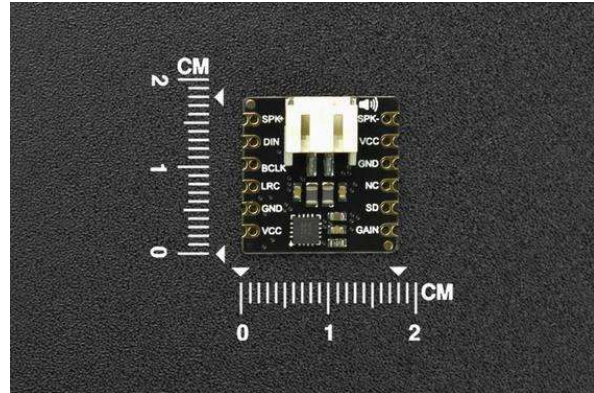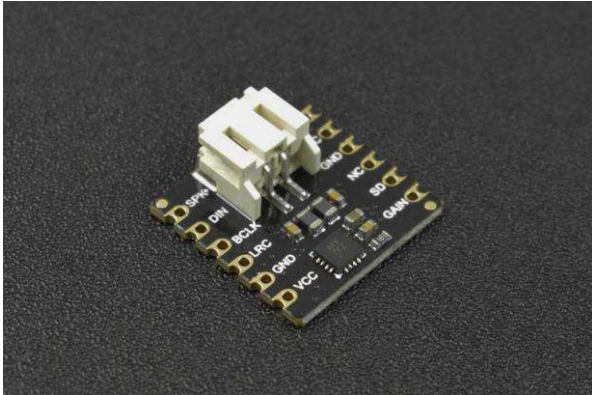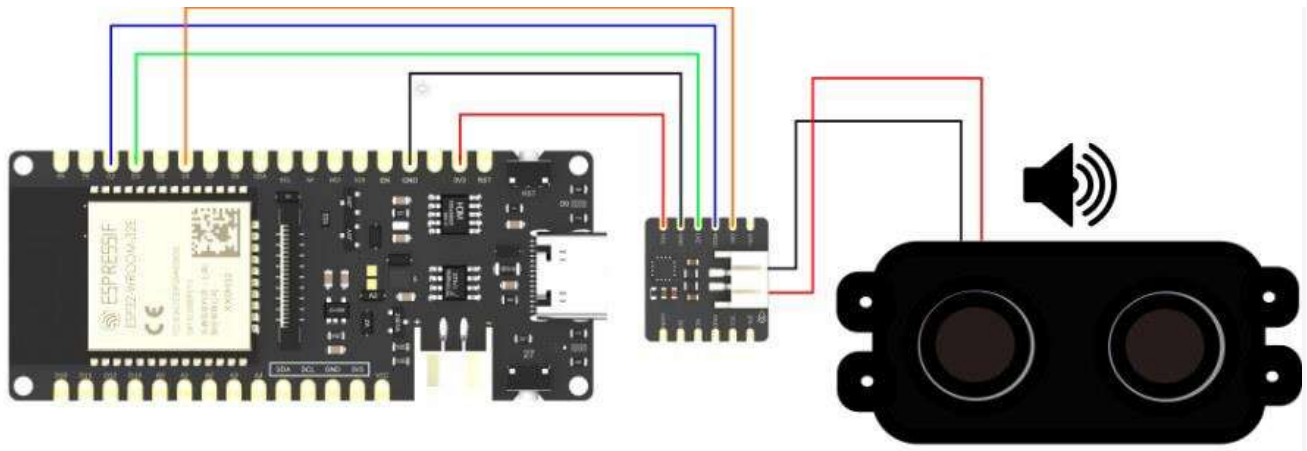# MAX98357 I2S Amplifier Module

