nonlinearcircuits

SNAKE JOKE build & BOM

The core of this module, where the logic and processing happens, was designed by [Tom Hirst](). Tom has been using the design for a few years in his 4U system and got in touch with me to release it as a Eurorack version. I was quite impressed that he had refined the circuit down to just three CMOS chips, built one and liked it.

So here we are:

The circuit is a CMOS based Euclidian trigger, gate and CV generator. You can use the switches (or input signals to over-ride the switches) to select how many triggers will be delivered per 16 steps. The circuit will "do its best" to evenly space the triggers over the 16 steps.

It is interesting to patch in gates of the divided down clock signal (or anything) to switch between patterns on the fly. Sometimes the patterns can go a bit awry, when switching mid cycle, and you may want give the momentary reset switch a tickle, then again the awry patterns are usually good too so just go with it and things may return to normal eventually.

The C1-4 gate outputs are taken from the internal switching of the circuit. Hit gate and hit trigger are the main outs, but in practise they are all interesting.

CV is a simple D to A resistor network taken from C1-4. It covers an approximate 0-5V range, feel free to adjust the resistors here reduce or increase this.

Perhaps a limitation of this module, compared to other Euclidian pattern generator running microprocessors, it is fixed to 16 step patterns. Using the reset input and careful switch set up can get around this limitation. Also, being able to change the patterns on the fly makes this a very powerful and complex pattern generator.
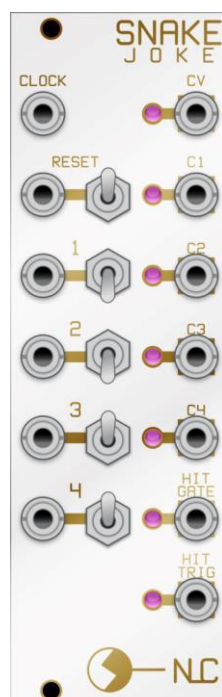
BOM — The Tayda & Mouser part numbers are given as examples
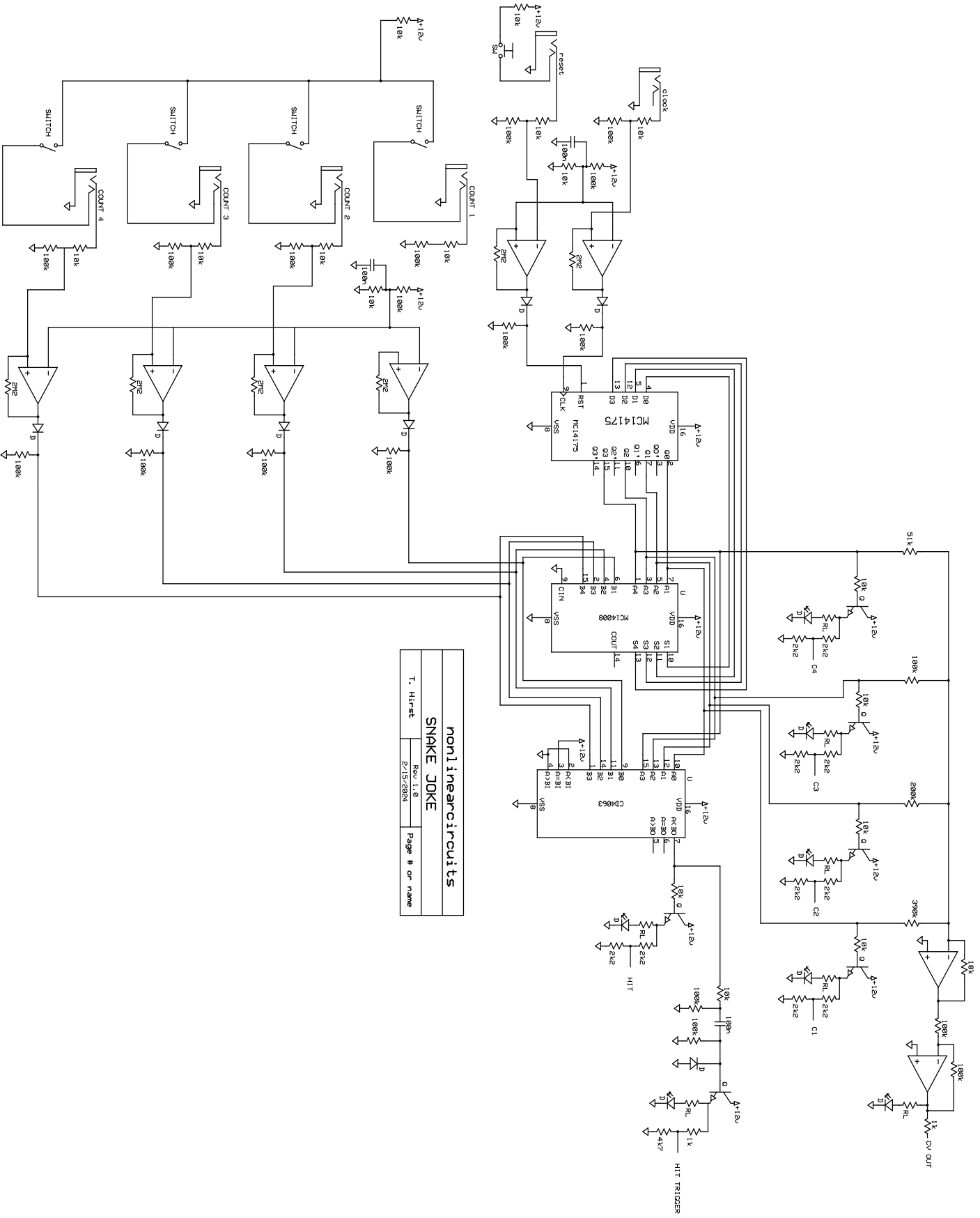
Synthcube will have full or partial kits available

