

nonlinearcircuits

I CAN'T BELIEVE IT'S NOT A VCO build & BOM

This module is based on ideas presented in Electronotes #132. It is a VCF with a 'filter exciter' section to allow a wide variety of acoustic, semi-acoustic and not-acoustic-at-all sounds. In a sense it takes the concept of pinging the LPG or ringing a VCF one step (or 2) further. The decaying sound is fed back into the input via a VCA. The VCA can be controlled by a gate or an envelope (or both).

Another interesting point is higher frequency sounds tend to be louder.....which is what happens naturally in the big room.

Also, please note the pots go on the side of the PCB that has the pot symbol screenprinted, this is different to previous NLC PCBs.....just look at the pictures, if you have time and it isn't too much trouble.

USE

VCO mode:

- Nothing in VCF input.
- Patch a gate into GATE and/or an envelope or other CV signal into ENV
- Patch CV into 1V/O or CV to control frequency.
- Use the BAND, LOW or OUT to get signals. BAND and LOW are basically sine. OUT has had some waveshaping so has a little bit more timbre to it.
- Use the ATT, DECAY and RESPONSE pots to shape the sounds.

VCF mode:

- Patch an audio signal into VCF
- The ENV and GATE inputs are now switched out of the circuit, so do not patch anything into them. The RESPONSE pot is also switched out
- Patch CV into CV and/or 1V/O to control cut-off and tweak the FREQ, FINE, CV and DECAY/Q pots as desired
- The ATT/VCF pot sets the level of the input signal. when turned up high, it is quite hot allowing a rougher, distorted signal from the outputs.



BOM – The Tayda part numbers are given as examples, feel free to buy from your favorite retailer if you prefer.

VALUE	QUANTITY	DETAILS
10pF	2	0805
470pF	2	0805
10nF	2	0805
22n	1	0805
100nF (104)	2	0805
1uF	1	0805
10µF	2	0805 OR 1206 25v rating or higher
22R	2	0805
100R	2	0805
1k	5	0805
1k tempco	1	thru hole, see notes
2k	1	0805
10k	8	0805
15k	2	0805
22k	2	0805
30k	1	0805
47k	2	0805
56k	1	0805
91k	1	0805
100k	14	0805
150k	1	0805
220k	1	0805
1M	1	0805
2M2	2	0805
5M6	1	0805
TL074 or TL084	1	soic Tayda: A-1137
LL4148 diodes	12	SOD-80 Tayda: A-1213
5V1 zener diode	1	SOD-80 or similar. Mouser: 863-MM3Z5V1ST1G OR 78-BZT55C5V1
LM13700M	2	Soic Mouser: 926-LM13700MX/NOPB
TL072 or TL082	3	Soic Tayda: A-1139
BC847	2	SOT-23 Tayda: A-1339
BCM857DS	1	SOT23-6 or SOT457 Mouser: 771-BCM857DS-T/R
BC857	1	SOT-23 Tayda: A-1345
20k trimpot	1	Tayda: A-592
100k trimpot	2	Tayda: A-587
100k (B) pot	5	Tayda: A-1848
1M (A or B) pot	1	Tayda: A-1882
Eurorack 10 pin power connector	1	Tayda: A-198 cut to size
Schottky, power rectifier or 10R, optional - for reverse voltage protection...or not	2	SMD, Schottky (best option) or standard power rectifier diode 50-600V 1A or more, dot on PCB indicates CATHODE (stripe on component) Or use a resettable fuse or just a 10R. SEE NOTES #1
3.5MM SOCKET Kobiconn style	8	Tayda: A-865 or preferably get Thonkiconn Jacks (PJ301M-12) from Thonk, Synthcube or Modular Addict
10 Pin 2.54mm Single Row Pin Header Strip	2	Tayda: A-197 (cut to size)
10 Pin 2.54mm Single Row Female Pin Header	2	Tayda: A-1306
11mm m3 stand-off	1	Or use 2 cable-ties (see pics)

Additional notes:

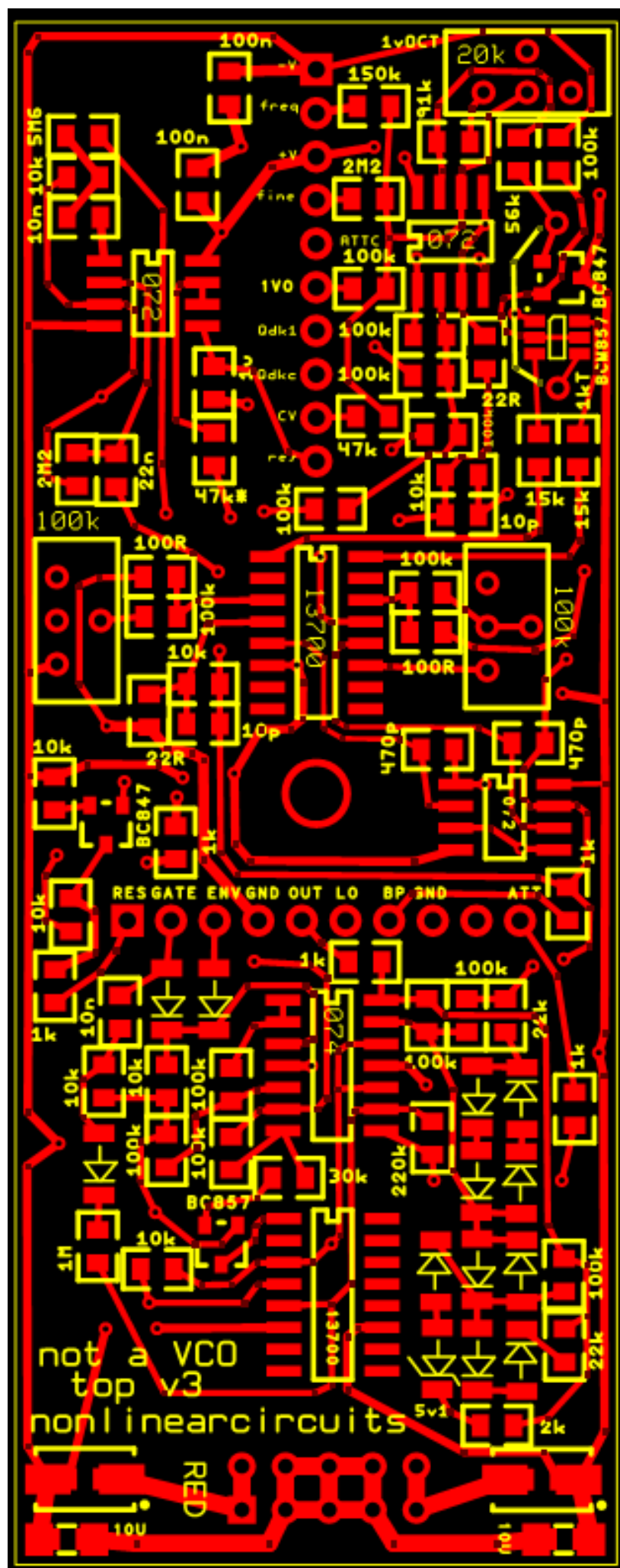
1. Some power diodes: PMEG2005EGWX SCHOTTKY RECT, AEC-Q101, 20V, SOD-123, PMEG2005EH DIODE, SCHOTTKY, 0.5A, 20V, 1N400x or S1JL or similar
2. The resistors, caps and transistors are cheapest from Tayda. Diodes from Mouser/E14/Farnell/etc.
3. Join the Nonlinearcircuits Builders Guild on FB: <https://www.facebook.com/groups/174583056349286/> and ask questions there if you have any. If you prefer not to FB then email is fine.
4. If you don't have 22R in stock, solder two 47R on top of each other (in parallel)
5. 1k tempco: place over BCM857 and BC847. Akaneohm 1% 3300ppm from Thonk, Synthcube or Modular Addict. Use a regular 1k if you don't care much about 1V/oct tuning.

