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LAST UPDATED ON MAY 21, 2022 BY SWAGATAM (<https://www.homemade-circuits.com/author/swag/>)

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The proposed 10 band graphic equalizer circuit can be used in conjunction with any existing audio amplifier system to get an enhanced 10 stage audio processing, and customized tone control.

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The circuit can be easily converted to a **5 band graphic equalizer** by simply eliminating 5 stages from the shown design

The Circuit Concept

A graphic equalizer is a type of complex tone control circuit which can be applied to smooth out or enhance the frequency response of any hi-fi audio amplifier, or in a guitar effects unit. To be precise, the unit can prove effective in virtually any form of audio application.

The unit is quite simple to use. All one has to do is feed the TV or PC audio input to this circuit and hook the output with the existing home theater amplifier.

Next, it would be just a matter of adjusting the given 10 band controls and enjoying the vastly improved sound quality.

You would be able to tailor the sound as per your preferred tastes. As an example, the midrange controls of the equalizer can be adjusted to highlight dialogue or in order to reduce the harshness over a particular range of voice audio.

Or perhaps you can roll off the high pitched even to further extents in case you wished, or simply heightened the bass boost to your liking.

Typically the controls would be able to provide up to 10dB of boost or cut at nominal center frequencies of 150Hz, 500Hz, 1kHz, 2kHz, 5kHz, 7kHz, 10kHz, 13kHz, 15kHz, 18kHz.

The circuit also includes a fixed 10kHz low pass filter stage for cancelling out unwanted noise such as hiss or other high frequency disturbances.

How the 10 band graphic equalizer circuit functions

Referring to the given circuit diagram we can see that the associated opamps form the main active component responsible for the required optimizations.

You will notice that all the 10 stages are identical, it's the difference in the values of the included capacitors and the pot which effectively varies the processing levels across the various stages.

For analyzing the operation we may consider any one of the opamp stages since all of them are identical.

**A connector set with
magnets designed**

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**magnets designed
to provide quick,
secure, hassle-free
connections**

Here the opamps act as "gyrators (<https://en.wikipedia.org/wiki/Gyrator>)" which refers to an opamp circuit which effectively converts a capacitive response to an inductance response.

Consider an AC voltage source V_i connected to the opamp stage. This pushes a current I_c via the capacitor (C_1 , C_2 , C_3 etc), which constitutes a proportional voltage across the connected ground resistance (R_{11} , R_{12} , R_{13} etc).

This voltage across the ground resistance is conveyed at the output of the opamp.

Due to this the voltage across the feedback resistor (R_1 , R_2 , R_3 etc) becomes equal to the difference between V_{in} and V_{out} which causes current to flow via the feedback resistor and back into the input voltage source!

A careful assessment of the phases of the above developed current would show that as I_c leads the voltage V_{in} (as it can be expected for any capacitive circuit) the net input current that may be the vector sum of I_c and I_o in fact trails the voltage V_i .

Using Capacitors as Tuned Inductors

Therefore this implies that in effect, the capacitor C has gotten transformed into a virtual inductor due to the actions of the opamp.

This transformed "inductance" may be expressed by the following equation:

$$L = R_1 \times R_2 \times C$$

where R_1 = ground resistance, R_2 = feedback resistance while C = capacitor at the non-inverting input of the op amp.

Here C would be in Farads and the resistances in Ohms.

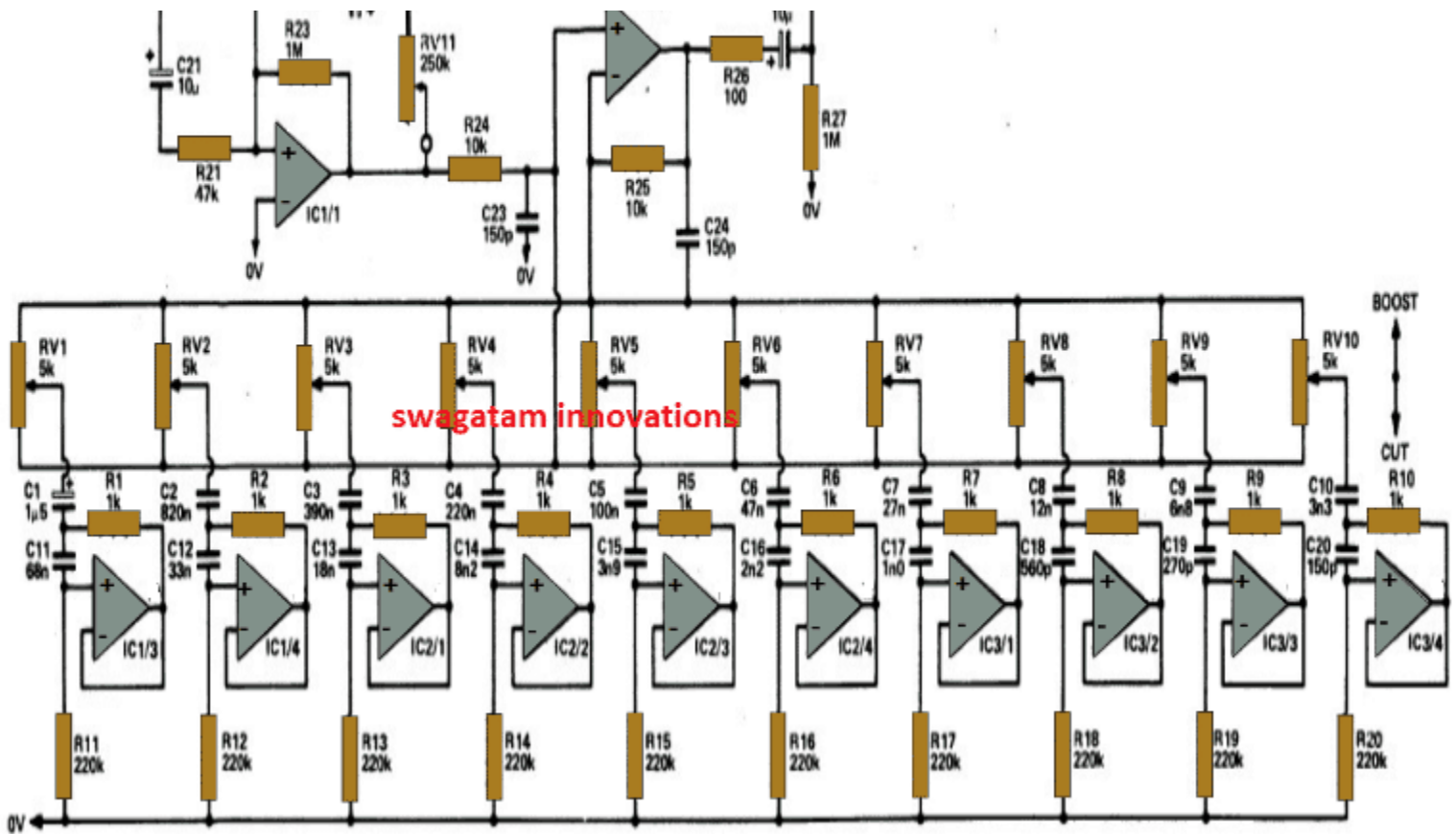
The pots effectively vary the input current to the opamps which results in a change in the value of the above explained "inductance", which in turn results in the required music enhancement in the form of treble cuts or bass boosts.

