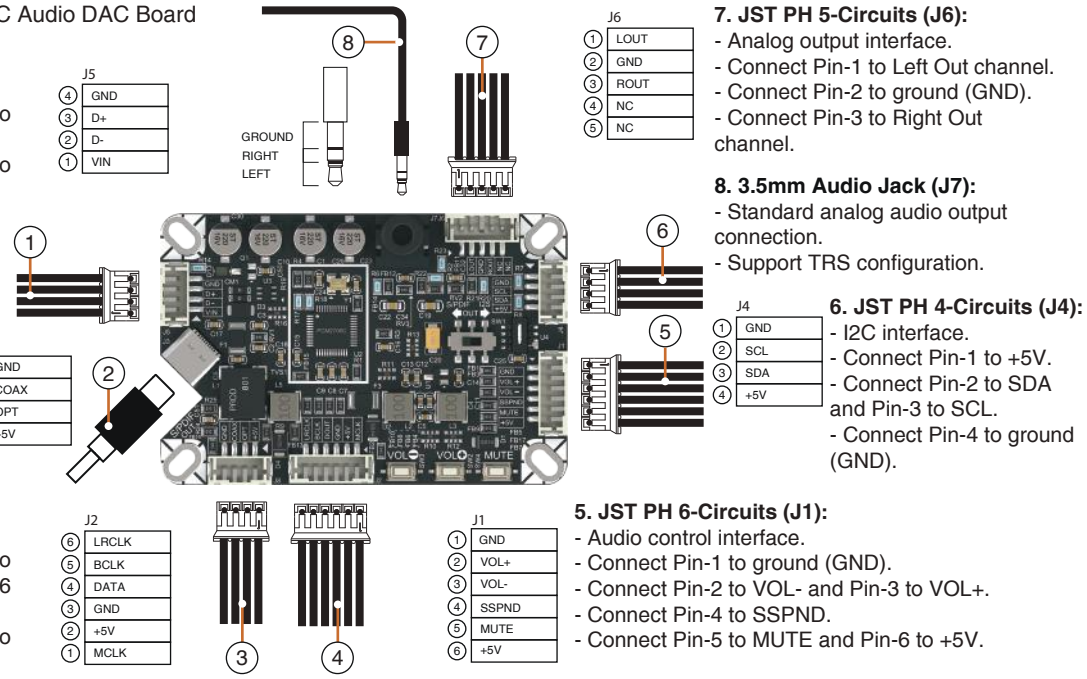
# Cable(s) Layout

Connecting the UCM-PCM2706C Audio DAC Board




**1. JST PH 4-Circuits (J5):**
- External USB connector.
- Connect Pin-1 to VIN and Pin-4 to ground (GND).
- Connect Pin-2 to D- and Pin-3 to (D+).

**2. USB Connector (J3):**
- USB Type-C connector.
- Power (DC5V) and data input (USB2.0)

**3. JST PH 4-Circuits (J8):**
- S/PDIF output interface.
- Connect Pin-1 to +5V.
- Connect Pin-2 to S/PDIF out(OUT).
- Connect Pin-4 to ground (GND).

**4. JST PH 6-Circuits (J2):**
- I2S digital audio output signals.
- Connect Pin-1 to (MCLK), Pin-4 to (DATA), Pin-5 to (BCLK) and Pin-6 to (LRCLK).
- Connect Pin-2 to +5V and Pin-3 to ground (GND).

**5. JST PH 6-Circuits (J1):**
- Audio control interface.
- Connect Pin-1 to ground (GND).
- Connect Pin-2 to VOL- and Pin-3 to VOL+.
- Connect Pin-4 to SSPND.
- Connect Pin-5 to MUTE and Pin-6 to +5V.

**6. JST PH 4-Circuits (J4):**
- I2C interface.
- Connect Pin-1 to +5V.
- Connect Pin-2 to SDA and Pin-3 to SCL.
- Connect Pin-4 to ground (GND).

