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SHAT-NOIR PHASER build & BOM

The core of the Shat-noir phaser is based on classic LDR based phaser designs, notably the Carlin, Compact Phasing A, Morely Phaser and ADA final Phase.

The CV drive is an anti-log circuit, it works a little differently as both the CV and phase pots must be adjusted to find the sweet spots. If one of these pots is at zero, the other will not have any effect.

The In2 pot is 0 at centre, the incoming signal is inverted below that. it is intended as a feedback input for one of the stage outputs, but shove in whatever you want of course.

Please note the build pictures below when constructing to make the box fairly light-proof. A little bit of leakage does not seem to matter much but you could add a bit of black silastic sealant around the edges if you really want to. When soldering the connector pins, use the SIP connectors, jumped across 1 or 2 pins (see pics) to ensure they are nicely perpendicular to the PCB. When soldering the PCB to PCB connectors, I press lightly on the PCB to help keep the connectors tight against the board.

The PCBs are 2mm thick with black soldermask to prevent light getting in.

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……I try to conform, its hard, really hard. Anyway look at the pics to make sure.

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

VALUE	QUANTITY	DETAILS
33pF	1	0805
330pF	1	0805
10nF	8	0805 – see notes #5
100nF (104)	2	0805
1µF	2	0805
10µF	4	0805 25V rating or higher – see notes #1
47R	3	0805
100R	1	0805 – see notes #6
1k	4	0805
22k	17	0805
39k	2	0805
100k	12	0805
200k	2	0805
470k	2	0805
1M	3	0805
LL4148 diodes	3	size: SOD-80, mini MELF, LL34, DO-213AA ……they are all same
LM348	3	soic
TL074	1	soic
1M trimpot	2	
GL5516 LDR	8	get them on ebay cheap. THESE GO ON THE BOTTOM OF THE UPPER PCB
LED	1	3mm or 5mm, diffused Red, green or yellow. THIS GOES ON THE BOTTOM OF THE UPPER PCB
100k pot	6	Tayda: A-1848
Eurorack 10 pin power connector	1	Tayda: A-198
Schottky, power rectifier or 10R, optional - for reverse voltage protection	2	SMD, Schottky (best option) or standard power rectifier diode 50-600V 1A or more, dot on PCB indicates CATHODE (stripe on component) SEE NOTES #2
3.5MM SOCKET Kobiconn style	8	Tayda: A-865 or preferably get Thonkiconn Jacks (PJ301M-12) from Thonk or Modular Addict
10 Pin 2.54mm Single Row Pin Header Strip	5	Tayda: A-197 (cut to size)
10 Pin 2.54mm Single Row Female Pin Header	5	Tayda: A-1306

Additional notes:

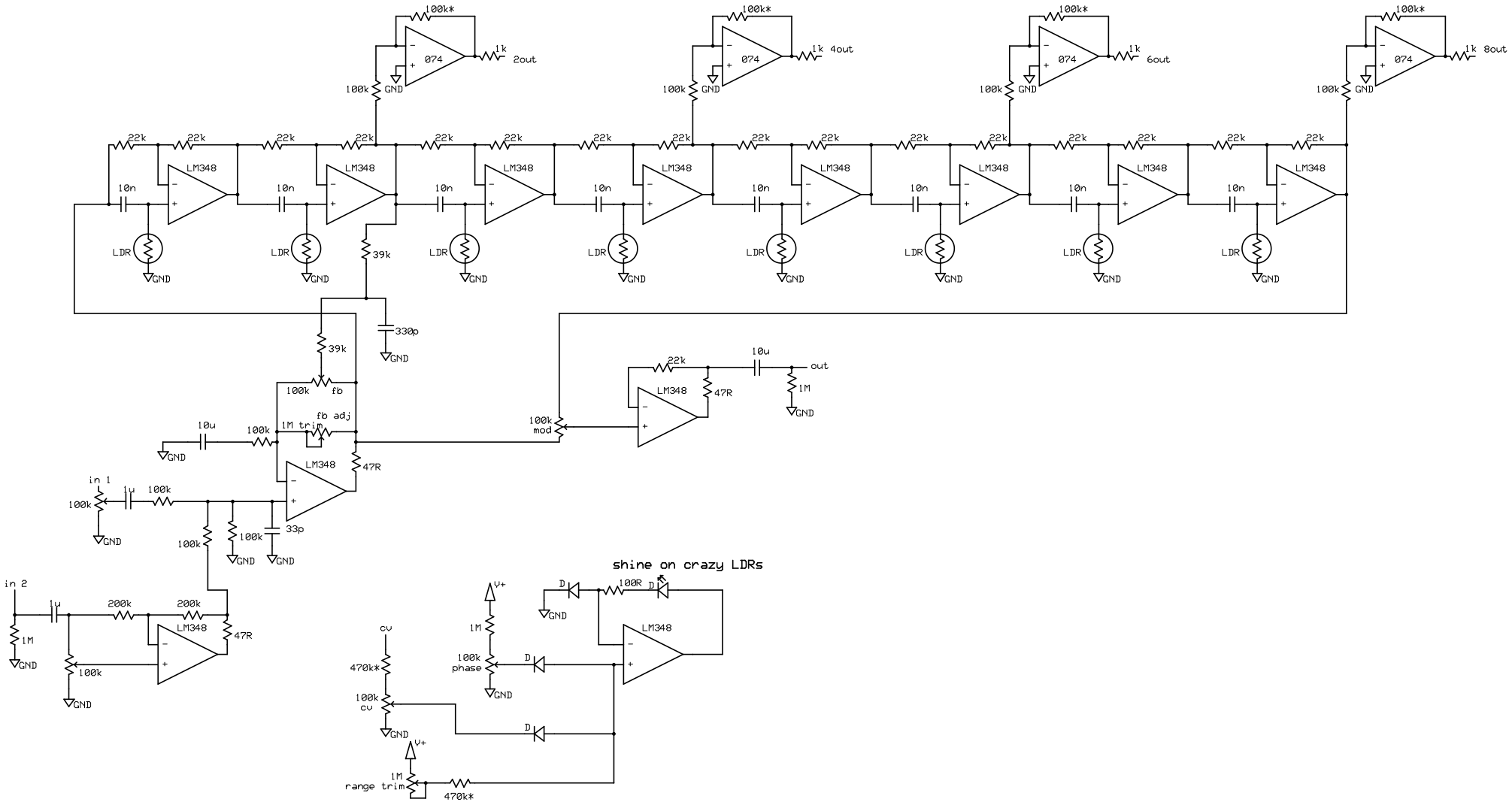
1. The prices for these 10uF 0805 capacitors drops to approx. 10c each when buying more than 10….and you should always get plenty of spares, it is easy to drop and lose smd parts. Mouser No: 81-GRM21BR61E106KA3L (or similar) It can be hard to find them from regular retailers these days, try ebay, search “10uF 0805 25V”. The 10uF caps near the power connector can be 2mm spacing electro 25V or higher **OR** 10uF 0805, no need to install both, but no prob if you do.
2. **Some power diodes: PMEG2005EGWX SCHOTTKY RECT, AEC-Q101, 20V, SOD-123, PMEG2005EH DIODE, SCHOTTKY, 0.5A, 20V, 1N400x or S1JL or similar**
3. The resistors, caps and transistors are cheapest from Tayda. Diodes and smd transistors from Mouser.
4. **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.**

5. If not using GL5516 LDRs you may need to adjust the caps to suit. GL5516's on-resistance is approx. 5k at 10 LUx, if your LDR is higher, use a lower value cap, say 4n7. If your LDR goes lower try a higher value cap, say 15nF-22nF
6. The 100R is part of the LED driver circuit; it should be considered the minimum value resistor to use. Feel free to experiment depending upon your LED, if you use a superbright increase the value. I have tried 1k, 4k7 and 10k with a superbright, I felt 10k was too much but 1k-4k7 were fine

Setup and Use

The 1M feedback trimpotpot should be set so the circuit just starts to scream when the panel pot is at max. This can vary a lot depending upon the signal source and its frequency. Best to leave it in the middle to start and adjust if your module is too squealy.
The 1M range trimpot sets the operating range for the CV and Phase panel pots. Again leave it in the middle to start and adjust if you find the panel pot operating range is too narrow or wide. You may need to adjust the 470k* resistor sitting next to the trimpot as well. Generally it is happy about in the middle.

