PROJECT NAME

TERMINA

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DIY GUITAR EFFECTS

BASED ON
Timmy V2 / Vemuram Jan Ray

BUILD DIFFICULTY
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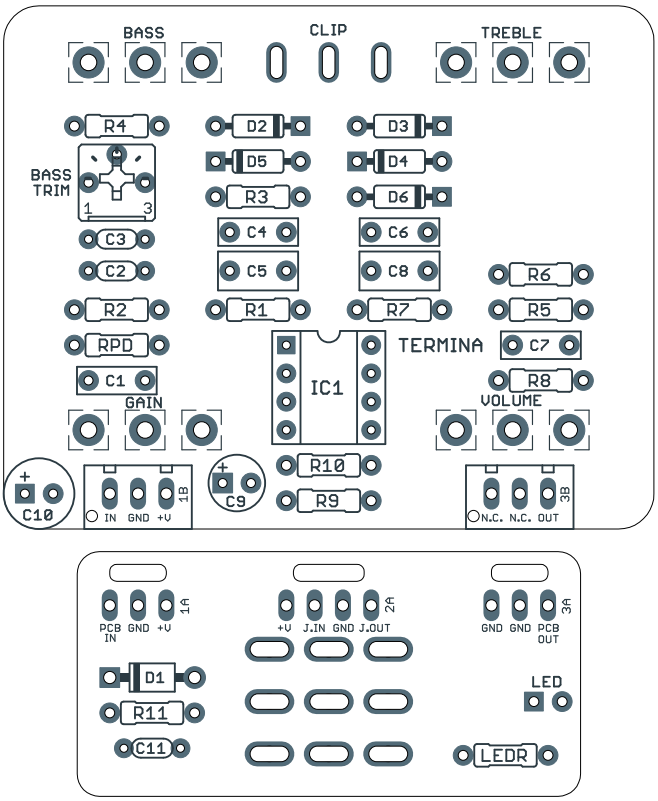
EFFECT TYPE
Overdrive

DOCUMENT VERSION
2.0.0 (2021-10-22)

PROJECT SUMMARY

The original transparent overdrive, designed to bring out the best in the guitar and amplifier. Includes a 2-band tonestack for bass and treble control.



Actual size is 2.3” x 1.86” (main board) and 2.3” x 0.86” (bypass board).

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INTRODUCTION

The Termina Transparent Drive is based on the Timmy overdrive pedal from Paul Cochrane, with some modifications adapted from the Vemuram Jan Ray.

The Timmy was originally released in 2004 and is generally credited for kicking off the "transparent overdrive" genre of pedals. It does have a two-band tone control, but generally speaking it's not designed to have much character of its own, instead bringing out the best qualities of the guitar and amplifier. While it has some similarities to a stripped-down Tube Screamer, there is no trace of the 720Hz mid-hump the Tube Screamer is known for.

The Termina is more specifically based on the Timmy V2 with the clipping diode switch, which is the same version that was licensed to MXR for their Custom Shop mini version. The Timmy V3 "15th Anniversary" edition was released in 2019, moving the diode selector inside the pedal and repurposing the toggle switch as a gain boost.

The Timmy has undergone several circuit changes throughout its run, so there is no single definitive schematic. This excellent research article from ManticoreFX tracks all the known differences, with several collected posts from Paul explaining the changes. The Termina project incorporates all of the revisions prior to the V3 overhaul, while reversing the travel of the bass and treble knobs so they increase the frequencies as they're turned up instead of cutting as on the V2.

Please see page 10 for revised licensing terms, which are different from our normal projects. The original Timmy pedal remains one of the best deals in the industry and we want to encourage as many people as possible to buy the original if they are able.

