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**2 X 250Watt Class D Audio  
Amplifier Board – IRS2092  
User's Guide**

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## Table of Contents

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<b>Chapter 1. Overview.....</b>	<b>1</b>
1.1 Overview .....	1
1.2 Accessories .....	1
1.3 Features .....	1
1.4 Applications.....	2
1.5 Benefits .....	2
1.6 Quick Start .....	2
<b>Chapter 2. Hardware Detail.....</b>	<b>4</b>
2.1 Power Connection .....	4
2.2 Input Connections .....	5
2.3 Output Connections .....	5
2.4 LED Indicators .....	6
2.5 Notes .....	6
<b>Chapter 3. Electrical Characteristics .....</b>	<b>7</b>
<b>Chapter 4. Mechanical Drawing .....</b>	<b>8</b>
<b>Chapter 5. Contact Us.....</b>	<b>9</b>

# 2 X 250Watt Class D Audio Amplifier Board – IR2092

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**Note:**

Please read this manual carefully before you use the product. To keep the product in a best working condition and having a long service time, please operate it according to the relevant steps. The warranty lapses if the product is damaged because of incorrect use and your negligence.

Please read this manual carefully before you use the product and check if the product is a good one. DC±60V is recommended to be used to power the product for one hour. Please make sure there's space for heat dissipation since this product outputs high power and don't touch the heat sink with your hand. Never use this product in an extreme condition.

**Warning:** Never immerse the product in the rain or any other humid environment to prevent the fire or electric shock.

**Safety Precautions:**

1. In order to achieve a better sound quality, please use stable power supply since a bad or unstable power supply may worsen the sound quality or even cripple the amplifier board.
2. Avoid metal objects. Protect this product well and move away metal objects from this product.



# 2\*250WATT CLASS D AUDIO AMPLIFIERBOARD –IRS2092 USER'S GUIDE

## NOTES:

**Product Version** : **Ver 1.0**

**Document Version** : **Ver 1.0**

## Chapter 1. Overview

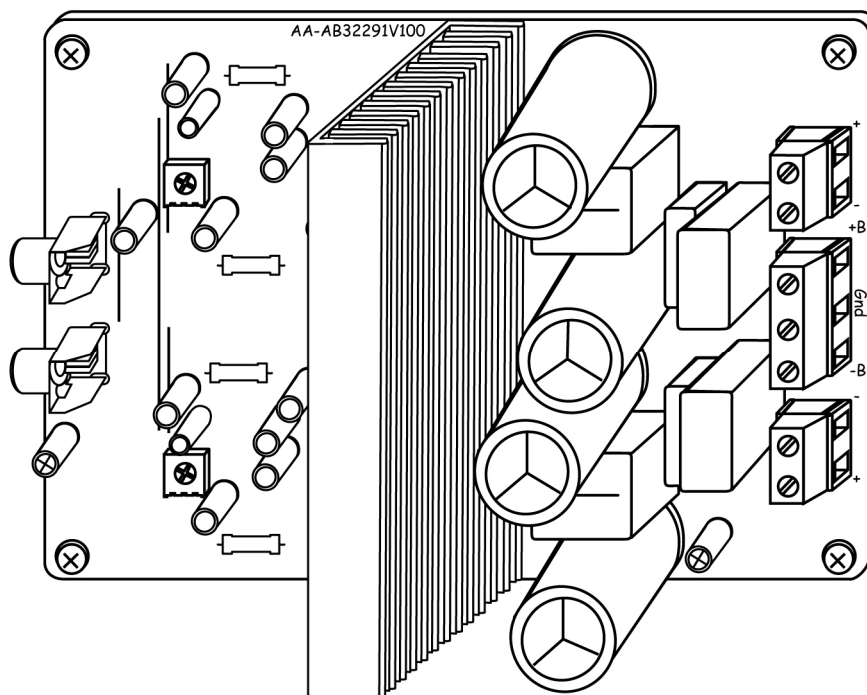
### 1.1 Overview

Welcome to use this 2\*250W Class D audio amplifier board by Sure Electronics.