SKU: DFR0954
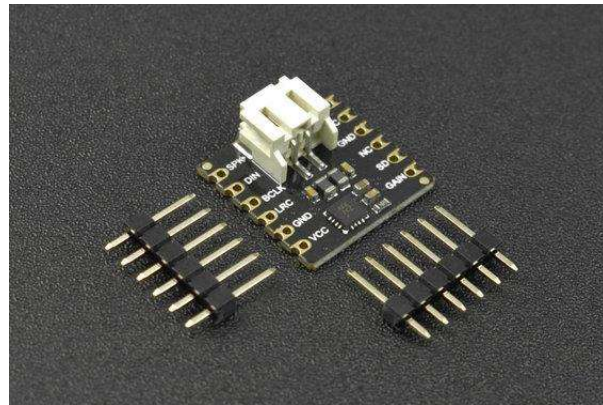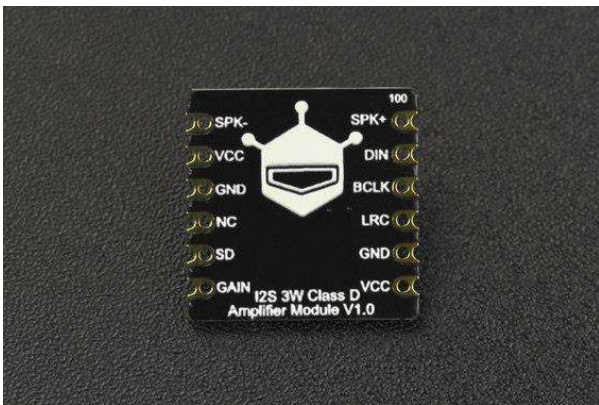
INTRODUCTION

This I2S digital amplifier **based on the MAX98357 I2S Class D amplifier module works great with microcontrollers with I2S audio outputs like ESP32** and can be applied to projects like IoT nodes, smart home devices, Bluetooth audio players, and so on.

The module supports a 3.3V-5V power supply. And it can output over 2.5W of power when driven by 5V and a 4Ω speaker. Besides, it allows users to set different modes (off, left channel, right channel, and mixed) by changing the resistance on the SD port. The product defaults to mixed mode.

Featuring a small size, this I2S amplifier comes with stamp holes that enable it to be directly plugged into or mounted on a PCB and breadboard. Also, it is designed with PH2.0 and stamp holes for connecting speakers, flexible, and convenient to use.

FEATURES

- MAX98357 I2S digital Class D amplifier, power >2.5W

- 3.3V~5V voltage power supply

- Switchable sound channel

- Adjustable gain

- Stamp holes design, support SMT and DIP

- Two ways to connect a speaker: PH2.0 and stamp holes

APPLICATIONS

- Bluetooth Audio Player

- IoT Node Audio Player

- Smart Home Voice Interaction

- Robotic Device Audio Player

SPECIFICATION

- Module Parameters

- MCU: MAX98357A

- Operating Voltage: DC 3.3V~5V

- Output Power: 8Ω 1.8W / 4Ω 2.5W (at 12db)

- Output Channel: single channel

- Communication Interface: I2S interface

- Operating Temperature: -40℃ - ＋80℃

- Storage Temperature: -40℃ - ＋80℃

- Dimension (Without Packaging): 18mm × 18mm/ 0.059 × 0.059

- Chip Audio-relevant Parameters
  (VDD = 5V, VGND = 0V, GAIN_SLOT = VDD. BCLK = 3.072MHz, LRCLK = 48kHz, speaker loads (ZSPK) connected between OUTP and OUTN, ZSPK = J, TA = TMIN to TMAX, unless otherwise noted. Typical values are at TA = +25NC.) (Note 2)

- Sample Rate: 8kHz~96kHz

- THD:
  0.02% (f = 1kHz, POUT = 1W, TA = +25NC, ZSPK = 4I + 33FH, TQFN)
  0.013% (f = 1kHz, POUT = 0.5W, TA = +25NC, ZSPK = 8I + 68FH)

- Dynamic Range: 105DB (A-weighted, VRMS = 2.54V, 24- or 32-bit data)

- Output Noise: 25FVRMS (A-weighted, 24- or 32-bit data (Note 4))

- Gain (relative to the reference level of 2.1dBV):
  GAIN_SLOT = GND through 100kΩ: Min 14.4dB, Typical 15dB, Max 15.6dB
  GAIN_SLOT = GND: Min 11.4dB, Typical 12dB, Max 12.6dB
  GAIN_SLOT = unconnected: Min 8.4dB, Typical 9dB, Max 9.6dB
  GAIN_SLOT = VDD: Min 5.4dB, Typical 6dB, Max 6.6dB
  GAIN_SLOT = VDD through 100kΩ: Min 2.4dB, Typical 3dB, Max 3.6dB

- Efficiency: 92% (ZSPK = 8I + 68FH, THD+N = 10%, f = 1kHz, gain = 12dB)

- DAC Gain Error: 1%

- Frequency Response: ±0.2dB

- Class D Switching Frequency: 330kHz

- Spread Spectrum Bandwidth: ±12.5kHz

DOCUMENTS

- Product wiki

- STP 3D Model

- 2D CAD Dimension

- 2D PDF Dimension

- Schematics

- MAX98357A Datasheet

SHIPPING LIST

- MAX98357 I2S Amplifier Module × 1