

EPIPEN

FX TYPE: Boost

Based on the Maestro® Echoplex™

Enclosure Size: 1590B

"Softie" compatibility: Softie3

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Overview

The **EpiPen** is a different take on the ClinchFX® EP-PRE™ style JFET boost, itself being based on the input section of the Echoplex™ tape delay. This is not a clone, however. The circuit has been adapted for split-rail operation and an output buffer has been added. The buffer ensures a consistent, low impedance output to work well in front of any number of effects (overdrive, delay, etc).

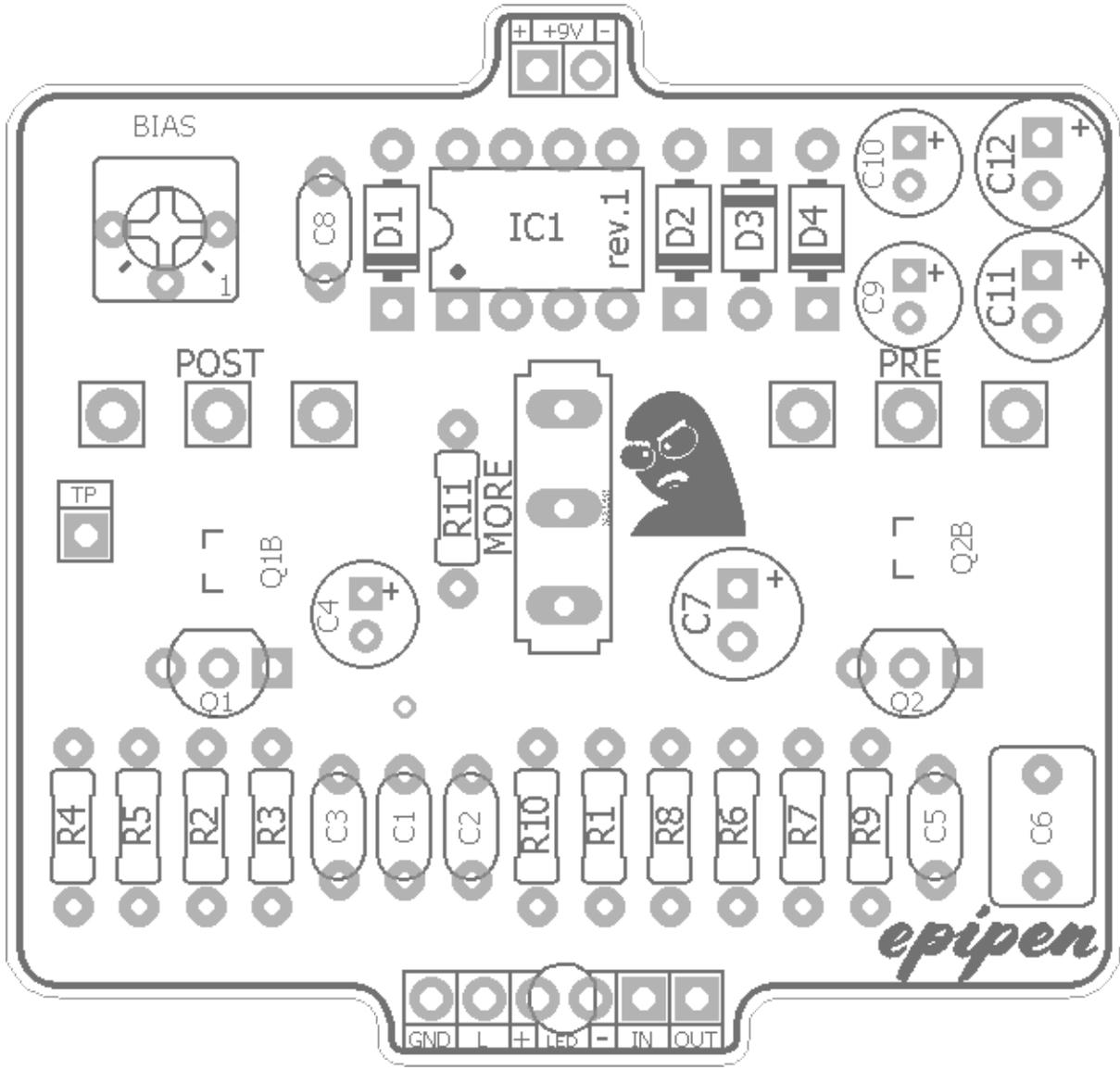
An output control has been added as well as a switch for additional gain, when needed.

