

QUASAR KIT No. 1046

2x25 Watt Hi-Fi BOOSTER AMPLIFIER

General Description

An amplifier small in size but great in its performance. It makes use of a new IC from PHILIPS the TDA1515 which is a STEREO amplifier in one package. The circuit uses two of them, one in each channel having the two amplifiers inside every IC connected in bridge for higher output power. The circuit works off a 12 VDC supply which makes it ideal for use in the car or for portable equipment. It can also be connected at the output of an existing amplifier of smaller output to serve as a power booster.

Technical Specifications – Characteristics

Output power: 2x25 W max. (music)
Load impedance:..... 4 ohms
Frequency response: 40 Hz-20 KHz
Input sensitivity: 1.45 V RMS (for max. output)
Supply voltage: 13.6 VDC
Quiescent current:..... 130 mA (both channels)
Max. current: 3.2 A (both channels)

How it Works

The circuit is based on the TDA1515 which is a new self contained STEREO power amplifier in one IC, from PHILIPS . In this circuit two TDA1515's are used, one for each channel, every one of them having its two parts connected in a bridge to deliver more than twice the power. There are also used a few other components to adjust the frequency response and ensure the stability of the circuit under a wide range of operating conditions.

Construction

First of all let us consider a few basics in building electronic circuits on a printed circuit board. The board is made of a thin insulating material clad with a thin layer of conductive copper that is shaped in such a way as to form the necessary conductors between the various components of the circuit. The use of a properly designed printed circuit board is very desirable as it speeds construction up considerably and reduces the possibility of making errors. Quasar Kit boards also come pre-drilled and with the outline of the components and their identification printed on the component side to make construction easier. To protect the board during storage from oxidation and assure it gets to you in perfect condition the copper is tinned during manufacturing and covered with a special varnish that protects it from getting oxidised and also makes soldering easier. Soldering the components to the board is the only way to build your circuit and from the way you do it depends greatly your success or failure. This work is not very difficult and if you stick to a few rules you should have no problems. The soldering iron that you use must be light and its power should not exceed the 25 Watts. The tip should be fine and must be kept clean at all times. For this purpose come very handy specially made sponges that are kept wet and from time to time you can wipe the hot tip on them to remove all the residues that tend to accumulate on it. DO NOT file or sand paper a dirty or worn out tip. If the tip cannot be cleaned, replace it. There are many different types of solder in the market and you should choose a good quality one that contains the

necessary flux in its core, to assure a perfect joint every time. DO NOT use soldering flux apart from that which is already included in your solder. Too much flux can cause many problems and is one of the main causes of circuit malfunction. If nevertheless you have to use extra flux, as it is the case when you have to tin copper wires, clean it very thoroughly after you finish your work. In order to solder a component correctly you should do the following:

- Clean the component leads with a small piece of emery paper.
- Bend them at the correct distance from the component's body and insert the component in its place on the board.
- You may find sometimes a component with heavier gauge leads than usual, that are too thick to enter in the holes of the p.c. board. In this case use a mini drill to enlarge the holes slightly. Do not make the holes too large as this is going to make soldering difficult afterwards.
- Take the hot iron and place its tip on the component lead while holding the end of the solder wire at the point where the lead emerges from the board. The iron tip must touch the lead slightly above the p.c. board.
- When the solder starts to melt and flow wait till it covers evenly the area around the hole and the flux boils and gets out from underneath the solder. The whole operation should not take more than 5 seconds. Remove the iron and let the solder cool naturally without blowing on it or moving the component. If everything was done properly the surface of the joint must have a bright metallic finish and its edges should be smoothly ended on the component lead and the board track. If the solder looks dull, cracked, or has the shape of a blob then you have made a dry joint and you should remove the solder (with a pump, or a solder wick) and redo it.
- Take care not to overheat the tracks as it is very easy to lift them from the board and break them.
- When soldering a sensitive component it is good practice to hold the lead from the component side of the board with a pair of long-nose pliers to divert any heat that could possibly damage the component.
- Make sure that you do not use more solder than it is necessary as you are running the risk of short-circuiting adjacent tracks on the board, especially if they are very close together.
- After you finish your work cut off the excess of the component leads and clean the board thoroughly with a suitable solvent to remove all flux residues that still remain on it.

The amplifier has very few components apart from the IC's and should present no difficulties to anyone even among the most inexperienced hobbyists. First of all solder the pins in their places, make the jumper connection which is located between the two rows formed by the leads of IC2, place then the resistors, continue with the capacitors observing the correct polarity of the electrolytic and finally solder the IC's in their places. You should be very careful with the IC's as they should not be overheated during soldering. Try using a pair of long nose pliers to hold the pins from the component side while you are soldering them. This will divert excess heat before it reaches the IC's. It is advisable to mount the IC's on the heatsink first and then solder them on the p.c. board. The IC's should be tightened as much as possible on the heatsink to ensure that there is a good path for the excess heat to dissipate towards the heatsink. When you finish construction make a careful visual inspection of the work done, and clean the board thoroughly with a suitable solvent to remove any remaining soldering flux.

