

nonlinearcircuits

SPASM build & BOM

This module takes the classic Sprott jerk circuit and replaces all the resistors with LDRs.....a 7 way vactrol. This means the brightness of the LED in the giant vactrol controls the frequency of the circuit.

It is a very easy build and will give you a very flexible chaotic circuit. The CV inject jack allows you to control the chaos with gates and CV, some signals will cause it to pause or stall, others will make it glitch & freak out. CV freq controls the LED which, in turn, controls the resistance in the LDRs.

It is a very flexible build; you can use any LDRs you like, so long as they are the same. You can also use any capacitors you like for CAP, so long as they are the same.

Of course, the LDRs and capacitors you choose will affect the behaviour & frequency range of the circuit. GL5516 LDRs go to 500k Ω off resistance whereas GL5549 go to 10M Ω + (anywhere from 10M Ω to 20M Ω), so will be a lot slower but will give a much wider frequency range and some very unpredictable outputs. Similarly with capacitors 10uF will be a lot slower than 10nF.

If going for the more extremely slow values, GL5549 LDRs and 10uF caps, the module will stall at minimum pot settings and generally needs a CV on the CV freq input to make it operate. This is actually a good thing as you can turn the signals on and off with CV or gates.

Please note the build pictures below when constructing to make the box fairly light-proof. A bit of leakage does not seem to matter much but you could add a bit of black silastic sealant around the edges if you really want to, I have never bothered. When soldering the connector pins, use the SIP connectors, jumped across 1 or 2 pins (see pics) to ensure they are nicely perpendicular to the PCB. When soldering the PCB to PCB connectors, I press lightly on the PCB to help keep the connectors tight against the board.

If you find the Spasm is being affected by reflections from flashing LEDs from other modules in your case; either take the view that it saves you a patch-cord, or place 2 pieces of black electrical tape across the PCB where the vactrol box is.

Also, please note the pots go on the side of the PCB that has the pot symbol screenprinted, this is different to previous NLC PCBs.....just look at the pictures, if you have time and it isn't too much trouble.



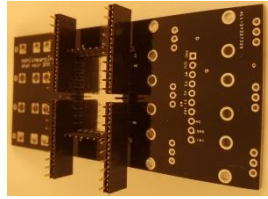
BOM – The Tayda part numbers are given as examples, feel free to buy from your favorite retailer if you prefer.

