Low Power Series

1/2 Channel Configurable 16W Class D Audio Amplifier Board - TPA3110 (AA-AB32231)



Key Features:

- **Output Power**
  2 x 8W @ 8Ohm, THD+N=10%
  1 x 16W @ 4Ohm, THD+N=10%
- **Power Supply Range: DC 8V to 19V**
- **PBTL and BTL Configurable**
- **Power Indicator**
- **Heat Dissipation through PCB Copper**
- **Overcurrent Protection**
- **Overtemperature Protection**
- **4-screw Easy Installation**
- **Weight: 90g/ 0.20 lbs (±10%)**
- **Size: 3 x 2 x 0.65 inches**

Distributors:

PARTS EXPRESS YOUR ELECTRONICS CONNECTION · MCM · AXIOMEDIA · HOBBYHIFILADEN · AUDIOPHONICS · Yokohama Bayside Net

All these boards are per-tested with our power supply solution to comply with FCC and CE. For all customers who need those information, please contact our distributor or Sure Electronics. RoHS compliant will need an MOQ of 1000pcs per order.

Ready for:

FC CE RoHS

Contact info

- **Email:**
  info@sure-electronics.com

WONDOM™

Electrical Characteristics in Stereo Mode, R_L=8ohm

Specifications typical @ +25℃, powered by 12V DC, unless otherwise noted. Specifications subject to change without notice.

Parameter		Conditions	Min.	Typ.	Max.	Units
Numbers of Channel		-	-	2	-	
Operating Voltage		-	8	12	19	V
Load Impedance		-	4	8	-	ohm
Output Power		1kHz, THD+N=0.1%	-	8	-	W
Idle Power		SD Floating	-	0.3	-	W
Switching Frequency		SD Floating	-	310	-	kHz
Efficiency		8W@8Ohm		90	-	%
Control	Standby (Low = inputs enabled)	High-level Input Voltage	2	-	12	V
		Low-level Input Voltage	-	-	0.8	
Standby Power		SD short to GND	-	30	-	mW

Audio Characteristics in Stereo Mode, R_L=8ohm

Specifications typical @ +25℃, powered by 12V DC, unless otherwise noted. Specifications subject to change without notice.

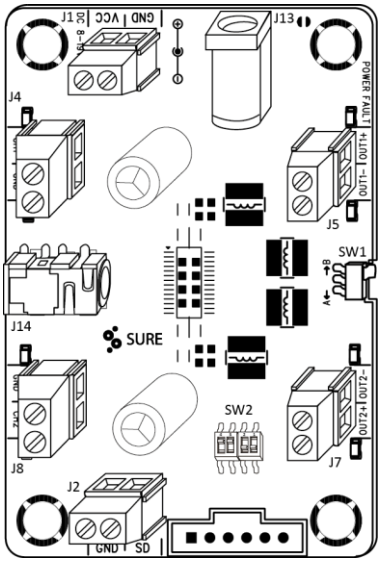
Parameter		Conditions	Min.	Typ.	Max.	Units
SNR		DIFF. 8W@8ohm, THD+N=1%, A-Weighting	-	100	-	dB
		SE. 8W@8ohm, THD+N=1%, A-Weighting	-	98	-	
THD+N	DIFF.	1W@8ohm, 1kHz	-	0.02	-	%
		8W@8ohm, 1kHz	-	0.1	-	
	SE.	1W@8ohm, 1kHz	-	0.05	-	
		8W@8ohm, 1kHz	-	0.2	-	
Output Noise Level		DIFF. A-weighting, Input Connected to GND	-	80	-	μV
		SE. A-weighting, Input Connected to GND	-	80	-	
Frequency Response		@4ohm, 1kHz,±3dB	20	-	20k	Hz
Amp Gain		DIFF. @8ohm, 1kHz	-	12	-	dB
		SE. @8ohm, 1kHz	-	26	-	
Input Impedance		DIFF.	-	45	-	kohm
		SE.	-	30	-	

Electrical Characteristics in Mono Mode, R_L=4ohm

Specifications typical @ +25℃, powered by 12V DC, unless otherwise noted. Specifications subject to change without notice.

Parameter		Conditions	Min.	Typ.	Max.	Units
Numbers of Channel		-	-	1	-	
Operating Voltage		-	8	12	19	V
Load Impedance		-	3.2	4	-	ohm
Output Power		1kHz, THD+N=0.1%	-	16	-	W
Idle Power		SD Floating	-	0.3	-	W
Switching Frequency		SD Floating	-	310	-	kHz
Efficiency		16W@4Ohm		90	-	%
Control	Standby (Low = inputs enabled)	High-level Input Voltage	2	-	12	V
		Low-level Input Voltage	-	-	0.8	
Standby Power		SD short to GND	-	30	-	mW

Audio Characteristics in Mono Mode, R_L=4ohm



Specifications typical @ +25℃, powered by 12V DC, unless otherwise noted. Specifications subject to change without notice.

