

PROJECT NAME

POSEIDON

BASED ON

Catalinbread® Katzenkönig

BUILD DIFFICULTY

■■■■■ Easy

EFFECT TYPE

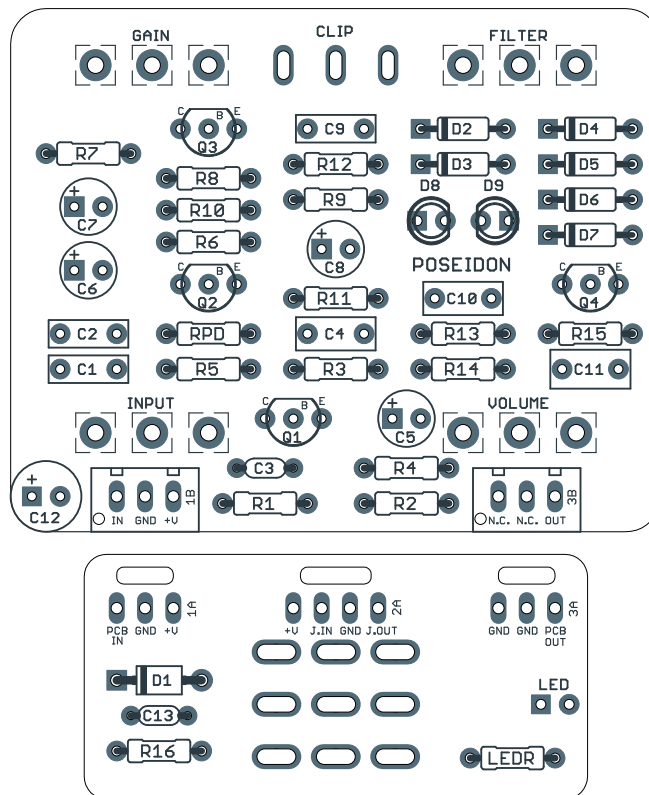
Fuzz, distortion

DOCUMENT VERSION

1.0.0 (2021-02-19)

PROJECT SUMMARY

A hybrid circuit that combines a silicon Tone Bender with the diode clipping and tone control from the RAT Distortion.



Actual size is 2.3" x 1.86" (main board) and 1.78" x 0.87" (bypass board).

TABLE OF CONTENTS

1	Project Overview	7	Drill Template
2	Introduction & Usage	8	Enclosure Layout
3-4	Parts List	9	Wiring Diagram
5	Build Notes	10	Licensing
6	Schematic	10	Document Revisions

INTRODUCTION

The Poseidon Silicon Fuzz is based on the Catalinbread Katzenkönig, originally released in 2015.

The Katzenkönig (also spelled Katzenkonig or Katzenkoenig) is a mash-up of the silicon Tone Bender circuit (input and transistor gain) with the back half of a RAT Distortion (clipping diodes, tone and output volume recovery). But as with most Catalinbread circuits, even if the source material is familiar, the result doesn't sound much like anything else.

Interestingly, Catalinbread published the schematic of the pedal in the manual under a Creative Commons license. Catalinbread has always been very friendly to the DIY community, and they reasoned that since much of the development of the silicon Tone Bender and the tracing and analysis of the RAT had come from DIYers, they wanted to give something back.

The Poseidon is a direct adaptation from this schematic, with one addition: a diode clipping switch has been added to go between the stock set of diodes and two other options with higher thresholds for more headroom and volume.

USAGE

The Poseidon has the following controls:

- **Input** controls the signal level coming into the transistor fuzz stage. Its effect is nearly identical to rolling back the guitar volume.
- **Gain** controls the amount of gain in the transistor fuzz stage.
- **Filter** is a treble cut. As with the RAT, it works in reverse, with more treble cut as it's turned up.
- **Volume** is the overall output level.
- **Clip** (toggle switch) selects between three different types of clipping diodes.

PARTS LIST

This parts list is also available in a spreadsheet format which can be imported directly into Mouser for easy parts ordering. Mouser doesn't carry all the parts (most notably potentiometers) so the second tab lists all the non-Mouser parts as well as sources for each.

[View parts list spreadsheet](#) →

PART	VALUE	TYPE	NOTES
R1	470k	Metal film resistor, 1/4W	
R2	100k	Metal film resistor, 1/4W	
R3	10k	Metal film resistor, 1/4W	
R4	1k	Metal film resistor, 1/4W	
R5	22k	Metal film resistor, 1/4W	
R6	1k	Metal film resistor, 1/4W	
R7	1k	Metal film resistor, 1/4W	
R8	150R	Metal film resistor, 1/4W	
R9	3k9	Metal film resistor, 1/4W	
R10	2k2	Metal film resistor, 1/4W	
R11	3k9	Metal film resistor, 1/4W	
R12	1k	Metal film resistor, 1/4W	
R13	1M	Metal film resistor, 1/4W	
R14	1M	Metal film resistor, 1/4W	
R15	3k3	Metal film resistor, 1/4W	
R16	100R	Metal film resistor, 1/4W	
RPD	1M	Metal film resistor, 1/4W	
LEDR	4k7	Metal film resistor, 1/4W	
C1	68n	Film capacitor, 7.2 x 2.5mm	
C2	1n	Film capacitor, 7.2 x 2.5mm	
C3	47pF	MLCC capacitor, NP0/C0G	
C4	150n	Film capacitor, 7.2 x 2.5mm	
C5	22uF	Electrolytic capacitor, 5mm	
C6	10uF	Electrolytic capacitor, 5mm	
C7	22uF	Electrolytic capacitor, 5mm	
C8	4.7uF	Electrolytic capacitor, 4mm	
C9	3n3	Film capacitor, 7.2 x 2.5mm	
C10	220n	Film capacitor, 7.2 x 2.5mm	
C11	1uF	Film capacitor, 7.2 x 3.5mm	
C12	100uF	Electrolytic capacitor, 6.3mm	
C13	100n	MLCC capacitor, X7R	

PARTS LIST, CONT.

PART	VALUE	TYPE	NOTES
D1	1N5817	Schottky diode, DO-41	
D2	1N914	Fast-switching diode, DO-35	
D3	1N914	Fast-switching diode, DO-35	
D4	1N914	Fast-switching diode, DO-35	
D5	1N914	Fast-switching diode, DO-35	
D6	1N914	Fast-switching diode, DO-35	
D7	1N914	Fast-switching diode, DO-35	
D8	3mm	LED, 3mm, red diffused	
D9	3mm	LED, 3mm, red diffused	
Q1	2N5088	BJT transistor, NPN, TO-92	
Q2	2N5088	BJT transistor, NPN, TO-92	
Q3	2N5088	BJT transistor, NPN, TO-92	
Q4	2N5088	BJT transistor, NPN, TO-92	
INPUT	250k Ω	16mm right-angle PCB mount pot	
FILTER	100k Ω	16mm right-angle PCB mount pot	
GAIN	50k Ω	16mm right-angle PCB mount pot	
VOL.	100k Ω	16mm right-angle PCB mount pot	
CLIP	SPDT cntr off	Toggle switch, SPDT on-off-on	
IN	1/4" stereo	1/4" phone jack, closed frame	Switchcraft 112BX or equivalent.
OUT	1/4" mono	1/4" phone jack, closed frame	Switchcraft 111X or equivalent.
DC	2.1mm	DC jack, 2.1mm panel mount	Mouser 163-4302-E or equivalent.
FSW	3PDT	Stomp switch, 3PDT	
ENC	125B	Enclosure, die-cast aluminum	Can also use a Hammond 1590N1.

BUILD NOTES

Clipping switch

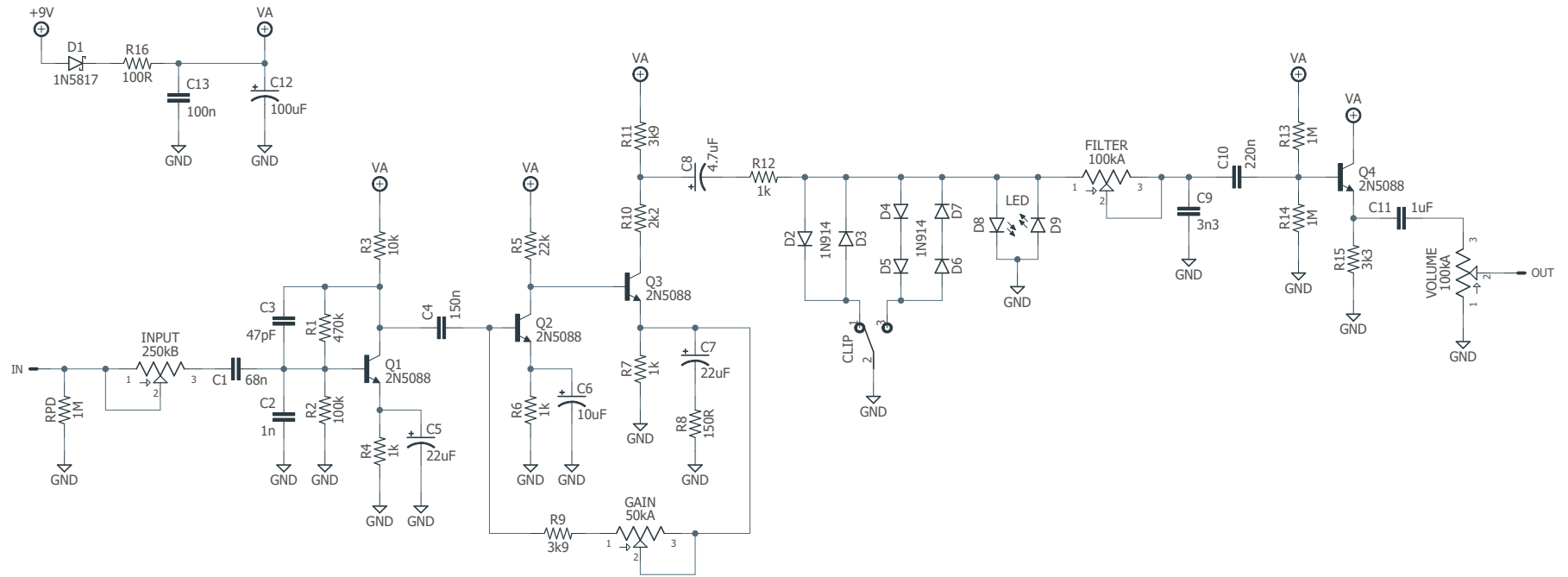
The clipping switch allows you select between different sets of diodes.

The left position of the toggle switch is the stock Katzenkönig clipping arrangement (the same as the RAT), which has one silicon diode in each direction. The right position of the toggle is two diodes in each direction, a higher clipping threshold with a more open sound. The center position leaves only the LEDs for a more dynamic and transparent tone.

If you look at the schematic, you'll see that the LEDs, D8 and D9, are always connected. However, in either the left or right switch positions, the lower-threshold diodes are engaged, and the LEDs have no effect since there's no signal left for them to clip.

Feel free to experiment, For example, you could jumper D7 for asymmetrical clipping. Or, you could omit the two clipping LEDs for a diode-lift mode in the center position.

SCHEMATIC



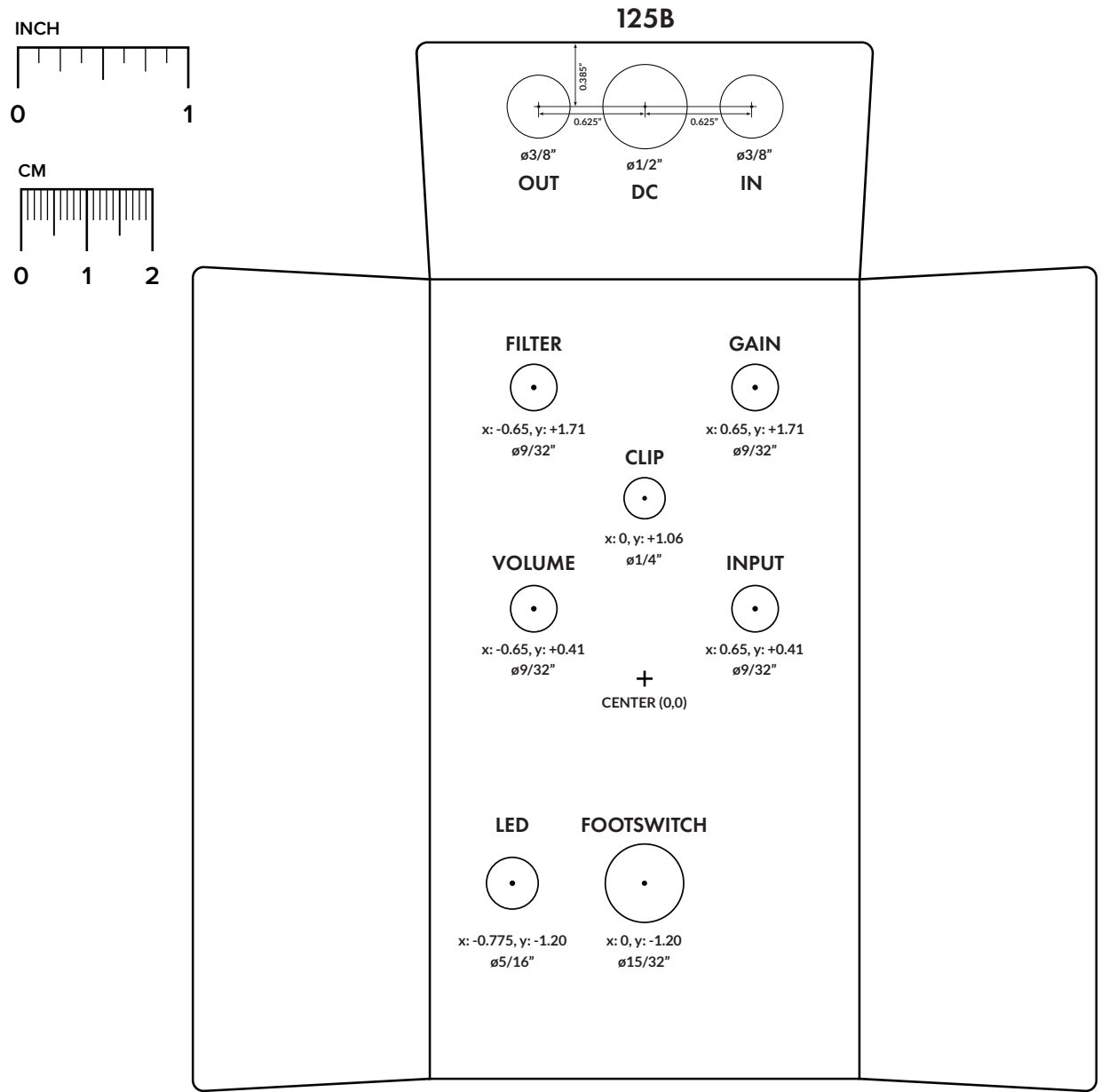
DRILL TEMPLATE

Cut out this drill template, fold the edges and tape it to the enclosure. Before drilling, it's recommended to first use a center punch for each of the holes to help guide the drill bit.

Ensure that this template is printed at 100% or "Actual Size". You can double-check this by measuring the scale on the printed page.

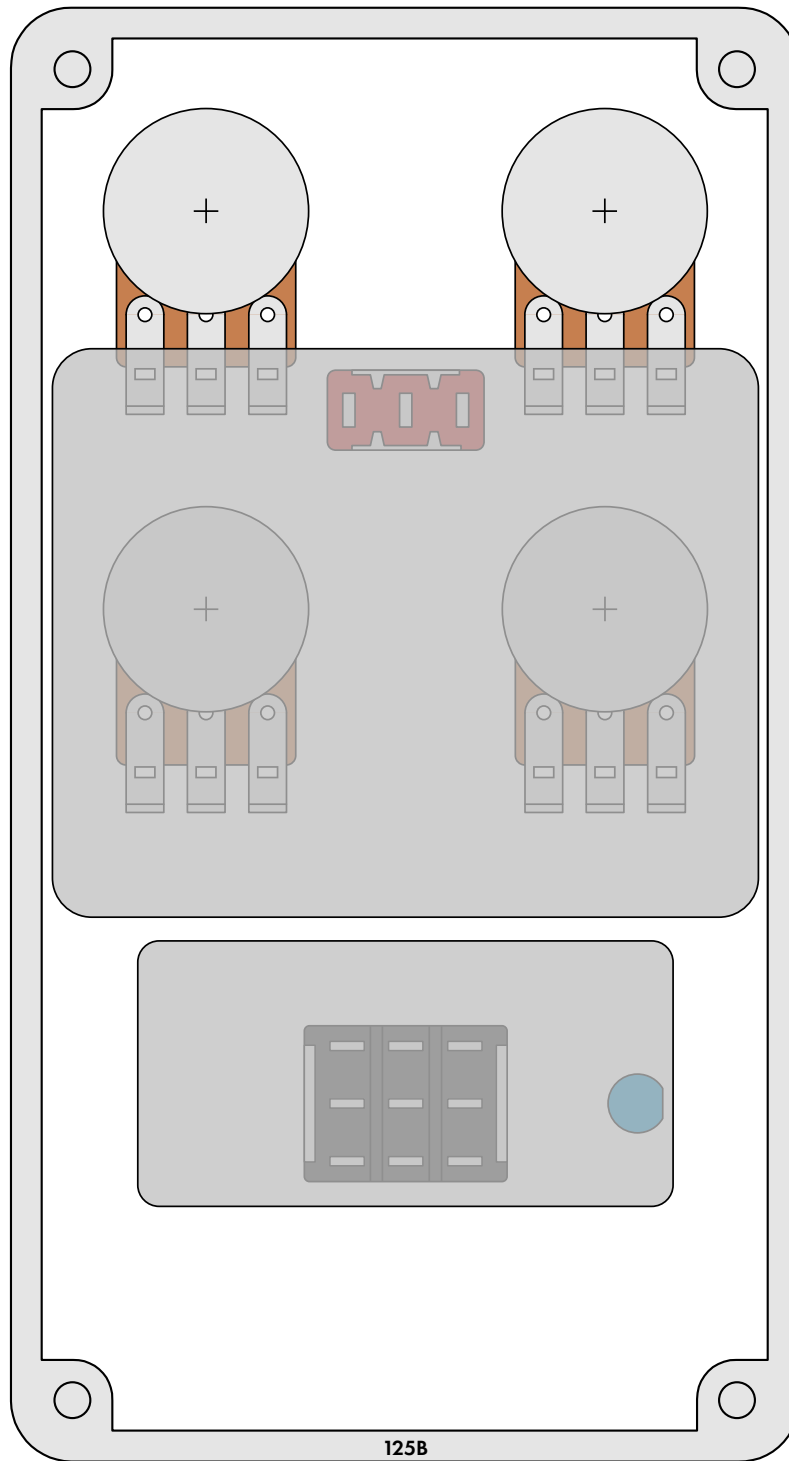
Top jack layout assumes the use of closed-frame jacks like the [Switchcraft 111X](#). If you'd rather use open-frame jacks, please refer to the [Open-Frame Jack Drill Template](#) for the top side.

LED hole drill size assumes the use of a [5mm LED bezel](#), available from several parts suppliers. Adjust size accordingly if using something different, such as a 3mm bezel, a plastic bezel, or just a plain LED.

