4 X 100Watt Class D Audio Amplifier Board - TDA7498 User's Guide

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. DC36V 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.

4 X 100WATT CLASS D AUDIO AMPLIFIER BOARD - TDA7498 USER'S GUIDE

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NOTES:

Product Version : **Ver 1.4**

Document Version : **Ver 1.0**

Chapter 1. Overview

1.1 Overview

Welcome to use this self-made 4*100W audio amplifier board which is a perfect class-D architecture integrated TDA7498 chip to achieve the single-channel 100W power output. With high efficiency, it especially is available for the outdoor venues where power supply is always in consideration.

Resistance and capacity components of high quality, including X7R ceramic capacitors and lower ESR electrolytic capacitors, are used to gain the perfect timber, finally realize high S/N ratio, low THD+N, wide frequency response range etc.

Briefly, the power supply range and heat sink performance of each product distinguishes. You may make the proper choice to meet your application needs.

FIGURE 1-1 FRONT VIEW

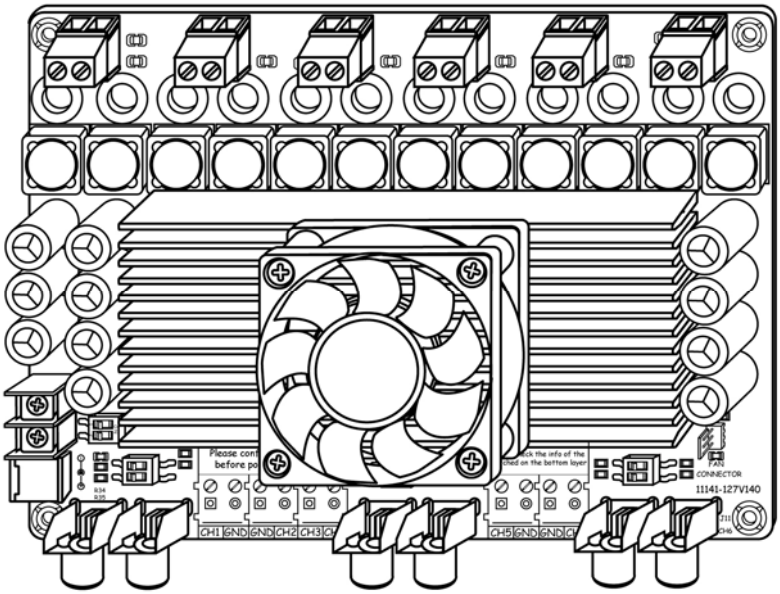
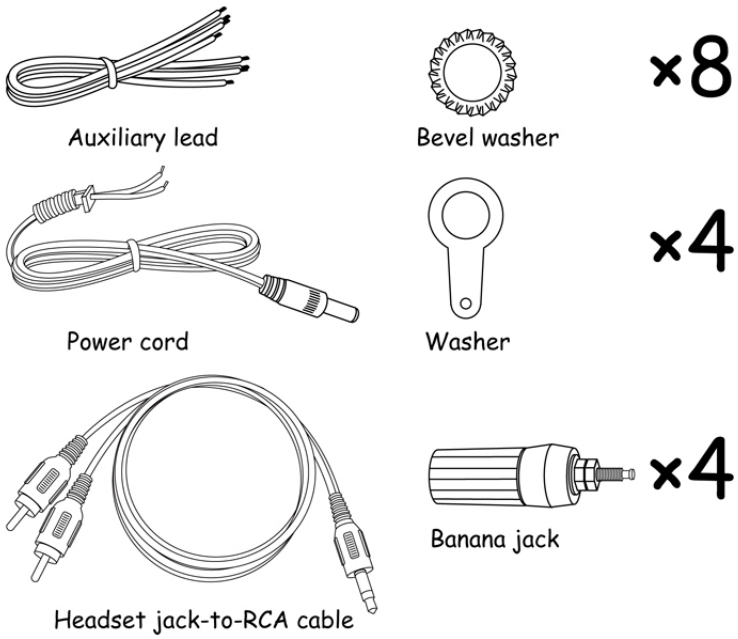


FIGURE 1-2 ACCESSORIES PACKAGE (OPTIONAL)



Note: All the diagrams in this manual are used for reference only.