It integrates high performance IRS2092 supporting dual channel audio amplification. Both of channels are capable of outputting nominal power simultaneously and continuously. It's suitable for amplifier enthusiasts or hobbyists to finish a complete amplifier system.

Resistance and capacity components of high quality, including Metallized Polyester (PET) Capacitors and lower ESR electrolytic capacitors, high performance inductors are used to gain the perfect timber, finally realize high S/N ratio, low THD+N, wide frequency response range etc.

**FIGURE 1-1 FRONT VIEW**



### 1.2 Accessories

We don't provide audio accessories together with this product. Please go to [www.sure-electronics.com](http://www.sure-electronics.com) to choose what you need.

**Note:** The diagrams above are used for reference only.

### 1.3 Features

- ÿ A perfect "Class D" architecture
- ÿ Frequency response: 20Hz to 20KHz(±3dB)
- ÿ Single end audio signal input
- ÿ Under voltage protection

# 2 X 250Watt Class D Audio Amplifier Board – IR2092

- Over current protection
- Short Circuit and Over Temperature Protection
- Click & Pop Noise Reduction

**Note:** If the fault condition persists, the protection circuit stays in shutdown until the fault is removed.

## 1.4 Applications

- AV receivers
- Powered speakers
- Sub-woofers
- Musical Instrument amplifiers
- PA System
- External Car Speaker System
- Background Music Systems
- Home DIY
- Prototype for recording studios, post-production, live sound and hi-fi applications.

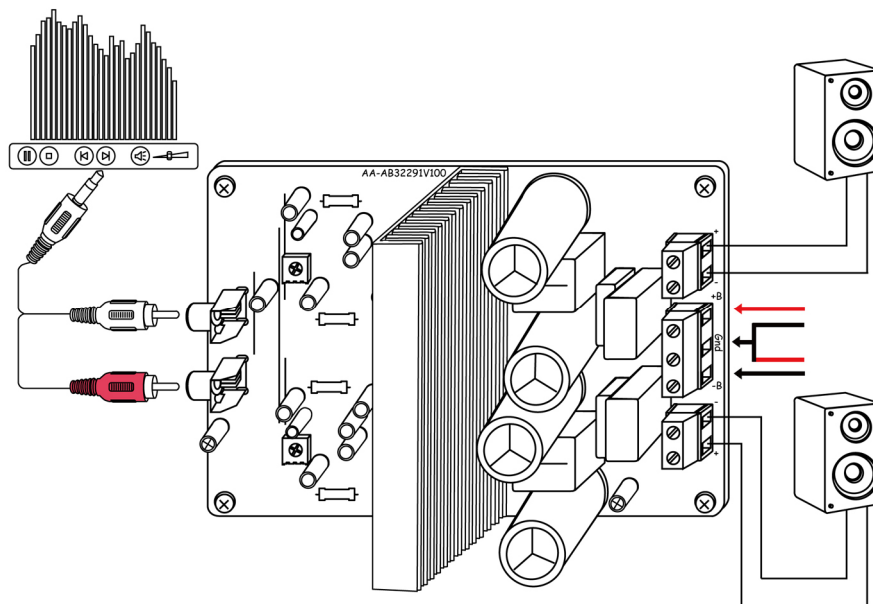
## 1.5 Benefits

- Mounting holes facilitate installation and fixing
- Excellent heat dissipation eliminates the requirement of an extra heat sink.

## 1.6 Quick Start

Suggested connection is shown in figure 1-3.

**FIGURE 1-3 CONNECTION SCHEMATIC**



**Note:** Please observe the following steps to complete verification so as to ensure the products are intact during transit.

