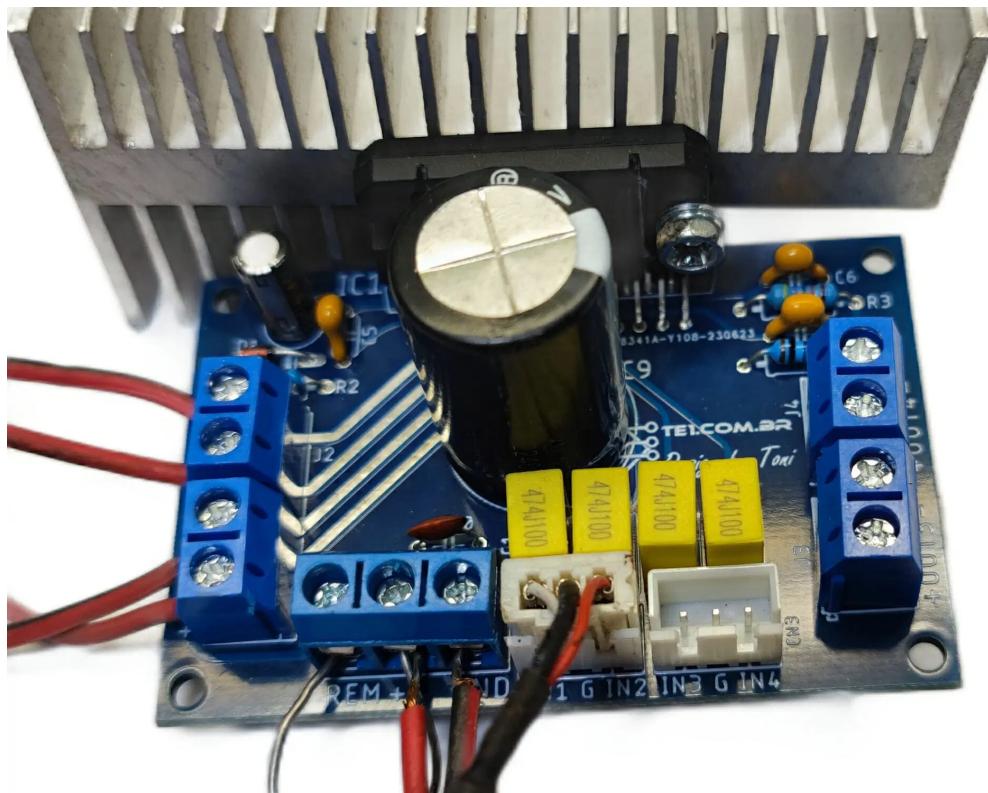




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Audio Power Amplifier Circuit with TDA7388 or TDA7850

Toni | August 7, 2023

CIRCUITS AMPLIFIER AUDIO





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Introduction

An audio power amplifier circuit with TDA7388 or TDA7850 is a popular choice for audio enthusiasts and professionals. These integrated circuits (ICs) are specifically designed to provide high-quality audio amplification for various applications. With their advanced features and capabilities, they offer excellent performance, low distortion, and efficient power output. This makes them suitable for use in car audio systems, home theaters, and other audio amplification setups. In this article, we will explore the key features and benefits of using an audio power amplifier circuit with TDA7388 or TDA7850.

Some equivalent TDA7850 chips that can be used are:

TDA7385, TDA7387, TDA7388, TDA7851, TDA7851L, PA2030A, TB2929HQ, TB2959HQ, TB6560AHQ, TA8435HQ, STPA001, STPA002, STPA003, STPA008, TDA7381, TDA7384A, THB6032MQ, TDA7560, TDA7384, TDA7386, TB2929HQ, TB2926HQ, TA82624H, TA8262, LV4700, TDA7850A, TDA7388A, among others with relabeled names that are used in various automotive multimedia brands.

Some chips may have additional pins and need to be adapted to this board. Some CIS use pin 25 for diagnostics.