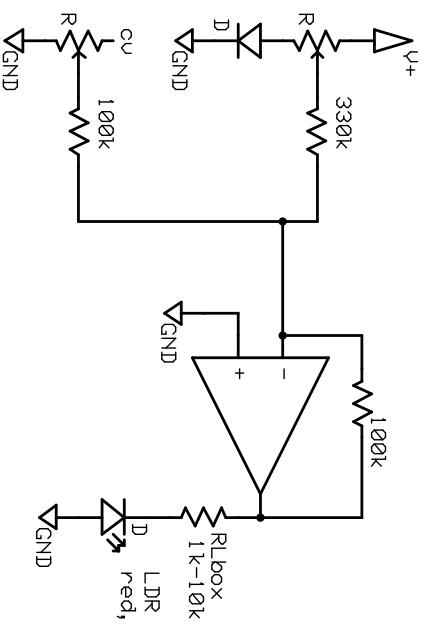
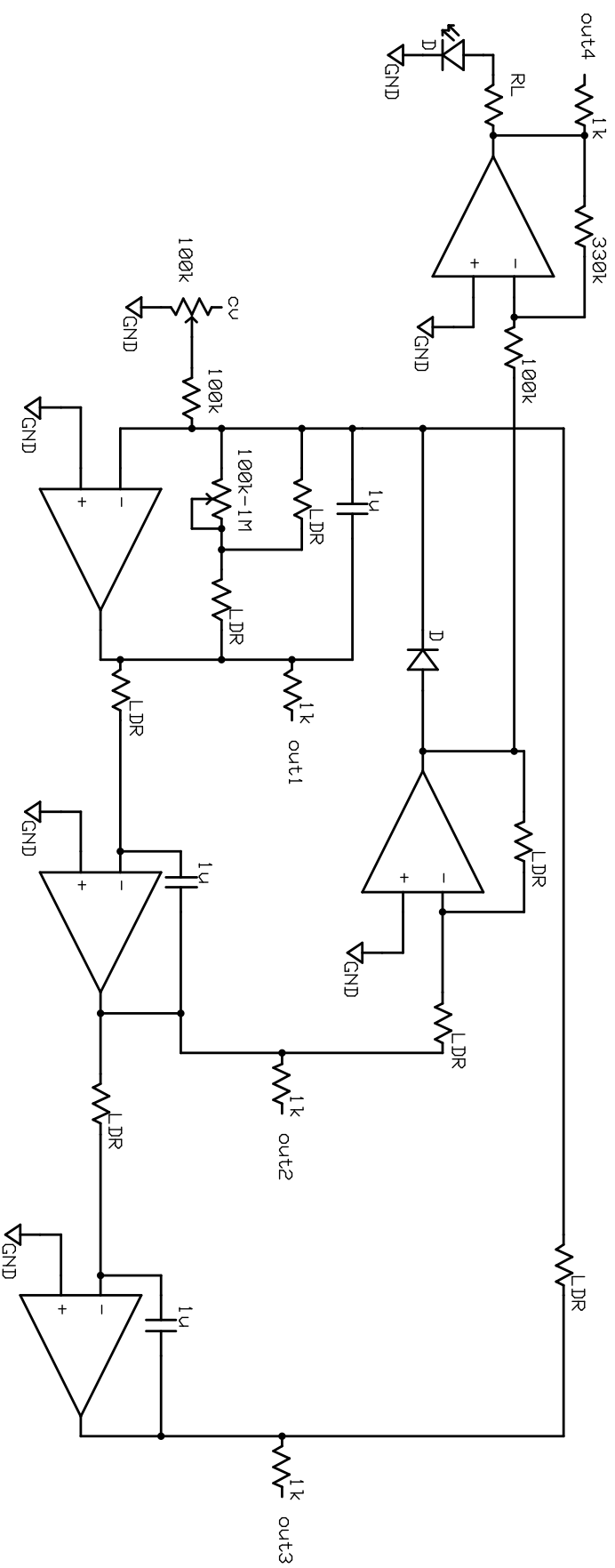
VALUE	QUANTITY	DETAILS
CAP	3	0805 see intro notes
10 μ F	2	0805 OR 1206 25V rating or higher
RL	1	0805 resistor for panel LED, select to suit brightness (best to use a superbright LED and at least 10k)
RLbox	1	0805 resistor for black box LED, select to suit brightness (1k-10k), probably 1k-2k2 will be good
1k	4	0805
100k	4	0805
330k	2	0805
TL072 or TL082	3	soic Tayda: A-1139
LL4148 diodes	2	
light dependent resistor (LDR)	7	SEE INTRO TEXT. THESE GO ON THE BOTTOM OF THE UPPER PCB
LED for vactrol box	1	3mm best, diffused Red, green or yellow. THIS GOES ON THE BOTTOM OF THE UPPER PCB
LED for panel	1	5mm - superbright or similar
100k (B) pot	3	Tayda: A-1848
100k - 1M pot (A or B...whatever you have)	1	Feedback pot. If building a very slow version, a 1M pot is better but not essential.
Eurorack 10 pin power connector	1	Tayda: A-198
Schottky, power rectifier or 10R, optional - for reverse voltage protection...or not	2	SMD, Schottky (best option) or standard power rectifier diode 50-600V 1A or more, dot on PCB indicates CATHODE (stripe on component) Or use a resettable fuse or just a 10R. SEE NOTES #1
3.5MM SOCKET Kobiconn style	6	Tayda: A-865 or preferably get Thonkiconn Jacks (PJ301M-12) from Thonk or Modular Addict
10 Pin 2.54mm Single Row Pin Header Strip	5	Tayda: A-197 (cut to size)
10 Pin 2.54mm Single Row Female Pin Header	5	Tayda: A-1306

Additional notes:

1. Some power diodes: PMEG2005EGWX SCHOTTKY RECT, AEC-Q101, 20V, SOD-123, PMEG2005EH DIODE, SCHOTTKY, 0.5A, 20V, 1N400x or S1JL or similar
2. The resistors, caps and transistors are cheapest from Tayda. Diodes from Mouser/E14/Farnell/etc.
3. 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.

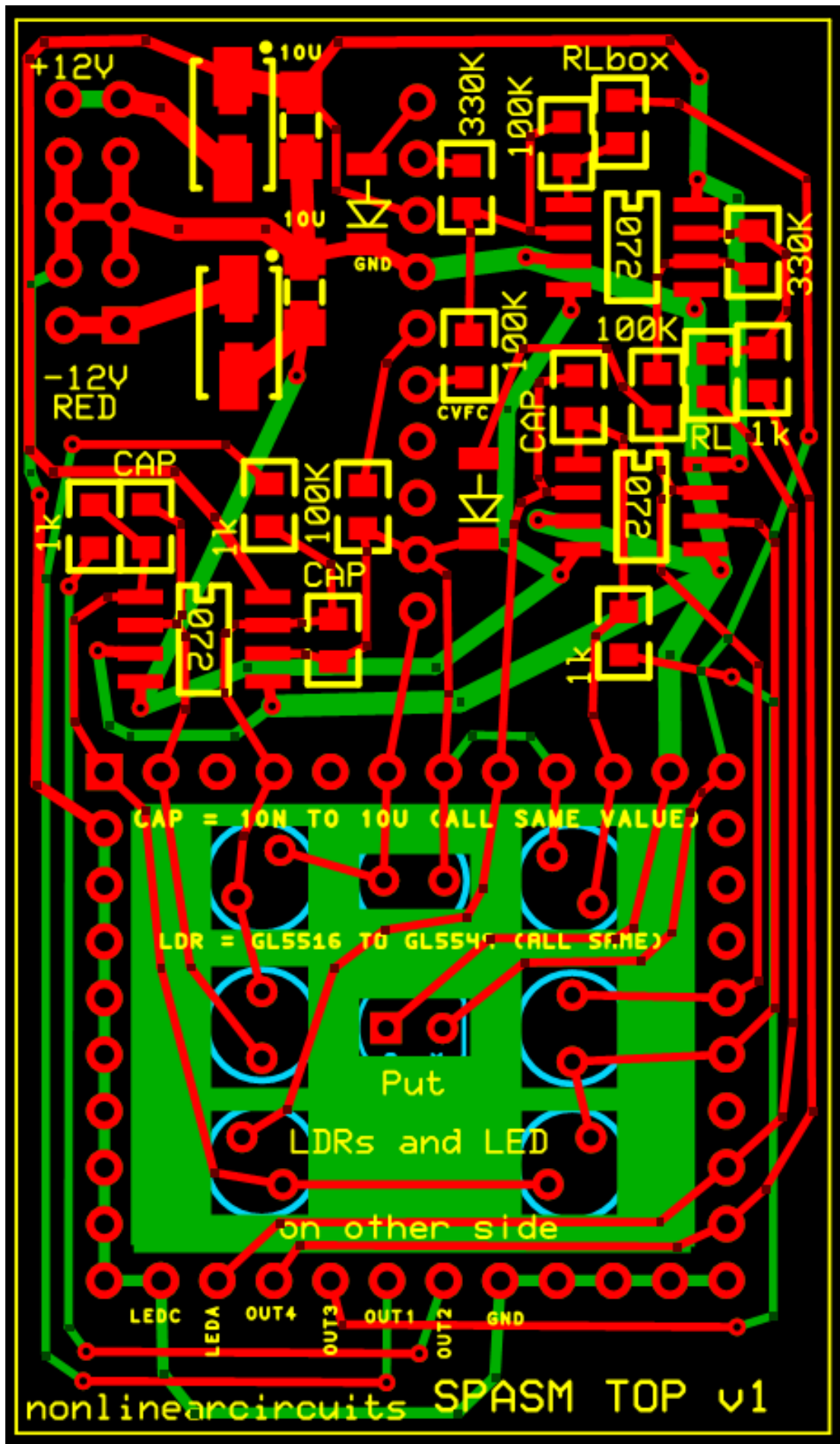
4. when soldering on the pins, use the SIP connectors to hold them on straight. This pic below is of the Shat-noir but the method is the same.





