Real Strength
High Sound Quality
Flexible Connections
Audio Signal Detection
Optimized Thermal Control

SURE® electronics

# Audio Amplifier Board Brick T-AMP Series

For PA System, Ultrasonic, Active Sonar System, Active Subwoofer, Alarm System, Mass Notification, Noise Cancellation System, vibration machine, Warehouse,UPS - Sine Wave Inverter, Power Conversion, etc.*

 Danger High Voltage. Will shock, burn or cause death.

* For any non-audio applications, customers are suggested to send an inquiry e-mail to us for system compatibility confirmation. Sure Electronics does not take any responsibilities for any abused and unconfirmed non-audio system integration.

# 1 Overview

**High Power Class-D Audio Amplifier Board Brick Series (Integrated Power Stage Mono)**

- 3.9 x 3.9 inches Compact PCB Size
- Output Power*
  1000W@1.5Ohm 50V DC THD+N 10%
  700W@1.5Ohm 50V DC THD+N 1%
- Flexible Connection and High Power Density
- Anti-reverse Power Supply Connection
- Audio Signal Detection
- Temperature Control Fan
- Differential and Single-ended Optional
- High Level and Low Level Gain
- Power and Clip Indicator
- Full Protection
- Optimized Heatsink Design

**High Power Class-D Audio Amplifier Board Brick Series (Discrete Power Stage Mono Low Impedance)**

- 3.9 x 3.9 inches Compact PCB Size
- Output Power*
  2000W@2Ohm 96V DC THD+N 10%
  1500W@2Ohm 96V DC THD+N 1%
- Flexible Connection and High Power Density
- Anti-reverse Power Supply Connection
- Audio Signal Detection
- Temperature Control Fan
- Differential and Single-ended Optional
- High Level and Low Level Gain
- Power and Clip Indicator
- Full Protection
- Optimized Heatsink Design

**High Power Class-D Audio Amplifier Board Brick Series (Discrete Power Stage Mono High Impedance)**

- 3.9 x 3.9 inches Compact PCB Size
- Output Power*
  750W@8Ohm 96V DC THD+N 10%
  600W@8Ohm 96V DC THD+N 1%
- Flexible Connection and High Power Density
- Anti-reverse Power Supply Connection
- Audio Signal Detection
- Temperature Control Fan
- Differential and Single-ended Optional
- High Level and Low Level Gain
- Power and Clip Indicator
- Full Protection
- Optimized Heatsink Design

* **The Maximum Output Rating Power of Each Audio Amplifier Series.**
**Please contact Sure Electronics CO., Ltd. for a confidential discussion of your requirements and further application information.**

## Overview

The Sure Electronics Brick Series combines a high performance Class-D amplifier available in eighteen modules delivering from 300W to 2000W of high-quality audio output power with wide power range. They are in strict accordance with industrial amplifier standard, creating a compact (only 3.9 x 3.9 inches PCB size), indurative amplifier solution in an ultra compact and lightweight package.

All Brick modules are based on Class-T (a branch from Tripath Class-D) modulator, and provide very warm and powerful sound. Sure Electronics always choose IRF (now Infineon), Infineon, and other world grade MOSFET suppliers, we use only Nippon Chemi Corpration electron capacitors, original SAGAMI inductors in this series and all other components from original manufacturer or authorized distributors only.*

Designed specifically with the high demanding professional audio applications in mind, high reliability was a top priority when developing the Brick series. All audio amplifier boards have been pre-tested with CE and FCC regulations for EMC and safety standard which will help the whole system to be complied with certifications more easily. Full protections on board like undervoltage, undercurrent, overvoltage and overcurrent protections help the whole system more safe and durable. Reverse connect protection on board will save huge maintenance costs and time for system integrated customers. Temperature control fan with a high quality customized heatsink provide reliable double thermal protection.

Thanks for Audio Signal Detection and Single Ended/ Differential signal configurable technologies which provide a convenient way to integrated Brick into systems. Not only for industrial integration, Sure Electronics also provide interface boards which are convenient with retail customers.



