

Imp

FX Type: **OVERDRIVE**
Build Level: Intermediate
Based On: Klon® Siberia™

Last Updated: February 14, 2025 6:03 PM
© 2024 [madbeanpedals](#)



The 2025 version of **The Imp** has no circuit changes from the previous (2022) version. The layout has been updated to fit the Standard Series of 1590B projects. This version also includes a 3PDT bypass board.

Overview

Klon.is.life. We.are.Klon.

The IMP is 100% Klon® other than adding a reverse polarity protection diode and two extra DC decoupling caps.

Controls

VOL: Total Output.

TONE: Active treble boost.

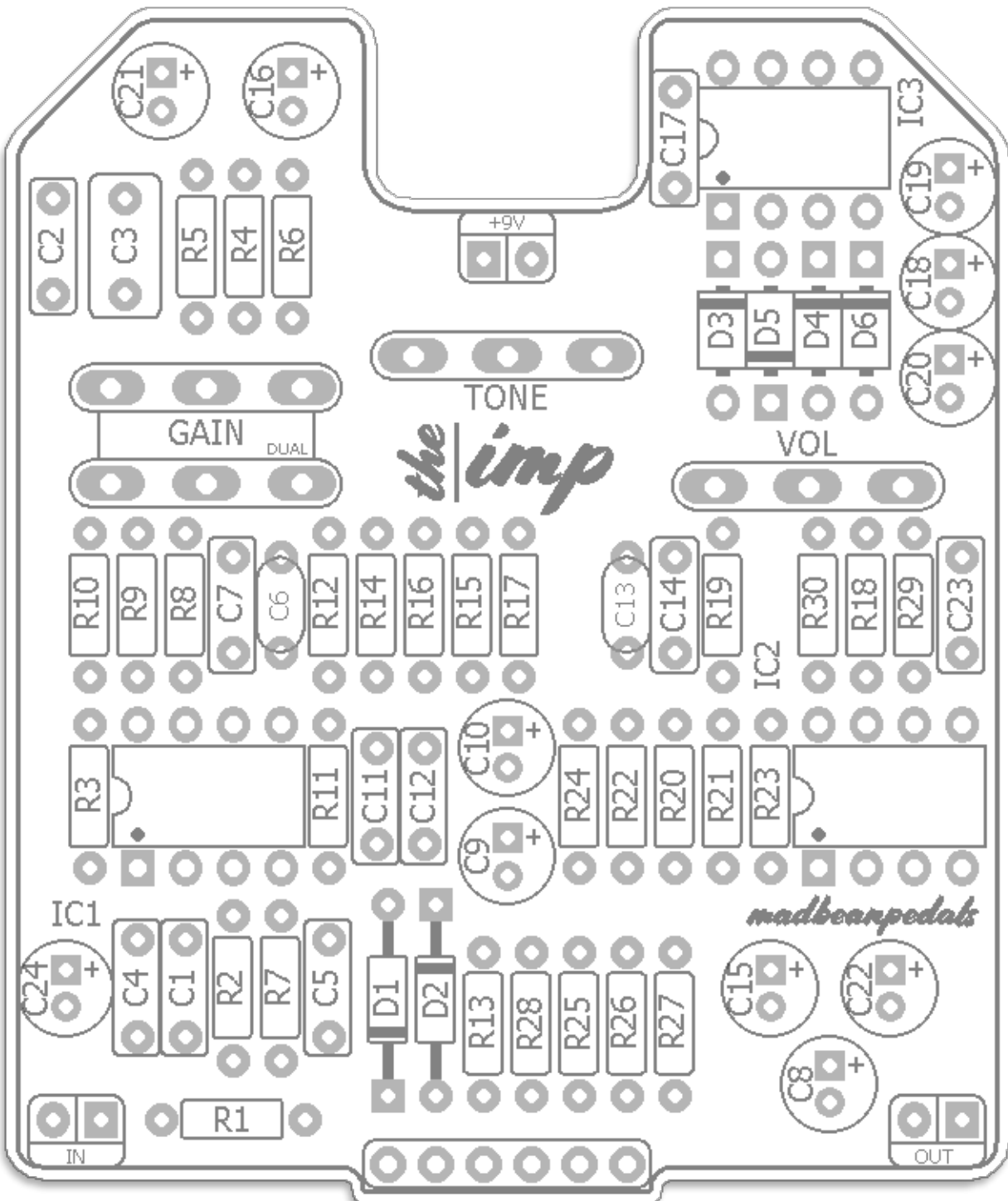
GAIN: The Gain control blends between two different audio paths. CCW is the clean boost mode. As you turn the control CW, the audio blends through the gain stage and hard clipping. Many players love the sound of the Klon® with the gain set in the first 1/3rd and the Volume boosted to push their tube amps into breakup.