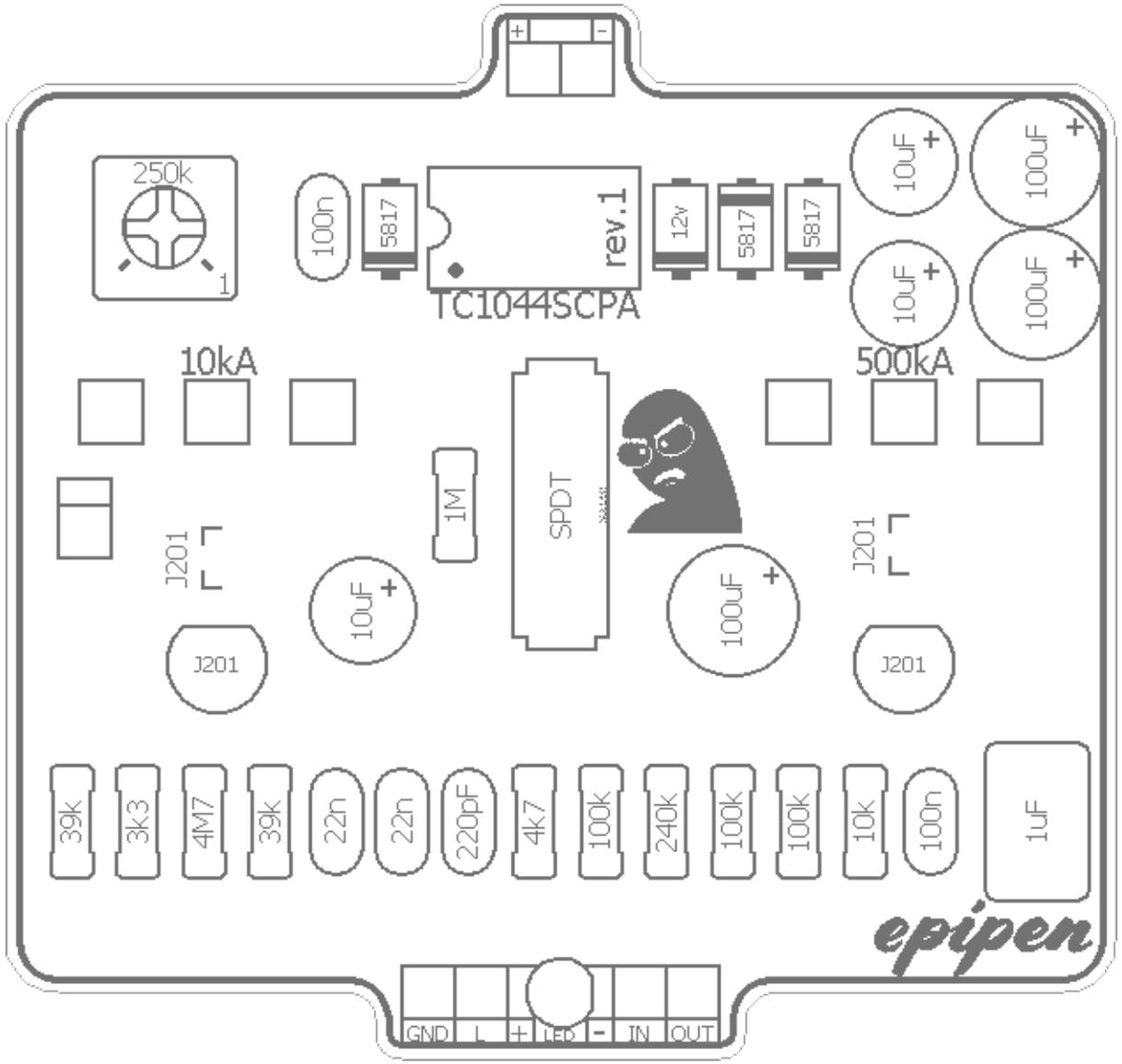
Controls

- **PRE** - Essentially, the gain control. Like the Echoplex™, the highest gain setting is around 2/3rd to 3/4 up. After that the output will be reduced somewhat.
- **POST** - A post-buffer volume control. Set this all the way if you want to just use PRE as the gain control. Or, use it to reduce the output when the MORE switch is up.
- **MORE** - Stock setting: down position. Up position: additional output gain as well as a more low end.
- **BIAS** - This trimmer is used to bias the output of Q1.