9,57 zł

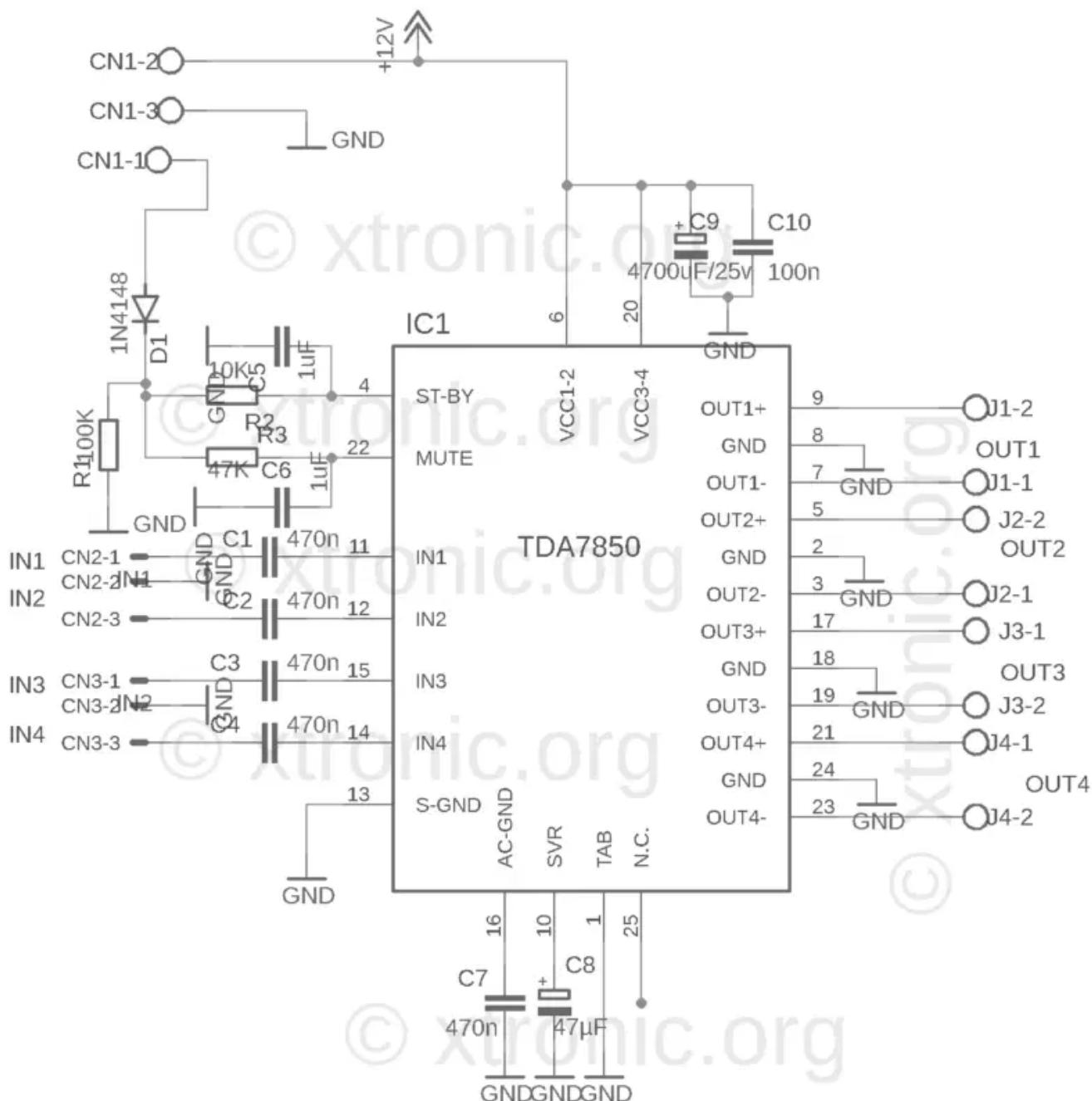
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To determine the maximum voltage and power for each chip, consult the datasheet. To determine the power supply current, considering a 60% efficiency Class AB amplifier, refer to the power vs. voltage graph in the datasheet.

