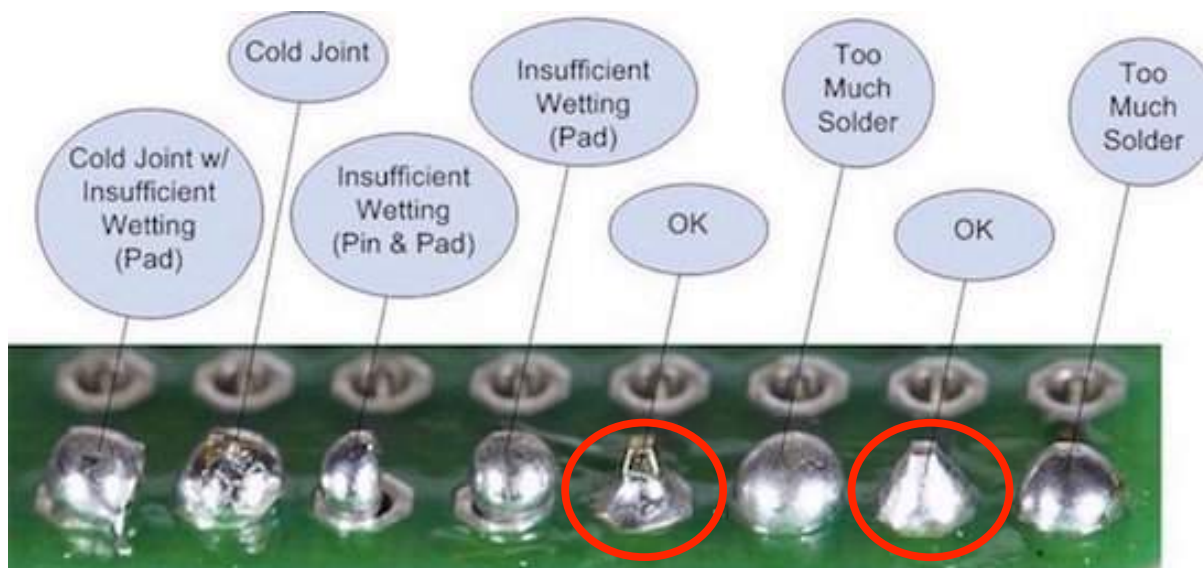
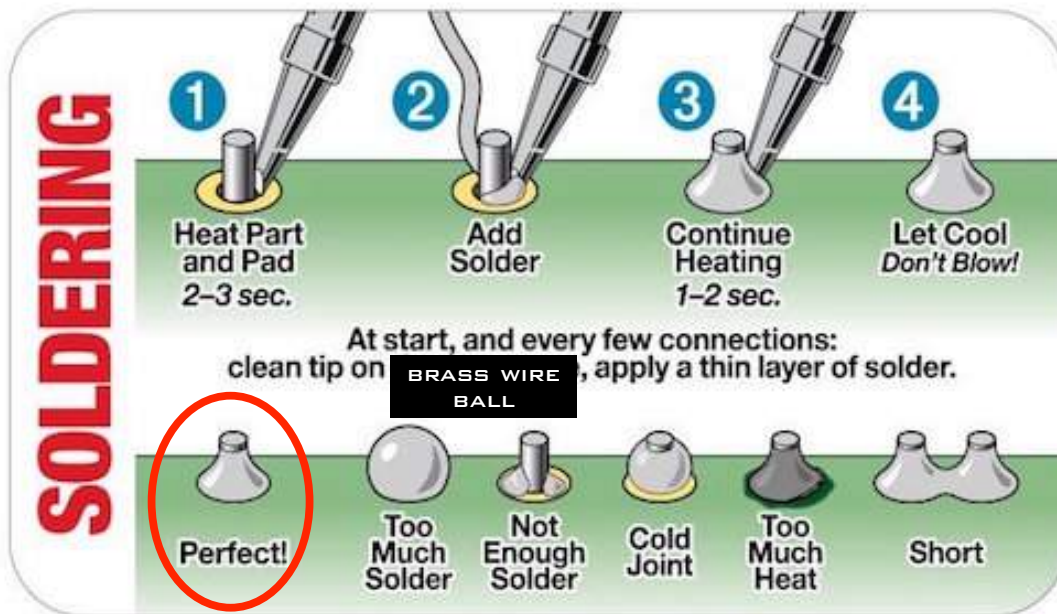
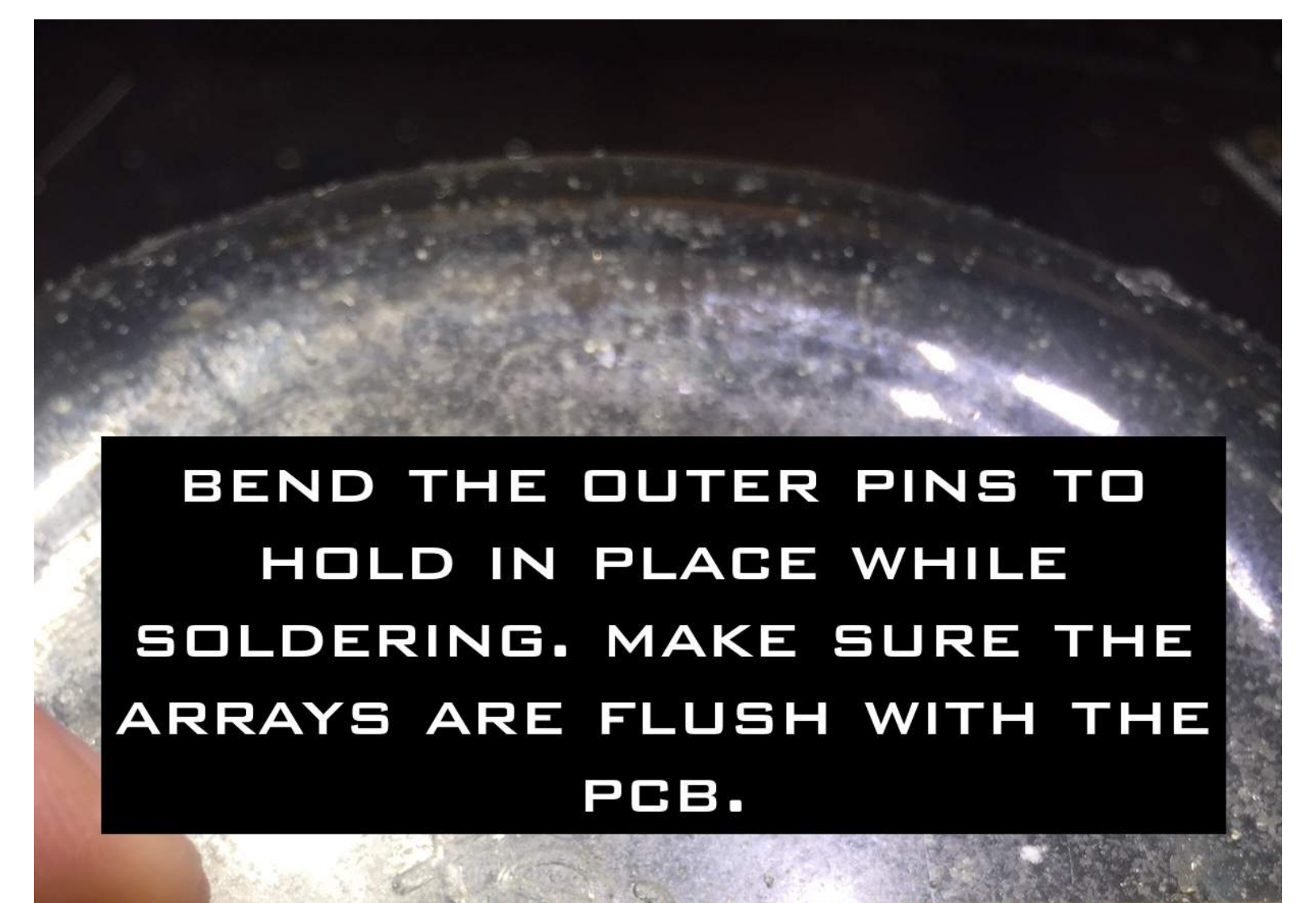


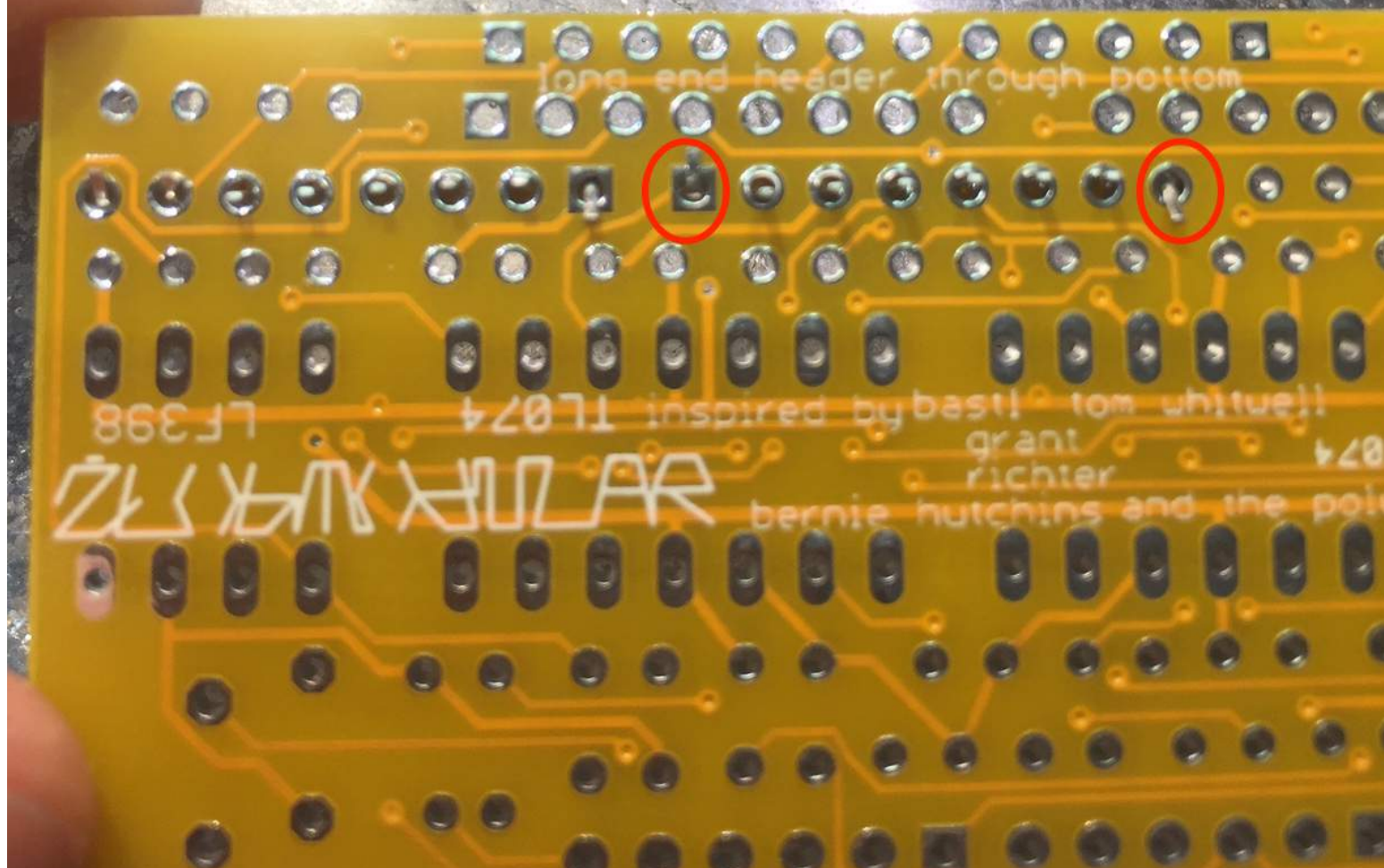
IF YOU CAN FOLLOW THESE TECHNIQUES
BELOW AND SOLDER UP TO THESE
“PERFECT” AND “OK” SPECS YOU SHOULD
HAVE MUCH LESS TROUBLESHOOTING AND
PROBLEMS WITH THIS BUILD AND ALL
OTHER DIY PROJECTS.



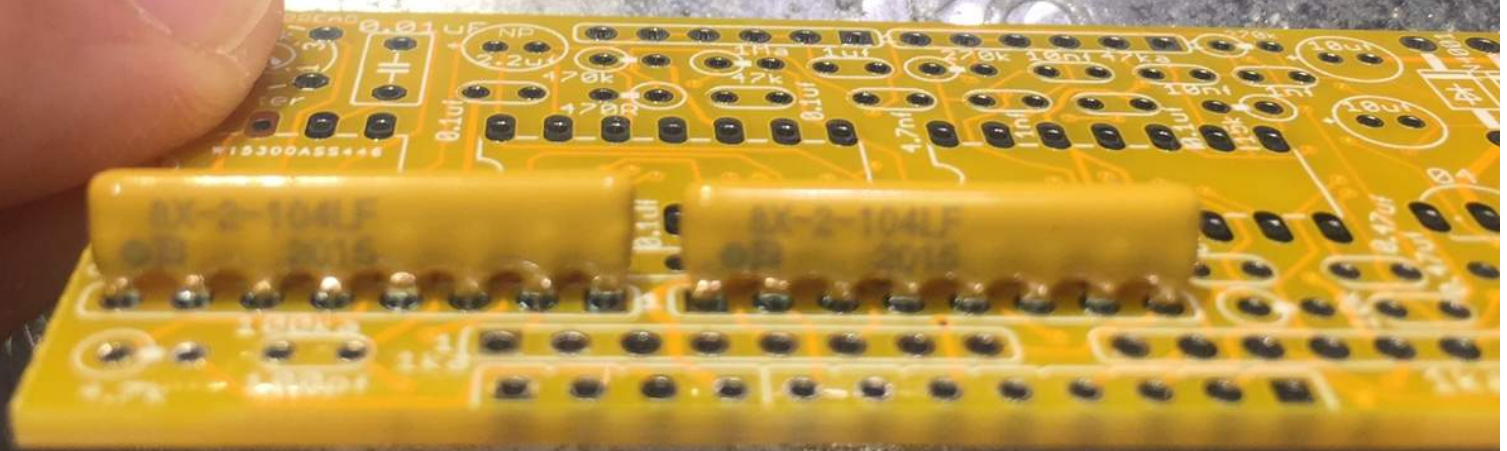
I AM NOT AFFILIATED WITH ADAFRUIT AND
CLAIM NO RIGHTS OR OWNERSHIP OF
THESE PICTURES. THEY ARE PROVIDED FOR
EDUCATIONAL PURPOSES

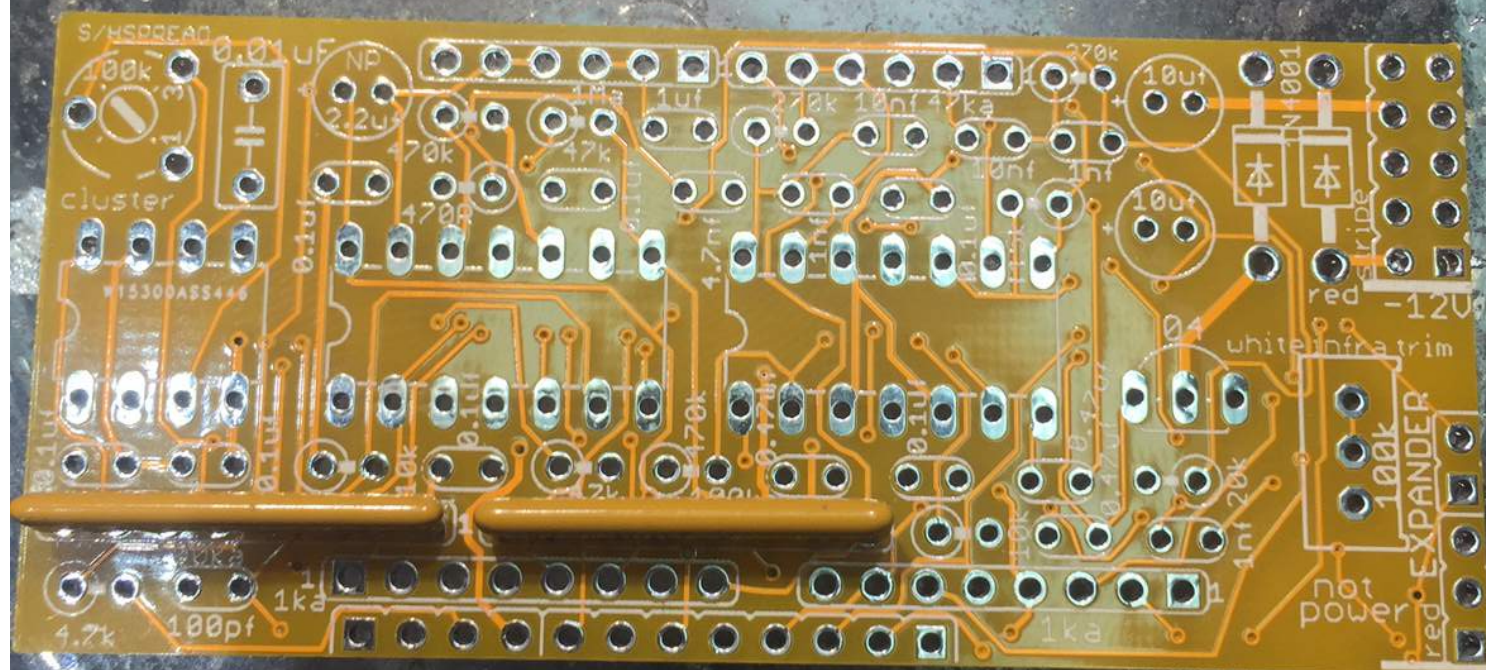


**BEND THE OUTER PINS TO
HOLD IN PLACE WHILE
SOLDERING. MAKE SURE THE
ARRAYS ARE FLUSH WITH THE
PCB.**

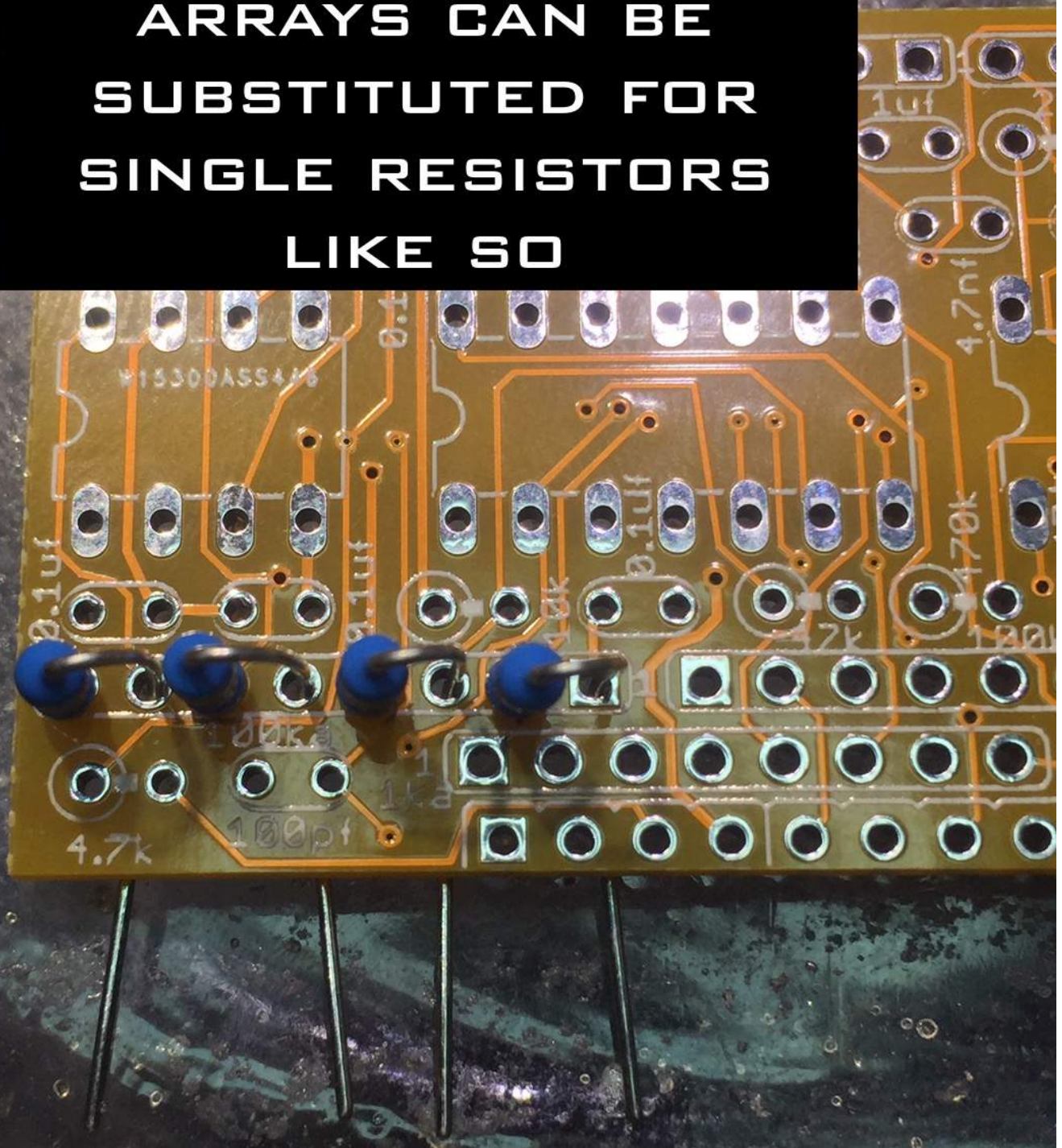


**ALL THE ARRAYS IN THIS
BUILD ARE ISOLATED
RESISTORS SO THEY DONT
HAVE AN ORIENTATION.
BUT IT HELPS TO FACE THE
TEXT OUTWARDS SO IT'S
EASIER TO TROUBLESHOOT
LATER ON**





**ARRAYS CAN BE
SUBSTITUTED FOR
SINGLE RESISTORS
LIKE SO**

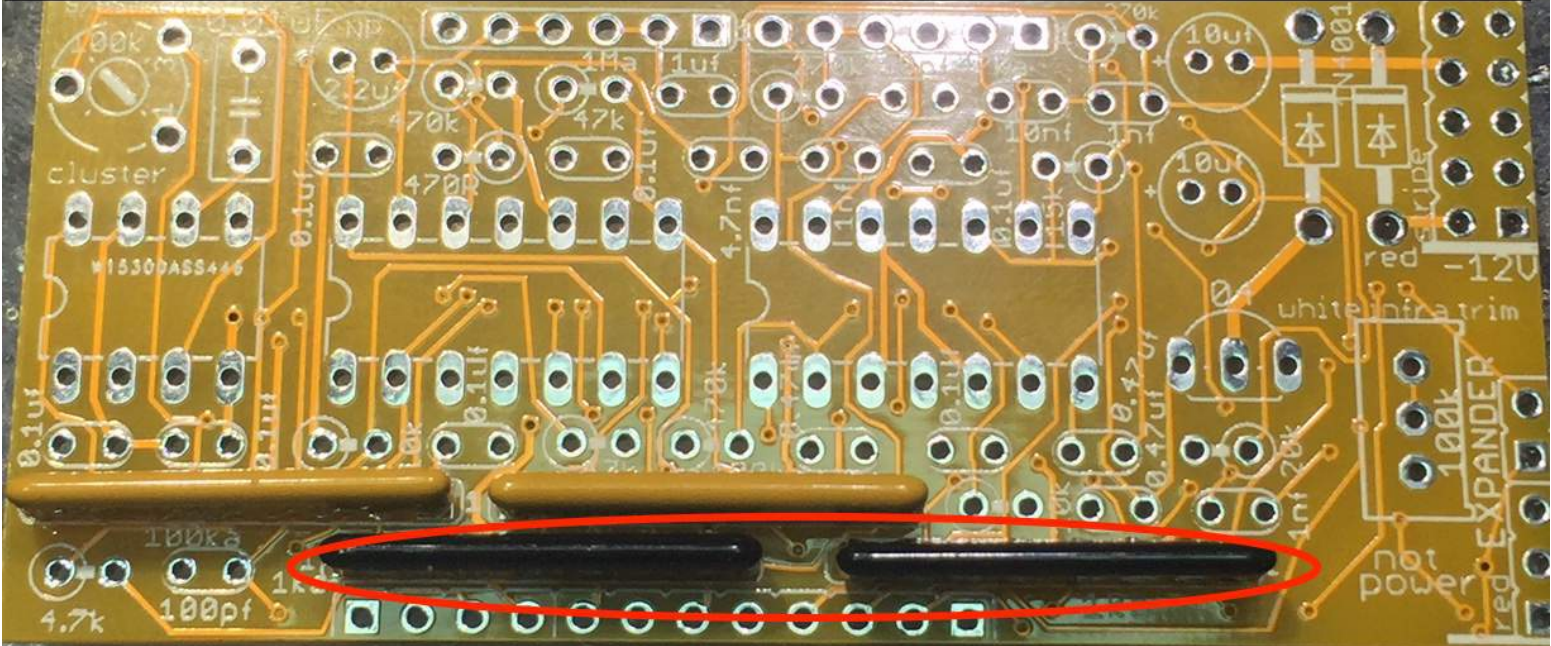


**TWO 1K 8PIN
ARRAYS(CODE 102)**



1 K ARRAYS
FOLLOW SAME METHOD AS FOR
THE 100K. FACE TEXT OUT AND
BEND PINS TO HOLD IN PLACE.
COLOR AND PACKAGE OF ARRAYS
CAN VARY FROM WHAT'S
PICTURED

