

Ease of build	Easy
-partscount	Low
-density	Medium
Parts sourcing	Advanced
Enclosure fitting	Easy
Debugging level	Easy

# 5-band graphic EQ V1.3b

## Overview

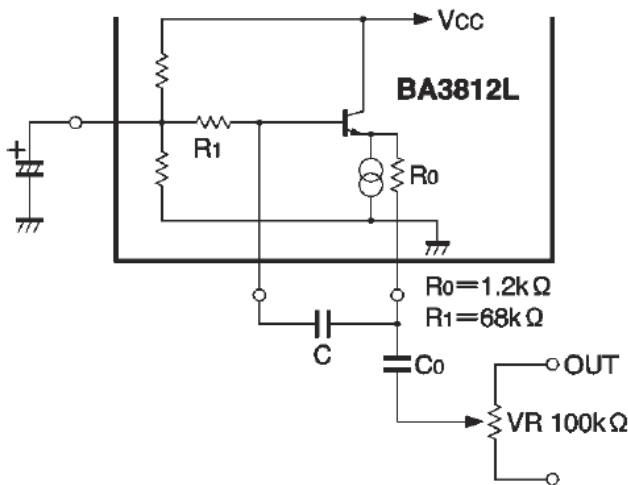
This circuit features a special application chip to allow a slimline 5-Band EQ with +/-12dB in each band.

## General

The chip does allow you to calc your own cap values to really build an equalizer with the frequency bands where you need them.

You also can chain multiple of those boards to set up more than the initial five frequency bands.

Using the below formulas will allow you to define Q and frequency of each frequency band:



$$Q = \sqrt{\frac{CR_1}{C_0 R_0}}$$

$$f_0 \text{ (Hz)} = \frac{1}{2\pi\sqrt{R_0 R_1 C C_0}} \quad (\text{R: } \Omega, \text{ C: F})$$

Common values:

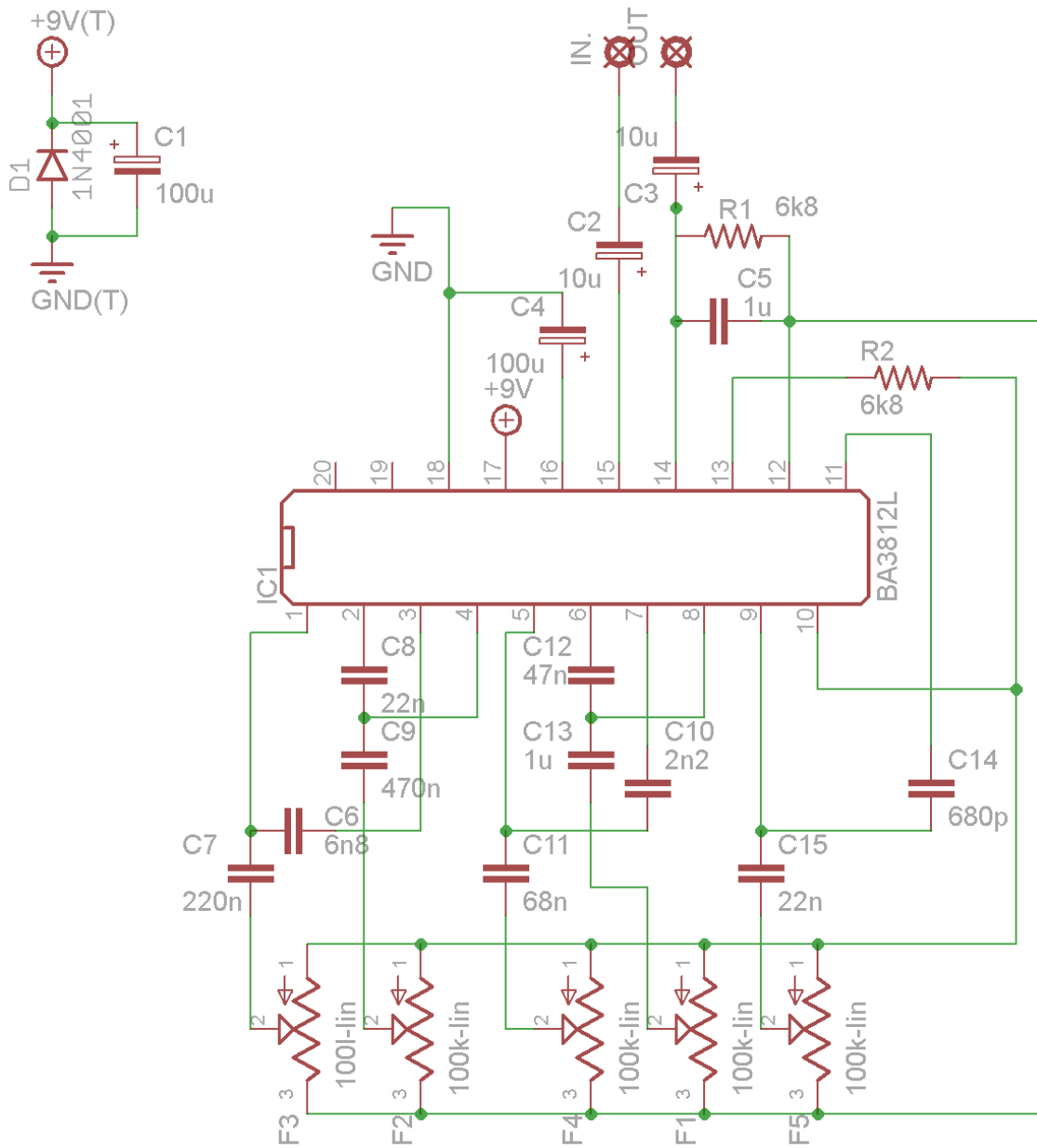
	100Hz	300Hz	1kHz	3kHz	10kHz
C0	1u	330n	100n	33n	10n
C	27n	8n2	2n7	820p	270p