Terms of Use: You are free to use purchased **Imp** circuit boards for both DIY and small commercial operations. You may not offer **Imp** PCBs for resale or as part of a "kit" in a commercial fashion. Peer to peer re-sale is fine, though.

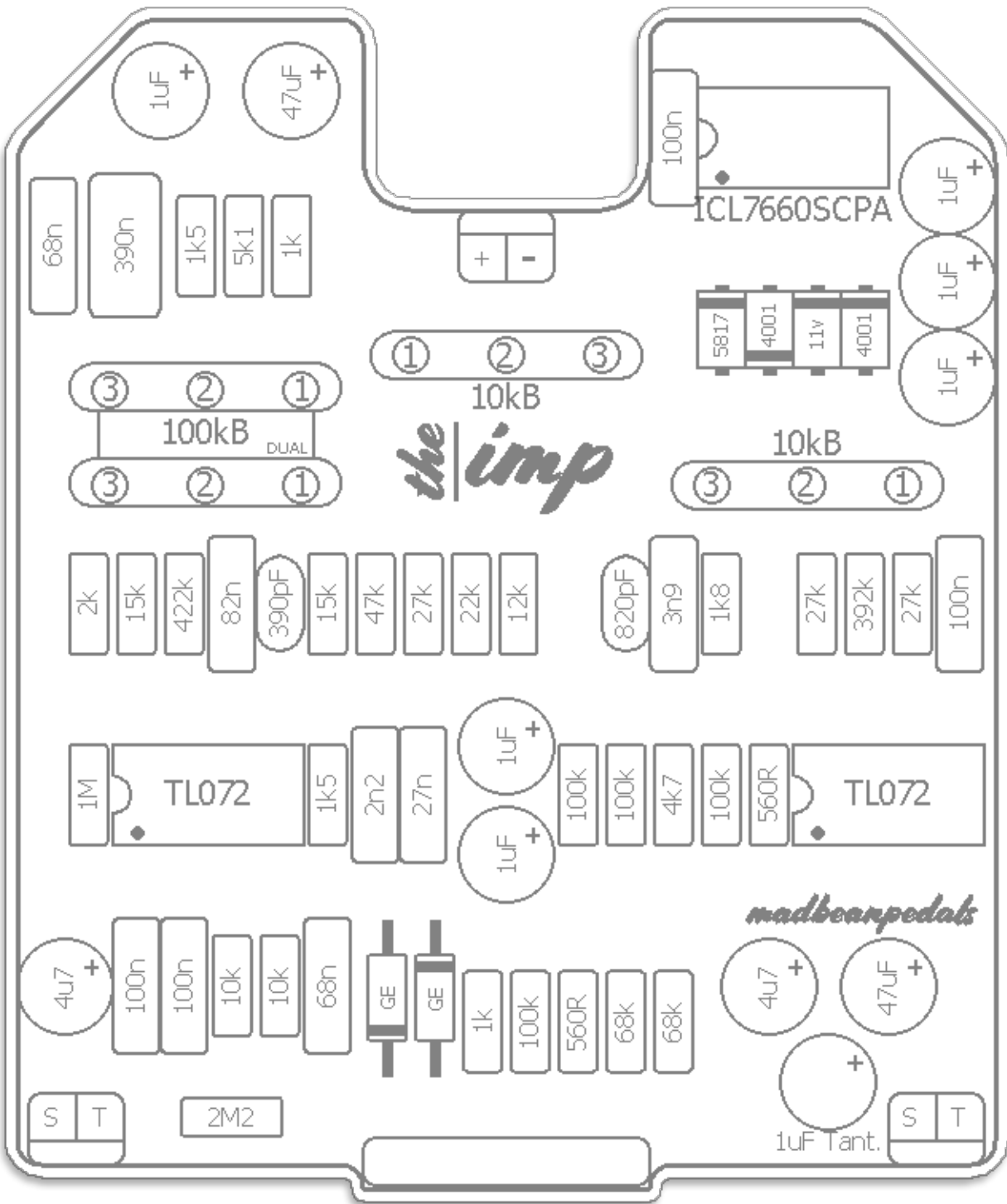
Technical assistance for is available via the [madbeanpedals forum](#). Please go there rather than emailing me for personal assistance. This is because (1) I'm not always available to respond via email in a timely and continuous manner, and (2) posting technical problems and solutions in the forum creates a record from which other members may benefit.

All copyrights and registered trademarks are property of their original owners. Any mention of trademarked or intellectual properties in this documents is purely for comparative purposes.

