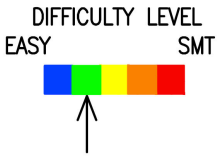
QRP Builder Audio Amplifier kit

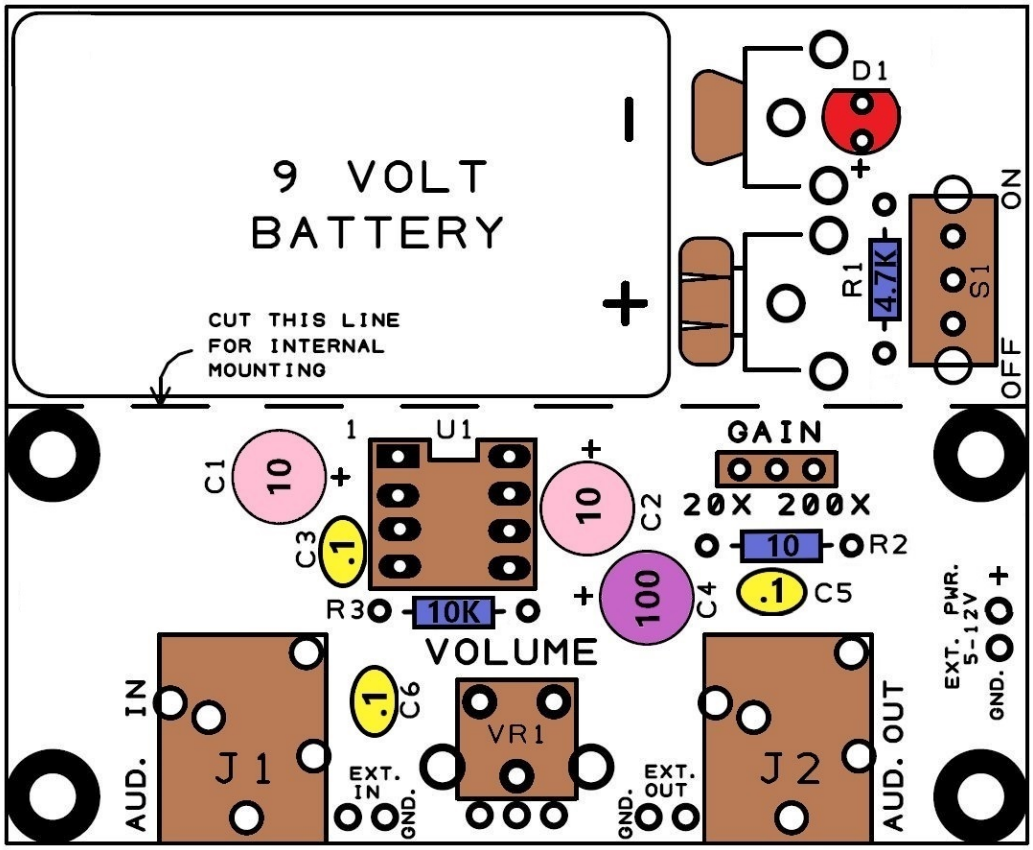


First, familiarize yourself with the parts and check for all the components. If a part is missing, please contact us and we will send one. Be sure to check the tape used to secure the IC and socket for any components stuck to the tape. Email qrpbuilder@gmail.com to request a part.

Parts List

1 – QRPBuilder Audio Amplifier PCB
1 – U1, LM386 IC 8pin DIP
1 – D1, red led, may have clear lens
2 – C1,2, 10uF electrolytic capacitor
3 – C3,5,6, .1uF mono capacitor, marked 104
1 – C4, 100uF electrolytic capacitor
1 – R1, 4.7K resistor (yellow-violet-red-gold)
1 – R2, 10 ohm resistor (brown-black-black-gold)
1 – R3, 10k resistor (brown-black-orange-gold)
1 – VR1, 10K 6mm trimmer pot, marked 103 on top
1 – S1, SPDT switch
2 – 3.5mm stereo PCB jack
1 – 8 pin DIP socket
1 – 1X3 pin header
1 – header shunt (Berg connector)
1 – male 9v battery clip (-)
1 – female 9v battery clip (+)
4 – self adhesive rubber foot

Assemble the smallest components first. All the components are installed on the front side of the board. Use the figure below as a guide for locations.