A 10-band EQ might look like this:

	70Hz	100Hz	180Hz	300Hz	700Hz	1,1kHz	1,7kHz	3kHz	4,5kHz	10kHz
C0	1u	1u	470n	330n	150n	100n	47n	33n	22n	10n
C	68n	27n	22n	8n2	4n7	2n7	2n2	820p	680p	270p

Please note that the frequency bands in the schematic are not in any order. So if you want F1 to be 100Hz you need to use 1uF for C13 and 27n for C12.

Schematic

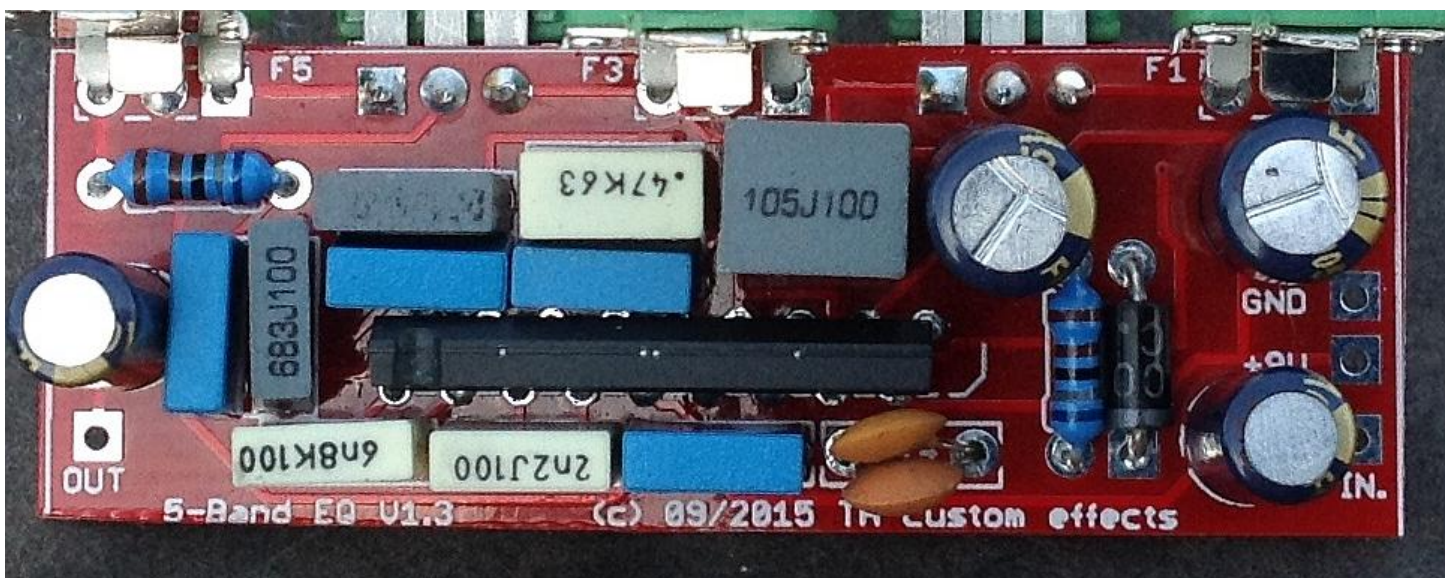
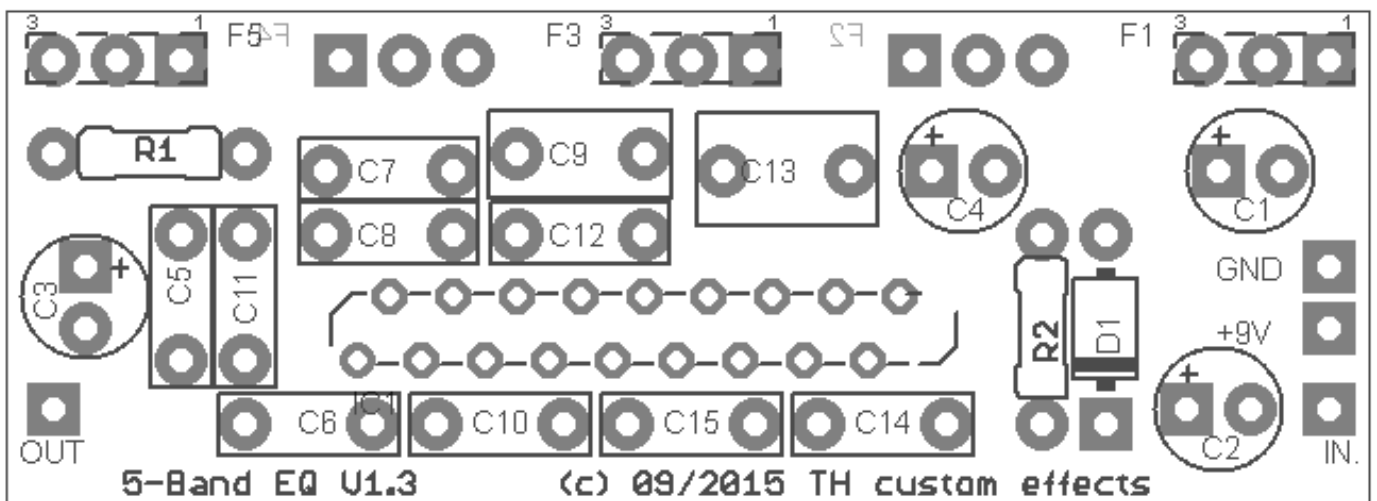


## Bill of Materials

	Device#	Qty	Value	Comment
<b>Resistors</b>	R1, R2	2	6k8	
<b>Capacitors</b>	C1,C4	2	100u	polarized electro
	C2,C3	2	10u	polarized electro
	C5	1	1n	box cap
<b>F1</b>	C13,C12		1u/27n	100Hz
<b>F2</b>	C9,C8		330n/8n2	300Hz
<b>F3</b>	C7,C6		100n/2n7	1kHz
<b>F4</b>	C11,C10		33n/820p	3kHz
<b>F5</b>	C15,C14		10n/270p	10kHz
<b>Pots</b>	F1-F5	5	100k-lin	9mm Alpha
<b>Diodes</b>	D1	1	1n4001	
<b>ICs</b>	IC1	1	BA3812L	

## Building

Start populating resistors and diode first, then the IC and capacitors. Use low profile electrolytic caps to reduce build height. Pin 1 of the SIL IC is at the left hand side.