A connector set with magnets designed to provide quick, secure, hassle-free connections

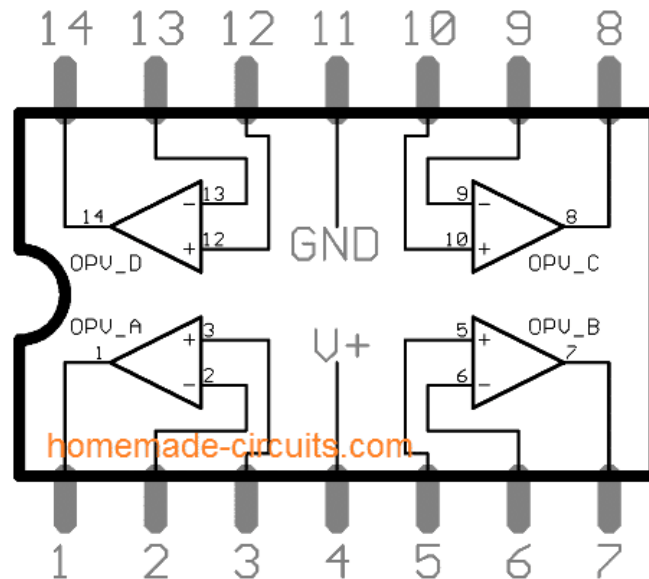
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Circuit Diagram





LM324 IC Pinout Details



Please make sure to connect the pin#4 of the ICs with the (+) DC supply, and the pin#11 with the 0V of the power supply and the circuit 0V line

