

THE_IMP

FX TYPE: Boost/Overdrive

Based on the Klon® Siberia™

Enclosure Size: 1590A

"Softie" compatibility: none

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Overview

The circuit that launched a hundred boutique pedal startups. It's Klon® and Klon® is life.

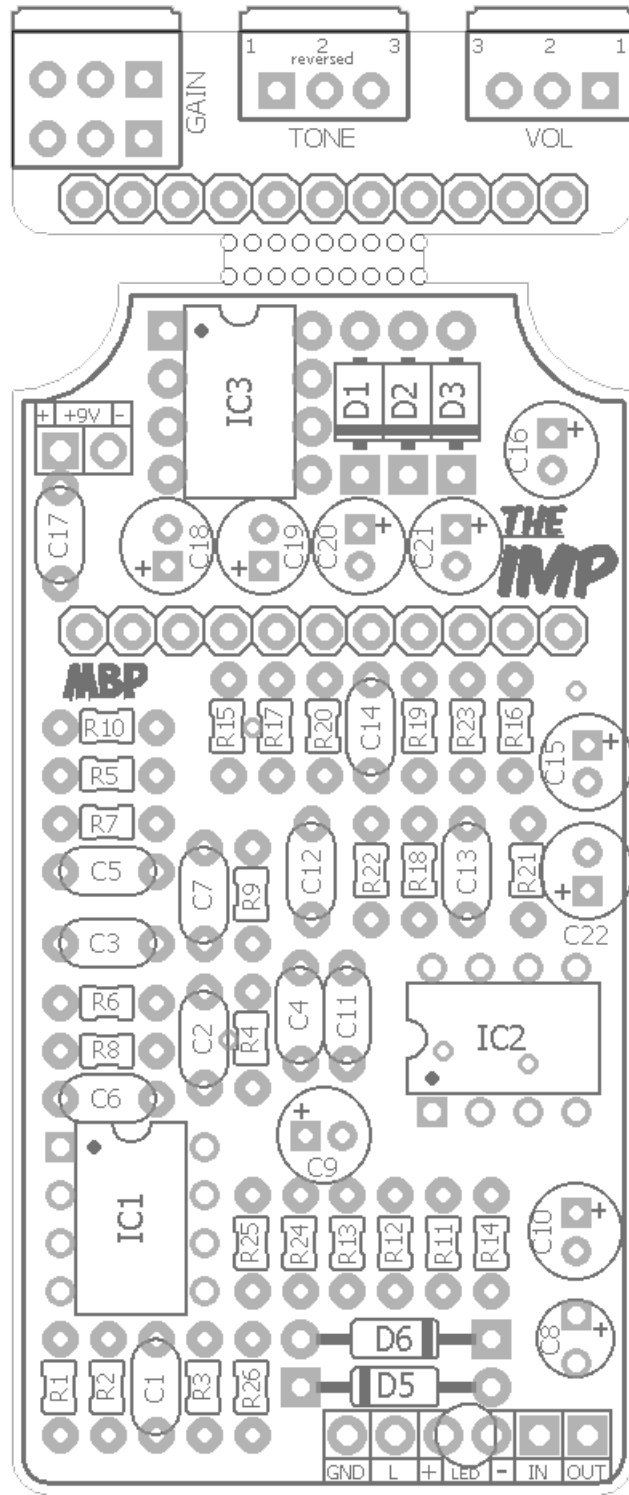
I've built lots of Klones over the years; big ones, small ones, cool alternatives like the VFE Merman, and a couple of broken sounding ones. The IMP had two design goals: put it in a 1590A and make it easy to build. Although there is quite a bit of wiring to do here it is set up to be much easier than typical hand wiring (esp. the dual-gang Gain pot). The one compromise was leaving off the buffered bypass option. I just could not get it to fit within the constraints of the two primary design goals. But, if you love the Klon® buffer you can easily build one (on vero or perf) and stick it anywhere in your pedal chain. The stock buffer doesn't even require the charge pump.