Understanding the Working Principle of TDA7388 Audio Power Amplifier Circuit





Schematic Audio Power Amplifier Circuit Tda7388 Tda7850

Audio Power Amplifier Circuit with TDA7388 or TDA7850

Understanding the Working Principle of TDA7388 Audio Power Amplifier Circuit

Audio power amplifiers are essential components in any audio system, as they are responsible for amplifying the weak audio signals to a level suitable for driving speakers. One popular choice for audio power amplifier circuits is the TDA7388 or TDA7850. These integrated circuits (ICs) offer high-quality audio amplification with low distortion and high efficiency.

The TDA7388 and TDA7850 are both quad bridge amplifier ICs, meaning they can drive four speakers simultaneously. They are designed to operate with a wide range of supply voltages, making them suitable for various applications. These ICs are



commonly used in car audio systems, where they can deliver powerful and clear sound to multiple speakers.

The working principle of the TDA7388 audio power amplifier circuit starts with the input stage. The audio signal is fed into the IC through a coupling capacitor, which blocks any DC voltage present in the input signal. The input stage consists of differential amplifiers that amplify the audio signal and provide a balanced output.

The amplified audio signal then goes through a pre-driver stage, which further amplifies the signal and prepares it for the power stage. The pre-driver stage also provides protection features such as short-circuit and thermal protection, ensuring the safety and reliability of the amplifier circuit.

The power stage is where the real amplification happens. The TDA7388 IC has four identical power amplifier channels, each capable of delivering up to 45 watts of power to a speaker. The power stage uses a bridge configuration, which allows for efficient power delivery to the speakers.

In the bridge configuration, two power amplifier channels are connected in parallel to drive each speaker. This configuration ensures that the full power supply voltage is available across the speaker, resulting in higher power output. Additionally, the bridge configuration allows for the elimination of output coupling capacitors, which improves the overall audio quality.