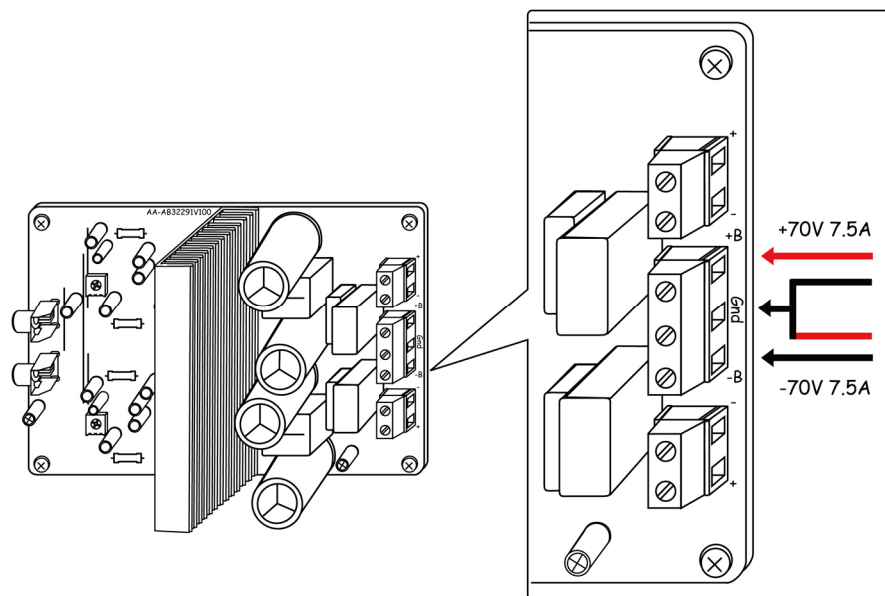
1. Open the amplifier package and make sure the product is intact (No missing or damaged components and no deformation).
2. Please observe the connection schematics when connecting the amplifier board. Use a nearby sound source, such as MP3 or CD player to have a trial. This amplifier board can be deemed as qualified if you can hear the sound corresponding to that sound source
3. It's recommended to make sure the polarities of wires correct first and then connect the wires to the board. After connecting the audio input and output cables, turn down the output to the lowest and then power the board.

## Chapter 2. Hardware Detail

### 2.1 Power Connection

To power the amplifier board, use terminal blocks CONN1. This board need to be powered by two 65V 7.5A power supply. The positive of one supply is connected to +B and the negative connected to Gnd. The negative of the other supply is connected to -B and the positive connected to Gnd. Pay attention to the polarity when connecting power supply. The ±B must be applied and removed at the same time.

**FIGURE 2-1 POWER CONNECTION**



**TABLE 2-1 POWER CONNECTION**

Connector Mark		Description	
Terminal Blocks	CONN1	+B	The positive of power supply
		Gnd	The negative of positive power supply and the positive of negative power supply
		-B	The negative of power supply

**TABLE 2-2 RECOMMENDED SUPPLY VOLTAGES**

Voltage Limitations	Current Requirement
±65V	7.5A

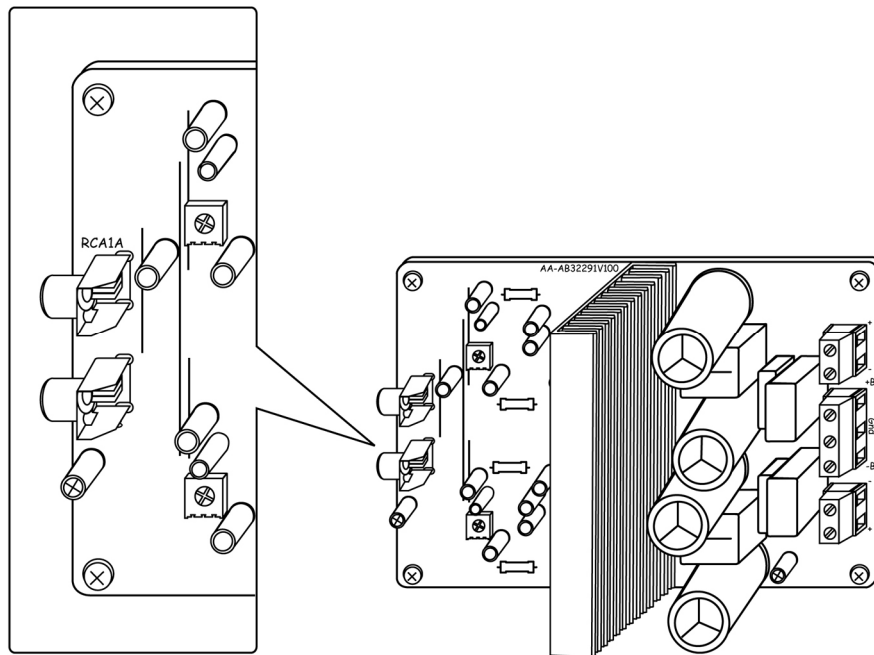
**Note:** It's recommended to use AWG16 wires. The length of power supply cable must be minimized. Increasing length of PSU cable is equal to increasing the distortion for the amplifier at high output levels and low frequencies.



