

Real Strength  
Full Protection  
High Sound Quality  
Optimized Thermal Control  
Support Volume Control Board (VC01)



# Single Supply High Power Audio Amplifier Board Series - Multichannel

For Desktop Amplifier, Home DIY, Multichannel  
Distribution, High Fidelity System  
Vending Machines, Lifts, Interactive Kiosks,  
Home Theater Receiver, Car Audio,  
Background Music Systems, Musical Instrument  
Amplifiers, Consumer Audio Applications, etc.

Preliminary

# 1 Overview



## 3 x 300Watt Class D Audio Amplifier Board - T-AMP (AA-AB35191)

- 6.00 x 4.50 inches PCB Size
- Output Power  
300W@30ohm 40V DC THD+N 10%  
180W@30ohm 40V DC THD+N 1%
- Power and Clip Indicator
- 4-screw Easy Installation
- Temperature Control Fan
- Overcurrent Protection
- Overtemperature Protection
- Optimized Heatsink Design
- Automatic Recovery Mode after Fault Conditions
- High Efficiency Power Stage (>90%)
- Weight: 757g/1.67 lbs (±10%)
- Typical Load: 30ohm
- Power Supply Range: DC 24V-40V



## 3 x 400Watt Class D Audio Amplifier Board - T-AMP (AA-AB35311)

- 6.00 x 4.50 inches PCB Size
- Output Power  
400W@30ohm 46V DC THD+N 10%  
270W@30ohm 46V DC THD+N 1%
- Power and Clip Indicator
- 4-screw Easy Installation
- Temperature Control Fan
- Overcurrent Protection
- Overtemperature Protection
- Optimized Heatsink Design
- Automatic Recovery Mode after Fault Conditions
- High Efficiency Power Stage (>90%)
- Weight: 757g/1.67 lbs (±10%)
- Typical Load: 30ohm
- Power Supply Range: DC 24V-46V



## 3 x 500Watt Class D Audio Amplifier Board - T-AMP (AA-AB35511)

- 6.00 x 4.50 inches PCB Size
- Output Power  
500W@30ohm 50V DC THD+N 10%  
312W@30ohm 50V DC THD+N 1%
- Power and Clip Indicator
- 4-screw Easy Installation
- Temperature Control Fan
- Overcurrent Protection
- Overtemperature Protection
- Optimized Heatsink Design
- Automatic Recovery Mode after Fault Conditions
- High Efficiency Power Stage (>90%)
- Weight: 767g/1.69 lbs (±10%)
- Typical Load: 30ohm
- Power Supply Range: DC 24V-50V



## 2 x 200Watt +1 x 400Watt Class D Audio Amplifier Board - T-AMP (AA-AB33312)

- 6.00 x 4.50 inches PCB Size
- Output Power  
400W@30ohm 46V DC THD+N 10%  
270W@30ohm 46V DC THD+N 1%
- Power and Clip Indicator
- 4-screw Easy Installation
- Temperature Control Fan
- Overcurrent Protection
- Overtemperature Protection
- Optimized Heatsink Design
- Automatic Recovery Mode after Fault Conditions
- High Efficiency Power Stage (>90%)
- Weight: 680g/1.50 lbs (±10%)
- Typical Load: 30ohm
- Power Supply Range: DC 24V-46V



## 2 x 300Watt +1 x 500Watt Class D Audio Amplifier Board - T-AMP (AA-AB33511)

- 6.00 x 4.50 inches PCB Size
- Output Power  
500W@30ohm 50V DC THD+N 10%  
312W@30ohm 50V DC THD+N 1%
- Power and Clip Indicator
- 4-screw Easy Installation
- Temperature Control Fan
- Overcurrent Protection
- Overtemperature Protection
- Optimized Heatsink Design
- Automatic Recovery Mode after Fault Conditions
- High Efficiency Power Stage (>90%)
- Weight: 680g/1.50 lbs (±10%)
- Typical Load: 30ohm
- Power Supply Range: DC 24V-50V