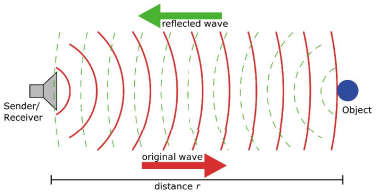
*Sure Electronics confirms Nippon Chemi Corpration electron capacitors and original SAGAMI inductors are used in Brick series. Other series product materials are selected according to actual situation.

# 2 Applications

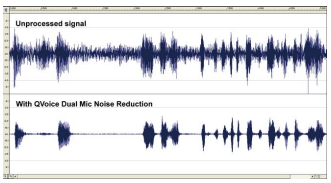
PA System

Mass Notification

Active Subwoofer

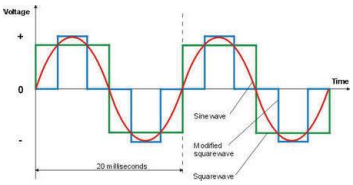



Active Sonar System



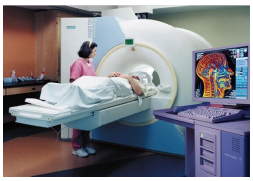

Noise Cancellation System

Transportation




UPS - Sine Wave Inverter

Professional Sound
Reinforcement Systems



Medical Instrument

Alarm System

Broadcast

Warehouse

# 3 Build for Your Applications

If you are an OEM and can't find what you need in our brochure, even including non-audio applications, for example sonar amplifiers, motor driver, piezoelectric load driver, please contact us and we will be glad to hear your suggestions or demands. We will try to provide a custom solution that fits your needs whenever possible.

Our capabilities contains:

- **Audio Electronics Design**
- **Schematic Capture**
- **PCB Layout**
- **EMI and EMS Compliance**
- **Audio Performance Optimization**
- **Packaging and Chassis Design**
- **Thermal Testing and Analysis**
- **Safety Certification**
- **Production Test Equipment**
- **Manufacturing**

Of course, we will also provide full technical support in order to help you get the most from our products, and a sample policy in order to give you the opportunity to evaluate our products at a reduced price and with no compromise.

# 4 Benefits

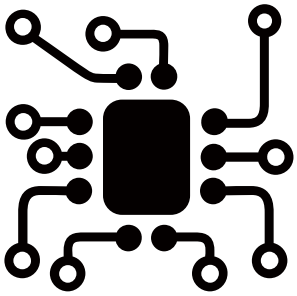
## High Sound Quality

Sure Electronics build this product series for high quality sound. This product series is driven by Class-T (a branch from Tripath Class-D) modulator, and provide very warm and powerful sound. We are not going to waste words in what Tripath chips can provide, there are too many such articles, we are just sure that we are the most skilled designers for Tripath chips. Original and most powerful integrated power stage STA516BE from ST Micro, that is the direct cousin from Tripath TP2050, just more powerful, is used in our integrated solutions. We fine select very low RDSon MOSFETs and they must be audio suitable in our test, extremmely fast recovery diodes, in our discrete power stage. That makes our auido amplifer boards can provide best high sound quality for listening, not only in datasheet.

## Easy for Integration

The robustness and reliability of the Brick series makes them a great match for professional and industrial applications. The excellent sound quality makes them suitable for final customer audio applications. It is also easy for system integration with following functions:

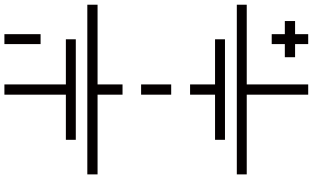
- **Audio Signal Detection**
- **Single Ended/ Differential Signal Configurable**
- **Reverse Connect Protection**
- **Gain Configurable**
- **Undervoltage and Undercurrent Protection**
- **Overvoltage and Overcurrent Protection**
- **Double Thermal Protection**
- **Interface Boards Compatible**



Choose a Brick amplifier module for product develpoment will save huge maintenance costs and time. Plug-in joints on board offer a more easier way for installation. Sure Electronics interface breakout boards also provide a consumer audio solution. By means of dedicated heatsink design with temperature controlled fan, these boards are capable of delivering maximum power simultaneously.
Besides of built-in chip protection, ESD and spike protection components used throughout input and output of the amplifier board ensure its robustness and reliability.