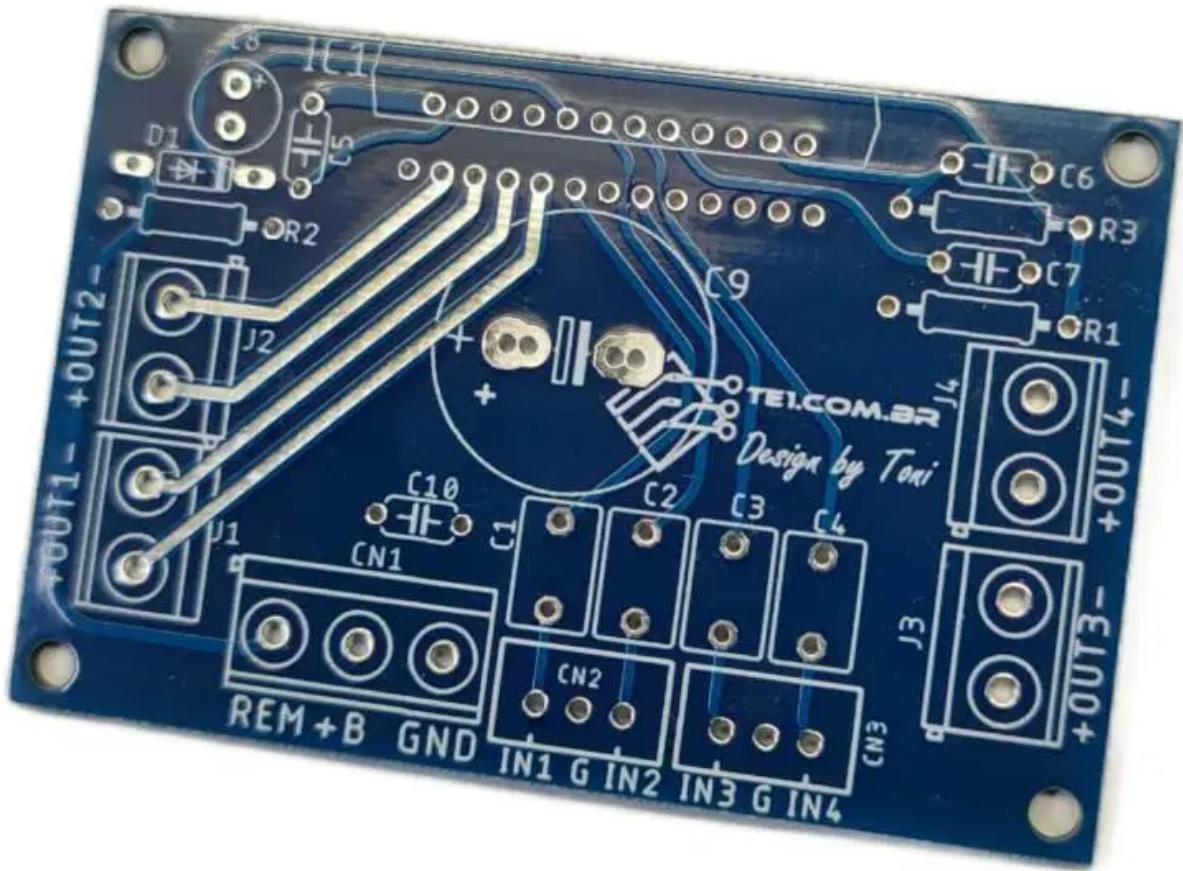
To control the output power of the amplifier circuit, the TDA7388 IC uses a feedback mechanism. A small portion of the output signal is fed back to the input stage through a feedback resistor. This feedback signal is compared to the input signal, and any difference is amplified and fed back to the power stage to adjust the output power accordingly. This feedback mechanism helps maintain a stable and accurate amplification of the audio signal.

The TDA7850 audio power amplifier circuit operates on a similar principle as the TDA7388. However, the TDA7850 offers higher power output, making it suitable for applications that require more power. It can deliver up to 50 watts of power to each speaker, making it ideal for high-performance audio systems.

In conclusion, the TDA7388 and TDA7850 audio power amplifier circuits are excellent choices for amplifying audio signals in various applications. Their working principle involves amplifying the audio signal through differential amplifiers, protecting the circuit with a pre-driver stage, and delivering high power to the speakers through



bridge configuration. These ICs offer high-quality audio amplification with low distortion and high efficiency, making them popular choices in the audio industry.



Audio Power Amplifier Circuit Tda7388 Tda7850 Pcb

Comparing The Performance Of TDA7388 And TDA7850 Audio Power Amplifier Circuits

Audio Power Amplifier Circuit with TDA7388 or TDA7850

When it comes to audio power amplifier circuits, two popular options are the TDA7388 and TDA7850. These integrated circuits (ICs) are widely used in the audio industry due to their exceptional performance and reliability. In this article, we will compare the performance of these two circuits to help you make an informed decision for your audio amplifier project.

Firstly, let's take a closer look at the TDA7388. This IC is a four-channel audio power amplifier that can deliver up to 4 x 45W of output power. It operates on a wide supply voltage range of 12V to 32V and has a THD+N of less than 0.08% at 1kHz. The TDA7388 is a monolithic integrated circuit designed for audio applications and is commonly used in car stereos, home theater systems, and other audio equipment.



voltage range of 8V to 18V, making it suitable for a variety of applications. The TDA7388 features a low distortion factor and high output power capability, making it ideal for high-quality audio systems.

On the other hand, the TDA7850 is a similar four-channel audio power amplifier IC that offers even higher output power. With a maximum output power of $4 \times 50\text{W}$, the TDA7850 is capable of driving larger speakers and delivering a more powerful audio experience. Like the TDA7388, it operates on a supply voltage range of 8V to 18V, ensuring compatibility with various power sources.