1.2 Features

- A perfect "Class D" architecture
- Frequency response: 20Hz to 20KHz(±3dB)
- Four selectable, fixed gain settings of nominally 25.6 dB, 31.6 dB, 35.1 dB and 37.6 dB.
- Single end audio signal input
- Over/under voltage protection
- Over current protection
- Over temperature protection

1.3 Applications

- Active Subwoofers
- Home Theater Receiver
- Multi-channel Distribution
- Active DVD System
- Mini/Micro Systems

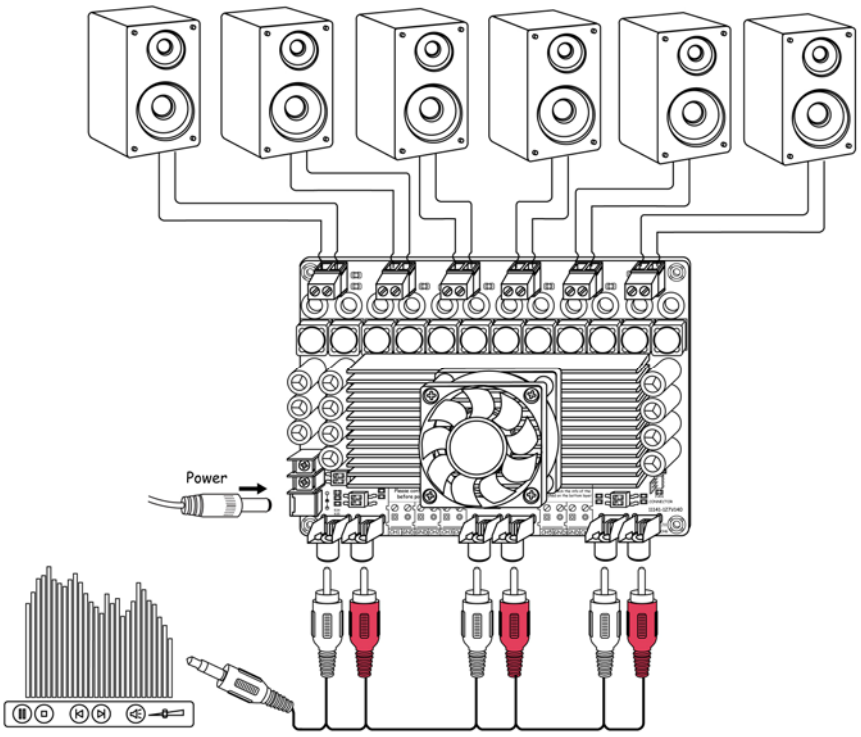
1.4 Benefits

- Mounting holes facilitate installation and fixing
- Several wiring methods facilitate connection: RCA Socket (Default),Terminal Block(Optional)
- Excellent design of the power ports which allows you to connect multiple amplifier boards in series (Terminal Block Optional).
- Excellent heat dissipation eliminates the requirement of an extra heat sink.

1.5 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

Chapter 2. Hardware Detail

2.1 Power Connection

To power the amplifier board, use either jack J12 or terminal blocks J13(optional). Pay attention to the polarity when connecting power supply.

