

FLUNKEE

FX TYPE: Envelope Filter

Based on the DOD® FX-25™

Enclosure Size: 1590B

"Softie" compatibility: Softie3

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Overview

Everyone loves the good ol' DOD 440. But, what about its cousin; the forgotten FX-25? If it's good enough for Flea is it not good enough for you? It is! Turns out that the FX-25 is a fairly righteous envelope filter on its own with a good amount of quack on tap. And, it has the advantage of using less expensive parts than its 440 counterpart (by virtue of not requiring a dual-vactrol that currently costs over \$10 and is a repro part). Plus, the Flunkee takes one extra step by adding a switch to allow you to select between low pass filter and band-pass filtering.

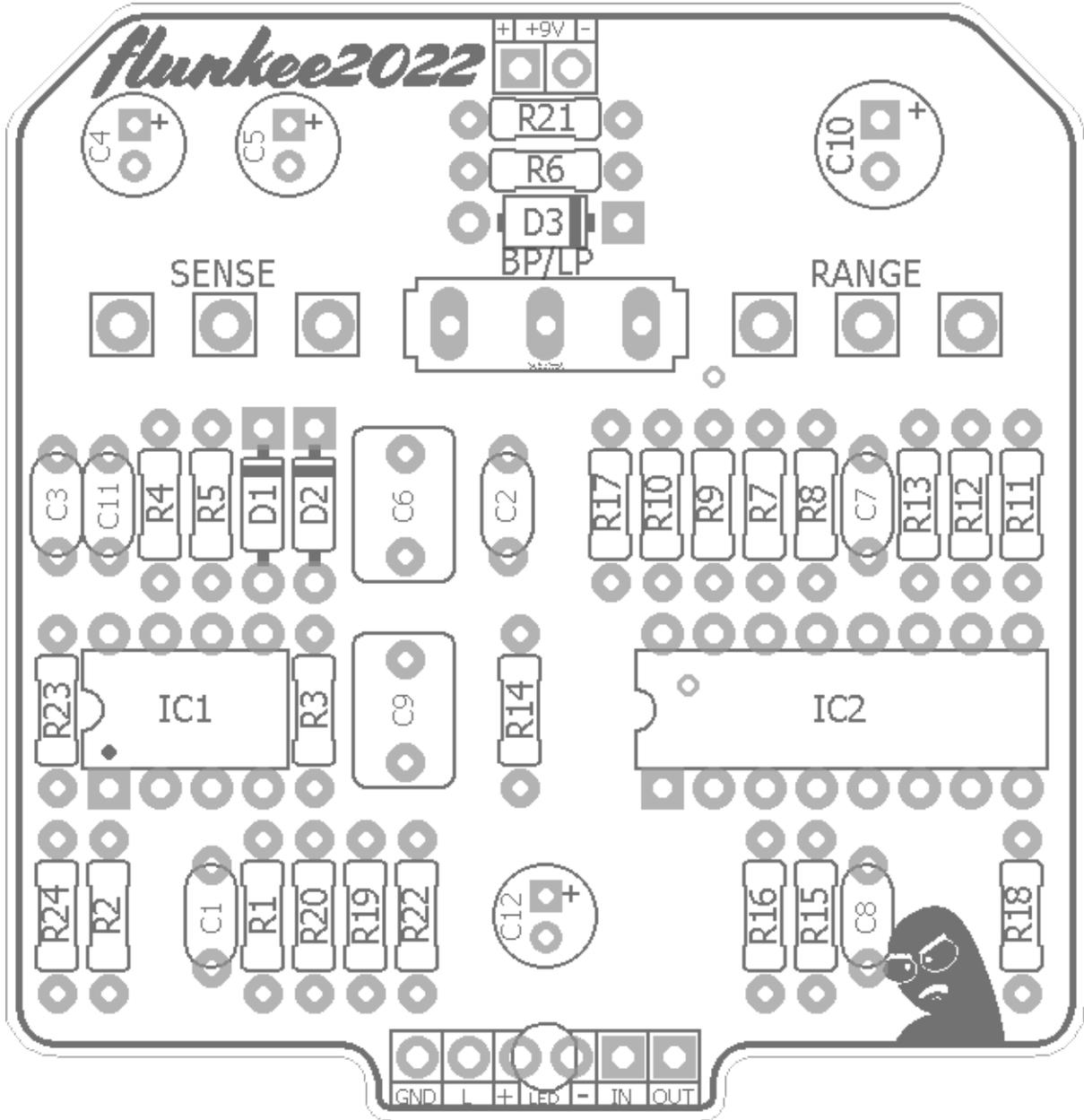
The 2022 version has no circuit changes from the 2019 version. The layout has been converted from 1590A to 1590B.