Parameter		Conditions	Min.	Typ.	Max.	Units
SNR		DIFF. 8W@4ohm, THD+N=1%, A-Weighting	-	97	-	dB
		SE. 8W@4ohm, THD+N=1%, A-Weighting	-	95	-	
THD+N	DIFF.	1W@4ohm, 1kHz	-	0.06	-	%
		8W@4ohm, 1kHz	-	0.2	-	
	SE.	1W@4ohm, 1kHz	-	0.08	-	
		8W@4ohm, 1kHz	-	0.3	-	
Output Noise Level		DIFF. A-weighting, Input Connected to GND	-	80	-	μV
		SE. A-weighting, Input Connected to GND	-	80	-	
Frequency Response		@4ohm, 1kHz,±3dB	20	-	20k	Hz
Input Sensitivity		DIFF. 16W@4ohm, 1kHz	-	2k	-	mV
		SE. 16W@4ohm,1kHz	-	400	-	
Amp Gain		DIFF. @4ohm, 1kHz	-	12	-	dB
		SE. @4ohm, 1kHz	-	26	-	
Input Impedance		DIFF.	-	45	-	kohm
		SE.	-	30	-	

Notes:

1. This amplifier board supports switching between stereo and mono mode and single-ended and differential input methods through two switches (SW1 and SW2) on this board. Please refer to Connection and silkscreen for detail information. The default setting is stereo mode and single-ended input.

2. All parameters were tested with Rohde & Schwarz UPV audio analyzer (AES17 filter enabled) and Audio Precision AUX0025 filter. For authorized distributors and OEM customers who need more detailed performance graphs and parameter settings, please send an inquiry e-mail to us. (Not available for retail customers)

3. Choose only one way to power the amplifier board at a time.

4. Feed only one group (dual channel) of audio signal to the amplifier board at a time.

5. Never connect more than one group of speaker to the audio output.

6. Never connect CH1_OUT-, CH2_OUT- together since they belong to different NETs.

7. 1 power LED indicator which is marked as “POWER” is on the board. It will be illuminated in green when power-up. 1 LED indicator which is marked as ‘FAULT’ is on the board. It will be illuminated in red when there is something is wrong with the amplifier board.