Make the following connections:

Input 1: 1 (signal) 2 (common)
Input 2: 5 (signal) 4 (common)
Output 1: 6 (+) 7 (-)
Output 2: 8 (+) 9 (-)
Supply:..... 10 (+) 3 (-)

Use a STEREO preamplifier with an output of at least 1.45 V, and two speakers of sufficient power rating and 4 ohm internal impedance. The power supply should be capable of delivering 13.6 VDC at a maximum load of 4 A. If you turn the power ON the signal from the preamplifier should be heard clear and loud from the loud speakers.

Adjustments

This kit does not need any adjustments, if you follow the building instructions.

Warning

Quasar kits are sold as stand alone training kits.

If they are used as part of a larger assembly and any damage is caused, our company bears no responsibility.

While using electrical parts, handle power supply and equipment with great care, following safety standards as described by international specs and regulations.

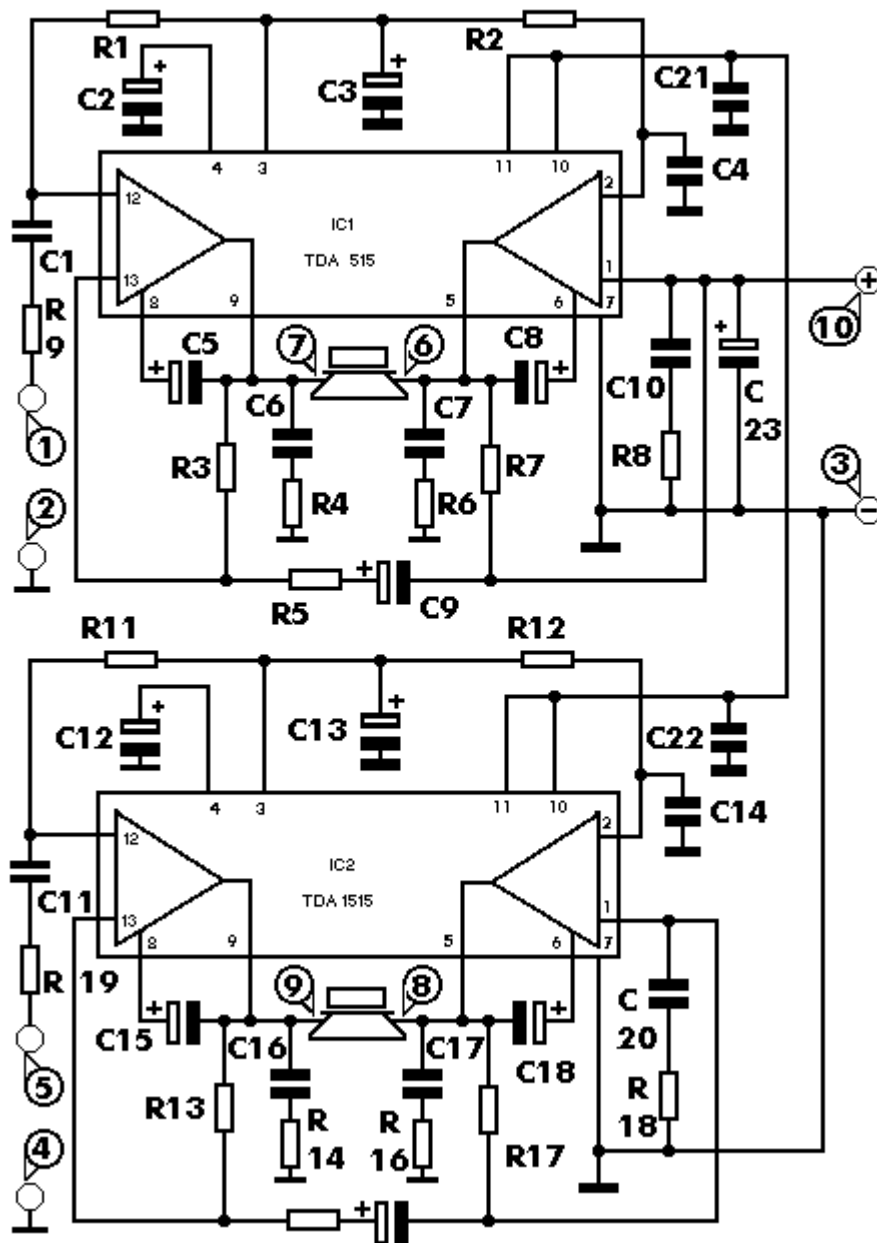
If it does not work

Check your work for possible dry joints, bridges across adjacent tracks or soldering flux residues that usually cause problems.

Check again all the external connections to and from the circuit to see if there is a mistake there.

- See that there are no components missing or inserted in the wrong places.
 - Make sure that all the polarised components have been soldered the right way round. - Make sure the supply has the correct voltage and is connected the right way round to your circuit.
 - Check your project for faulty or damaged components.
- If your project still fails to work, please contact us for information about our Get-You-Going service.

Schematic Diagram



Parts List

All components including printed circuit board, assembly instructions including schematics and detailed parts list are supplied when you purchase the kit.

Ordering

For pricing info and online ordering please visit:

<http://www.quasarelectronics.com/1046.htm>

For further info please contact us by e-mail:

[mailto: sales@QuasarElectronics.com](mailto:sales@QuasarElectronics.com)

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