Parts List

All resistor are 1/4 watt 1%

R1----R10 = 1K

R11---R20 = 220k

R21 = 47K

R22 = 15K

R23, R27 = 1M

R24, R25 = 10K

R26 = 100 ohm

RV1----RV10 = 5K pot

RV11 = 250K pot

All pF and nF capacitors are metallized polyester 50V

C1 = 1.5uF

C2 = 820nF

C3 = 390nF

C4 = 220nF

C5 = 100nF

C6 = 47nF

C7 = 27nF

C8 = 12nF

C9 = 6.8nF

C10 = 3n3

C11 = 68nF

C12 = 33nF

C13 = 18nF

C14 = 8.2nF

C15 = 3.9nF

C16 = 2.2nF

C17 = 1nF

C18 = 560pF

C90 = 270pF

C20 = 150nF

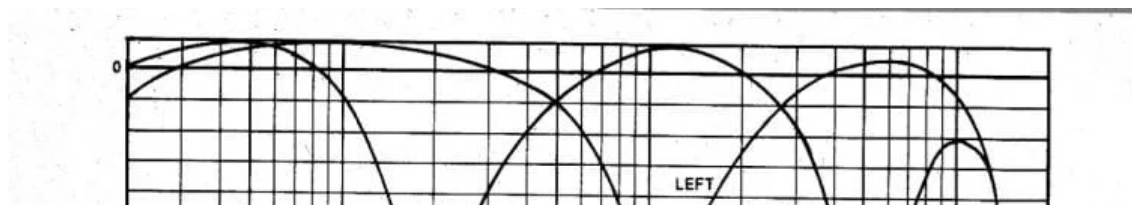
$C20 = 150\mu F$

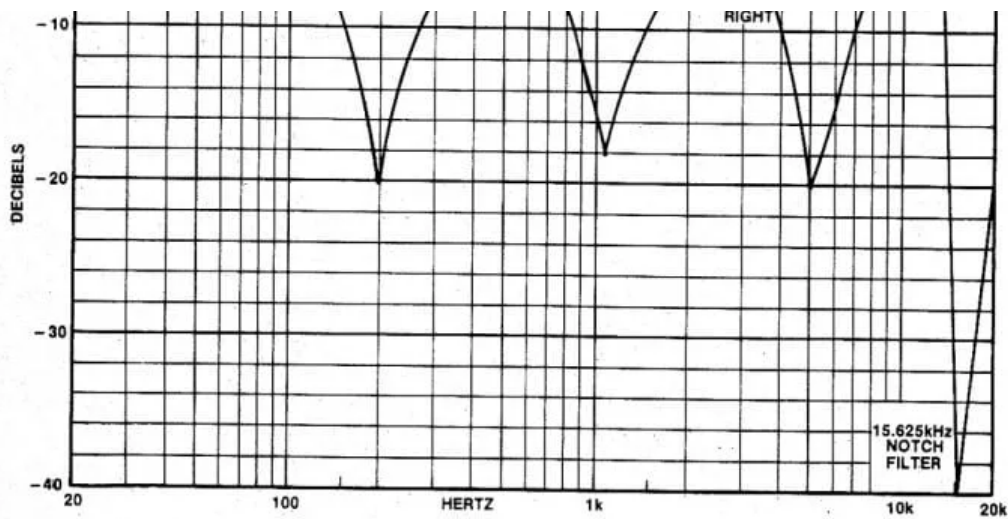
$C21, C22, C25 = 10\mu F/25V$

$C23, C24 = 150pF$

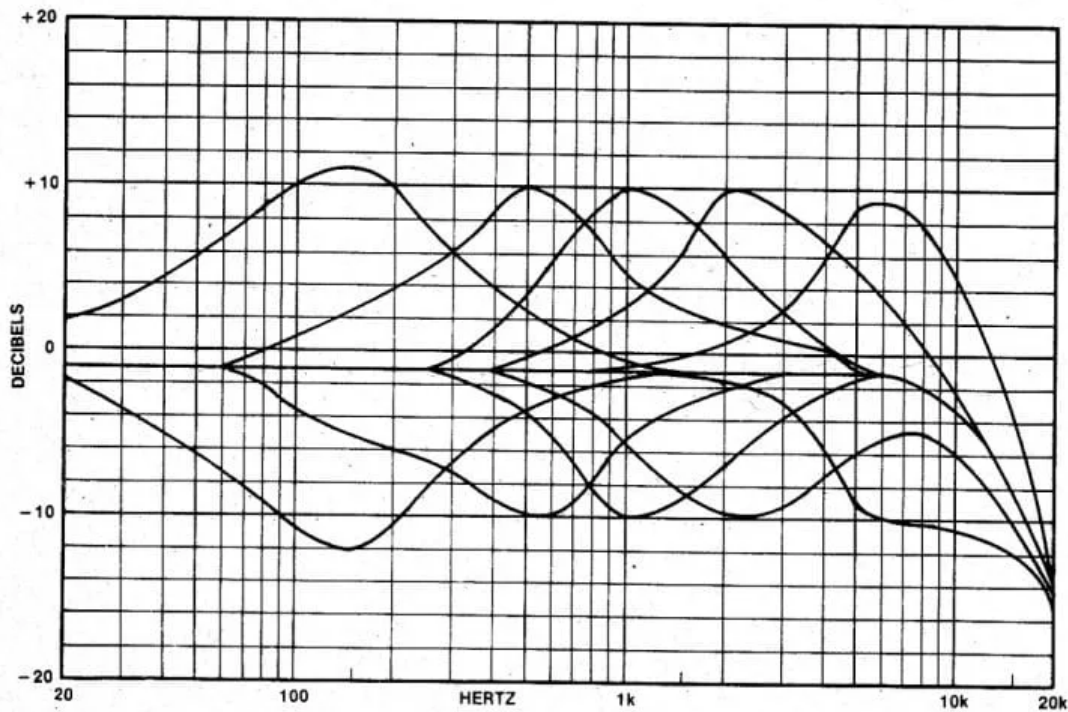
Op amps = 4nos LM324

Response Curve for the above 10 band graphic equalizer design



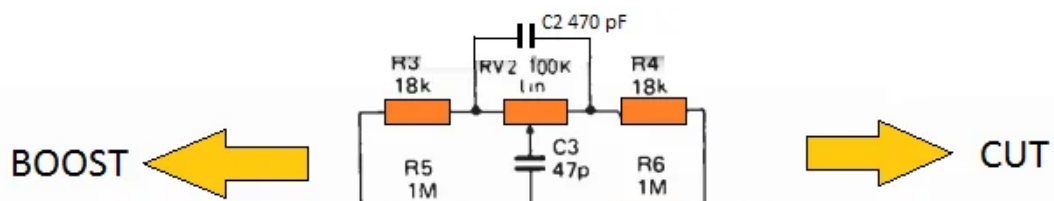


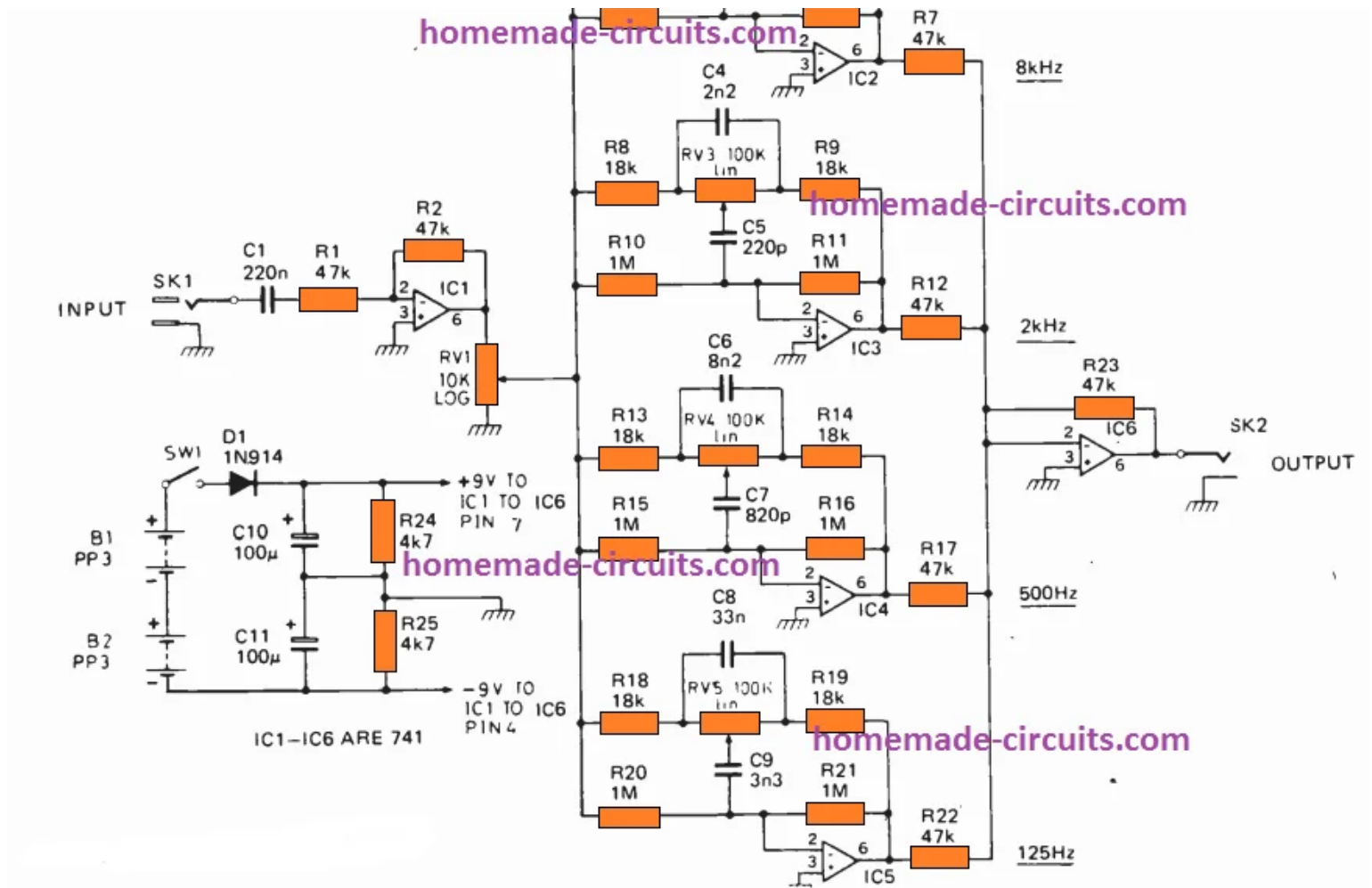
Graph 1: left and right channel response with equaliser controls set flat.