## Single (Asymetric) Power Supply

This product series requires single supply ONLY. You don't have to use transformers, only one switching power supply unit is enough and we even do not need any auxiallary power supply. That will greatly reduce the installation time and the system design is never complex. Sure Electronics also provide a Farad Capacitor solution, which can ensure customer use 350Watts - 600Watts Power Supply Unit to drive 1kW rated audio load. Contact us for details if you are designer for subwoofers, it will reduce your cost greatly, not by using a fake power marking trick.




## Real Strength for Any Applications

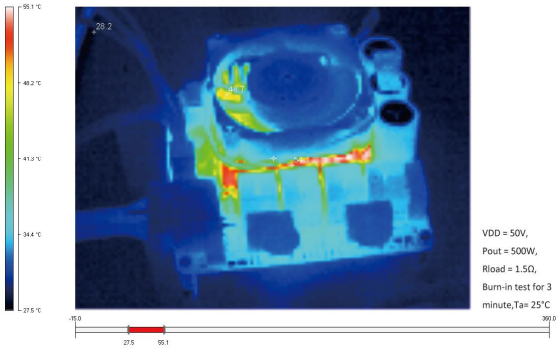
In Sure Electronics, that is real 1kW when it is declared as 1kW, that is continous playing back for 1kW audio signal, that is continous power for drive 1kW resistor dummy load, that is continous power for drive 2550Watts air conditioner in parrallel! That is different, different with those weak amplifiers with only coin size heatsink, different with those amplifiers without good layout and traces thin as hair, different with those amplifiers without any high quality components, how could they achieve the rated power they declared? So try Sure Electronics amplifiers and feel what does true RMS power mean.

# Higher Cost-effective

You don't have to save up hundreds of dollars to get them. They start with only $64.9, and end with $199. For those customers who design subwoofers, or need high power amplfier solutions, please feel free to contact our worldwide distributors, or contact Sure Electronics directly, we are the specialist in HIGH POWER audio amplifiers. Tell us your budget, and get a solution here.

# Signal Detection

The Brick sereis provides a very sensitive auto signal detection functionality which detects the main input audio signal and switches to corresponding channel automatically.
Along with standby functionality, Brick series provide a more convenient way to control your system, save your engineering cost and improve operating experience.
The standby current consumption is only several mA, or typically less than 100mW, that will keep a very high headroom for your Energy Star or CE certification. To provide a very high sound quality, we use a high carrier frequency in mute or play state, but we still provide a low power consumption and high efficiency, take reference from the datasheet.

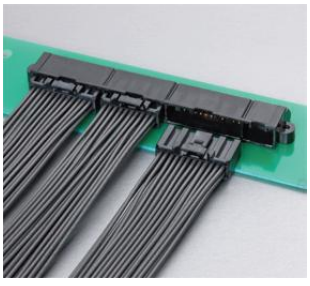



# Fully Protection, Robust Performance

The Brick series employs the STA516BE chip from ST as the main chip. It is equipped with overcurrent and overtempture protection, which is able to avoid permanent stressed caused by unproper operation.
Besides of built-in chip protection, ESD and spike protection components used throughout input and output of the amplifier board ensure its robustness and reliablity. And all the available input and output pins are present as molex headers which facilitates mating and prevents accidental mis-mating during assembly.

