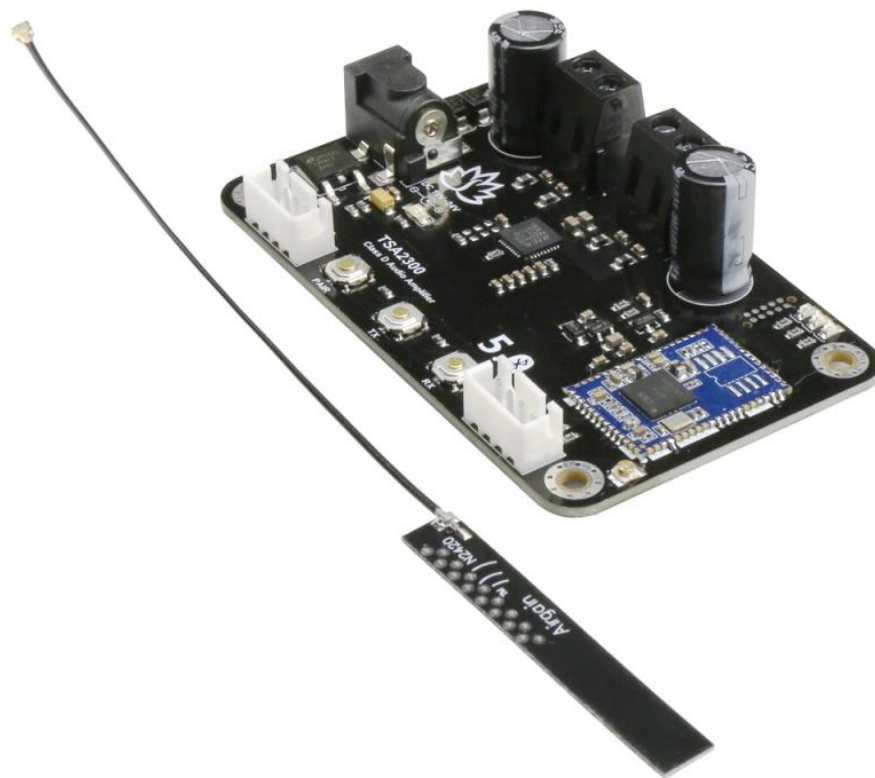




TSA2300

2 x 20W Bluetooth 5.0 Multipoint Audio Amplifier Board

Datasheet





1 Features:

- Wide-range 10V to 24V Supply Voltage Operation
- Size: 80*49*20mm
- Bluetooth programmable
- Multi-point connection
- Bluetooth 5.0
- Up to 100 boards can be linked together.
- Effective transmission distance:10-15m
- Compatible with all Bluetooth devices that support media audio, including iPhone

2 Applications:

- Wireless and Powered Speakers
- Soundbars
- Car audio
- Subwoofers
- Wireless Surround Sound System
- Bookshelf Stereo Systems
- Professional and Public Address (PA) Speakers

3 Description:

TSA2300 is a 2x20W Stereo Bluetooth 5 multi-point audio amplifier board. It has perfect class-D architecture (Based on MAX98400A) and each channel has 20W power output. Both of channels are capable of outputting nominal power simultaneously and continuously. This board can be powered by any DC10V-24V power supply. It can be used to drive two 8Ω passive speakers.

The highlight point is BT 5 integrated. You can make many TSA2300 boards paired and work together. TSA2300 can remember the pairing info. You don't need pair them each time you turn the amplifier board on. This makes it possible to build a wireless surround sound system by using the TSA2300.

