

DIY Kit 107. LOW VOLTAGE 1W STEREO AMPLIFIER MODULE

INTRODUCTION

The TDA7053 is an integrated stereo audio power amplifier in a 16-pin dual-in-line plastic package. It is designed for battery-powered portable audio equipment but is also suitable for mains-powered applications.

The circuit used is straight out of the data book. PCB dimensions are a tiny 33mm x 36mm (1.3" x 1.35").

TDA7053 SPECIFICATIONS

- 3-15V supply voltage range
- 1.5A max non-repetitive output peak-current
- 0.6A max repetitive output peak-current
- 1.1W output power using 6V supply (THD=10%)
- 32mV input sensitivity for 1W power output with 6V supply
- 39dB voltage gain
- 100kΩ internal input impedance
- 180uV noise output voltage

The kit is constructed on single-sided printed circuit board. Protel Autotrax & Schematic were used in the design.

CONSTRUCTION

Start with the two resistors followed by the small monobloc capacitor. Use one of the resistor lead offcuts for the link. Next comes the IC socket with the electrolytic capacitor last. Be careful to get the electrolytic capacitor in the right way around. The positive lead is marked on the overlay. The negative lead is marked on the body of the capacitor.

Solder the power and audio cables directly to the pads provided on the PCB.

CIRCUIT DESCRIPTION

There is not much to say really. All the work is done internally in the IC. The internal circuit consists of a differential input stage, two class AB output stages and a stabiliser circuit.

Input diodes limit the maximum input voltage is to about 1.5V peak-to-peak. The input needs a DC path to ground. This is provided by resistors R1 and R2. These resistors can be replaced by a volume control if required (maximum resistance = 10kΩ).

The output stages are a BTL (Bridge Tied Load) configuration, with the maximum output equal to the supply minus some small voltage losses in the output transistors. With no input signal the output voltage sits at half the supply voltage. The voltage gain is internally fixed at 39dB.

Due to the BTL output configuration the outputs are floating with respect to ground. **Therefore the outputs of the amplifier should never be connected to ground.**

Capacitors C1 and C2 provide power supply decoupling.

IF IT DOES NOT WORK

Poor soldering ("dry joints") is the most common reason that the circuit does not work. Check all soldered joints carefully under a good light. Re-solder any that look suspicious. Check that all components are in their correct position on the PCB. Is the electrolytic capacitor the right way round?

PARTS LIST - TDA7053

Resistors (0.25W carbon)

4K7 R1,2 2

Capacitors

100nF monobloc C1 1

220uF 16V electrolytic C2 1

Semiconductors

TDA7053 IC1 1

1W Stereo Audio Power Amplifier IC

Miscellaneous

PCB, K107 1

9V battery snap 1

Web Address & Email

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<http://kitsrus.com>

