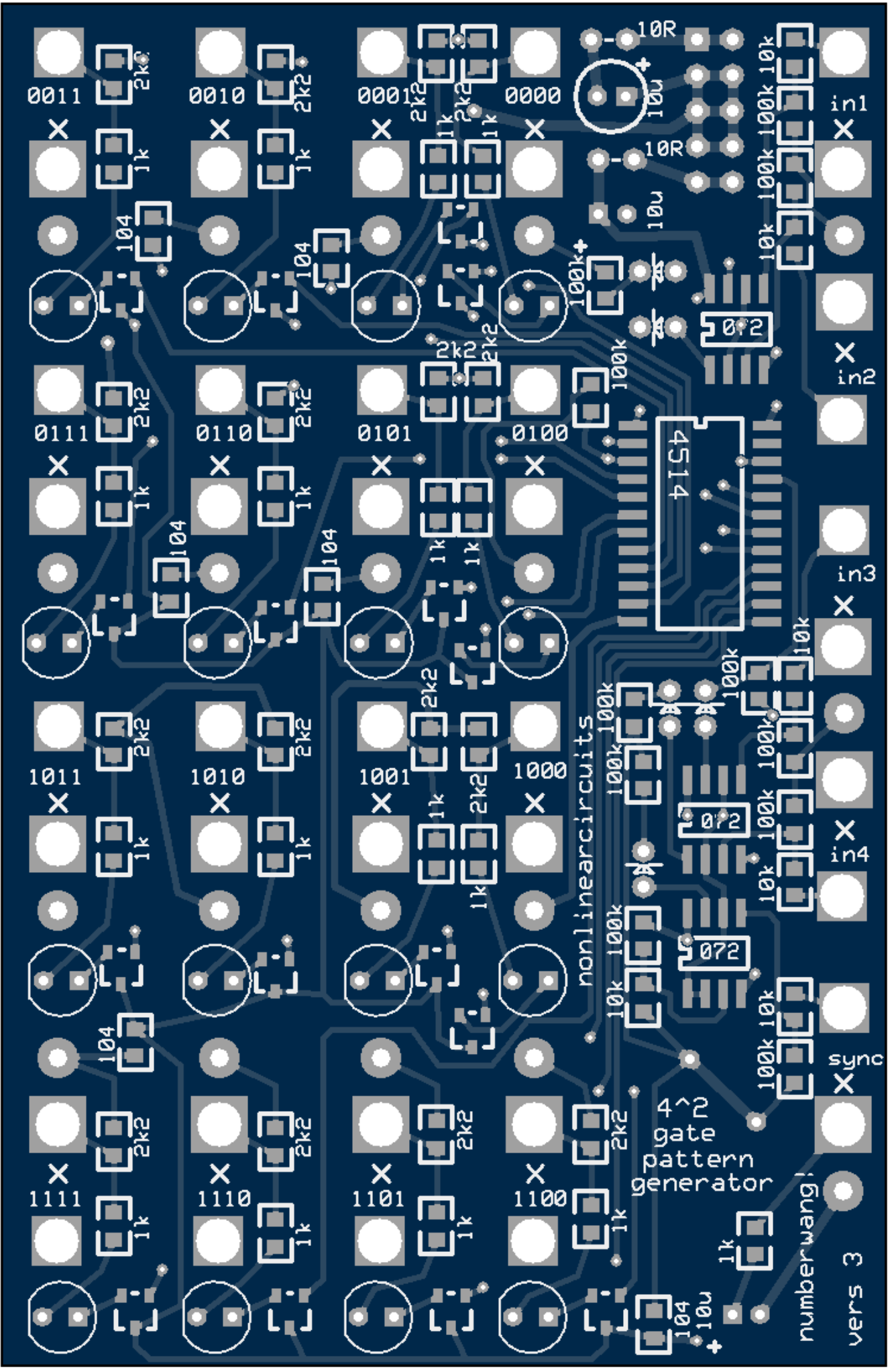# nonlinearcircuits

Numberwang Build guide & BOM

vers1 (5/4/2016)

This module is basically a 4:16 decoder with sync and async modes. In use, patch for signals to the 4 inputs and generate an endless variety of gate patterns. If nothing is plugged into the sync input, then the circuit will change when one of the 4 inputs is changed, with sync it will only change when the signal on sync is high.

The only tricky point in the build is choosing the resistors for the gate outputs and LEDs. These are marked 1k/2k2 on the PCB, which are good values for low brightness LEDs. If using superbright LEDs and don't want to go blind, replace the 1ks with 3k3 and replace the 2k2 with 6k8. This will keep the gate outputs to around 5V as well.