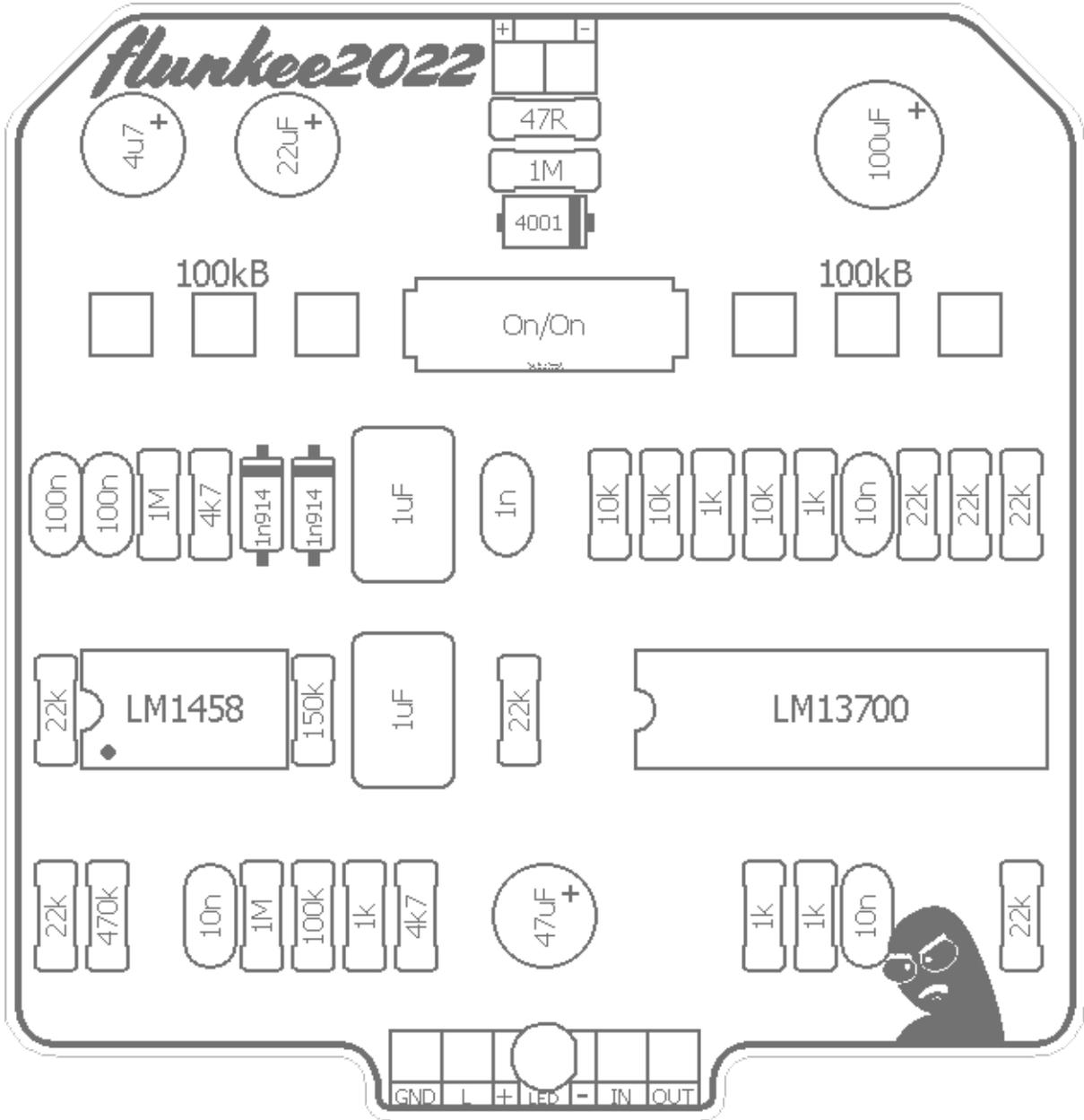
Controls

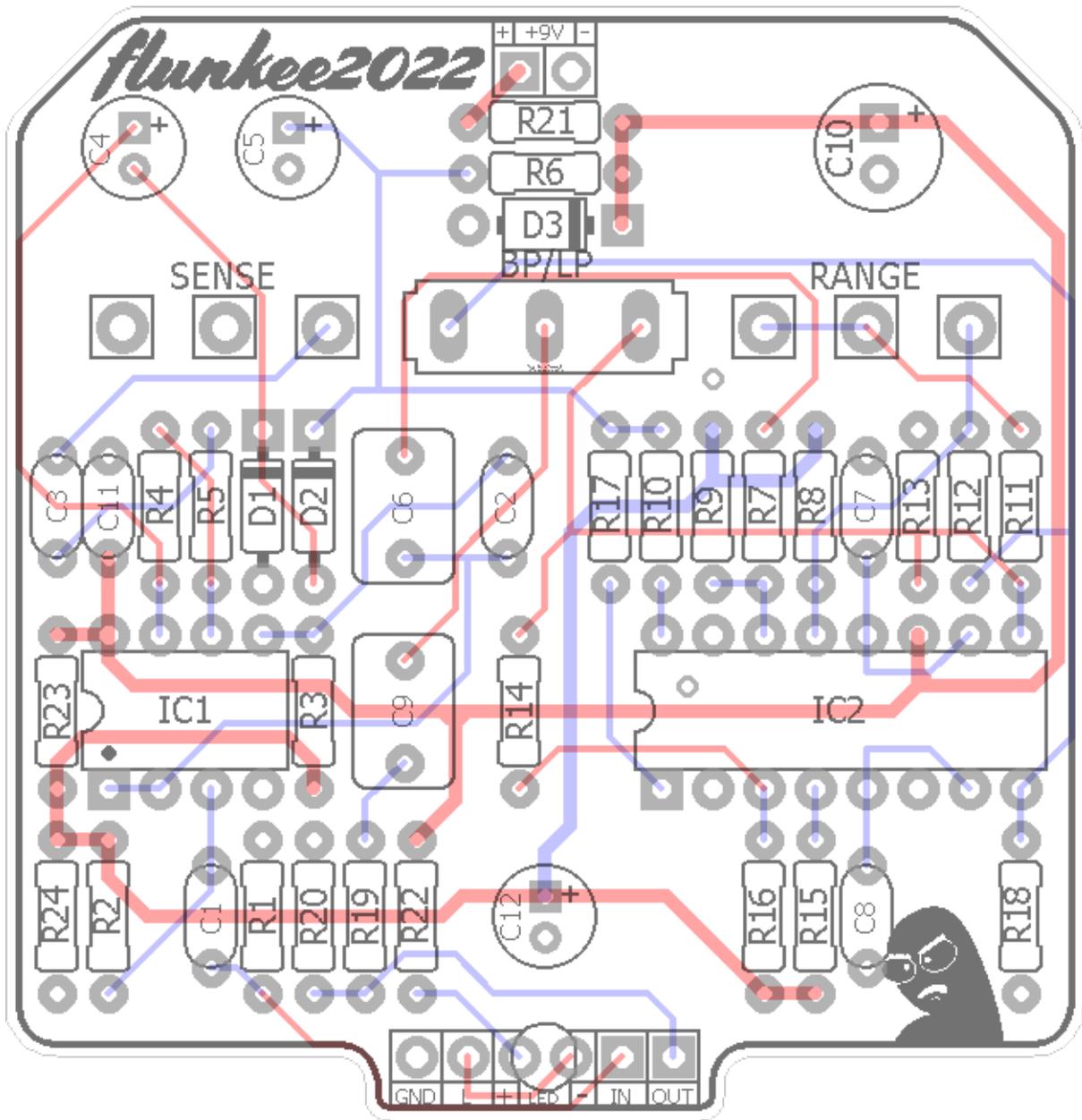
- **SENSE** - The overall sensitivity of the envelope detector from least to greatest.
- **RANGE** - The resonant peak of the swept filter from low to high.
- **BP/LP** - Select between low-pass (left) and band-pass filtering.