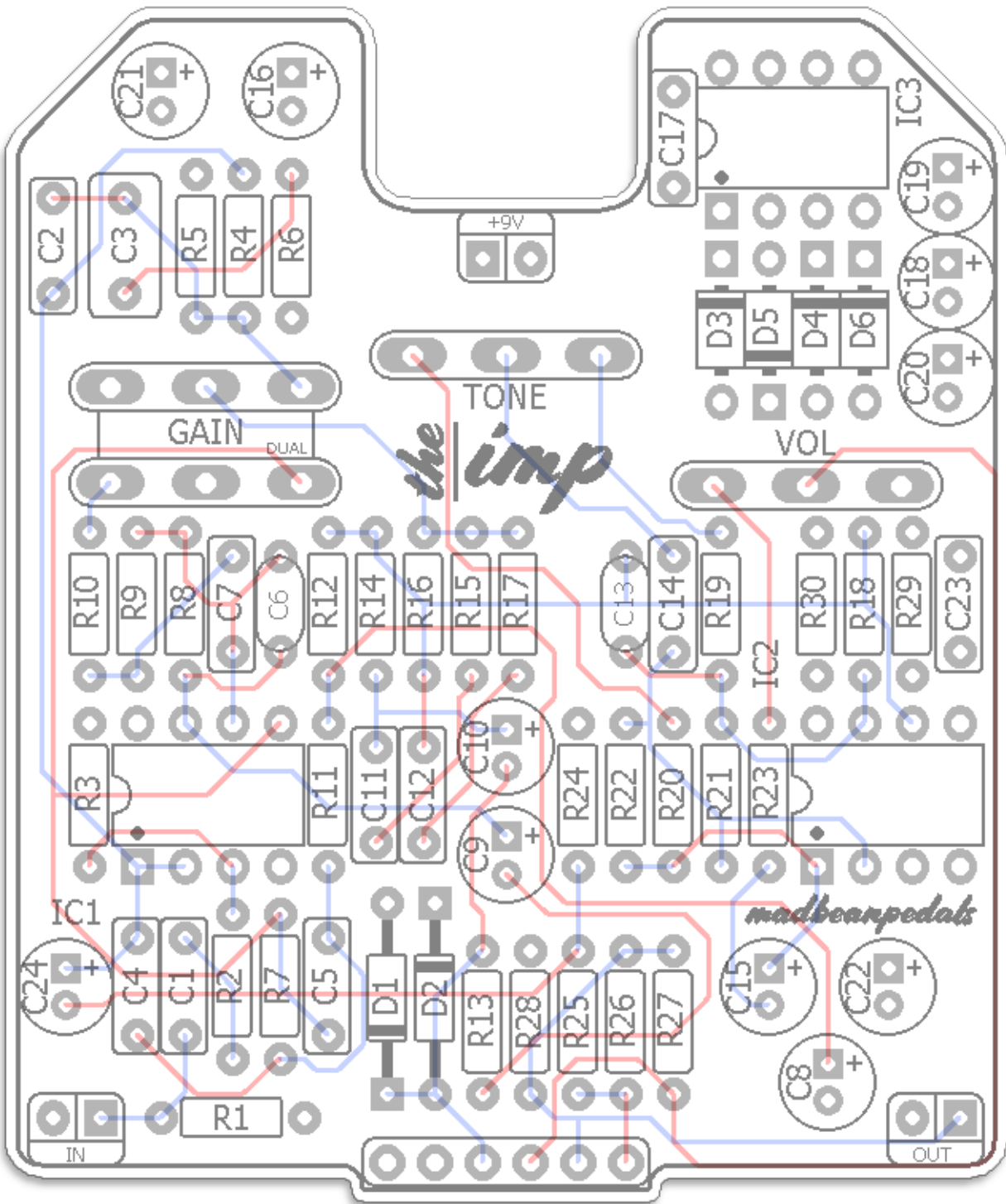
Parts Layout



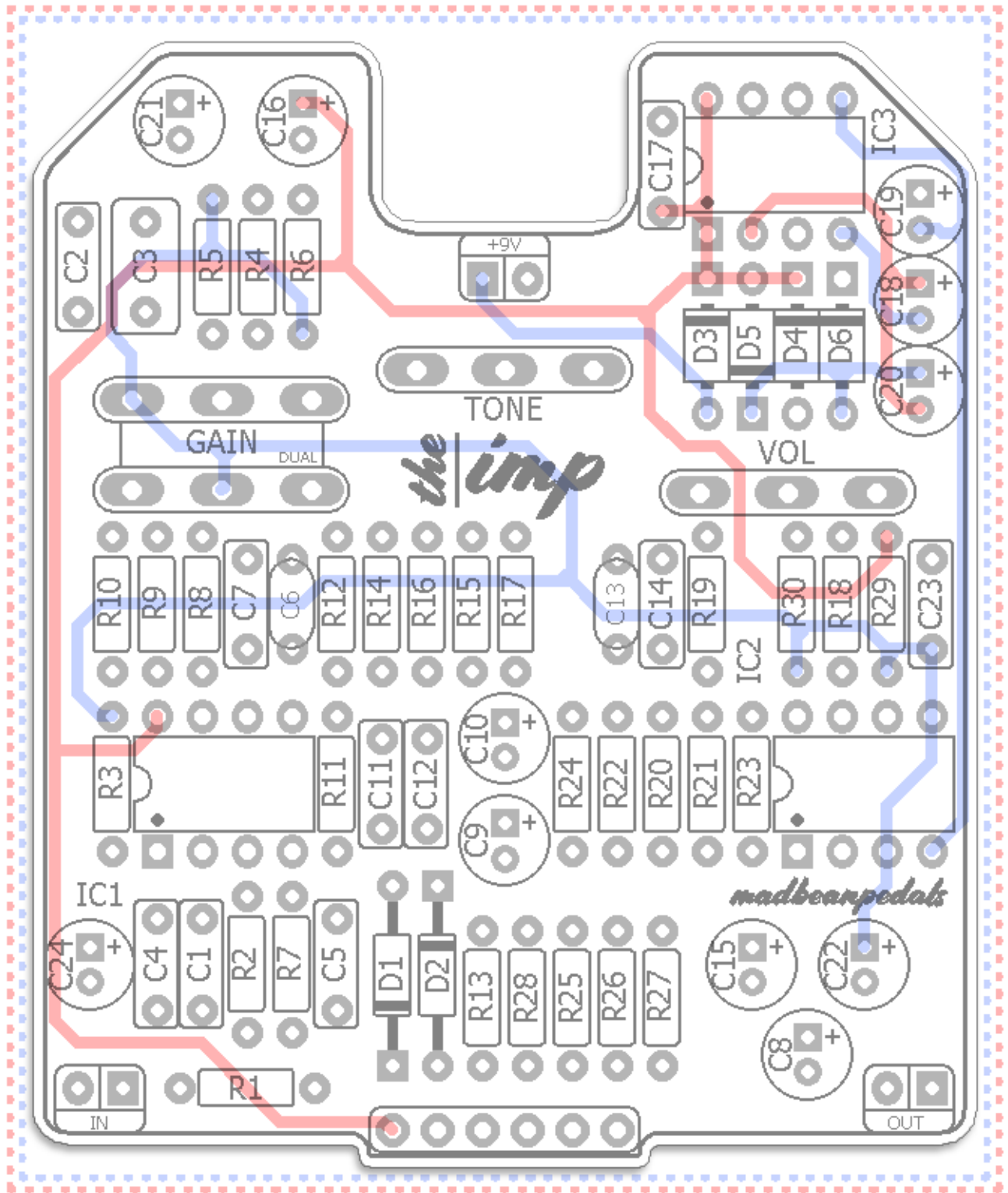
Component Values



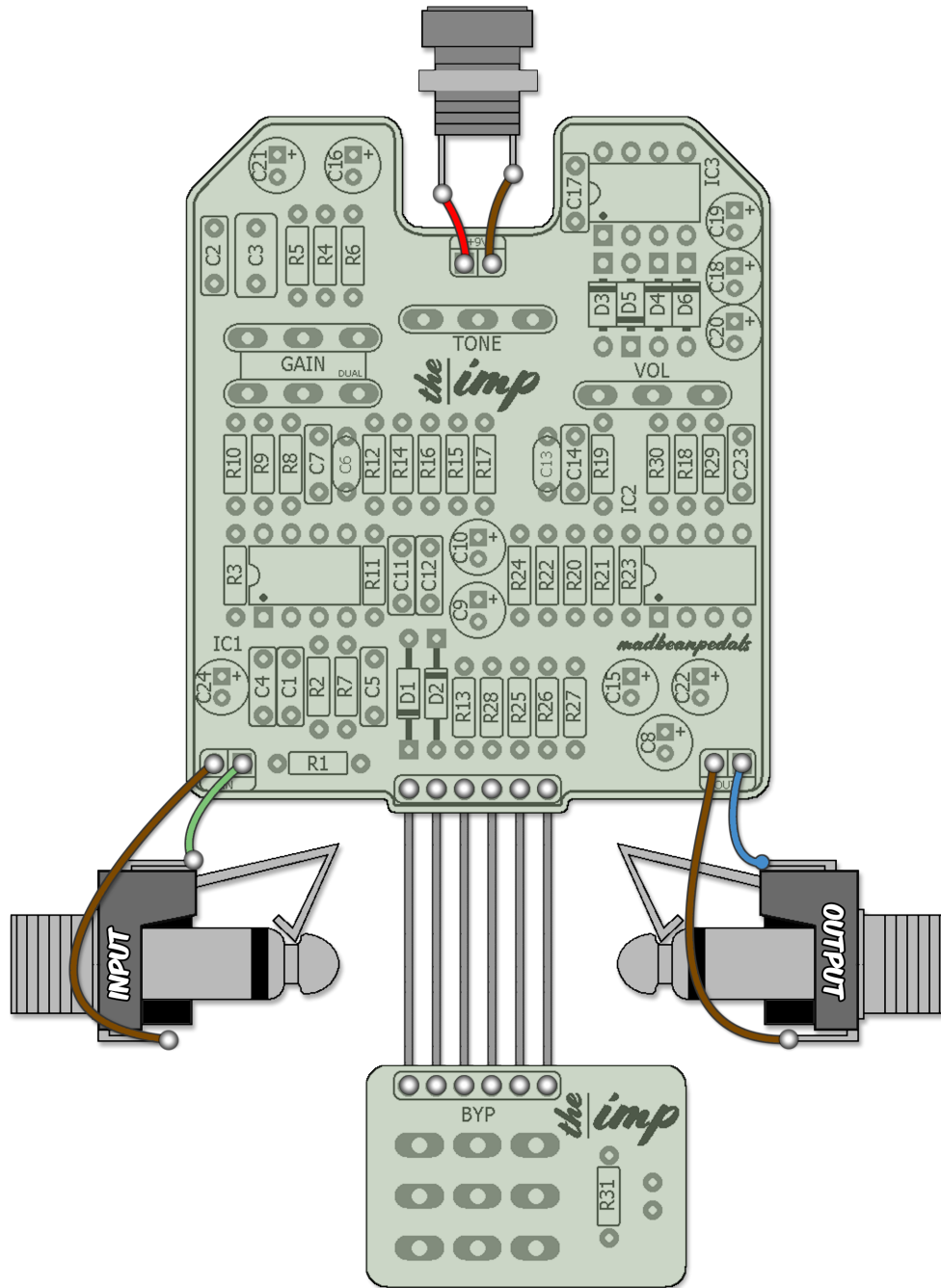
Trace Layout - Outer Layers



Trace Layout - Inner Layers



Wiring



The Imp comes with its own 3PDT bypass board and is wired as shown above. A 6-pin, 2" ribbon cable is recommended for soldering the connections between the two PCBs.

B.O.M.

Resistors		Caps		Diodes	
R1	2M2	C1	100n	D1	GE
R2	10k	C2	68n	D2	GE
R3	1M	C3	390n	D3	1n5817
R4	5k1	C4	100n	D4	11v Zener
R5	1k5	C5	68n	D5	1n4001
R6	1k	C6	390pF	D6	1n4001
R7	10k	C7	82n	ICs	
R8	422k	C8	1uF Tant.	IC1	TL072
R9	15k	C9	1uF	IC2	TL072
R10	2k	C10	1uF	IC3	ICL7660SCPA
R11	1k5	C11	2n2	Pots	
R12	15k	C12	27n	TONE	10kB