LDR: GL5516
adjust 10n to suit (15n-33nF), if using different type
LED should be green/yellow/red/orange, 3mm diffused superbright is nice
but feel free to experiment



Core based on Compact Phasing 'A', ADA Final Phase and Morley Phaser
CV section is a nice anti-log LED driver

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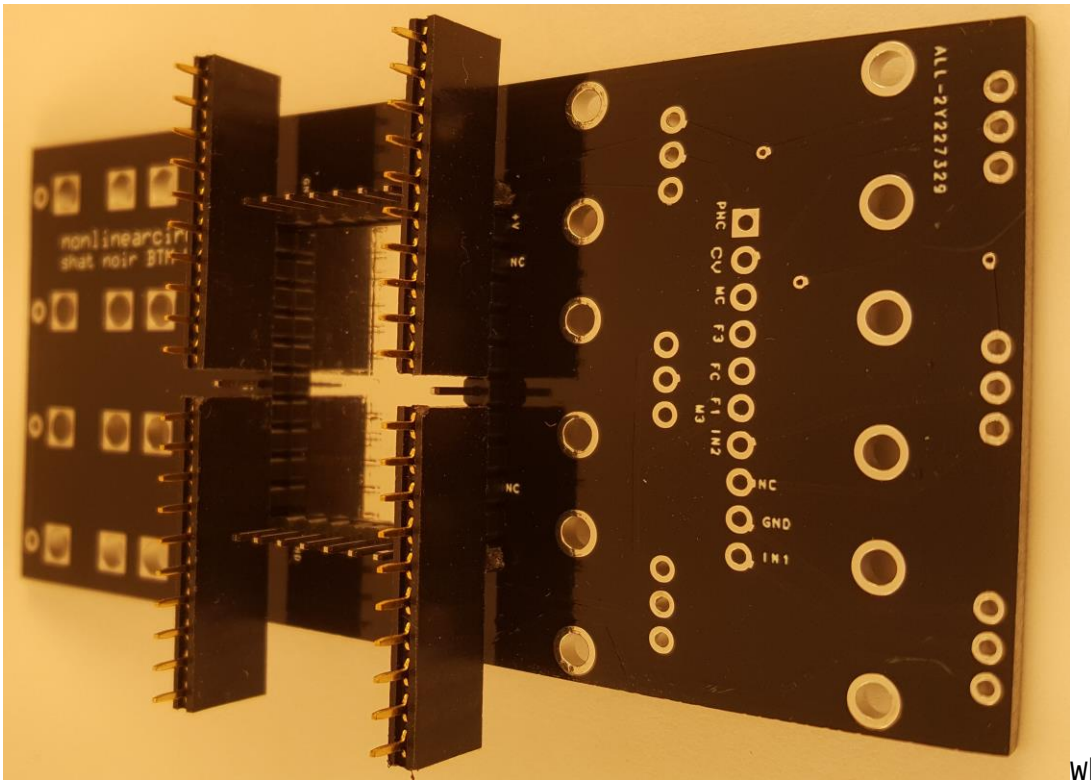
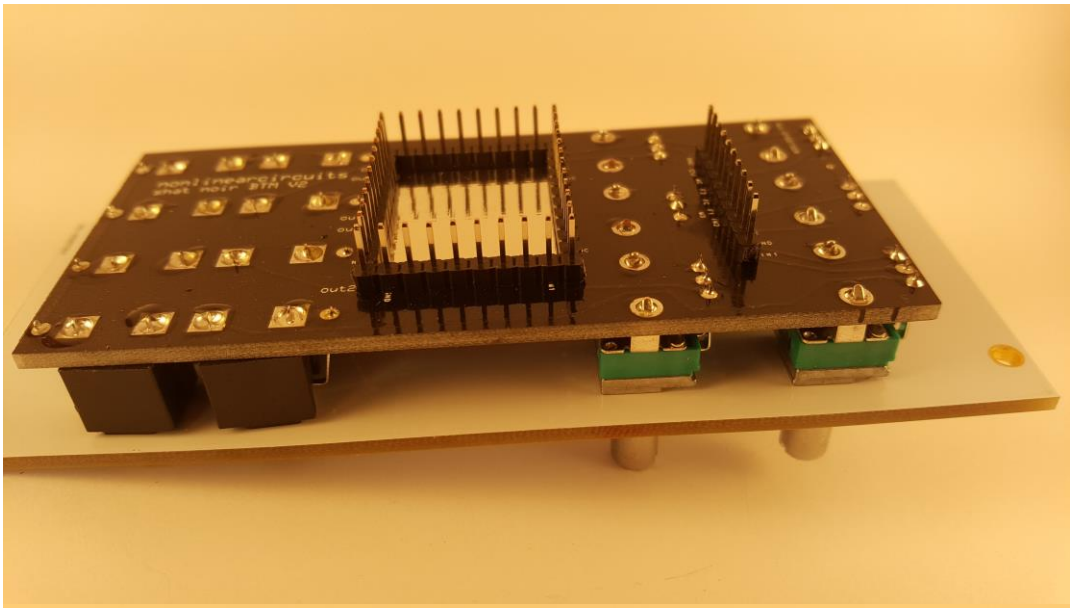
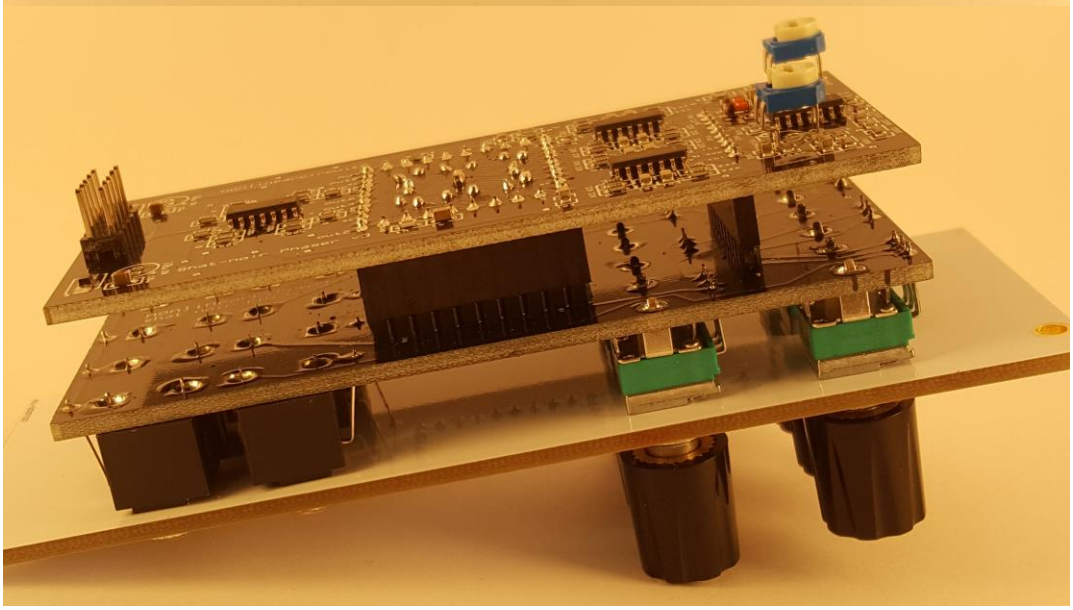
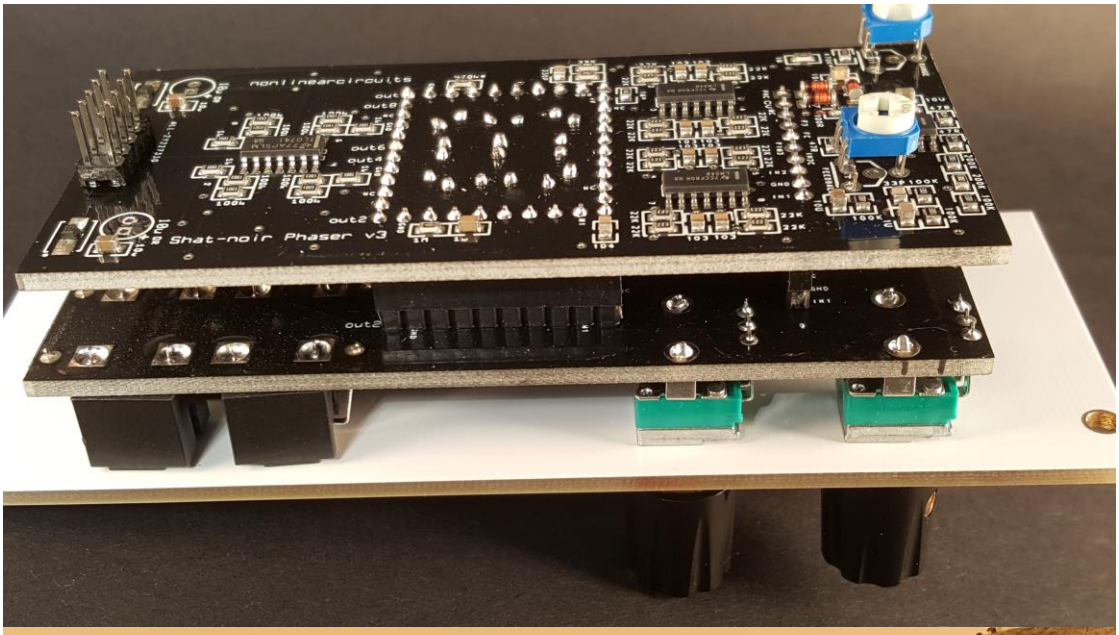


