PCB silkscreen labels

res47k
bigcaps1u
for 2.5Hz

10k
A
A
fb1
u1
10k
fb2
1k
1k
1k
1k
all 074
47k?
x
in
in
u1
10k
x
1k
1k
1k
1k
10k
fb2
47k?
10R
+V
1N4004
10R
N
in
in
fb1

double jerkoff

"Freedom is just chaos, with better lighting" Foster

nonlinearcircuits

DOUBLE JERKOFF V1.0 30/11/11

nonlinearcircuits

This circuit is based on a design by J. Sprott and modified for practical use as a synth module.

It can be built with a variety of component values. Everything above the green line is for the upper circuit.

Your choice of resistors and caps will affect the central frequency of the circuit (pots centred, nothing on the inputs). Whatever value you choose for resistors, select the fb1 & fb2 pots to be approx. double this value. The input pots should be 47k-100k.

For example I used 47k resistors, 100k pots and 1uF caps, giving a central frequency of approx. 2.5Hz. If you want to slow things down, try 100k resistors, 200k pots and 1uF caps.

Of course you can use different sets of resistors & caps for each circuit, but they should be all the same on each circuit.

Each circuit will operate at much faster and slower frequencies depending on the input signal and pot settings, the choice of components just sets the 'base' frequency.

The unmarked resistors are the ones to fill with the value you choose. The two resistors marked **47k?** set the weight of your input signal, feel free to experiment, though the easiest option is to make them the same value as all of the other resistors you have chosen.

There are four **types of caps** on the PCB;

the two electros near the power connector can be 10uF 25V (or higher voltage rating)

the small rectangular caps (2.5mm spacing) are for decoupling and can be anything from 10nF-100nF

the larger rectangular caps are the ones you choose to set the base frequency of each circuit (3 per circuit)

there is space under the PCB to mount three capacitors for decoupling.
They are 1206 sized and any value from 10nF to 100nF will be fine.
These 3 are not essential, the circuit will work fine without them.

All ICs are TL074, TL084 will be ok.

The large diodes near the power connector are to protect against connecting the power incorrectly. Use 1N4004, these can be left out if you like; they do nothing in normal operations.

The two LEDs marked in red are an important part of the circuit. I used red LEDs, other LEDs with a different V_{on} will work and give slightly different behaviour. You could even try 1N4004, Ge diodes, etc….might be interesting …or maybe not.

The other 4 LEDs indicate what the circuit is doing. The current limiting resistors

associated with these are marked with purple rings on the picture above. I used 1k, if your LEDs are superbrights, choose a larger value, say 4k7 to 10k.

Each circuit has **outputs**: X, Y, Z and **input** 'in'.

Typically the output signals range between +/- 5V, though some pot settings will encourage excursions beyond this. Other pot settings may make the circuit stop or result in a very small signal. Generally it will produce mad shit most of the time.

For your panel, the 6 pots are spaced 1 inch apart.

I use 100k pots from Song Huei - R0903N-B100k, L-25KC (the 25 is the length L).

 It seems a pretty common footprint. Another pot that fits is this Alpha from Altronics - http://www.altronics.com.au/index.asp?area=item&id=R1948

You should find similar types from Mouser, Rapid, etc.

in

100k

47k?

R = 47k - 51k

C = 1uF

100k, 1u for 1.2 Hz

100k, 100n for 120 Hz

100k, 10n for 1200 Hz

GND

LED

14

U1
LM324

12

GND

13

R

R

2R

1k-10k

C

2
4
−
U1
1
3
+
11

GND

R

C

6
LM324
U1
5
+
7

GND

R

C

9
−
LM324
U1
8
10
+
GND

1k-10k

2R

2
4
−
1
3
+
11

1k

LED

LED

GND

13
−
LM324
U
14
12
+

1k
z

6
−
LM324
U
7
5
+

1k
x

9
−
LM324
U
8
10
+

1k
y