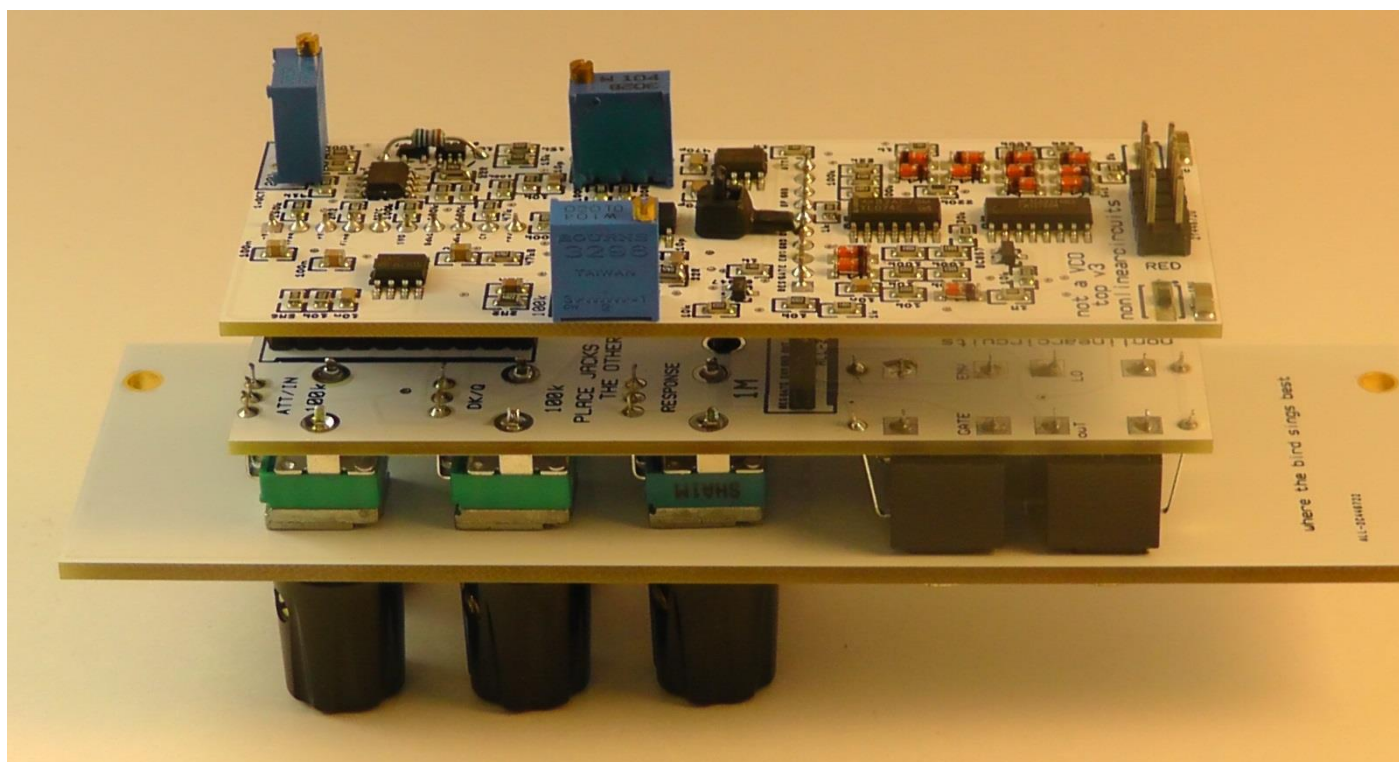
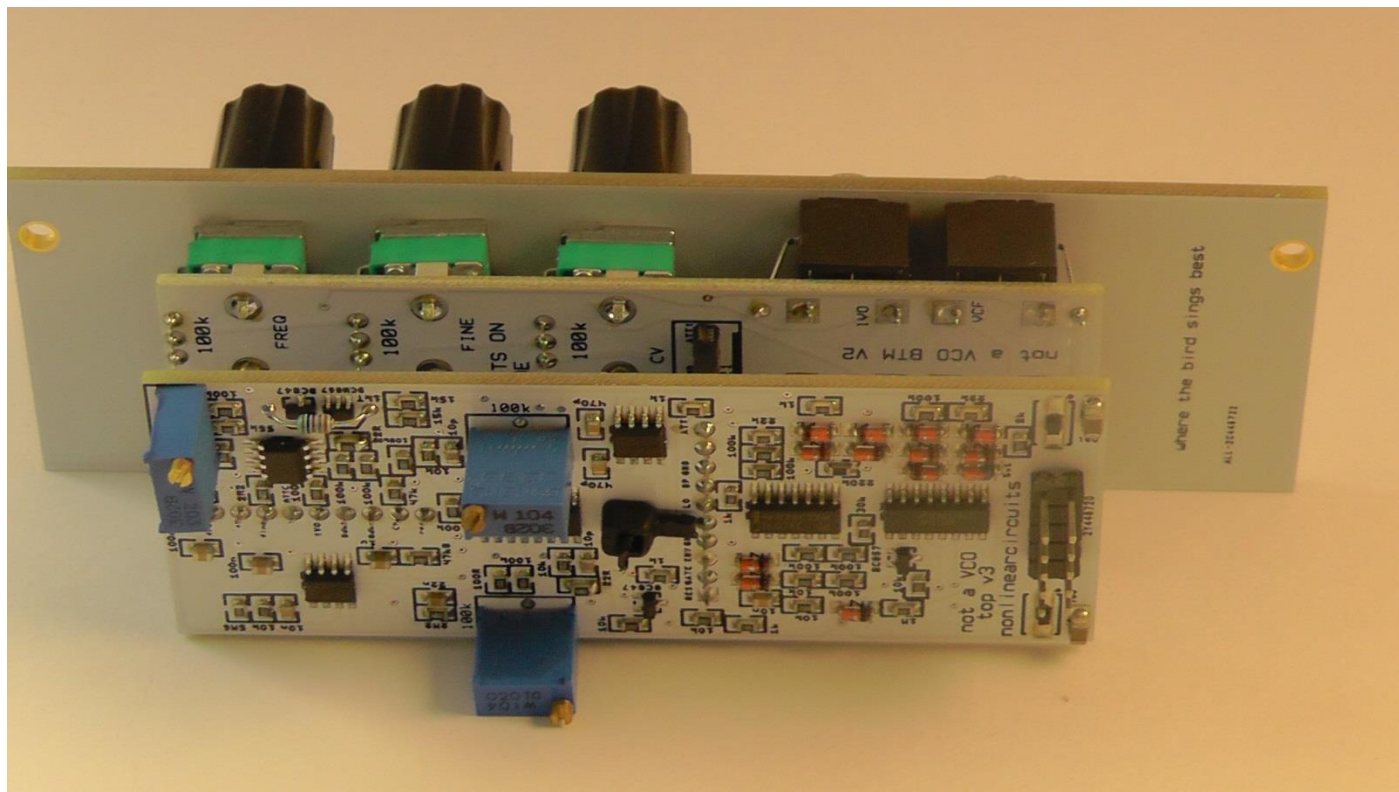
Setting up:

Check the module is working as expected. Use your favourite method to adjust the 20k trimpot for 1V/oct tuning. Google for some ways to do this, everybody has their preferred method.

With nothing on the inputs, use a scope or multimeter in DC voltage mode to measure the BAND and LOW outputs. Adjust the 100k trimpots so both outputs measure 0V. Looking at the back of the module, the right side trimpot is for BAND, left side for LOW.

voila!







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FREQ



ATT/VCF



FINE



DECAY/Q



CV



RESPONSE



1V/O

CV

ENV

GATE

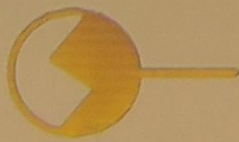


VCF

BAND

LOW

OUT



NLC