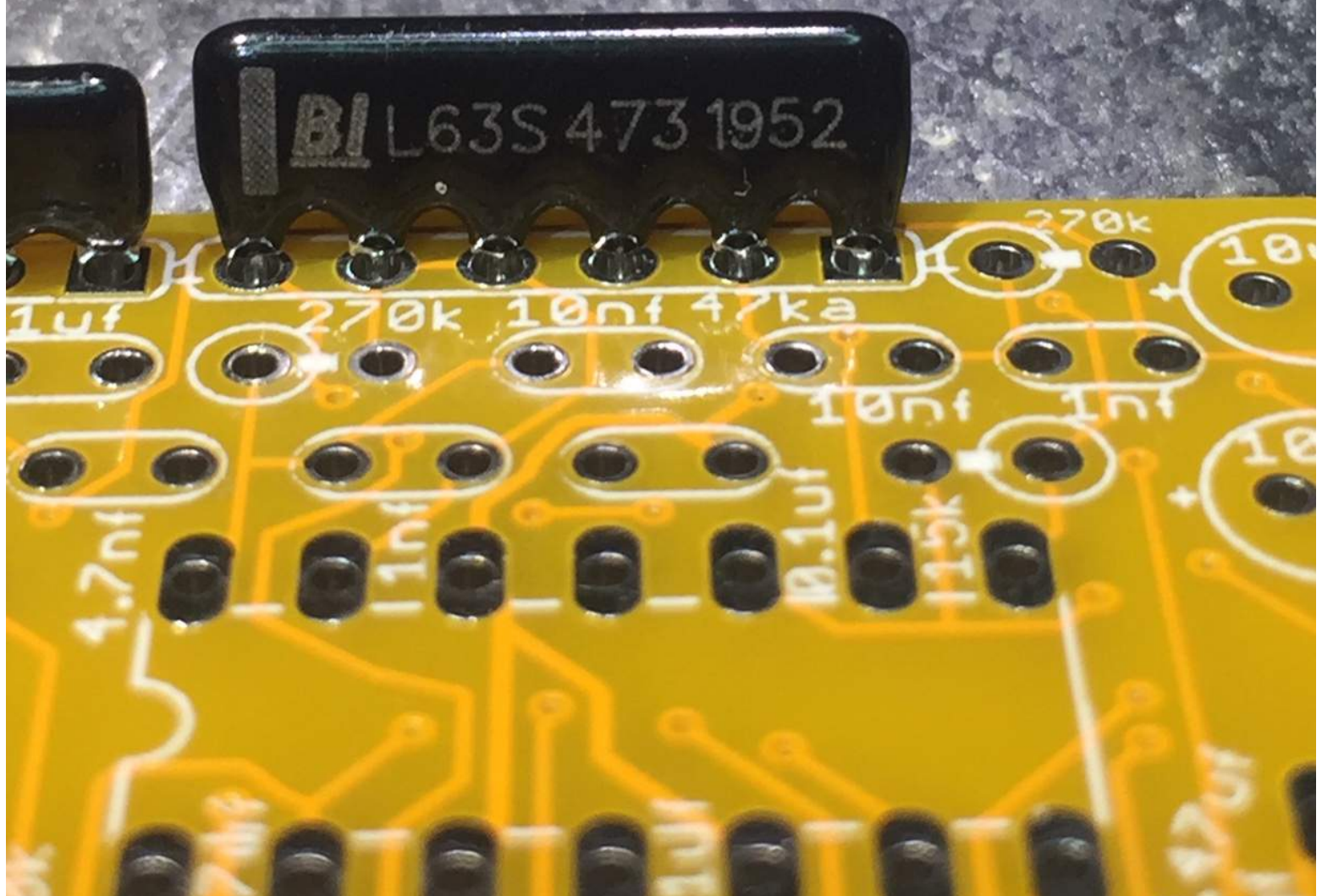
1 K ARRAYS
FOLLOW SAME METHOD AS FOR
THE 100K. FACE TEXT OUT AND
BEND PINS TO HOLD IN PLACE.
COLOR AND PACKAGE OF ARRAYS
CAN VARY FROM WHAT'S
PICTURED



ONE 1M 6PIN ARRAY
(CODE 105)



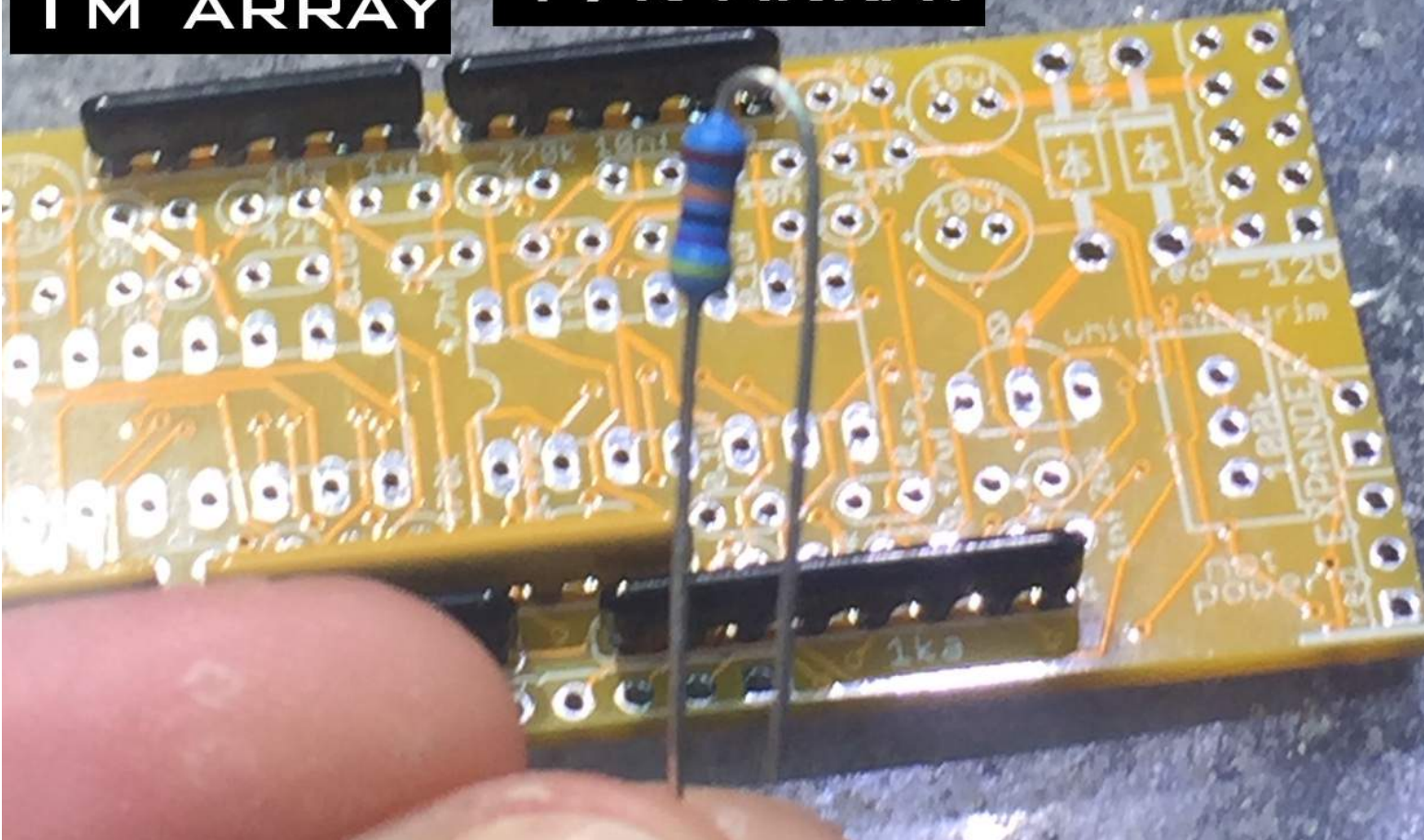
ONE 47K 6PIN ARRAY
(CODE 473)



TWO 470K RESISTORS
COLOR BANDS
YELLOW,PURPLE,BLACK,
ORANGE,BROWN. BEND
ONE OF THE LEGS OF THE
RESISTOR DOWN LIKE
BELOW/

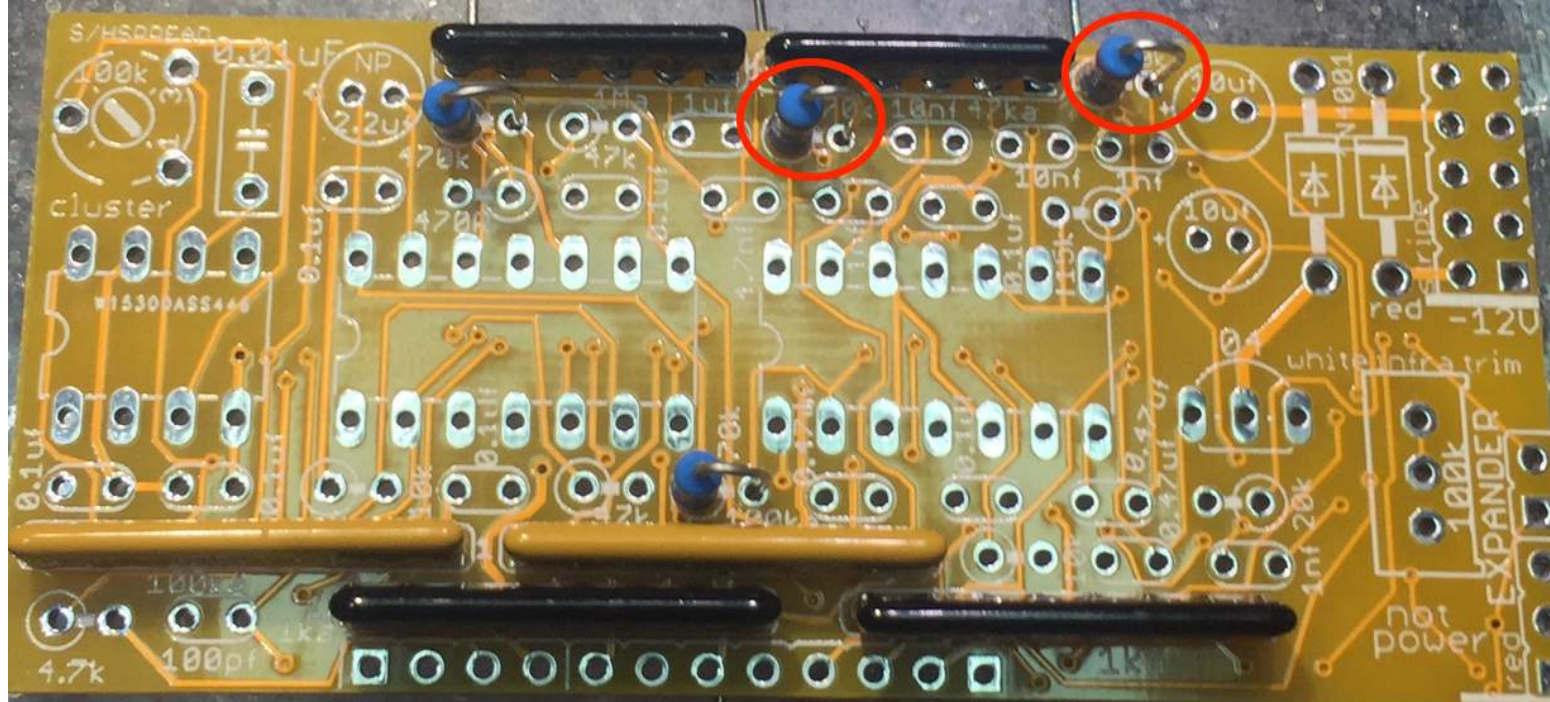
1 M ARRAY

47K ARRAY

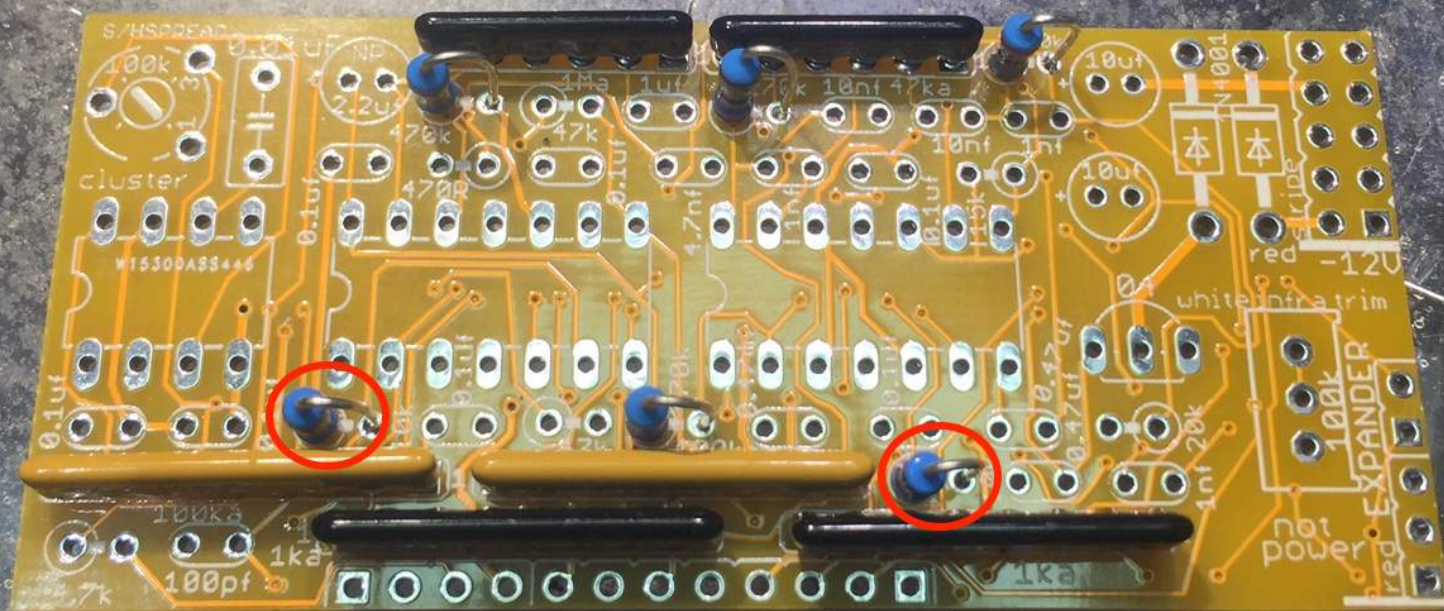


**TWO 270K RESISTORS
COLOR BANDS RED,
PURPLE, BLACK, ORANGE,
BROWN**

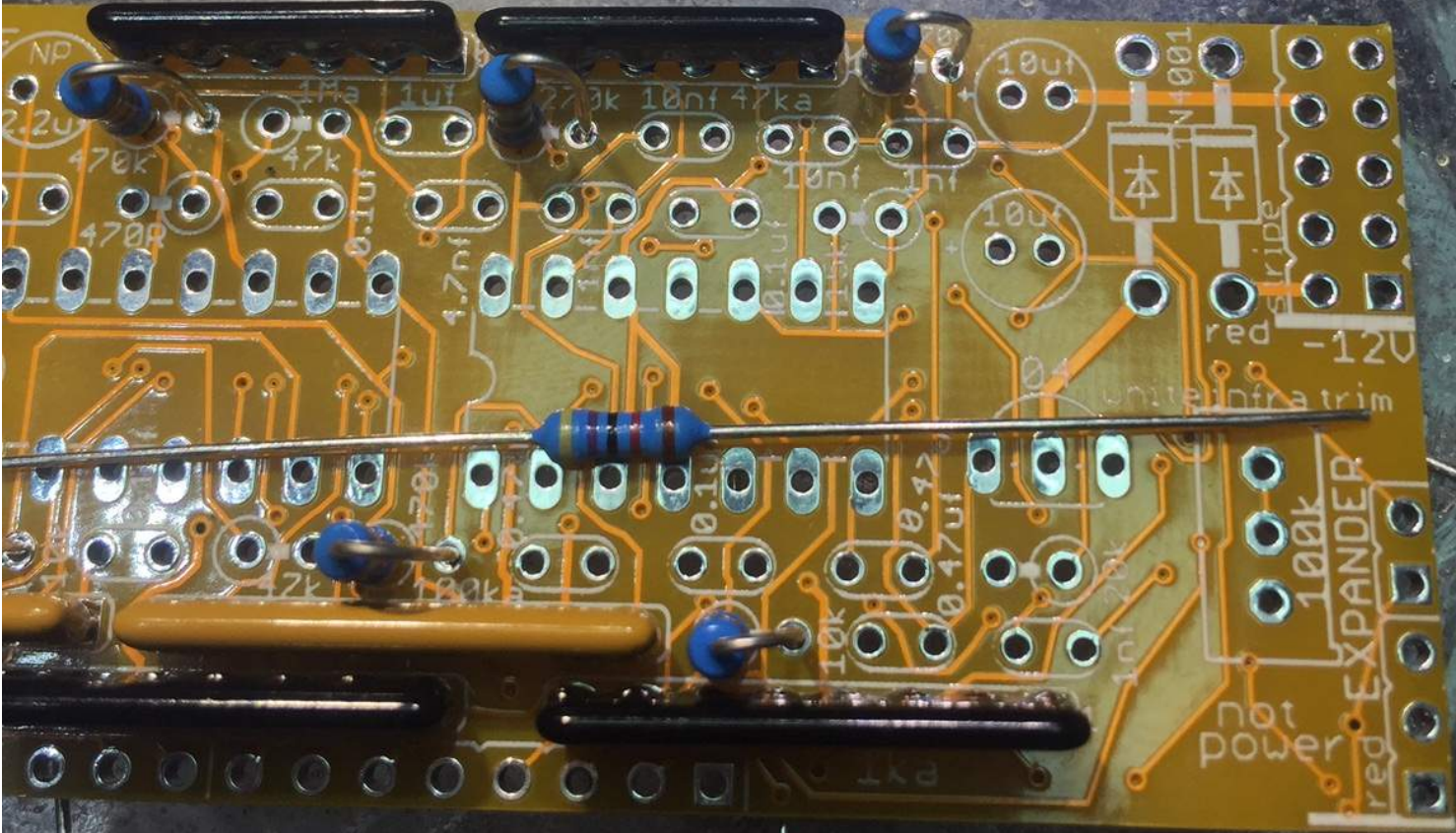
270K



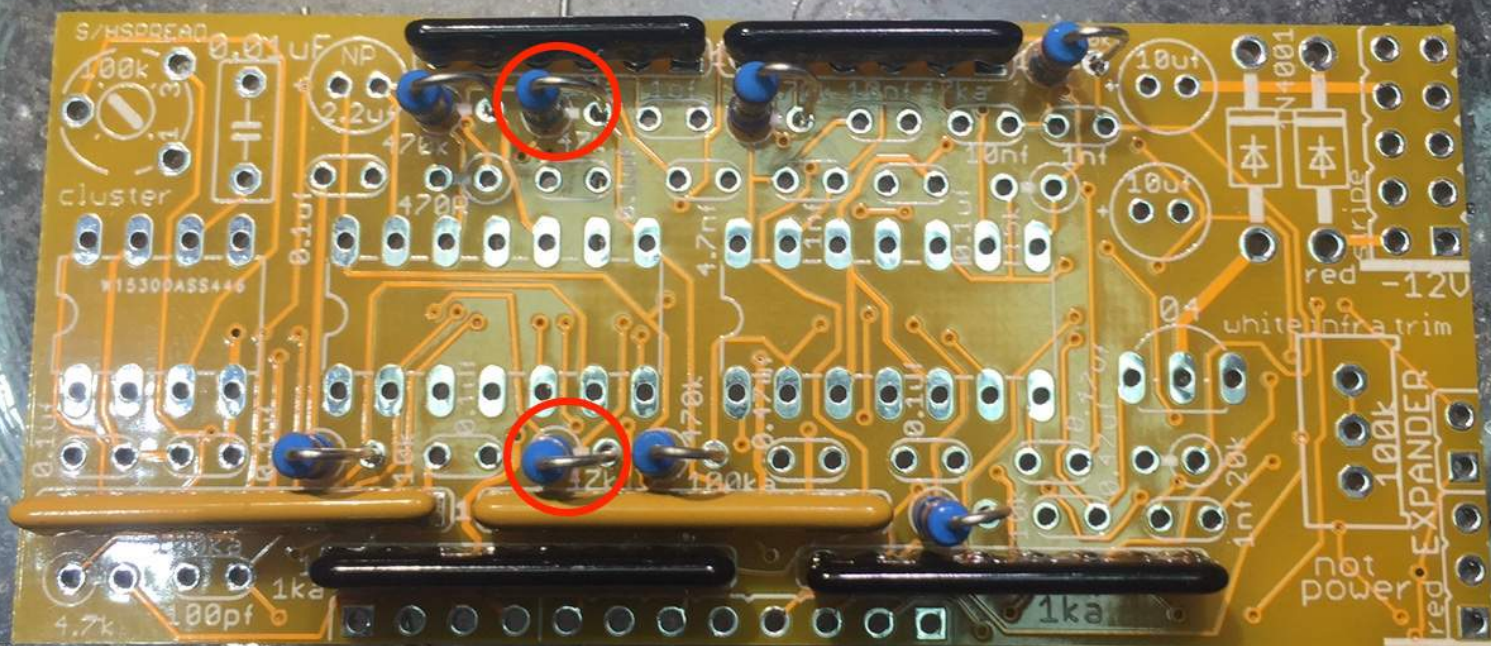
10K



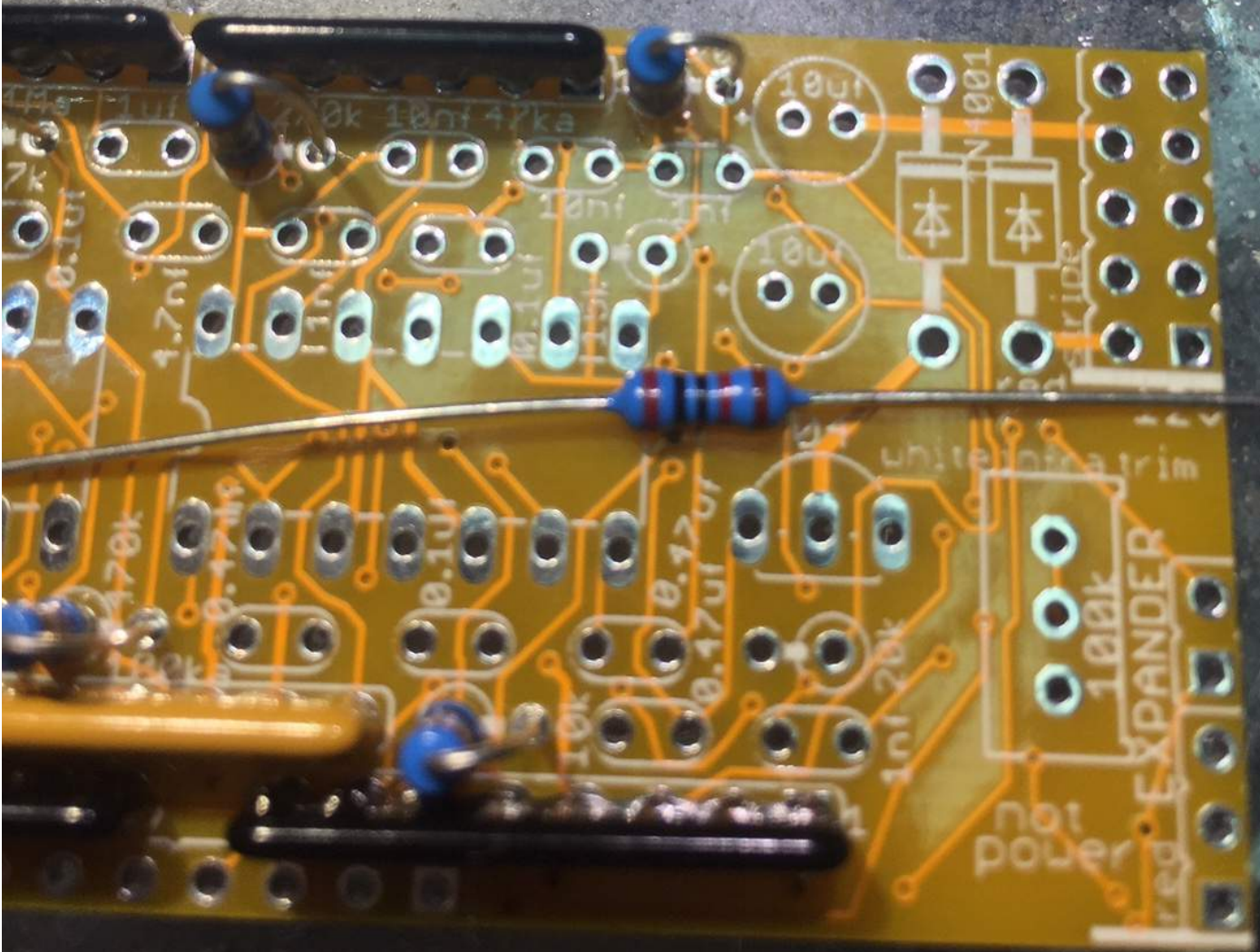
TWO 47K COLOR BANDS
YELLOW,PURPLE,BLACK,
RED,BROWN. THE 2 EXTRA
47K ARE USED FOR THE
TOP PCB.