**7. JST PH 5-Circuits (J6):**
- Analog output interface.
- Connect Pin-1 to Left Out channel.
- Connect Pin-2 to ground (GND).
- Connect Pin-3 to Right Out channel.

**8. 3.5mm Audio Jack (J7):**
- Standard analog audio output connection.
- Support TRS configuration.

# Electrical and Audio Performance Parameters

Electrical and audio performance specifications are typical at +25°C, powered by 5V DC, unless subject to change without notice. Combination with any add-on module(s) are not tested together.

UCM-PCM2706C Electrical Performance Parameters

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Power Supply | USB Type-C Input | 4.5 | 5 | 5.5 | VDC |
| Idle Current | Power Supply = 5 V, Test after 20 seconds without Input Signal | 0.016 | 0.021 | 0.025 | A |
| Idle Power | Power Supply = 5 V, Test after 20 seconds without Input Signal | 0.080 | 0.105 | 0.125 | W |
| Analog Output Minimum Load Resistace | @1 kHz, Vin = 0 dBFS | 16 | 32 | - | Ω |
| Operating Temperature | | -20 | - | 65 | °C |
| Storage Temperature | | -10 | 25 | 45 | °C |

UCM-PCM2706C Audio Performance Parameters

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Output Voltage | @Test Signal = 0 dBFS, 1kHz, Analog Output through ASIO drive, left or right Channel | 0.585 | 0.650 | 0.715 | Vrms |
| Noise Level | @Analog Output, 1 kHz, Vin = -100 dBFS, ASIO drive, A-weighted | - | 8.4 | 12 | uVrms |
| Frequency Response | @Power Supply = 5 V, Test Signal = 0 dBFS, 20 Hz-20 kHz Sweeping, Load Resistance = 100 kΩ | - | ±0.2 | ±0.4 | dB (Vrms/FS) |
| | @Power Supply = 5 V, Test Signal = 0 dBFS, 20 Hz-20 kHz Sweeping, Load Resistance = 10 kΩ | - | ±0.3 | ±0.5 | |
| DAC Characteristics | Resolution, Supporting 32 kHz, 44.1 kHz, 48 kHz | - | 16 | - | Bits |
| Total Harmonic Distortion (THD + N) | @Load Resistance = 20 Ω, 1 kHz, Analog Vout = 200 mVrms, A-weighted | - | 0.017 | - | % |
| | @Load Resistance = -32 Ω, 1 kHz, Analog Vout = 200 mVrms, A-weighted | - | 0.029 | - | % |
| Channel Separation | @1 kHz, Test Signal = 0 dBFS, Load resistance = 100k Ω | - | -64 | - | dB |
| Signal-to-Noise Ratio (SNR) | @1 kHz, A-weighted, Test Signal = 0 dBFS, Load Resistance = 100 kΩ | - | 95 | - | dB |

⚠ Note: UCM-PCM2706C do provide reverse polarity protection, BUT extreme caution must be exercised to ensure correct polarity during connection. Permanent damage caused by reverse polarity will not be covered under warranty.

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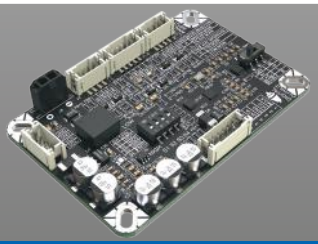
# Audio Signal Converter & USB Codec Module Series