USAGE

The Termina has four controls and one toggle switch:

- **Drive** controls the amount of gain from the op-amp stage that is clipped by the diodes.
- **Bass** allows adjustment of the pre-clipping bass response of the circuit.
- **Treble** allows adjustment of the post-clipping treble response of the circuit.
- **Level** sets the overall output of the effect.
- **Clipping** selects between three different sets 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—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	510k	Metal film resistor, 1/4W	
R2	3k3	Metal film resistor, 1/4W	
R3	9k1	Metal film resistor, 1/4W	Use 3k3 if omitting the bass trimmer mod.
R4	680R	Metal film resistor, 1/4W	Part of the bass trimmer mod. See build notes.
R5	1k	Metal film resistor, 1/4W	
R6	10k	Metal film resistor, 1/4W	
R7	10k	Metal film resistor, 1/4W	
R8	18k	Metal film resistor, 1/4W	
R9	8k2	Metal film resistor, 1/4W	
R10	10k	Metal film resistor, 1/4W	
R11	100R	Metal film resistor, 1/4W	
RPD	2M2	Metal film resistor, 1/4W	Input pulldown resistor.
LEDR	4k7	Metal film resistor, 1/4W	LED current-limiting resistor. Adjust value to change LED brightness.
C1	39n	Film capacitor, 7.2 x 2.5mm	
C2	47pF	MLCC capacitor, NP0/C0G	
C3	100pF	MLCC capacitor, NP0/C0G	
C4	39n	Film capacitor, 7.2 x 2.5mm	
C5	1uF	Film capacitor, 7.2 x 3.5mm	
C6	10n	Film capacitor, 7.2 x 2.5mm	
C7	2n2	Film capacitor, 7.2 x 2.5mm	
C8	1uF	Film capacitor, 7.2 x 3.5mm	
C9	47uF	Electrolytic capacitor, 5mm	Reference voltage filter capacitor.
C10	100uF	Electrolytic capacitor, 6.3mm	Power supply filter capacitor.
C11	100n	MLCC capacitor, X7R	Power supply filter capacitor.
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	
IC1	LM1458N	Operational amplifier, DIP8	Can substitute JRC4559D (NJM4559D).
IC1-S	DIP-8 socket	IC socket, DIP-8	

PARTS LIST, CONT.

PART	VALUE	TYPE	NOTES
BASS TRIM	10k trimmer	Trimmer, 10%, 1/4”	Part of the bass trimmer mod. See build notes.
GAIN	1MA	16mm right-angle PCB mount pot	
BASS	50kC	16mm right-angle PCB mount pot	
TREBLE	50kB	16mm right-angle PCB mount pot	
VOLUME	25kA	16mm right-angle PCB mount pot	
CLIP	SPDT cntr off	Toggle switch, SPDT center off	
LED	5mm	LED, 5mm, red diffused	
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.
BATT	Battery snap	9V battery snap	Optional. Use the soft plastic type—the hard-shell type will not fit.
FSW	3PDT	Stomp switch, 3PDT	
ENC	125B	Enclosure, die-cast aluminum	Can also use a Hammond 1590N1.