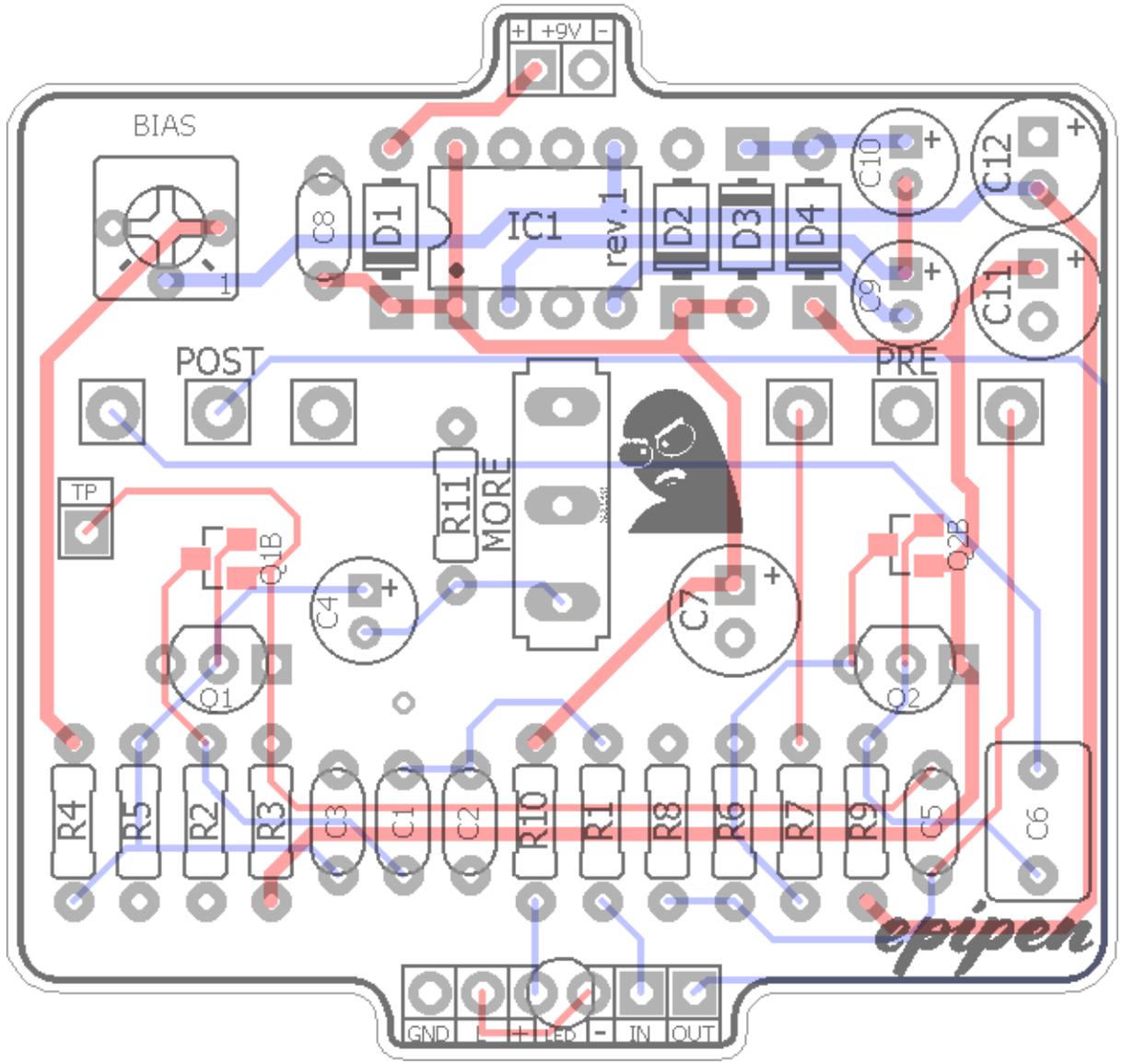
Terms of Use: You are free to use purchased **EpiPen** circuit boards for both DIY and small commercial operations. You may not offer **EpiPen** PCBs for resale or as part of a "kit" in a commercial fashion. Peer to peer re-sale is fine, though.