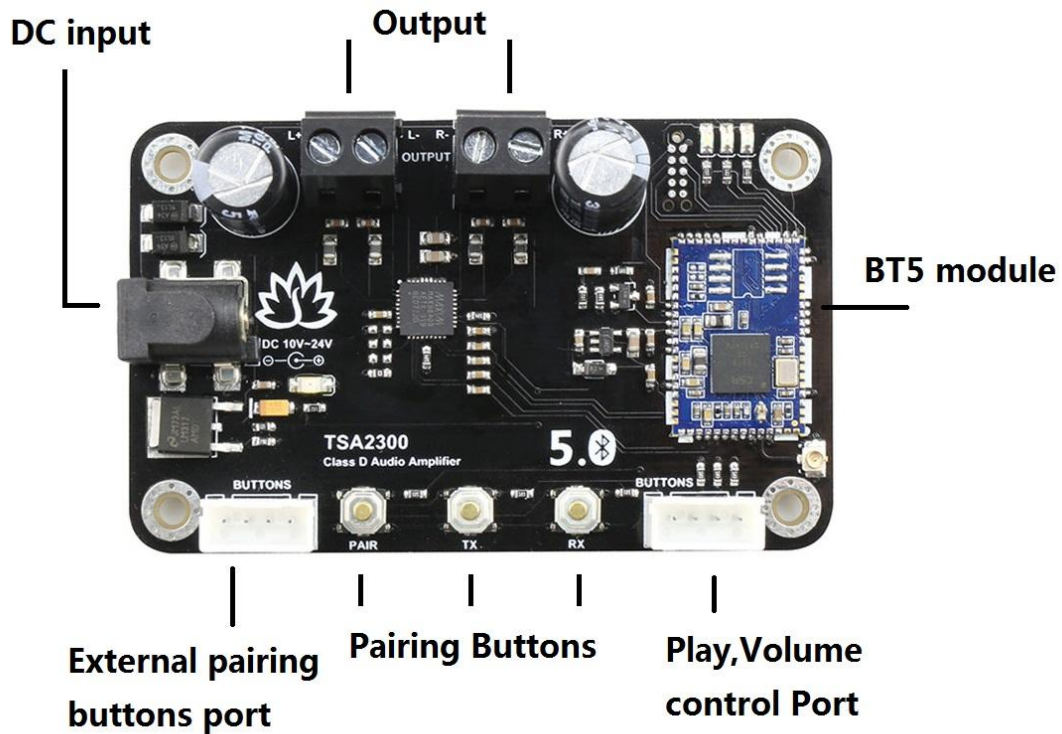
If you only use one TSA2300, it can work like a common Bluetooth amplifier board. Power the amplifier board. Double click PAIR button to set the board into Pairing mode. Use your phone or PC (etc.) to search for a new Bluetooth device. The module will appear as "TSA2300". You don't need a PIN, pair it and then you can play music.



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4 Device function diagram:



5 Specifications

Following table lists all typical data of the Amp board. For full specification, please refer to the data sheet of MAX98400A chip. TA = 25°C, fin = 1 kHz sine wave, RL = ∞, VVS = 18V. (Unless otherwise stated)

Parameter	Condition	Min	Type	Max
Supply Voltage (VDC)	Inferred from PSRR test	10	-	24
Current Limit		3.5A	5A	-
Bandwidth @±3dB	@8Ω	20Hz	-	22kHz
Efficiency	PO = 2X20W, MAX98400A, PVDD = 12V, RL = 8Ω	-	90%	-
Minimum Load Impedance		-	8Ω	-
Switching Frequency		265KHZ	330KHZ	295KHZ
Gain		9dB	20.1dB	29.8dB
Input Sensitivity (RMS)		-	620mV	-
Input Impedance		-	22KΩ	-
	Stereo, RL = 8Ω, THD+N	-	22	-

Output Power (W)	10%			
	Mono, $RL = 4\Omega$, THD+N 10%	-	44	-
THD+N	$POUT=0.1W$ to $POUT/2$, $f_{IN}= 20Hz$ to $20kHz$, $RL= 8\Omega$	-	0.3%	-
	$POUT/2$, $f_{IN}=1kHz$, $RL= 8\Omega$	-	0.03%	-

6 Connection Ports and Functions

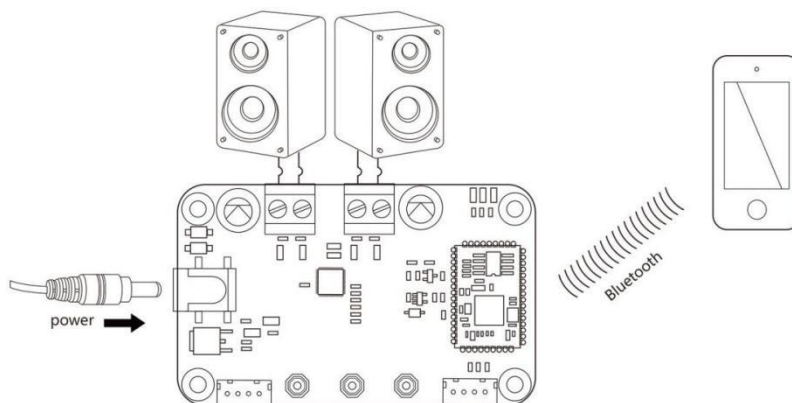
6.1 Power input

- DC input voltage: DC10V-24V.
- Power reverse connection protection

6.2 Control buttons

- PAIR Button
 - Double click into pairing mode
 - click to exit party mode
- TX Button
 - Click into transmitter mode.
 - Double click to search slave
- RX Button
 - Click into receiver mode