VALUE	QUANTITY	DETAILS
100nF	8	0805 Tayda: A-3511
10uF	2	0805 25V or higher voltage rating Mouser:963-TMK212BBJ106MG-T or similar
RL	7	0805 - resistors to suit LED brightness, typically 4k7 these days
1k	1	0805
2k2	12	0805
10k	16	0805
18k	1	0805
51k	1	0805
100k	19	0805
200k	1	0805
390k	1	0805
2M2	6	0805
TL074 or TL084	2	Soic Tayda: A-1140 or A-1137
MC14175	1	Mouser No: 863-MC14175BDG
MC14008	1	Mouser No: 863-MC14008BDR2G
CD4063	1	Mouser No: 595-CD4063BNSR
BC847	6	SOT23-3 Tayda: A-1339
LL4148	7	sod-80 Tayda: A-1213
3mm LED	7	square hole = anode/long lead
Eurorack 10 pin power connector	1	Tayda: A-198 cut to size
S1JL, Schottky, power rectifier or 10R	2	SMD SEE NOTES #1. **dot on PCB indicates CATHODE (stripe on component).**
3.5MM SOCKET	13	Tayda: A-2563 or Thonkiconn Jacks (PJ301M-12) from Thonk, Synthcube or Modular Addict
toggle switch on-on	4	Tayda: A-5389 (short lever) or A-5387 (long lever)
toggle switch (on)-off-(on)	1	Tayda: A-2001 **(on) = momentary RESET SWITCH – goes at the top position (**<mark>NOT the end where there are 2 headers</mark>**)**
10 pin header	3	get a 40 pin strip and cut off as needed Tayda: A-197
10 Pin 2.54mm Single Row Female Pin Header	3	Tayda: A-1306

Additional notes:

<mark>1.</mark> , Schottky (best option) **or** standard power rectifier diode 50-600v 1A or more, **or** use a resettable fuse **or** just a 10R (worst option). Examples: BAT54GWX, PMEG2005EGWX, AEC-Q101, 20V, SOD-123, PMEG2005EH DIODE, SCHOTTKY, 0.5A, 20V, 1N400x or S1JL or similar.

<mark>2.</mark> The chips, resistors, caps are cheapest from Tayda. Schottky diodes, CMOS & 1uF, 10uF 25V 0805 caps from Mouser/E14/Farnell/etc.

<mark>3.</mark> 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.

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SNAKE JOKE

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	Rev 1.0	Page # or name
	2-15-2024	

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TOM HIRST
DESIGNER

SNAKE TOP 2

RED

074
MC14125
4040
CD4063
074

SCHOTTKY
SCHOTTKY

BC847

100k 100k 100k 100k 100k 100k
200k
51k 105k 390k
2M2 2M2 2M2 2M2 2M2
10k 10k 10k 10k
2k2 2k2 2k2 2k2 2k2 2k2
100n 100n 100n 100n 100n 100n 100n 100n
RL RL 2k2 RL 2k2

hitL
gnd