R13	1k	C13	820pF	VOL	10kB
R14	47k	C14	3n9	GAIN	100kB Dual Gang
R15	22k	C15	4u7		
R16	27k	C16	47uF		
R17	12k	C17	100n		
R18	392k	C18	1uF		
R19	1k8	C19	1uF		
R20	4k7	C20	1uF		
R21	100k	C21	1uF		
R22	100k	C22	47uF		
R23	560R	C23	100n		
R24	100k	C24	4u7		
R25	560R				
R26	68k				
R27	68k				
R28	100k				
R29	27k				
R30	27k				
R31	3k9				

Shopping List

Value	Qty	Type	Rating
560R	2	Carbon / Metal Film	1/4W
1k	2	Carbon / Metal Film	1/4W
1k5	2	Carbon / Metal Film	1/4W
1k8	1	Carbon / Metal Film	1/4W
2k	1	Carbon / Metal Film	1/4W
3k9	1	Carbon / Metal Film	1/4W
4k7	1	Carbon / Metal Film	1/4W
5k1	1	Carbon / Metal Film	1/4W
10k	2	Carbon / Metal Film	1/4W
12k	1	Carbon / Metal Film	1/4W
15k	2	Carbon / Metal Film	1/4W
22k	1	Carbon / Metal Film	1/4W
27k	3	Carbon / Metal Film	1/4W
47k	1	Carbon / Metal Film	1/4W
68k	2	Carbon / Metal Film	1/4W
100k	4	Carbon / Metal Film	1/4W
392k	1	Carbon / Metal Film	1/4W
422k	1	Carbon / Metal Film	1/4W
1M	1	Carbon / Metal Film	1/4W
2M2	1	Carbon / Metal Film	1/4W
390pF	1	Ceramic/Film/MLCC	25v min.
820pF	1	Ceramic/Film/MLCC	25v min.
2n2	1	Film	25v min.
3n9	1	Film	25v min.
27n	1	Film	25v min.
68n	2	Film	25v min.
82n	1	Film	25v min.
100n	4	Film	25v min.
390n	1	Film	25v min.
1uF	1	Tantalum	25v min.
1uF	6	Electrolytic	
4u7	2	Electrolytic	25v min.
47uF	2	Electrolytic	25v min.
GE	2	1n34a or D9E	
1n5817	1		
Zener	1	11v, 1W	
1n4001	2		
TL072	2		
ICL7660SCPA	1	or, TC1044 SCPA , MAX1044 CPA	
10kB	2	PCB Right Angle	16mm
100kB Dual Gang	1	PCB Right Angle	16mm

