

U-BOAT V1.5

Suboctave-effect based on Merlin Blencowe's circuit

OVERVIEW

Merlin is famous for his knowledge about valve circuits. But from time to time he releases stompbox circuits after his own ideas. His site: <http://www.valvewizard.co.uk/>

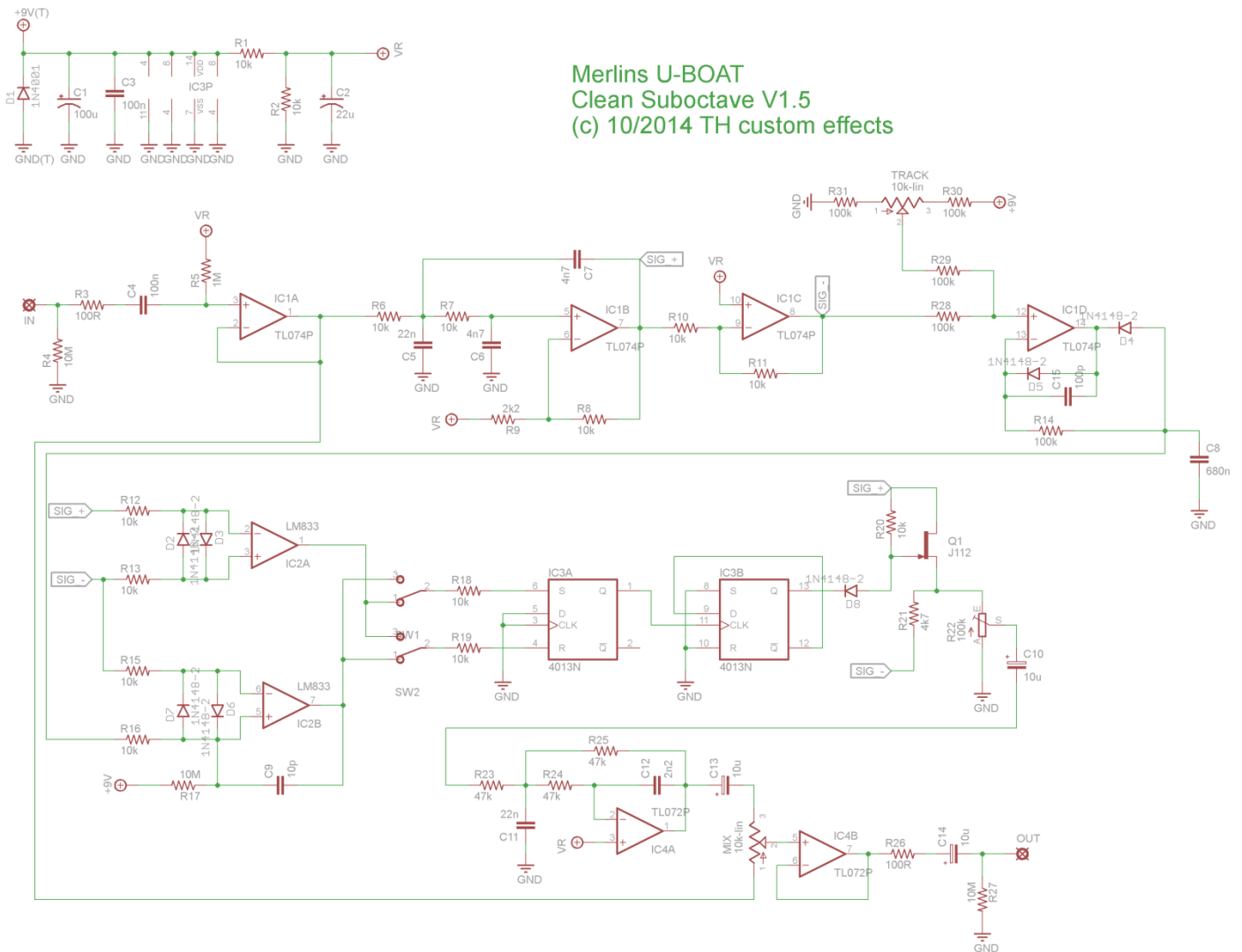
GENERAL

This circuit has true bypass instead of the original FET switching. Also a Track-pot has been added for finding the sweet spot where the octave works best for your guitar pickups.

Here is Merlins project page: <http://www.valvewizard.co.uk/uboa.html>

This version of the PCB addresses a few symptoms that have shown up in a minor number of builds.

SCHEMATIC



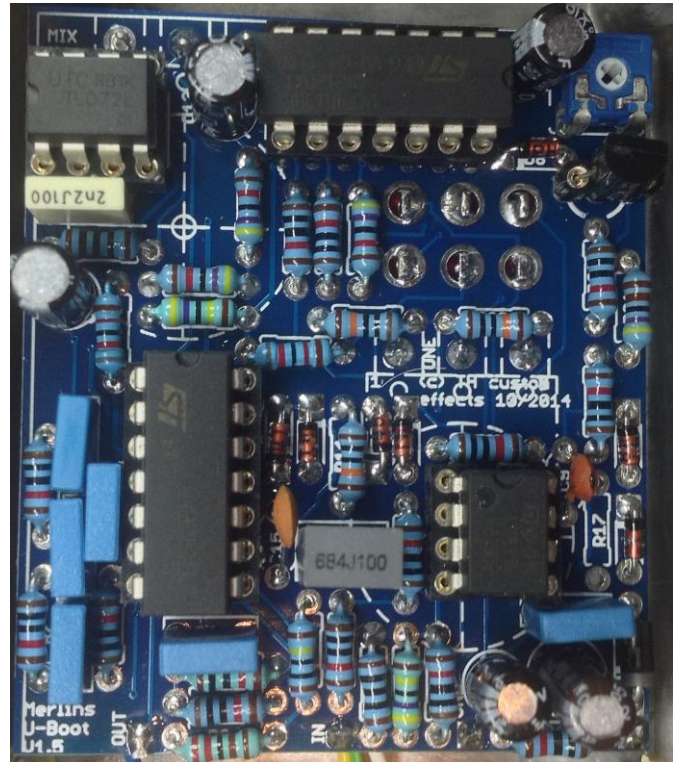
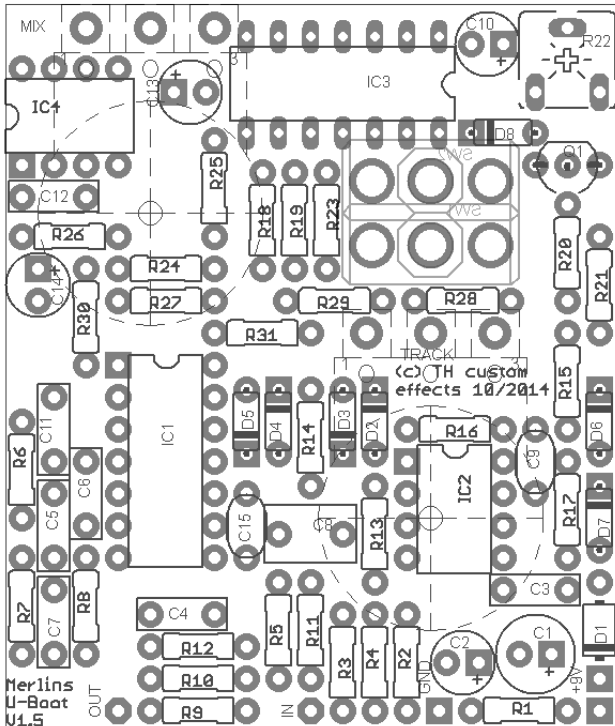
BILL OF MATERIALS

	Device#	Qty	Value	Comment
Resistors	R1, R2, R6, R7, R8, R10, R11, R12, R13, R15, R16, R18, R19, R20	14	10k	
	R3, R26	2	100R	
	R4, R17*, R27	3	10M	R17 – use if IC2 is not a LM833
	R5	1	1M	
	R9	1	2k2	
	R21	1	4k7	
	R23, R24, R25,	3	47k	
	R14, R28, R29	3	100k	
	R30, R31	2	82k	
	Capacitors	C1	1	100u
C2		1	22u	polarized electro
C3, C4		2	100n	box film
C5, C11		2	22n	box film
C6, C7		2	4n7	box film
C8		1	680n	box film
C9		1	10p	ceram
C10, C13, C14		3	10u	polarized electro
C12		1	2n2	box film
C15		1	100p	ceram
Pots	R22	1	100k-lin	trimpot 6mm ACP CV6
	MIX, TRACK	2	10k-lin	
Diodes	D1	1	1N4001	
	D2-D8	7	1N4148	
Transistors	Q1	1	J112	
Switches	SW1	1	2PDT	
ICs	IC1	1	TL074	
	IC2	1	LM833	highly recommended
	IC3	1	CD4013	
	IC4	1	TL072	

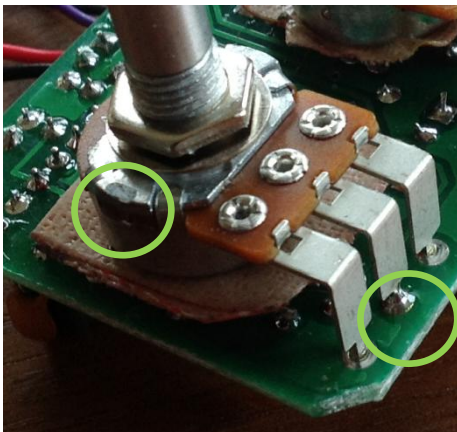
BUILDING

There are a lot of parts on relatively small space, so take your time and everything will work out well.

Start populating resistors and diodes first, then IC sockets. If you want to socket the transistors you put the sockets in now. Next do the capacitors, starting ceramic, box film and last 1u box film and pol. electros.



The trimpot R22 allows you to adjust the volume of the suboctave signal to be later mixed with the original signal.



The board mounted pots need to go onto the other side of the board. Use some (double-sided) tape to make sure the pot cases do not shorten any pins that come through the board. As you solder them it is good practice to apply some solder to the middle pin first, then pull it back approx. 1mm and let it harden. Then solder the other pins. This will align the pot horizontally in a better way and avoid shortcuts of the wide pot pins and the board.

Don't forget to clip of the small bracket before you mount the circuit.

FINALLY

Thanks to Merlin there is an option to the well known OC-2 circuit most octave-down pedals are built around. With a few improvements added by myself it tracks even better for some pickups.

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