BUILD NOTES

Bass trimmer

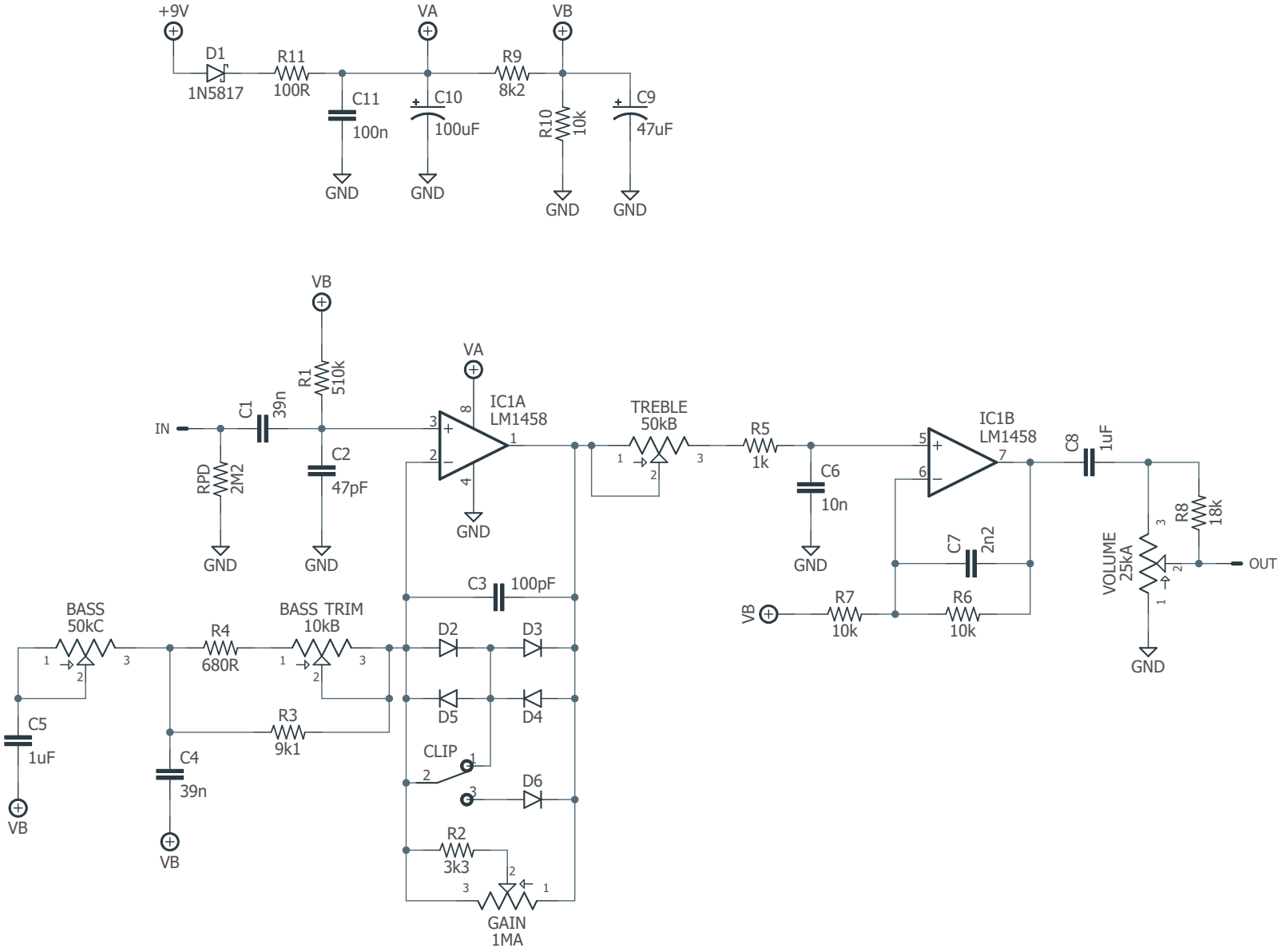
This trimmer, along with R3 and R4, sets the frequency and gain ratio of the op-amp clipping stage. It impacts both filters, including the range of the Bass knob.

Set it to about 45% rotation for the stock Timmy circuit (4.5k + 0.68k || 9.1k = 3.3k). Or, if you don't care to use this trimmer at all, you can use 3.3k for R3 and omit R4 and the trimmer entirely.

IC selection

The original Timmy has used both the JRC4559D and LM1458 throughout its production. Most V2's used the 4559, while the V3 now uses the 1458. Use a socket and try both of them to see which one you like better.

SCHEMATIC


+9V
D1
1N5817
R11
100R
C11
100n
GND
VA
C10
100uF
GND
VB
R9
8k2
R10
10k
GND
C9
47uF
GND
VB
R1
510k
IN
C1
39n
RPD
2M2
GND
C2
47pF
GND
VA
IC1A
LM1458
GND
TREBLE
50kB
R5
1k
C6
10n
GND
IC1B
LM1458
C8
1uF
C7
2n2
R7
10k
R6
10k
VB
VOLUME
25kA
R8
18k
OUT
GND
C3
100pF
BASS
50kC
R4
680R
BASS TRIM
10kB
D2
D3
D5
D4
R3
9k1
C5
1uF
VB
C4
39n
VB
CLIP
D6
R2
3k3
GAIN
1MA

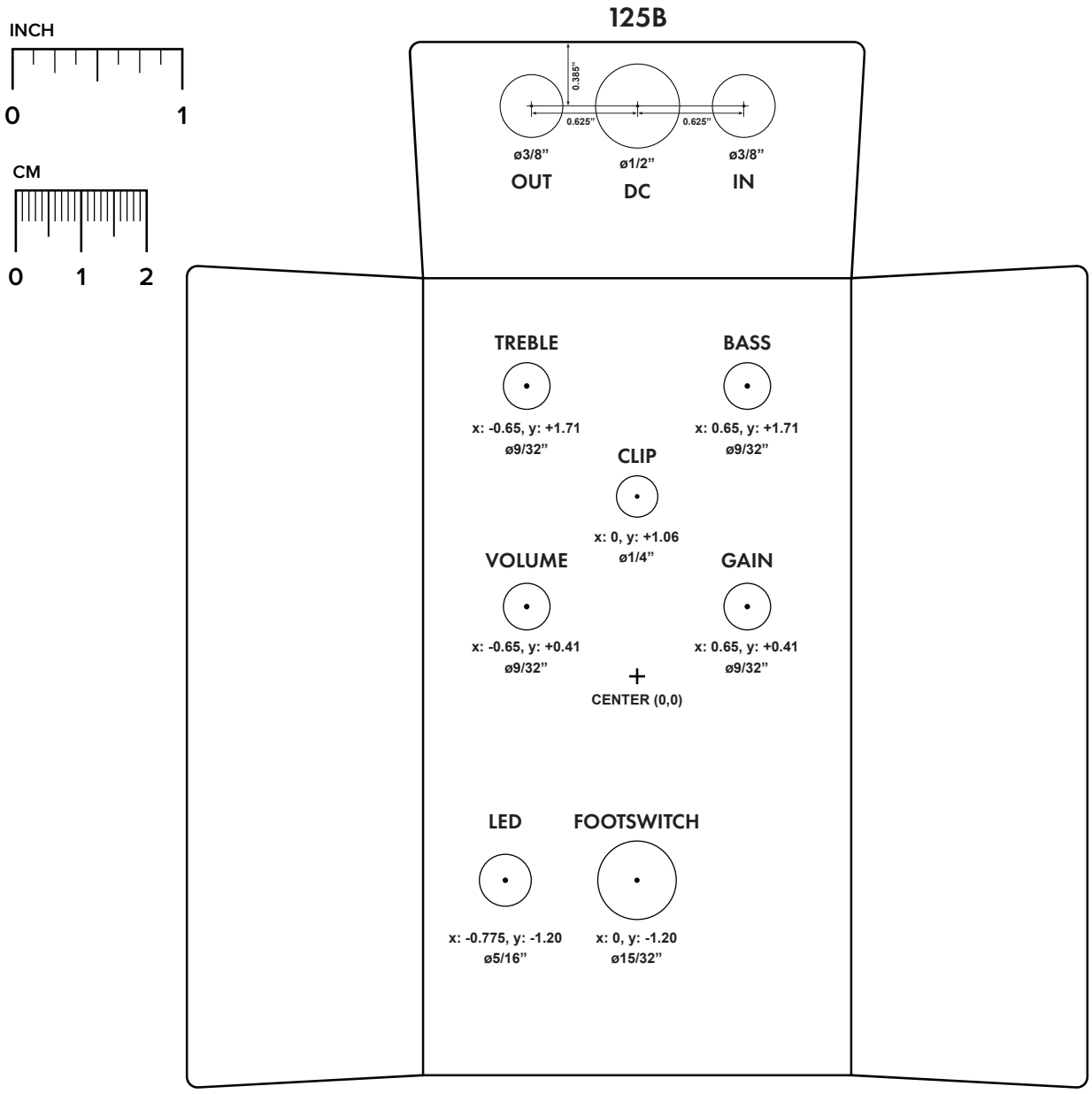
DRILL TEMPLATE

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.

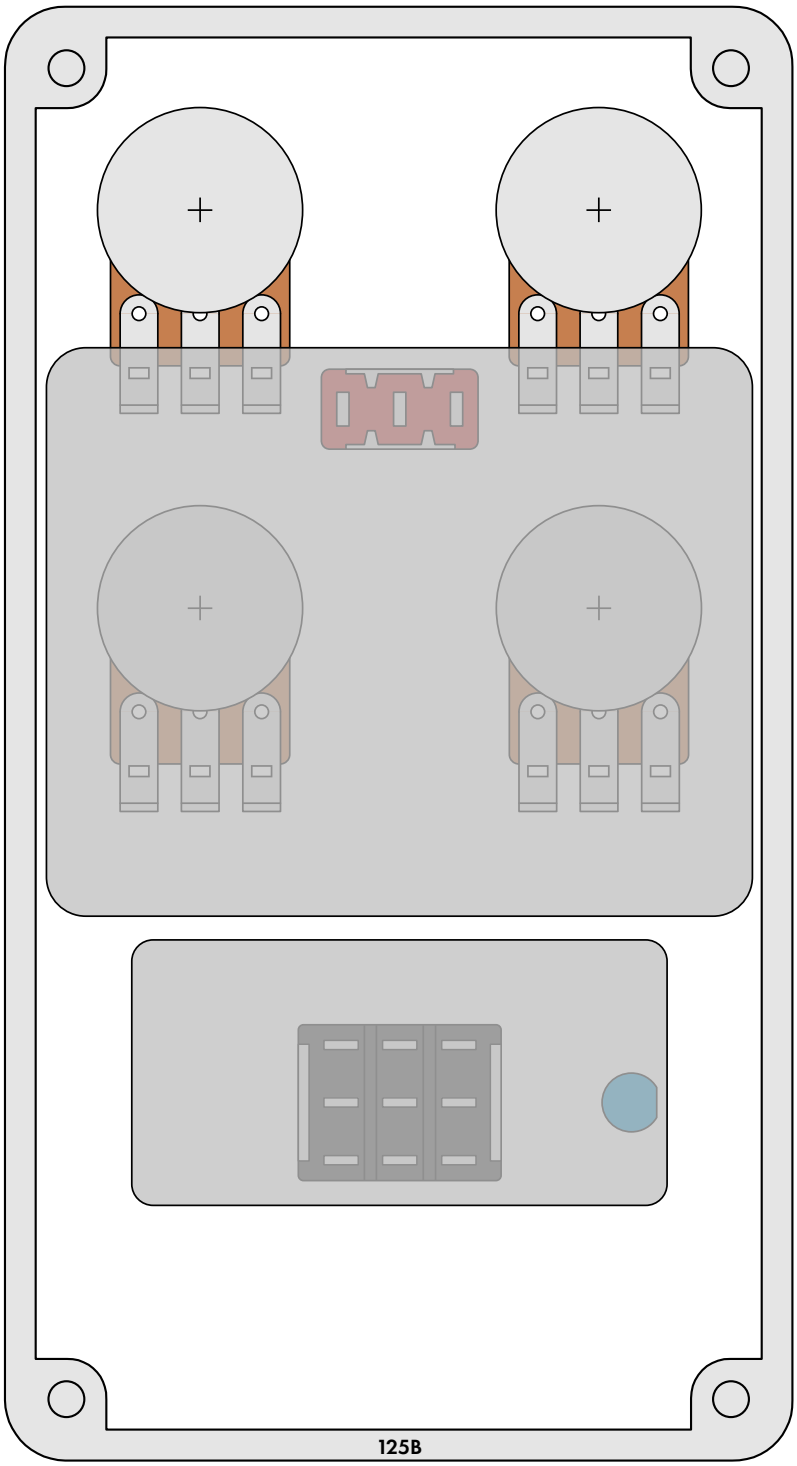
Top jack layout assumes the use of closed-frame jacks like the Switchcraft 111X. If you'd rather use open-frame jacks, please refer to the Open-Frame Jack Drill Template for the top side.

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.