Simplified Version

The simplified version of the above explained graphic equalizer can be witnessed in the following image:





Parts List

RESISTORS all 1/4W, 5%

R1, R2 = 47k

R3, R4 = 18k

R5, R6 = 1M

R7 = 47k

R8, R9 = 18k

R10, R11 = 1M

R12 = 47k

R13, R14 = 18k

R15, R16 = 1M

R17 = 47k

R18, R19 = 18k

$R_{10}, R_{17} = 10k$

$R_{20}, R_{21} = 1M$

$R_{22}, R_{23} = 47k$

$R_{24}, R_{25} = 4k7$

POTENTIOMETERS

RV1 10k log slider pot

RV2, 3, 4, 5 100k linear slider pot

CAPACITORS

$C_1 = 220n$ PPC

$C_2 = 470p$ PPC

$C_3 = 47p$ ceramic

$C_4 = 2n2$ PPC

$C_5 = 220p$ ceramic

$C_6 = 8n2$ PPC

$C_7 = 820p$ ceramic

$C_8 = 33n$ PPC

$C_9 = 3n3$ PPC

$C_{10}, C_{11} = 100\mu$ 25V electrolytic

SEMICONDUCTORS

IC1-IC6 = 741 op amp

D1 = IN914 or 1N4148

MISCELLANEOUS

SW1 spst miniature toggle switch

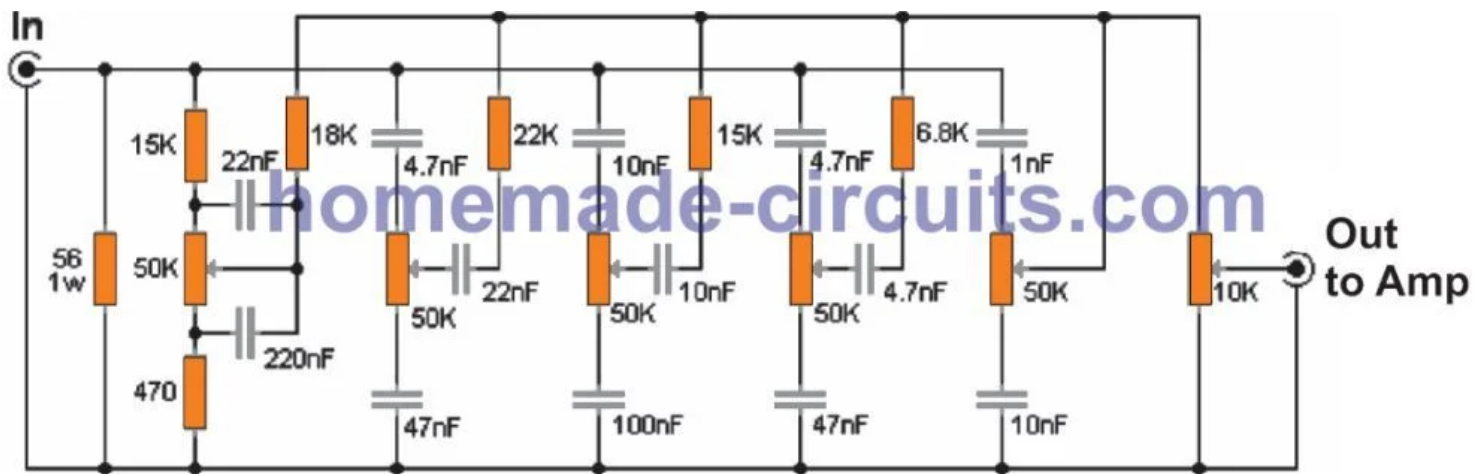
SK1, 2 mono jack sockets

B1, 2 9V 216 batteries

5 Band Passive Equalizer Circuit

A very neat and reasonably efficient 5 band graphic equalizer circuit using only passive components can be built as shown in the following diagram:

Music



As can be seen in the figure above, the 5 band equalizer has five potentiometers for controlling the tone of the input music signal, while the sixth potentiometer is positioned for controlling the volume of the sound output.

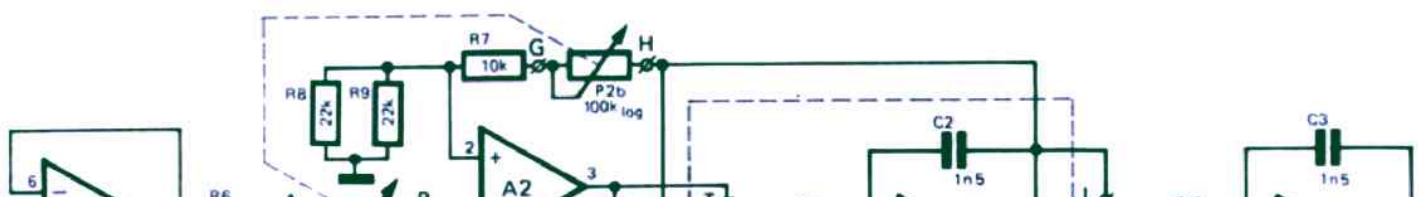
Basically, the shown stages are simple RC filters, which narrow or broaden the frequency passage of the input signal, so that only a certain band of frequency is allowed to pass, depending on the adjustment of the relevant pots.