## 2 Applications



Soundbox



Jukebox



Desktop Audio



Jukecase



Coffee Machine



Vending Machine



Game Machine



Toy



ATM



Ticket Checker



Guide Machine



Recreational Vehicle



Yacht



Motorcycle



Home Furnishing



Hotel

## 3 Benefits

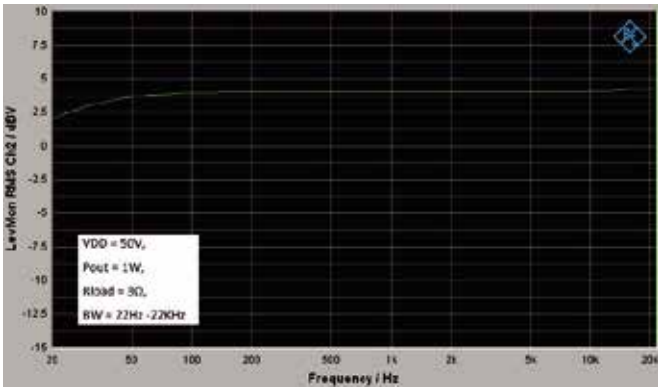
### High Sound Quality

T-AMP technology is employed in this series, featuring low distortion and low noise for your listening pleasure. With a passive LC demodulation filter and high fidelity chipset, this series can deliver high-quality, high efficiency audio amplification with EMI compliance. All original and authorized components can help vastly reduce distortion caused by the output filters and compensate any frequency response variations due to the different loads connected to the amplifier. Besides, layout of the PCB is of great importance in this kind of amplifiers. In addition, ten years of experience contributes to such exceptional audio fidelity. Engineers of Sure Electronics, with ten years' experience of Hi-Fi and Hobby audio, have been dedicated to bringing sophisticated sound to customers through Class-D. With supreme features like signal loop and components optimization during design and measurement, we can provide better sound quality products, with higher SNR more than 95 dB and THD+N as 0.074% (@30 $\Omega$ , 10W, 1kHz)\*.

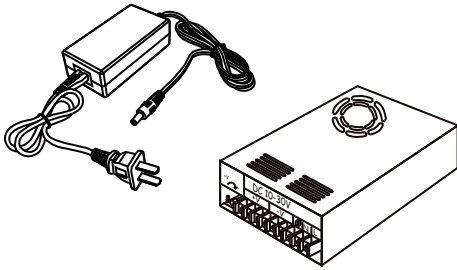
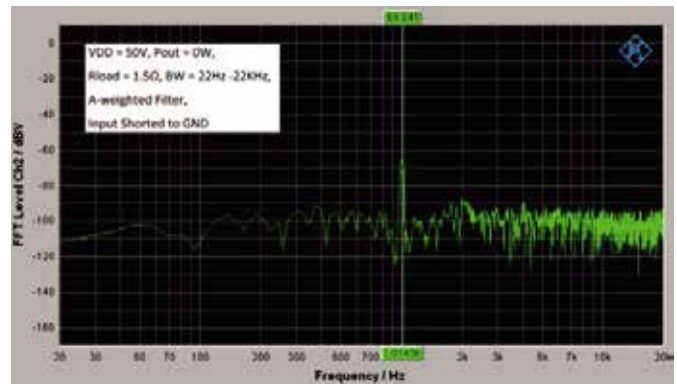
A low noise cooling fan would be mounted atop the robust heatsink for a drastic reduction for the system temperature meanwhile making sure excellent hearing experience.

\*Note: The SNR and THD+N is different from board to board. Please refer to datasheet for detailed information of each model.

## Frequency Response



## Noise Floor



## Power Supply Solution

For audio amplifier, performance depends on its quality, plus some external factors, like power supply. Sure Electronics provides full range power supplies from several watts to several kilo watts from Mean Well, Huntkey and Delta. All of three manufacturers are top five manufacturers of industry power supplies and power adapters. When comparing different solutions by cost, board space, efficiency and performance, they will provide good performance with high efficiency.

## High Efficiency

All boards are very optimally designed to provide a low power consumption with superb efficiency. First of all, we select chips with high efficiency more than 90%. Then Sure Electronics brings this priority into full play through elaborate design and meticulous components selection. The standby power under 'SD' connected to 'GND' and fan OFF is below 1W while the idle power under SD floating, fan ON is below 13.5W, which verifies the outstanding performance visually via data. When system temperature reaches 50°C, fans mounting atop the heatsink will be active to ensure excellent heat dissipation, preventing much useless power consumption in the load.