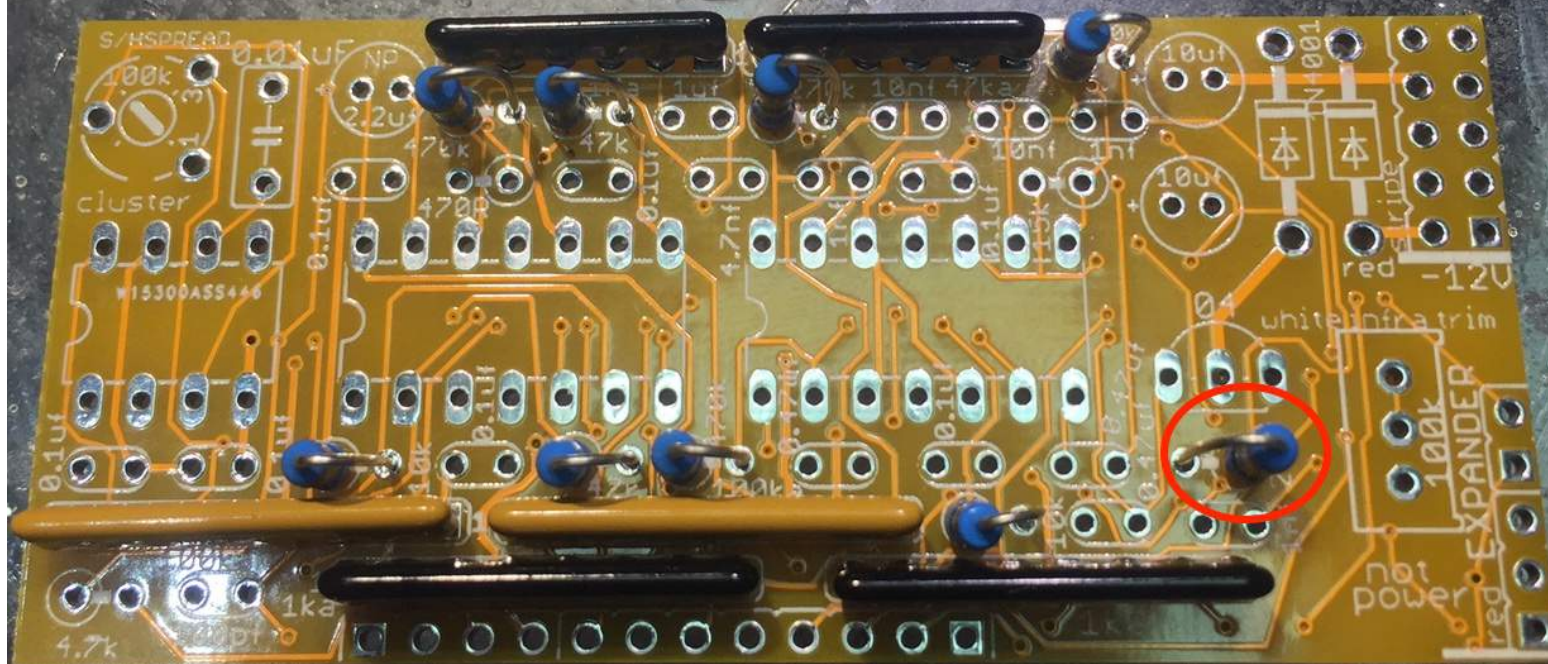
47k



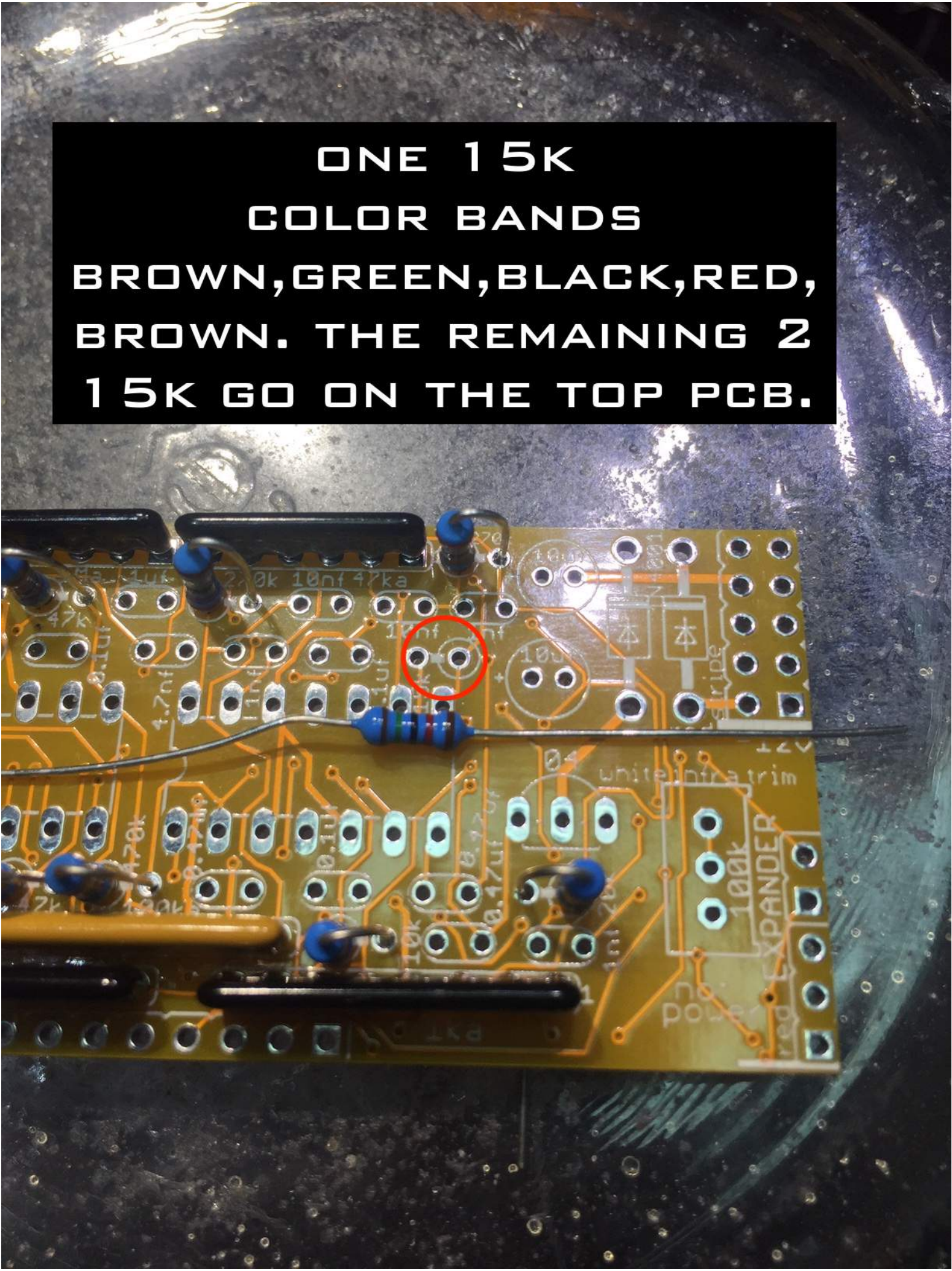
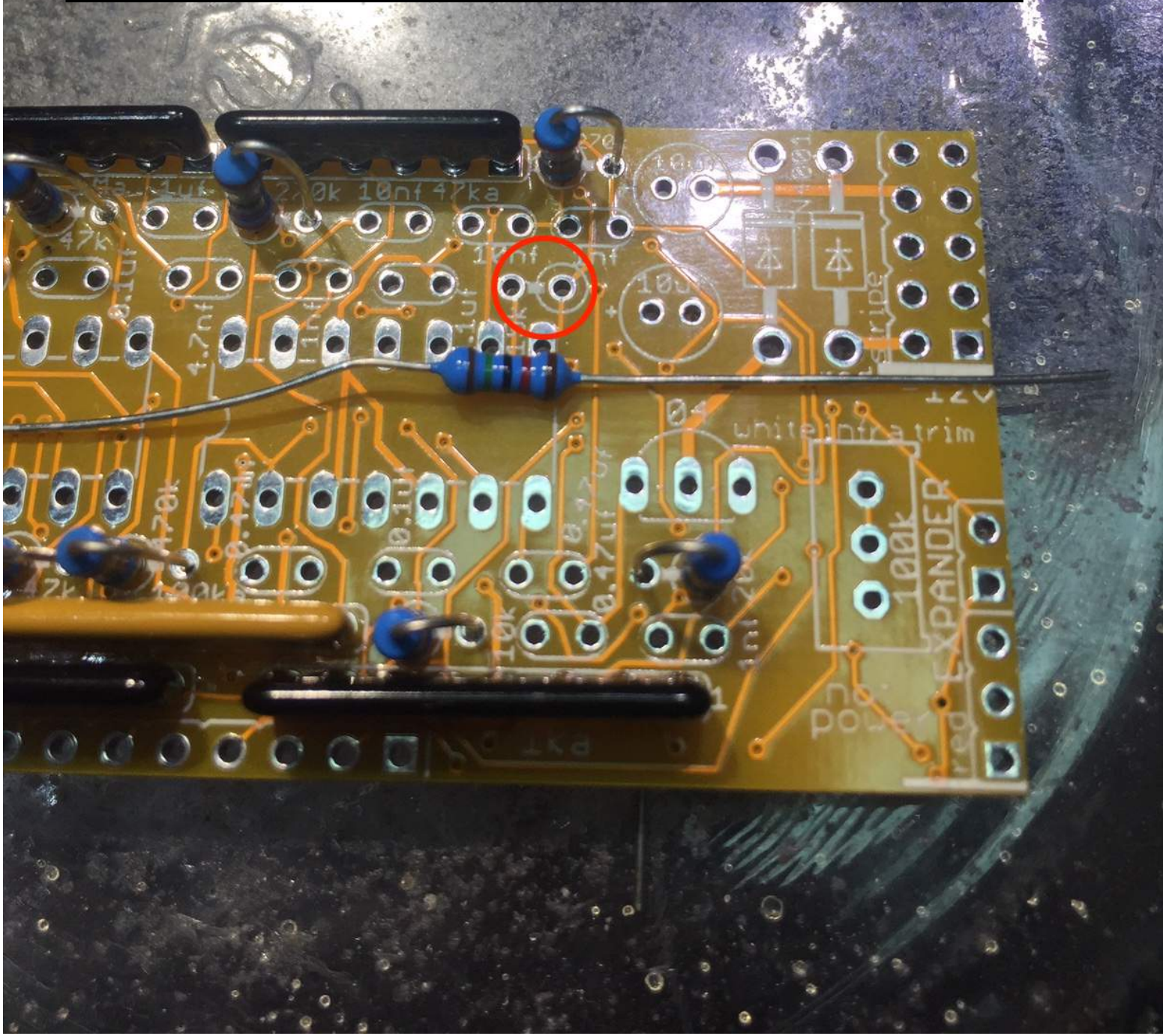
ONE 20K
COLOR BANDS RED, BLACK,
BLACK, RED, BROWN



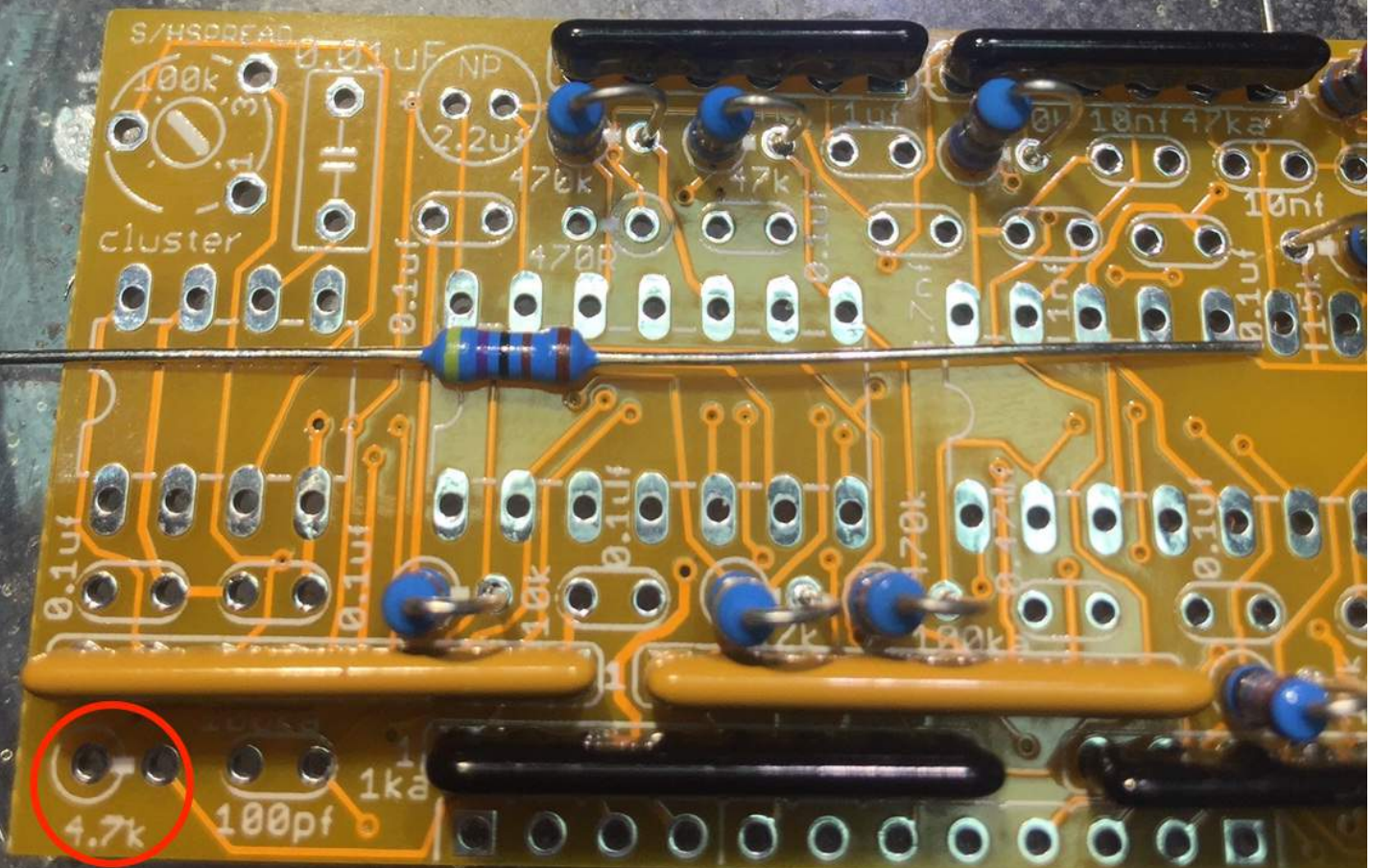
20K



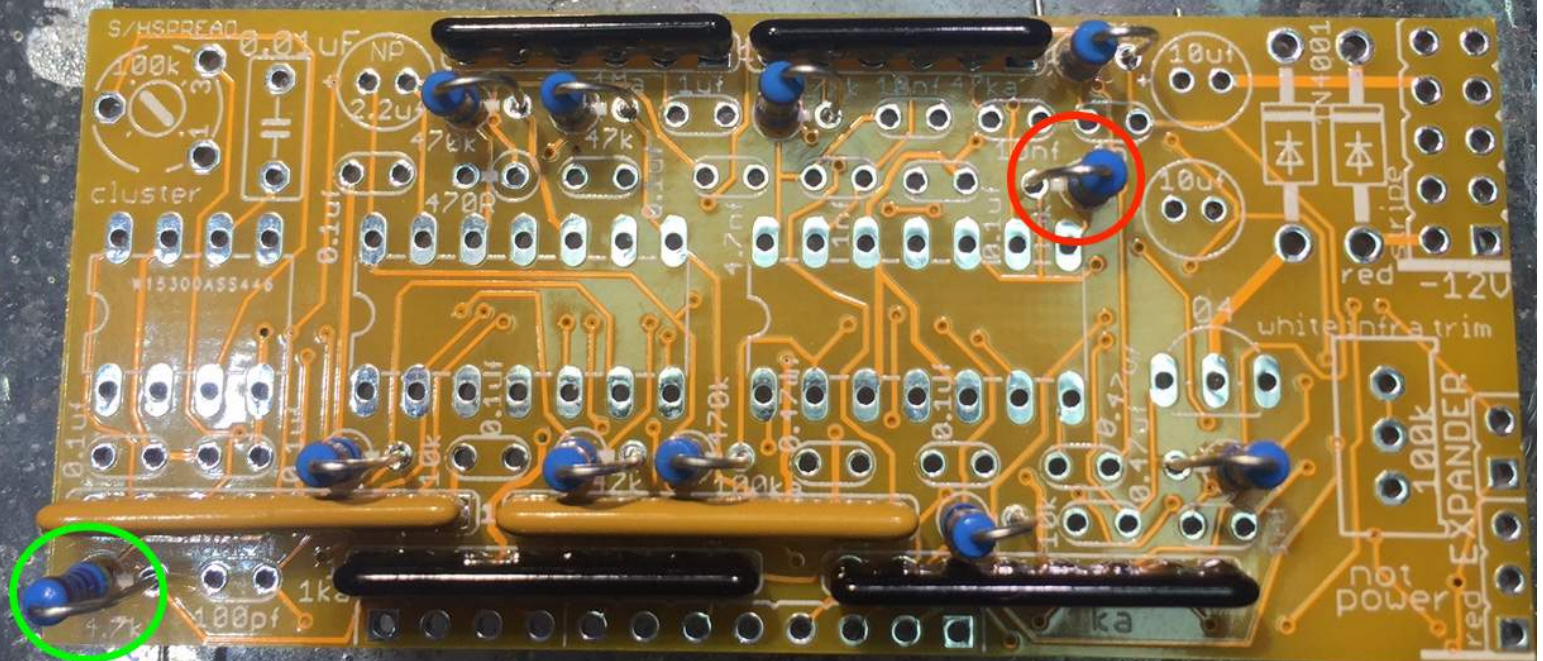
**ONE 15K
COLOR BANDS
BROWN, GREEN, BLACK, RED,
BROWN. THE REMAINING 2
15K GO ON THE TOP PCB.**



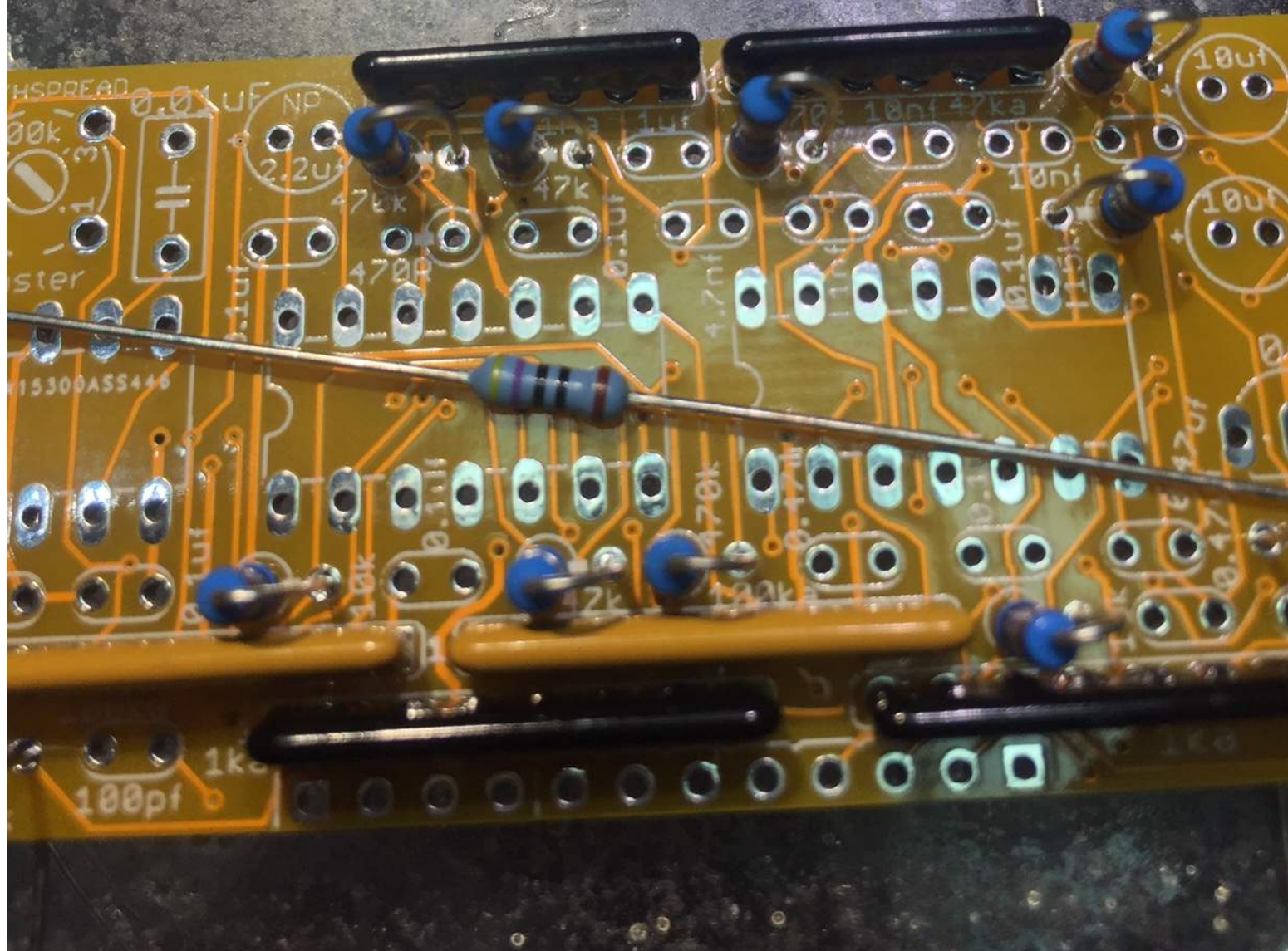
**ONE 4.7K
COLOR BANDS
YELLOW,PURPLE,BLACK,
BROWN,BROWN**