LDR driver
red, green or yellow

non linear circuits	
LDR jerk	
Rev 1.0	Page # or name
08-Dec-18	andrewf



CAP = 10N TO 10U (ALL SAME VALUE)

LDR = GL5516 TO GL5545 (ALL SAME)

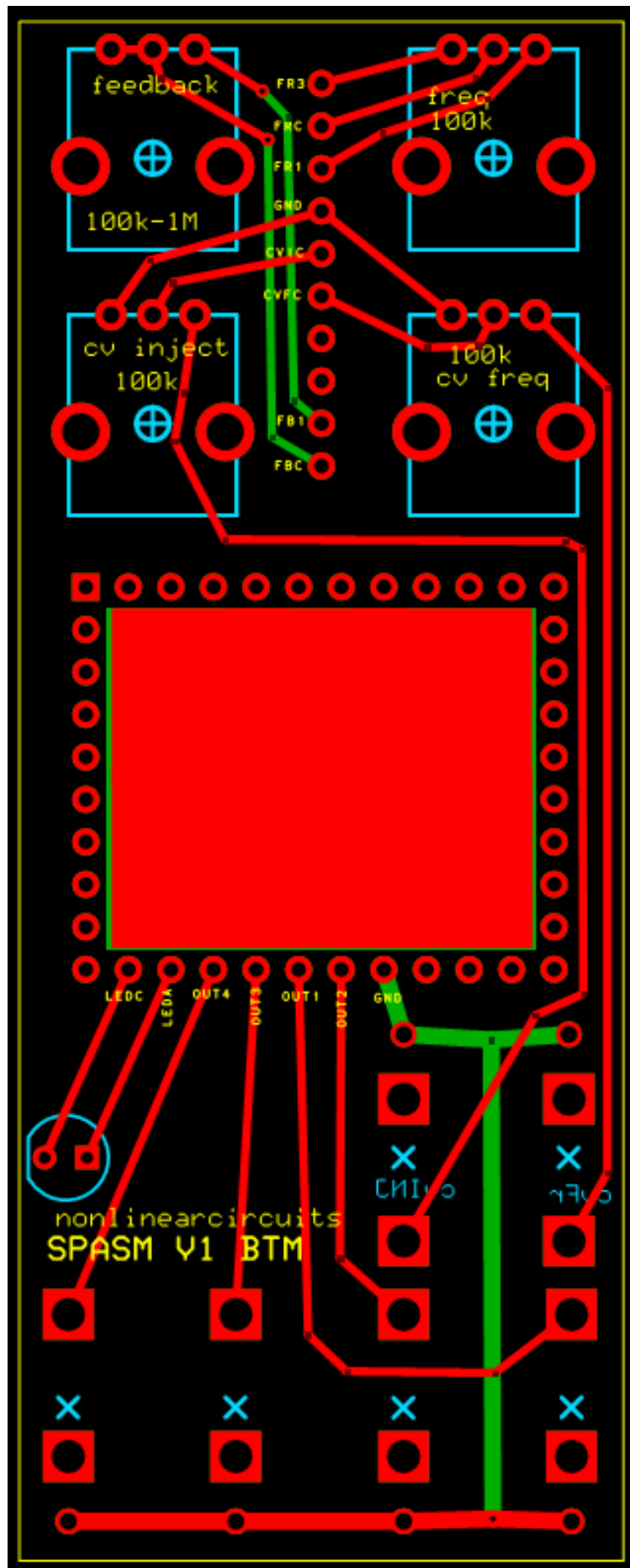
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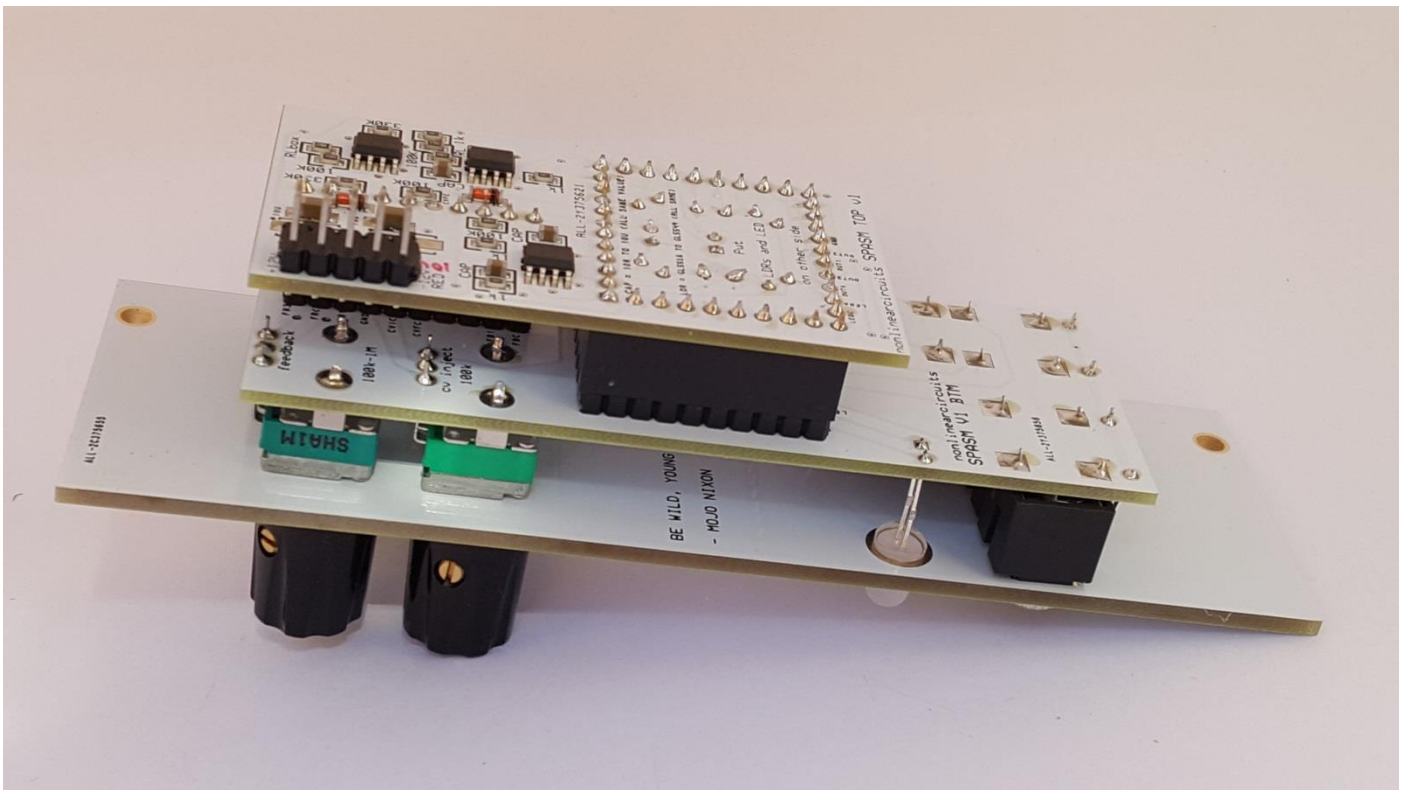
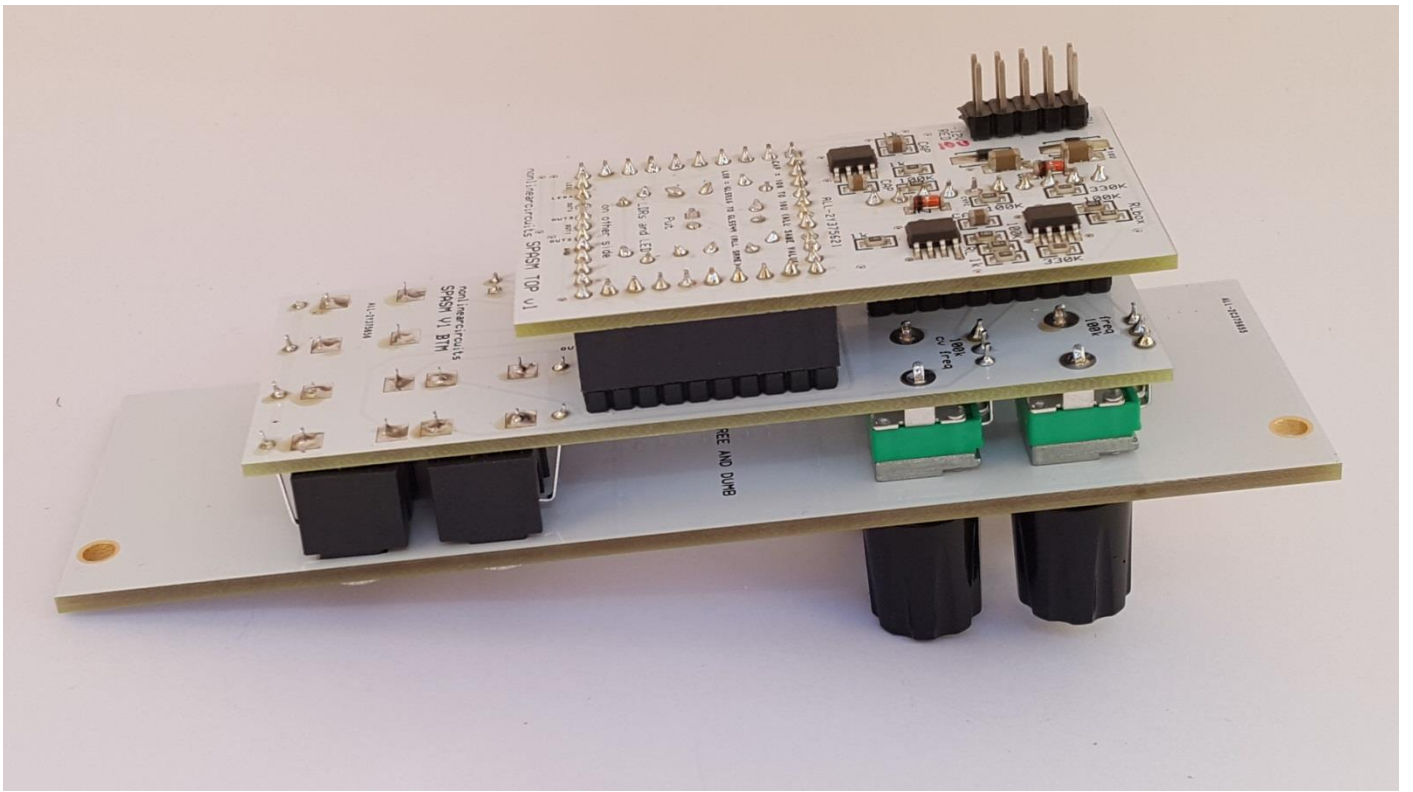
LDRs and LED