when soldering on the pins, use the SIP connectors to hold them on straight.



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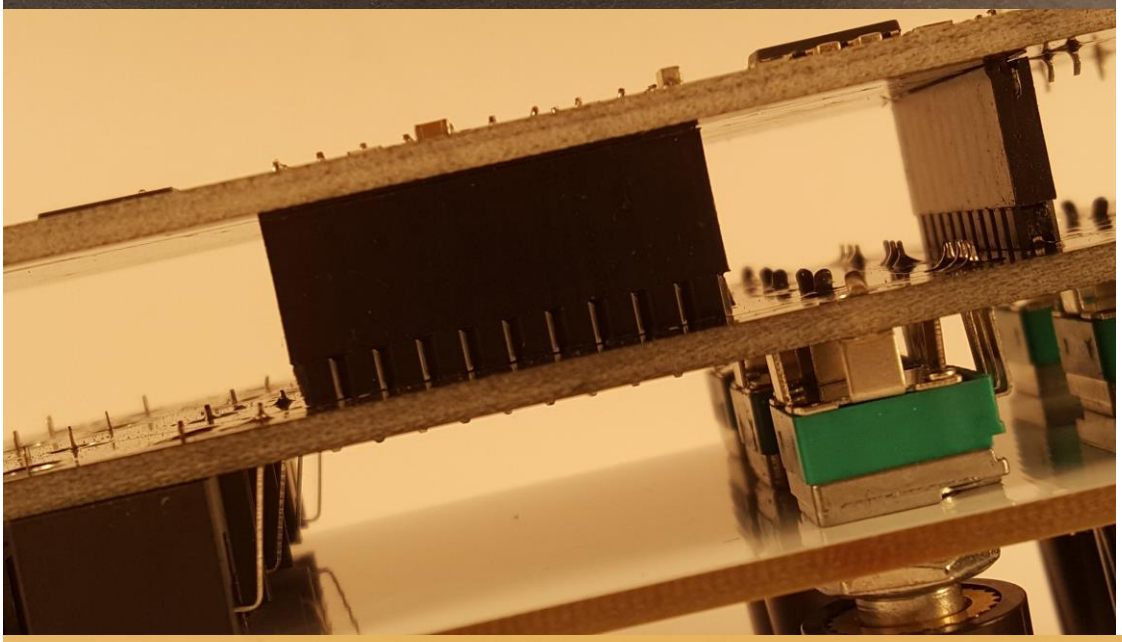
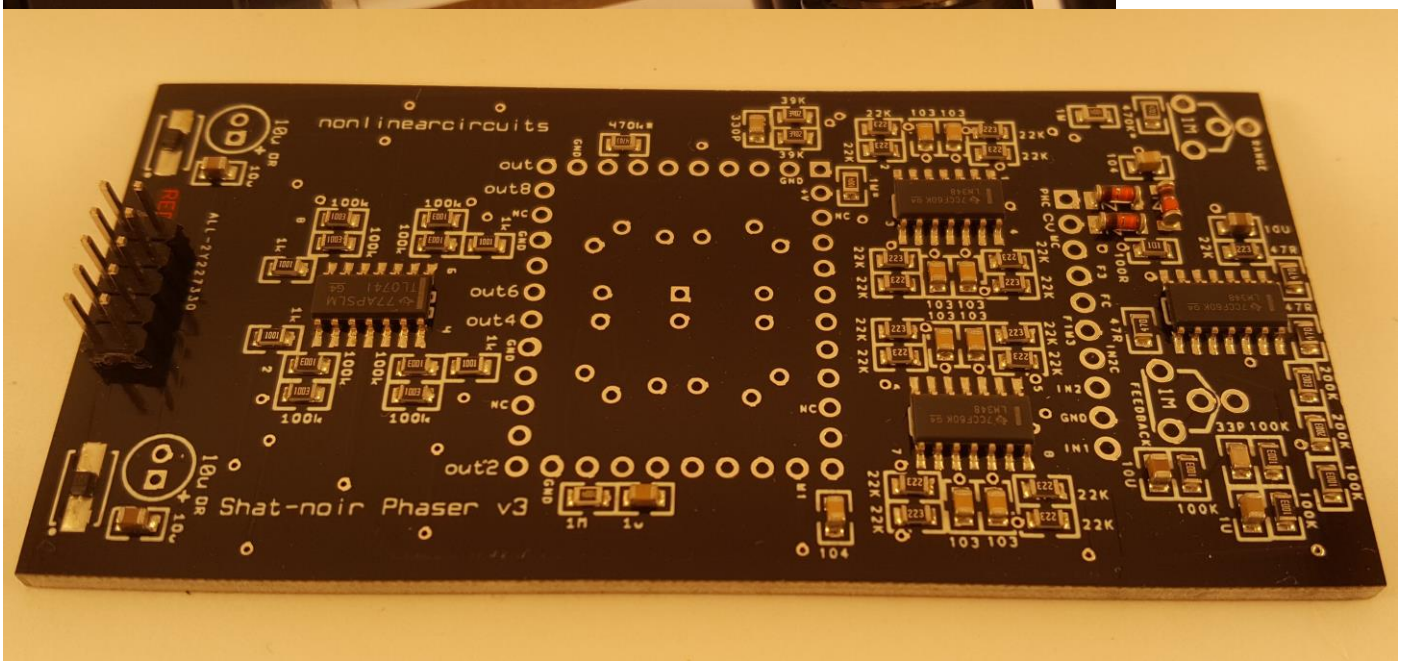
Shat-noir Phaser v3