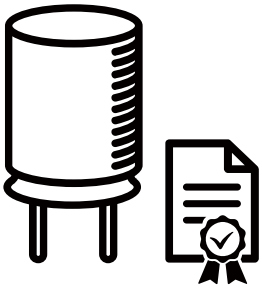
# Quick Installation

During the practical industrial amplifier installation, high up to several tens of minutes will be spent on connection and debugging in last step of assembly and test. The reasons behind potential problems lie on many aspects of operation, such as power pins reverse polarity, the correct multi-channel orders, volume adjustment of each channel, signal channel disconnection caused by the poor contact and so on. In order to solve the problems mentioned above and improve the effective connection and pass rate of test, we take the advantage of different forms of connectors for power connections, speaker connections, signal input connections and potentiometer connections. For example, 4CKTS Molex SL vertical header, 6CKTS JST PH SMT top entry type header and 8CKTS Multi-Lock header are populated in Brick series amplifier boards for easy recognizations. Furthermore, we also provide the matched extension cables for different connectors, which are easily made distinguished from each other by different cable colors. We spare no effects in improving the connection and measurement efficiency and saving the cost on installations and debugging.



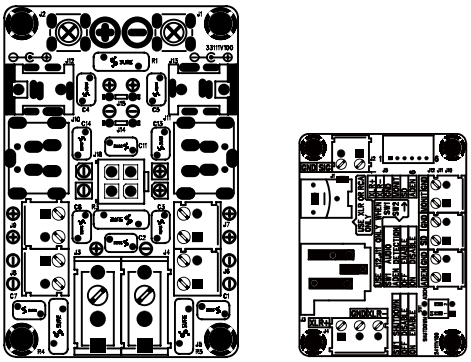
# Great Components from Great Suppliers

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



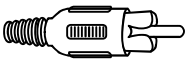
# Interface Breakout Board Optional

Sure Electronics have released several power interface breakout boards to meet different power interface requirements in customer's applications. Interfaces on board including PCB terminals, 5.5mm/2.5mm power jacks, DIN-4PIN power jacks, Fastfit terminal, RJ128 terminal blocks and Banana plugs.
Also an input & control interface breakout board is available for all Brick series amplifier boards. Interfaces on board including RCA, XLR and RJ128 terminals (Single-ended input, Differential input, Audio signal detection control, Shut dowm control and Single-ended output). For more detailed information, please contact with info@sure-electronics.com



# Single Ended or Differential Audio Input Configurable Gain Adjustable

Considering the need of user's fast evaluation, you may use the general music player with 3.5mm phone jack as the audio source for this amplifier series board, such as a cell phone or a mp3 player.
For other applications of professional audio equipment interface connection, XLR or TRS phone connectors, for example, tuner, recording, public address, you may configure the amplifier board as the differential input.
At the same time, there is significant nominal output level difference between different the music players, professional audio nominal level 1.228VRMS, and consumer audio nominal level 0.316VRMS. So you may select high or low gain level of the amplifier board to adapt the different music player.

RCA Input 

XLR Input 


# 5 Years Product Life

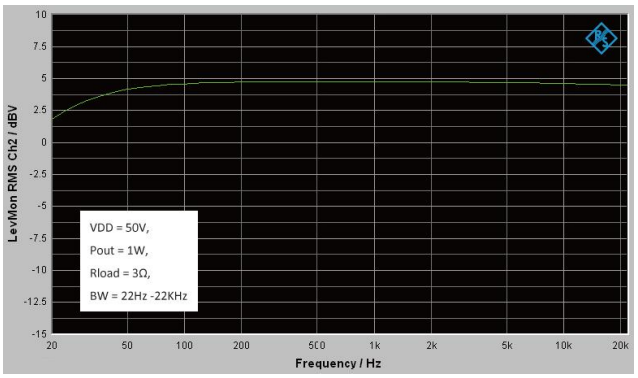
Sure Electronics ensure that no product will be stopped within 5 years. Bluetooth products is something that always get a short production life, but Sure Electronics always sign long term contract with its suppliers and guarantee a 5 years product life, even if we really get some problem in this, we will provide fully pin to pin, screw to screw compatible solution to our customers.