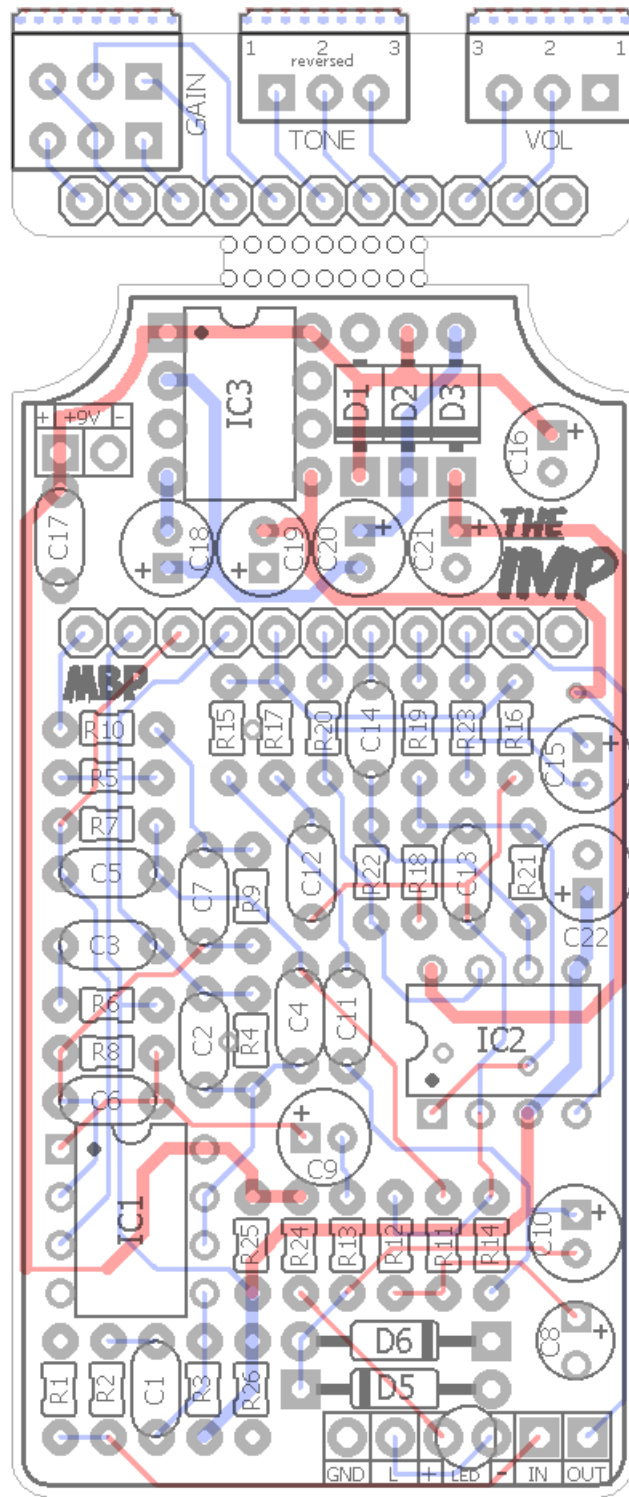
Controls

- **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 **The_IMP** circuit boards for both DIY and small commercial operations. You may not offer **The_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 your build(s) is available via the [madbeanpedals forum](#). Please go there rather than emailing me for assistance on [builds](#). 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.





Resistors		Caps		Diodes	
R1	1M	C1	100n	D1	11v
R2	10k	C2	68n	D2	IN4001
R3	1M	C3	390n	D3	1N4001
R4	5k1	C4	100n	D5	GE
R5	1k5	C5	68n	D6	GE
R6	1k	C6	390pF	ICs	
R7	10k	C7	82n	IC1	TL072
R8	422k	C8	1uF Tant.	IC2	TL072
R9	15k	C9	1uF	IC3	ICL7660SCPA
R10	2k	C10	1uF	Pots	
R11	1k5	C11	2n2	GAIN	100kB Dual Gang
R12	15k	C12	27n	TONE	10kB
R13	1k	C13	820pF	VOL	10kB
R14	47k	C14	3n9		
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	4u7		
R23	560R				
R24	4k7				
R25	27k				
R26	27k				

Value	QTY	Type	Rating
560R	1	Metal / Carbon Film	1/8W
1k	2	Metal / Carbon Film	1/8W
1k5	2	Metal / Carbon Film	1/8W
1k8	1	Metal / Carbon Film	1/8W
2k	1	Metal / Carbon Film	1/8W
4k7	2	Metal / Carbon Film	1/8W
5k1	1	Metal / Carbon Film	1/8W
10k	2	Metal / Carbon Film	1/8W
12k	1	Metal / Carbon Film	1/8W
15k	2	Metal / Carbon Film	1/8W
22k	1	Metal / Carbon Film	1/8W
27k	3	Metal / Carbon Film	1/8W
47k	1	Metal / Carbon Film	1/8W
100k	2	Metal / Carbon Film	1/8W
392k	1	Metal / Carbon Film	1/8W
422k	1	Metal / Carbon Film	1/8W
1M	2	Metal / Carbon Film	1/8W
390pF	1	Ceramic / MLCC	25v min.
820pF	1	Ceramic / 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	3	Film	25v min.
390n	1	Film	25v min.
1uF Tant.	1	Tantalum	25v min.
1uF	6	Electrolytic	25v min.
4u7	2	Electrolytic	25v min.
47uF	1	Electrolytic	25v min.
11v	1	Zener	
1N4001	2		
GE	2	1n34a, 1n270	
TL072	2		
ICL7660SCPA	1		
100kB Dual Gang	1	PC Mount	9mm
10kB	2	PC Mount	9mm

For convenience I have created a **MOUSER** project for most of the components needed for this build.