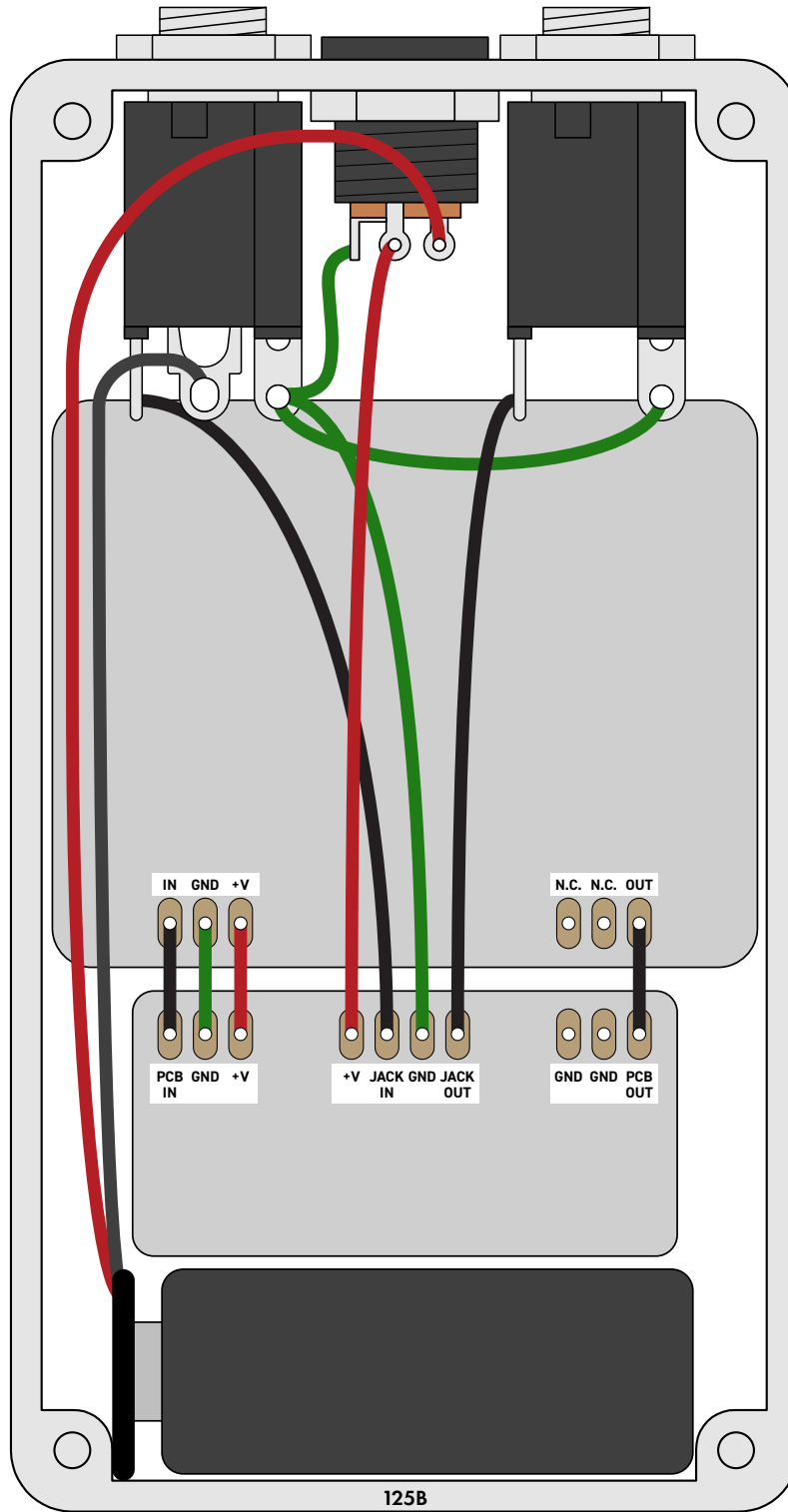


ENCLOSURE LAYOUT

Enclosure is shown without jacks. See next page for jack layout and wiring.



WIRING DIAGRAM



LICENSE & USAGE

No direct support is offered for these projects beyond the provided documentation. It's assumed that you have at least some experience building pedals before starting one of these. Replacements and refunds cannot be offered unless it can be shown that the circuit or documentation are in error.

All of these circuits have been tested in good faith in their base configurations. However, not all the modifications or variations have necessarily been tested. These are offered only as suggestions based on the experience and opinions of others.

Projects may be used for commercial endeavors in any quantity unless specifically noted. No attribution is necessary, though a link back is always greatly appreciated. The only usage restrictions are that **(1) you cannot resell the PCB as part of a kit without prior arrangement, and (2) you cannot “goop” the circuit, scratch off the screenprint, or otherwise obfuscate the circuit to disguise its source.** (In other words: you don't have to go out of your way to advertise the fact that you use these PCBs, but please don't go out of your way to hide it. The guitar effects industry needs more transparency, not less!)

DOCUMENT REVISIONS

1.0.0 (2021-02-19)

Initial release.