TinySine

AudioB I2S

Bluetooth Digital Audio Receiver Module

User Manual

FCC ID: 2ARMD-AUDIOBI2S

TinySine

List

1 Features

- Bluetooth 5.1
- I2S digital output
- Sampling Rate: 48KHz
- Bit per Sample: 16 bit
- Left Justified
- Justified Data 1 bit delay
- Apt-X supported
- Low power consumption: 5mA@5V
- HFP V1.6
- HSP V1.2
- A2DP V1.2
- AVRCP v1.4
- Support for smartphone application(APPs)

2 Applications

- Personal computer
- Background music system
- Musical instrument amplifiers
- Home DIY
- Car audio

3 Description

If you want to build a digital Bluetooth amplifier board, AudioB I2S Bluetooth audio receiver module is a good choice for your project. This is a Bluetooth 5.0 stereo recevier module, I2S digital output and music resampling frequency is 48KHz. It supports Apt-X supported, and it is based on QCC3031. We breakout pins to 2x10 2mm space male pins. You can integrate it to your project easily. This module has a U.FL connector. You can connect an external 2.4G antenna with it by using a U.FL to SMA cable.

4 Pin Functions

PIN#	NAME	DIRECTION	DESCRIPTION
1	Linein A N	Analog in	Line input negative, Channel A
2	Linein A P	Analog in	Line input positive, Channel A
3	Linein B P	Analog in	Line input positive, Channel B
4	Linein B N	Analog in	Line input negative, Channel B
5	AUX DET	Digital input	Aux in/Line in enable
6	GND	-	Ground
7	GND	-	Ground
8	I2S BCK	-	I2S syncheronous data clock
9	I2S SD OUT	-	I2S syncheronous data output
10	I2S LRCK	-	I2S word select
11	Vin	-	Voltage input (+3.7V - 5.5V)
12	MIC BIAS	Analog output	Microphone bias output
13	LED+	Analog output	LED anode 3.3V
14	LED-	Digital output	LED control pin
15	+3.3V	Digital output	3.3V output
16	GND	-	Ground
17	FORWARD	Digital input	Next track/Volume+
18	REWIND	Digital input	Previous track/Volume-
19	PLAY/PAUSE	Digital input	Play/Pause
20	MUTE	Digital output	Mute control

5 Bluetooth programming

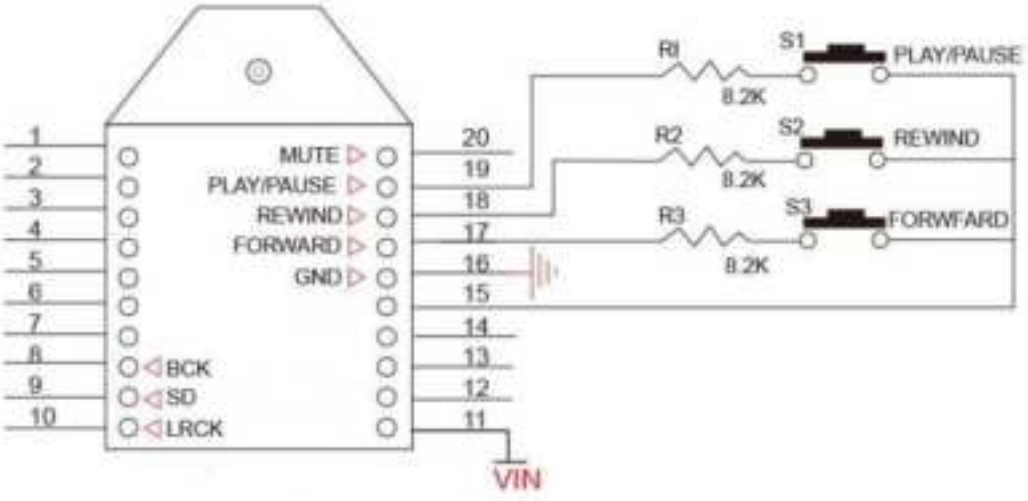
AudioB I2S has a microUSB port, you can do the programming via the USB port. You can change the BT name, Audio tones, Firmware ect... by using the official Qualcomm software.

6 Typical Application

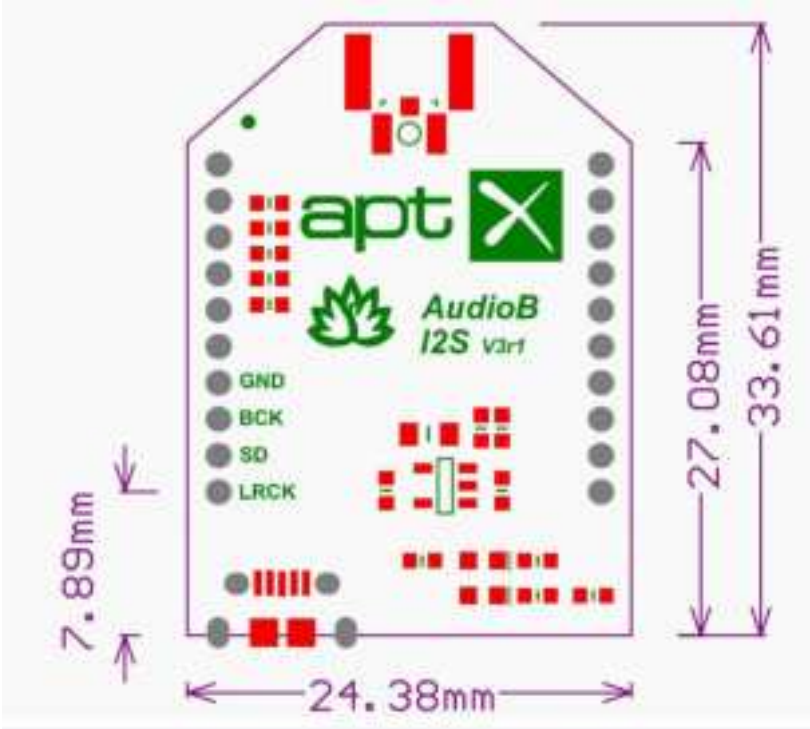
AudioB I2S can work with Tinysine audio amplifier board which supports I2S input, you can also use it with your audio amplifier board, following picture shows the typical application of this module.