Technical assistance for your build(s) is available via the [madbeanpedals forum](http://madbeanpedals.com). 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.





epipen



Resistors		Caps		Diodes	
R1	100k	C1	22n	D1	1n5817
R2	4M7	C2	220pF	D2	12v Zener
R3	39k	C3	22n	D3	1n5817
R4	39k	C4	10uF	D4	1n5817
R5	3k3	C5	100n	Transistors	
R6	100k	C6	1uF	Q1, Q2	J201
R7	100k	C7	100uF	IC	
R8	240k	C8	100n	IC1	TC1044SCPA
R9	10k	C9	10uF	Switches	
R10	4k7	C10	10uF	MORE	SPDT
R11	1M	C11	100uF	Trimmers	
		C12	100uF	BIAS	250k
				Pots	
				POST	10kA
				PRE	500kA

Value	Qty	Type	Rating
3k3	1	Carbon / Metal Film	1/4W
4k7	1	Carbon / Metal Film	1/4W
10k	1	Carbon / Metal Film	1/4W
39k	2	Carbon / Metal Film	1/4W
100k	3	Carbon / Metal Film	1/4W
240k	1	Carbon / Metal Film	1/4W
1M	1	Carbon / Metal Film	1/4W
4M7	1	Carbon / Metal Film	1/4W
220pF	1	Ceramic / MLCC	25v min.
22n	2	Film	25v min.
100n	2	Film	25v min.
1uF	1	Film	25v min.
10uF	3	Electrolytic	25v min.
100uF	3	Electrolytic	25v min.
1n5817	3		
Zener	1	12v, 1W	
J201	2	through-hole or surface mount	
TC1044SCPA	1		
SPDT	1	On/On, Solder or Pin Mount	
250k	1	Bourns 3362p	
10kA	1	PCB Right Angle	16mm
500kA	1	PCB Right Angle	16mm

J201:

You'll need to find a source of your own if you want to use through-hole JFET201 :(

SMD sub (MMBFJ201):

<https://www.mouser.com/ProductDetail/512-MMBFJ201> (currently out of stock)

<https://www.pedalpcb.com/product/mmbfj201/> (currently in stock)

2n5457 sub: These will work but will have less gain

<https://stompboxparts.com/semiconductors/2n5457-jfet/>

MPF102 sub: Untested, but may work as well as the J201

<https://stompboxparts.com/semiconductors/mpf102-jfet-nos-fairchild/>

TC1044SCPA:

<https://stompboxparts.com/semiconductors/tc1044scca-charge-pump-ic/>

<https://www.mouser.com/ProductDetail/579-TC1044SCPA>

Sub MAX1044CPA:

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

12v Zener:

<https://stompboxparts.com/semiconductors/1n4742a-zener-diode-12-1v/>

<https://www.mouser.com/ProductDetail/512-1N4742A>

Bourns 3362p trimmer:

<https://www.mouser.com/ProductDetail/652-3362P-1-254LF>

<https://stompboxparts.com/pots/trim-pot-3362p/>

SPDT:

<https://smallbear-electronics.mybigcommerce.com/spdt-on-on-short-lever/>

<https://stompboxparts.com/switches/spdt-toggle-switch-on-on-solder-lug-short-bat/>

16mm Right Angle Pots:

<http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-16mm-right-angle-pc-mount/>

<https://stompboxparts.com/pots/16mm-potentiometer-short-pcb-leg/>

DC Jacks:

<https://smallbear-electronics.mybigcommerce.com/2-1-mm-all-plastic-round/>

<https://stompboxparts.com/power-connections/dc-power-jack-2-1mm-low-profile/>

<https://lovemyswitches.com/thinline-lumberg-dc-power-jack-2-1mm/>

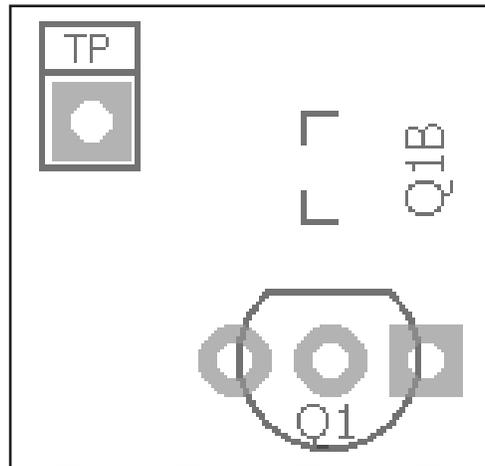
1/4" jacks:

<https://smallbear-electronics.mybigcommerce.com/1-4-in-mono-nys229/>

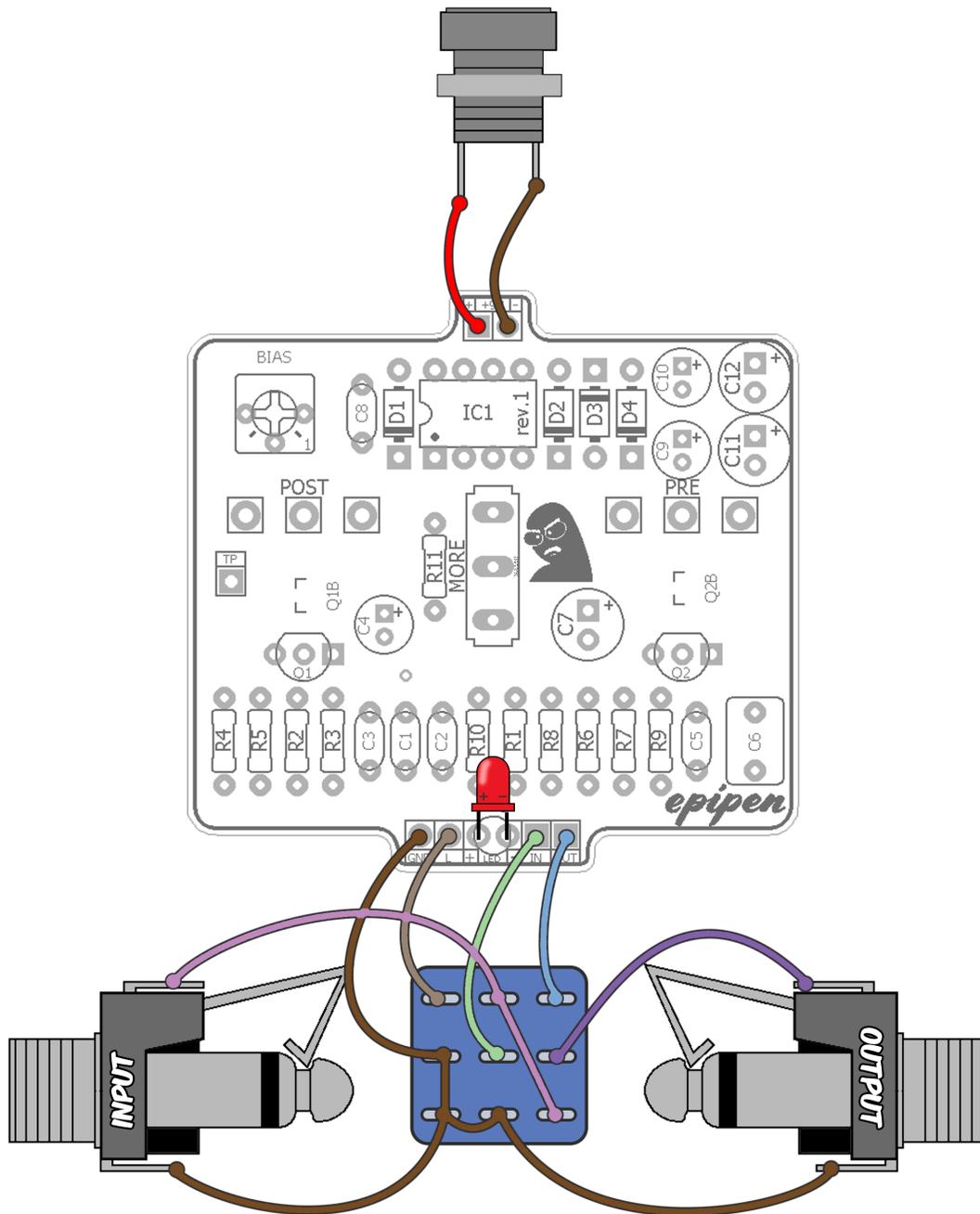
<https://smallbear-electronics.mybigcommerce.com/1-4-in-mono-switchcraft-11/>