6.2.1 Standard working mode



One board works alone

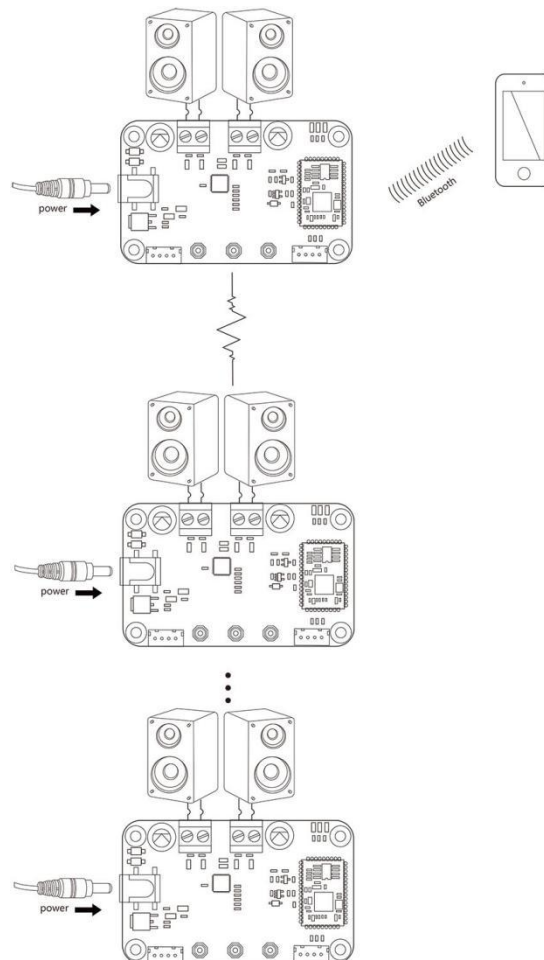


How to use:

1. Connect speakers with TSA2300 and Power up, Blue LED slow blinks.
2. Double click PAIR button to set the TSA2300 into Pairing mode. Blue LED fast blinks.
(Voice: Pairing)
3. Now, your smartphone will be able to find a new Bluetooth device whose name is "TSA2300". Connect it. (Voice: Pairing successful)
4. You can play the music now.

6.2.2 Multi-point mode (Party mode)

Multi-point mode is also called as party mode too. In this mode, user can make multiple TSA2300 paired and work together. One of these TSA2300 works as master (transmitter) and the other boards work as slave (receiver). Smartphone only connect with the master board. All TSA2300 have audio output when your smartphone is playing the music.



Multiple boards work together



How to use:

Master board:

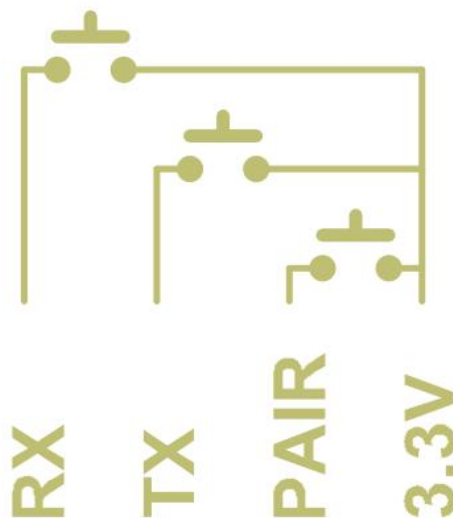
1. Power up the TSA2300, Blue LED slow blinks.
2. Double click PAIR button to set the TSA2300 into Pairing mode. Blue LED fast blinks. (Voice: Pairing)
3. Now, your smartphone will be able to find a new Bluetooth device whose name is "TSA2300". Connect it.
4. You can play the music now. If you only use one amplifier board, you don't need do the following steps.
5. Click TX button, and set the module to transmitter mode. (Voice: transmitter mode)

Slave board:

1. Power up another TSA2300. Blue LED slow blinks.
2. Make sure that master board works correctly and in transmitter mode. Click RX button to set slave board into receiver mode. It will automatically search the master board. (Voice: receiver mode, searching)
3. Double click the TX button on the Master board. The master board will automatically search (30s) slave board. Both master and slave board will be connected. (Voice: searching)
4. The slave board can play music now.
5. If a new board joins as slave board, just click RX on new module and Double click on Master module.
6. If a slave board wants to quit, click TX or PAIR button on that module.