FIGURE 2-1 POWER CONNECTION

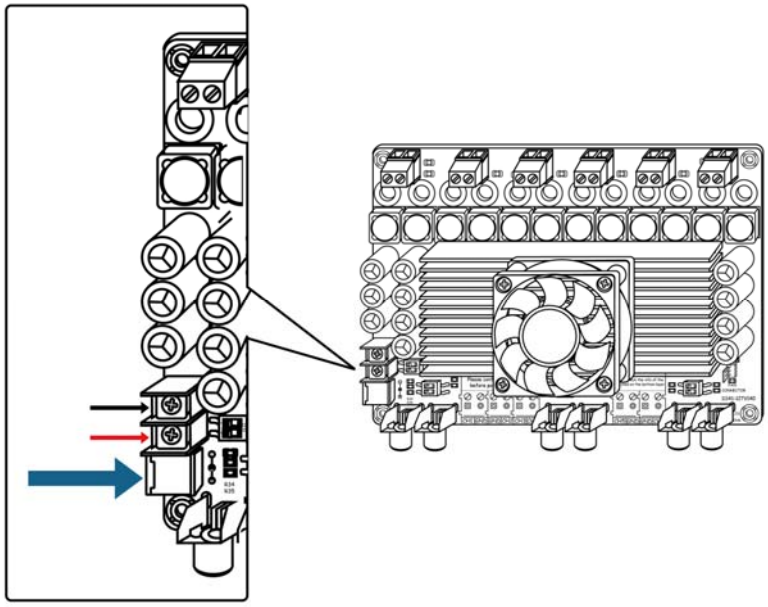


TABLE 2-1 POWER CONNECTION

Connector Mark			Description
Jack	J12		DC 14-39V power supply socket
Terminal Blocks	J13	VCC	The positive of DC 14-39V power supply socket
		GND	The negative of DC 14-39V power supply socket

Note:

1. You are allowed to use only one way to power the amplifier board at a time.
2. The maximum supply voltage shall be referred to Chapter 3.

2.2 Input Connections

You may use RCA connectors to input audio signal.

FIGURE 2-2 INPUT CONNECTION

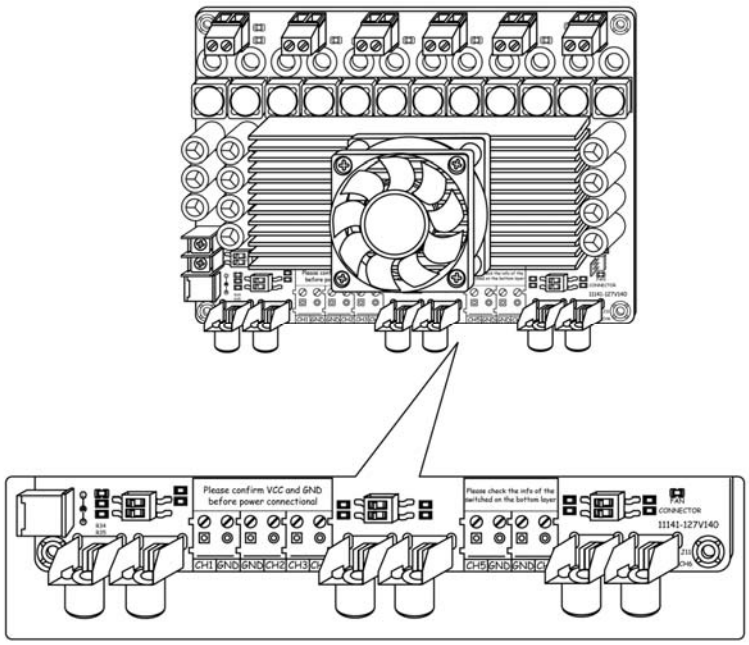


TABLE 2-2 INPUT CONNECTION

Connector Mark		Channel Description
RCA connector	J6	Channel 1 Input
	J7	Channel 2 Input
	J10	Channel 5 Input
	J11	Channel 6 Input
Terminal Blocks（Optional）	J1	Channel 1 Input
		GND
	J2	GND
		Channel 2 Input
	J4	Channel 5 Input
		GND
	J5	GND
		Channel 6 Input

Warning:

1.You are allowed to feed only one group (dual channel) of audio signal to the amplifier board at a time.

2.Never plug in or unplug RCA connectors when the amplifier is powered. Or the amplifier will be damaged permanently.

2.3 Output Connections

You can use either terminal blocks or banana connectors(optional) to output audio signal.