<https://lovemyswitches.com/1-4-mono-jack-lumberg-klbm-3/>

- You can use either through-hole or surface mount JFETs for the build. Just don't use both at the same time!
- Use your multimeter for the BIAS trimmer. Attach the black lead to ground and touch the red lead to the TP pad on the EpiPen PCB. Adjust the Bias trimmer until you get the cleanest, loudest output possible. For me, this ended up being between 7 and 8v DC.

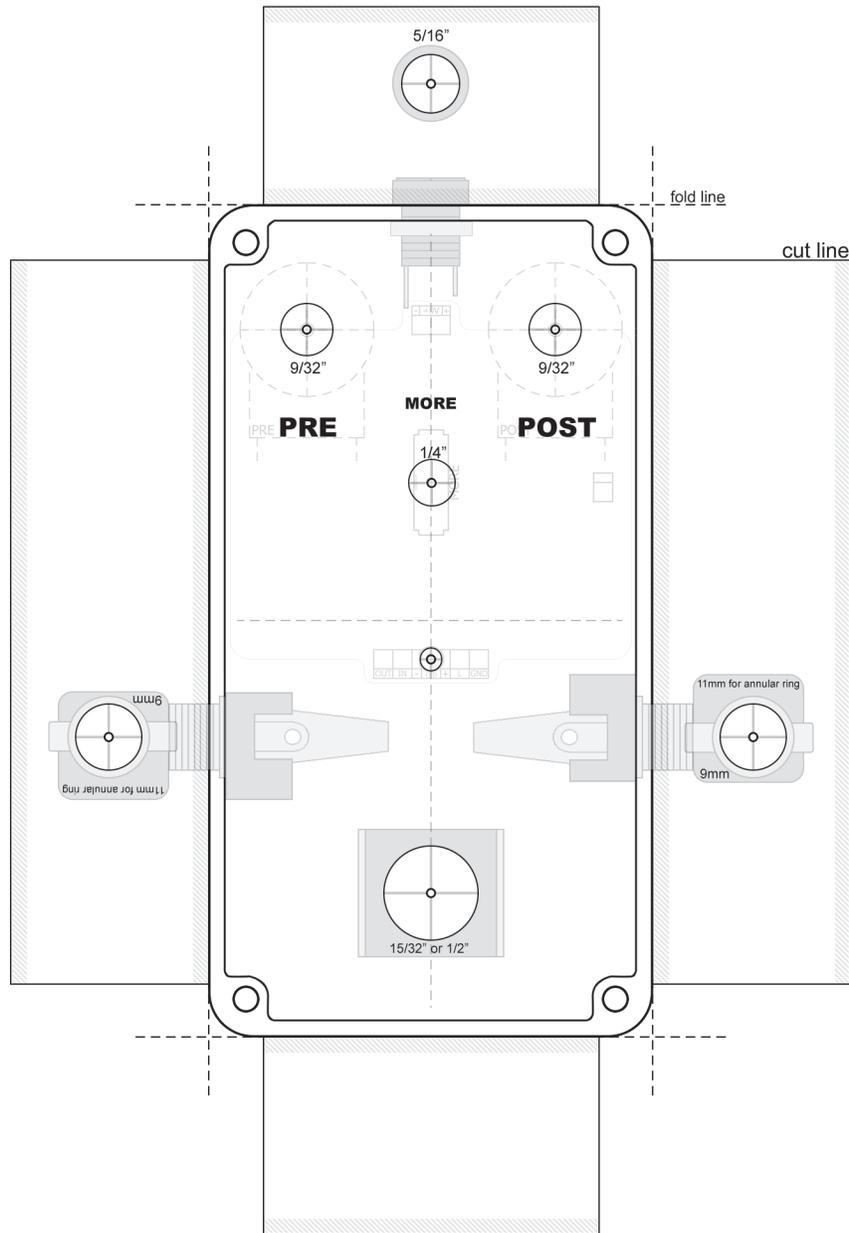


- Since this is a very loud boost, you might consider using a soft-touch relay based bypass system instead of a mechanical 3PDT to reduce or eliminate any switch pop. I used a regular 3PDT and it does have a pretty noticeable pop on it. So, I may convert my build to a Softie3 bypass later on.



