SNOW v2.2 BOM 2021

Resistors	Value	#	Details
r1, r13	15k	2	1% metal film
r2, r17	100k	2	1% metal film
r3, r18, r26, r27	10k	4	1% metal film
r4	3.9k	1	1% metal film
r5, r6, r9, r11, r30, r31	499r	6	1% metal film
r7, r8, r10, r14, r15, r16, r19, r20, r21, r22, r23, r24, r25, r32, r33, r39	1k	16	1% metal film
r34, r35, r36, r37, r38	20k	5	1% metal film
r28	30k	1	1% metal film
Jumper			
JU	2pin + jumper	1	
Diodes			
VD1, VD2	1n4001	2	
d1, d2	1n5711	2	
Ferrite			
f1, f2	ferrite bead	2	68ohm
Capacitors			
c1, c2	330nF	2	2.5mm
c3, c6, c7, c10, c11, c12, c14, c15, c16, c17, c18	100nF	11	2.5mm 2.5mm
c8, c13	1nf	2	2.5mm
c9	47nF / 56nf	1	2.5mm
c4, c5,	10uF	2	Electrolythic
Transistors			
IC1	79l05		VREG
IC2	78l05		VREG
T1, T2	2n3904	2	or 2n2222
IC			
U1, U2, U3, U4	LM6172	4	
Sockets	8pin	4	optional
Trimpot	1k	2	
Powerheader	10pin shrouded	1	
Power cable	10 to 16 pin	1	
Potentiometers	b10k vertical	5	9mm
Jacks	PJ301M	5	Thonkiconn
Switch ON-ON sub-miniature toggle	SPDT	1	5mm shaft diameter
Knobs	Of your choice	5	
mount screws	6mm black	4	

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SNOW buildguide v2.2

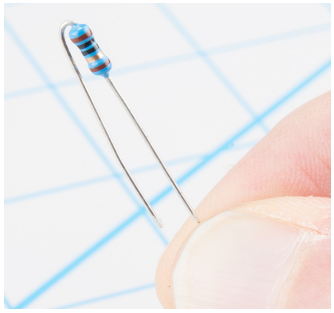
SNOW is an analog video noise module, with 5 outputs.
It features two separate transistor based noise sources, each with offset and gain control.
Each source has two outputs: offset noise and filtered noise. The filtered noise can be attenuated by the gain control. (the offset control is blocked by the highpass filter)
There is also a comparator output, with a dedicated offset knob and a switch that selects the noise1 or noise2 input. This control knob sets the voltage offset which has a keying effect on the amount of black and white in the image.

The pcb is tightly packed, with all the resistors, mounted “standing up”.
We start with the these parts, the 1n5711 diodes.

Diodes:
Place the 2x 1n5711 diodes at d1 and d2. Take care of the polarity , the white line must match with the black stripe on the diode.

IC sockets:
Place the 4x 8pin IC sockets U1, U2, U3, U4.
Flip the pcb over and solder one pin of each socket. Now check if the socket is aligned correctly. If not, reheat the pin and carefully press down on the socket. It sould click into place. Now solder all pins.

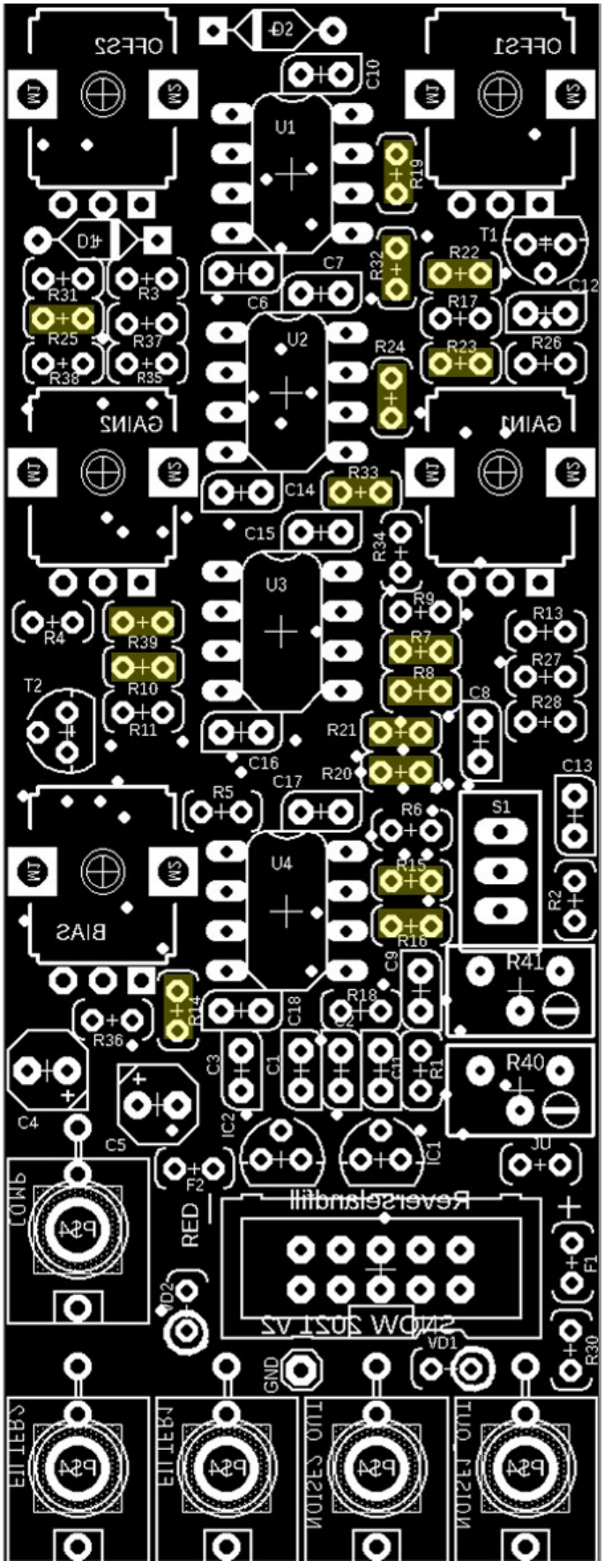
Resistors:
All the resistors are mounted standing up, like so:



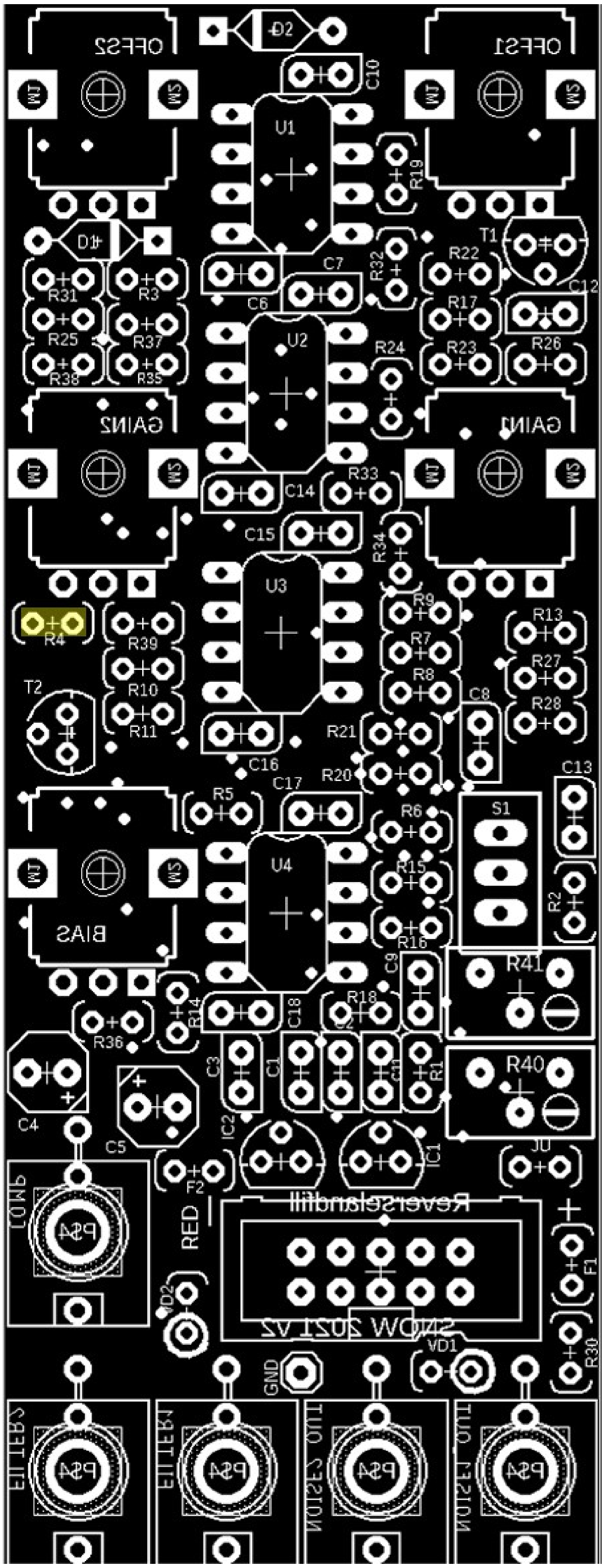
Place the resistors and first solder one pin of each. Now turn the pcb over check if the resistors are aligned correctly to the pcb. If not, reheat the soldered pin and carefully press down on top of the resistor. When they are all seated correctly, solder the rest of the pins.

Below are all resistor placements:

1K: (16x) r7, r8, r10, r14, r15, r16, r19, r20, r21,r22, r23, r24, r25, r32, r33, r39