[ ] Install C3,5,6, .1uF mono capacitor, marked 104

[ ] Install D1, the red LED. *The polarity must be correct. The long lead is "+".* Seat the LED flush with the surface of the board.

[ ] Install R1, 4.7K resistor (yellow-violet-red-gold)

[ ] Install R2, 10 ohm resistor (brown-black-black-gold)

[ ] Install R3, 10K resistor (brown-black-orange-gold)

[ ] Install 1X3 pin header at the "GAIN" position indicated on the silkscreen, plug in the shunt (Berg connector), to keep from losing it.

[ ] Install the 8 pin DIP socket

[ ] Install S1, SPDT switch

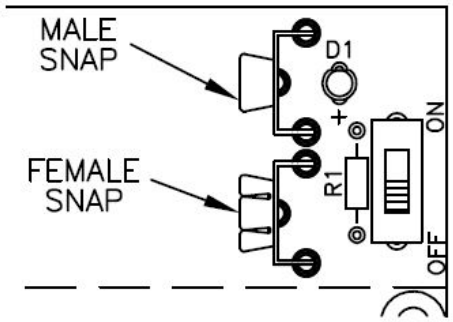
[ ] Install VR1, 10K 6mm trimmer pot

[ ] Install J1,2, 3.5mm stereo jack

[ ] Install C1,2, 10uF electrolytic capacitor. *The polarity must be correct. The long lead is "+".*

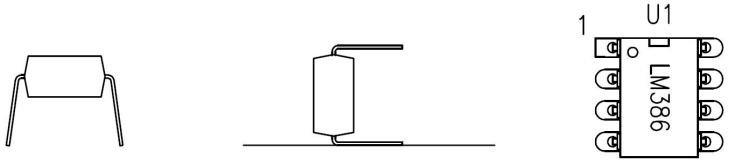
[ ] Install C4, 100uF electrolytic capacitor. *The polarity must be correct. The long lead is "+".*

[ ] Install the 9 volt battery clips noting the position of the male and female contacts as shown in the figure below. *There is no reverse polarity protection diode, so installing these in the wrong position may result in circuit damage.*



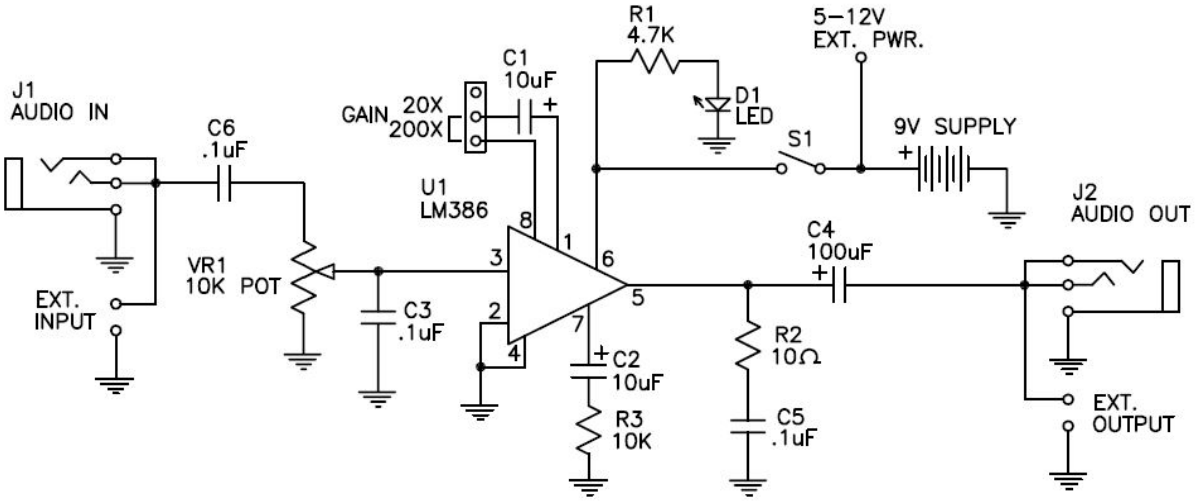
[ ] Install the four self adhesive feet on the back side corners.

