

nonlinearcircuits

MOGUE build & BOM

MOGUE is a VCA and Mixer based on early Moog designs, with some mods to get them into 'Eurorack standards' (!). Both circuits can be overdriven to get some wave-shaping action. The mixer can handle CV and audio but the VCA is audio only. Some users consider these 2 modules are an inherent part of the legendary Moog sound...maybe; I just wanted to use up all my LM394.

Most of the capacitors can be thru-hole or 0805 smd, **do not install both**. It is becoming difficult to purchase smd caps these days (7/2018), so you have a choice.

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

VALUE	QUANTITY	DETAILS
3n3 (=3.3nF)	1	0805 or 5mm spacing thru hole
100nF	2	0805 or 2mm (0.1 inch) spacing thru hole
330nF	1	0805 or 5mm spacing thru hole
10µF	3	0805 25V rating or higher Mouser No: 81-GRM21BR61E106KA3L (or similar) OR 2mm spacing electro 25V or higher
220uF	2	thru hole electrolytic 25V
10R	2	0805
47R	1	0805
75R	2	0805
120R	3	0805
150R	2	0805
330R	2	0805
470R	1	0805
510R	1	0805
680R	2	0805
820R	1	0805
1k	8	0805
3k3	1	0805
6k8	2	0805
15k	2	0805
22k	3	0805
33k	1	0805
47k	1	0805
68k	1	0805
82k	1	0805
150k	1	0805
270k	1	0805
LL4148 diodes	2	size: SOD-80, mini MELF, LL34, DO-213AAthey are all same
LM394	3	DIP or SSM2210 or 3 pairs of matched BC547
BC557	2	thru-hole PNP, Tayda A-1334. These should be matched
8 pin DIP socket	3	Tayda: A-001
BC857	1	PNP Tayda A-1345
BC847	2	NPN Tayda A-1339
BCM857	1	PNP Matched pair
100R trimpot	3	
11mm standoff	1	suit M3 or M2.5 screws. 11mm is best but 10mm is fine with a washer.
100k pot	6	Tayda: A-1848
Eurorack 10 pin power connector	1	Tayda: A-198
Schottky, power rectifier or 10R, optional - for reverse voltage protection	2	SMD, Schottky (best option) or standard power rectifier diode 50-600V 1A or more, dot on PCB indicates CATHODE (stripe on component) SEE NOTES #
3.5MM SOCKET Kobiconn style	8	Tayda: A-865 or preferably get Thonkiconn Jacks (PJ301M-12) from Thonk or Modular Addict
10 Pin 2.54mm Single Row Pin Header Strip	2	Tayda: A-197 (cut to size)
10 Pin 2.54mm Single Row Female Pin Header	2	Tayda: A-1306

Additional notes:

1. The prices for these 10uF 0805 capacitors drops to approx. 10c each when buying more than 10...and you should always get plenty of spares, it is easy to drop and lose smd parts.
2. Some power diodes: PMEG2005EGWX SCHOTTKY RECT, AEC-Q101, 20V, SOD-123, PMEG2005EH DIODE, SCHOTTKY, 0.5A, 20V, 1N400x or S1JL or similar
3. The resistors, caps and transistors are cheapest from Tayda. Diodes and smd transistors from Mouser, Synthcube has LM394 clones for a good price.
4. 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.

Setup and Use

The trimpots are to remove DC offset. If you have a scope, patch in a sine wave, adjust the pots for unity gain (output = input), monitor the output (same for both mixer and VCA) and adjust the trimpots so the signal is more or less equally above and below 0V. If you don't have a scope, prob best just to leave the trimpots in the centre position and trust that modern manufacturing is pretty good these days and components are pretty much on spec.

Unity gain on the mixer means the pots are at around 12 o'clock, past that and the waveshapes start getting corrupted, which is not a bad thing.

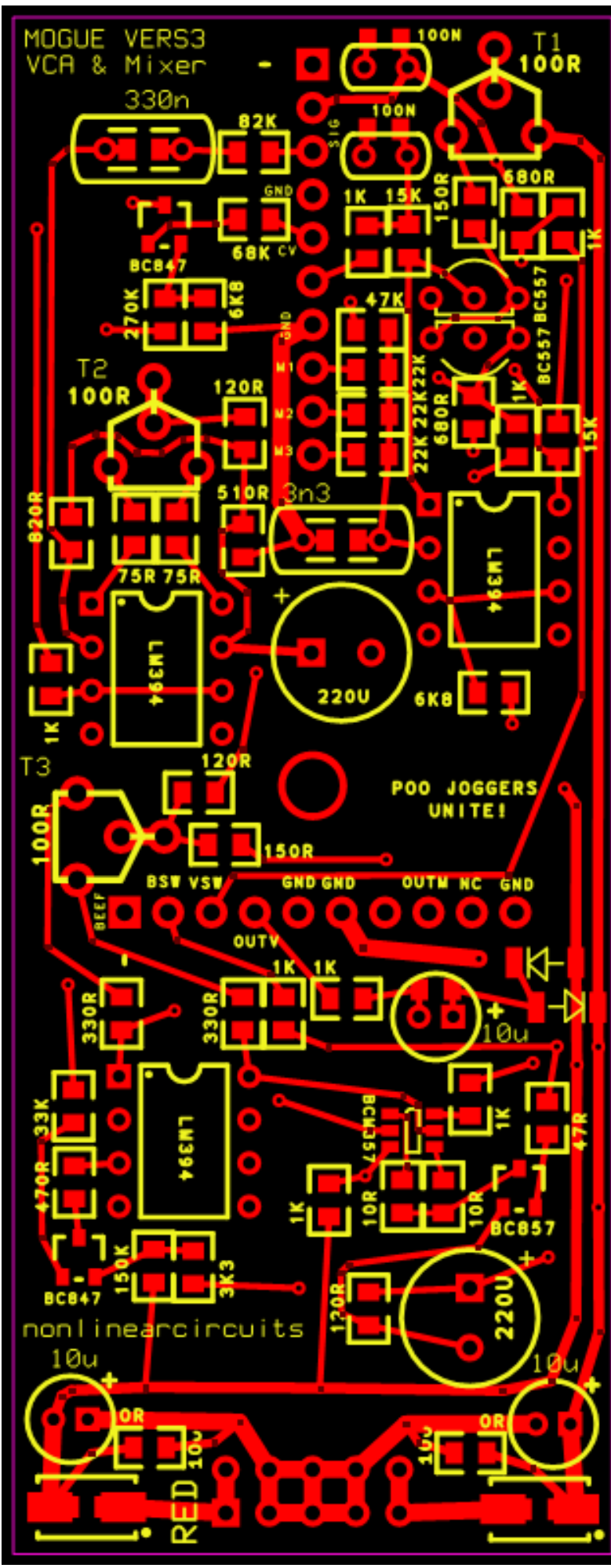
The mixer actually has 2 outputs; one is fed directly to the switching pin of the VCA input. This output is somewhat distorted from whatever is being fed into the mixer. The cleaner output goes to the panel jack. The VCA has 2 driving/gain stages. The pots for both can be used for initial gain settings if no CV is patched in. When CV is applied the pots act as attenuators.

If driving the VCA using a CV on the CV input, the Beef pot must be turned up, or vice versa; turn up the CV pot and drive the VCA via the Beef jack.

Otherwise apply CV signals to both inputs and get a VCA with voltage controlled overdrive.

Beef comes from a long forgotten soup commercial (except by me), where a young son is drinking his instant cup-a-soup and asks, "what's yours daddy?" Daddy responds in the ultimate OTT baritone "BEEF!" One of those things that has stuck in my head for 40 years and needed to come out.

MOGUE VERS3
VCA & Mixer



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