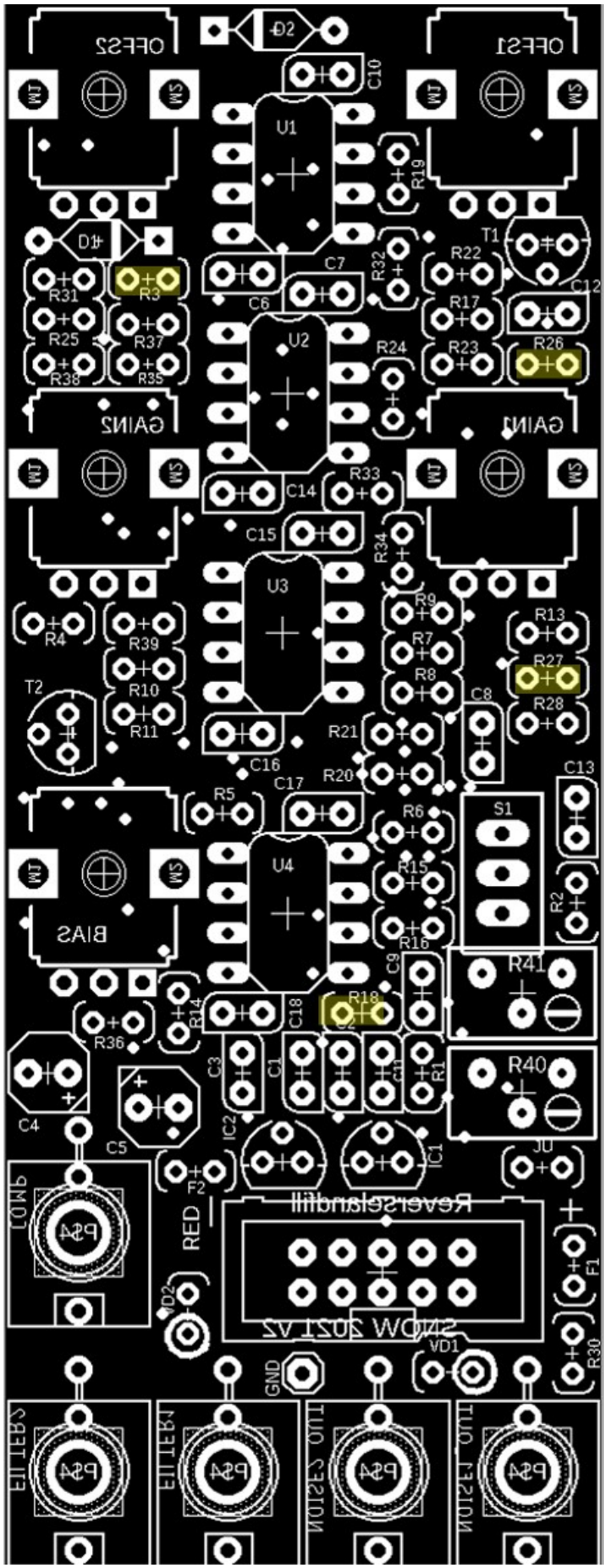


3K9: (1x) r4

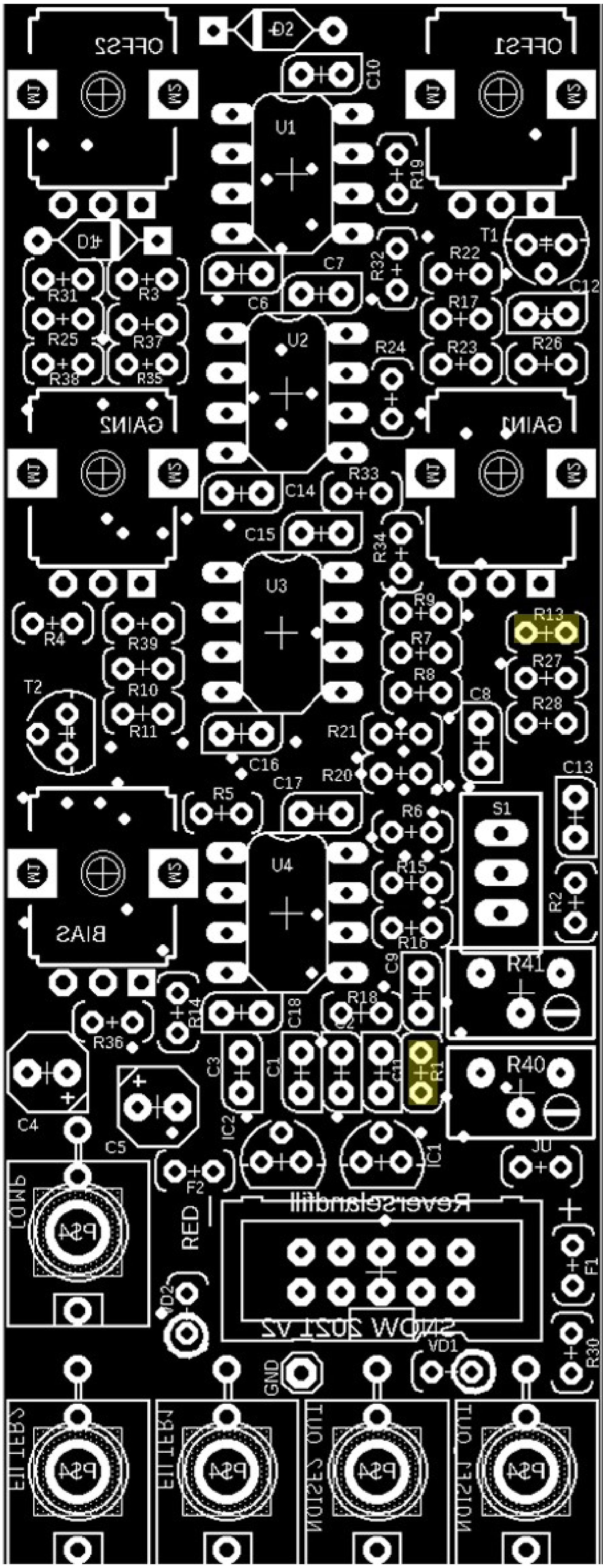


D2
OFFS1
C10
U1
R19
D1
T1
R22
C7
R32
R31
R3
C6
R17
C12
U2
R25
R37
R23
R26
R24
R38
R35
GAIN1
R33
C14
C15
R34
U3
R9
R13
R4
R39
R7
R27
R8
T2
R10
C8
R28
R11
R21
C16
R20
C13
R5
C17
R6
S1
U4
R15
R2
R16
R41
R14
R18
C18
C9
R36
R40
C3
C1
C11
R1
C4
C5
IC2
IC1
JU
F2
Reverselandfill
RED
F1
VD2
VD1
GND
R30