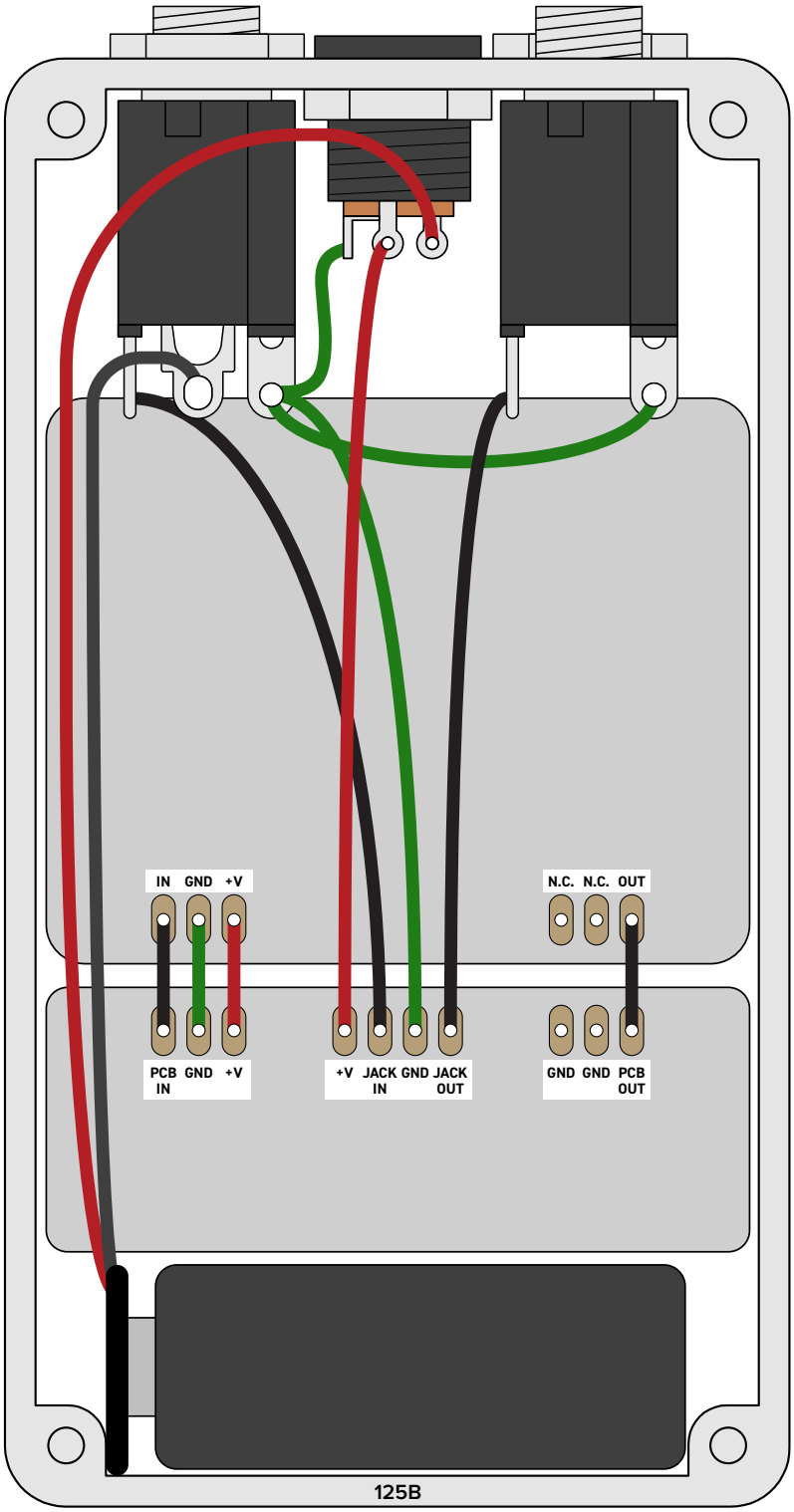


ENCLOSURE LAYOUT

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



WIRING DIAGRAM



Shown with optional 9V battery. If battery is omitted, both jacks can be mono rather than one being stereo. Leave the far-right lug of the DC jack unconnected.

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 cannotbe 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.

This project is for personal use only and cannot be used for commercial endeavors in any quantity. You can still sell your own personal builds if you no longer want them, but generally speaking, we don't want these DIY versions out on Reverb or eBay competing with the original Timmy.

The Timmy is still in production and remains one of the most reasonably-priced handmade pedals out there, so please support the builder and buy one!

DOCUMENT REVISIONS

1.0.0 (2021-10-22)
Initial release.