

SUBWOOFER FILTER

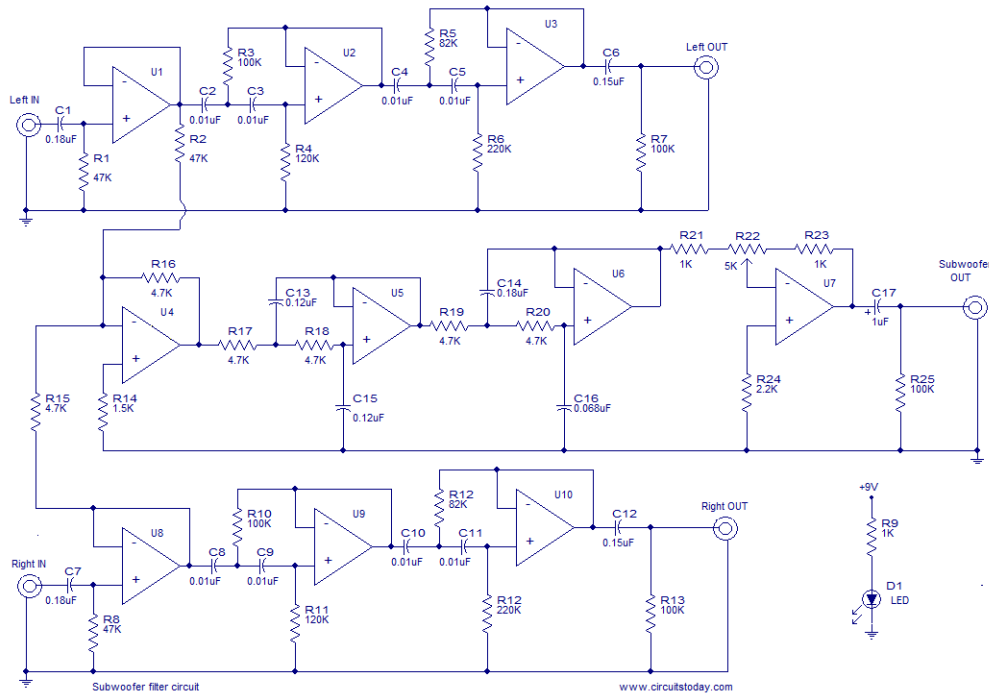
Description.

Here is the circuit diagram of an opamp based subwoofer filter. Audio frequencies below 200Hz are considered to be in the subwoofer range. So a subwoofer filter will be essentially a low pass filter with a cut off frequency of 200Hz. The working of this straight forward circuit is as follows.

The left channel of the audio source is connected to the non-inverting input of opamp U1 which is wired as a buffer. Opamps U2 and U3 forms a high pass filter. Output of U1 is coupled to the input of this high pass filter. The high pass filtered audio signal available at the output of U3 represents left channel output. Similarly the right channel of the audio source is connected to the non-inverting input of U8 which is wired as a buffer amplifier. The output of U8 is connected to the input of the high pass filter formed by opamps U9 and U10. The filtered audio signal available at the output of U10 represents the right channel audio output.

Output of U1 and U10 are coupled to the inverting input of the opamp U4. U4 performs the job of mixing the two signals. Output of U4 is coupled to the input of the low pass filter comprising of opamps U5 and U6. The low pass filter has a cut off frequency of 200Hz. The output of the filter is coupled to the inverting input of opamp U7 through the POT R22. U7 works as an output amplifier and POT R22 can be used for adjusting the gain. The audio signal available at the output of U7 represents the subwoofer output.

Circuit diagram.



Notes.

- ❑ The circuit must be assembled on a good quality PCB.
- ❑ The ICs U1 to U 10 are all opamps and you can use any opamp with a split power supply.
- ❑ I used two TL074(quad opamp) and one TL072(dual opamp).
- ❑ I used +9/-9 V DC dual supply for powering the circuit.
- ❑ The power supply connection is not shown in the circuit .Positive and negative supplies must be connected to the appropriate pins of the IC by yourself.
- ❑ Pin configuration of your opamp can be understood from its datasheet.
- ❑ It is better to mount the ICs on a holder.
- ❑ LED D1 is just a power ON indicator and it is optional.

- Some capacitance values shown in the circuit are hard to find in the market. The best solution is to combine available capacitors serially or parallelly to obtain the required value.

Source : <http://www.circuitstoday.com/subwoofer-amplifier>