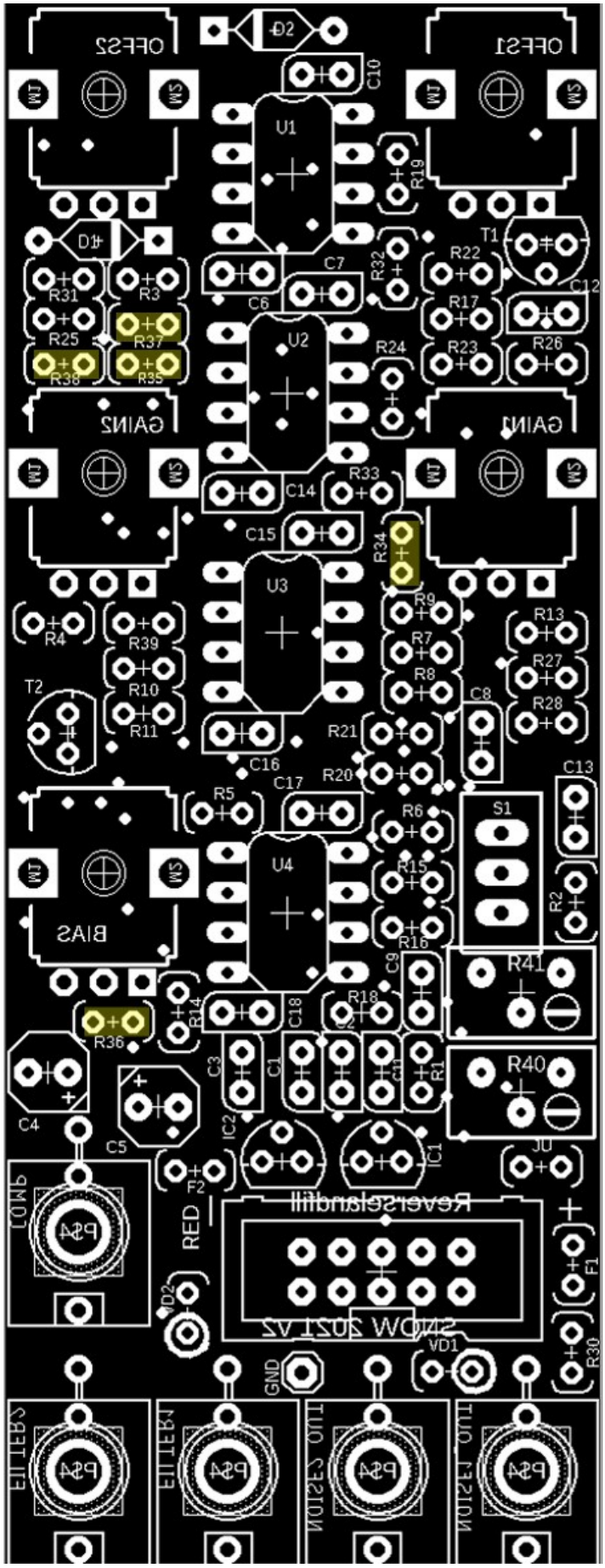
10K: (4x) r3, r18, r26, r27



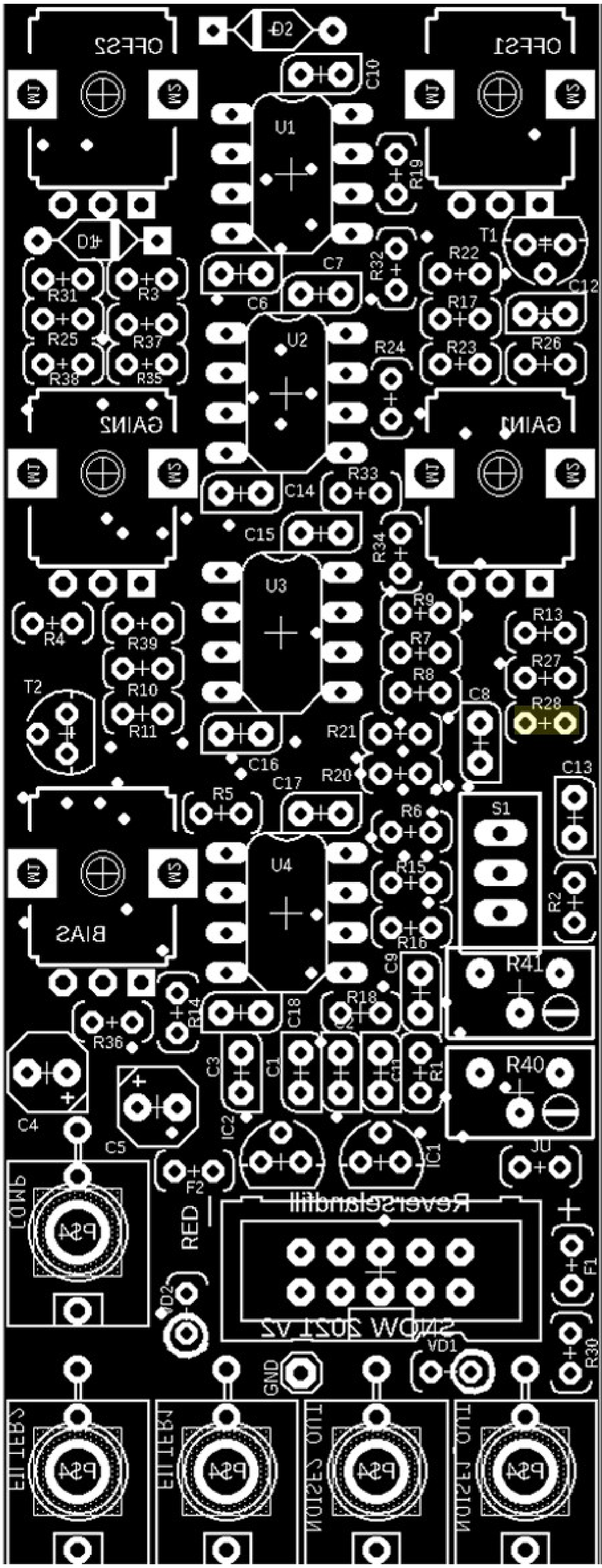
15K: (2x) r1, r13


C10
U1
R19
R31
R3
R22
T1
C7
R32
C6
C12
R17
R25
R37
U2
R24
R23
R26
R38
R35
C14
R33
C15
R34
U3
R9
R13
R4
R39
R7
R27
R8
C8
T2
R10
R28
R11
R21
C16
R20
C13
C17
R5
S1
R6
U4
R15
R2
R16
C9
R41
R14
R18
C18
R36
C3
C1
C2
C11
R1
R40
C4
C5
IC2
IC1
JU
F2
RED
F1
VD2
VD1
GND
R30