15K RED CIRCLE
4.7K GREEN CIRCLE

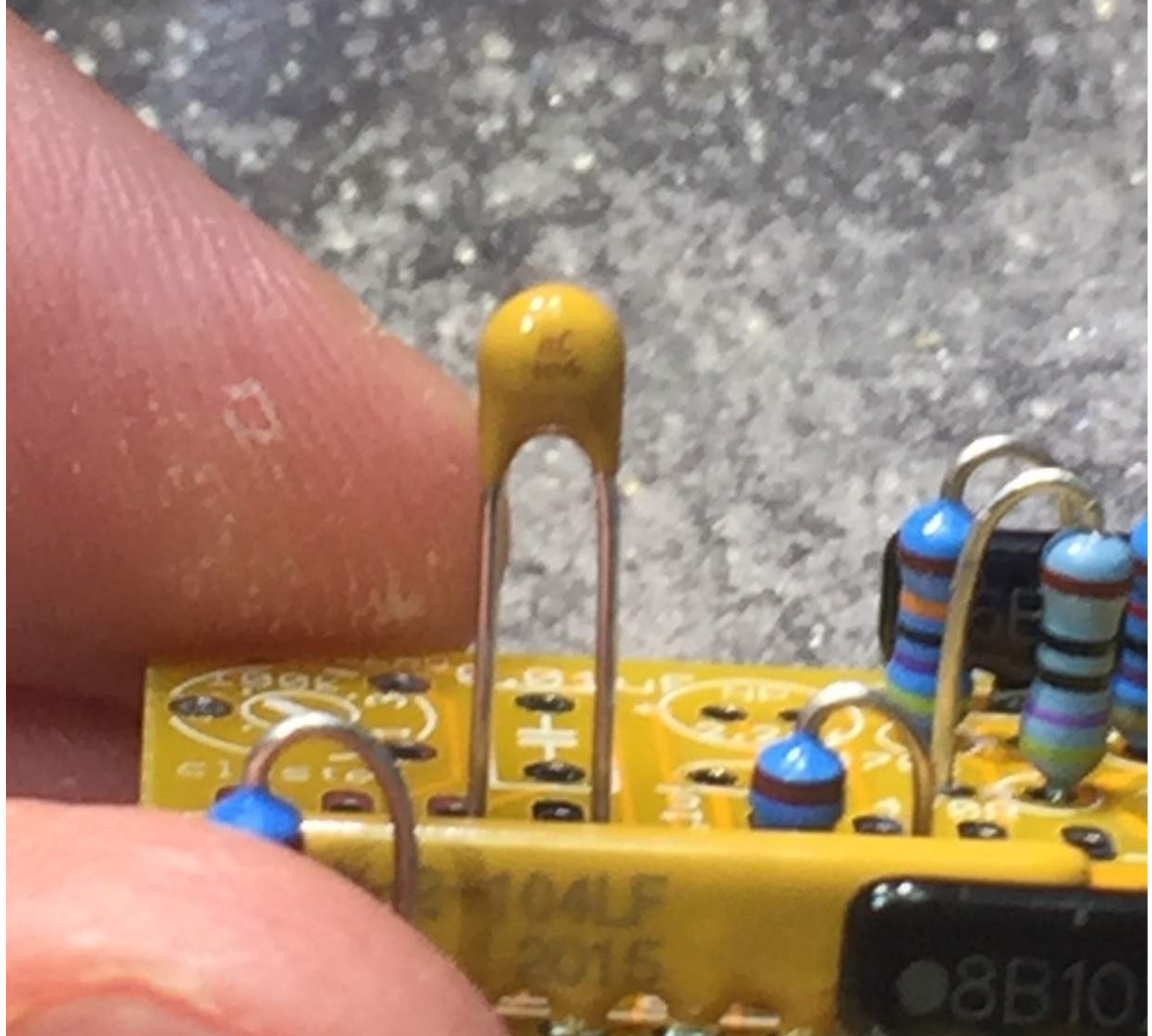


**ONE 470R(OHM)
COLOR BANDS
YELLOW,PURPLE,BLACK,BLA
CK,BROWN**

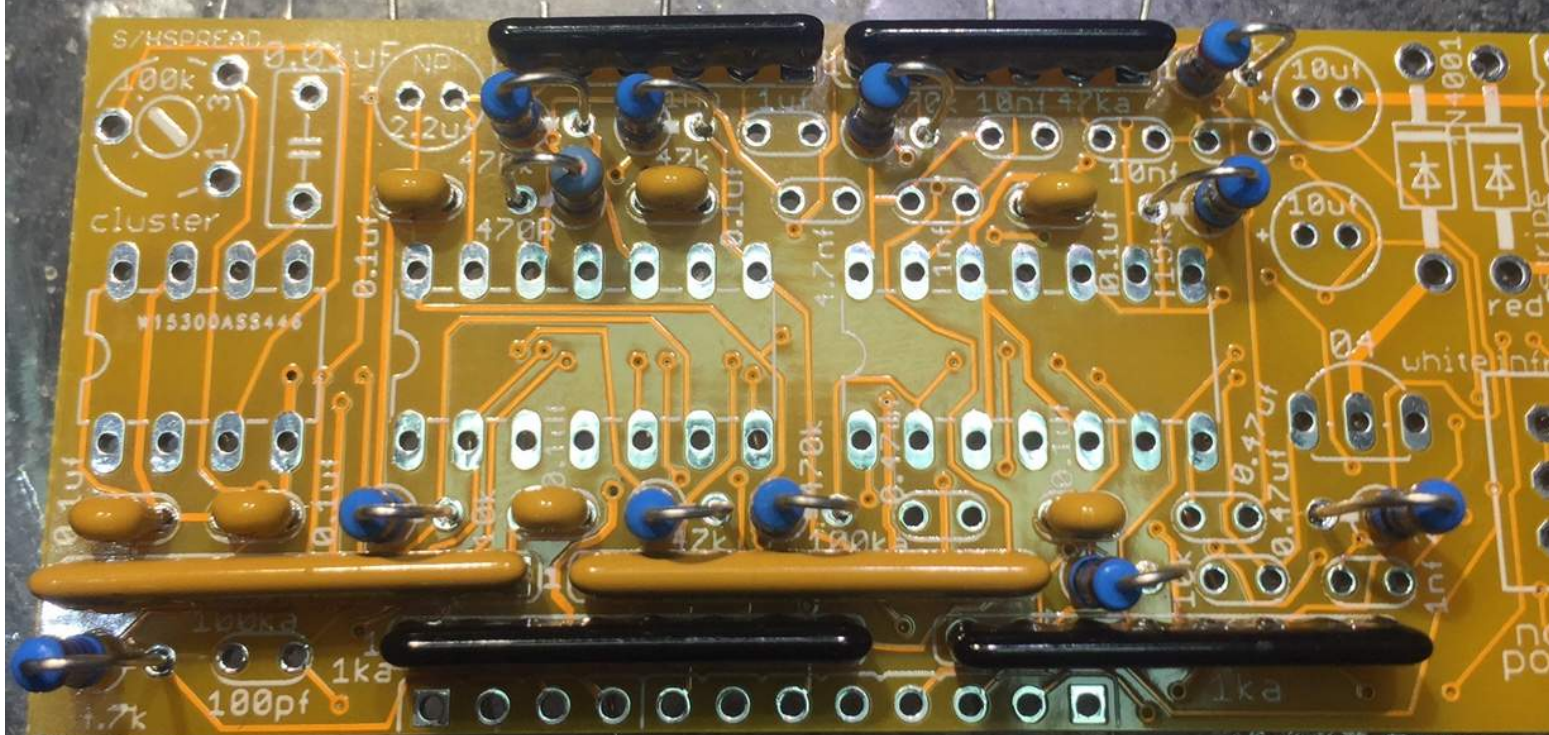


470R

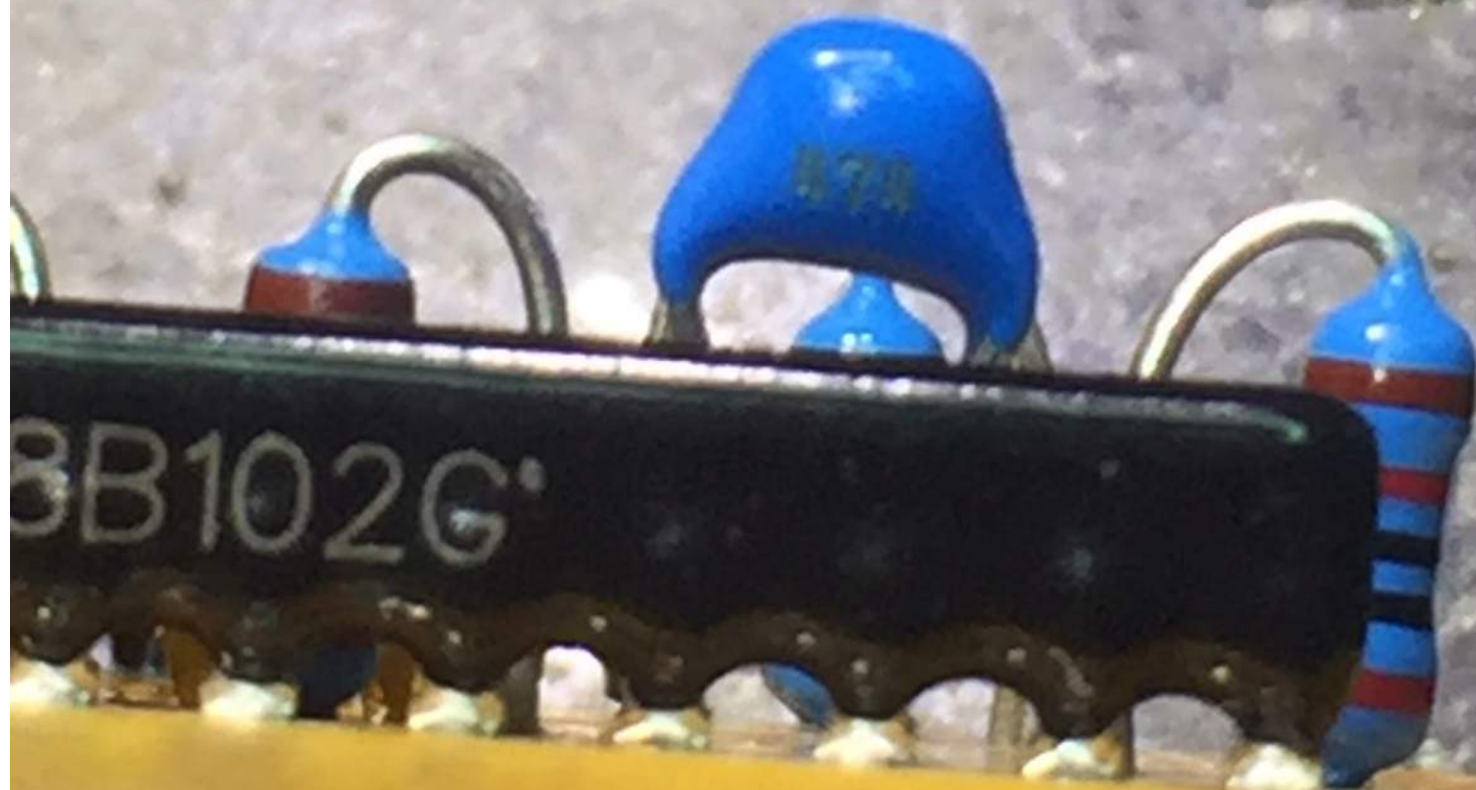
**SEVEN 0.1UF CAPACITORS
CODE 104**



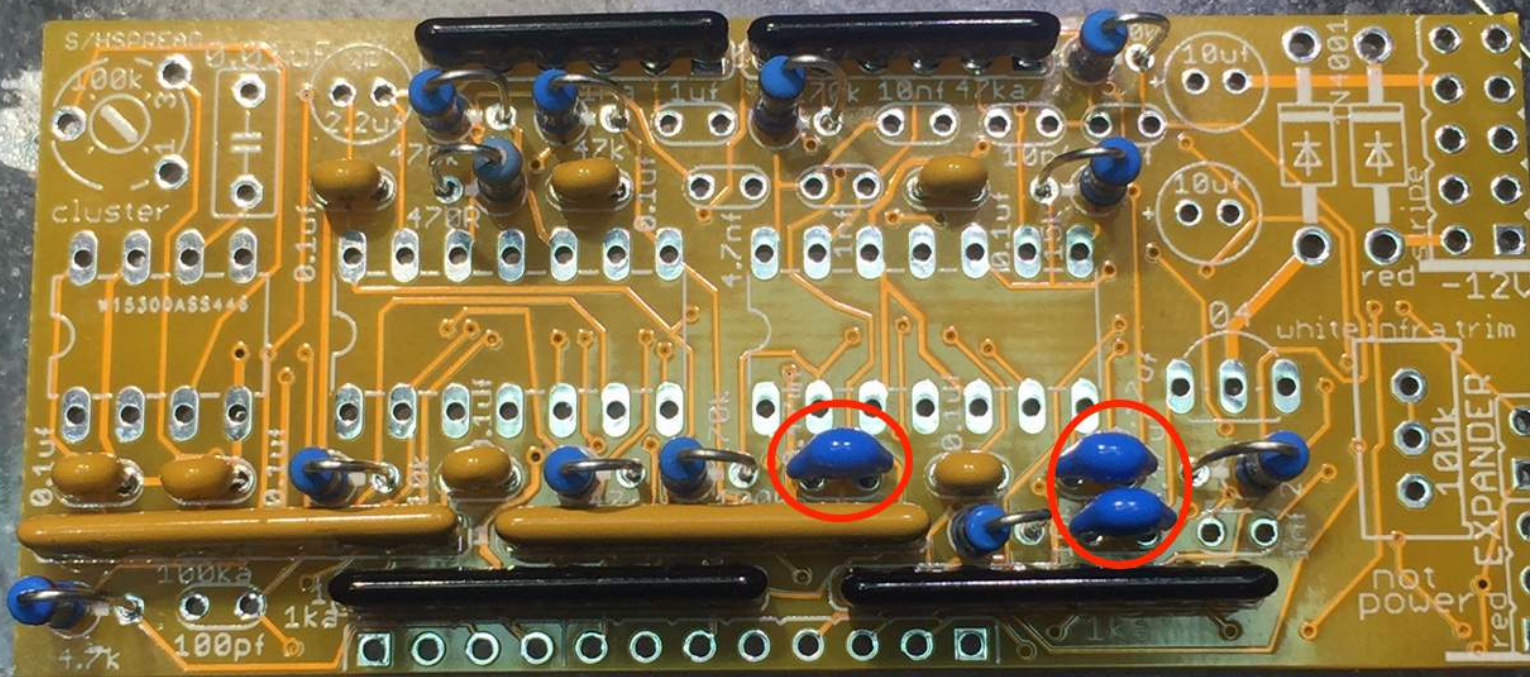
0.1 μ F



**THREE 0.47uF
CODE 474**

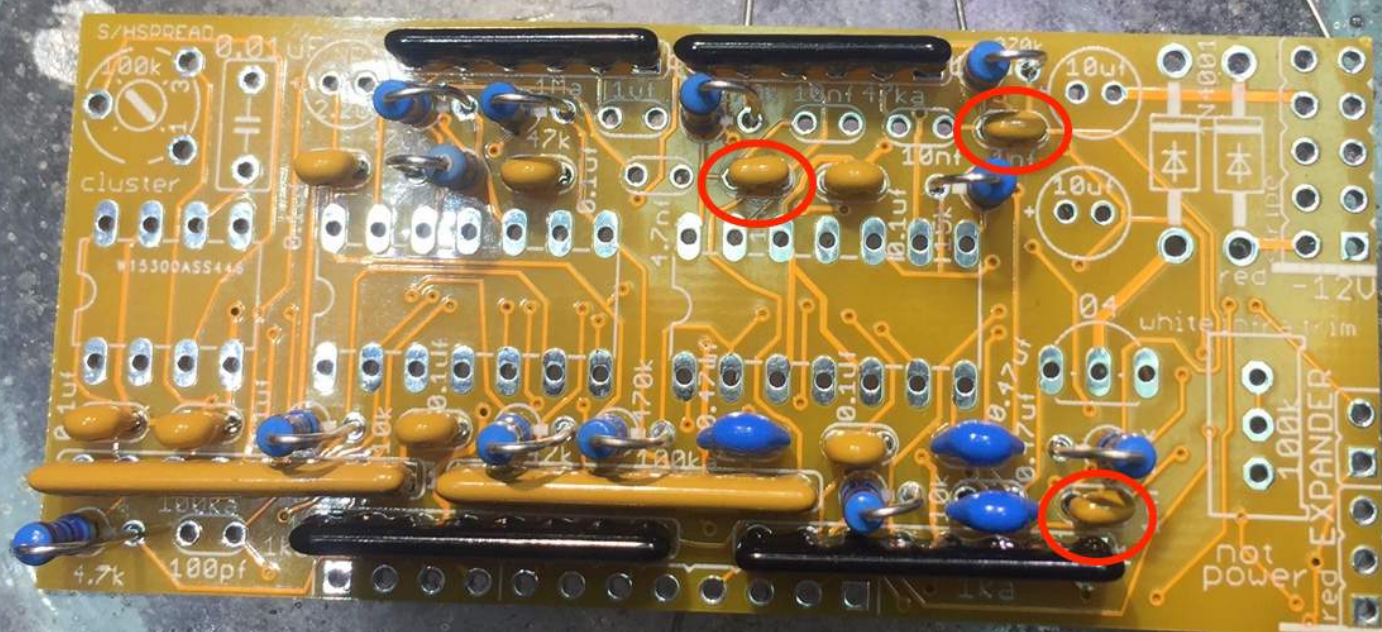


0.47UF

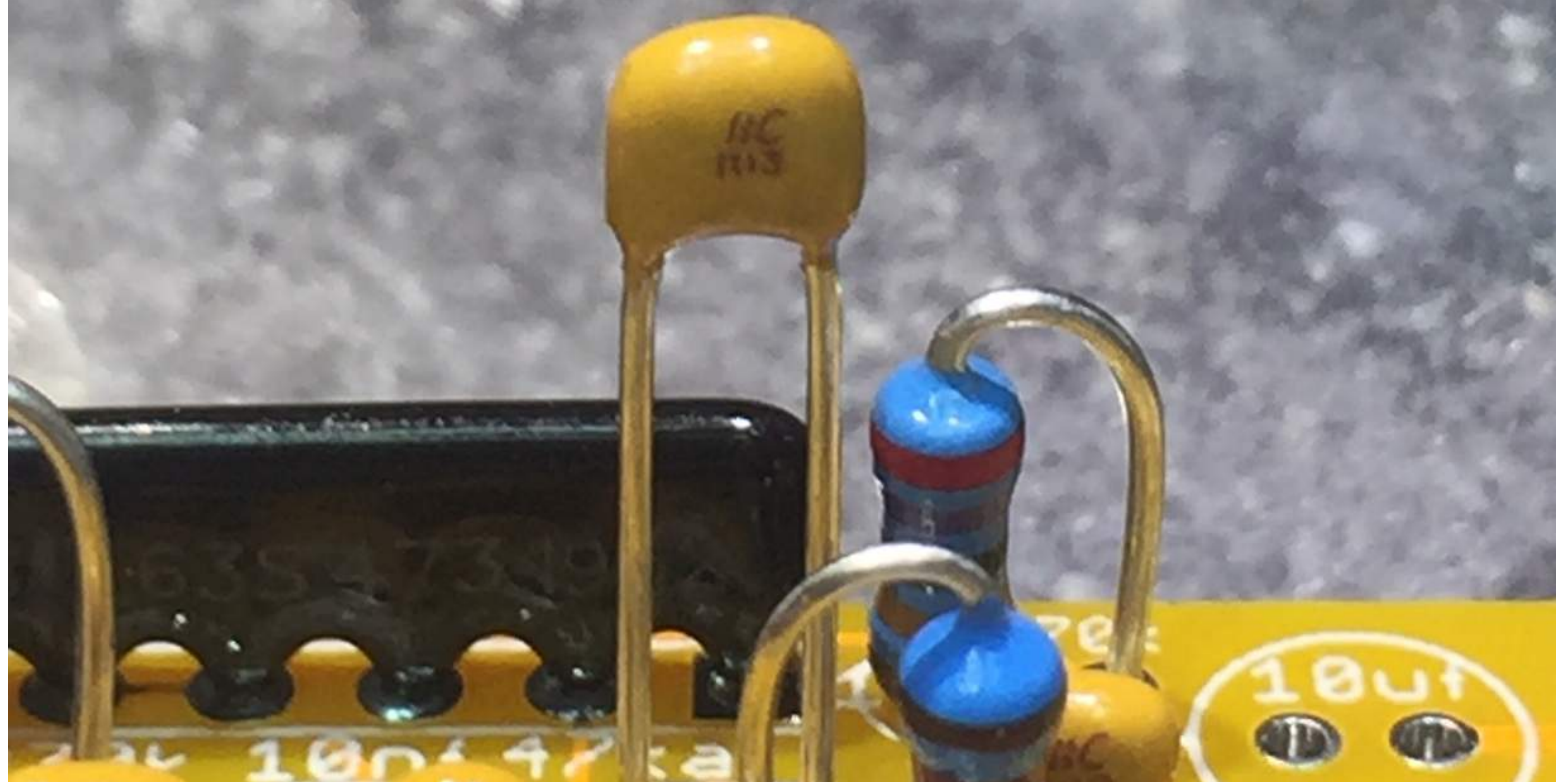


**THREE 1NF(0.001UF)
CODE 102**

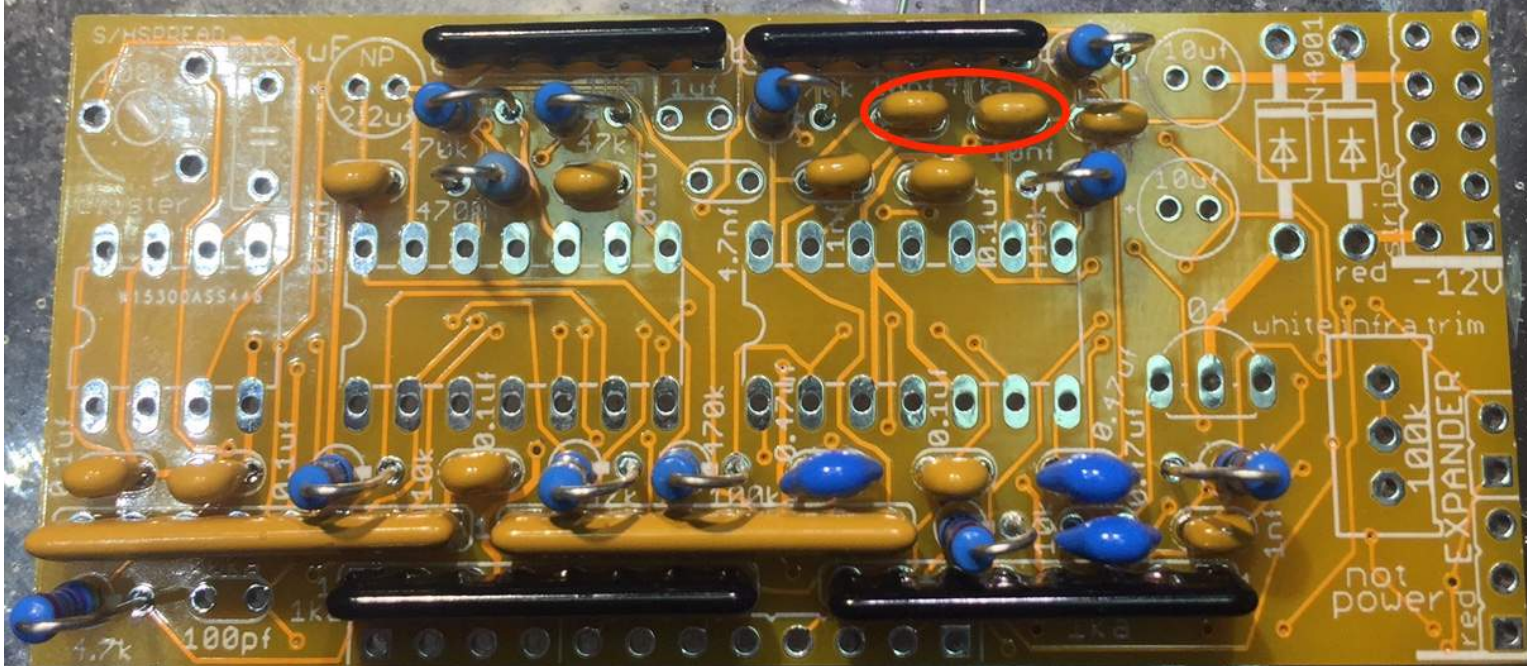
1 NF



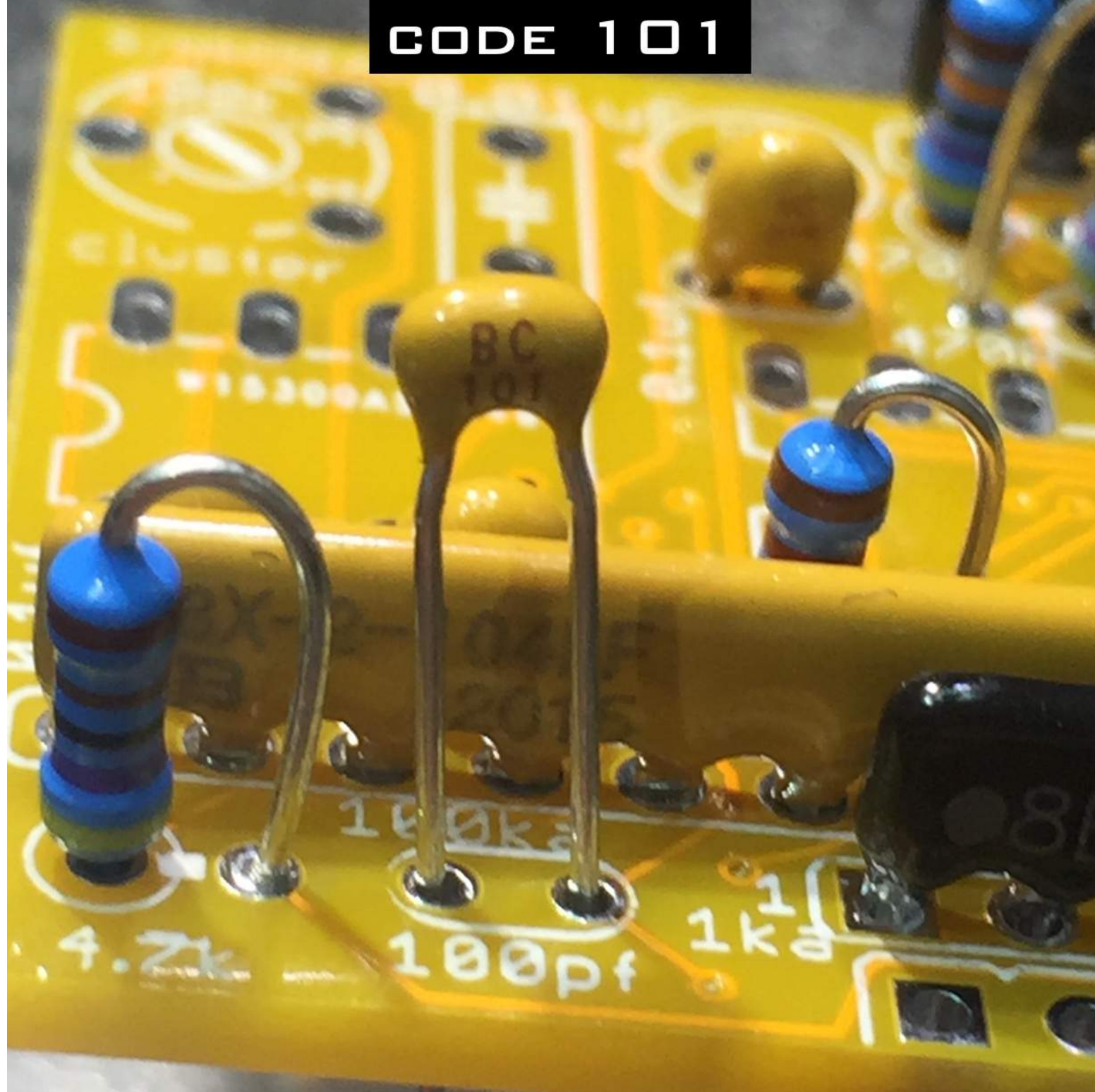
**TWO 10NF
CAPS(0.01UF)
CODE 103**



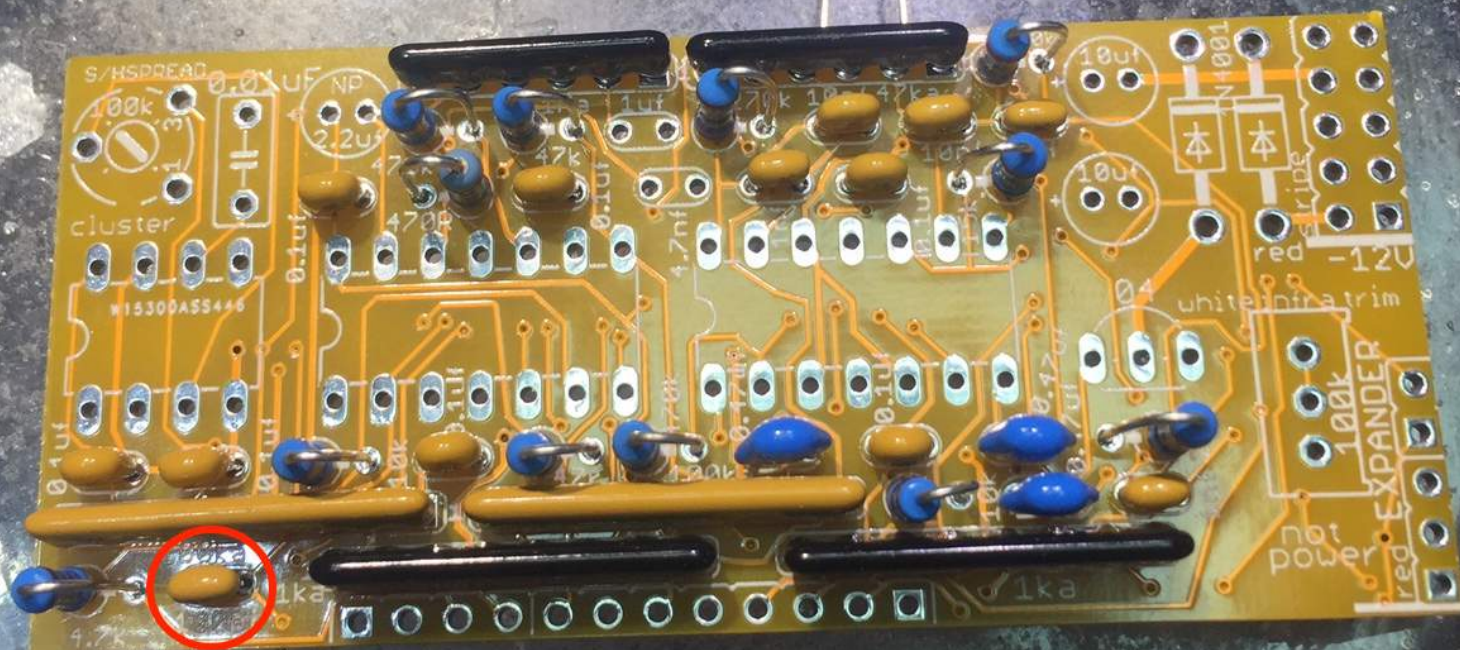