Terms of Use: You are free to use purchased **Flunkee** circuit boards for both DIY and small commercial operations. You may not offer **Flunkee** 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	
R1	1M	C1	10n
R2	470k	C2	1n
R3	150k	C3	100n
R4	1M	C4	4u7
R5	4k7	C5	22uF
R6	1M	C6	1uF
R7	10k	C7	10n
R8	1k	C8	10n
R9	1k	C9	1uF
R10	10k	C10	100uF
R11	22k	C11	100n
R12	22k	C12	47uF
R13	22k	Diodes	
R14	22k	D1	1n914
R15	1k	D2	1n914
R16	1k	D3	1n4001
R17	10k	IC	
R18	22k	IC1	LM1458
R19	1k	IC2	LM13700
R20	100k	Switch	
R21	47R	BP/LP	On/On
R22	4k7	Pots	
R23	22k	RANGE	100kB
R24	22k	SENSE	100kB

Value	QTY	Type	Rating
47R	1	Metal / Carbon Film	1/4W
1k	5	Metal / Carbon Film	1/4W
4k7	2	Metal / Carbon Film	1/4W
10k	3	Metal / Carbon Film	1/4W
22k	7	Metal / Carbon Film	1/4W
100k	1	Metal / Carbon Film	1/4W
150k	1	Metal / Carbon Film	1/4W
470k	1	Metal / Carbon Film	1/4W
1M	3	Metal / Carbon Film	1/4W
1n	1	Film	16v min.
10n	3	Film	16v min.
100n	2	Film	16v min.
1uF	2	Film	16v min.
4u7	1	Electrolytic	16v min.
22uF	1	Electrolytic	16v min.
47uF	1	Electrolytic	16v min.
100uF	1	Electrolytic	16v min.
1n914	2		
1N4001	1		
LM1458	1		
LM13700	1		
SPDT	1	On/On, Solder Lugs or Pins	
100kB	2	PCB Right Angle	16mm

LM1458:

<http://smallbear-electronics.mybigcommerce.com/ic-mc1458p-ti/>

<https://www.taydaelectronics.com/lm1458n-lm1458-1458-ic-dual-operational-amplifier.html>

LM13700:

<https://www.taydaelectronics.com/lm13700-lm13700n-operational-amplifier-ic.html>

You can also use the 13600 which is available at smallbear:

<http://smallbear-electronics.mybigcommerce.com/ic-njm13600d/>

SPDT:

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

16mm Pots:

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

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/>

<https://lovemyswitches.com/1-4-mono-jack-neutrik-rean-nys229/>

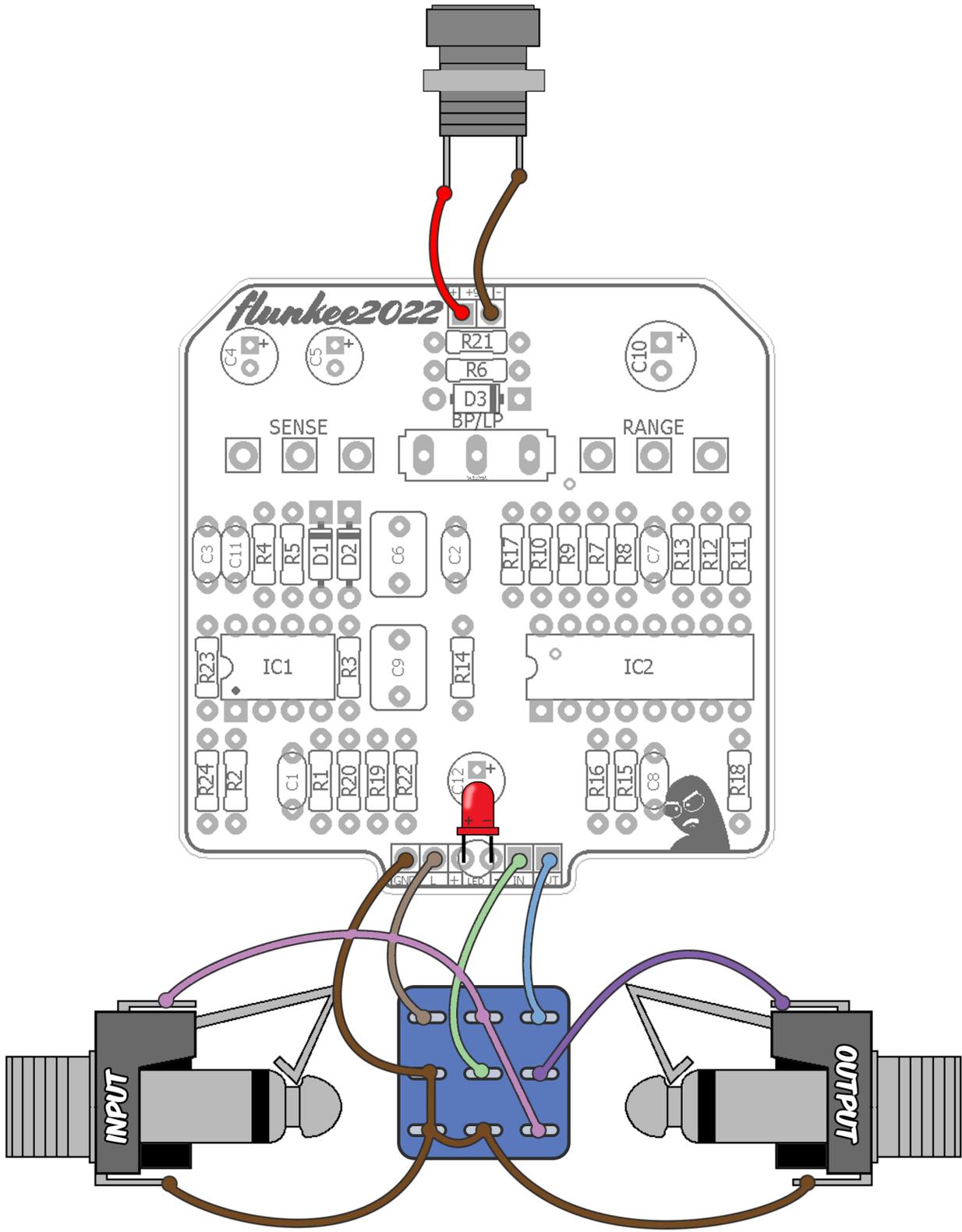
My preferred 3PDT switch:

<https://lovemyswitches.com/pro-3pdt-latched-foot-switch-solder-lugs-feather-soft-click/>