# Zero Stock for Customers

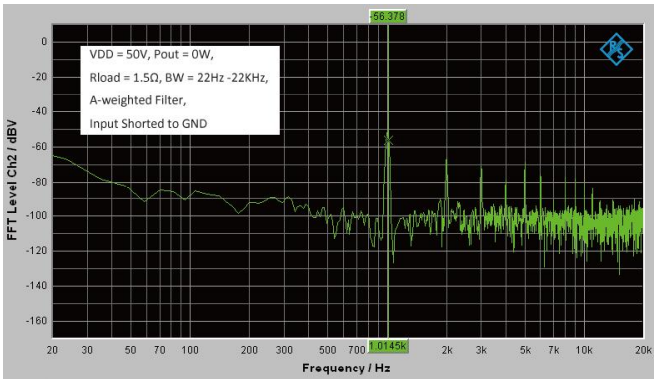
To meet our customers requirement in Just - In - Time manufacturing, Zero Stock policy, Sure Electroincs always provide enough stock, for most audio products, Sure Electronics always keep more than 1000pcs stock, and for best sellers, we keep more than 3000pcs, that means Sure Electroncis keep about 100k pcs circuit boards as stock at any time, that is true, in our Nanjing Stock, we have more than 80 CBM of finished products, and more than 100 CBM for half finished products, they are turning in very fast cycles. We can ship more than 98% requriements of our standard products - that is amazing, right?