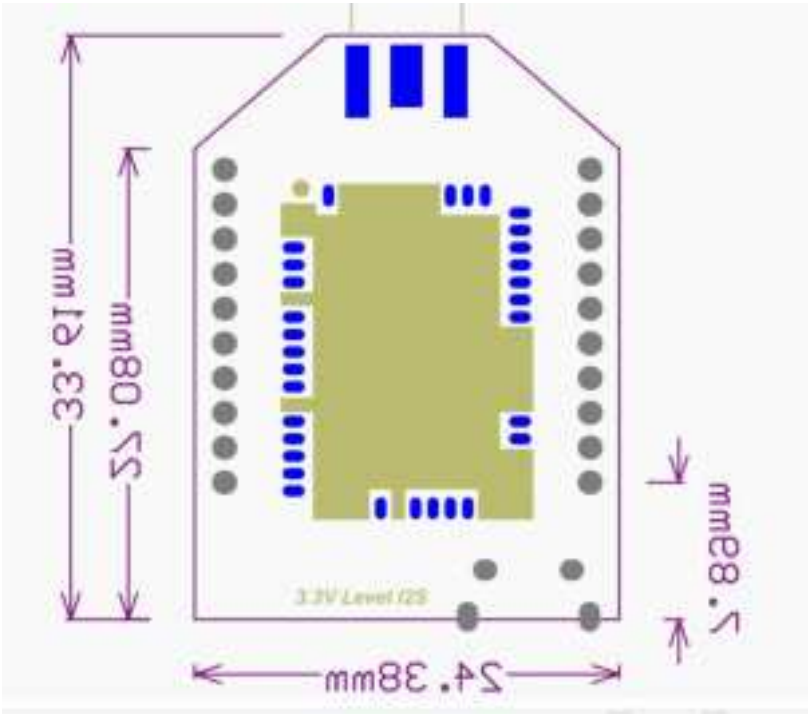
The module PIN7, 8, 9, 10 are I2S output pins, I2S voltage is 3.3V.

- 7 - GND
- 8 - BCK I2S synchronous data clock, It's a 2.304MHz square wave signal.
- 9 - SD I2S synchronous data output.
- 10 - LRCK I2S word select, 48KHz. 1 - Left channel data, 0 - Right channel data.



7 Dimensions





8 FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

RF Exposure
This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment can be used as portable exposure without any restriction.
Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
Country Code selection feature to be disabled for products marketed to the US/Canada.
This device is intended only for OEM integrators under the following conditions:

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna,
3. For all products market in US, OEM has to limit the operation channels in CH1 to CH79 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change. (if modular only test Channel 1-79)

As long as the three conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

End Product Labeling
The final end product must be labeled in a visible area with the following" Contains FCC ID: 2ARMD-AUDIOBI2S"
Manual Information to the End User
The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01.
2.2 List of applicable FCC rules
CFR 47FCC PART15 SUBPART C & E has been investigated. lt is applicable to the modular transmitter
2.3 Specific operational use conditions
This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.
2.4 Limited module procedures
Not applicable
2.5 Trace antenna designs
Not applicable
2.6 RF exposure considerations
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
2.7 Antennas
This radio transmitter FCC ID: 2ARMD-AUDIOBI2S has been approved by Federal Communications Commission to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.
Antenna No.:Bluetooth
Type of antenna: PCB Antenna
Gain of the antenna (Max.):3.5 dBi
Frequency range:2402-2480MHz

2.8 Label and compliance information
The final end product must be labeled in a visible area with the following "Contains FCC ID: 2ARMD-AUDIOBI2S".
2.9 Information on test modes and additional testing requirements
Host manufacturer is strongly recommended to confirm compliance with FCC requirements for the transmitter when the module is installed in the host.
2.10 Additional testing, Part 15 Subpart B disclaimer
Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15B.
A user's manual for the finished product should include the following statement:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or televisión reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

2.11 Note EMI Considerations
Host manufacture is recommended to use D04 Module Integration Guide recommending as "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties.
2.12 How to make changes
This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system. According to the KDB 996369 D02 Q&A Q12, that a host manufacture only needs to do an evaluation (i.e., no C2PC required when no emission exceeds the limit of any individual device (including unintentional radiators) as a composite. The host manufacturer must fix any failure.