20K: (5x) r34, r35, r36, r37, r38

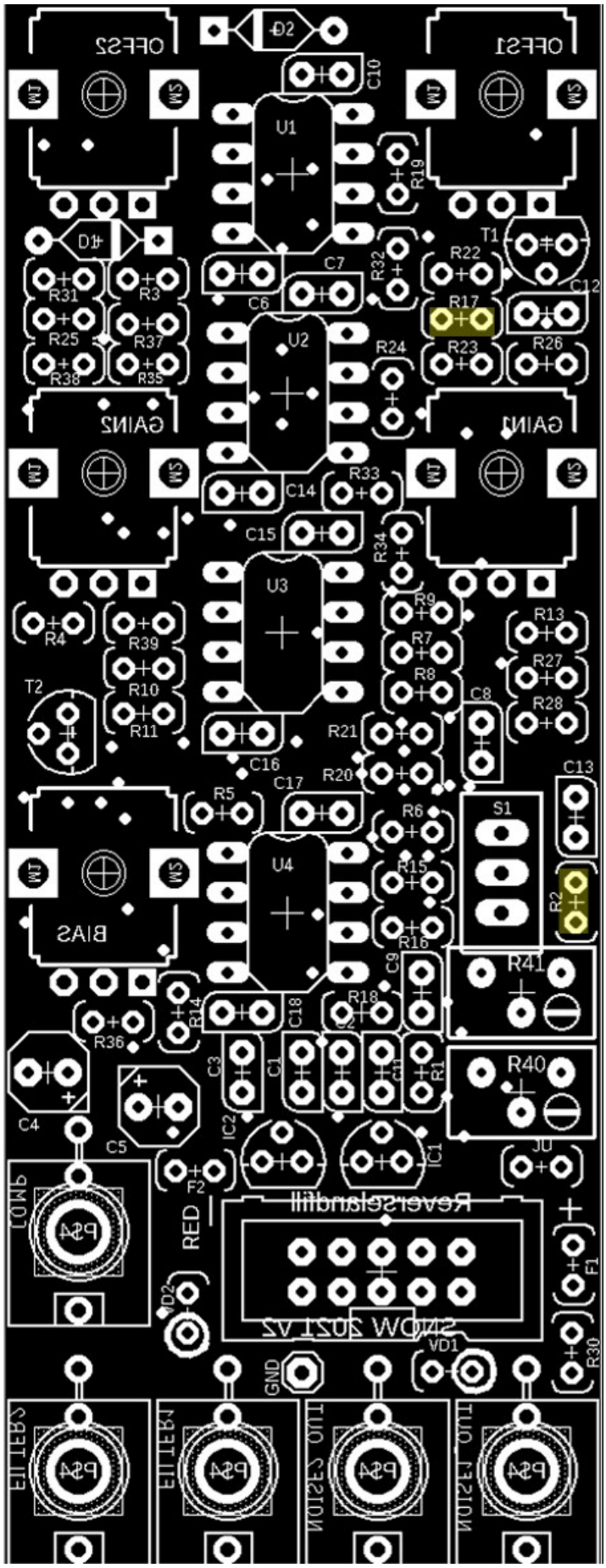


30K: (1x) r28

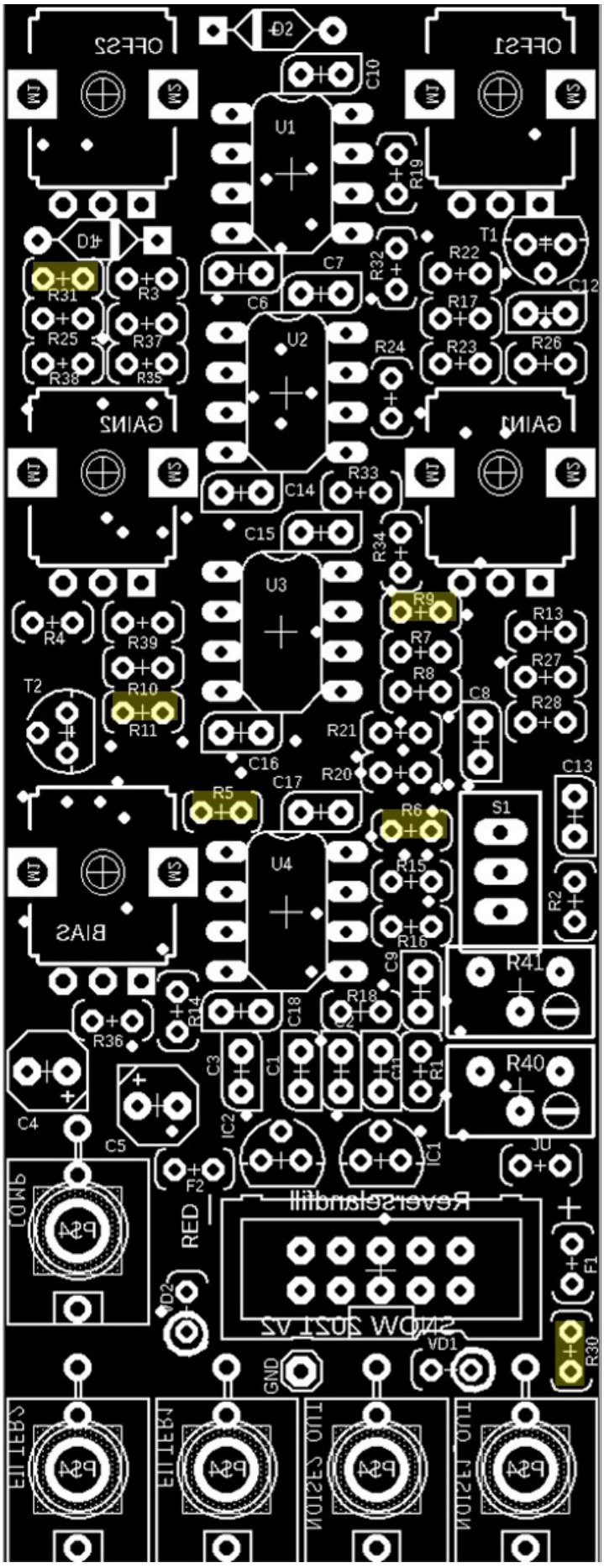


D2
C10
U1
R19
D1
T1
R31
R3
C7
R32
R22
C12
C6
R17
R25
R37
U2
R24
R23
R26
R38
R35
C14
R33
C15
R34
U3
R9
R13
R4
R39
R7
R27
R10
R8
T2
C8
R28
R11
R21
C16
R20
C13
R5
C17
R6
S1
U4
R15
R2
R16
C9
R41
R14
C18
R18
R36
C3
C1
R1
R40
C4
C5
IC2
IC1
JU
F2
RED
F1
GND
VD1
R30