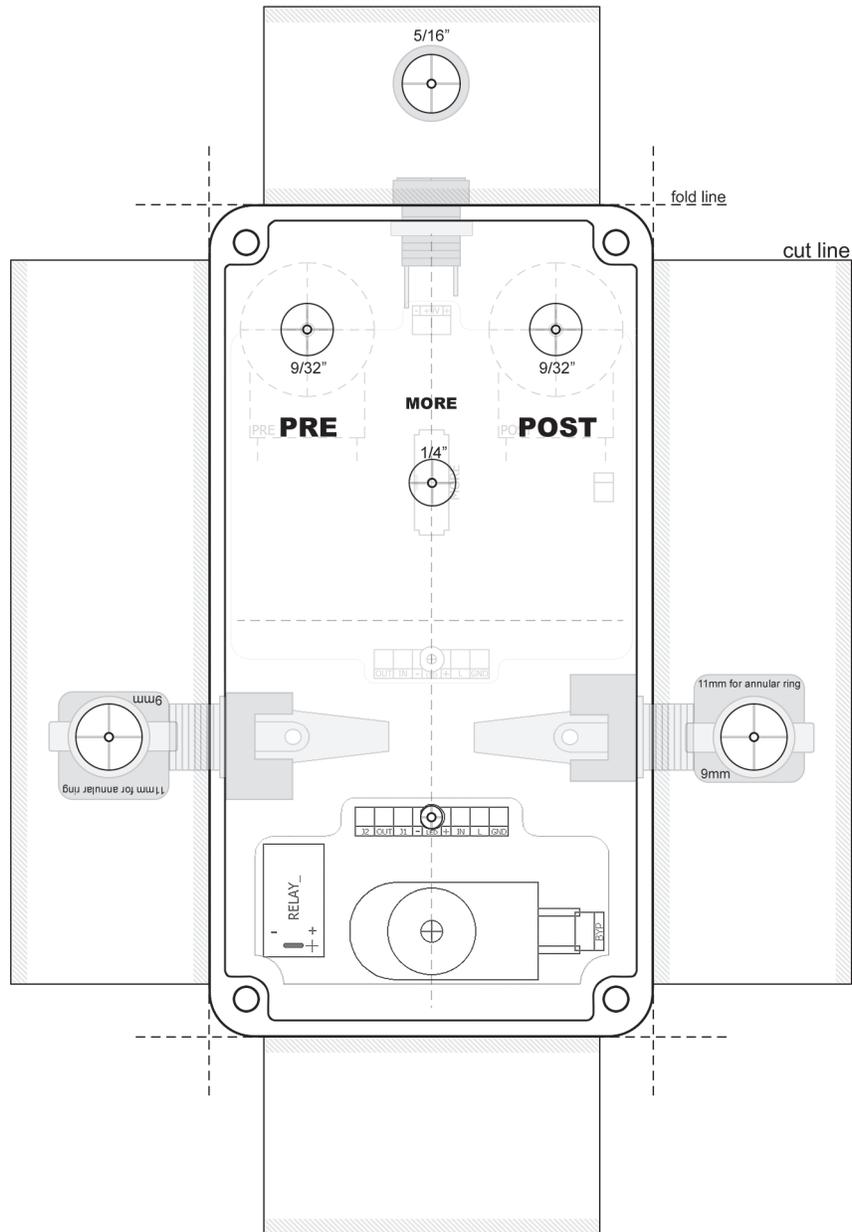
The bypass LED is soldered directly to the PCB.

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



Use this template for regular 3PDT bypass.