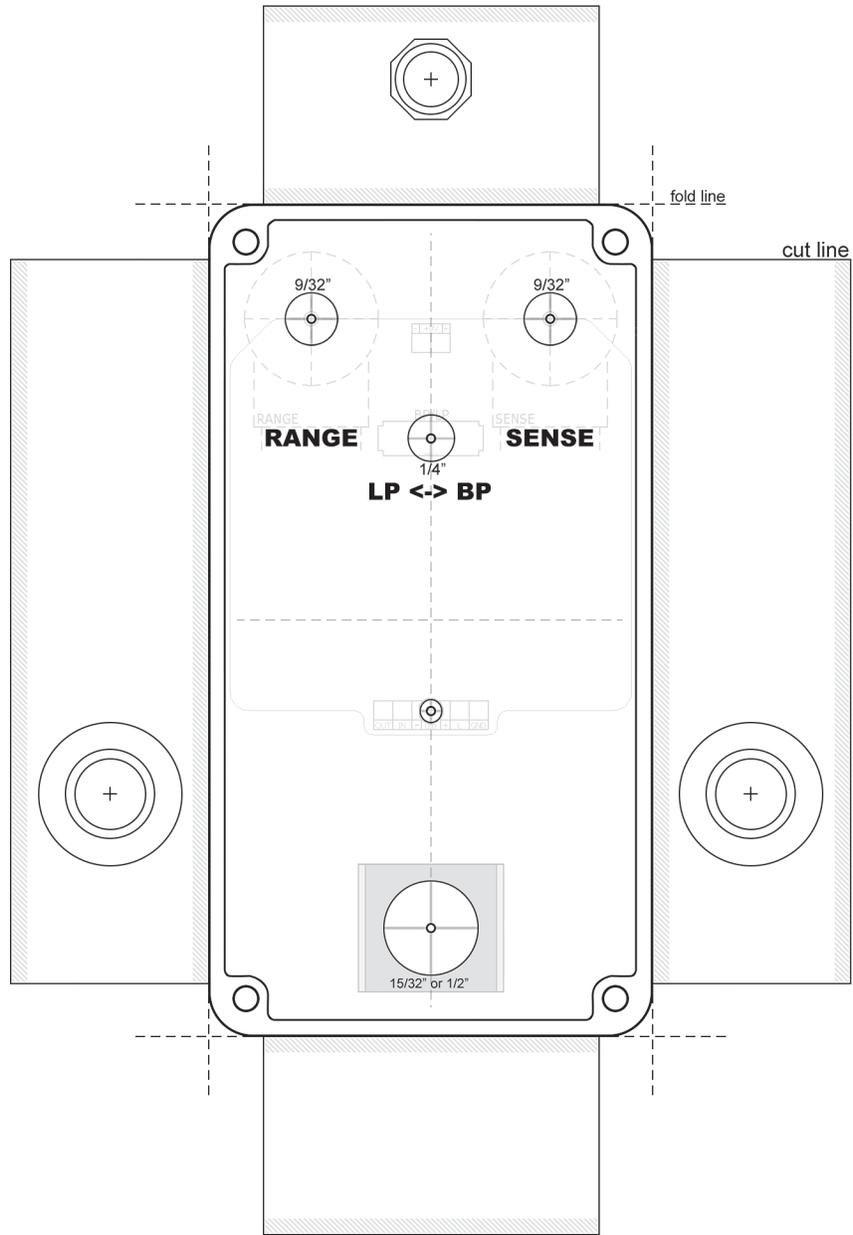
- The (through-hole) LM13700 is in short supply right now and due to be obsoleted in 2023 from what I've heard. You can sub in the 13600 which is still available through smallbear. The only difference is S/N but that's not a big factor here. This is a quacky envelope, not fine audio!
- I don't particularly like the 100kB for the Sense control. I found that lowering it to a 25kB gives much more fine control while retaining all the useful range. I suggest you consider this, as well.

Mods

- Changing the value of C7 and C8 will change the frequency over which the envelope operates. Lower values for higher frequencies, higher values for lower ones.
- If you want to tweak the sensitivity of the envelope, you can try lowering the resistors connected to the current input pins of the LM13700. These are R10 and R17. Suggested values would be 6k8 or 4k7. Use the same value for both.