10NF



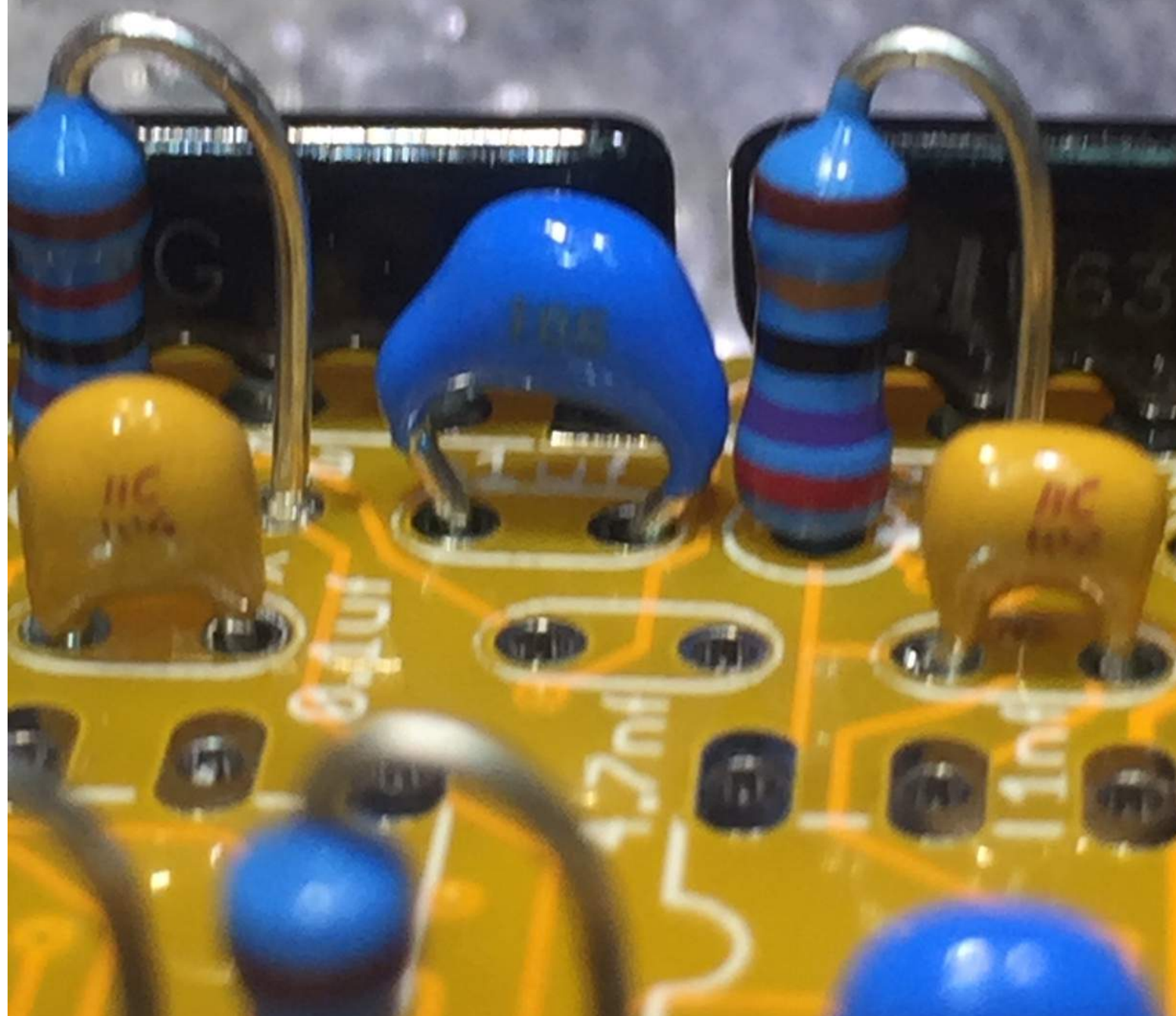
ONE
100PF
CODE 101



100PF

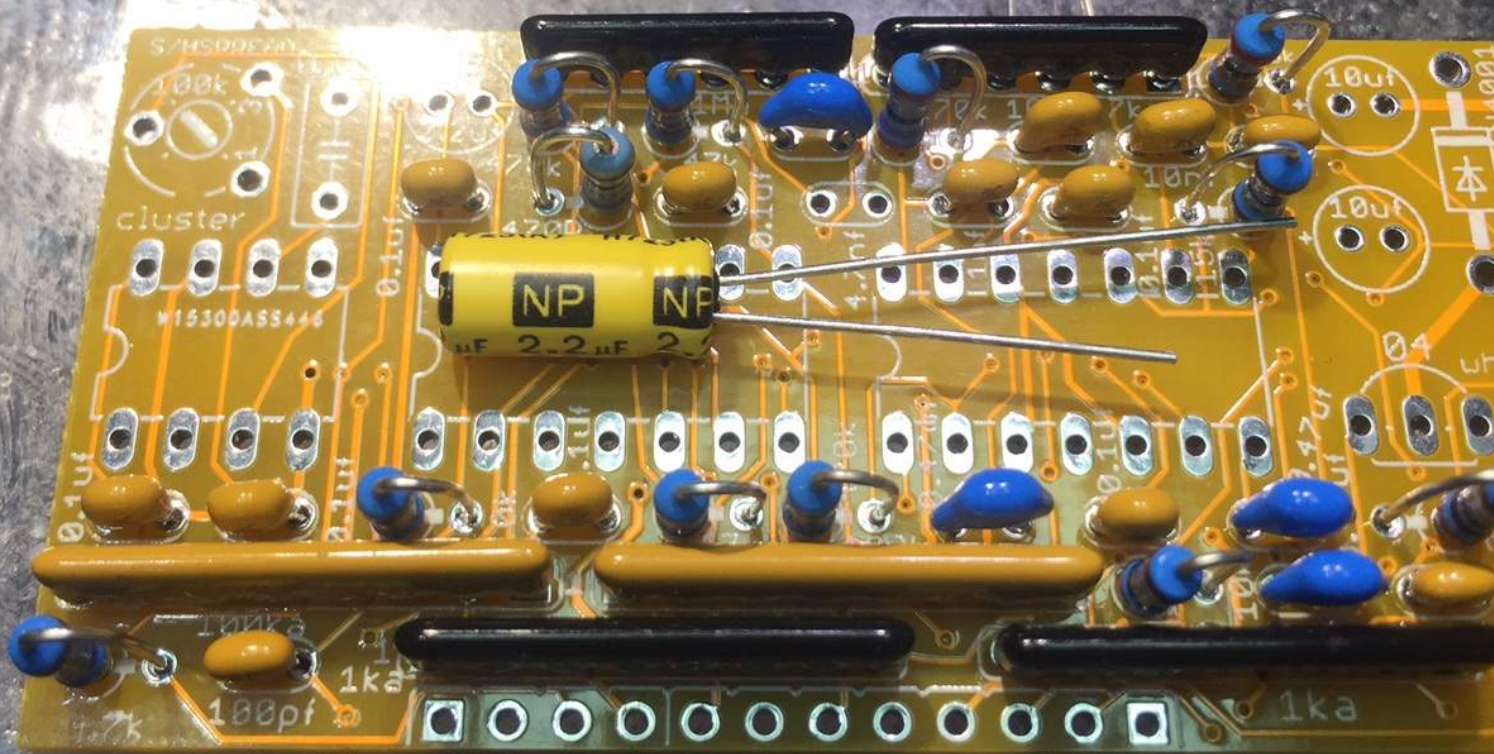


ONE 1UF
CODE 105

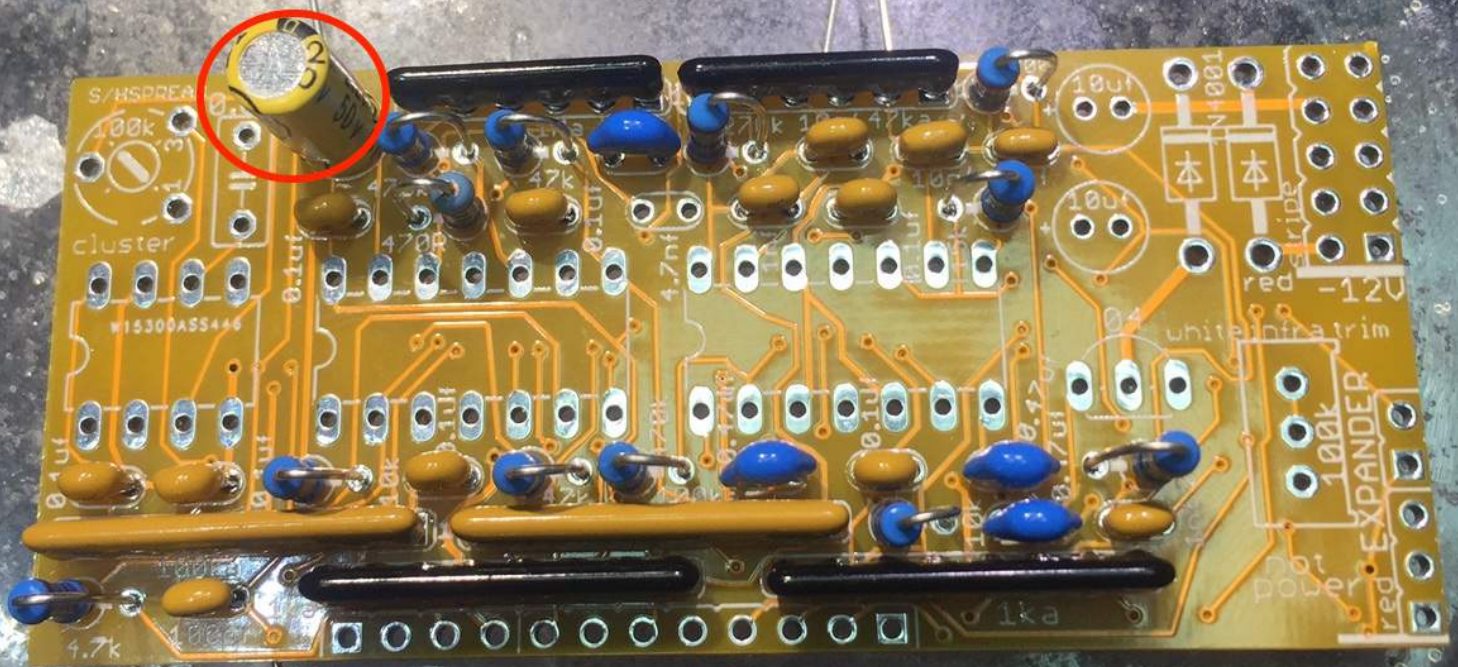


1 UF

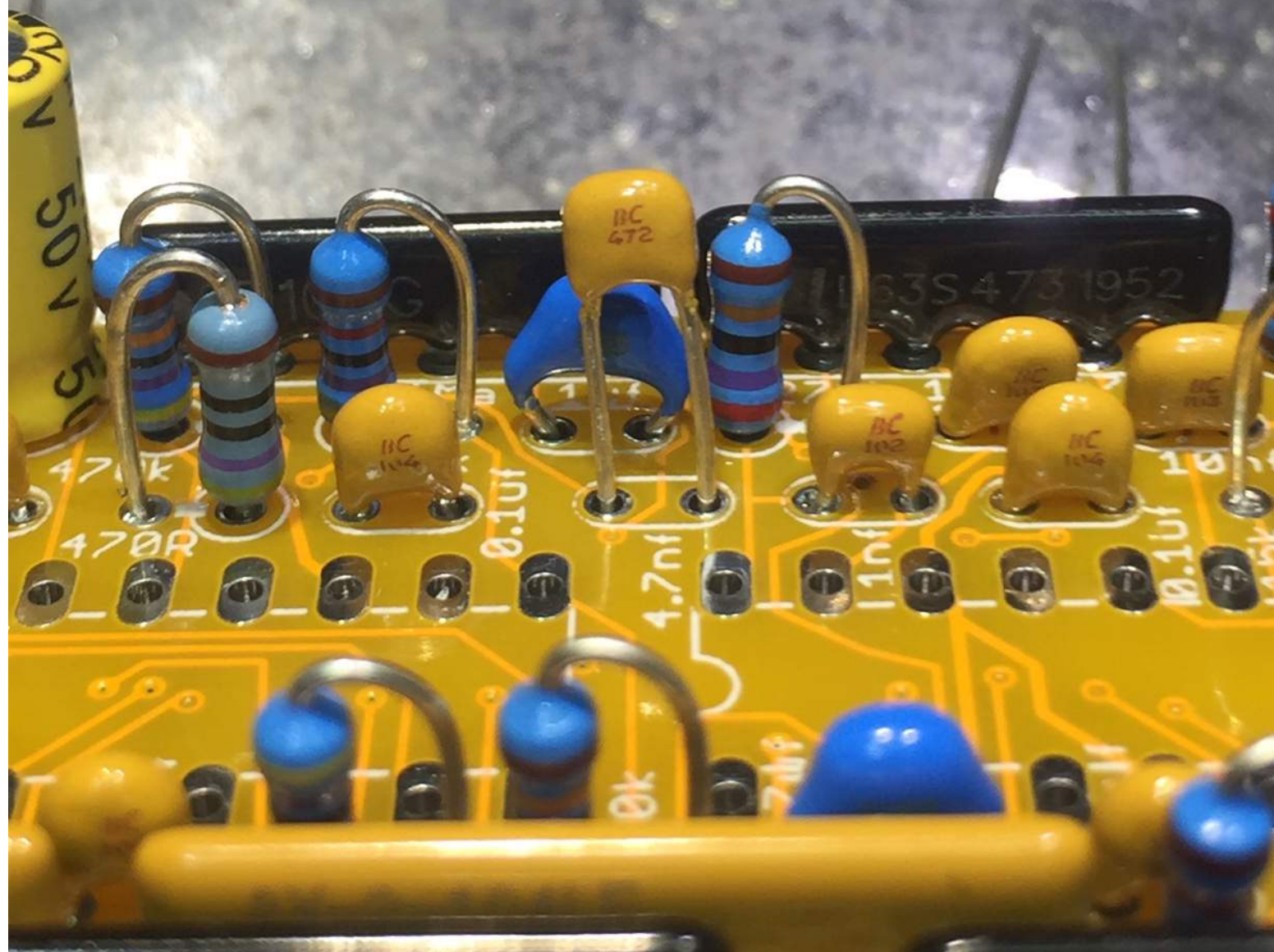
2.2UF NONPOLAR



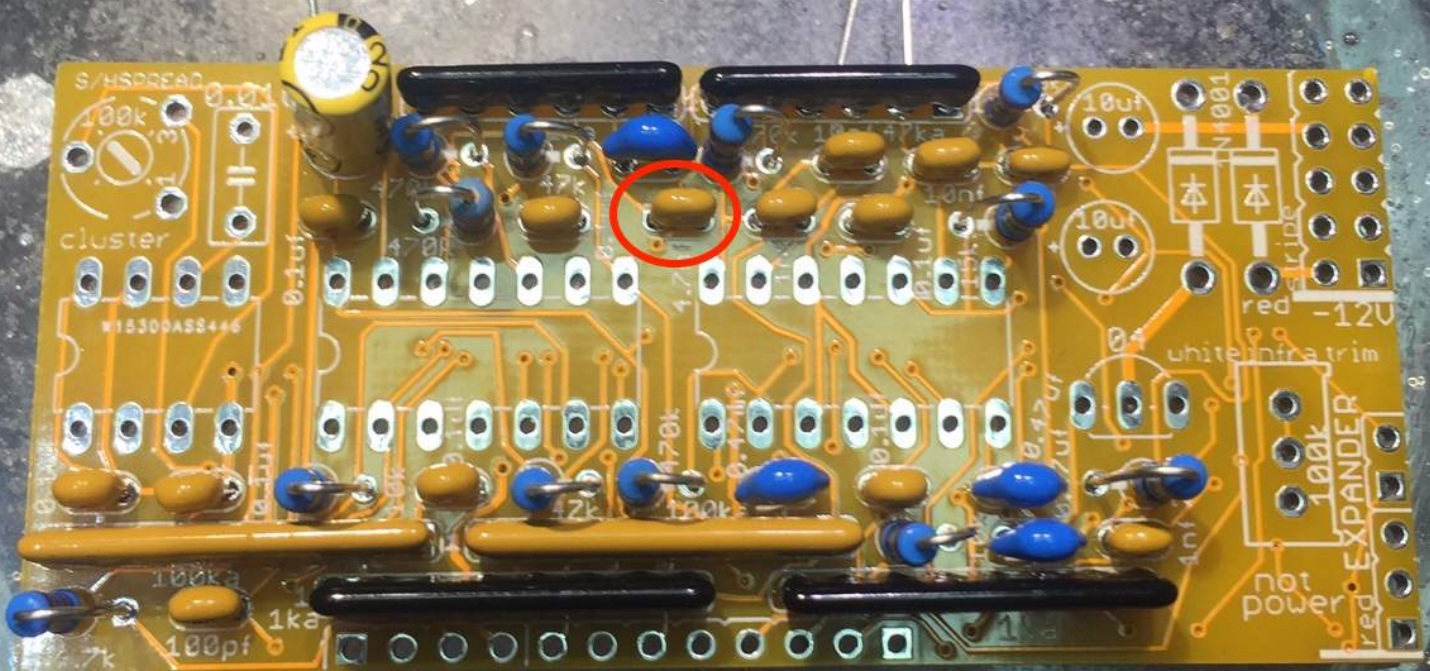
2.2UF



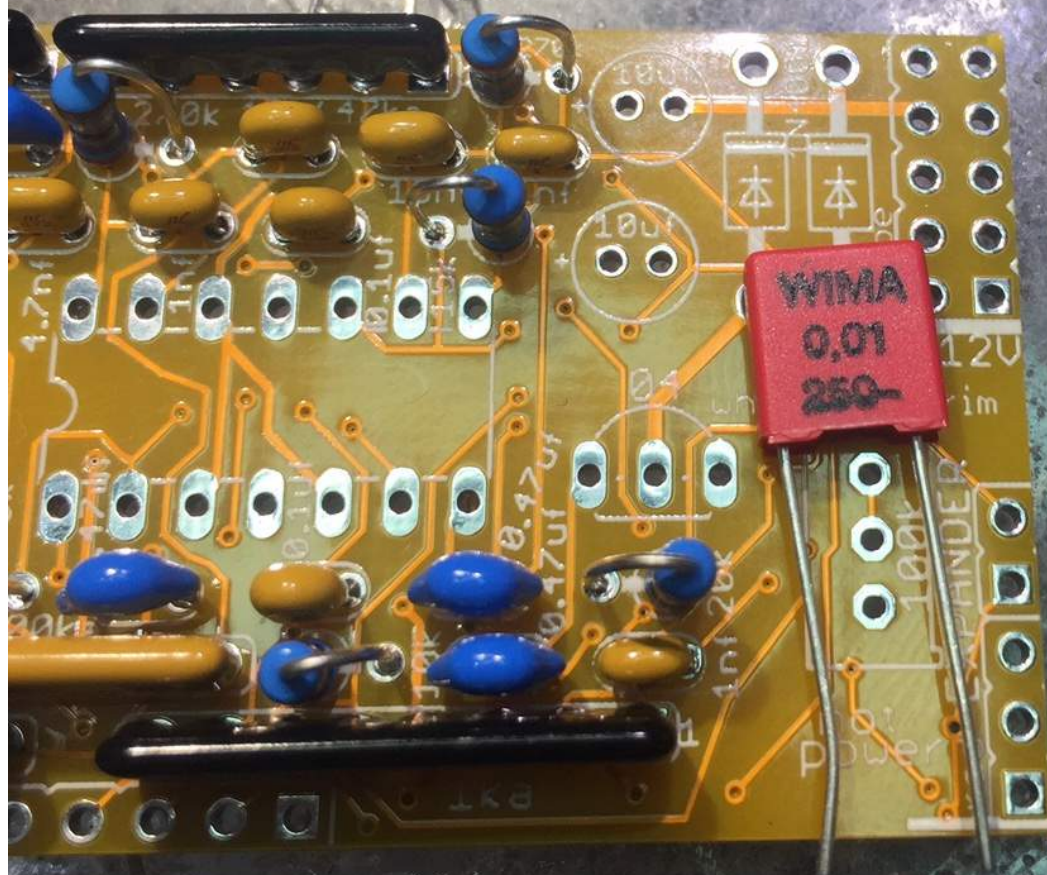
ONE 4.7NF(0.0047UF)
CODE 472



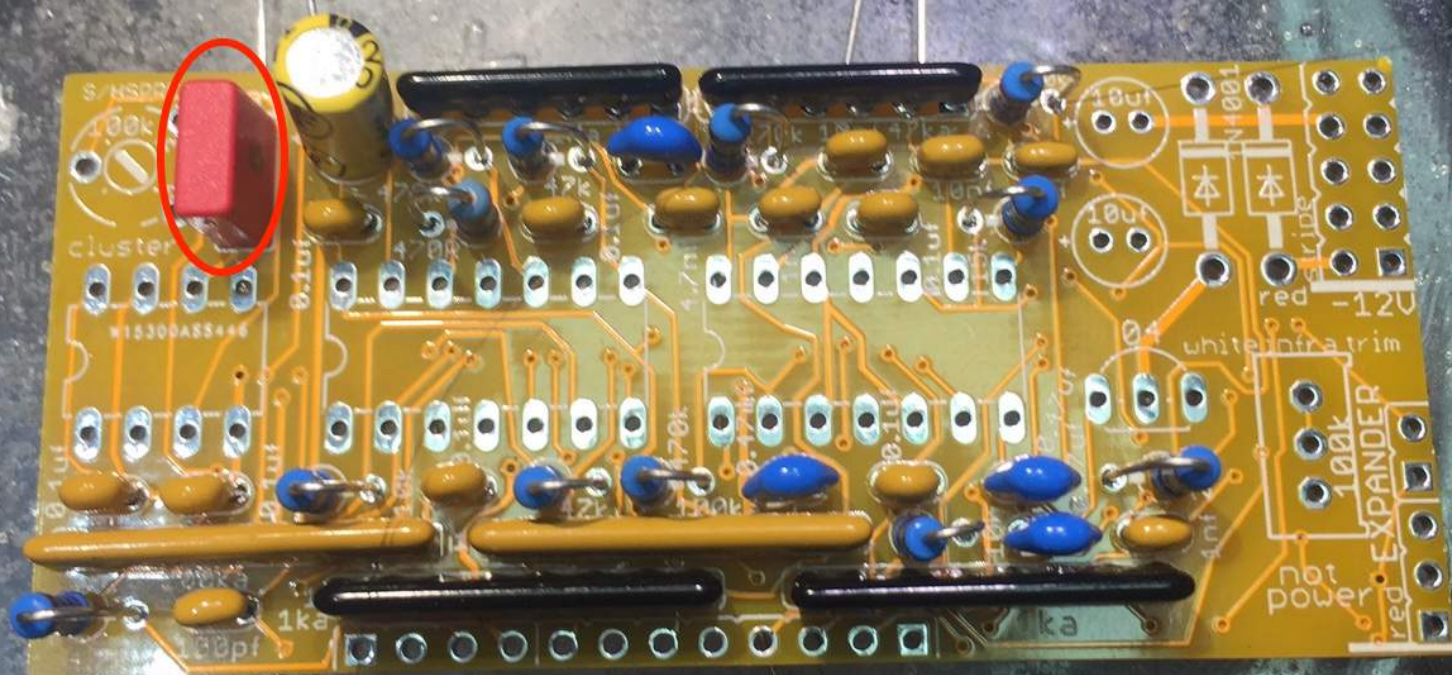
4.7 NF



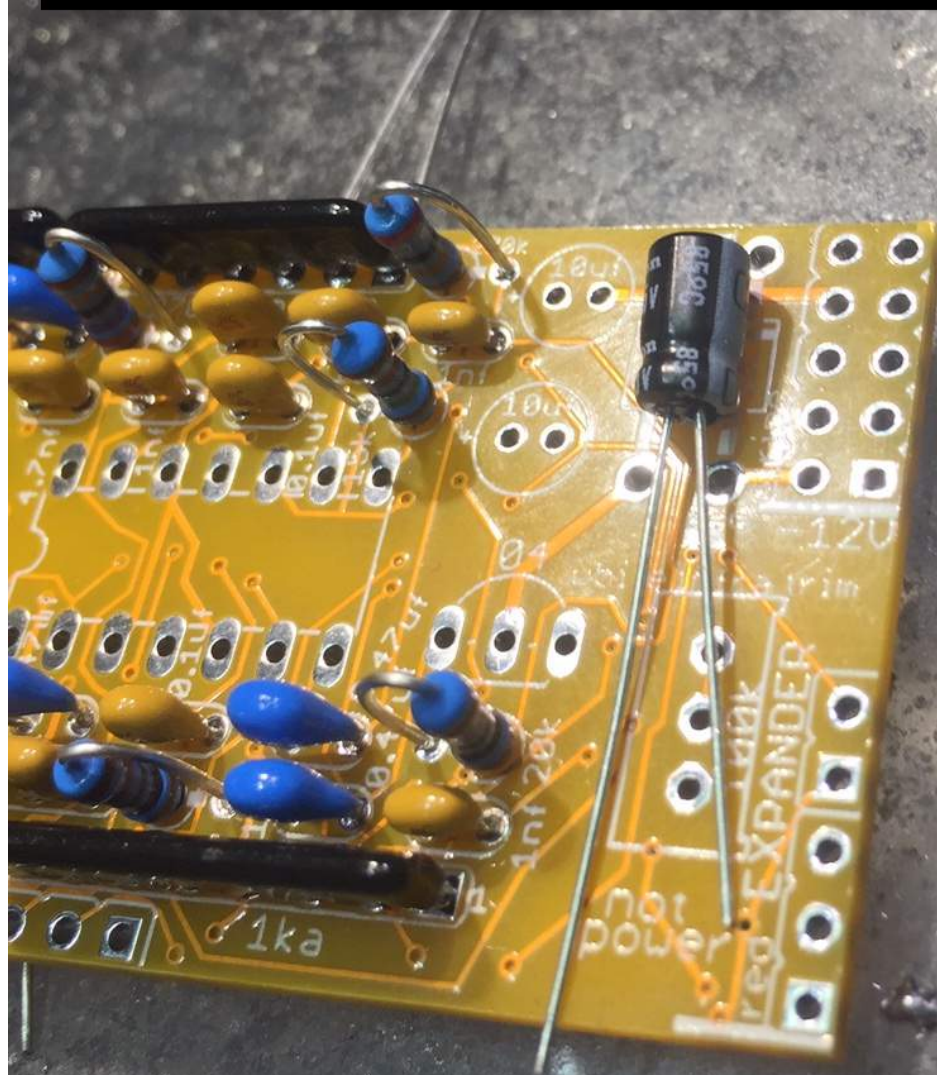
0.01UF POLYPROP CAP



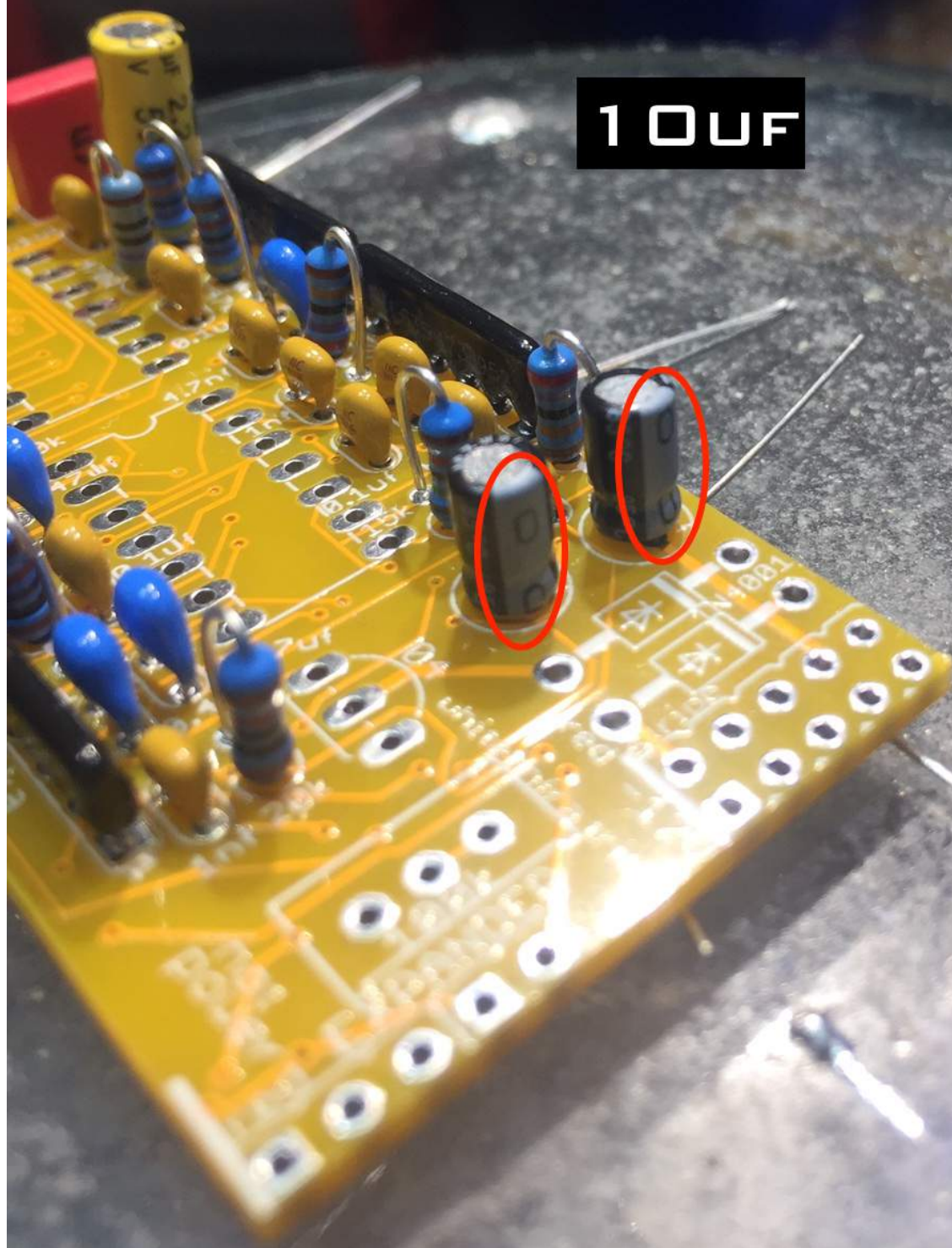
0.01 uF

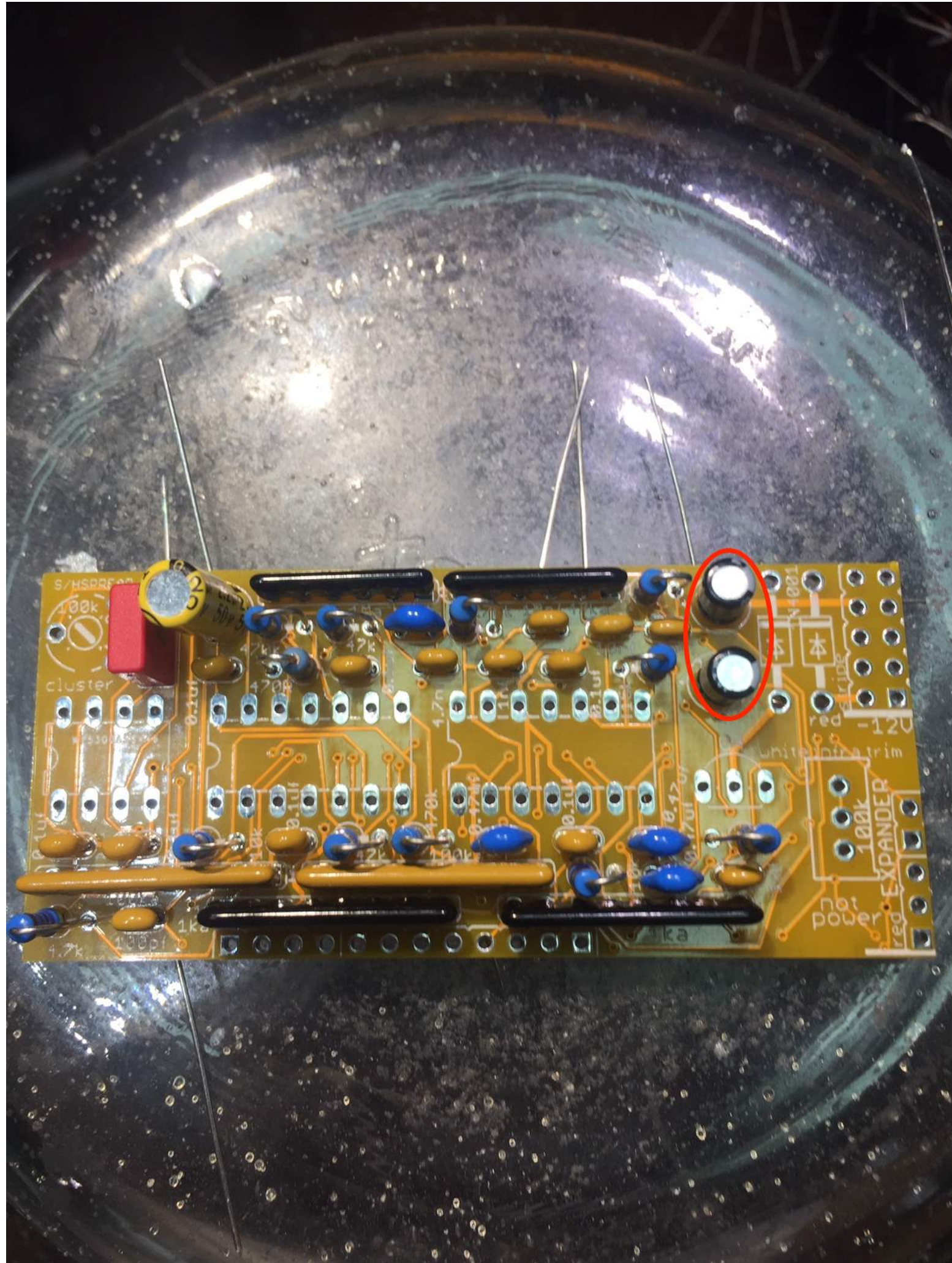


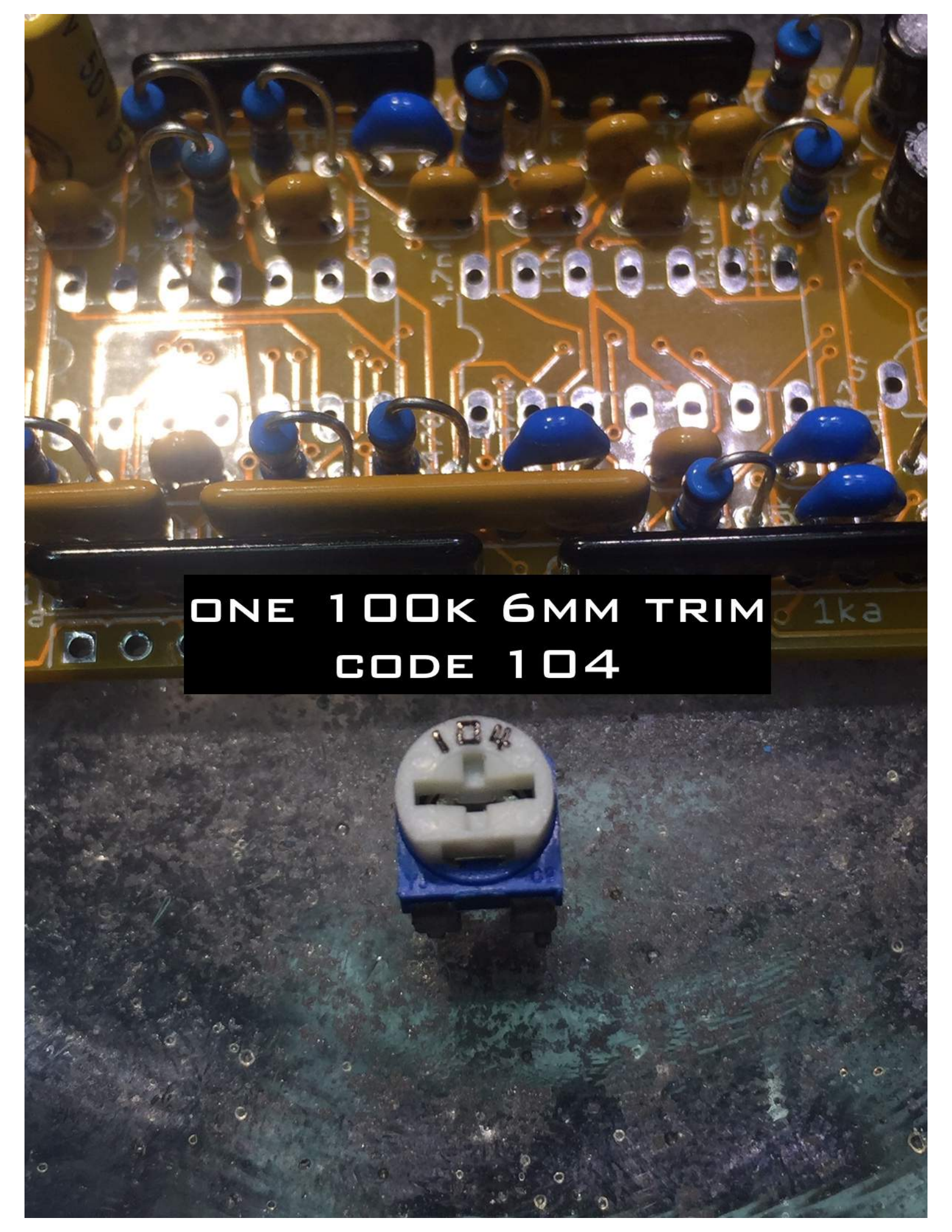
