Kit 97. 4W Amplifier Module

This is a very simple amplifier built around the LM380 IC. It can deliver up to 4W into an 8 ohm speaker depending on the supply voltage. The circuit is based on the National Semiconductor LM380 operational amplifier. Instead of using a heatsink or heat fins the heat produced is dissipated through the centre pins of the IC into the copper overlay left on the PCB. So there is NO IC socket used. **The IC solders directly to the PCB.**

You may download the data sheet for this IC from the National Semiconductor website at:

http://www.national.com/catalog

How It Works. The 100n capacitor blocks any input DC level. The signal is fed across a 5K potentiometer. This picks off a percentage of the input signal via its wiper and acts as a volume control. The two 1N4148 input diodes render the amplifier almost destruction proof. The diodes conduct at about 0.7V and shunt any high amplitude signals to earth. The 22K resistor connects the non-inverting input to earth - approximating the input from the pot in its mid position. Internal stabilization is provided by the 4.7uF electrolytic capacitor on pin 1.

There is a standard Zobel network on the output. This is the 2R7 resistor and the 100nF capacitor. This shunts any high frequency output to earth.

The 470uF electrolytic blocks any output DC level from the IC to the speaker. The 10n and 10uF capacitors provide power supply smoothing. The 1N4004 diode prevents reverse voltage connection from damaging the IC. The ideal operating voltage is between 8V and 20V DC.

At 9V supply an input signal of 35mV will deliver an output of .35W into an 8 ohm speaker. At 12V a signal of 56mV will deliver 1W. While at 20V supply a signal of 113mV will give an output of 4W. All these performance graphs can be seen in the data sheet.

COMPONENTS		
22K resistor red red orange	R1	1
2R7 resistor red violet gold	R2	1
10K potentiometer		1
1N4004 diode	D3	1
1N4148 diode	D1 D2	2
100nF monoblok	C1 C6	2
330pF ceramic	C2	1
4.7uF ecap	C3	1
470uF/16V ecap	C4	1
10uF ecap	C5	1
10nF mylar	C7	1
LM380	IC1	1
Kit 97 PCB		1

Both Signal Input & Signal Output are situated on the right hand side of the board. Power input is on the left hand side of the board.

Make sure to get the diode and all electrolytic capacitors around the correct way.

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Other Amplifier Kits available

Kit 17	LM386 2W module
Kit 27	TDA7052 1W module
Kit 47	LM383 8W module
Kit 50	LM1875 25W module
Kit 48	Introduction to AB amplifiers
Kit 87	TDA2822 1W Stereo module
Kit 88	TDA2009A 10W Stereo module
Kit 90	BA5406 3W Stereo Module
Kit 97	LM380 4W module
Kit 98	Preamplifier
Kit 105	HA13118 18W module
Kit 106	TDA7294 50W module
Kit 107	TDA7053 1W Stereo module