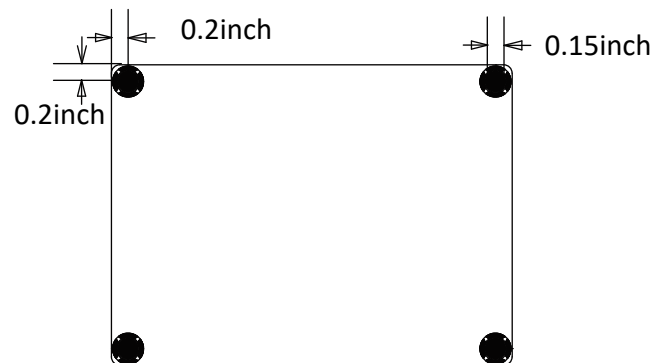
## Easy for Integration

- Easy Installation with 4 Screws

Immobilization of the board is the key of system integration, taking which into consideration, 4 standard screw holes are provided at four corners on all boards for customers' convenience. The specific dimension is shown in left picture. Any requirements of standoffs and screws, please contact us.

- 4:3 PCB Size

Dimension is a paramount consideration in audio system, which must fit in perfectly to save cost and space. 95% of Sure Electronics' products realize 4:3 PCB size with different dimensions (3.6 x 2.7 inches, 4.8 x 3.6 inches, 6 x 4.5 inches, 9 x 6 inches), meeting diverse demands of customers and simplifying installation difficulties. Please contact [store@sure-electronics.com](mailto:store@sure-electronics.com) if you have any problem or customization requirements.



- Diverse Terminals for Swift Connection

Potential problems may occur due to improper operation of cables plugging in falsely in assembling. To prevent the problems at the utmost, diverse connectors have been used for different functions on these boards for common use. A 5.5mm/2.5mm DC power adapter jack is provided on boards for convenient power connection meanwhile one port for switching power supply is available too. RCA jack is used for audio input and RJ128 is mounting on for audio output. Ports for audio line input are reserved on all boards for customers' potential demands but please note that connectors are not installed in standard products in advance. Any requirements on the connectors, please contact us at [store@sure-electronics.com](mailto:store@sure-electronics.com).

# Multichannel solution

This series offers 3 channels solution for customers, which means customers can get audio 2.1 system with standard products while no more configuration is needed. To satisfy high power requirements for subwoofer, five models of amplifier boards delivering 300W to 500W per channel or one channel are offered for customers' selection, which can meet most power requirements of audio application. In addition, excellent design of the power ports which allows you to connect multiple amplifier boards in series through Terminal Block. This means customers can almost get any channels through combination.

## Audio System

2 | 0  
2 | 1



## Real Strength for Any Audio Applications

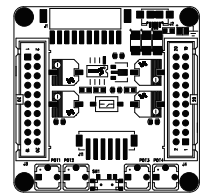
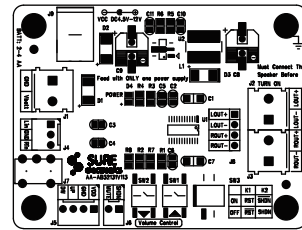


Reliability and ruggedness are always fundamental concepts in any application no matter in designing or purchasing. Sure Electronics strives to offer satisfactory products to customers for any audio application, which goes through essential strict tests to ensure problems only occur in laboratory, including burning test, basic performance test and quality management layer upon layer. For customers with requirements of high power and high reliability, this series is the fully-deserving choice with high cost-effective. Contact Sure Electronics with [store@surrelectronics.com](mailto:store@surrelectronics.com) to feel the true RMS and real strength.

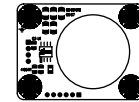
## Full Set of Solution Available

As an audio solution provider, Sure Electronics is committed to offering full set of audio system solution for customers' requirements, from power supply to speaker, including signal transceiver, signal processor, crossover and so on. Considering the facilitation of system integration, we choose conventional but corresponding connectors on different products. This series can connect with Sure's volume control board, Bluetooth receiver board and DSP through RCA jack on each board for more functions assembly.

Please kindly be noticed that when using amplifier boards with other Sure's products such as Bluetooth receiver board, noise may occur if they are not connected in common ground. In this case, two boards should be powered by separate power supply or customers can connect 'GND' of two boards. Any problems please contact [store@surrelectronics.com](mailto:store@surrelectronics.com) for technical support.

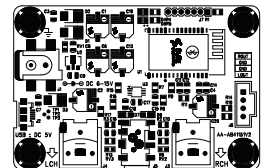


DSP

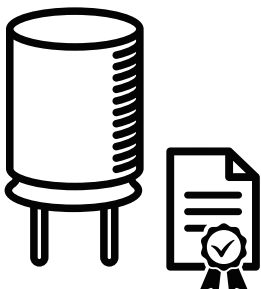


Volume Control Board

Bluetooth Receiver Board



## Great Components from Great Suppliers



We always choose IRF (now Infineon), Infineon, and other world grade MOSFET manufacturers as suppliers, we use only Nippon Chemi Corporation electron capacitors, original SAGAMI inductors in this series and all other components from original manufacturer or authorized distributors only. We can always provide commercial invoices from our suppliers - only original or authorized.