100K: (2x) r2, r17

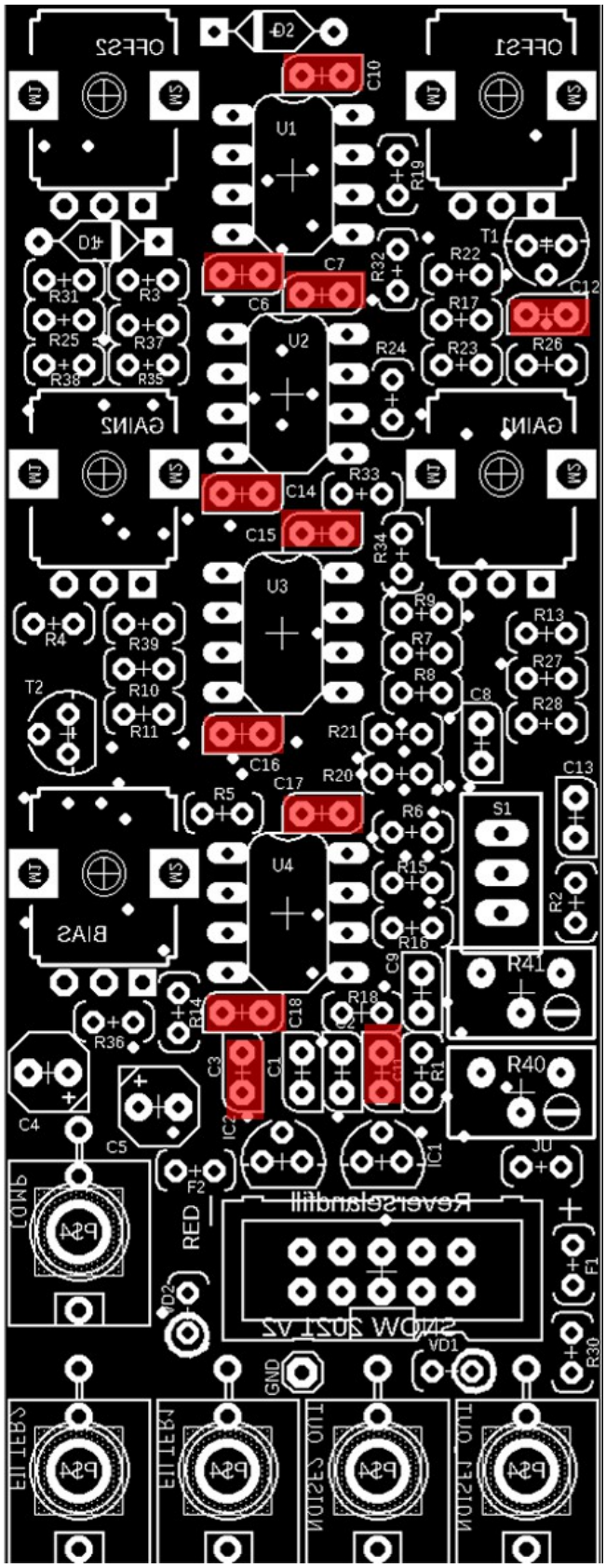


499R: (6x) r5, r6, r9, r11, r30, r31

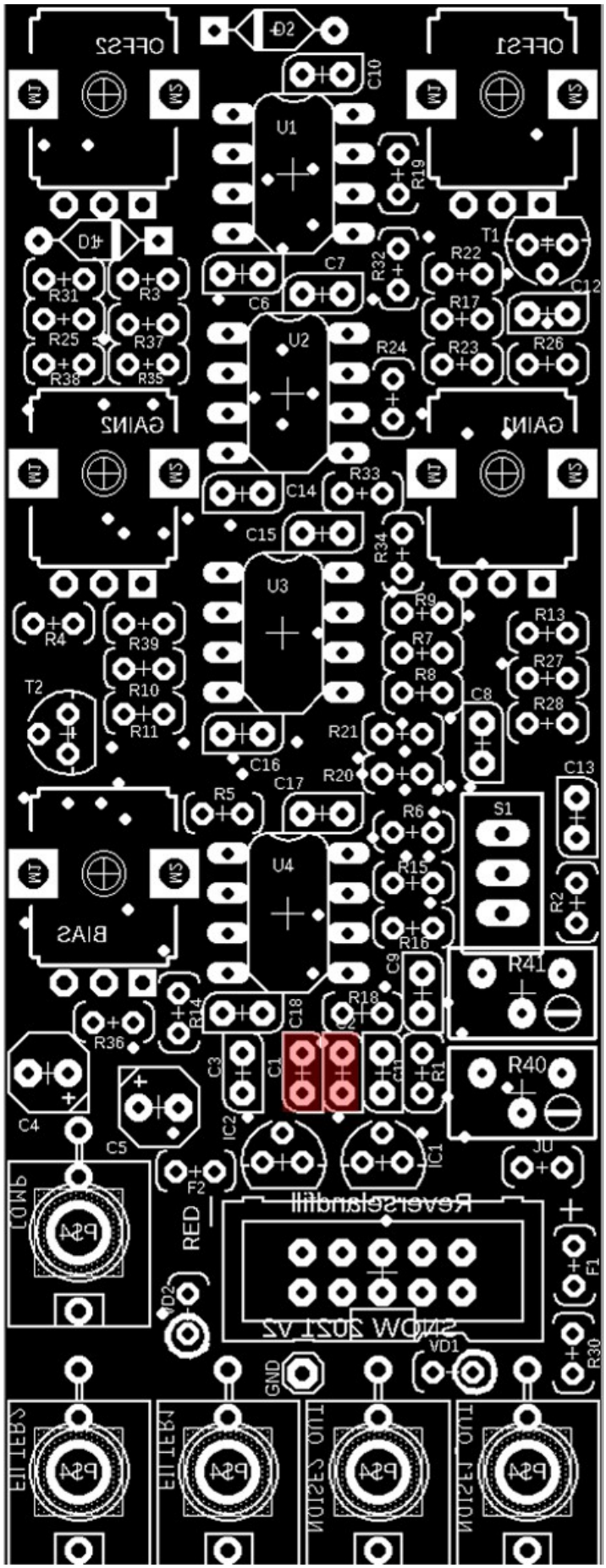


Small capacitors:
The yellow 100nF capacitors in the kit are also mounted “standing up”.