## 2.2 Input Connections

You may use RCA connectors to input audio signal.

**FIGURE 2-2 INPUT CONNECTION**



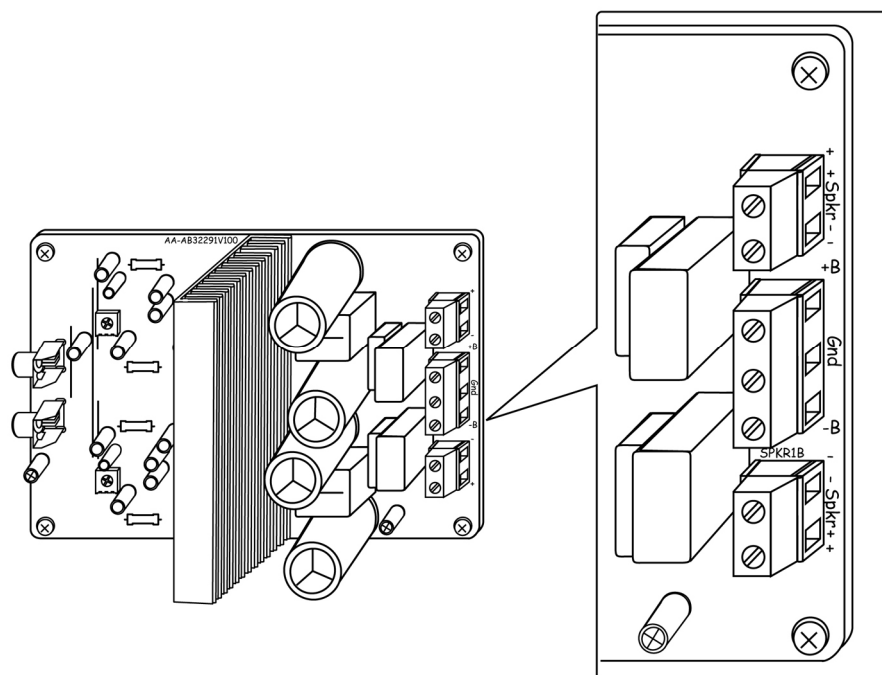
**TABLE 2-2 INPUT CONNECTION**

Connector Mark		Channel Description
RCA connector	RCA1A	Channel 1 Input
	RCA1B	Channel 2 Input

## 2.3 Output Connections

You can use terminal blocks SPKR1A, SPKR1B to output audio signal.

**FIGURE 2-3 OUTPUT CONNECTION**



# 2 X 250Watt Class D Audio Amplifier Board – IRS2092

**TABLE 2-3 OUTPUT CONNECTION**

Connector Mark		Description
Terminal blocks	SPKR1A	Output of Channel 1
	SPKR1B	Output of Channel 2

**Note:**

1. Never connect SPKR1A- 、SPKR1B- together since they belong to different NETs.
2. Refer to on-board descriptions for connection details.
3. Both positive and negative speaker outputs are floating and may not be connected to ground (e.g., through an oscilloscope).

## 2.4 LED Indicators

This amplifier has 2 LED indicator which is marked as “LED1A” 、 “LED1B “. These two LEDs are used for indicating PWM mode. When powered on, after one second delay, the two blue LEDs turn ON which indicates that PWM oscillation is present. This transition delay time is controlled by CSD pin of IRS2092, capacitor CP3.