Additional Hardware

- (1) 1590B enclosure
- (2) Lumberg 1/4" Compact mono jacks
- (1) Slim 2.1mm DC jack
- (1) Standard 3PDT footswitch
- (1) 5mm LED

Build Notes

- R1 (2M2) is not used in the stock version. I've added it as a safeguard. It provides a path to ground for DC should C1 ever fail. It's not necessary to include it but it also will not impact the final output/tone. Basically, it's good design practice.
- Some versions of the Klon® used the R2 series input resistor (10k) and some did not. You can jumper this resistor if you want.
- C8 can be regular electrolytic instead of tantalum. There is no discernible difference in tone between the two, IMO.
- You can sub either the MAX1044**CPA** or TC1044**SCPA** for the ICL7660**SCPA**. For the MAX and TC subs, you can use a 12v Zener for D4 instead of 11v, but either is fine. The ICL7660SCPA has a max input voltage of 10v, so that's why the 11v Zener protection diode was used.

ICL7660SCPA:

<https://www.taydaelectronics.com/ic-integrated-circuits/voltage-regulators/icl7660scpaz-icl7660-cmos-voltage-converter-ic.html>

<https://www.mouser.com/ProductDetail/968-ICL7660SCPAZ>

Subs:

<https://smallbear-electronics.mybigcommerce.com/ic-max1044cpa/>

<https://stompboxparts.com/semiconductors/tc1044scpa-charge-pump-ic/>

1n34A Germanium Diodes:

<https://stompboxparts.com/semiconductors/1n34a-germanium-diode/>

D9E Germanium Diode (popular sub for the Klon®):

<https://stompboxparts.com/semiconductors/d9e-nos-soviet-germanium-diode/>

MODS

- Gain mod: Most players use the Klon® as a “hairy” boost rather than a full-on overdrive. But if you want more gain on tap then lower the value of R10. The stock value is 2k. You could try reducing that value to 1k or 470R to goose the overdrive a bit more. Socket to experiment.
- The inclusion of D3 (reverse polarity protection) results in a bit of voltage drop from the 9v supply. This has some impact on the resultant “18v” tap from the charge pump (it's around 16.5v in reality). If you sub 1n5817 in place of the 1n4001 used for D5 and D6 you should be able to get a bit closer to 18v out of the charge pump..

Circuit Voltages

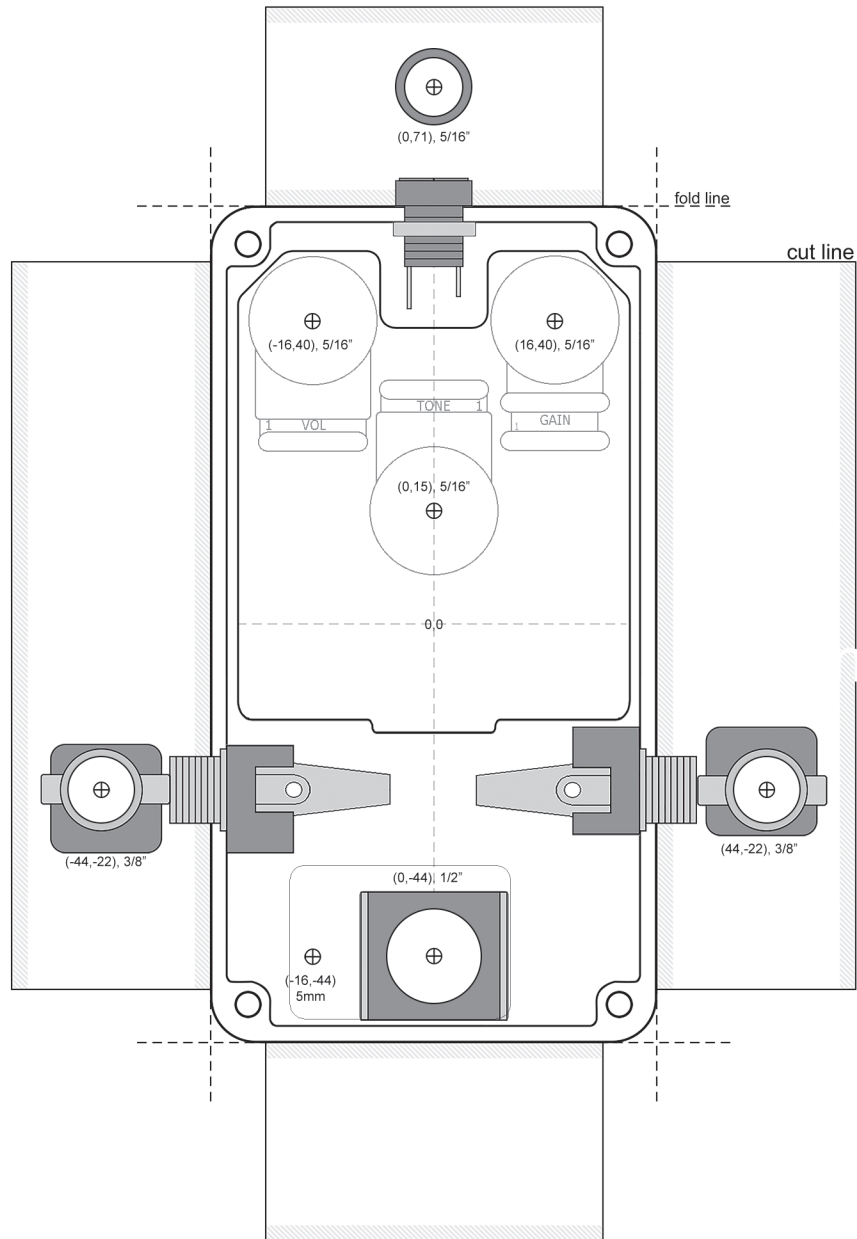
IC1	TL072	IC2	TL072	IC3	1044SCPA
1	4.57	1	4.57	1	9.22
2	4.57	2	4.58	2	4.6
3	3.61	3	4.56	3	0
4	0	4	-8.79	4	-4.36
5	4.57	5	4.57	5	-8.79
6	4.58	6	4.58	6	4.82
7	4.59	7	4.66	7	6.74
8	9.22	8	16.75	8	9.22