100NF: (11x) c3, c6, c7, c10, c11, c12, c14, c15, c16, c17, c18



330NF: (2x) c1, c2



1nF: (2x) c8, c13

47nF: (1x) c9

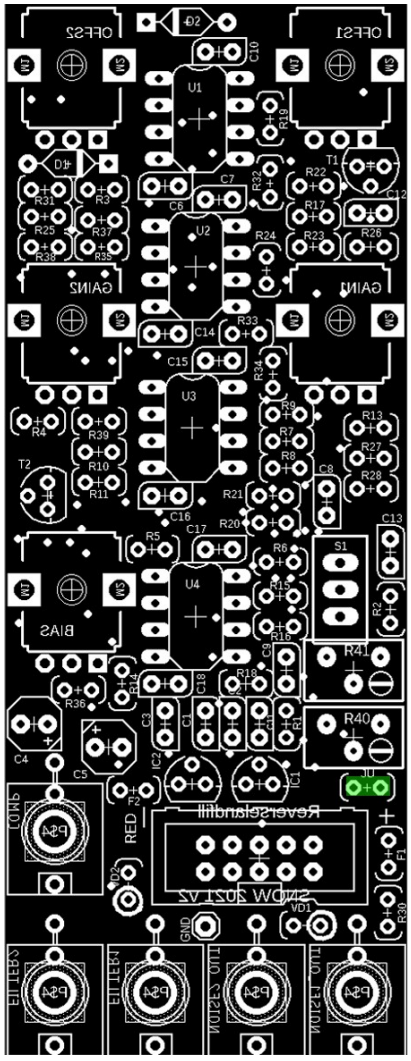
Diodes and ferrite beads:
The 1n4001 diodes are mounted "standing up". The white circle on the pcb must match the line on the diode. Place the diodes at VD1 and VD2. Place the ferrite beads "standing up"at f1 and f2.

Transistors:
There are 4 transitors in the kit: 7805, 7905 (which are voltage regulators) and 2x 2n3904 (these are the noise sources). The 2n3904 in the kit are tested for their noise amount and offset scale.
If you build this module and buy the parts yourself, I recommend that you mount the noise transistors on female headers. Doing this, you can test several transistors to select the best ones.

T1 and T2: 2n3904 (or 2n2222)

The next two transistors are voltage regulators. Make sure you solder them in the correct place!
IC1: 79L05
IC2: 78L05

JUMPERpin: (1x) male 2pin header, JU
Solder one pin and make sure the header is aligned correctly. Solder the other pin and install the female jumper.



Trimpots:
Mount the two 1k trimpots. Turn the pcb over and solder one pin. Check if they are aligned correctly. If not, reheat the pin and press then into place.
Then solder the other pins.

Powerheader:
Place the 10pin shrouded powerheader . Make sure the open gap is facing down, towards the jacks.

IC's:
Bend the legs of the LM6172 IC's so that they are in a 90 degree angle.
Fit them into the IC sockets, while making sure the notch on the IC matches the marking on the PCB. Push the IC firmly into place.

You are done with this side on the PCB.
Next: the pots, jacks and switch.

Place the pots, jacks and switch on the PCB. Install one of the nuts on the switch.
Now place the panel . Install one nut on a pot, turn the PCB over and solder one pin of each pot, jack and switch.
The switch pads can be hard to reach, make sure you don't melt the trimpots!

Now check if the pots, jacks and the switch are aligned correctly.
If so, solder the rest of the pins.

Mount the rest of the nuts and turn all pots fully CCW. Install the knobs.

Big Capacitors:
Mount the 2x 10uF electrolythic capacitors in c4 and c5 and solder them in place.

And you are done!

Testing:

Before powering the module, check if you have installed the female jumper, that all IC's are facing the correct way, that the polarised parts are place in the correct direction.

Trimpot adjustment:
Turn both trimpots fully CW, and then two turn CCW. This is the rough setting. We will do the finetuning later!

Place the module in your video rack and power it up.

Turn all pots (except for the comparator fully CW and check output 1. (by patching it to an RGB Encoder)
Look at your video Monitor. You should see noise.

Trimpot 1 (the lower) sets the gain of Noise1. Adjust the trimpot so that you see dots of noise in several shades of gray.
Trimpot 2 (the upper) sets the gain of noise2. Noise2 has a different look, wider dots / short lines. Adjust the trimpot in the same manner.

Note: there is no wrong setting, so choose what you visually like. You can always change it later!

Note2: if you have mounted the noise transistors on headers, this is the time to select the best transistors. If the image is too dark or too grey, select another one!

The noise outputs should look something like this: (with the offset pot at about 12 'o' clock)

MODDING:
The jumper is a place where you could place CV control over the comparator offset.
See the schematics for more detail.

Filter setting can be adjusted. You could even make a bandpass filter if you switch the capacitor and resistor at the filtered output locations.
Experiment with other filter settings at these locations:

Noise1 source filter:
c13 and r28

Noise1 filtered output:
c8 and r14

Noise2 source filter:
c12 and r26

Noise2 filtered output:
c9 and r18

This project is Open Source.
You can use the schematic to make your own boards, but please:
-Mention my name “Reverselandfill” or “M.Verhallen”
-Only do non-commercial runs. Private use only.

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