

nonlinearcircuits

BI-DI CHOPPERS build & BOM

This is a dual stripped version of the original Chopper. It is a very easy build with few components. It can sort of be used as a 1 into 2 switch or 2 into 1. A CV signal can be used to help control the switching point. Choppers are different from regular switches as the signals being switched also control the switching, so things happen that you might not expect.

It can be used to process CV and audio signals.

The basic idea for the Chopper is from a 1975 paper titled - 'A nonlinear modulator using delta principles' by S.K. Mullick and K.R. Srivathsan, although this version drops the comparator output, makes the slew stage adjustable, converts the 2 inputs so they can also be outputs and adds an in/out stage before the slew section.

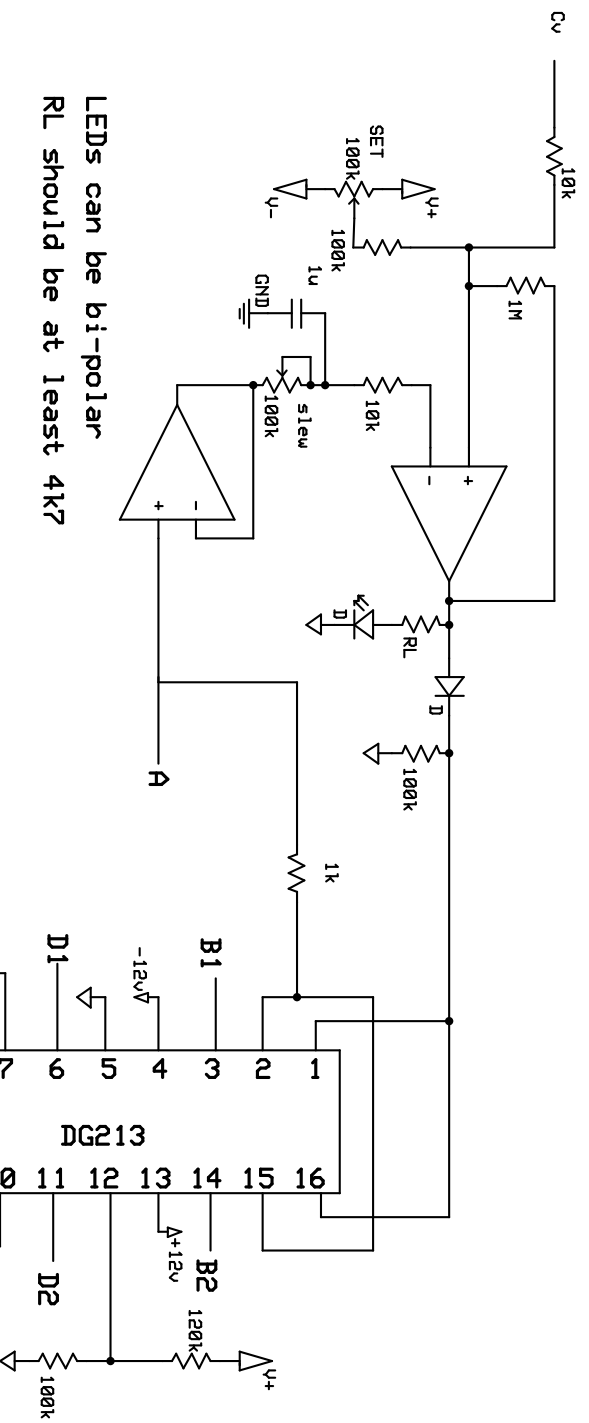


BOM – The Tayda part numbers are given as examples, feel free to buy from your favorite retailer if you prefer.

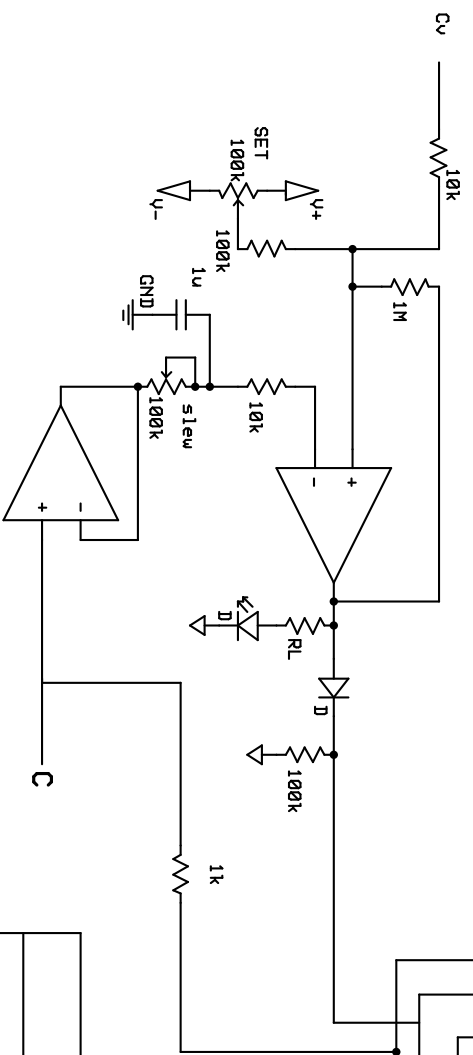
VALUE	QUANTITY	DETAILS
1uF (1u)	2	0805 see notes #4
10μF	2	0805 OR 1206 25V rating or higher
1k	2	0805
10k	4	0805
100k	5	0805
120k	1	0805
1M	4	0805
RL	2	0805 select to suit LED brightness
LL4148 diodes	2	SOD-80 Tayda: A-1213
DG213	1	Soic Mouser No: 781-DG213DY-T1-E3 See notes #5
TL072 or TL082	2	Soic Tayda: A-1139
Eurorack 10 pin power connector	1	Tayda: A-198 cut to size
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	8	Tayda: A-865 or preferably get Thonkiconn Jacks (PJ301M-12) from Thonk, Synthcube or Modular Addict
3mm LED	2	Must be 3mm! Tayda or ebay
100k (B) pot	6	Tayda: A-1848

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, diodes and transistors are cheapest from Tayda.
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. The 1uF caps determine the maximum slew rates which greatly effect when the switches are activated. Feel free to experiment with this value, maybe use 1 chopper for audio so use a lower valued cap (100nF?) and the other for CV and stick with 1uF (or higher)
5. DG413 should work fine (untested at time of writing) but DO NOT USE Vishay DG413LE, which are a low voltage version and will not work (actually they will work for a little while but will get hot and die)

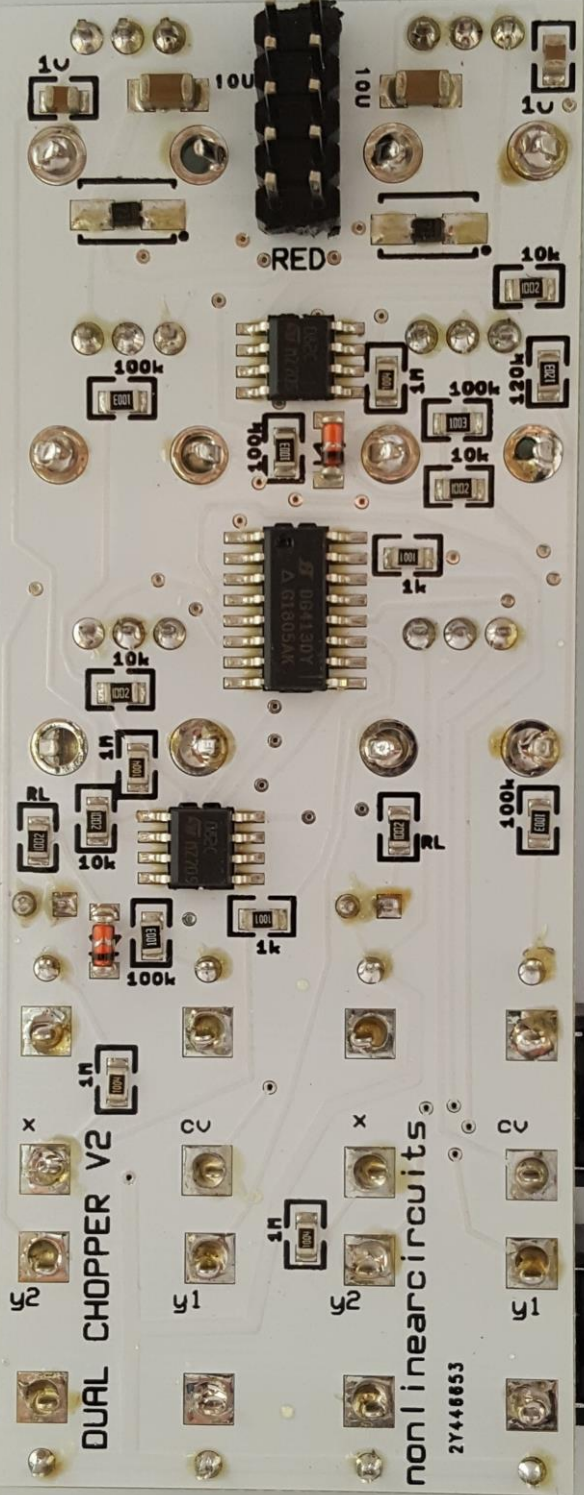


LEDs can be bi-polar
RL should be at least 4k Ω



Slew cap can be any value to suit purpose
less for audio, more for CV

ANALOGUE SWITCH - DG213	
nonlinear circuits	
dual choppers v2	
Andrew F	Rev 1.0
10feb2019	Page # or name



DUAL CHOPPER V2

nonlinearcircuits

2Y448653

any fool can wear a hat
and not move when they play

2C446652