# Rated Power Continuously Operating

With the high efficiency up to 91% and the extremely low standby power consumption below 3W, this series fulfills the high power with high efficiency. Superior design and layout, dedicated heat dispatch design with thermostatically controlled fan and high quality selected components, all these features enable this series excellent power and can operate stably and continuously at the rated power from 300W to 1000W.

## Ready for FCC, CE



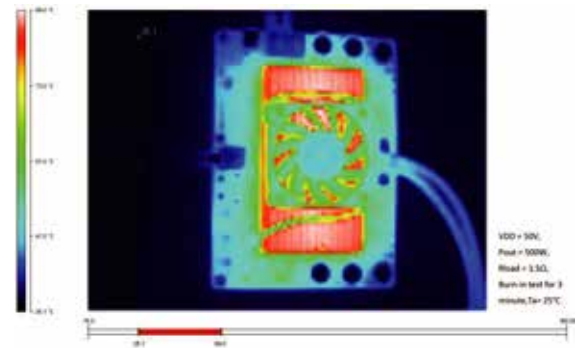
This series has passed the pre-test of FCC and CE in EMI and EMC parts, which simplifies the task of customers achieving certifications for the final product, saving much valuable time and costs. The FCC and CE certification is directed at final products with enclosure. So we have done the pre-test for EMC part in the laboratory but we didn't issue the paper certifications. The final equipment must be re-confirmed that it still meets EMC directives.

The whole series has inherited Sure's consistent solid built quality and been added all relevant protection features to ensure long-time usage and outstanding reliability which can minimize customers' quality costs.

## Full Protection, Robust Performance

The whole series is equipped with full set of protection carefully designed to prevent the device from any permanent damages caused by short circuits and over temperature. Since the amplifier is designed for audio application, the output power will not be continuous and transitory peak current may occur due to high music output. To avoid accidental shutdown of above situation, overcurrent protection allows some time for judgement. When the output stage of amplifier boards are shorted circuited, overcurrent protection will be activated to prevent damage to boards.

Over temperature protection will be triggered when the internal die temperature exceeds  $150^{\circ}\text{C}$  ( $\pm 15^{\circ}\text{C}$ ) due to high ambient temperature or high load for a long time, in which situation, the power supply shut down and the output are disabled for sake of protection. The amplifier will restart to work automatically without any need of extra operations once the temperature decreases to normal value.



## 5 Years Product Life

Sure Electronics guarantees at least 5 years PLC (Product Life Cycle) to our customers, this means, once products are launched to the market, you can place order and get technical support from Sure Electronics and Sure Electronics' distributors within 5 years. For any halt production caused by the discontinued core materials, Sure Electronics will provide full pin to pin, screw to screw compatible solutions for you to ensure you a smooth Production Transition.



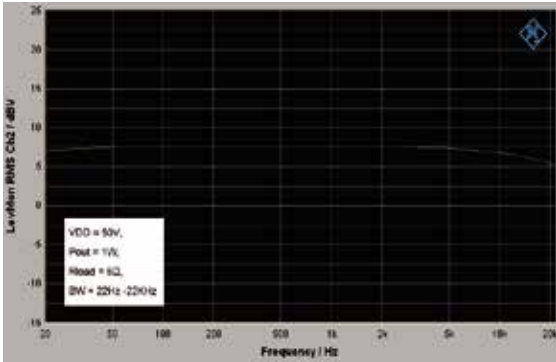
## Zero Stock for Customers

Sure Electronics always prepares full back-up for customers, which greatly reduces the delivery time to fit for the customers' 'Just - in - Time' manufacturing and 'Zero Stock' Policy. We guarantee each standard product at least 100 pieces inventory while best sellers have more than 1000 pieces inventory. This means Sure Electronics keeps at least 100K pieces circuit board in stock at any time. With more than 80 CBM of finished products and more than 100 CBM half-finished products, Sure Electronics can ship more than 98% requirements of our standard products to save customers' time and cost.