In terms of performance, both the TDA7388 and TDA7850 offer excellent audio quality with low distortion and noise levels. They also feature built-in protection circuits to safeguard against short circuits, thermal overload, and overvoltage conditions. This ensures the longevity and reliability of the amplifier circuit, even under demanding operating conditions.

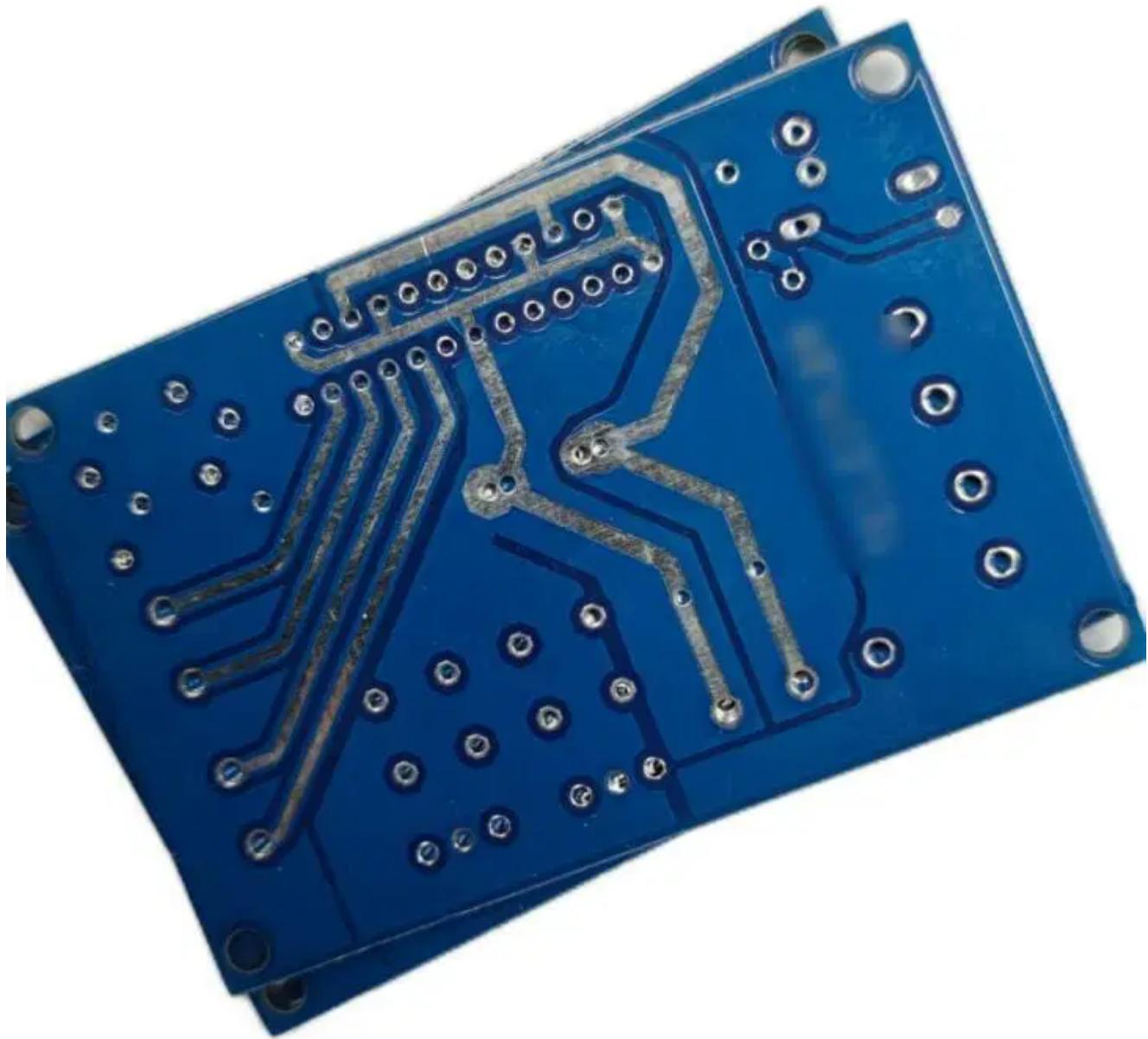
One key difference between these two ICs is their power efficiency. The TDA7850 has a higher efficiency compared to the TDA7388, meaning it can convert a larger portion of the input power into usable output power. This can be advantageous in applications where power consumption is a concern, such as portable audio devices or automotive audio systems.