FIGURE 2-3 OUTPUT CONNECTION

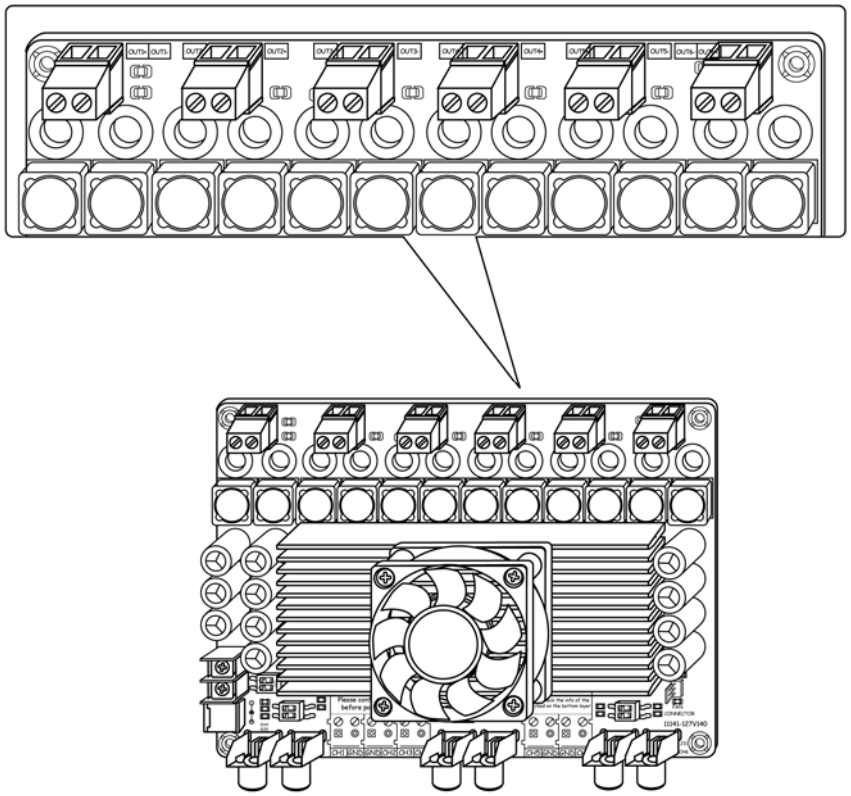


TABLE 2-3 OUTPUT CONNECTION

Connector Mark		Description
Banana Connectors	J21	Positive Output of Channel 1
	J22	Negative Output of Channel 1
	J23	Positive Output of Channel 2
	J24	Negative Output of Channel 2
	J29	Positive Output of Channel 5
	J30	Negative Output of Channel 5
	J31	Negative Output of Channel 6
	J32	Positive Output of Channel 6
Terminal blocks*	J15	Output of Channel 1
	J16	Output of Channel 2
	J19	Output of Channel 5
	J20	Output of Channel 6

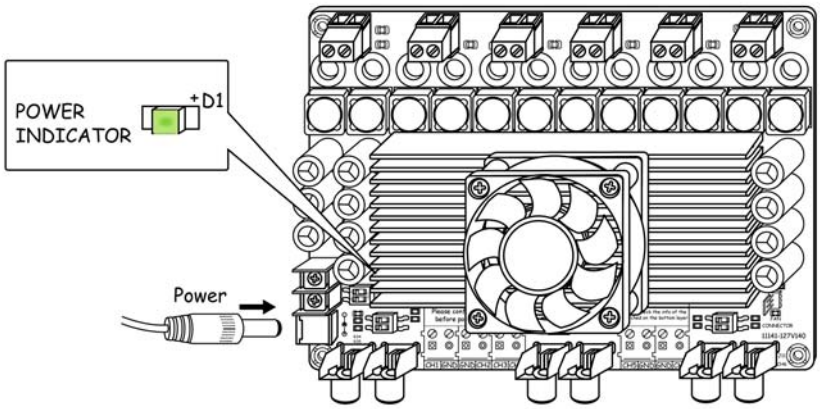
Note:

1. Never connect more than one group of speaker to the audio output
2. Never connect CH1_OUT- 、CH2_OUT- 、CH5_OUT-、CH6_OUT- together since they belong to different NETs.
3. Refer to on-board descriptions for connection details.

2.4 LED Indicators

This amplifier has 1 power LED indicator which is marked as “Power Indicator (D1)” .“ Power Indicator (D1)” will be illuminated in green when power-up.

FIGURE 2-4 LED INDICATOR



2.5 Volume Control

K1 and K2 of SW1, SW2 and SW3 have been factory preset as ON to make sure weak gain of three channels. This can prevent chip from permanent damage caused by overheat when input signal amplitude is over range. On the other conditions of gain setting, it is recommended that the output signal amplitude is no larger than the power supply voltage once the input signal reaches the peak.