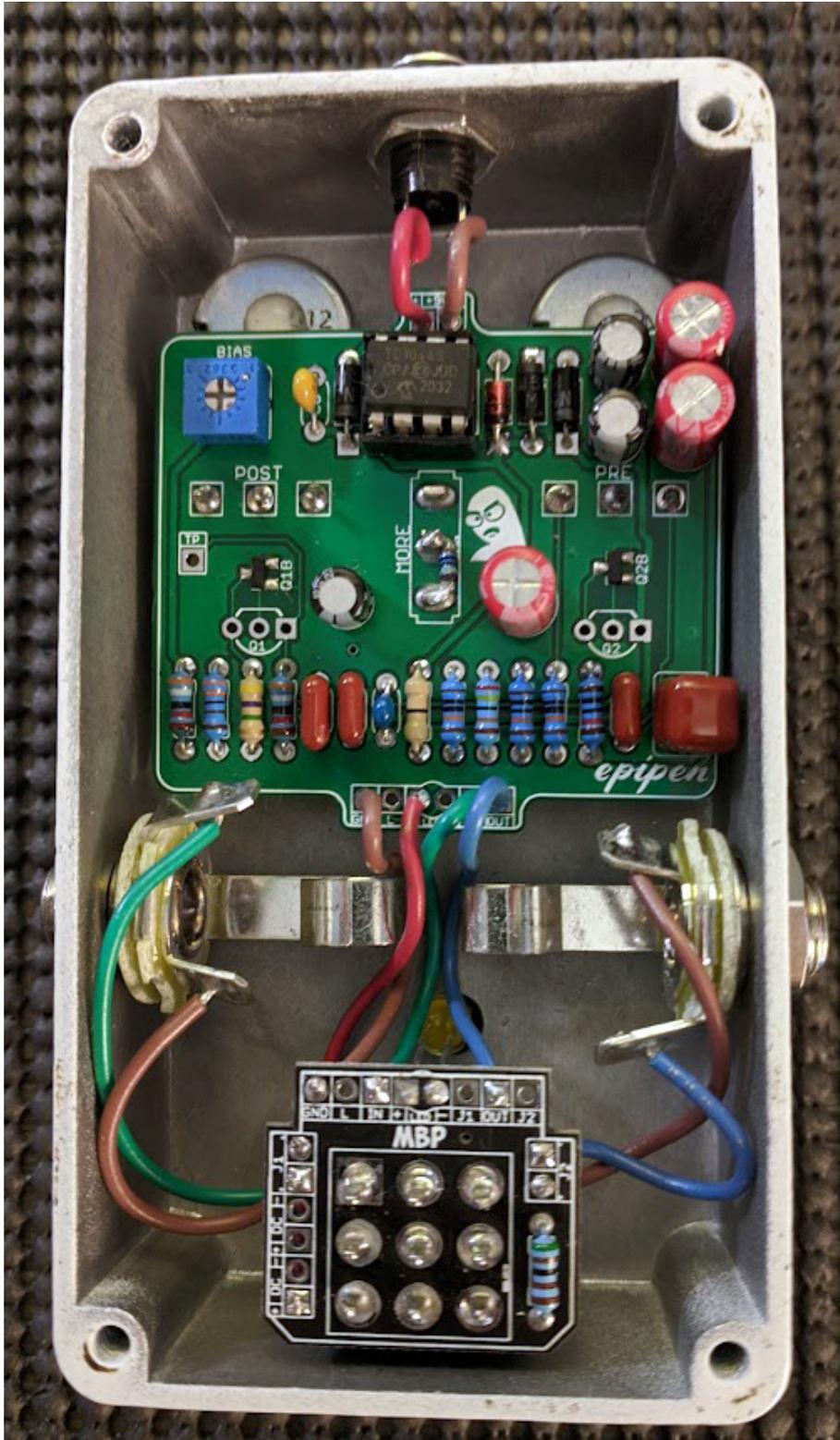
Note: Drill Guides are approximate and may require tweaking depending on the types of jacks, switches and pots you use.



Use this template for "Softie3" relay bypass. Note the different bypass LED location.

IC1	TC1044SCPA	Q1	J201
1	9.27	D	7.86
2	5.34	S	281mV
3	0	G	0
4	-3.89	Q2	J201
5	-9.21	D	18.04
6	4.31	S	-163mV
7	5.75	G	0
8	9.27		

- 9.42vDC One Spot
- Current Draw: ~3mA



Prototype build. I added the resistor on the switch to the final production board. This resistor is prevent the switch from popping.