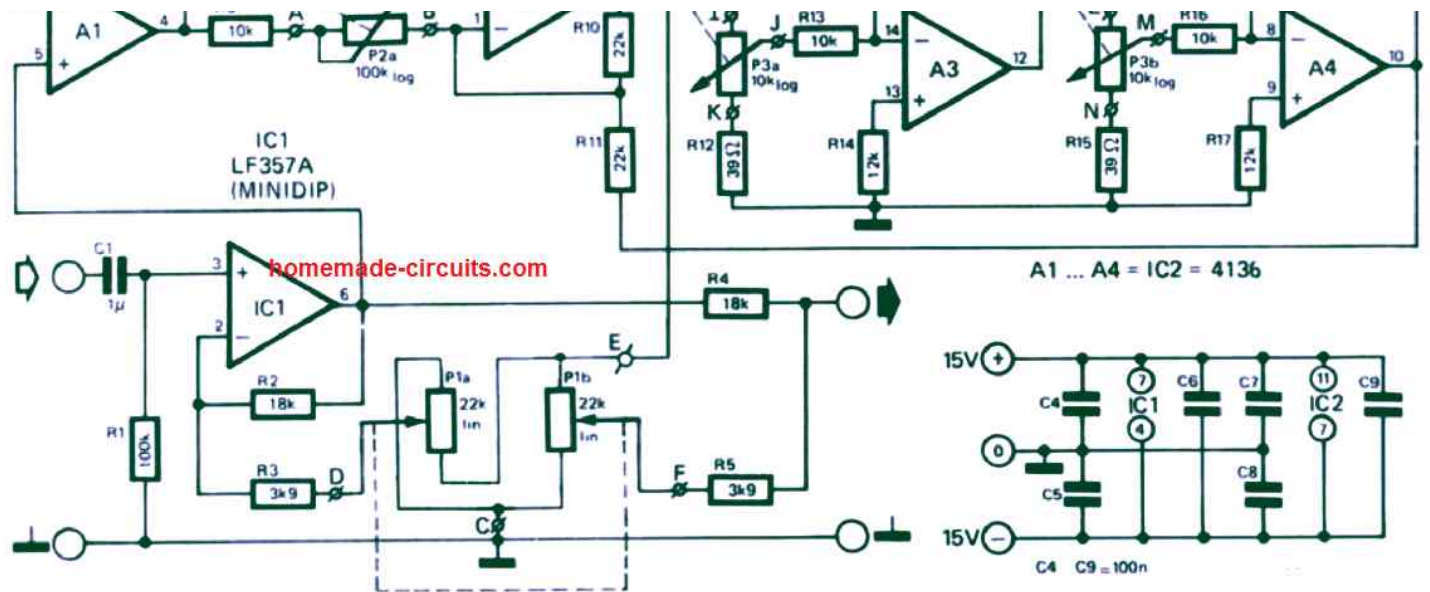
The equalized frequency bands are 60Hz, 240Hz, 1KHz, 4KHz and 16KHz, from left towards right. Lastly followed by the volume control pot control.

Since the design does not use active components this equalizer is able to operate without any supply input. Please note that if this 5 band equalizer is implemented for a stereo or multichannel system, it may become necessary to set up an equalizer in the identical manner for each of the channels.

Parametric Equalizer Circuit for Enhanced Effect

If you are not impressed with the above 10 band graphic equalizer results, then the following simple parametric equalizer circuit (<https://www.homemade-circuits.com/parametric-equalizer-circuit/>) will surely make you feel a lot happier.





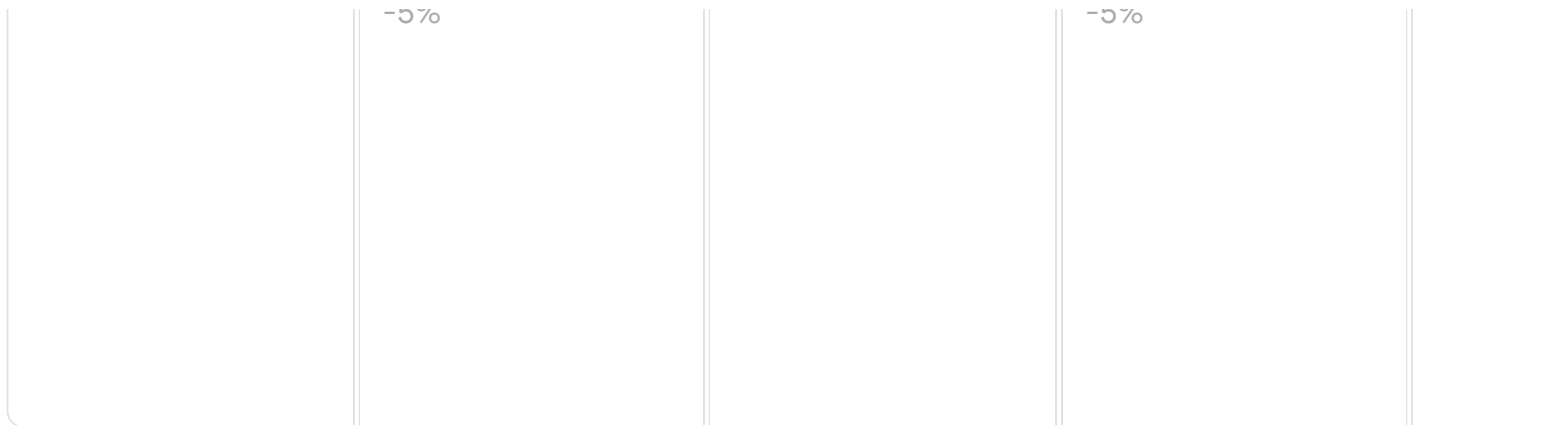
Audio input is sent from left side at the input of C1, while the enhanced equalizer effect is acquired from the right side R4 end which must be connected to the power amplifier.