on other side

LEDC LEDA OUT4 OUT3 OUT1 OUT2 GND

nonlinearcircuits SPASM TOP v1





ALL-2C375655

12V
RED 100

100 100

330K 100K

RLbox

330K

100K

100K

100K

1k

CAP

1k

100K

CAP

1k

ALL-2Y375621

CAP = 10N TO 10U (ALL SAME VALUE)

LDR = GL5516 TO GL5549 (ALL SAME)

Put

LDRs and LED

on other side

LEDC LED4 OUT4 OUT3 OUT1 OUT2 GND

nonlinearcircuits SPASM TOP v1

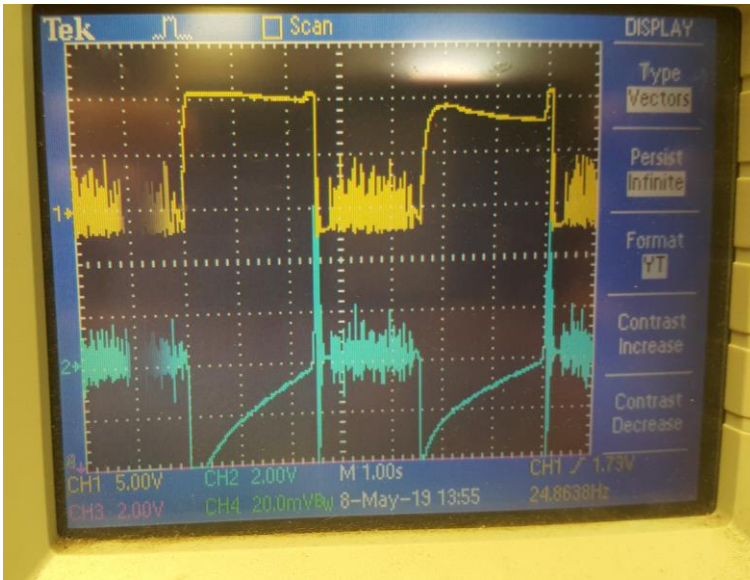
nonlinearcircuits
SPASM V1 BTM

ALL-2Y375656

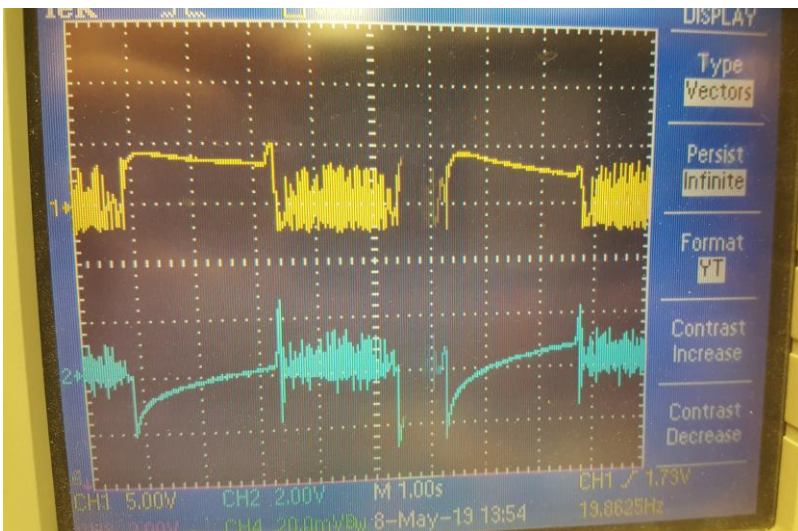
USE

Spasm needs a signal on the CV Freq input to react to. I usually prefer gates but anything will do.

The feedback pot controls the size of the jerk, the change will not always be obvious but it depends on the frequency and patch you have.



This pic shows the Feedback pot at minimum, yellow trace is output 1, blue trace is output 4. Tri from LFO is patched to the CV Freq input. It can be seen the reset jerks are very large, up to +/-10V.



Same details as above but Feedback pot at maximum. The reset jerks are much smaller, generally under 5V, tho the odd 10 voltter still happens.....this is chaos not tea and scones on the lawn.