Another factor to consider is the cost. The TDA7388 is generally more affordable compared to the TDA7850, making it a popular choice for budget-conscious projects. However, if you require the higher output power and improved efficiency of the TDA7850, the additional cost may be justified.

When it comes to the design and implementation of these amplifier circuits, both the TDA7388 and TDA7850 are relatively straightforward to use. They require minimal external components and can be easily integrated into your audio system design. However, it is important to carefully follow the manufacturer's datasheet and application notes to ensure proper circuit layout and component selection.

In conclusion, the TDA7388 and TDA7850 are both excellent choices for audio power amplifier circuits. They offer high-quality audio performance, built-in protection features, and wide supply voltage ranges. The TDA7850 provides higher output power and efficiency, but at a higher cost. Ultimately, the choice between these two ICs depends on your specific requirements and budget constraints. Whichever option you choose, you can be confident in the performance and reliability of these audio power amplifier circuits.





Audio Power Amplifier Circuit Tda7388 Tda7850 Pcb Bottom

Step-By-Step Guide To Building An Audio Power Amplifier Circuit With TDA7388 Or TDA7850

Audio Power Amplifier Circuit with TDA7388 or TDA7850

Building an audio power amplifier circuit can be a rewarding project for any electronics enthusiast. In this step-by-step guide, we will explore how to build an audio power amplifier circuit using either the TDA7388 or TDA7850 integrated



circuits. These ICs are widely used in the audio industry due to their excellent performance and reliability.

Before we dive into the circuit design, let's take a moment to understand the basic principles behind audio power amplification. An audio power amplifier is responsible for increasing the amplitude of an audio signal to drive a loudspeaker or any other audio output device. The TDA7388 and TDA7850 are specifically designed for this purpose, offering high-quality amplification with minimal distortion.

To begin our circuit design, we will need a few essential components. These include the TDA7388 or TDA7850 IC, a power supply, a heat sink, capacitors, resistors, and a few other passive components. It is crucial to select high-quality components to ensure optimal performance and longevity of the amplifier circuit.

The first step is to connect the power supply to the amplifier circuit. The TDA7388 and TDA7850 require a dual power supply, typically ranging from $\pm 12V$ to $\pm 18V$. It is essential to provide a stable and clean power supply to avoid any unwanted noise or distortion in the audio output.

Next, we need to connect the input signal to the amplifier circuit. The TDA7388 and TDA7850 have multiple input channels, allowing for stereo or multichannel audio amplification. The input signal can be sourced from a preamplifier or any audio source with a suitable output level.

Once the power supply and input signal connections are established, we can move on to the output stage of the amplifier circuit. The TDA7388 and TDA7850 can deliver a significant amount of power to drive loudspeakers efficiently. However, it is crucial to ensure proper heat dissipation by attaching a heat sink to the IC to prevent overheating.

To protect the amplifier circuit from any potential damage, we can incorporate various protection mechanisms. These include over-temperature protection, over-voltage protection, and short-circuit protection. These protection features help safeguard the amplifier circuit and ensure its longevity.

After completing the circuit connections, it is essential to double-check all the connections and ensure that there are no loose or shorted wires. Once everything is verified, we can power up the amplifier circuit and test its performance.