6.3 External Pairing Buttons Port

Wiring:

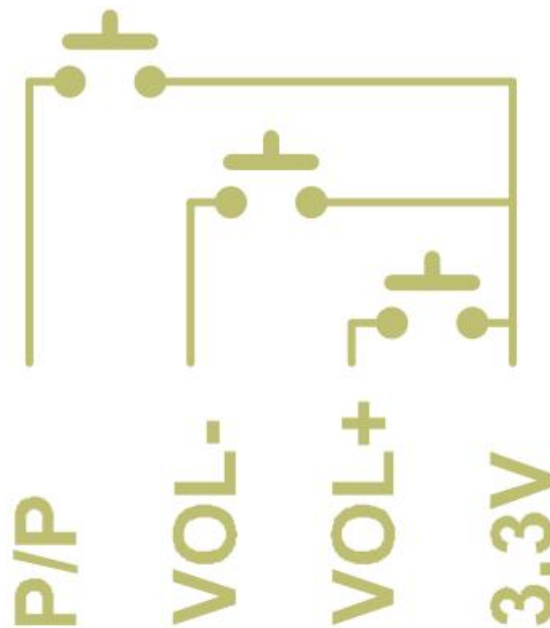


Pin functions

Pin#	Name	Description
1	3.3V	Provides voltage to the IO port of the Bluetooth module
3	PAIR	Pairing button, Double click button into pairing mode
3	TX	TX button, Click button into transmitter mode
4	RX	RX button, Click button into receiver mode

6.4 Play, Volume Control Port

Wiring:



Pin functions

Pin#	Name	Description
1	3.3V	Provides voltage to the IO port of the Bluetooth module
2	VOL+	VOL+ button 1.Short click: Next track 2.Long press: Audio volume +
3	VOL-	VOL- button Short click: Previous track Long press: Audio volume -
4	P/P	Play/Pause button

7 Bluetooth programming

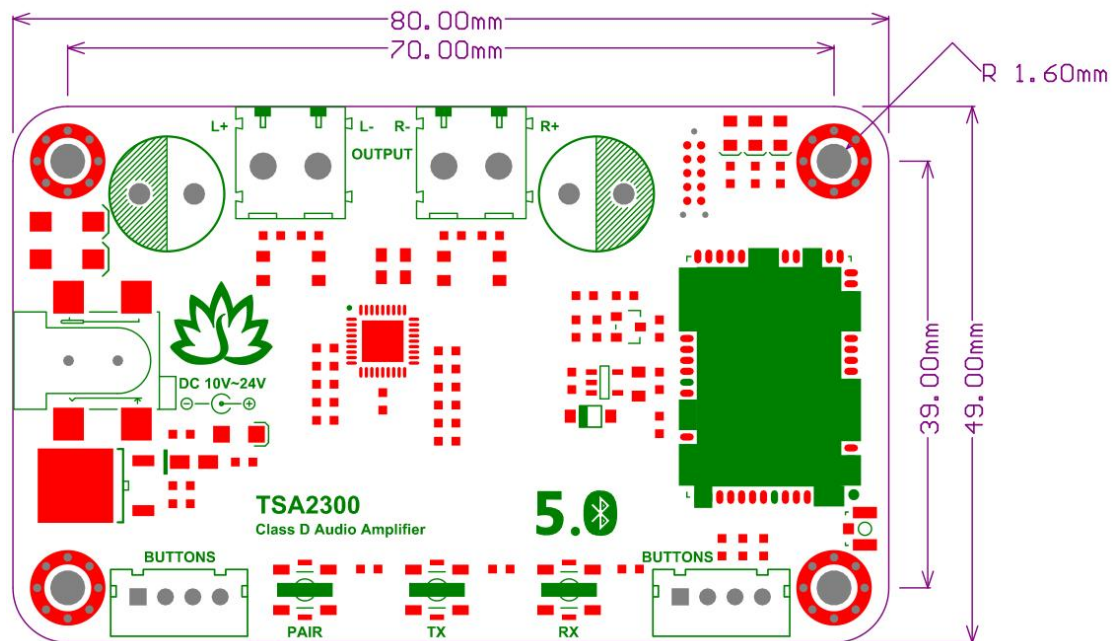
TSA2300 uses Qualcomm CSR8675 as the main Bluetooth chip. User can do the programming



via the [CSR USB-SPI programmer](#). You can change the BT name, Audio tones, Firmware ect... by using the Official Qualcomm software.

- [ADK_CSR867X.WIN4.3.1.5](#)
- [How to set the CSR8675 party mode go straight into paring mode](#)
- [How to change the BT name](#)
- [Firmware](#)
- [How to change the EQ](#)
- [No need push button into pairing mode](#)
- [How to disable the audio tones](#)

8 Dimensions



9 Revision history

Document revision history

Date	Revision	Changes
1-Aug-2024	1	Initial release