TUBE DRIVER V1.3

Famous tube sound in a user-friendly package (1590BB)

OVERVIEW

There is a well known circuit that runs a simple OpAmp-based distortion into a tube - generating great tones.

This is used by David Gilmore, Eric Johnson, Joe Satriani and many other well known guitarists.

If you ever wanted to own one or build one yourself – don't look any further.

GENERAL

This circuit is intended to fit in a 1590BB enclosure with the tube inside.

The tube heaters run on 6V to allow 9V operation on any pedalboard. Internally the tube is powered with ~60V DC.

There are a lot of small changes to the original circuit to make I more versatile and fix a few insufficiencies. That starts with the higher voltage on the tube plates, a single power rail, a different tone control (Baxandall) and a well thought after optimized board and layout which makes boxing it very easy.

The unit will draw 300-500mA on 9V, so keep this in mind when connecting it to your pedal board supply. It is highly recommended to use a separate and isolated output.

The schematic of this circuit looks a little more complicated than the 125B version but it isn't. It's just that the tube is connected remotely which looks different

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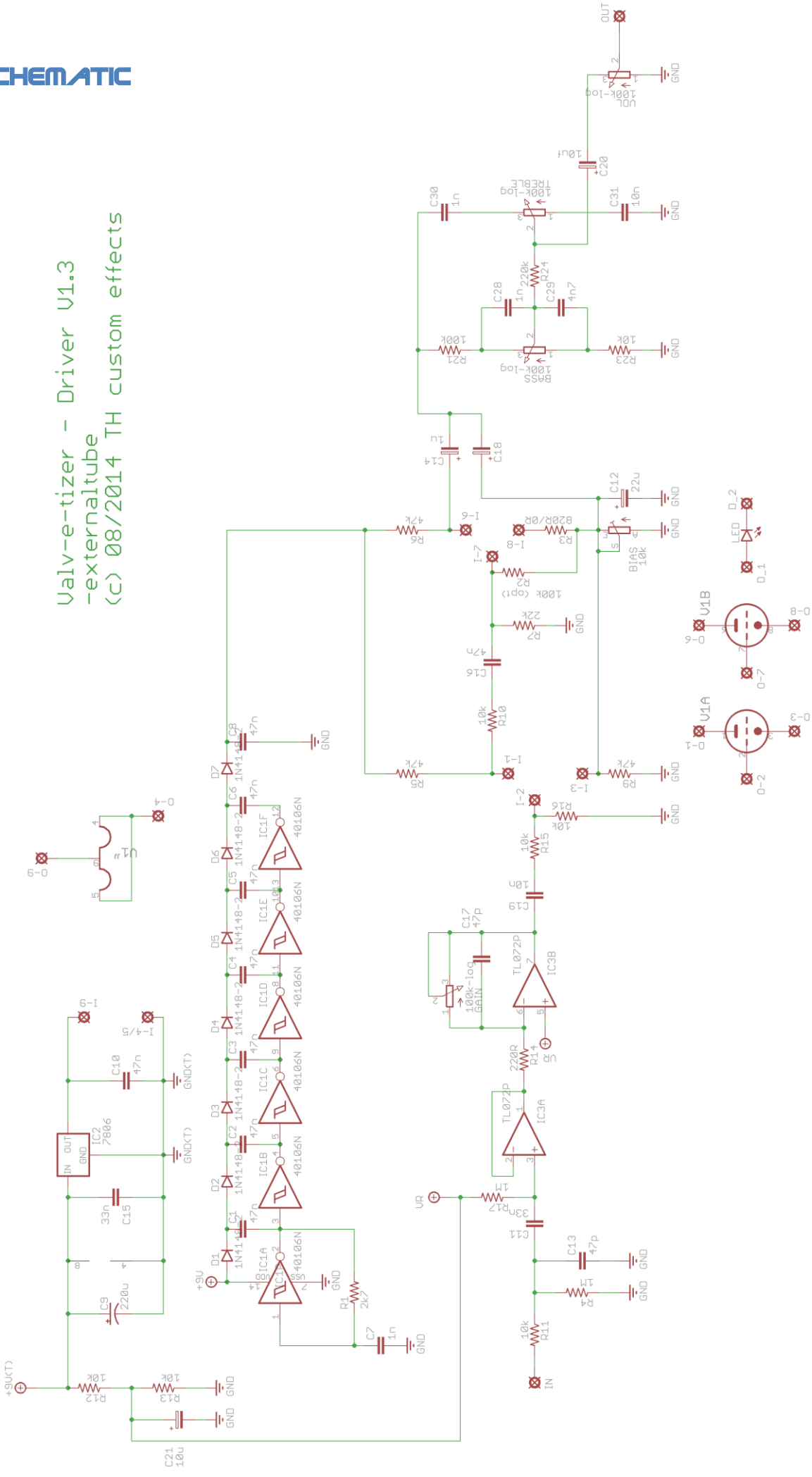
TH CUSTOM EFFECTS