**TWO 10UF ELECTROLYTICS
THESE HAVE A POLARITY.
WHITE STRIPE TO THE RIGHT**



10uF



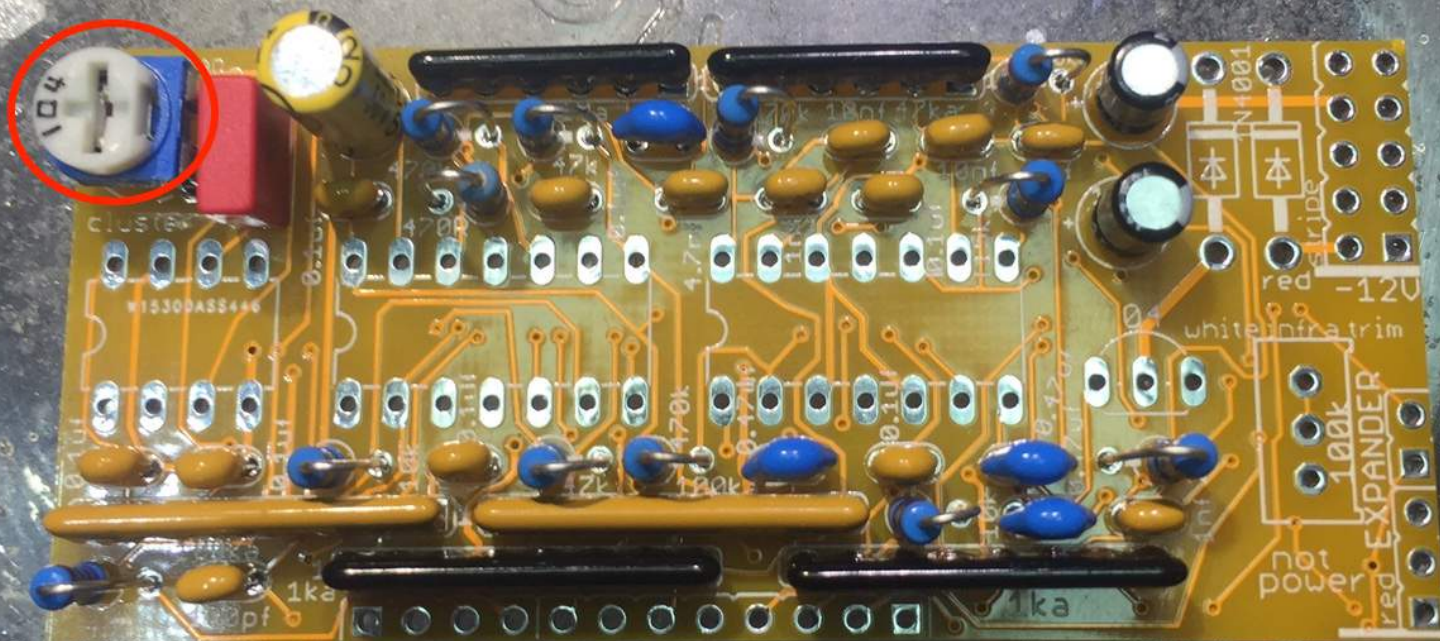




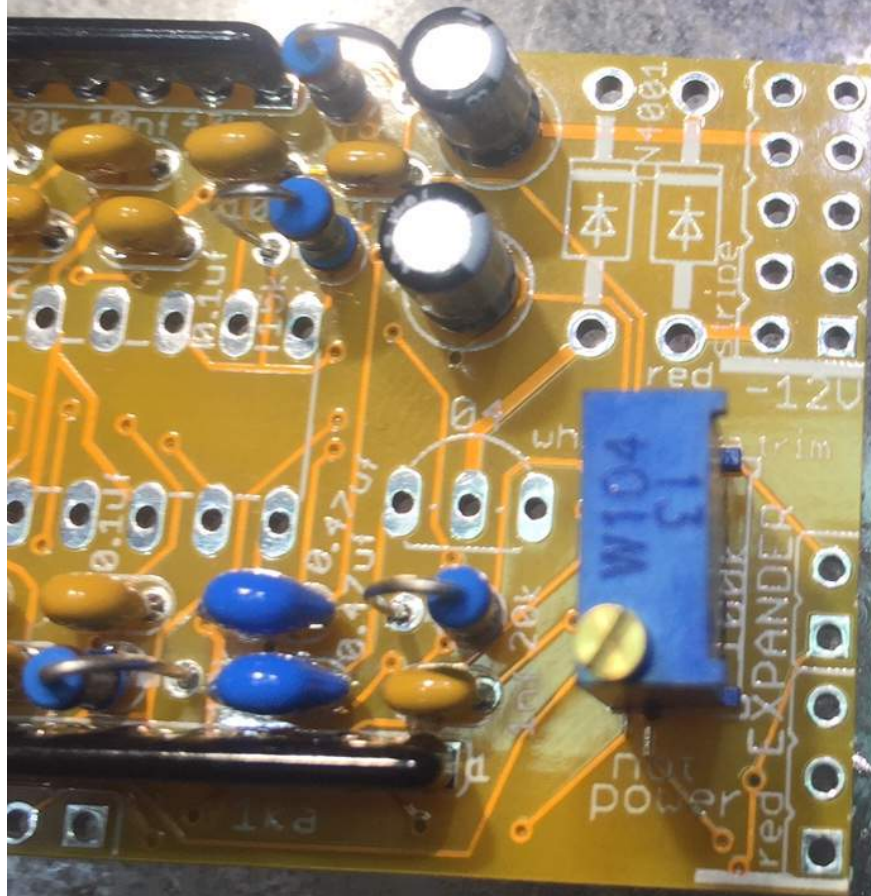
ONE 100K 6MM TRIM
CODE 104



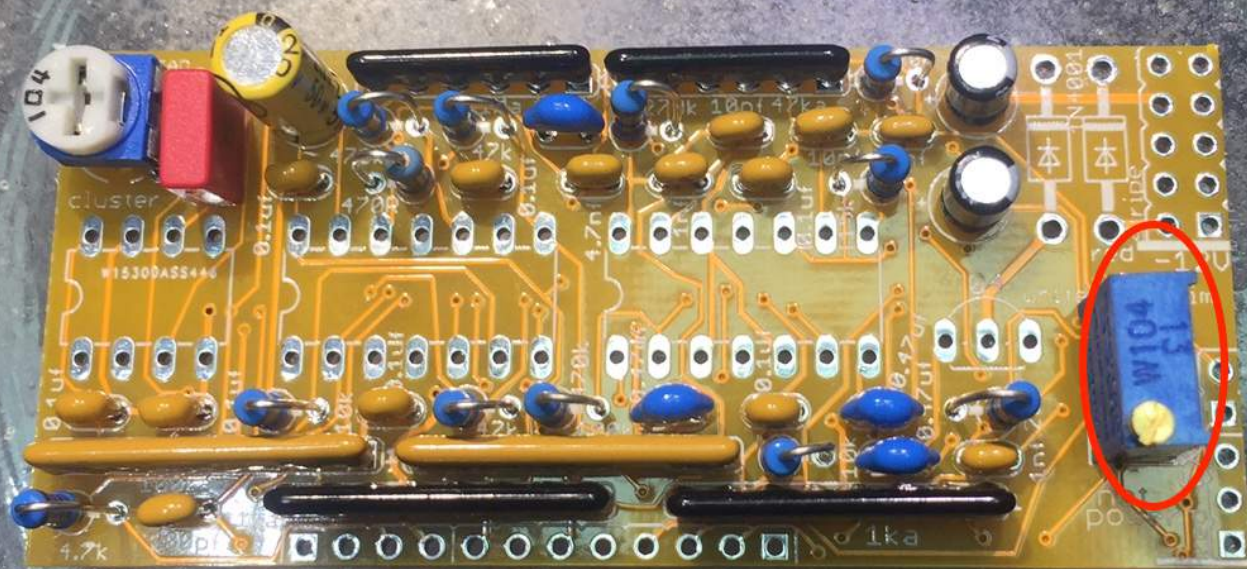
100K CLUSTER TRIM



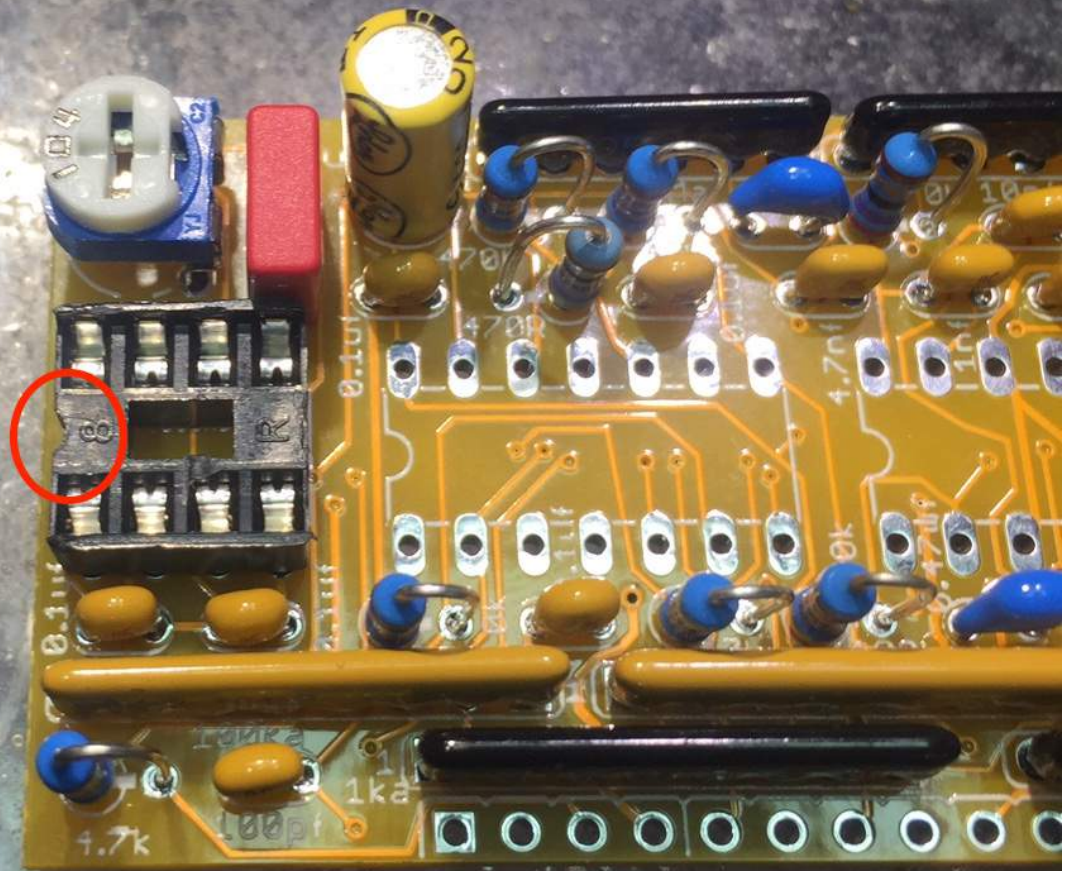
**100K MULTI TURN TRIM
CODE 104. MAKE SURE THE
NOTCHES FACE TO THE RIGHT
AND PACKAGE LINES UP WITH
SILKSCREEN**



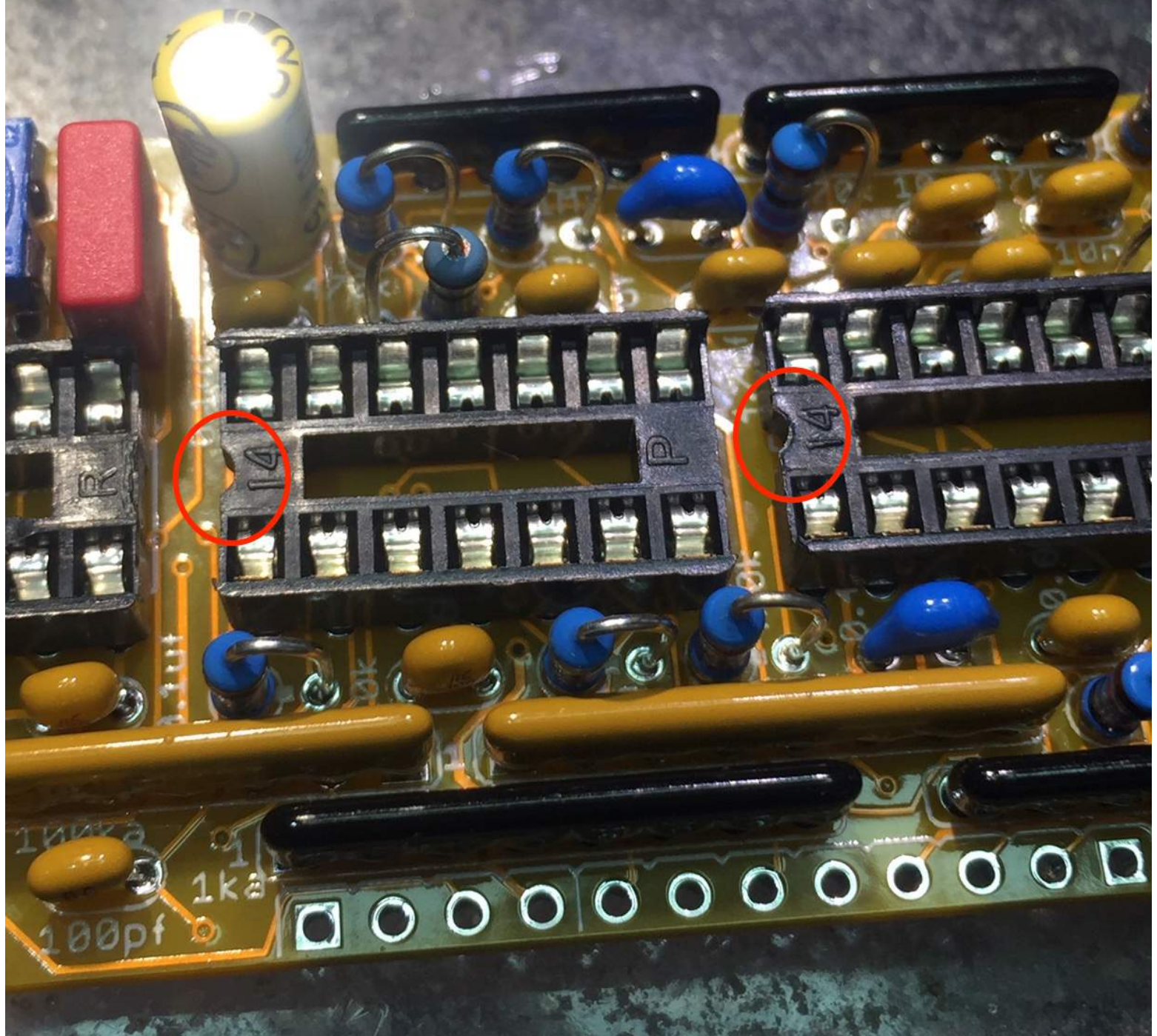
100K MULTI TURN



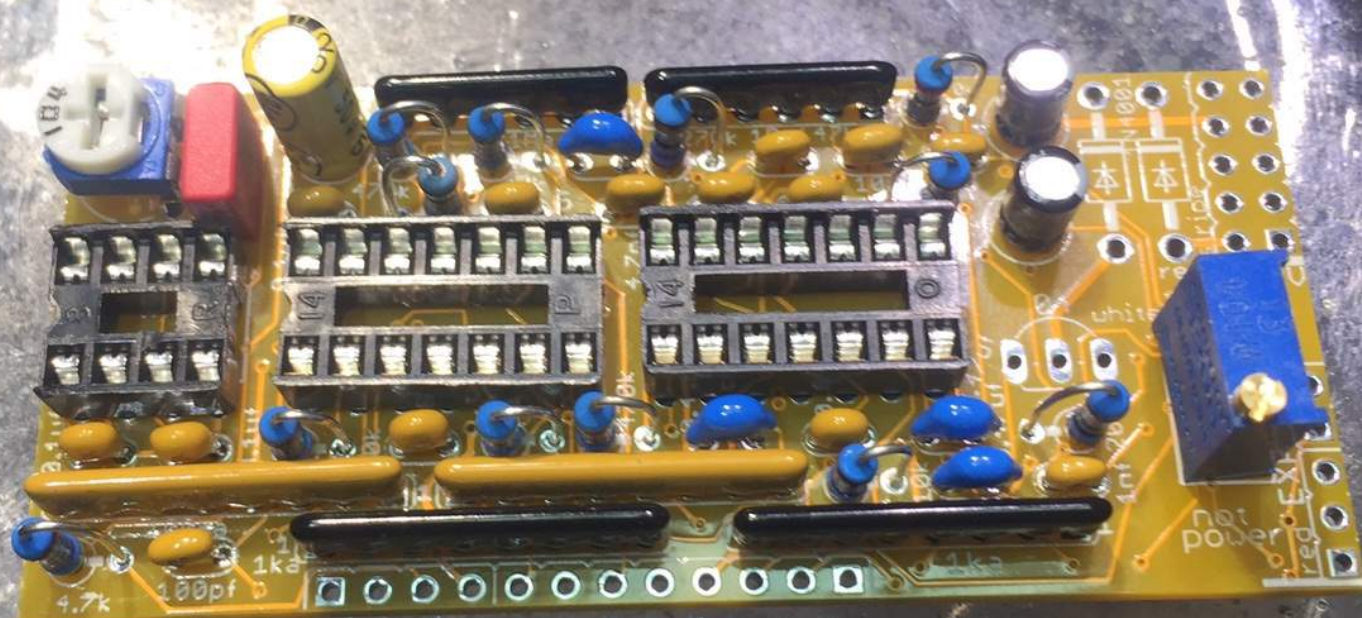
**8 PIN DIP
SOCKET. MAKE
SURE THE NOTCH
IS ON THE LEFT.**



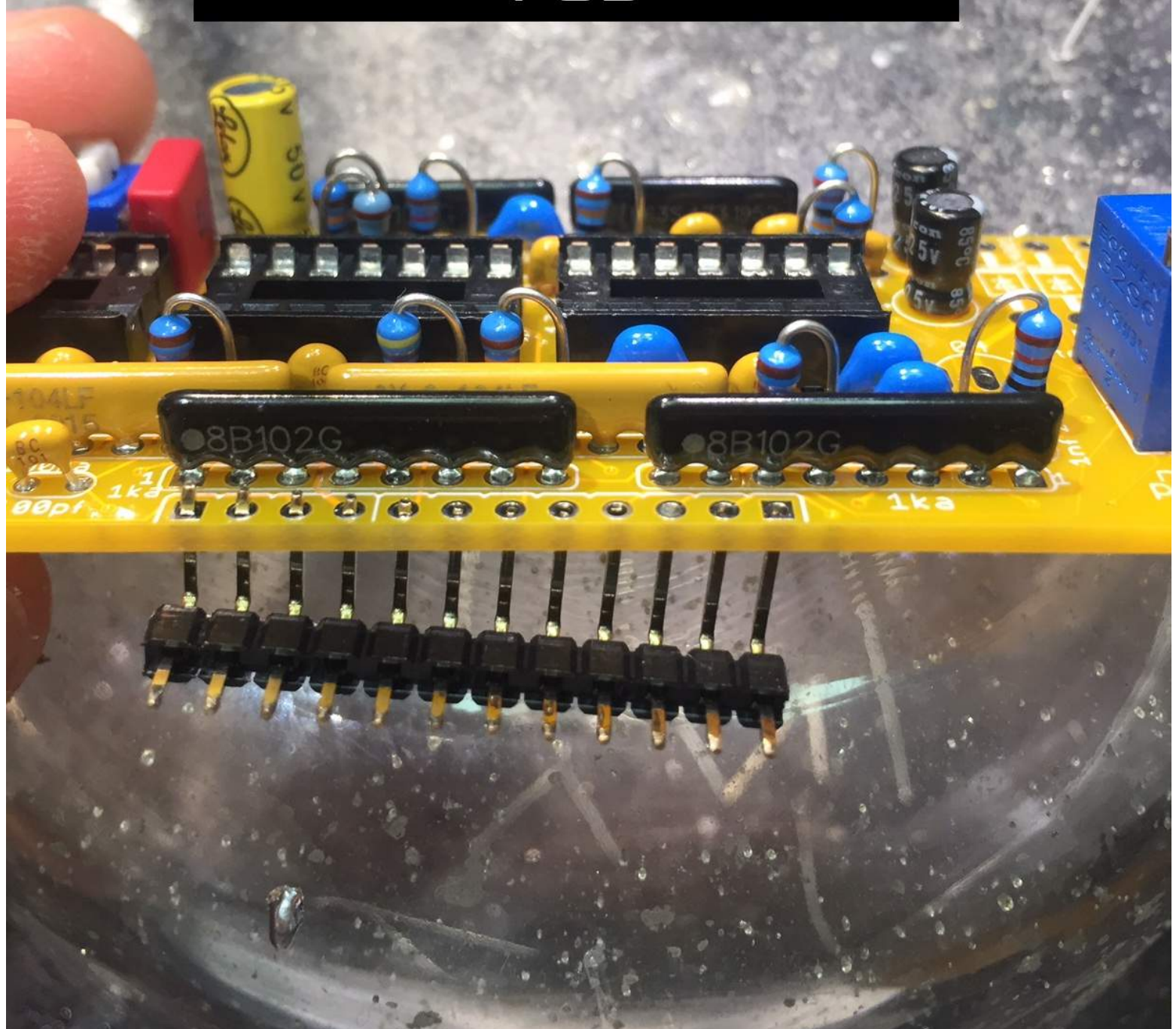
**TWO 14 PIN DIP SOCKETS
NOTCH ON LEFT**