**TABLE 2-4 INDICATOR DESCRIPTION**

Indicator Mark	Indicator Color	Description
LED1A,B	Blue	PWM (presence of low side gate signal)

## 2.5 Notes

In order to protect amplifier board and extend its service lifetime, please read the following warnings carefully since warranties will be voided if you do not observe the following warnings:

**Warning 1:**

Quality-related issues caused by potentiometers installed by buyers.

**Warning 2:**

In order to achieve a better sound quality, please use stable power supply since a bad or unstable power supply may worsen the sound quality or even cripple the amplifier board.

**Warning 3:**

Never equip a pre-amplifier to the audio input since the amplifier itself has powerful amplification ability and a high signal input will burn out the amplifier chip.

**Warning 4:**

In order to protect amplifier and speaker, please turn the volume output to the minimum when hooking up the amplifier and you may readjust the volume when you are sure that the amplifier is functioning properly.

## Chapter 3. Electrical Characteristics

Following table lists all typical data of the Amp board. For full specification, please refer to the data sheet of IRS20995 chip.

**TABLE 3-1 ELECTRICAL CHARACTERISTICS**

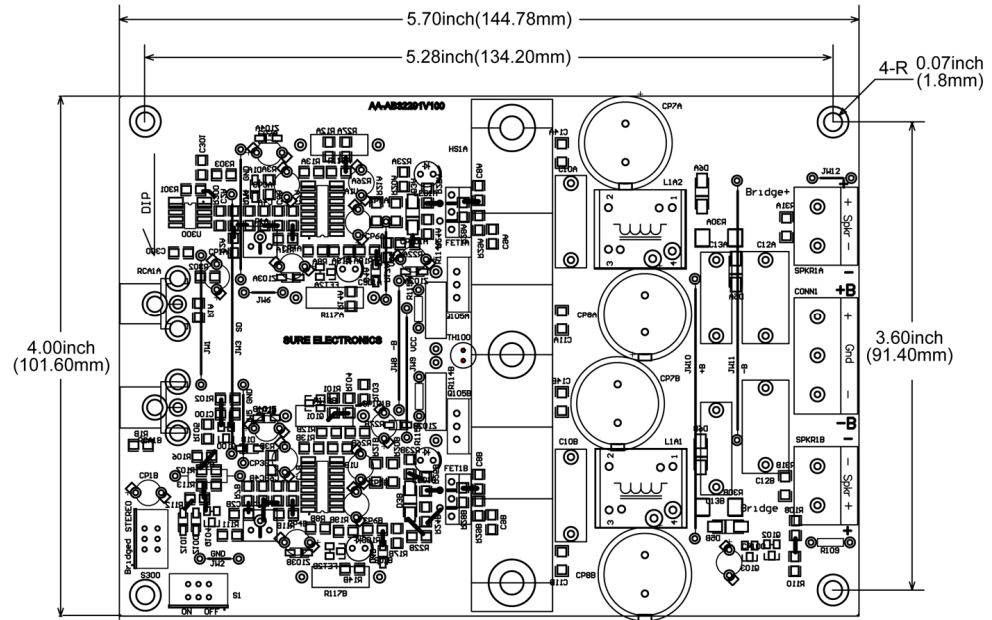
Parameter	Condition	Min.	Typ.	Max.
Supply Voltage	-	±55	±60V	±65V
Quiescent Current (Powered by±70V)	FAN ON	-		50mA
Gv	Voltage Gain	-	40dB	-
Frequency Range	-	20Hz to 20KHz (±3dB)		
Efficiency	Both channels output rating power.	-	90%	-
Input Impedance	-	13Kohm	-	16.7K ohm-
Load	-	3.5 ohm	4ohm	-
Operating Temperature	-	0°C	80°C	115°C
Storage Temperature	-	-55°C	20°C	150°C
Thermal Shutdown	-	-	100°C	-

**Note:**

1. Stresses beyond the listed maximum power supply voltage may cause the permanent damage to components on board.
2. The input sensitivity values are calculated on the basis of 4 Ohm load.

## Chapter 4. Mechanical Drawing

FIGURE 4-1 MECHANICAL DRAWING



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## Chapter 5. Contact Us

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