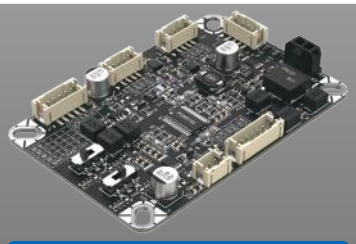


**ASCM-A2D-PCM1822**

**Transceiver IC:** PCM1822

**Input: Analog**
- ***Single-Ended*** *(JST PH 5 Circuits)*
- ***Differential*** *(JST PH 4 Circuits)*

**Output: Digital**
- ***I2S*** *(JST PH 6 Circuits)*

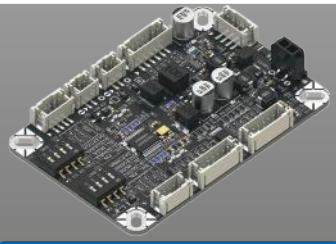


**ASCM-D2A-PCM5122**

**Transceiver IC:** PCM5122

**Input: Digital**
- ***I2S*** *(JST PH 6 Circuits)*

**Output: Analog**
- ***Single-Ended*** *(JST PH 5 Circuits)*
- ***Differential*** *(JST PH 4 Circuits)*

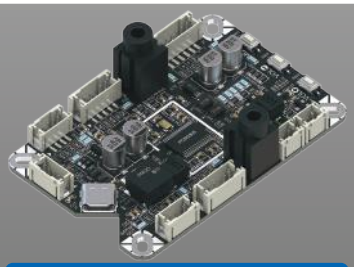


**ASCM-DST-WM8804**

**Transceiver IC:** WM8804

**Input: Digital**
- ***I2S*** *(JST PH 6 Circuits)*
- ***S/PDIF*** *(JST PH 4 Circuits)*

**Output: Digital**
- ***I2S*** *(JST PH 6 Circuits)*
- ***S/PDIF*** *(JST PH 4 Circuits)*



**UCM-PCM2906C**

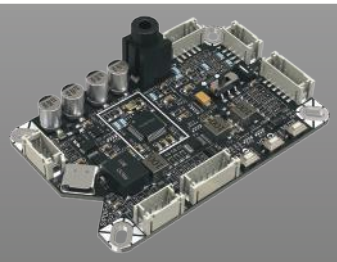
**Transceiver IC:** PCM2906

**Input: Digital**
- ***USB Type-C***
- ***S/PDIF*** *(JST PH 4 Circuits)*

**Output: Digital**
- ***S/PDIF*** *(JST PH 4 Circuits)*

**Input: Analog**
- ***Single-Ended*** *(3.5mm Socket & JST PH 5 Circuits)*

**Output: Analog**
- ***Single-Ended*** *(3.5mm Socket & JST PH 5 Circuits)*



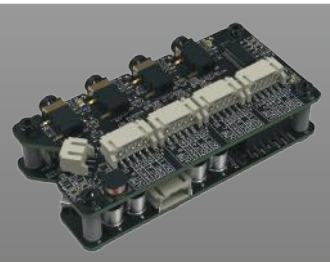
**UCM-PCM2706C**

**Transceiver IC:** PCM2706

**Input: Digital**
- ***USB Type-C***

**Output: Digital**
- ***S/PDIF*** *(JST PH 4 Circuits)*
- ***I2S*** *(JST PH 6 Circuits)*

**Output: Analog**
- ***Single-Ended*** *(3.5mm Socket & JST PH 5 Circuits)*



**UCM-D2A-SA9128**

**Transceiver IC: SA9128 & PCM5122**

**Input: Digital**
- ***USB Type-C***
- ***External Connector for USB*** *(JST PH 4 Circuits)*

**Output: Analog**
- *4 x* ***Single-Ended*** *(3.5mm Socket & JST PH 5 Circuits)*

Note: Kindly be aware that this display features only selected product series and does not include our entire collection.
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## Warranty Terms and Product Usage Restrictions

Wondom products come with a one-year warranty starting from the date of purchase. Customers are responsible for the cost of returning the goods to the seller, and by making a purchase, you agree to this condition. Due to the nature of DIY products, visible damage or use on screw holes or tinning of solder pads directly invalidates the warranty. Damage caused by the use of incorrect power sources, such as exceeding the specified voltage range or reverse polarity, is not covered under warranty. All Wondom products undergo through testing before shipment. We do not accept bulk returns after a bulk purchase. If you are unsure of the quantity you need, please purchase the appropriate quantity as needed. The rated operating temperature range is -20°C to 65°C.

## Origin and Design Location

All WONDOM products are designed, manufactured, and assembled in Malaysia. They may be shipped from either Malaysia or China. The country of origin for these product is Malaysia.

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