# 5 Typical Performance Graphs

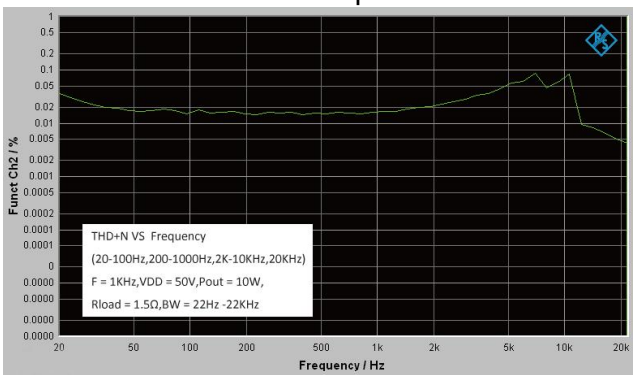
Frequency Response



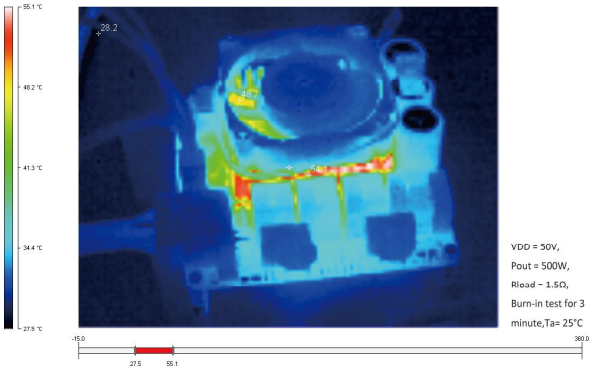

Noise Floor




Distortion Spectrum




Thermal Image

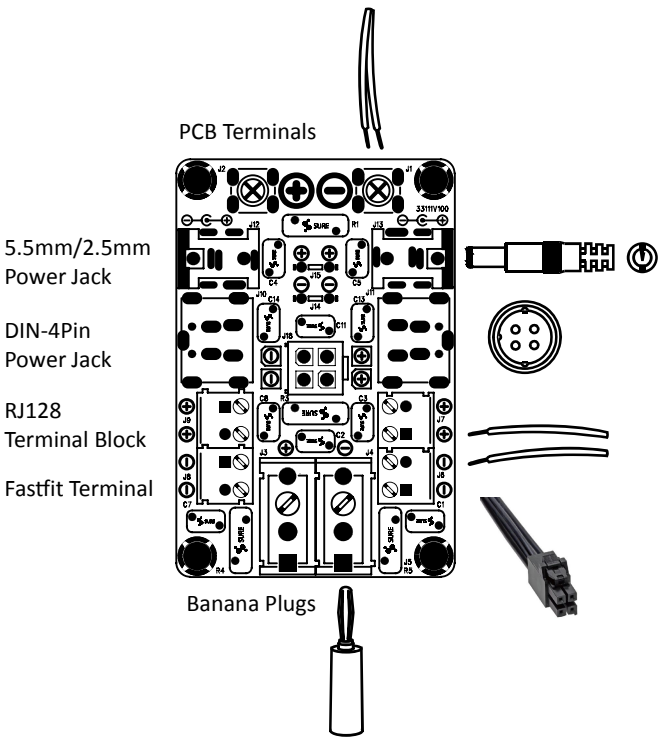



Typical performance graphs adopt from 1 x 1000 Watt Class-D Audio Amplifier Brick - T-AMP (AA-BK31391 ) All parameters were tested with Rohde & Schwarz UPV audio analyzer (AES17 filter enabled) and Audio Precision AUX0025 filter. For customers who ask for more detailed specifications and parameter settings, please send an inquiry e-mail to info@sure-electronics.com.

# 6 Extension Board

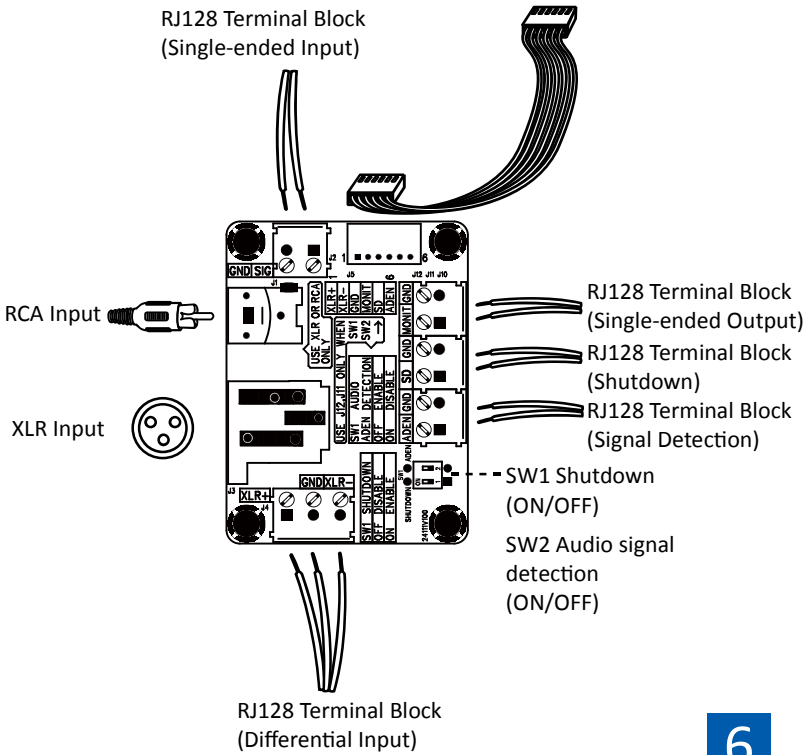
**Power Interface Breakout Board (MB-BB31112)**

**$9.99**




**Input Interface & Control Breakout Board (MB-BB41112)**

**$4.99**



# 6 Model Selection Guide

High Power Class-D Audio Amplifier Board Brick Series (Integrated Power Stage Mono)

| Model | P/N | Output Power | Power Supply Range | Typical Load | Dimensions | Listed Price |
|---|---|---|---|---|---|---|
| IBK1 | AA-BK31291 | 1 x 450Watt | DC 24-36V | 1.5-3Ω | 3.9" x 3.9" | $64.90 |
| IBK2 | AA-BK31541 | 1 x 600Watt | DC 24-48V | 1.5-3Ω | 3.9" x 3.9" | $74.90 |
| IBK3 | AA-BK31432 | 1 x 750Watt | DC 24-48V | 1.5-3Ω | 3.9" x 3.9" | $84.90 |
| IBK4 | AA-BK31551 | 1 x 900Watt | DC 24-48V | 1.5-3Ω | 3.9" x 3.9" | $99.90 |
| IBK5 | AA-BK31393 | 1 x 1000Watt | DC 24-48V | 1.5-3Ω | 3.9" x 3.9" | $109.00 |