	-5%		-5%	
--	-----	--	-----	--

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The dotted lines indicate that the relevant potentiometers must be dual type pots, and must move concurrently.

The effect from such parametric equalizers or filter circuit is said to be similar to the effects that we normally get in concert halls, and auditoriums.



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4. Digital Theremin Circuit – Make Music with your Hands (<https://www.homemade-circuits.com/digital-theremin-circuit-make-music-with-your-hands/>)

[mini-circuit-make-music-with-your-hands/](https://www.homemade-circuits.com/build-this-subwoofer-amplifier-circuit-mini-ground-shaker/))

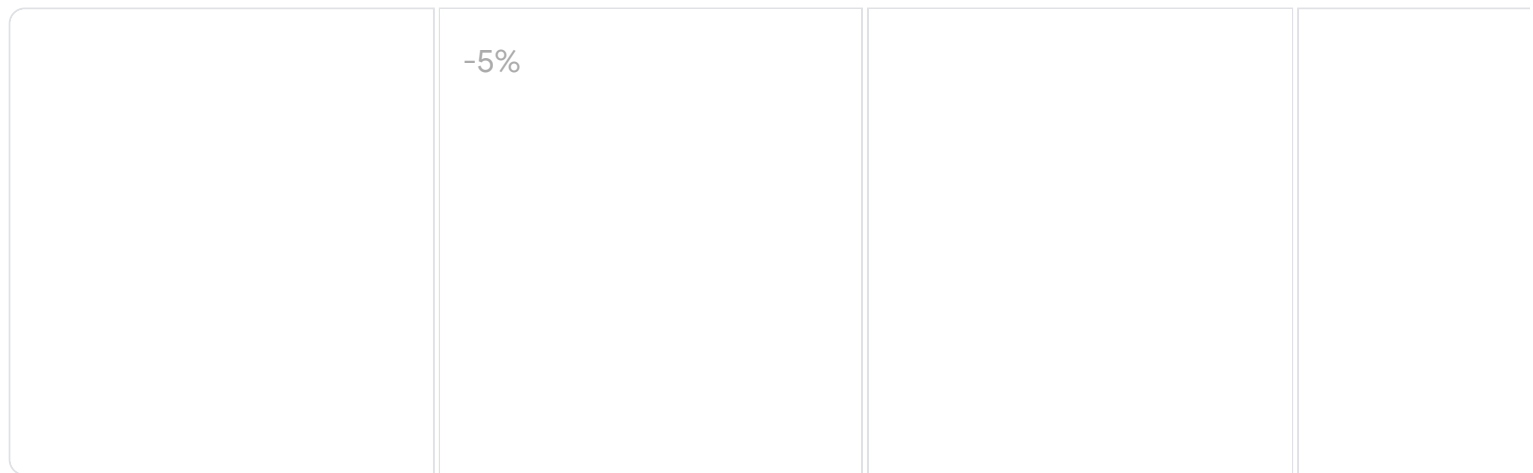
5. Simple Digital Clock using LM8650 IC Circuit (<https://www.homemade-circuits.com/simple-digital-clock-circuit-explained/>)

6. Build this Subwoofer Amplifier Circuit [Mini Ground-Shaker] (<https://www.homemade-circuits.com/build-this-subwoofer-amplifier-circuit-mini-ground-shaker/>)

About Swagatam

I am an electronic engineer (diplETE), hobbyist, inventor, schematic/PCB designer, manufacturer. I am also the founder of the website: <https://www.homemade-circuits.com/>, where I love sharing my innovative circuit ideas and tutorials.

If you have any circuit related query, you may interact through comments, I'll be most happy to help!



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Comments

K K RAVICHANDREN says

August 26, 2022 at 11:12 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-132676>)

Hello Sir i need a stereo 10 band equaliser circuit with pcb layout with good effect if any circuit please guide me

Ravichandren. K K

REPLY

Swagatam says

August 26, 2022 at 5:49 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-132684>)

Hello KK, the circuit presented in the above article will provide a very good equalizer effect. You can create two of these units to fulfill your stereo requirement. However, unfortunately I do not have a PCB layout for this design.

REPLY

Abasifreke Essien says

April 24, 2022 at 3:57 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-119511>)

Hello,

Am abasifreke essien, pls I need help, i wanan be train on circuit designing& circuit analyzing. Thanks. Have gone through the knowledge &experience share in diz platform indeed is a wow.. Though most them in a short while I will understand...

Pls. Accept me!

REPLY

Swagatam says

April 25, 2022 at 9:52 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-119567>)

Hello, Abasifreke welcome to this blog, you can learn by posting comments, asking questions and by building and testing small circuits initially.

REPLY

Gábor says

April 11, 2022 at 9:31 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-118348>)

Hello,

I have found a very good circuit with transistor, what lot of producters like samsung are using. And in there are capacitors also, but I think without any bad compliment what I found is better and requiers much more fewer element, and in this case is not as big on the plate. If you are interested I can send to you and maybe you can help me to say the truth:). Have a nice day!
Gábor

REPLY

Swagatam says

April 12, 2022 at 4:53 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-118382>)

Hi, thank you and I appreciate your offer to provide me the transistor regulator, however I already have many good transistorized regulator circuits in this blog, so it's fine! No problem!

REPLY

Gábor says

April 11, 2022 at 12:17 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-118296>)

I can do the supply for the op amps with an other circuit. I have to use an inverter from what does 30V from auto accu. 12V and after this again regulated to DC. After I use a stabilized voltage tranzistor circuit with the difference that on the B I use a resistor and a capacitor not diode. As I recognised many of the company using this to reduce incomming noise and this also chilling the interferency between the op amps.

Am I thinking good Sir?

Thank you for answer!

Gábor

REPLY

Swagatam says

April 11, 2022 at 9:26 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-118308>)

If your power supply is regulated and has negative positive both supplies, then it is fine you can use it to power the op amp circuits.

REPLY

Gábor says

April 11, 2022 at 4:22 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-118322>)

Hey again!