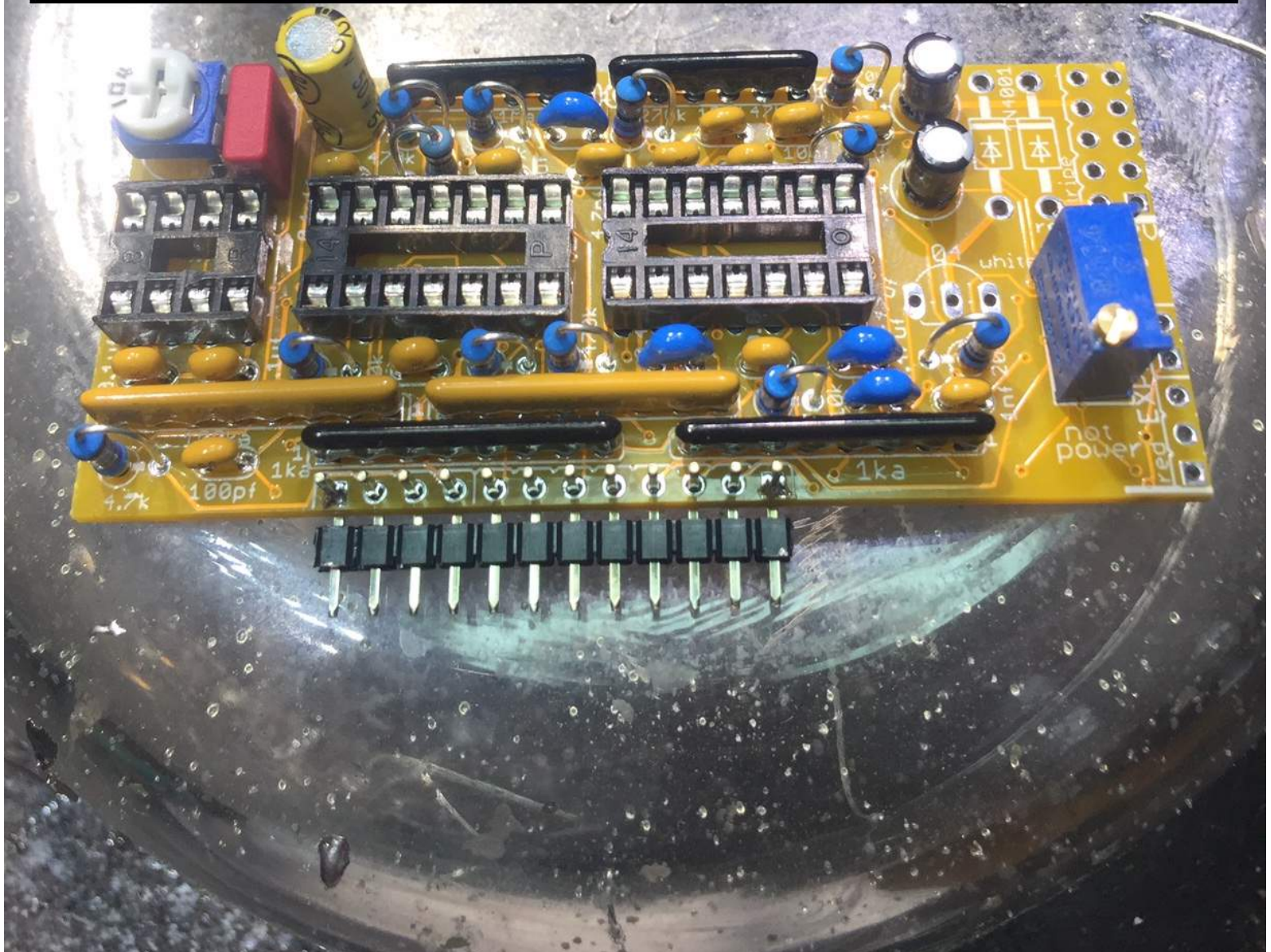
SOCKETS INSTALLED



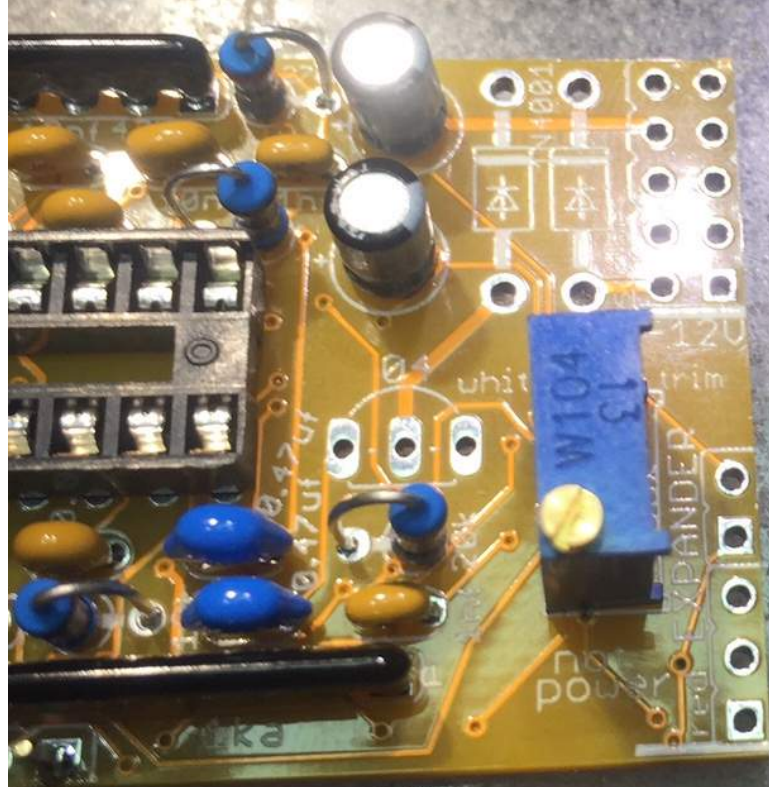
**12 PIN RIGHT ANGLE
MALE HEADER
LONG END GOES
THROUGH BOTTOM OF
PCB**



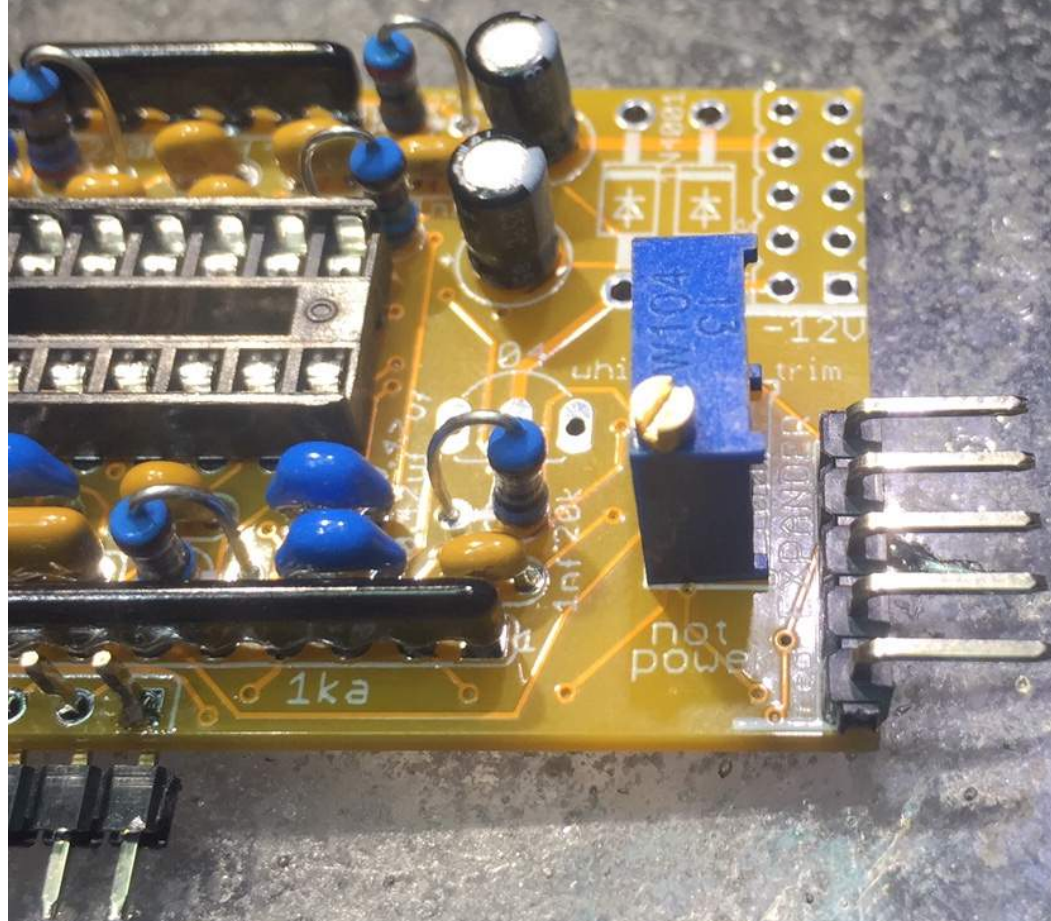
**MAKE SURE IT'S FLUSH WITH
THE PCB. I TACK THE TOP
OUTER PINS TO HOLD IN PLACE
AND THEN SOLDER BOTTOM
PADS OF THE HEADER. MAKE
SURE THIS HEADER IS FULLY
AND WELL SOLDERED. THIS
HEADER TRANSMITS SIGNALS
TO THE TOP PCB**



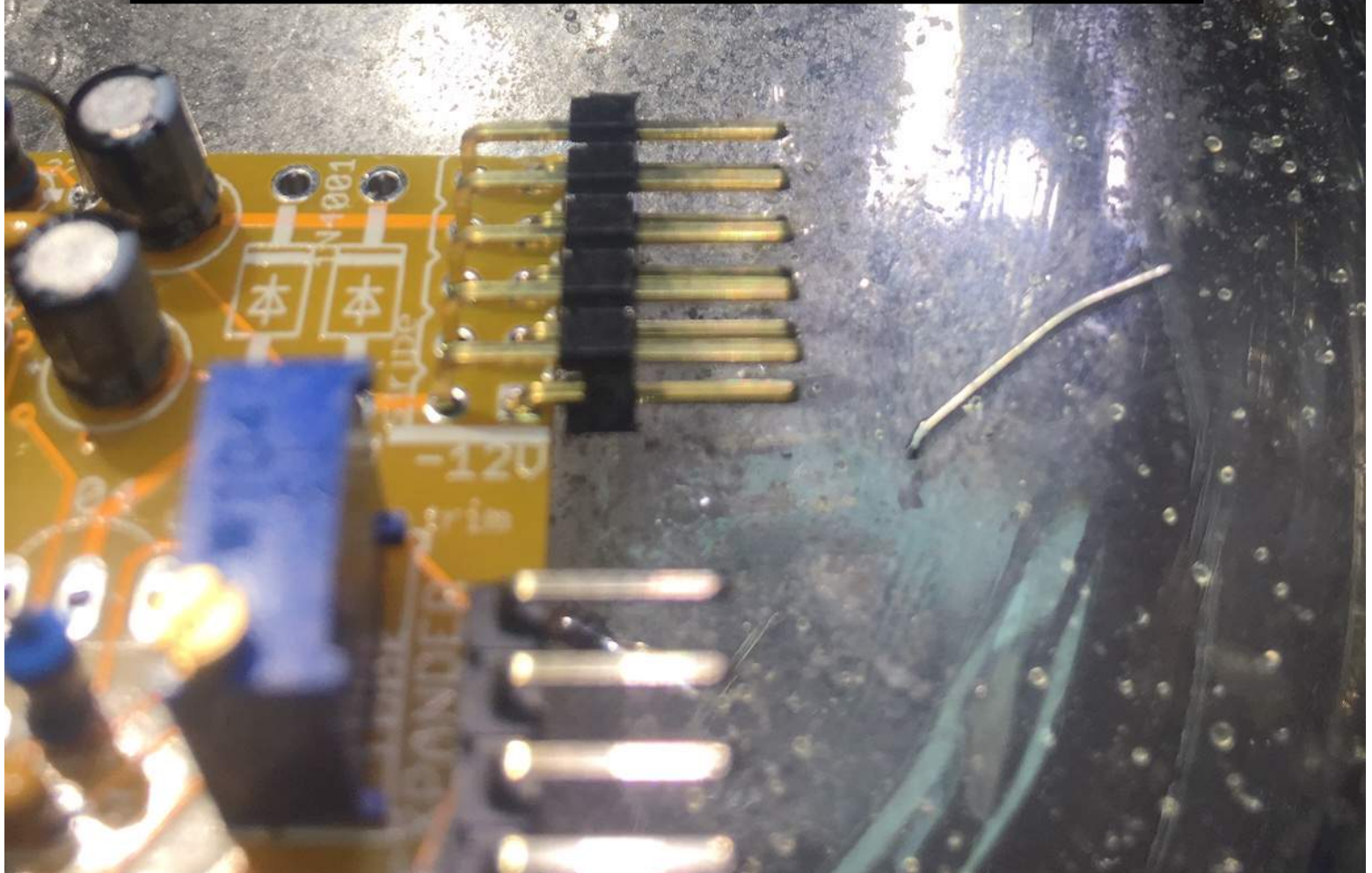
5 PIN RIGHT ANGLE HEADER



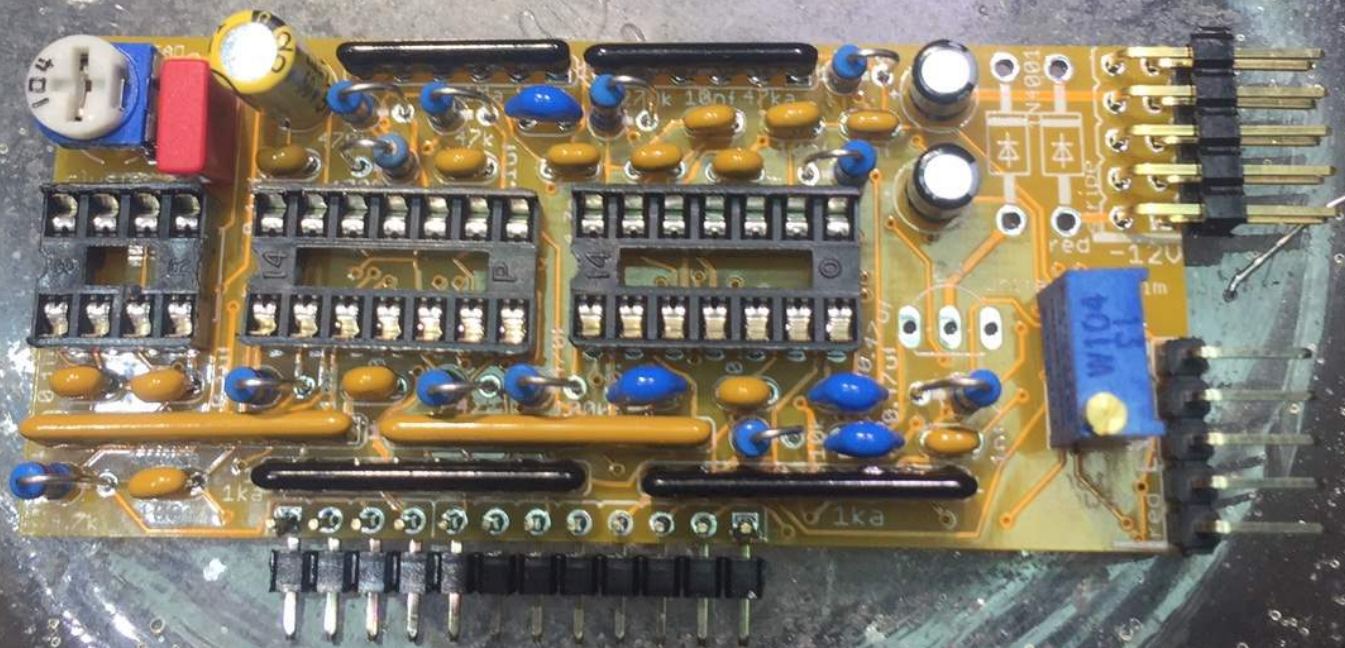
**SHORT END THROUGH
TOP OF PCB.**



**10 PIN DUAL ROW. RIGHT
ANGLE SIDE THROUGH
THE TOP. SOLDER WELL,
THIS IS THE POWER
HEADER. IT MAY REQUIRE
MORE HEAT TO FULLY
SOLDER THE PADS.**



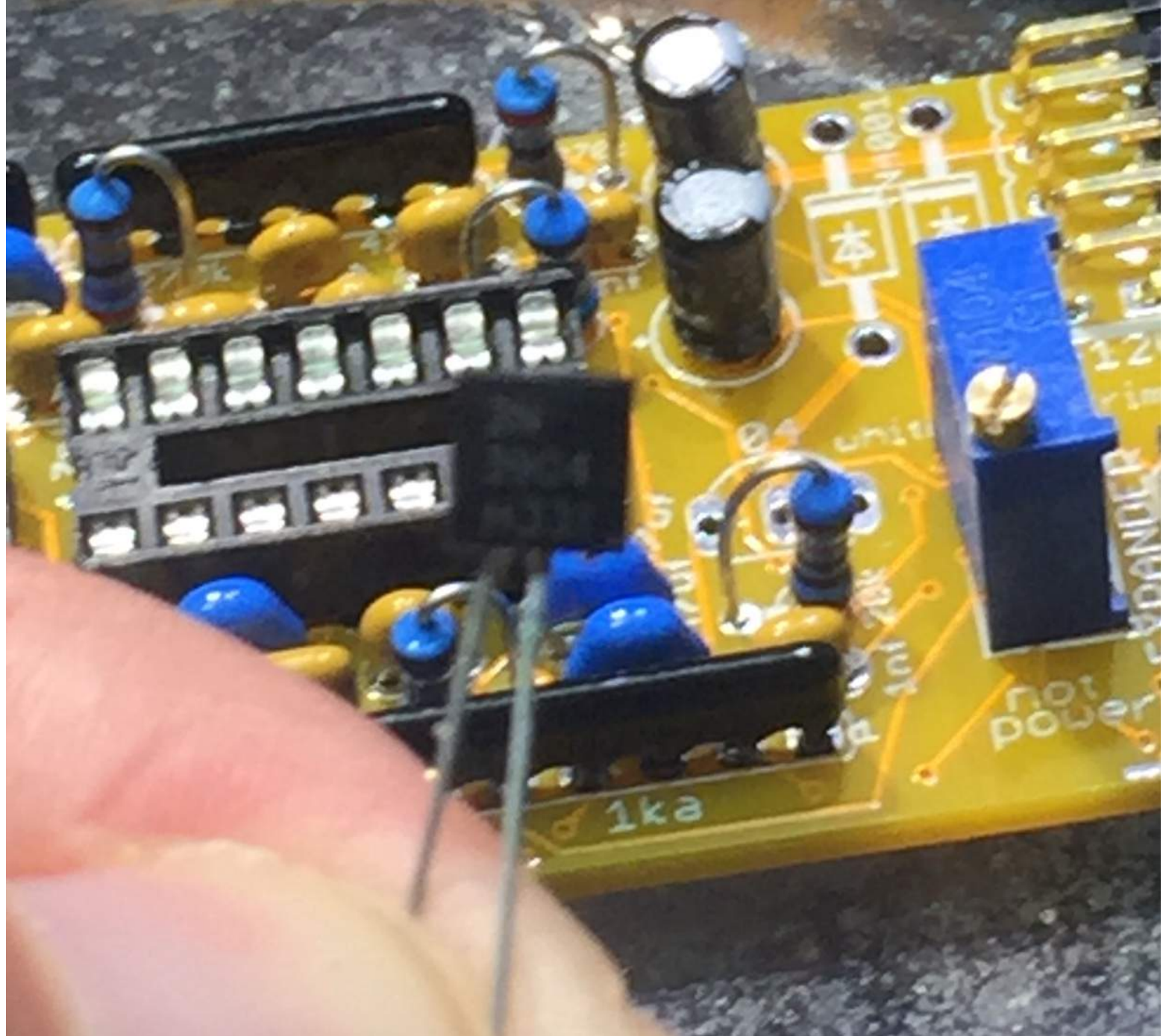
ALL HEADERS SOLDERED



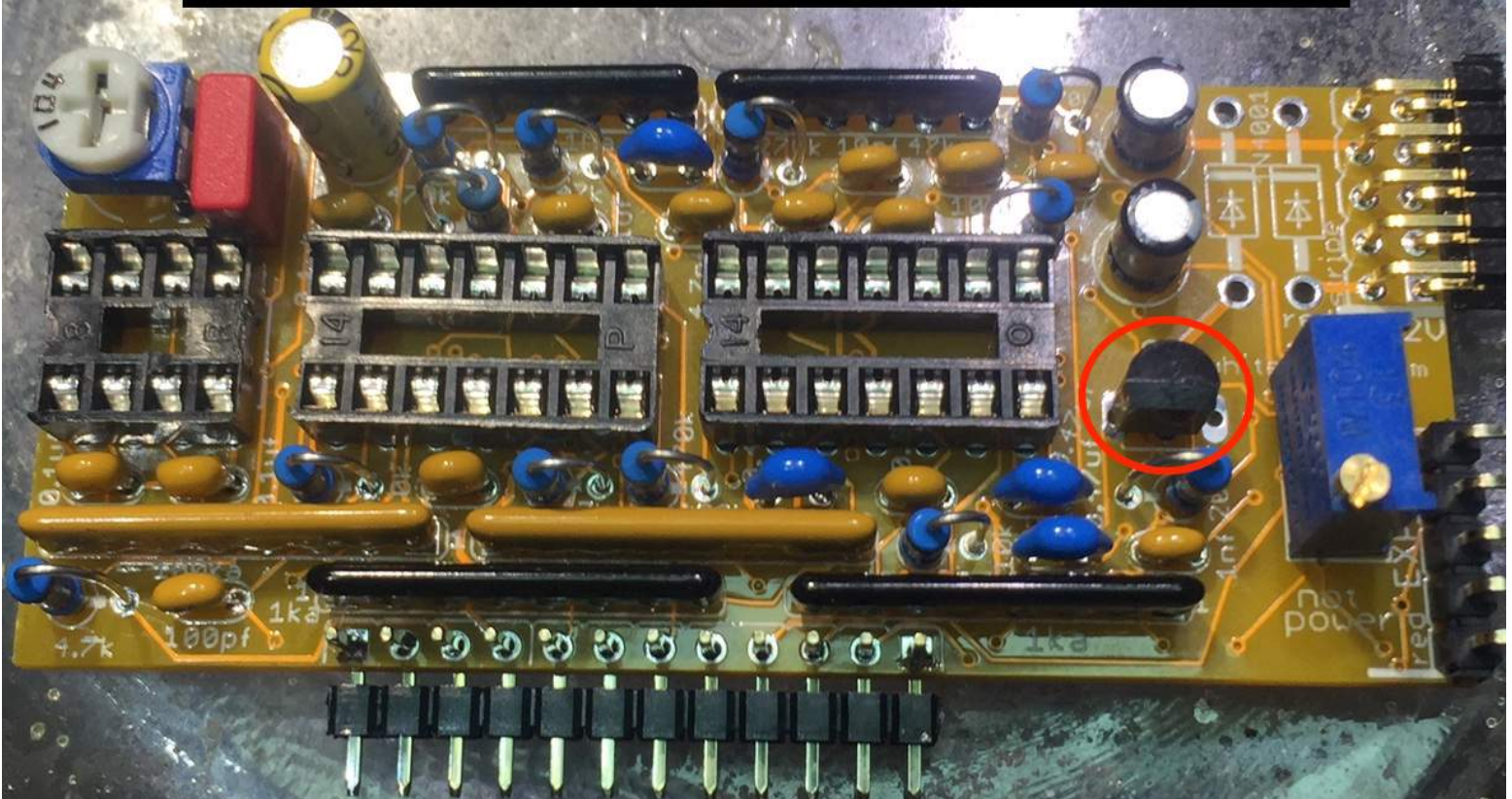


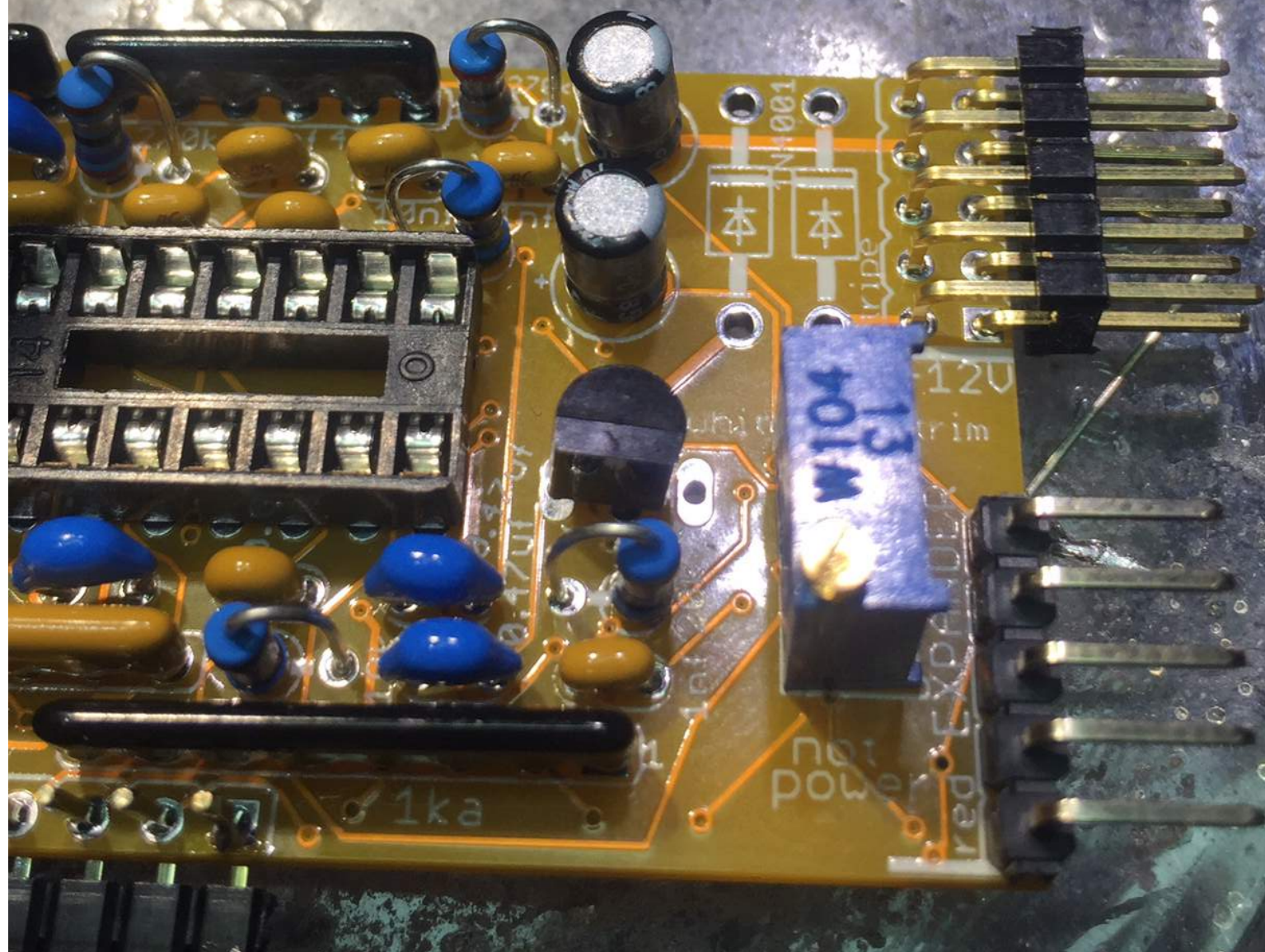
**3904 TRANSISTOR. BE
CAREFUL WHILE
HANDLING. THIS IS AN
ACTIVE PART AND IS
SENSISTIVE TO STATIC
ELECTRICITY**