For example, the maximum amplitude of the input signal is no more than 323mV RMS when power supply voltage is 36V, load impedance is 6 ohm and the gain is set at 37.6 dB. The other circumstances can be referred to the input sensitivity from **TABLE 3-1 ELECTRICAL CHARACTERISTICS**

FIGURE 2-5 VOLUME CONTROL

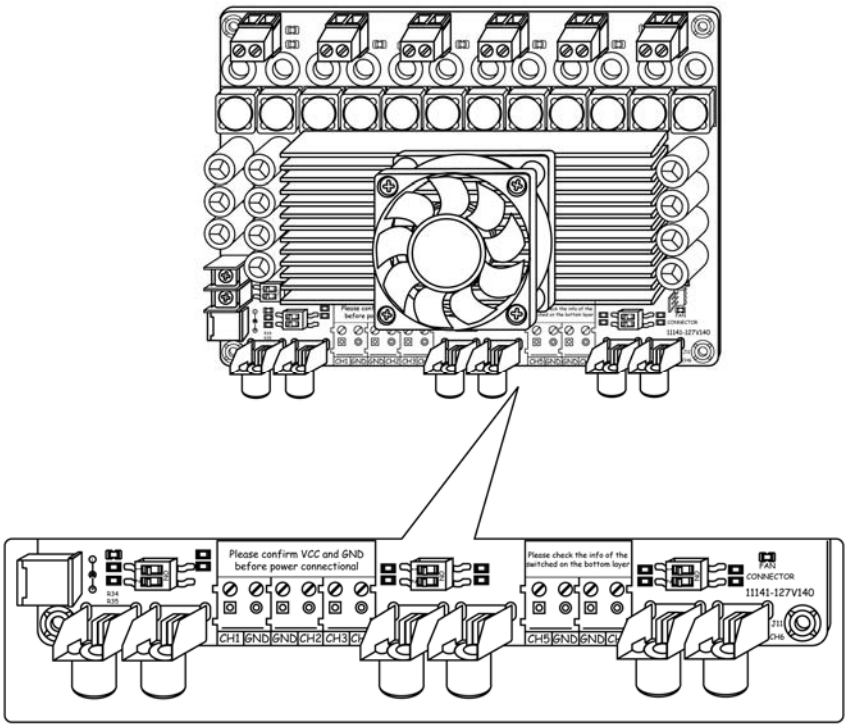


TABLE 2-4 DIP SWITCH SW1/SW3 SETTING

Switch	K1	K2	Gain Status(dB)
SW1/SW3	ON	ON	Weak
	OFF	ON	Low
	ON	OFF	Medium
	OFF	OFF	High

2.6 Mode Selection

The three operation modes of this board are set by the DIP switch SW4.

- **Standby mode:** all circuits are turned off, very low current consumption.
- **Mute mode:** inputs are connected to ground and the positive and negative PWM outputs are at 50% duty cycle.
- **Play mode:** the amplifiers are active.

FIGURE 2-6 MODE SELECTION

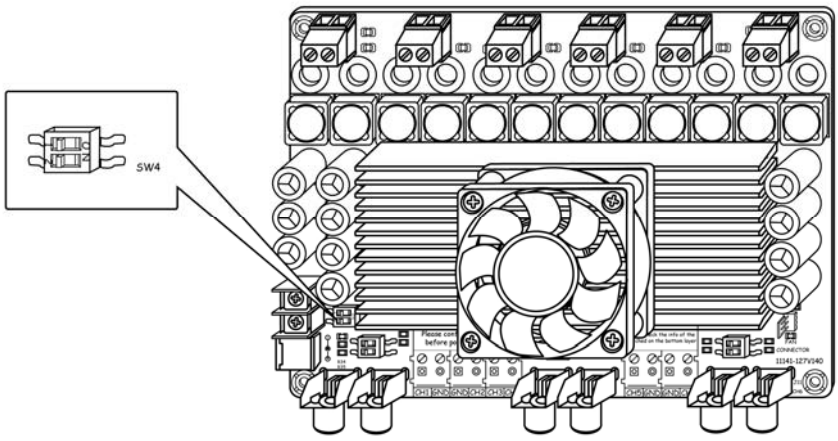


TABLE 2-5 DIP SWITCH SW4 SETTING

Switch	K1	K2	Mode
SW4	X (don't care)	ON	Standby
	ON	OFF	Mute
	OFF	OFF	Play

2.7 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 ST's TDA7498 chip.