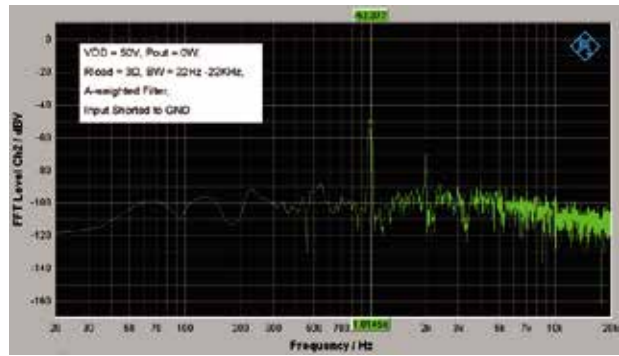
Preliminary

# 4 Typical Performance Graphs

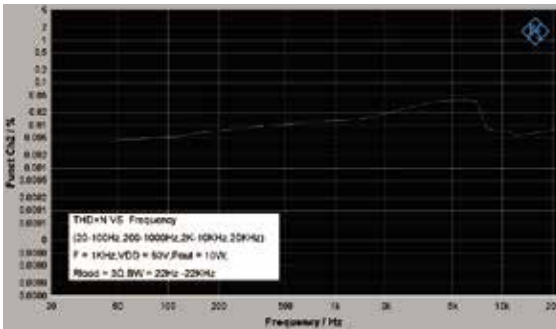
Frequency Response



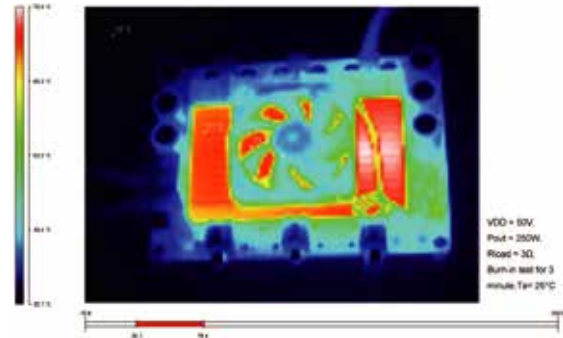
Noise Floor



Distortion Spectrum



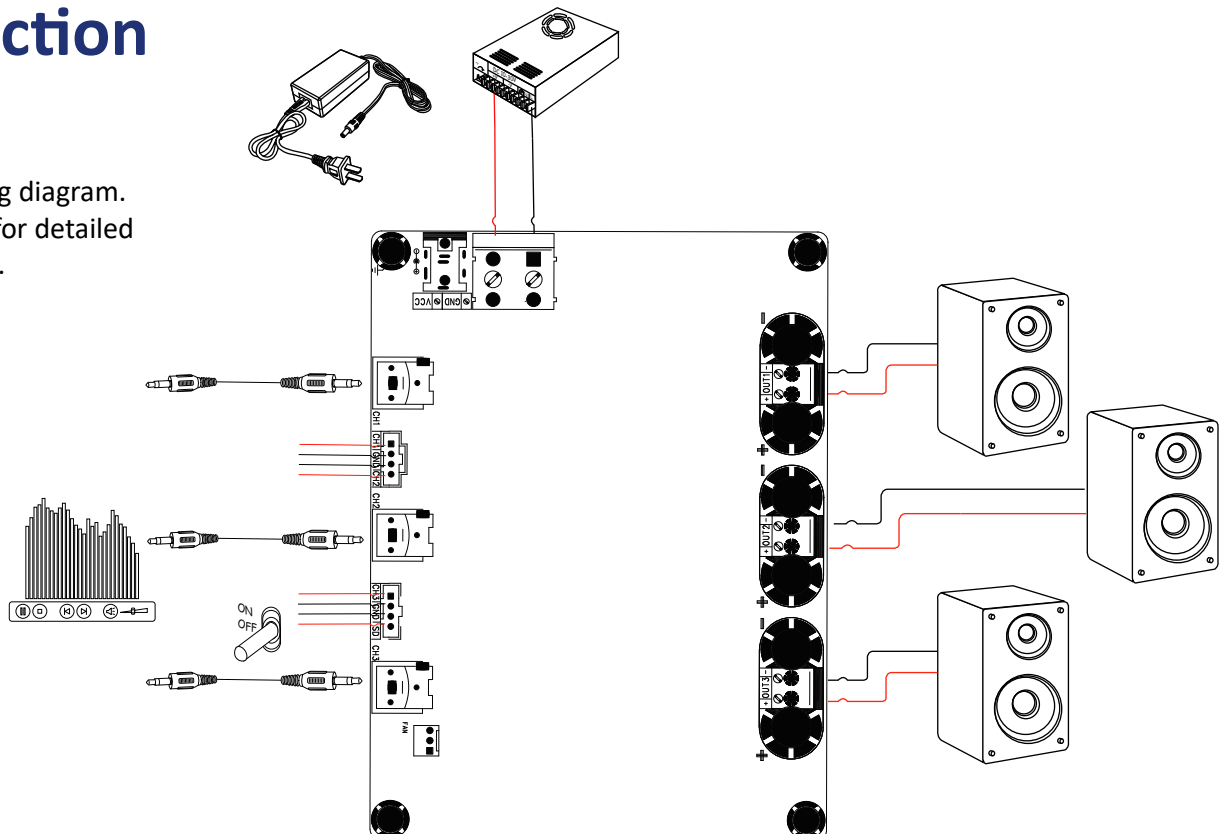
Thermal Image



Typical performance graphs adopt from 3 x 500Watt 3 Ohm Class D Audio Amplifier Board - T-AMP (AA-AB35511). All parameters were tested with Rohde & Schwarz UPV audio analyzer (AES17 filter enabled) and Audio Precision AUX0025 filter. For customers who ask for more detailed specifications and parameter settings, please send an inquiry e-mail to [store@sure-electronics.com](mailto:store@sure-electronics.com).

# 5 Connection

Notes: This is simple wiring diagram. Please refer to datasheet for detailed connection of each model.



## 6 Model Selection Guide

Model Number	Output Power	Power Supply Range	Typical Load	Amplifier IC	Dimensions	Listed Price
AA-AB35191	3 X 300Watt	DC 24-40V	3Ω	T-AMP	6"X4.5"	\$89.90
AA-AB35311	3 X 400Watt	DC 24-46V	3Ω	T-AMP	6"X4.5"	\$109.00
AA-AB35511	3 X 500Watt	DC 24-50V	3Ω	T-AMP	6"X4.5"	\$129.00
AA-AB33312	2 X 200Watt+1 X 400Watt	DC 24-46V	3Ω	T-AMP	6"X4.5"	\$79.90
AA-AB33511	2 X 300Watt+1 X 500Watt	DC 24-50V	3Ω	T-AMP	6"X4.5"	\$99.90

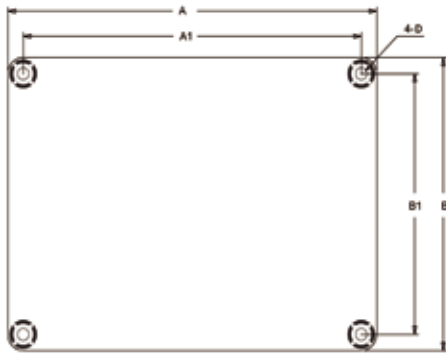
Notes:

1. Reliable power supply solutions can be provided for any audio applications. Sure Electronics is also a power supply provider of Mean Well, Delta and HuntKey. Send an e-mail to [store@sure-electronics.com](mailto:store@sure-electronics.com) if you need a power supply solution.