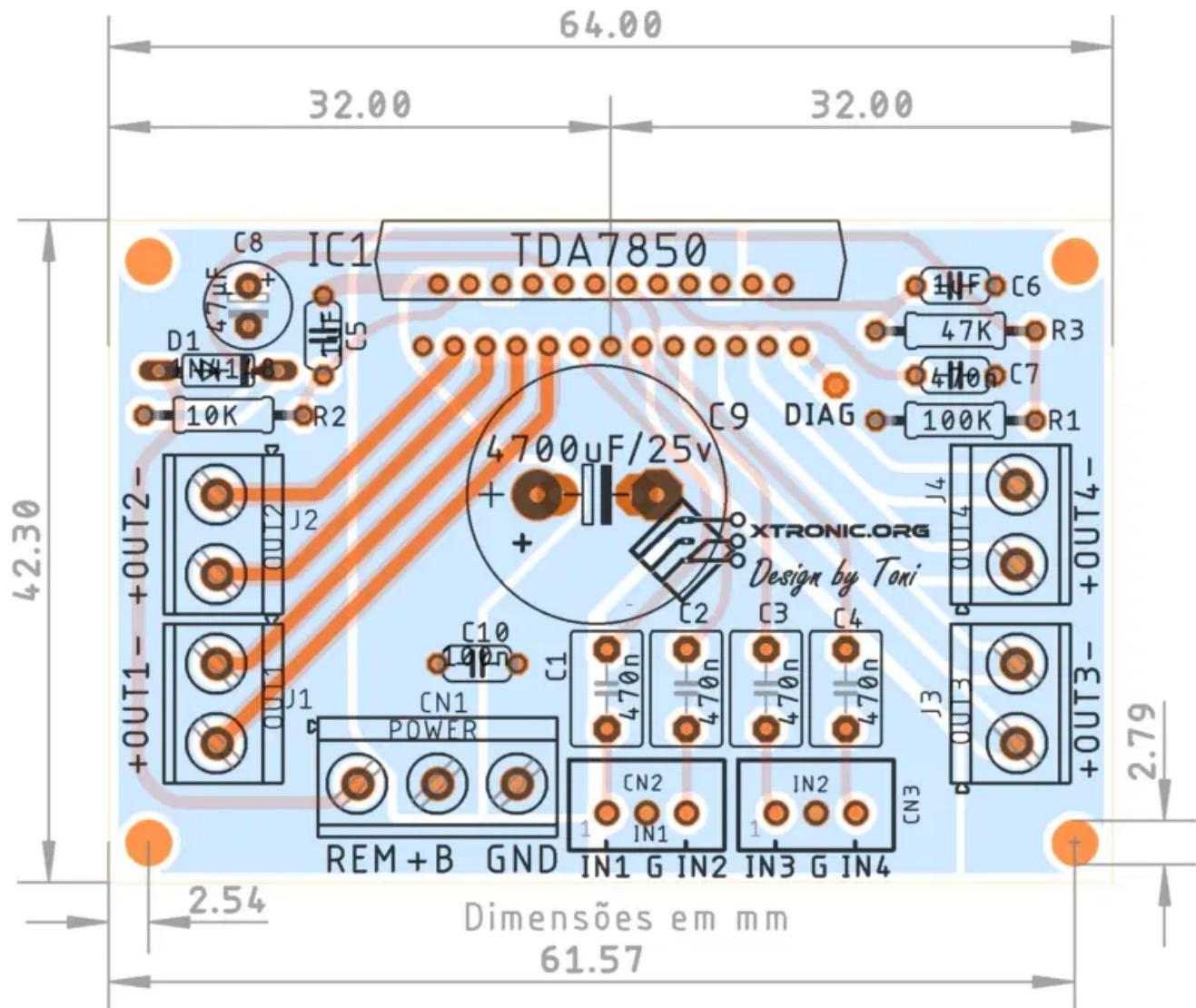
During the testing phase, it is advisable to start with a low input signal and gradually increase it to avoid any sudden loud noises or potential damage to the loudspeakers.