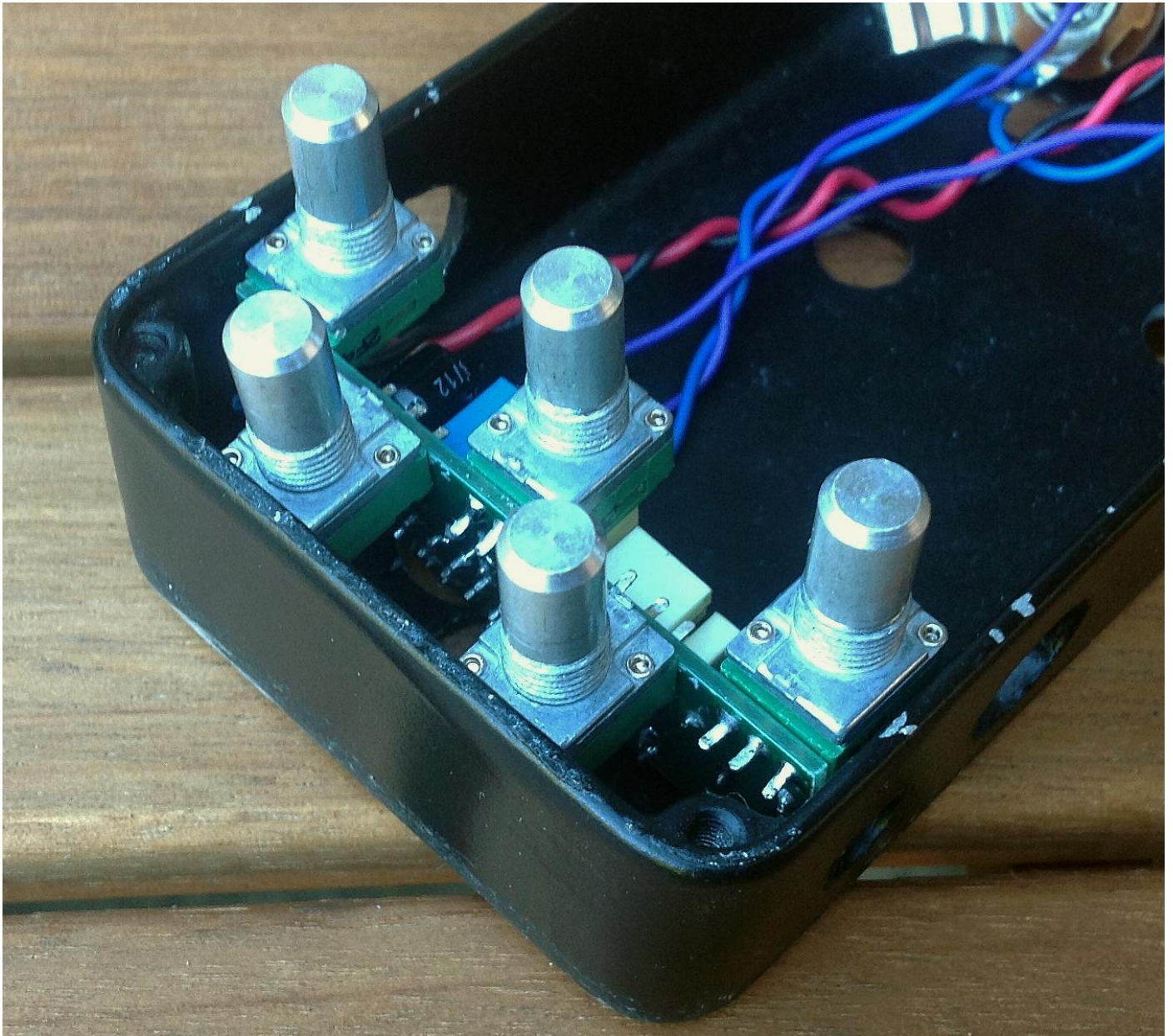




## Finally

You now have made a very universal circuit which can be used in many ways and applications.

This picture shows how it fits in a 1590B enclosure:



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