BOM

component	quantity	remarks
4514	1	SOIC, Mouser:595-CD4514BM96
TL072	3	SOIC
BC847	16	NPN SOT-23
1N4148	5	thru-hole
LED	16	**NOTE: 3mm size for NLC panel**
jacks	21	Kobiconn style
100nF capacitor (or larger) ('104' on PCB)	6	0805, for decoupling
10uF electro	3	thru-hole, minimum 25V rating, 2mm lead spacing
10R	2	thru-hole
1k	1	0805
10k	6	0805
100k	11	0805
1k on PCB (use 3k or 3k3 for superbright LEDs)	16	0805, select value to suit LED brightness and gate voltage
2k2 on PCB (use 6k8 for superbright LEDs)	16	0805, select value to suit LED brightness and gate voltage
eurorack power connector (10 pins)	1	

0011   2k2
1k
104
0010   2k2
1k
104
0001   2k2   2k2
1k   1k
0000
10R
10n   +
10R
10n
100k   +
2k2   2k2
100k
10k 10k
10k
100k
10k
in1

072

0111   2k2   2k2
1k
0110   2k2
1k
104
0101   1k   1k
0100
in2

104   104

4514

1k   1k

in3

1011   2k2   2k2
1k
1010   2k2
1k
104
1001   1k   2k2   2k2
1000   1k
nonlinearcircuits
100k   100k
100k   100k
10k 10k
100k   100k
100k   10k
072
100k   10k
in4

1111   2k2
1k
1110   2k2
1k
1101   2k2
1k
1100   2k2   1k
100k   100k
072
100k 10k
100k
sync
4^2
gate
pattern
generator
1k
104
10n   +
numberwang!
vers 3

data in 1

data in 2

data in 3

data in 4

sync input

GND

V+

100k
10k
1k
2k2
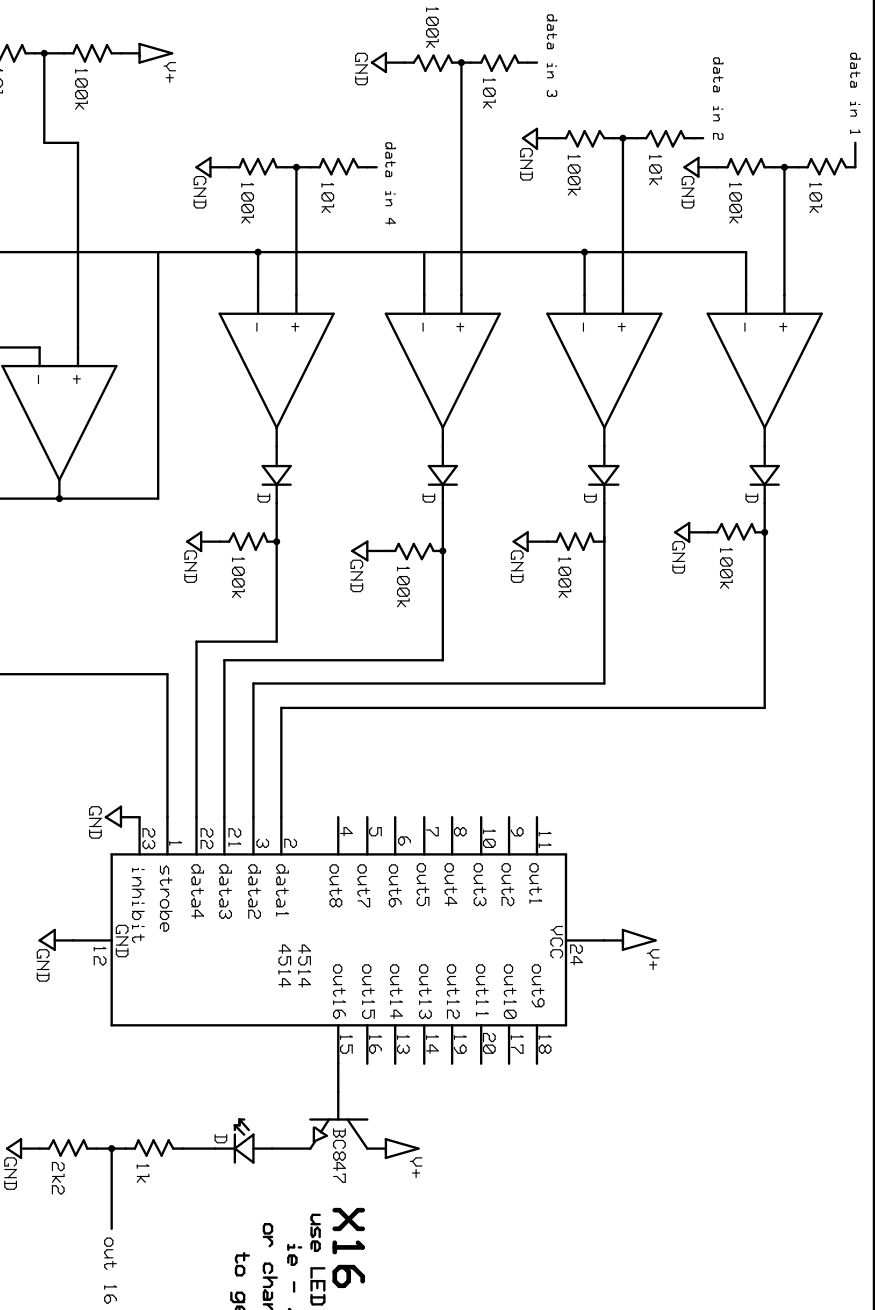
X16
use LED with low forward voltage
ie - a red one
or change 1k to 3k3 and 2k2 to 6k8 for superbright LEDS
to get 5-6V output

BC847

out 16

4514

strobe
inhibit
GND
data4
data3
data2
data1
out8
out7
out6
out5
out4
out3
out2
out1
out9
out10
out11
out12
out13
out14
out15
out16
VCC