Typical Performance Graphs

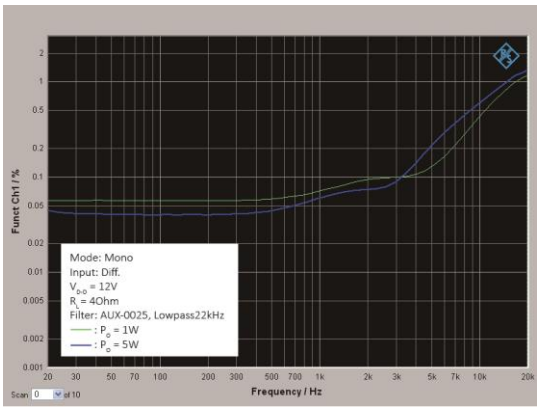


Figure 1: Total Harmonic Distortion + Noise (Mono Mode) vs Frequency

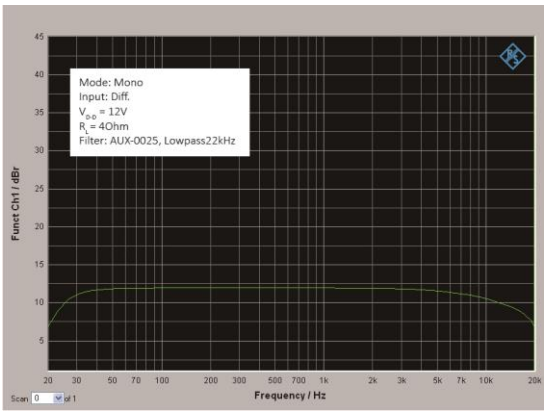


Figure 2: Frequency Response (Mono Mode) vs Frequency

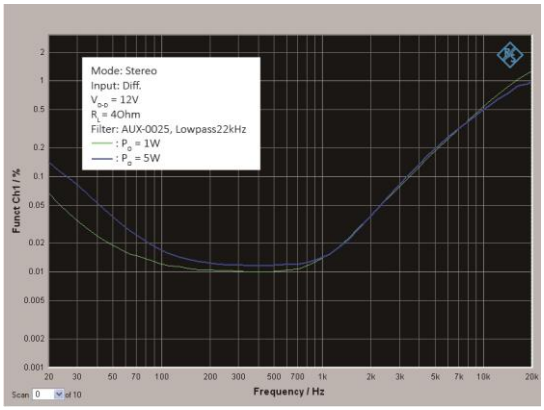


Figure 3: Total Harmonic Distortion + Noise (Stereo Mode) vs Frequency

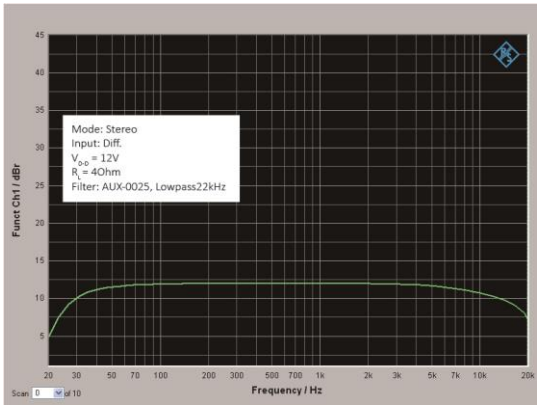


Figure 4: Frequency Response (Stereo Mode) vs Frequency

Sure Electronics

Make Your Audio Application Simple!

NO.9, Weidi Road, Xianlin University City, Qixia District, Nanjing, Jiangsu Province, P.R.C

www.sure-electronics.com
www.wondom.com
Mail: store@sure-electronics.com
Skype: surewebstore

Model Selection Guide

Model Number	Output Power	Power Supply Range	Typical Load	Amplifier IC	Dimension
AA-AB32131	2 X 2Watt	DC6-12V	4Ω	PAM8803	2.85"X2.15"
AA-AB32231	2 X 8Watt	DC8-19V	8Ω	TPA3110	3"X2"
AA-AB32232	2 X 10Watt	DC10-15V	8Ω	PAM8610	3.6"X2.7"
AA-AB32999	2 X 15Watt	DC10-24V	4Ω	PAM8615	3.6"X2.7"
AA-AB32233	2 X 10Watt	DC10-15V	4Ω	SSM3302	3.6"X2.7"
AA-AB32992	2 x 15Watt	DC10-24V	4Ω	MAX9736A	3.6"X2.7"
AA-AB32993	2 X 15Watt	DC10-24V	4Ω	MP7740	3.6"X2.7"
AA-AB32996	2 X 15Watt	DC10-24V	8Ω	TPA3110	3.6"X2.7"
AA-AB32155	2 X 15Watt	DC10-14V	4Ω	TA2024	3.6"X2.7"
AA-AB32254	2 X 20Watt	DC10-24V	8Ω	MAX98400A	3.6"X2.7"
AA-AB32166	2 X 25Watt	DC10-24V	6Ω	TDA7492P	3.6"X2.7"
AA-AB32165	2 X 25Watt*1	DC14-19V	6Ω	TDA7492	4.8"X3.6"
AA-AB32174	2 X 50Watt*1	DC10-24V	6Ω	TDA7492	4.8"X3.6"
AA-AB32179	2 X 50Watt	DC10-24V	6Ω	TDA7492	3.6"X2.7"
AA-AB32167	2 X 25Watt	DC10-27V	4Ω	TPA3123	3.6"X2.7"
AA-AB32472	2 X 30Watt	DC10-24V	8Ω	TPA3118	3.6"X2.7"
AA-AB32178	2 X 50Watt	DC10-24V	4Ω	TPA3116	3.6"X2.7"

Notes:

1. The output power is rated at the condition THD+N 10%,1kHz sine wave.

2. All amplifier boards don't employ power supply reverse polarity protection. Stresses beyond the power supply range maximum ratings may cause permanent damage.

3. None typical load may cause rating power reduction.

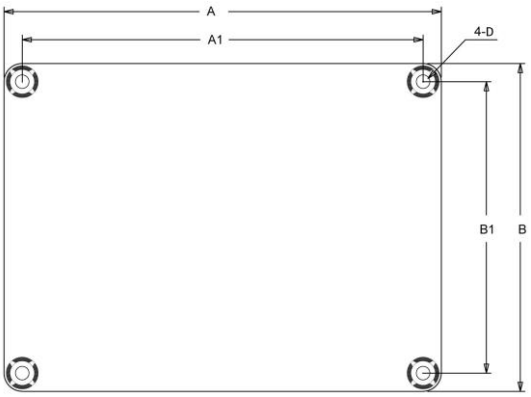
4. Dimensions mean length and width of PCB only, excluding excessive part out of the PCB outline.