TABLE 3-1 ELECTRICAL CHARACTERISTICS

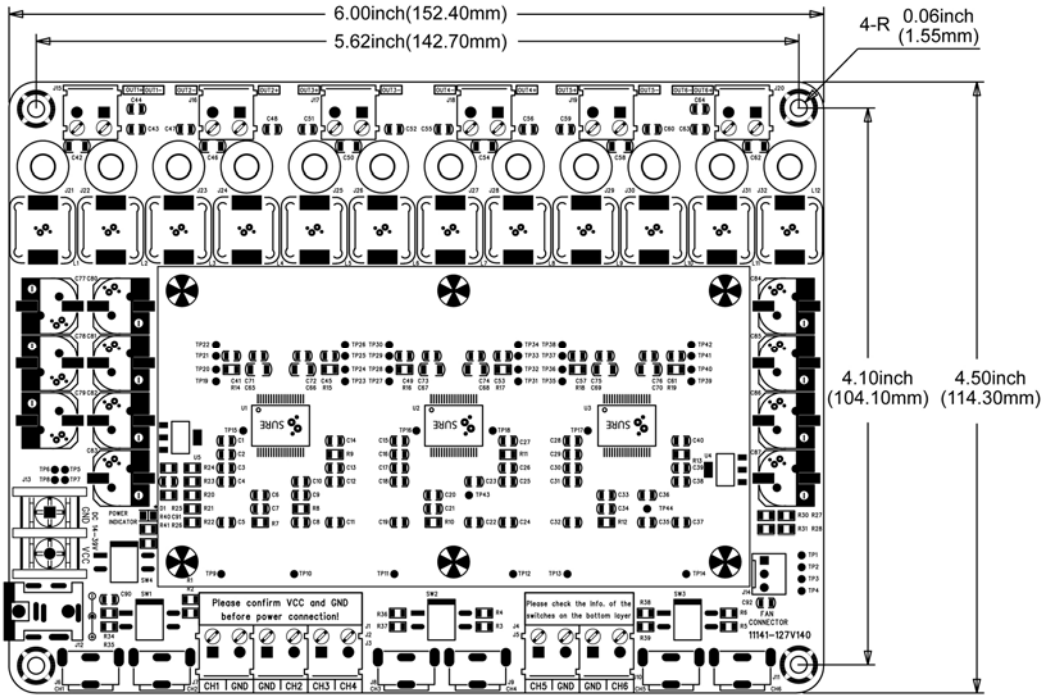
Parameter	Condition	Min.	Typ.	Max.
Supply Voltage	-	14V	36V	39V
Input Sensitivity	25.6dB	-	1286mV	-
	31.6dB		723mV	
	35.1dB		430mV	
	37.6 dB		323mV	
Gain(SW1/SW3 Setting)	K1 ON, K2 ON	24.6	25.6	26.6
	K1 OFF, K2 ON	30.6	31.6	32.6
	K1 ON, K2 OFF	34.1	35.1	36.1
	K1 OFF, K2 OFF	36.6	37.6	38.6
Gain matching	-	-1	-	1
Frequency Range	-	20Hz to 20KHz（±3dB）		
Efficiency	P=100W+100W	-	90%	-
Input Impedance	-	48K ohm	60K ohm	-
Power transistor on resistance	High side	-	0.2 ohm	-
	Low side	-	0.2 ohm	-
Overvoltage protection threshold	-	42V	43v	-
Undervoltage protection threshold	-	-	-	8V
Overcurrent protection threshold	R=0 ohm	5.5A	7A	-
Load	-	-	6 ohm	-
Operating Temperature	-	0℃	20℃	50℃
Storage Temperature	-	-20℃	20℃	105℃
Thermal Shutdown	-	-	150℃	-

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 6 Ohm load.

Chapter 4. Mechanical Drawing

FIGURE 4-1 MECHANICAL DRAWING



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