9.52DC One Spot supply
Current Draw: ~17mA

1590B Drill Template

Coordinates are denoted in (X,Y), drill size format starting from the center (0,0) location of the enclosure.

[Tayda drill template for the Imp](#)

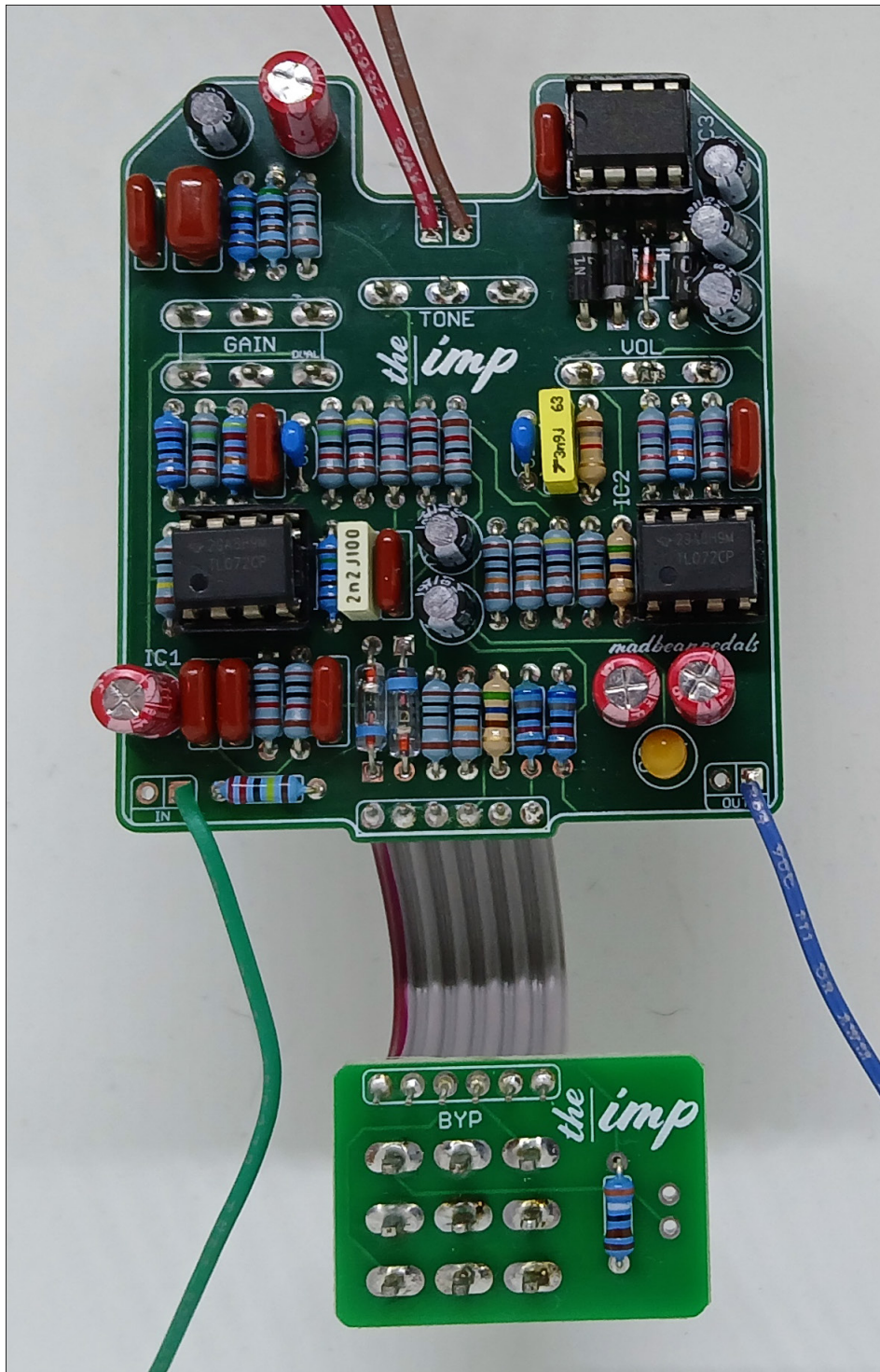


Hardware

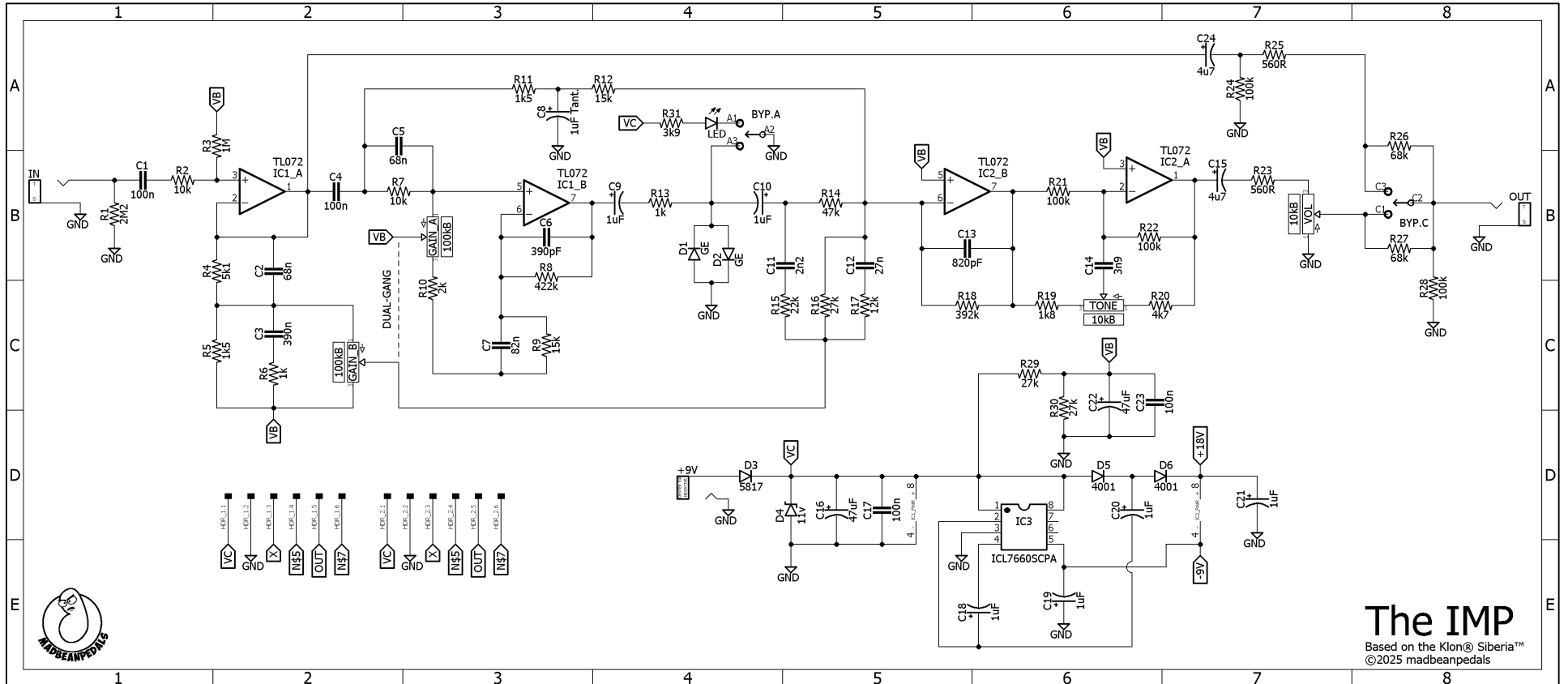
1590B enclosure
16mm pots
Lumberg 1/4" Compact mono jacks
Slim 2.1mm DC jack
Standard 3PDT footswitch
5mm LED

NOTE: Different 1/4" and DC jack styles may require different sized drill holes.

Circuit Voltages



Schematic



The IMP
 Based on the Klon® Siberia™
 ©2025 madbeanpedals