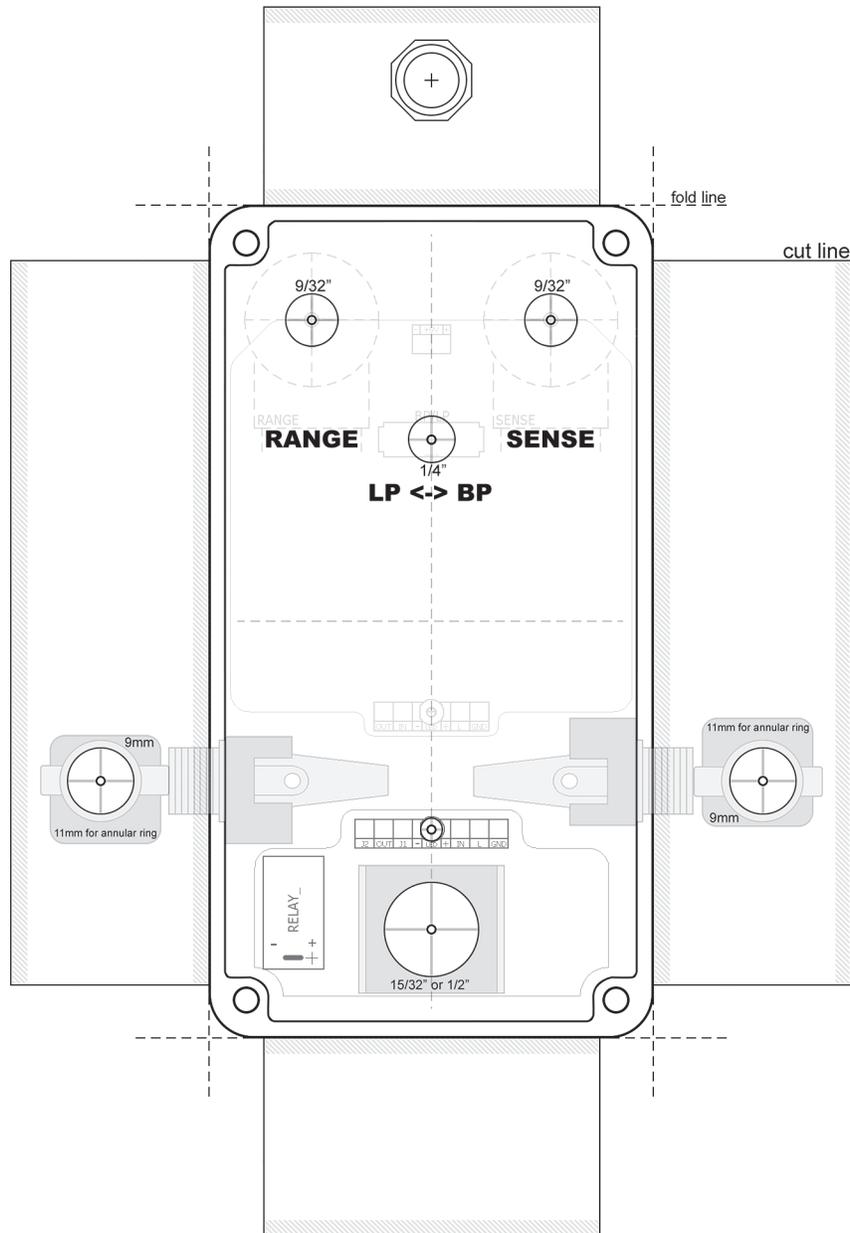


Note: Drill Guides are approximate and may require tweaking depending on the types of jacks, switches and pots you use.



Use this template for regular 3PDT bypass.

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Use this template for “Softie3” relay bypass. Note the different bypass LED location. The drill location for the bypass switch is the same. This will be a bit of a squeeze so I suggest using the Lumberg 1/4” jacks if you use a Softie.

IC1	LM1458	IC2	LM13700
1	4.48	1	1.32
2	4.48	2	1.2
3	4.3	3	4.6
4	0	4	4.59
5	4.34	5	5.7
6	4.41	6	0
7	5.08	7	5.7
8	9.34	8	4.58
		9	4.61
		10	5.74
		11	9.34
		12	5.74
		13	4.6
		14	4.6
		15	2.03
		16	1.32

- 9.42vDC One Spot
- Current Draw: ~5mA
- Knobs full CCW
- SW - left