SCHEMATIC



BILL OF MATERIALS

Please stick to the part values in the BOM. The values in the layout may be different.

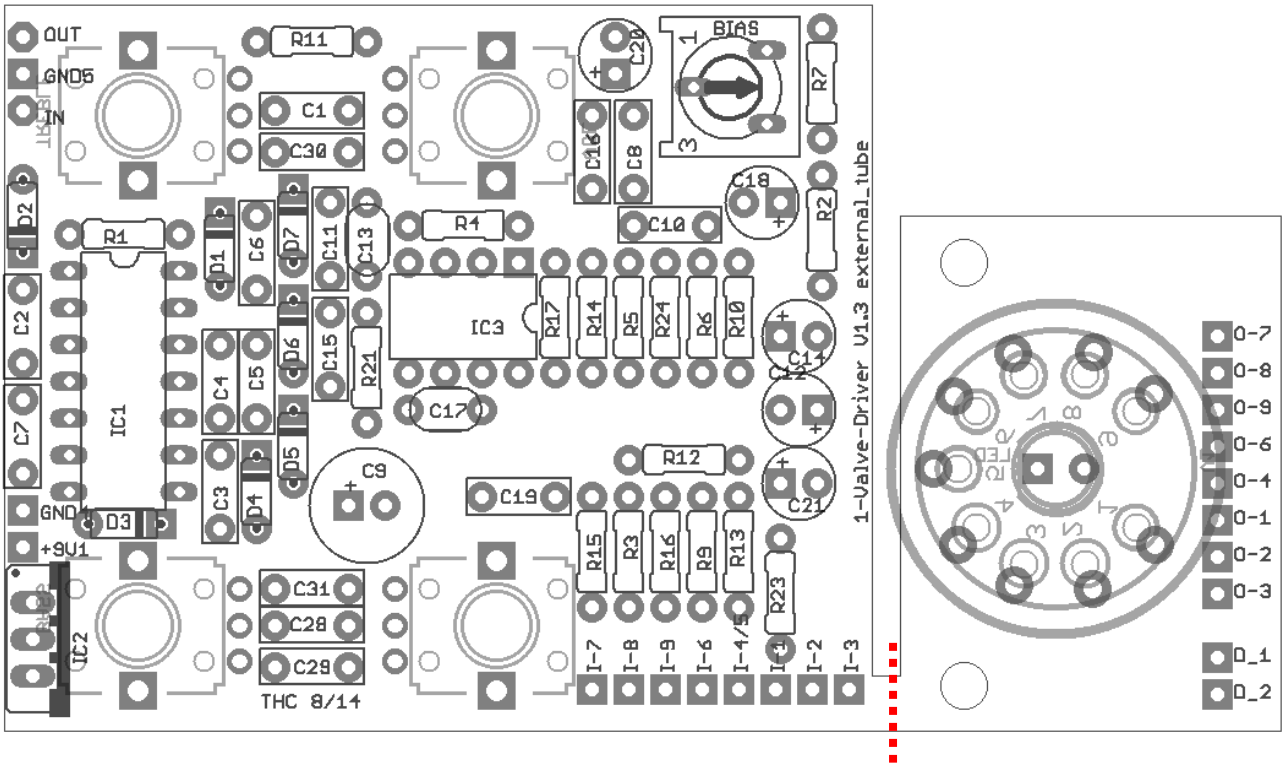
	Parts	Value			Qty	Description
		MyDriver	both	Driver		
Resistors	R1	2k7			1	
	R2	---		---	1	Do not populate
	R3	jumper		jumper	1	0R resistor or cut-off leg (wire)
	R4, R17	1M			2	
	R5	47k		47k	1	
	R6	47k		47k	1	
	R7	22k		22k		
	R8	1k5-3k3			1	LED series resistor. Test for brightness with your LED first.
	R9	47k			1	*Optional. Use with external BIAS pot
	R10, R11, R12, R13, R15, R16, R23	10k			7	
	R14	1k5			1	
	R21	100k			1	
	R24	22k			1	
Capacitors	C1, C2, C3, C4, C5, C6, C8, C10, C16	47n			9	box film ! 80-100V !
	C7, C28, C30	1n			3	box film
	C9	220u/16V			1	pol. electro
	C11	47n		33n	1	box film
	C12	22u/50V			1	pol. electro
	C13, C17	47p			2	ceram
	C14	1u/50V		1u/50V	1	pol. electro
	C15	33n			1	box film
	C18	---		---		pol. electro
	C19	33n		10n	1	box film
	C20, C21	10u/16V			2	pol. electro
	C29	6n8			1	box film
	C31	4n7			1	box film
Diodes	D1, D2, D3, D4, D5, D6, D7	1N4148			7	
	LED	LED3MM			1	super-bright
Trimpots	BIAS1*	10k			1	*6mm ACP6 or Piher
Pots	Gain, Volume, Treble, Bass	100k-log			4	Potentiometers 9mm Alpha (from Tayda)
Ics	IC1	40106N			1	
	IC2	uA7806			1	
	IC3	TL072			1	
Other	V1	12AT7		12AX7	1	
	S1	Socket Noval print			1	Noval Socket Print

*The bias pot can be used externally and be mounted to the enclosure if you want to make it tweakable from the outside. Usually it is set fixed once you found your sweet spot with the tube you are using.

BUILDING

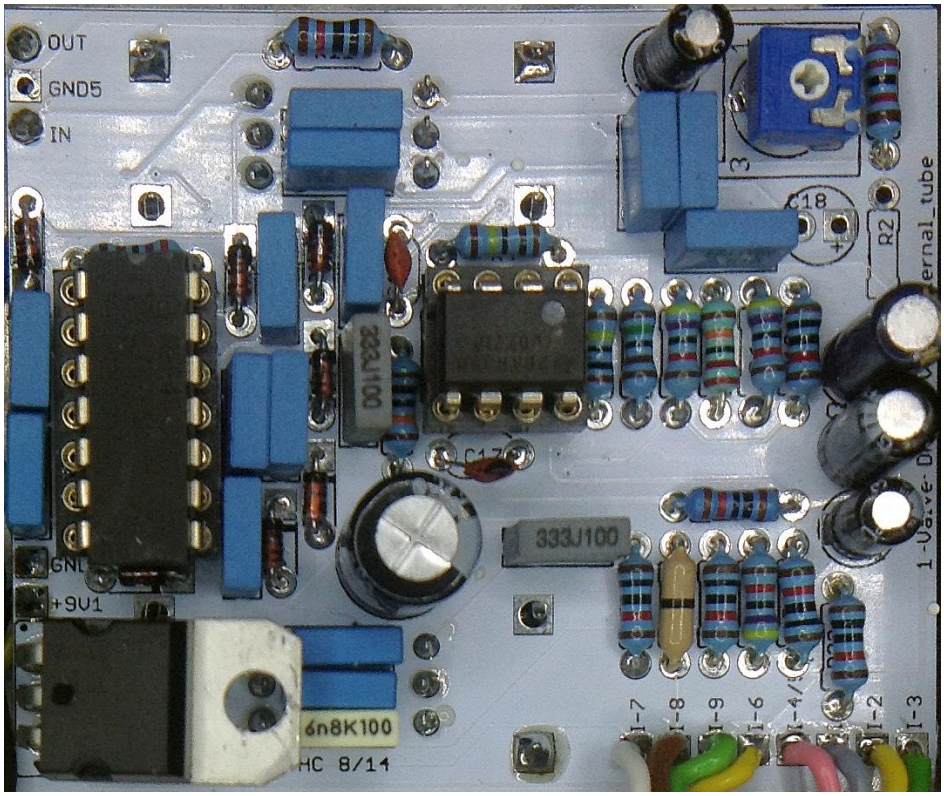
The BOM lists two different versions that can be built. One is very close to the original circuit and will definitely sound alike. The other one is tweaked to my liking.

First you need to separate the tube daughter board from the main PCB by cutting through at the dotted line.



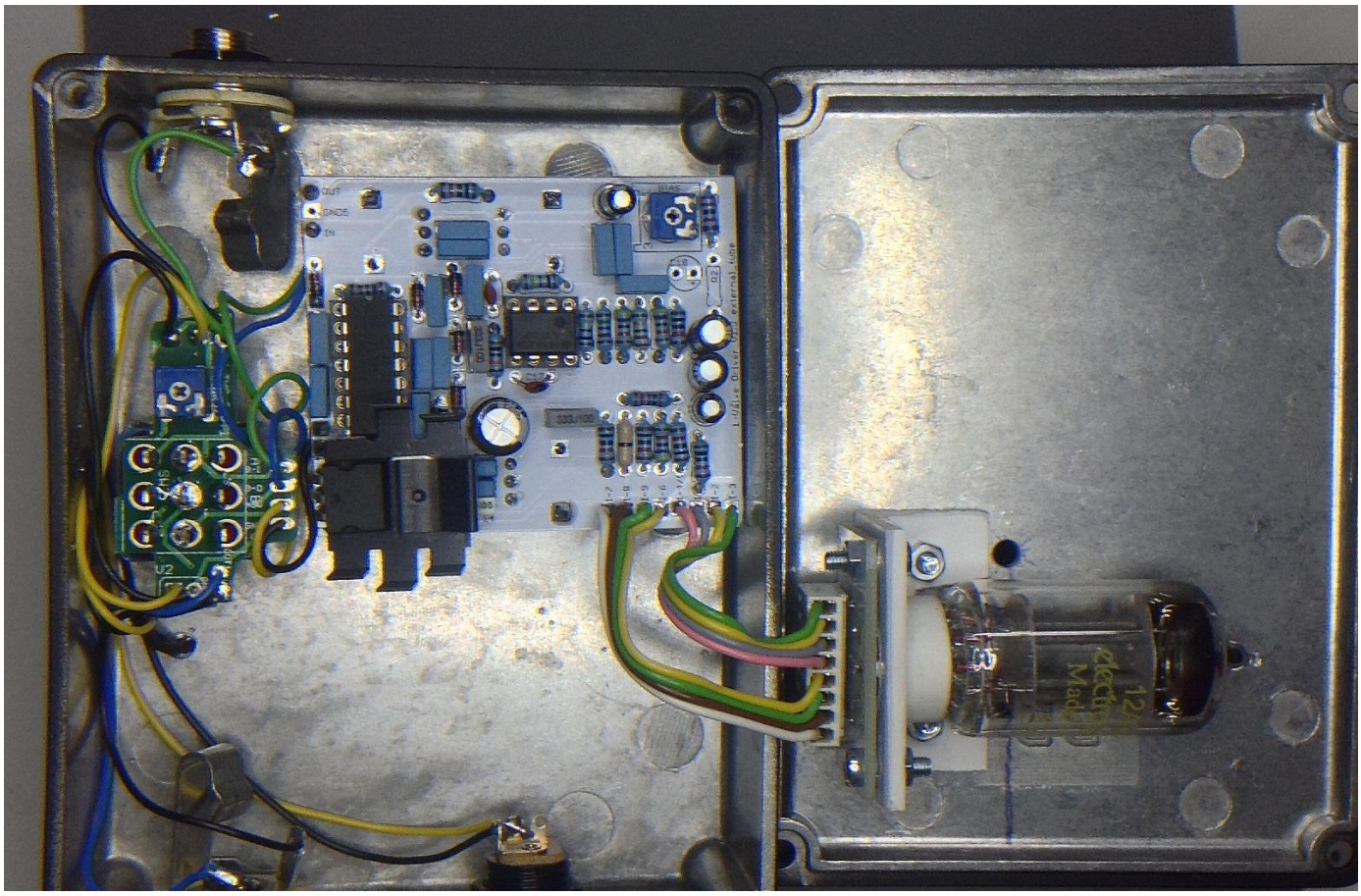
Start populating the small diodes first, then larger diodes, resistors, IC socket and capacitors. It is a good idea to mount the power regulator to the enclosure which will work as a heatsink.

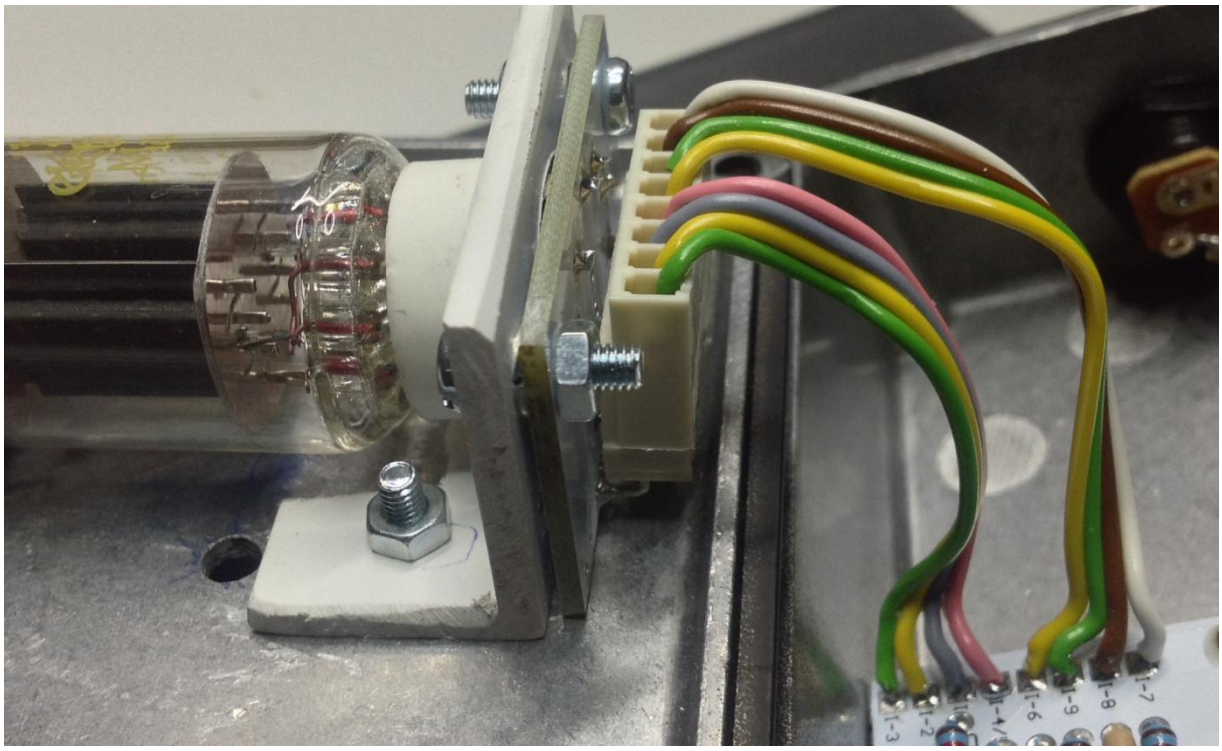
Please note that the pots and the tube socket are mounted on the backside of the PCB!



DETAILS

I used an angled connector attached to the tube socket allowing to mount the tube very close to the wall.

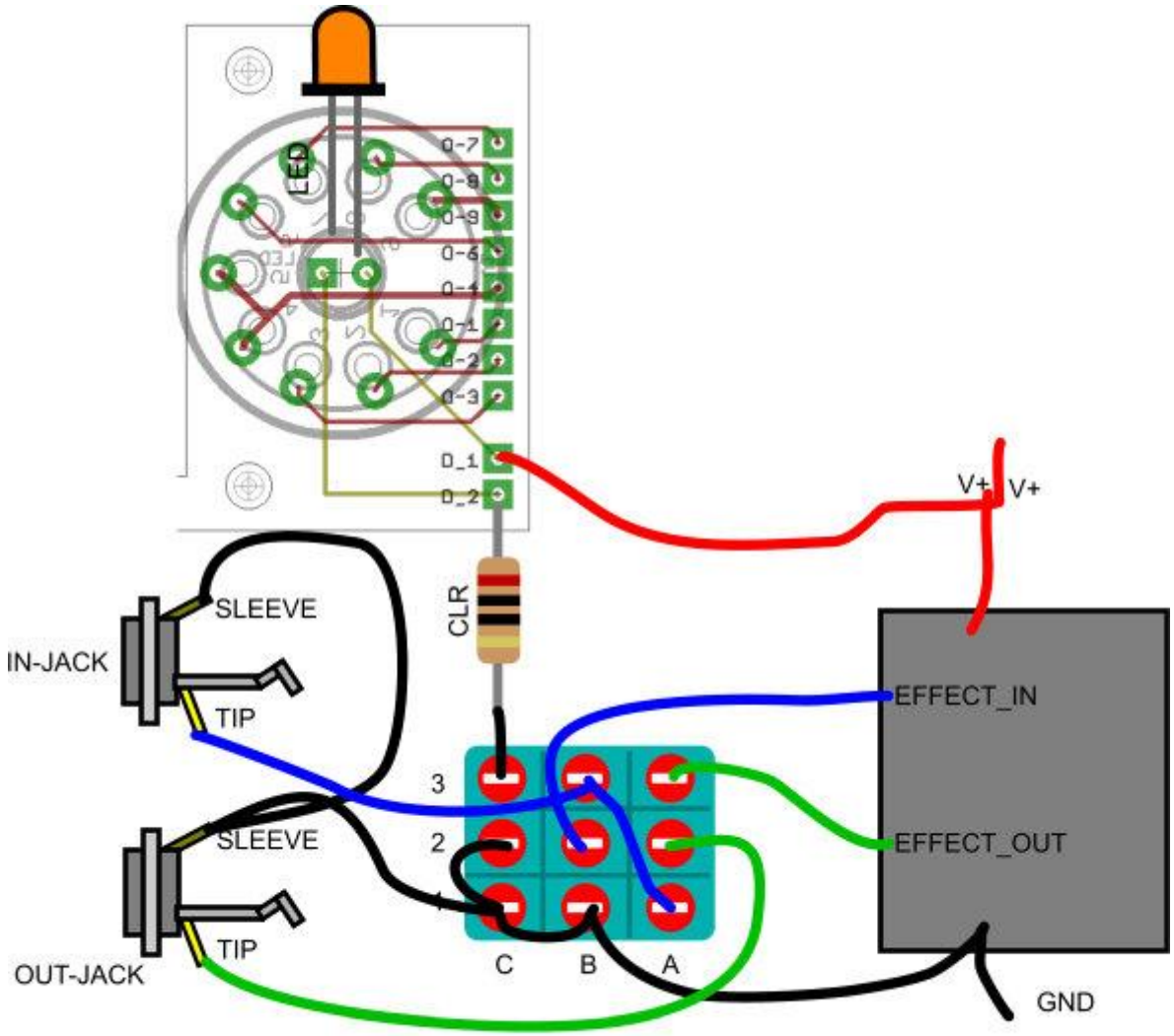




ENCLOSURE

A drilling template can be found here: http://diy.thcustom.com/drill-templates/

WIRING



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