High Power Class-D Audio Amplifier Board Brick Series (Discrete Power Stage Mono Low Impedance)

| Model | P/N | Output Power | Power Supply Range | Typical Load | Dimensions | Listed Price |
|---|---|---|---|---|---|---|
| DBKL1 | AA-BK31442 | 1 x 800Watt | DC 36-60V | 2-4Ω | 3.9" x 3.9" | $109.00 |
| DBKL2 | AA-BK31394 | 1 x 1000Watt | DC 36-60V | 2-4Ω | 3.9" x 3.9" | $129.00 |
| DBKL3 | AA-BK31271 | 1 x 1200Watt | DC 48-72V | 2-4Ω | 3.9" x 3.9" | $139.00 |
| DBKL4 | AA-BK31412 | 1 x 1500Watt | DC 48-84V | 2-4Ω | 3.9" x 3.9" | $159.00 |
| DBKL5 | AA-BK31451 | 1 x 1600Watt | DC 48-84V | 2-4Ω | 3.9" x 3.9" | $169.00 |
| DBKL6 | AA-BK31561 | 1 x 1750Watt | DC 48-84V | 2-4Ω | 3.9" x 3.9" | $179.00 |
| DBKL7 | AA-BK31571 | 1 x 1800Watt | DC 48-96V | 2-4Ω | 3.9" x 3.9" | $189.00 |
| DBKL8 | AA-BK31382 | 1 x 2000Watt | DC 72-120V | 2-4Ω | 3.9" x 3.9" | $199.00 |

High Power Class-D Audio Amplifier Board Brick Series (Discrete Power Stage Mono High Impedance)

| Model | P/N | Output Power | Power Supply Range | Typical Load | Dimensions | Listed Price |
|---|---|---|---|---|---|---|
| DBKH1 | AA-BK31552 | 1 x 900Watt | DC 48-96V | 4-8Ω | 3.9" x 3.9" | $129.00 |
| DBKH2 | AA-BK31591 | 1 x 1250Watt | DC 72-120V | 4-8Ω | 3.9" x 3.9" | $159.00 |
| DBKH3 | AA-BK31411 | 1 x 1500Watt | DC 72-150V | 4-8Ω | 3.9" x 3.9" | $179.00 |
| DBKH4 | AA-BK31381 | 1 x 2000Watt | DC 72-180V | 4-8Ω | 3.9" x 3.9" | $199.00 |

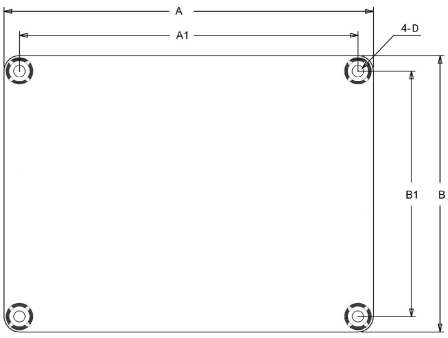
Notes:

1.Reliable power supply solutions can be provided for any audio applications. Sure Electronics is also a power supply provider of MeanWell, Delta and HuntKey. Send an e-mail to info@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.

| Dimensions | A (inch/mm) | A1 (inch/mm) | B (inch/mm) | B1 (inch/mm) | D (inch/mm) |
|---|---|---|---|---|---|
| #1 | 3.90/99.06 | 3.50/88.9 | 3.90/90.06 | 3.5/88.9 | 0.14/3.60 |

# 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. For any operations over 36Volts, customers should have a certain level of professional knowledge. Sure Electronics will not take any responsibility for any personal injury or property damage.
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. Only when the input voltage reaches the rated voltage will the output power reaches the nominal value.

# 9 Contact Us

Have Fun With Us!

SURE® electronics

Sure Electronics Co., Ltd.

SUPERIOR DESIGN UNIFIED FORM REAL STRENGTH ENDURING QUALITY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