<https://www.mouser.com/ProjectManager/ProjectDetail.aspx?AccessID=fdeb9839df>

What's not included in the Mouser BOM:

- 9mm pots
- GE Diodes
- Enclosure and associated hardware (3pdt, jacks, LED, etc).

9mm PC Mount Dual Gang pots (100kB):

<http://smallbear-electronics.mybigcommerce.com/alpha-dual-gang-9mm-pc-mount/>

9mm PC Mount pots (10kB):

<http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-9mm-pc-mount/>

Thinline DC Jack:

<http://smallbear-electronics.mybigcommerce.com/dc-power-jack-all-plastic-unswitched-2-1-mm/>

Enclosed Mono:

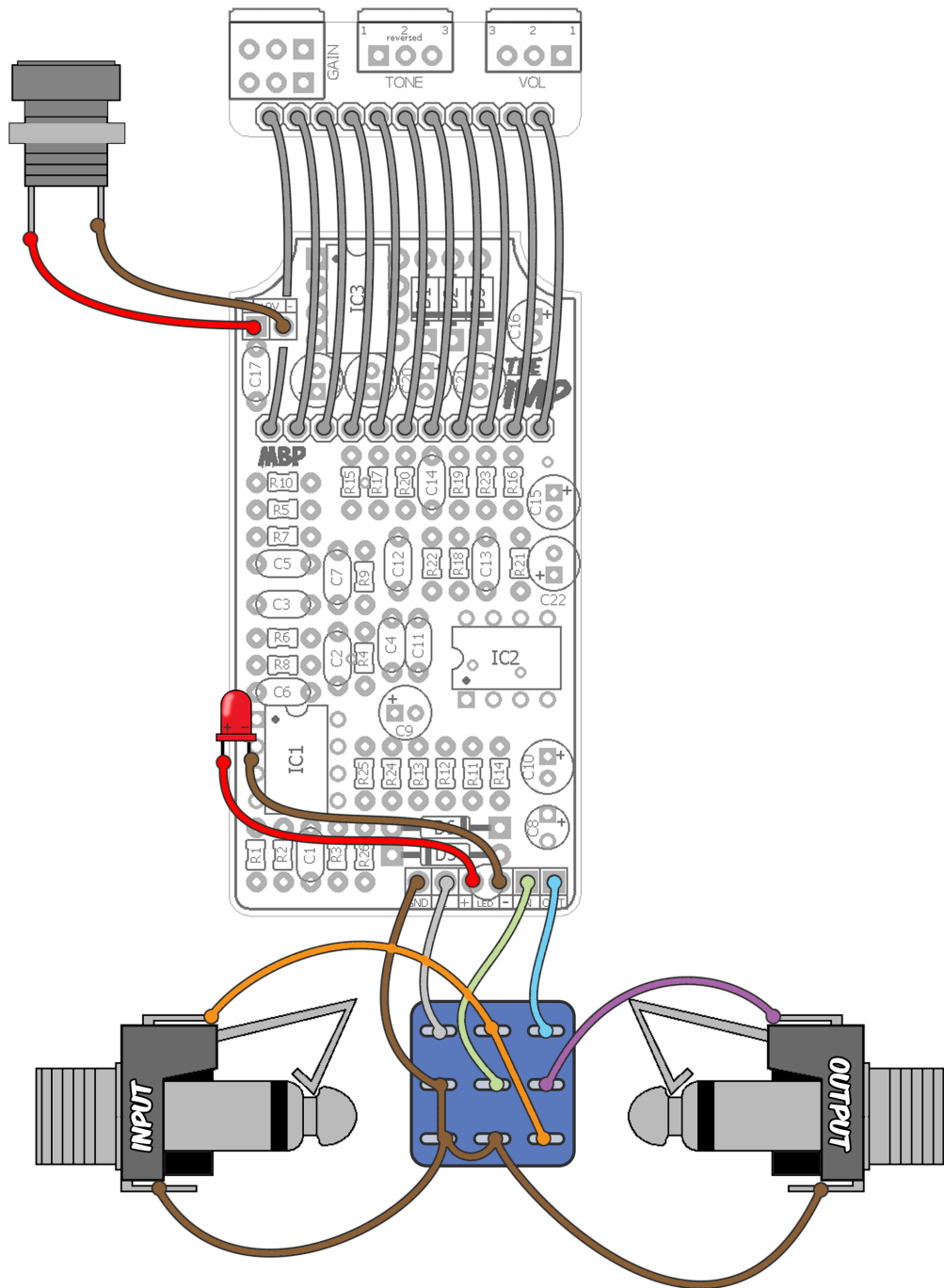
<http://smallbear-electronics.mybigcommerce.com/1-4-in-mono-enclosed-jack/>