5. All parameters were tested with Rohde & Schwarz UPV audio analyzer (AES17 filter enabled) and AP AUX0025 filter. Linear Power Supply units were used for testing.

6. Sure Electronics promises all standard products life cycle more than 5 years. Sure Electronics reserves the right to update the version without notice. All the products sent to retail customers are the latest version. We will provide back-to-order service (100 Pieces MOQ needed) for our distributors in 5 years.

7. Suggested power supply solution:
Huntkey HKA02412020-8D 12V 2A 24W AC/DC Power Adapter (PS-SP11502)
If you have other power supply requirements, please feel free to contact us.

Mechanical Dimensions

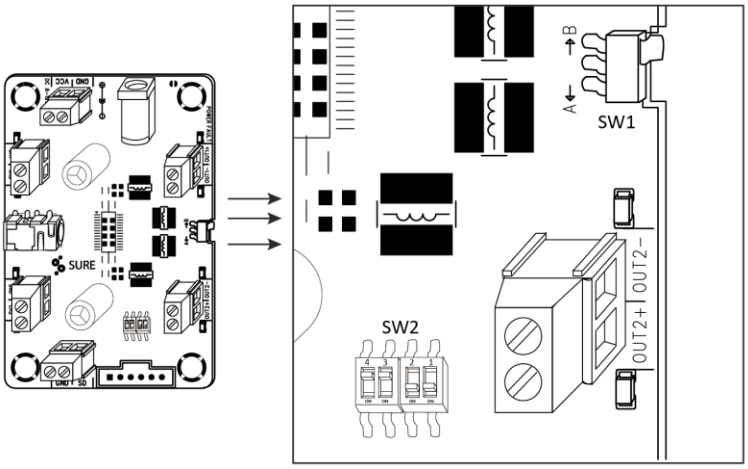


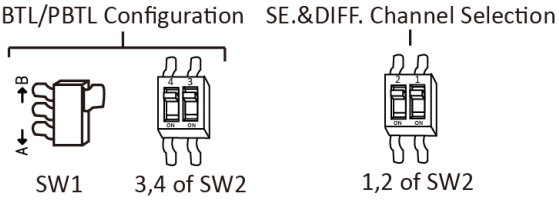
Dimensions	inch/mm
A	3.0/76.2
A1	2.7/68.6
B	2.0/50.8
B1	1.7/43.2
D	0.12/3.1

Notes:
· Two kinds of mounting holes on one board
· All dimensions are typical in inches (mm)
· Tolerance x.xx = ±0.02 (±0.50)

Connection

The default setting of this amplifier board is stereo mode and single-ended input.





BTL/PBTL Configuration

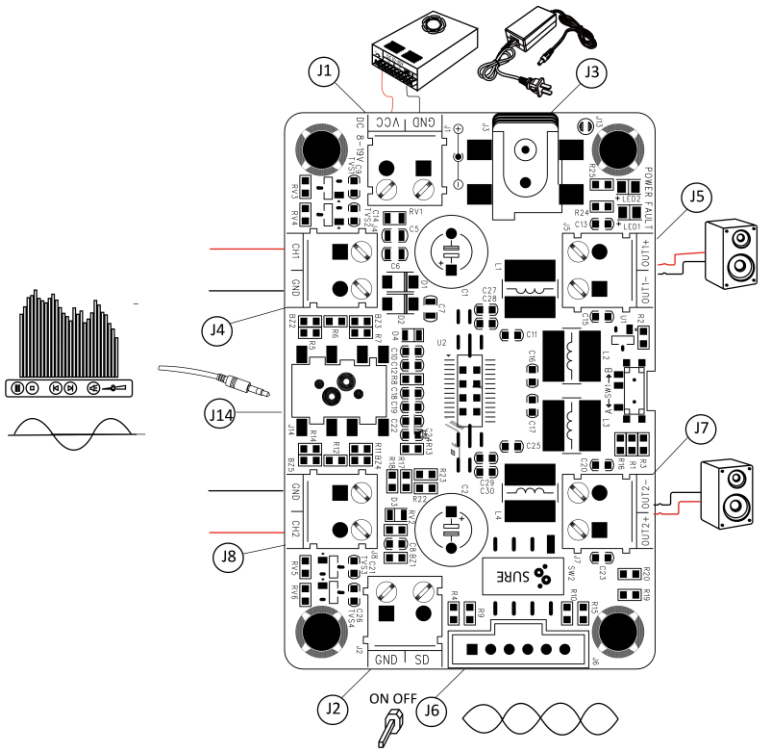
Mode \ SW Position	SW1	3,4 of SW2
Stereo	B	OFF
Mono	A	ON