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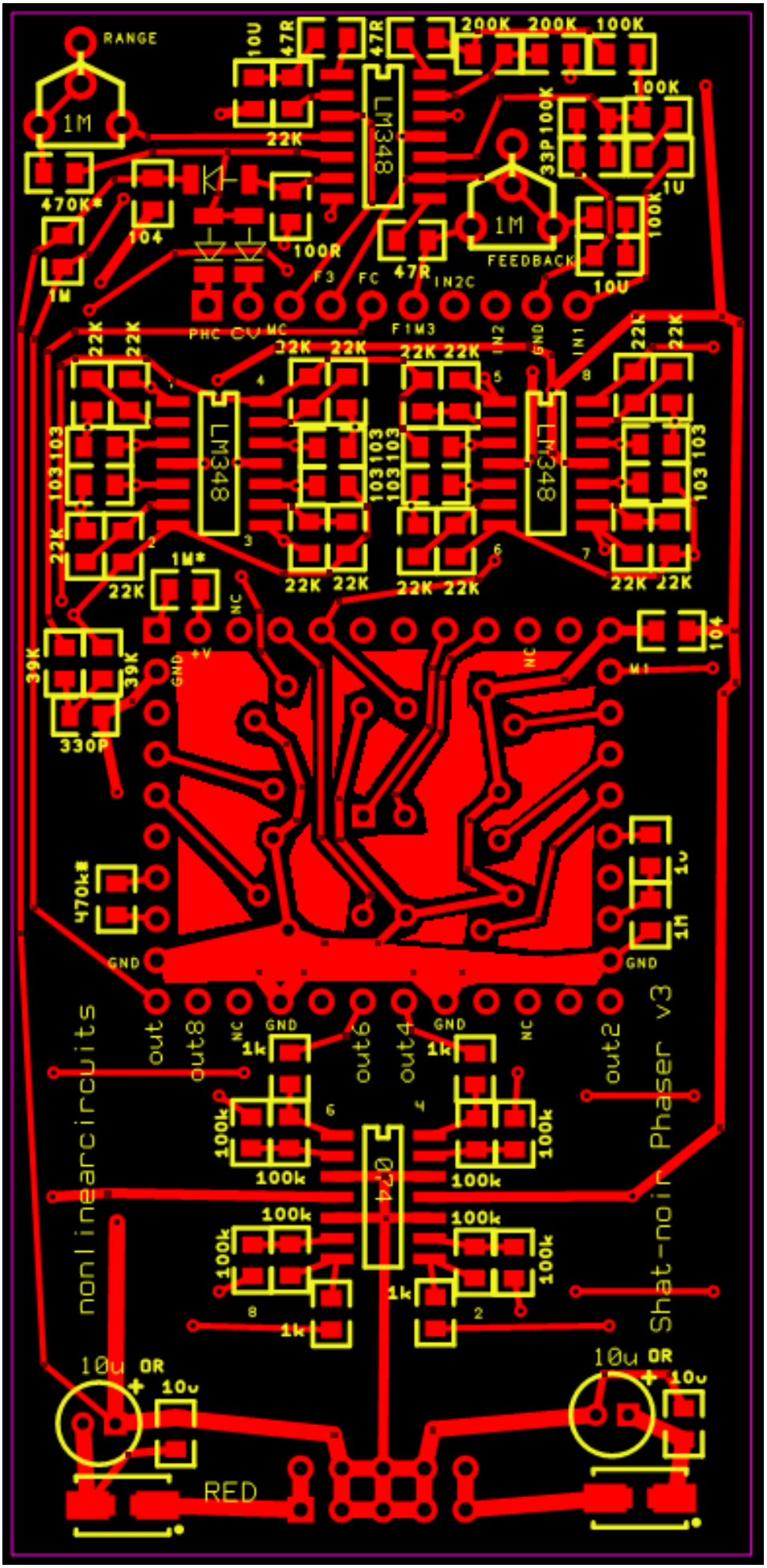
Shat-noir Phaser v3


RANGE
1M
470K*
1M
104
10U
47R
22K
100R
LM348
200K 200K 100K
100K
33P 100K
1M
FEEDBACK
100K
1U
10U
47R
F3
FC
IN2C
PHC CV NC
F1M3
IN2
GND
IN1
22K
103 103
1M*
NC
39K
330P
+V
GND
470k*
104
M1
1u
1n
GND
out
out8
NC
GND
out6
out4
GND
NC
out2
1k
100k
074
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Shat-noir Phaser v3
10u OR
10v
RED