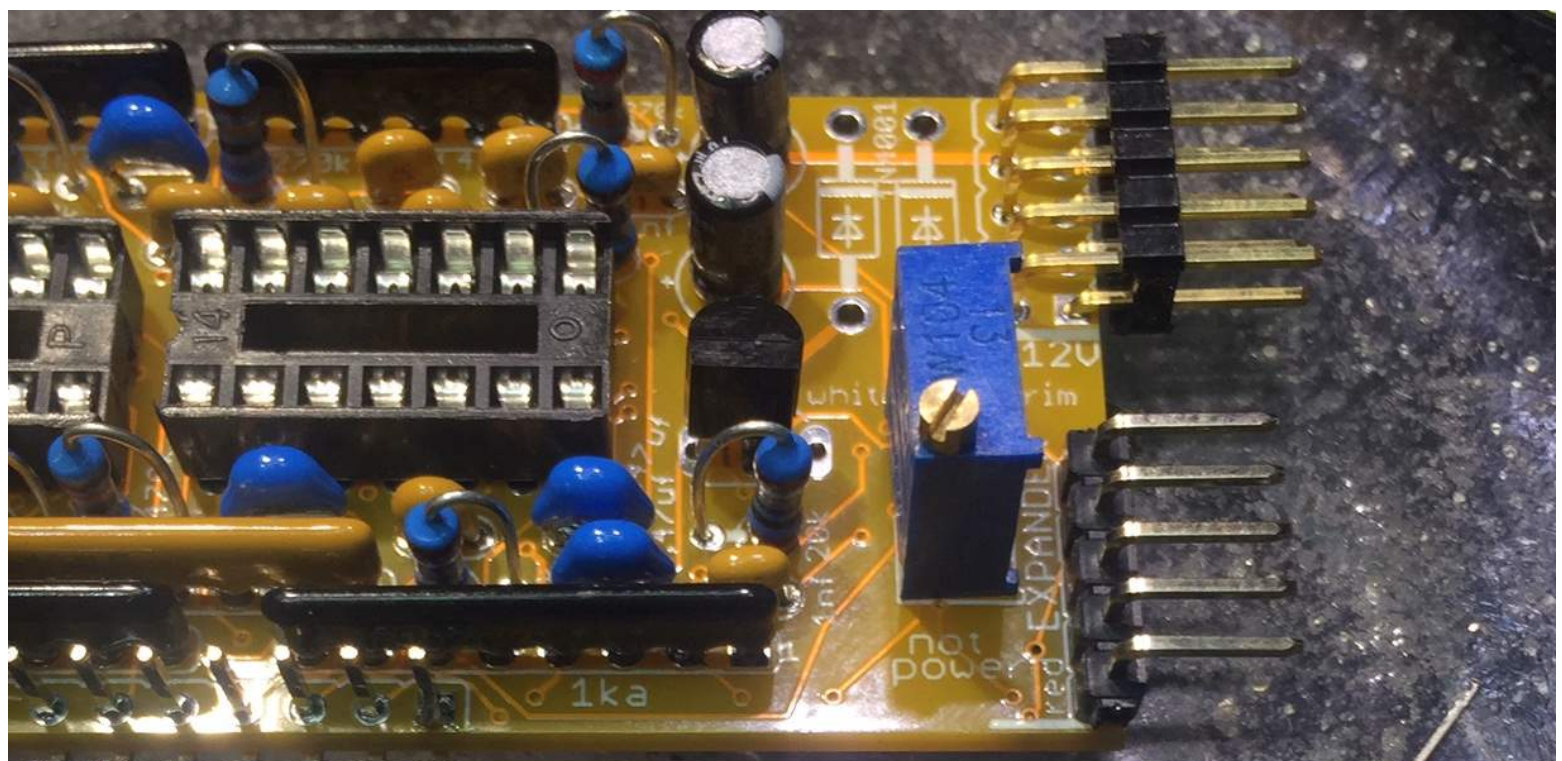
**CUT THE
COLLECTOR(RIGHT
PIN WITH TEXT
FACING YOU)**



THE TRANSISTOR HAS AN
ORIENTATION. IT SHOULD
MATCH THE SILKSCREEN
AND FLAT(TEXT) SIDE
SHOULD FACE DOWN IN
THIS PICTURE



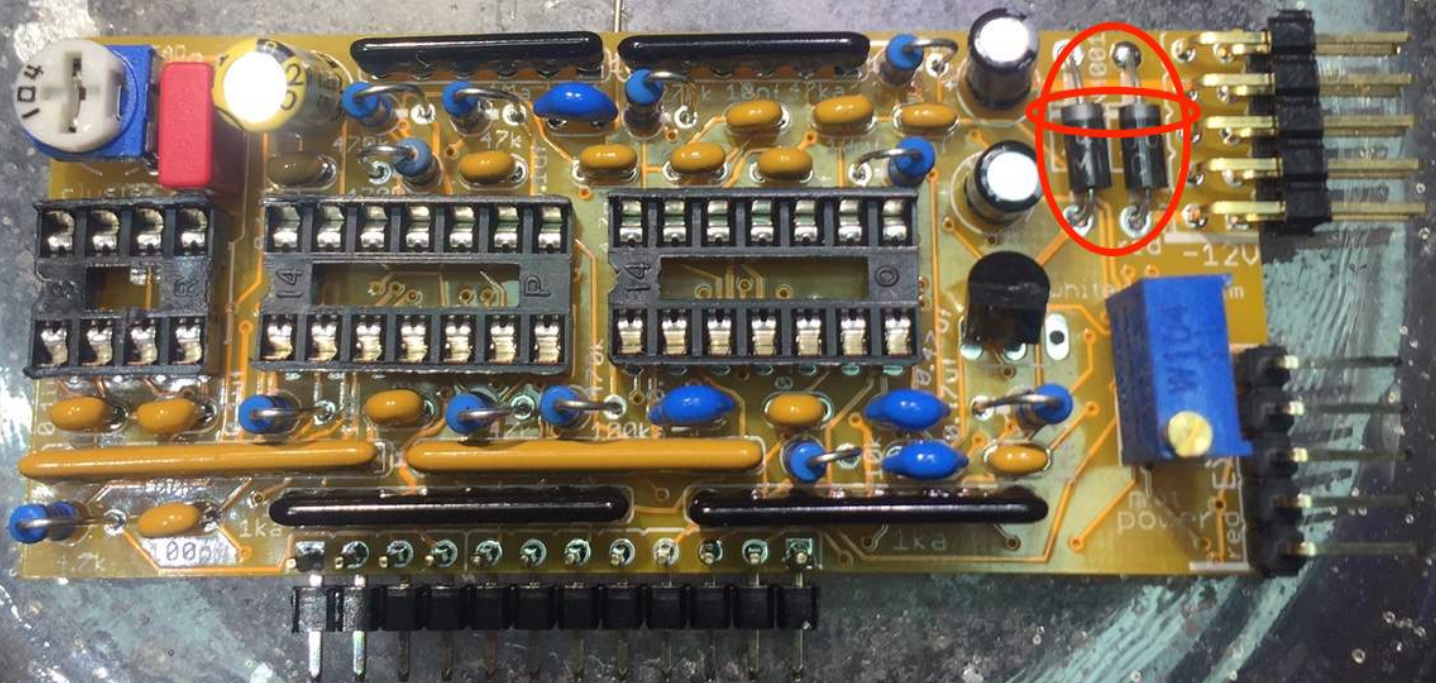




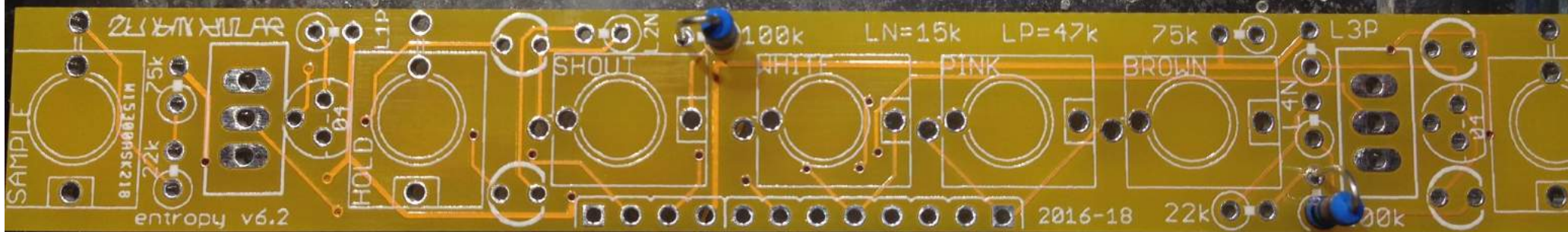
**TWO 4001 DIODES. THESE
ALSO HAVE AN
ORIENTATION AND ARE
SENSITIVE TO STATIC.**



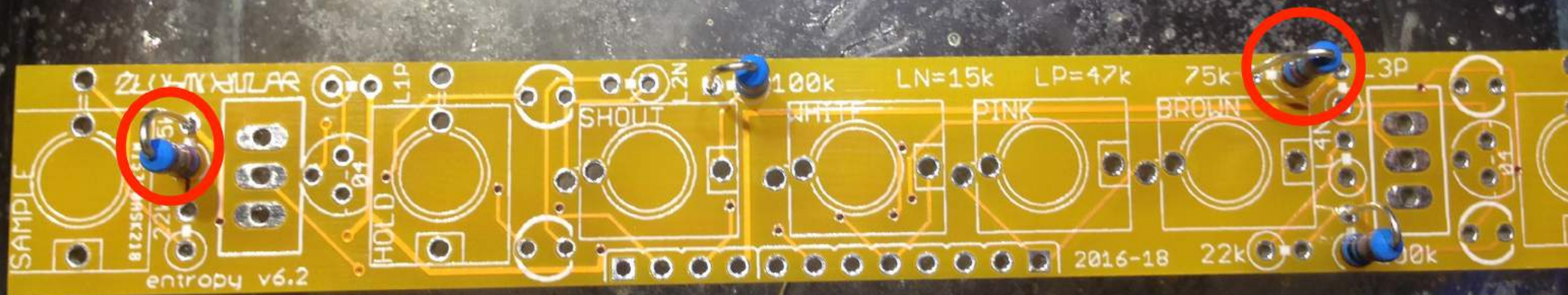
**WHITE STRIPES UP ON THE
DIODES. STRIPES SHOULD
MATCH THE SILKSCREEN.
CONGRATULATIONS. NOW
ONTO THE TOP PCB**



2
100k
brown,black,black,
orange,brown

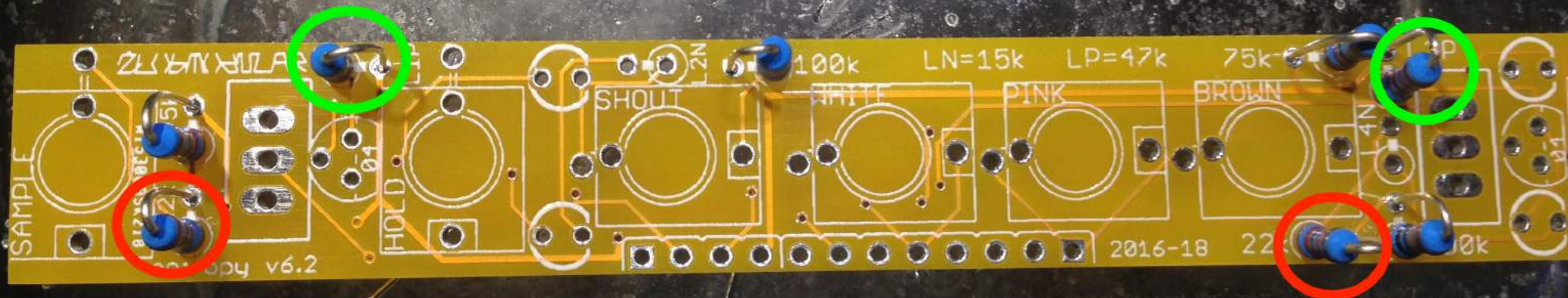


2
75k
purple,green,black,
red,brown

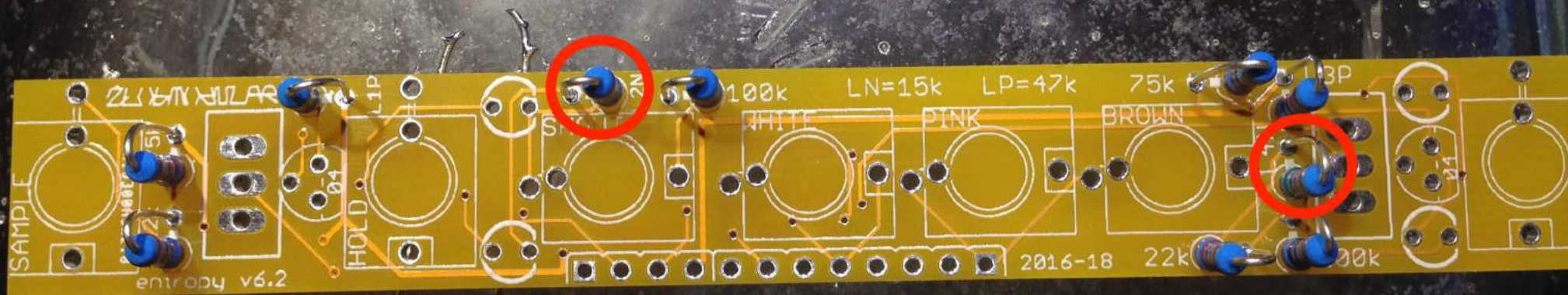


2
22k
red circles
red,red,black,red,brown

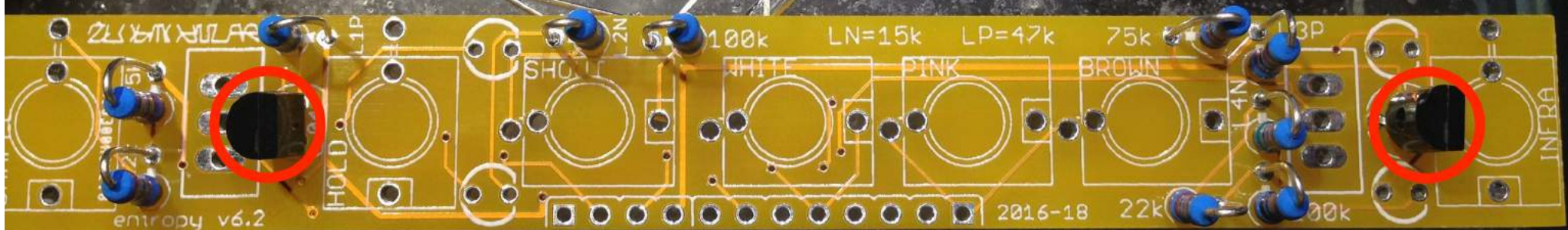
2
47k
green circles
yellow,purple,black,red,brown
sets brightness of positive
indicating(red) led



2
15k
brown, green, black, red,
brown
sets brightness of
negative(blue)
indicating led

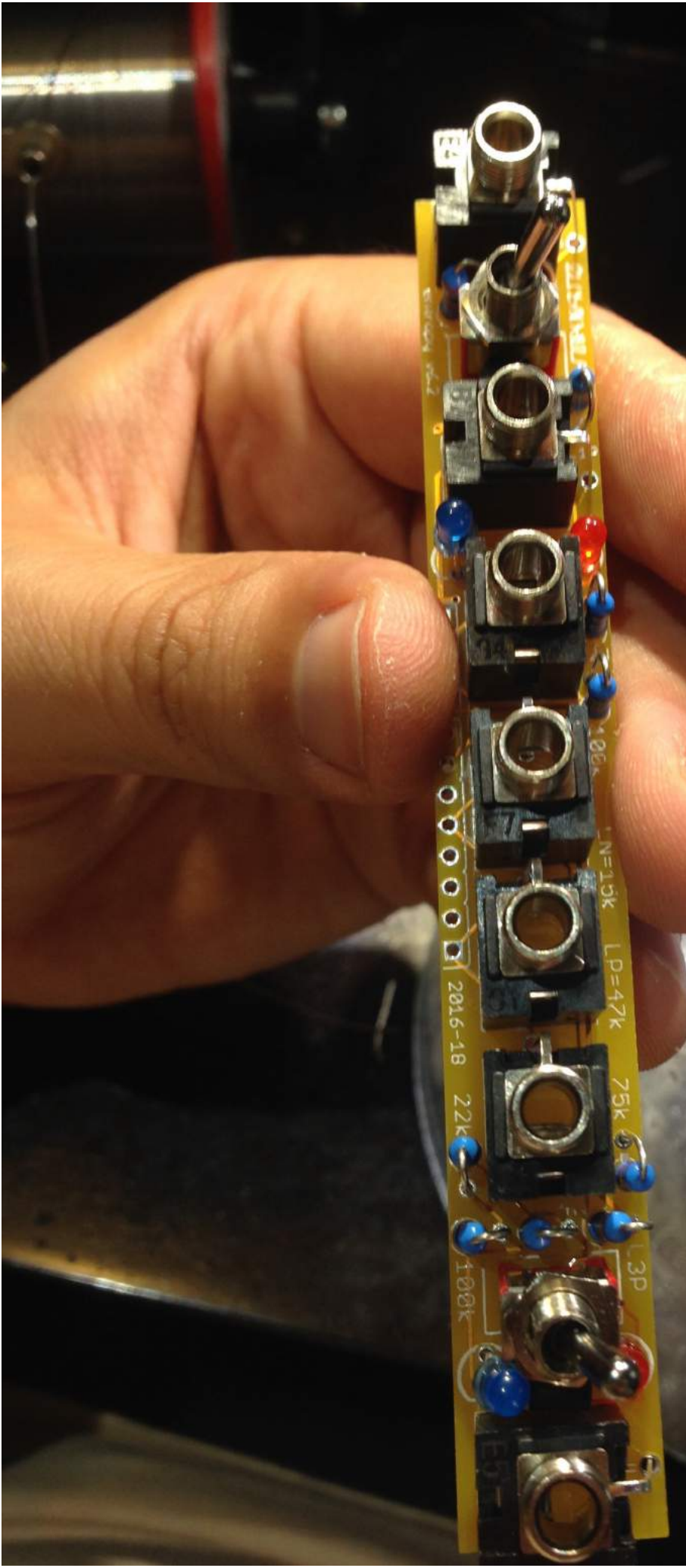


2
3904 transistors



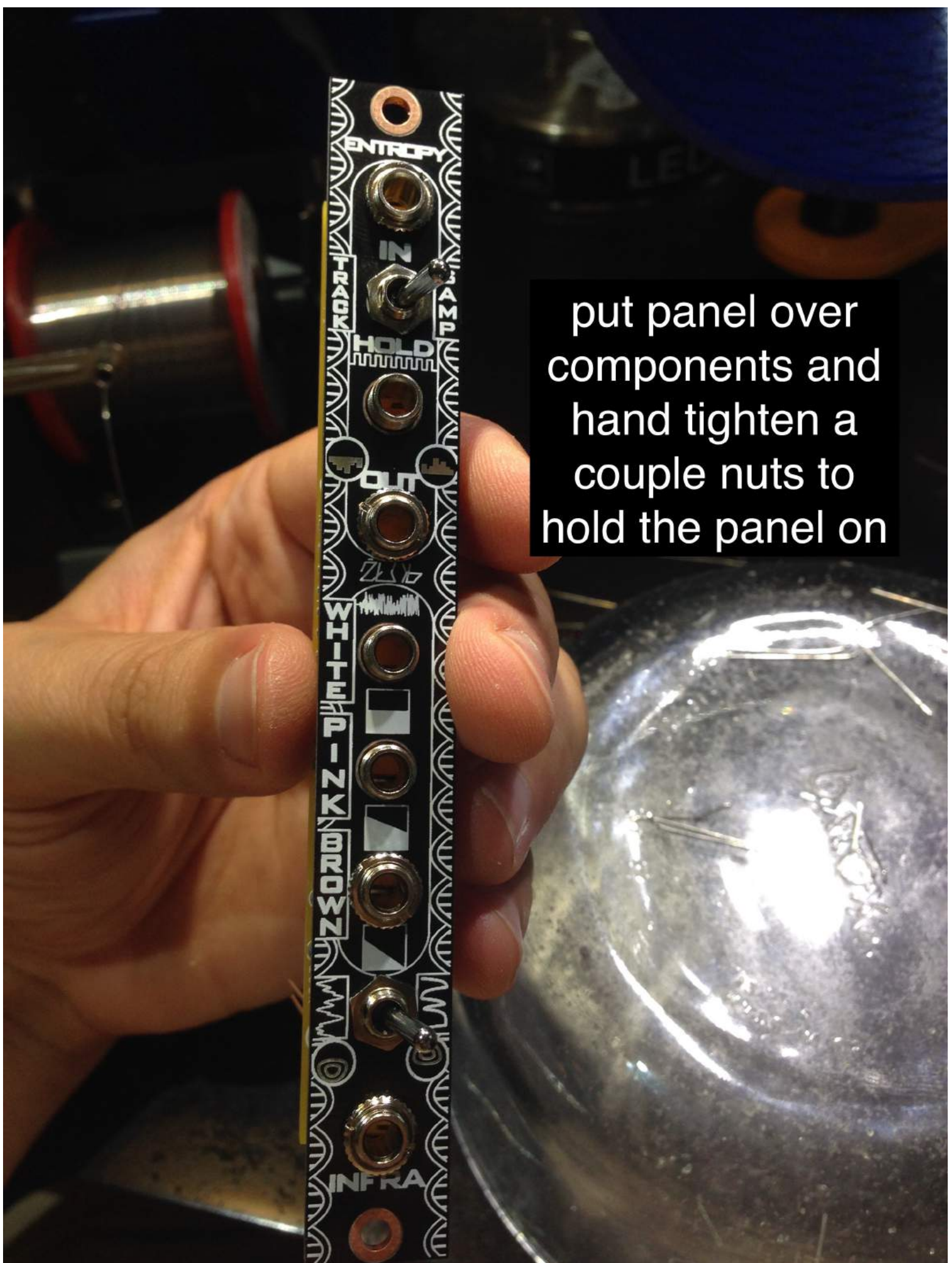
put one nut on each
switch. also insert a cable
twice into each jack to
check for mechanical
failure.



A hand is holding a yellow printed circuit board (PCB) vertically. The board features a series of five BNC connectors along its length. Between these connectors, there are several small electronic components, including blue and red LEDs, and various resistors. Some components are already soldered to the board, while others are being inserted. The background is dark and out of focus, showing some metallic surfaces.

insert all
components into
pcb, do not
solder yet. make
sure blue leds
are on the left
and red on right

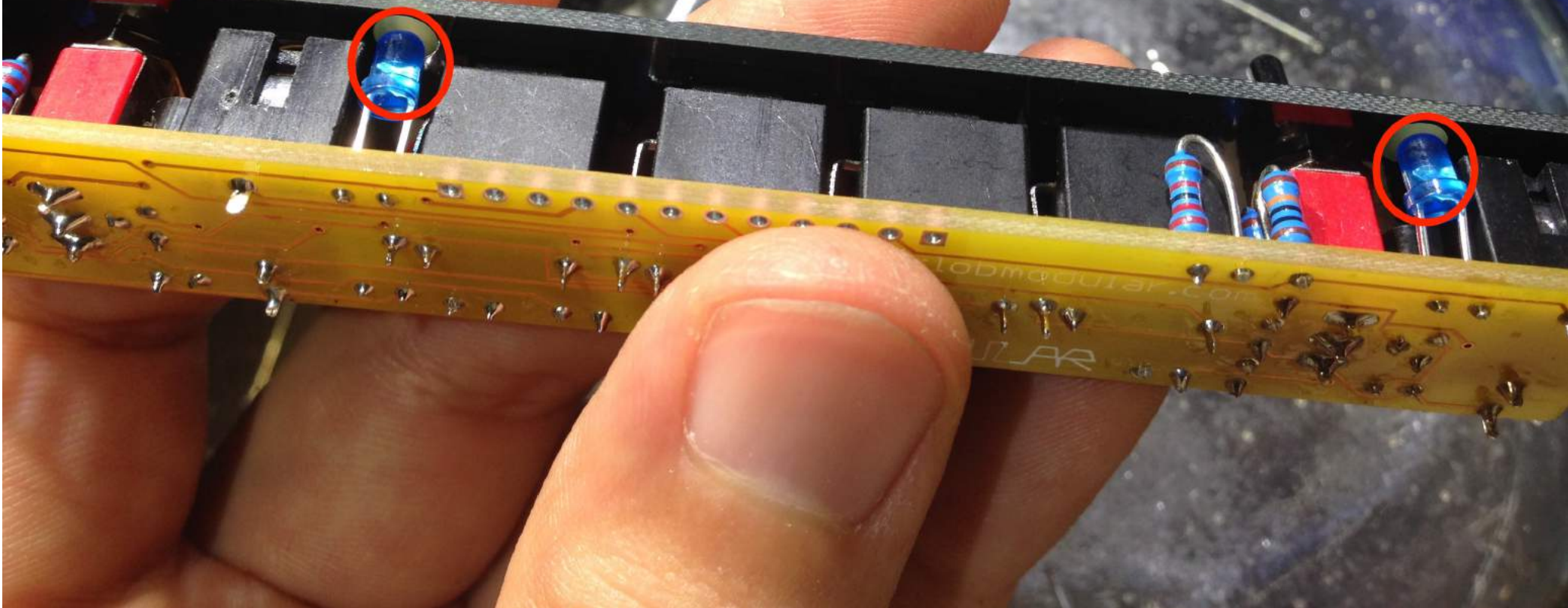
put panel over
components and
hand tighten a
couple nuts to
hold the panel on



situate leds up against the
panel(solder mask window)



same for other side. don't
solder leds too close as you
still have to tighten nuts on
panel. you can bend them
back into place after
soldering.



solder mother board to
top pcb. ensure pcbs are
connecting in the proper
direction