It is also crucial to monitor the temperature of the IC and the heat sink to ensure that they are within safe operating limits.

In conclusion, building an audio power amplifier circuit with the TDA7388 or TDA7850 can be a rewarding project for any electronics enthusiast. By following this step-by-step guide and using high-quality components, you can create a powerful and reliable audio amplifier circuit. Remember to pay attention to the power supply, input signal, output stage, and protection mechanisms to ensure optimal performance and longevity of the amplifier circuit. Happy building!

PCB FOR ASSEMBLY, OF THE AMPLIFIER



Component Viewer Pcn Tda7850 Tda7388



Audio Power Amplifier Circuit Tda7388 Tda7850 Pcb Bottom



Audio Power Amplifier Circuit Tda7388 Tda7850 Pcb Top

BOM

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Part	Valor	Descrição	Quantidade
Resistors 1/4W			
R1	100K	Brown, black, yellow, gold	1
R2	10K	Brown, black, orange, gold	1
R3	47K	Yellow, violet, orange, gold	1
Capacitors			
C1, C2, C3, C4, C7	470n (474)	Film capacitor	4

C5, C6	1uF (105)	Ceramic capacitor	2
C7	470n (474)	Ceramic capacitor	1
C8	47uF/25V	Electrolytic capacitor	1
C9	4.700uF a 10.000uF/25V	Electrolytic capacitor	1
C10	100n (104)	Ceramic capacitor	1

Semiconductors

D1	1N4148	Diode	1
IC1	TDA7850 or equivalent	4 × 50 W MOSFET quad bridge power amplifier	1

Miscellaneous

J1	OUT1	Terminal block 5.08 mm, Output 1	1
J2	OUT2	Terminal block 5.08 mm, Output 2	1
J3	OUT3	Terminal block 5.08 mm, Output 3	1
J4	OUT4	Terminal block 5.08 mm, Output 4	1
CN1	POWER	Terminal block 5.08 mm, Power	1
CN2	IN1	Connector 2.54 mm, 3 pins, inputs 1 and 2	1
CN3	IN2	Connector 2.54 mm, 3 pins, inputs 3 and 4	1

Weld, wires, PCB, box, source, etc.

To connect stereo signal, connect input 1 and 2 and input 3 and 4

Download files for this assembly, plates in Gerber, PNG, PDF, and PS



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Buy Kit for Mounting or Plate Amplifier with TDA7850, or TDAD7388



Conclusion

In conclusion, the Audio Power Amplifier Circuit with TDA7388 or TDA7850 is a reliable and efficient solution for amplifying audio signals. These integrated circuits offer high power output, low distortion, and a wide frequency response range. They are commonly used in car audio systems and other applications where high-quality audio amplification is required. Overall, the TDA7388 and TDA7850 circuits provide excellent performance and are well-suited for various audio amplification needs.

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About the author

Toni



Xtronic.org blog author. Electronics technician for the technical school of Brasilia - Brazil. Interested in electronics, circuits and technology in general.

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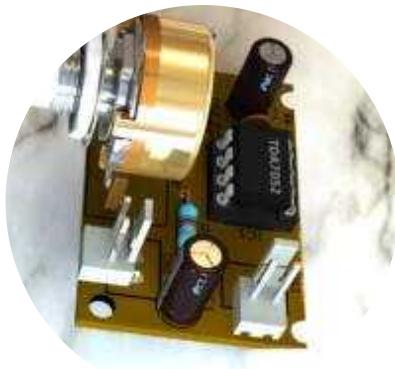
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TDA7052 Amplifier Circuit TDA7052A BTL

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TDA2040 Amplifier Circuit Diagram 30W

1.



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2.



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Transmitter Power Amplifier Electronic Circuit Diagram Supply PCB



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