<http://smallbear-electronics.mybigcommerce.com/1-4-in-mono-enclosed-switchcraft-111x/>

Lumberg Mono:

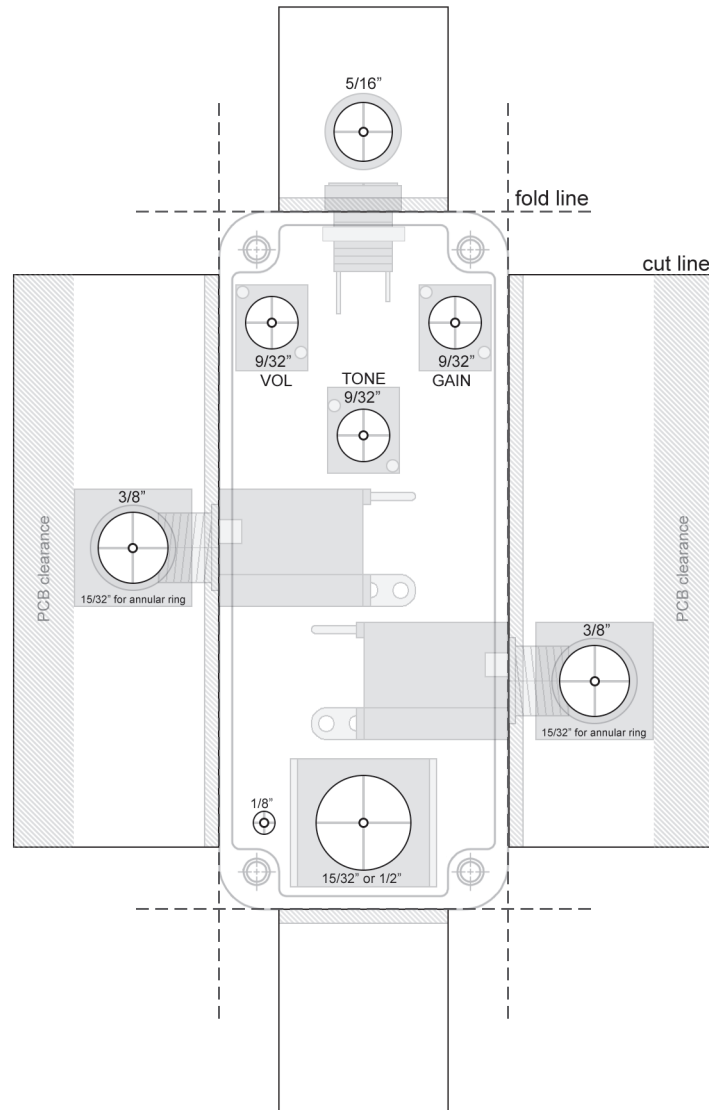
<http://smallbear-electronics.mybigcommerce.com/lumberg-1-4-compact-shrouded-mono-jack/>

- Be sure to separate the two PCBs from one another before you start populating!
- You can use alternate charge pumps depending on availability. The MAX1044**CPA** and TC1044**SCPA** will work fine for the IMP.
- You can use BAT46 in place of the GE diodes. Their forward voltage is comparable. The original Klon used 1n34a although who and when they were made is unknown.
- The buffer bypass was left off this design due to its compactness.



- Although the wiring is sown on the top of the two PCBs, I recommend placing your wires underneath both boards. This will make it much easier to mount in the 1590A. I also recommend using either 24 or 26AWG for the wires connecting the two boards.
- Make sure you install the pots the right way! The top of the daughter board has the Tone pot labeled “reverse” (IOW, put it on the bottom of the board).

Note: Drill Guides are approximate and may require tweaking depending on the types of jacks, switches and pots you use.



- This template will work for either mono enclosed jacks or the “Lumberg” style.
- It uses the “Thinline” style DC Jack.
- I do not recommend using the mbp “3PDT02” bypass board for this build due to the tight fit.

IC1	TL072	IC2	TL072	IC3	7660
1	4.79	1	4.76	1	9.4
2	4.71	2	4.71	2	4.8
3	4.7	3	4.71	3	0
4	0	4	-8.74	4	-4.3
5	3.65	5	4.71	5	-8.74
6	4.7	6	4.71	6	4.45
7	4.7	7	4.65	7	5.88
8	9.4	8	16.71	8	9.4

- 9.42vDC One Spot
- Current Draw: ~ 15mA



The IMP prototype. I did not have a 1uF tantalum when doing this build so I just used electrolytic. This cap is not in the *direct* audio path so its effect should be negligible.



For the final design, I had to change the placement of the three 9mm pots. The dual-gang is longer as you can see above!