[ ] Insert U1, LM386. *Note the position of Pin 1*. The IC pins come flared so that they can be retained by auto insertion tools. Gently rock it on a flat surface so the pins are parallel and it will insert into the socket more easily.



This completes the electrical and mechanical assembly.

Schematic:



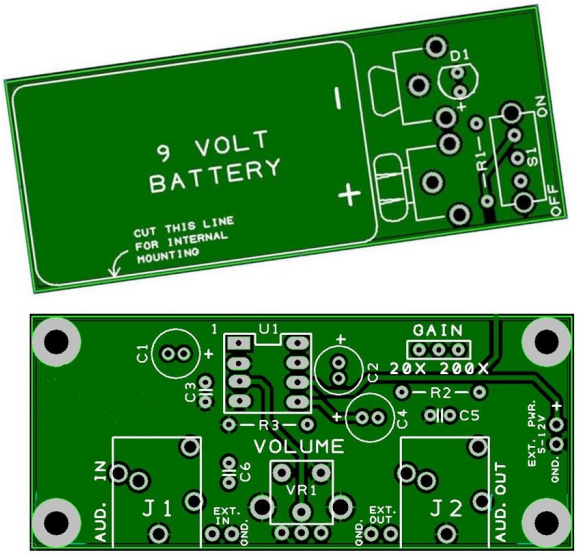
Usage:

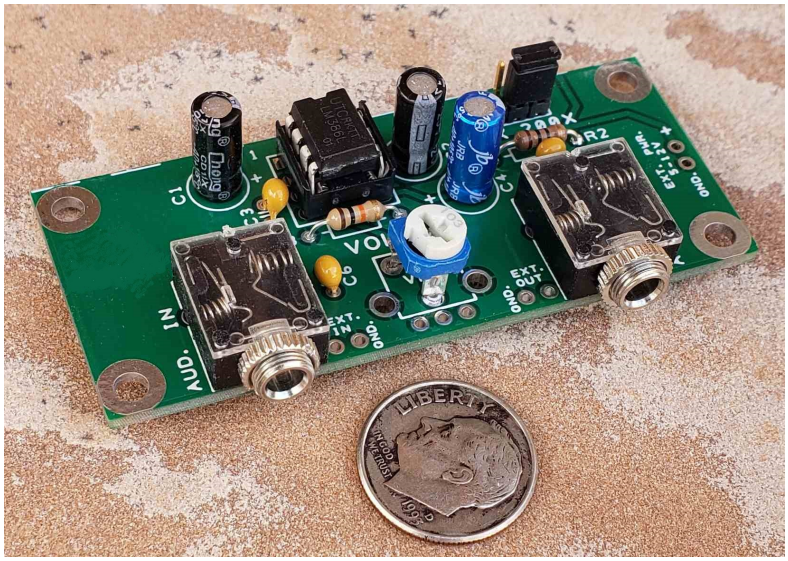
This amplifier is helpful for any of your projects, using ear buds or headphones, that you would like to have more amplification, or to drive a speaker. There are two native amplification factors, 20X and 200X, that are jumper selectable for your specific application, along with a volume control. Install a 9V battery, alkaline type recommended. Install the Berg connector (shunt) at the “Gain” header, selecting the amount of gain you need for your application. Depending on the input usually 20X is good for if you are just raising the gain to drive earbuds, 200x for driving a speaker.

You will notice extra pads at the “Volume” potentiometer position are present if you wish to substitute a 9mm horizontal style 10K potentiometer, shown below, similar to a Alpha #RV09AF-20-20K-B10K, available from Mouser or Jameco, instead of the supplied 6mm vertical potentiometer.

Internal Mounting:

For applications that internal mounting and power is desired, simply cut the board at the dotted line with some tin snips, removing the battery, switch, led, and discard. You can also omit the 3.5mm jacks if using internal connections. Pads are available for audio input, audio output, and 5-12V power. If clearance is an issue with the height of the electrolytic capacitors you can mount them on the bottom of the board, just follow the polarity marked on the silkscreen and they can be laid down for more clearance if necessary. If you require a panel mounted volume control on your project, remove the board mounted pot, add an inexpensive, (Tayda A-2981), panel mounted 10K potentiometer, and wire to the pcb pads at VR1.





Notes: