

# **AVT 1024** Headphone amplifier



Stereo power amplifier with integrated circuits TDA7233. The load of the amplifier can be headphones with impedance greater than  $2\Omega$ . The best results are achieved with headphones with an impedance of  $32\Omega$ .

#### Specifications

- · AB class power amplifier
- Output power 800mW at RL=32 $\Omega$  and Vcc=12V
- THD is less than 0.3%
- Bandwidth 17Hz-23kHz
- Supply voltage 3-15V DC
- Power consumption in the standby mode approx 6mA / channel

### **Functional description**

Schematic diagram of the amplifier is shown in Figure 1. Both channels are identical and each contains integrated circuit TDA7233. The C9 and C10 capacitors form a loop of negative feedback for alternating current. The inclusion of  $5,1\Omega$  resistors in series with these capacitors causes a decrease in the voltage gain of the power stage, which reduces the nonlinear

distortion and harmonic frequency level in the output signal. The audio output signal is fed through capacitors C4 and C8 to the output connector to which the headphones are connected directly. They can be any magnetodynamic headphones with an impedance greater than  $2\Omega$ .







### Assembly and test

The assembly is typical and should not cause the problems. It runs in standard way starting from the smallest components and ending with the largest ones. During assembly the polarity of the components (electrolytic capacitors, transistors, diodes) should be noted. After completing the assembly, the polarization of the components on the PCB and the short circuiting of the soldering points should be carefully checked. Correct assembly ensures immediate and trouble-free commissioning of the amplifier.



## **Component list**

#### **Resistors:**

R1, R3:	10kΩ	(brown-black-orange-gold)
R2, R4:	5,1Ω	(green-brown-red-gold)
R5, R6:	1,2Ω	(brown-red-red-gold)
R7:	1kΩ	(brown-black-red-gold)
Z:	0Ω	(black)
PR1:	rotary	potentiometer 2×50kΩ
Capacitors:	-	
C1, C5:	220nF	(marked as 224)
C2, C4, C6:	100µF	!
C3, C7:	22µF!	
C8, C11, C14:	100µF	!
C9, C10, C12:	100nF	(marked as 104)
C13, C16:	10µF!	
C15, C17, C18:	100nF	(marked as 104)
C19:	1000µl	F!
Semiconductors:		
D1:	1N400	7!
LD1:	LED di	ode !
US1, US2:	TDA72	33 with 8-pin IC socket !
Others:		
X2, X3:	3.5mm	Stereo Audio Jack
X1:	2-pin t	erminal block connector

While assembling the components marked with an exclamation mark attention should be paid to their polarity. Symobols of the components on the PCB as well as photos of assembled sets may come in useful. To access highresolution images, download the PDF file.





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**AVT 102**4

Headphone amplifier

Start off by soldering the printed circuit elements in order from smallest to largest. The unit assembled flawlessly, using the supplied components will operate immediately after switching on the power supply.

# Assembly in 4 steps



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## Notes

Thank you for purchasing AVT product. Please take your time to read carefully the important information below concering use of this product.

Educational Electronics Kits are intended for educational and demonstration purposes only. They are not intended for use in commercial applications. If they are used in such applications the purchaser assumes all responsibility for ensuring compliance with all local laws. In addition, they cannot be used as a part of life support systems, or systems that for use as or as a part of life support systems, or systems that might create a hazardous situation of any kind.

- Battery or wall-adaptor are safe devices. They do not require special attention unless main voltage is connected to an output e.g. a relay.
- If the kit is used to switch currents greater than 24V it is necessary to have the installation and performed by a trained professional authorized for such work. The kit may only be used in such application if it was installed in a safe to touch enclosure.
- · Never exceed the limits or ratings listed in the 'Specifications' section at the this user guide.
- If the kit is used in schools or educational facilities or similar institutions the operation must be supervised by trained and authorized staff.
- The product itself and all parts thereof (including packing material) are not suitable toys for childern! (choking hazard, risk of electric shock, ...)

Failures in modern electronic component are very rare as 95% of non-working kits are due to poor soldering or components placed in the wrong location or orientation so please check your work carefully.

DIFFICULTY LEVEL



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This symbol means do not dispose of your product with your other household waste. Instead, you should protect human health and the environment by handing over your waste equipment to a designated collection point for the recycling of waste electrical tion and electronic equipment.

AVT SPV reserves the right to make changes without prior notice. Assembly and connection of the device not in accordance with the instructions, unauthorized modification of components and any structural modifications may cause damage to the device and endanger the person using it. In this case, the manufacturer and its authorized representatives shall not be liable for any damages arising directly or indirectly from the use or malfunction of the product.