Well, my question is: I want to supply this circuit from an auto accu. I have to use an inverter for more voltage, a so called stabilised voltage supply at the out what I can plan and implement.

This is just a thing. But, after the inverter I have to use again a AC/DC regulator cuz the opamp is functioning with nearly linear signal. Okay, he does have a tolerance to Frequency depends on producer and type. But I want to be sure this is why I want to implement a transistor circuit what is capable to filter ingoing noise and stabilises the interfequency and Voltage stability between the 5 opamp. <—huh this is my plan. Do I think it good? I recognise that your filter with the many of Capacitors also working on the +15.-15 circuit but I want to do otherwise.<— It is also a way what can be followed?

Thanks for answer, have a nice day. I

REPLY

Swagatam says

April 11, 2022 at 8:36 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-118342>)

Hello, yes you can implement a transistorized voltage regulator. You must also keep the capacitors which are shown in the circuit diagram for proper filtration. The capacitors are required otherwise there may be a chance of noise getting inside the op amp circuit.

REPLY

Gábor says

April 10, 2022 at 3:41 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-118271>)

Sorry, that I have got an other question!

Right from the Out is an other circuit. May it be that this is the voltage support for the opamps? And I just figured out that when this is the voltage support then it may be that it can be do otherwise? Because I have got other ideas to do the 15V voltage and the -15 voltage I mean summa 30V for the opamps function voltage support.

Thanks a lot!

THANKS a lot:

Gábor

REPLY

Swagatam says

April 10, 2022 at 4:42 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-118275>)

Yes the other small circuit at the bottom right shows the supply details for the op amp supply pinouts. You can use voltage from 6V to 15V

REPLY

Gábor says

April 7, 2022 at 8:49 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-118137>)

Dear Sir!

What does it mean the circle with a line in it and a circle with line only on the two side around the circle?

I speak about the last circuit, the enchanted equaliser.

And where comes out the signal here in the same circuit? I mean it is okay that you use a Power equaliser, but where are the out signals? ON C9 Capacitor?

Thank you very much, Gabor

REPLY

Swagatam says

April 8, 2022 at 10:28 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-118152>)

Dear Gabor, please don't worry about the circle with line marking, it only shows a few connections, that you have to make externally. that's all. Out is from the black arrow and the ground line.

REPLY

Suresh Champhekar says

October 30, 2021 at 5:33 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/>)

for/comment-page-2/#comment-103225)

Is it possible to use small directional microphone as input to the equalizer and use it as a hearing aid?

REPLY

Swagatam says

October 30, 2021 at 6:14 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-103230>)

Yes that's possible!

REPLY

yiur william says

April 23, 2021 at 11:00 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-88720>)

Hello sir i'm a student that study engineering electronic from french guiana (IUT de Kourou).

i'm on a first year ! in my school every year we need to make a projet of our choice (i want to make an equalizer) the project will be presented on 11 juin.

on my researches i understood how to change frequency depending of the values (resistor and capacitor) but still don't get it about the LM324. could you help ? and give more explanation in details !!!

REPLY

Swagatam says

April 24, 2021 at 9:15 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-88726>)

Hello Yiu, I do not have any further information about the op amp functioning except what is posted above....but you can search online for op amp gyrators and know more about them and how they are used in filter circuits.

REPLY

yiur william says

April 27, 2021 at 4:32 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-88804>)

Okay, but first of all, for the LM324 component, can we use it to make our 5-band equalizer? because I saw the diagram for the 5-band equalizer there is no LM324!

The 5 frequencies we want to define are:

60hz (low pass filter with an RC circuit)

160hz, 400hz, 1khz (band pass filter with an RLC circuit)

16khz, (high pass filter with an RL circuit).

from the above frequencies do you think we will need the LM324 or not at all?

REPLY

Swagatam says

April 27, 2021 at 5:17 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-88807>)

Passive filter will produce an low quality output with subdued effects, whereas the LM324 or any op amp based filter will give you clearer, and more effective Hi-Fi sound equalization and quality...

REPLY

Michael post says

March 30, 2021 at 1:45 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-88091>)

Sweet thanks, that should be a excellent place to start

REPLY

Michael Post says

March 28, 2021 at 10:45 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-88057>)

Hello there, I'm currently building a head unit for my truck using a Jetson Nano Tea5767 some solid state relays(for windows, locks, possibly a snow plow). I've been knee deep reading The Art of Electronics 2nd Edition. Trying to wrap my head around the math for a passive EQ. Your 5 band passive uses 50K pots and I have 10K sliders I'd like to design a 10 band passive, just curious how to calculate resistor value to capacitor for a given Hz. Then from there I'm going to adjust fade and balance at my pre-amplifier planning on using NE5532 a I2C multiplexer and I2C digital pots for balance, and fade.

REPLY

Swagatam says

March 29, 2021 at 9:49 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/>)

for/comment-page-2/#comment-88066)

Hi, I do not have the calculations for passive filters, after some researching I could find the following article, which seems to have some in-depth information regarding the subject, you can check out the link here:

http://education.lenaraudio.com/en/06_x-over_2.html (http://education.lenaraudio.com/en/06_x-over_2.html)

REPLY

nk says

March 6, 2021 at 10:03 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-87596>)

Nice!! Building this in KiCad right now. Curious, what are the primary functions for blocks for IC1/1 and IC1/2? Looks like you're doing some buffering/filtering?

REPLY

Swagatam says

March 6, 2021 at 8:43 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-87610>)

Yes, those are basically for preamplification and buffer together...

REPLY

Azade says

January 8, 2021 at 12:51 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-85974>)

thank you

What kind of capacitor is c1? I put the C1 capacitor electrolytic, with a capacity of 2.2 microfarads, is there a problem?

What is the circle on volume 250K?

REPLY

Swagatam says

January 8, 2021 at 6:05 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/>)

for/comment-page-2/#comment-85979)

You can see the symbol, it shows an electrolytic cap. 2.2uF will also work...the circle is nothing, just a connecting point.

REPLY

azade says

January 8, 2021 at 4:22 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-85957>)

Hi . Has this circuit been tested in practice? I connected the circuit to the first six bands. But the output is very low and has noise.