2. The output power is rated at the condition THD+N 10%, 1KHz sine wave. None typical load may cause rating power reduction.

3. If you'll buy the same model of amplifier board for the second time at the MOQ 100, please inform us the version and time of last purchase in order to avoid application incompatibility brought by version upgrade.

## 7 Mechanical Dimensions



Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.02 (±0.50)
- Sure Electronics provides connecting and dimensional diagrams for customers. Under no circumstance do we provide schematics.

Dimension	A (inch/mm)	A1 (inch/mm)	B (inch/mm)	B1 (inch/mm)	D (inch/mm)
	6.00/152.40	5.60/142.24	4.50/114.3	4.10/104.14	0.15/3.8

## 8 Disclaimers

1. Sure Electronics reserves the right to wipe off the characters, logos and patterns on the surface of the chips without any notification. Any inquiries about the models of the chips will be ignored. Sure Electronics will guarantee all the chips are original ones and the performance and quality will not be affected by such operations.
2. Amplifier boards are recommended for experienced users only with the proper equipment to measure the voltage output of the power supplies. Failure to use the minimum recommended power supply voids the warranty of amplifier boards.
3. Sure Electronics only takes responsibility for the loss caused by the audio amplifier board itself. We are not responsible for any joint liability.
4. Power supply at rated voltage are required for operation to dedicate its full output potential for maximum output.

## 9 Contact Us



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