SE. & DIFF. Channel Selection

Input Method \ SW Position	1,2 of SW2
Single-ended	ON
Differential	OFF

Sure Electronics
Make Your Audio Application Simple!
NO.9, Weidi Road, Xianlin University City, Qixia District, Nanjing, Jiangsu Province, P.R.C
www.sure-electronics.com
www.wondom.com
Mail: store@sure-electronics.com
Skype: surewebstore

Stereo Mode



Power Supply Connector:
· J3 DC8-19V power adapter socket Jack 5.5mm/2.1mm
· J1 Terminal Block RJ128

	Pin	Function
J1	■	GND
	●	VCC

Mute Setting:
· J2 Terminal Block RJ128

	Pin	Function
J2	■	GND
	●	SD

Audio Input Connector:
· J14 3.5mm AUX- in Jack
· J4, J8 Terminal Block RJ128
· J6, Molex 6-Pos-2.54mm, (Differential Input)

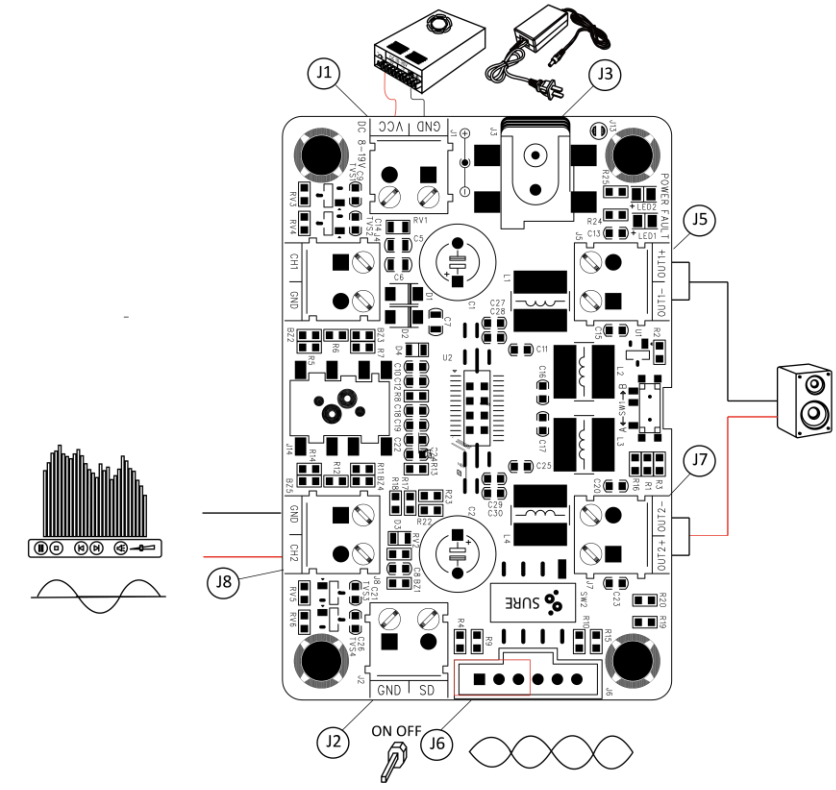
	Pin	Function
J4	■	CH1
	●	GND
J8	■	GND
	●	CH2

	Pin	Function
J6	■	DIFF1_N
	●	SGND
	●	DIFF1_P
	●	DIFF2_N
	●	SGND
	●	DIFF2_P

Speaker Output Connector:
· J5, J7 Terminal Block RJ128

	Pin	Function
J5	■	OUT1-
	●	OUT1+
J7	■	OUT2+
	●	OUT2-

Mono Mode



Power Supply Connector:
· J3 DC8-19V power adapter socket Jack 5.5mm/2.1mm
· J1 Terminal Block RJ128

Speaker Output Connections:
· J5, J7 Terminal Block RJ128

	Description
J5	Negative polarity of mono output
J7	Positive polarity of mono output

***Notes:**For mono output, OUT2+ and OUT2- are short circuited as the positive of speaker output, and OUT1- and OUT1+ are short circuited as the negative of speaker output.

Audio Input Connector:
· J8 is used for single-ended input terminal block in mono mode.
· The pin of J6 in red box is used for differential input in mono mode.

Mute Setting:
· J2 Terminal Block RJ128

WONDOM™

Sure Electronics

Make Your Audio Application Simple!

NO.9, Weidi Road, Xianlin University City, Qixia District, Nanjing, Jiangsu Province, P.R.C

www.sure-electronics.com
www.wondom.com
Mail: store@sure-electronics.com
Skype: surewebstore