I used MKT capacitor. Is this the reason for my problem?

Will the problem be solved if I assemble the circuit to the end?

I used wire to connect the volume. Is this a problem?

If I did not receive an answer from this circuit. I try the last circuit that is without power.

Finally, if you have any advice to improve the output, please

REPLY

Swagatam says

January 8, 2021 at 9:20 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-85964>)

It is 100% tested, for me worked extremely well. All types of capacitors will work for this project....nothing's critical in the circuit, except the connections, which should be exactly as indicated..

REPLY

wesky says

November 11, 2020 at 8:30 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-84311>)

Hi,Swagatam,

About "5 Band Passive Equalizer Circuit":

How to calculate the frequency? For these frequencies, I calculated based on the above components, and the value obtained is far from the nominal value.Please give a few examples this Circuit.thanks.

REPLY

Swagatam says

November 11, 2020 at 11:16 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-84318>)

Hi Wesky, which formula did you use, RC filter formula?

REPLY

wesky says

November 17, 2020 at 3:33 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-84523>)

Hi,
I'm used basic calculation circuit: " $f=1/(2\pi RC)$ ", for example: (about "5 Band Passive Equalizer Circuit"-240Hz) 22nf, 22k, calculation value: 329hz, for example: (about "5 Band Passive Equalizer Circuit"-60Hz), calculation?

REPLY

Swagatam says

November 17, 2020 at 8:07 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-84537>)

Hi, but the equalizer involves quite a few resistors and capacitors, so applying the above formula can be tricky, or may be the various RCs will have to be solved in steps.

REPLY

riad nassar says

October 19, 2020 at 3:22 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-83685>)

Hi and thanks so much for the circuit. I'm just wondering what is the wattage of the resistors with the passive eq? Are they all 1w like the 56 ohm one? also, what is the tolerance? I'm new to electronics so I guess I'm asking rather obvious stuff... Thanks again for the circuits, it's brilliant!

REPLY

REPLY

Swagatam says

October 19, 2020 at 12:08 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-83689>)

You are welcome, resistor tolerance indicate the maximum voltage and current it can withstand before getting hot and burning.

Whenever the wattage of a resistor is not given, you can assume it to be 1/4 watt 5% rated.

REPLY

riad says

October 19, 2020 at 4:27 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-83699>)

Perfect, thanks again 😊

REPLY

AntonyMan says

September 7, 2020 at 11:13 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-82067>)

Ideally, based on “5 Band Passive Equalizer Circuit”, I would like to build a 5-6 band EQ which each have adjustable “Q” and adjustable band frequency. (I want to use it as EQ for guitar-Bass instrument)

1) Can I make an adjust somehow of the “Q” in the Circuit”? If yes, how?

2) Can I use variable frequency bands tuned by each separate band pot,

or

how to calculate new “default” bands? *instead of default 60, 240, 1k, 4k, 16kHz, maybe, for example, I need to use 60, 120, 300, 650, 1.5k Hz (How to calculate band Hz?)

Sorry for my English and

Thanks in advance.

REPLY

Swagatam says

September 8, 2020 at 2:35 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-82081>)

Not sure how Q factor can be controlled or calculated. The default bands could be calculated through the formula as explained in the article.

REPLY

Hogan says

September 3, 2020 at 4:21 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-81923>)

Hello! I'm wanting to mod my Boss GE-7, but I can't figure out how to calculate what frequency will be affected. Then, I will be able to adjust what frequencies are being affected. Would you be able to look and tell me either what needs to be changed to obtain the frequencies below or give me an equation of some sort to get the frequency I'm looking for! Thanks.

100 -> 400

200 -> 800

400 -> 1.2k

800 -> 1.6k

1.6k -> 2k

3.2k -> 2.5k

6.4k -> 4k

REPLY

Swagatam says

September 3, 2020 at 5:56 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-81947>)

Hello, I have not yet used this device, so it can be difficult for me to solve your query.

REPLY

Emrys Jones says

August 26, 2020 at 6:36 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-81728>)

The LM324 is quite a high voltage chip. Can you suggest a 5v alternative?

Yes, 5v because that's what comes out of USB, and that's what fits in easily these days. I could use a step up to get 30v, but I would rather not.

REPLY

REPLY

Swagatam says

August 27, 2020 at 12:25 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-81737>)

LM324 will work with 5 V also.

REPLY

 Avocado says

August 18, 2020 at 2:27 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-81466>)

Do you know any formula to calculate the quality factor of the gyrators without measuring any parameters?


REPLY

Swagatam says

August 18, 2020 at 6:37 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-81476>)

Sorry not sure about it at this moment, will need to research it.

REPLY

 Avocado says

August 19, 2020 at 10:55 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-81500>)

No probs sir

REPLY

Dotty says

August 19, 2020 at 10:57 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-81501>)

Sir, which simulator would you prefer; LTspice or Multisim?

REPLY

Swagatam says

August 19, 2020 at 12:13 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-81504>)

Both are good, depends which is better equipped for a given schematic.

REPLY

Kenneth Fox says

August 19, 2020 at 5:57 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-81510>)

Personally, I've found Circuit Lab to be better than either

REPLY

Max says

June 10, 2020 at 2:15 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-79334>)

Hello,

I know you posted the type of capacitors used, metalized polyester, 50VDC. This is probably a dumb question, can any non-polarized capacitor be used like ceramic or other film? Also do the capacitors need to be 50VDC or will any capacitor rated 50 or above work? (Just referring to the non-polarized capacitors.)

Thank you for taking the time to help

REPLY

Swagatam says

June 10, 2020 at 11:08 am (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-79347>)

Hi, yes they can be used as long as they are of standard quality and from good manufacturers. As a rule of thumb the capacitor voltage must be 2 times more than the supply voltage used for the circuit, higher value than this will only enhance the safety of the capacitor, and will have no effect in their normal working.

REPLY

Binod Thakur says

August 14, 2020 at 2:01 pm (<https://www.homemade-circuits.com/10-band-graphic-equalizer-circuit-for/comment-page-2/#comment-81338>)

Sir, how did you stimulate this? With LTspice?

REPLY

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