

# PEPPERSPRAY2019

## FX TYPE: Fuzz

Based on the Interfax® Harmonic Percolator™

Enclosure Size: 1590A

"Softie" compatibility: none

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## Overview

The Harmonic Percolator™ is a very rare and mysterious fuzzbox. Not many Interfax® production units were made in its short life-span. However, in the last few years there has been a resurgence of interest and at least a couple of companies have offered clones at one time or another.

If you've never heard of this beast, I suggest you watch these:

<http://www.youtube.com/watch?v=nahPA-RKEfQ>

[http://www.youtube.com/watch?v=7278zg\\_UQKQ](http://www.youtube.com/watch?v=7278zg_UQKQ)

<http://www.youtube.com/watch?v=XzNXKrMynW4>

The Percolator does not seem to have one "stock" design. Slight changes were made in component values over its life-cycle. Therefore, determining what constitutes the "ultimate" version involves some guess-work. The 2018 version of the Pepper Spray is the same as the "Steve Albini" Percolator; at least as far as anyone knows!

The schematic also lists alternate values in parenthesis. These reflect what was likely the "stock" unit although that is debatable. There are many, many variations listed for the Percolator. The main differences between the two are these:

- The Albini version is smoother and more controlled. It has a slightly over-compressed fuzz tone when the Harm is all the way up. IMO, it's a more aggressive than a FuzzFace with some unique characteristics.
- The Stock version is much more unruly. It has a very over-compressed sound (although this is not a bad thing). It also is noisier than the Albini version.

Between the two I prefer the Albini version. But, if you want something that is pretty sick and rude, the stock version is right up your alley!

## Controls

- **HARM:** The "harmonics" control sets the input level of the effect.
- **BAL:** The "balance" control sets the volume output.
- **CLIP:** Toggle between the stock 1n695 and your choice of clipping diodes.
- **T1:** Instead of the stock 4k7 resistor T1 is a 10k trimmer. This allows you to change the amount of clipping symmetry (turning it up makes it more asymmetrical and down is fully symmetrical). For stock sound, set T1 at or just below halfway.

Links with detailed information and analysis of the Harmonic Percolator

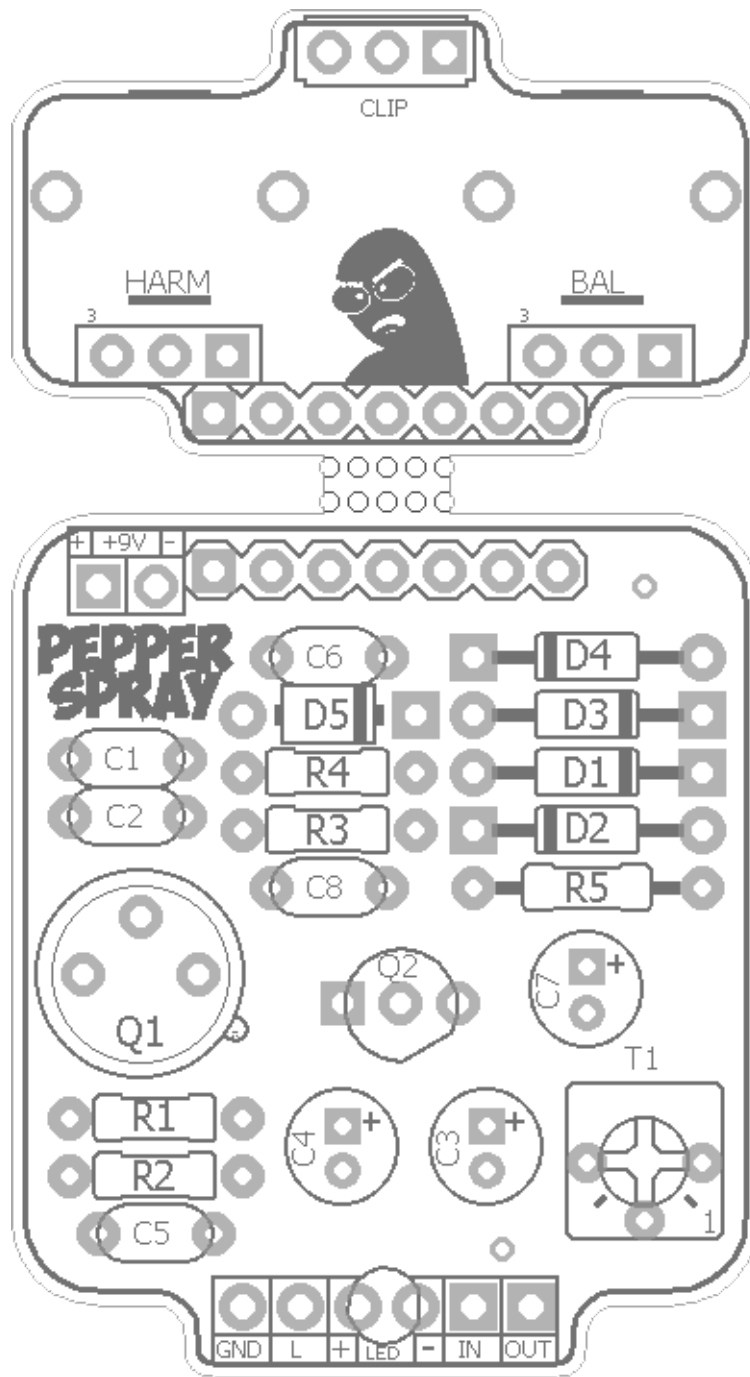
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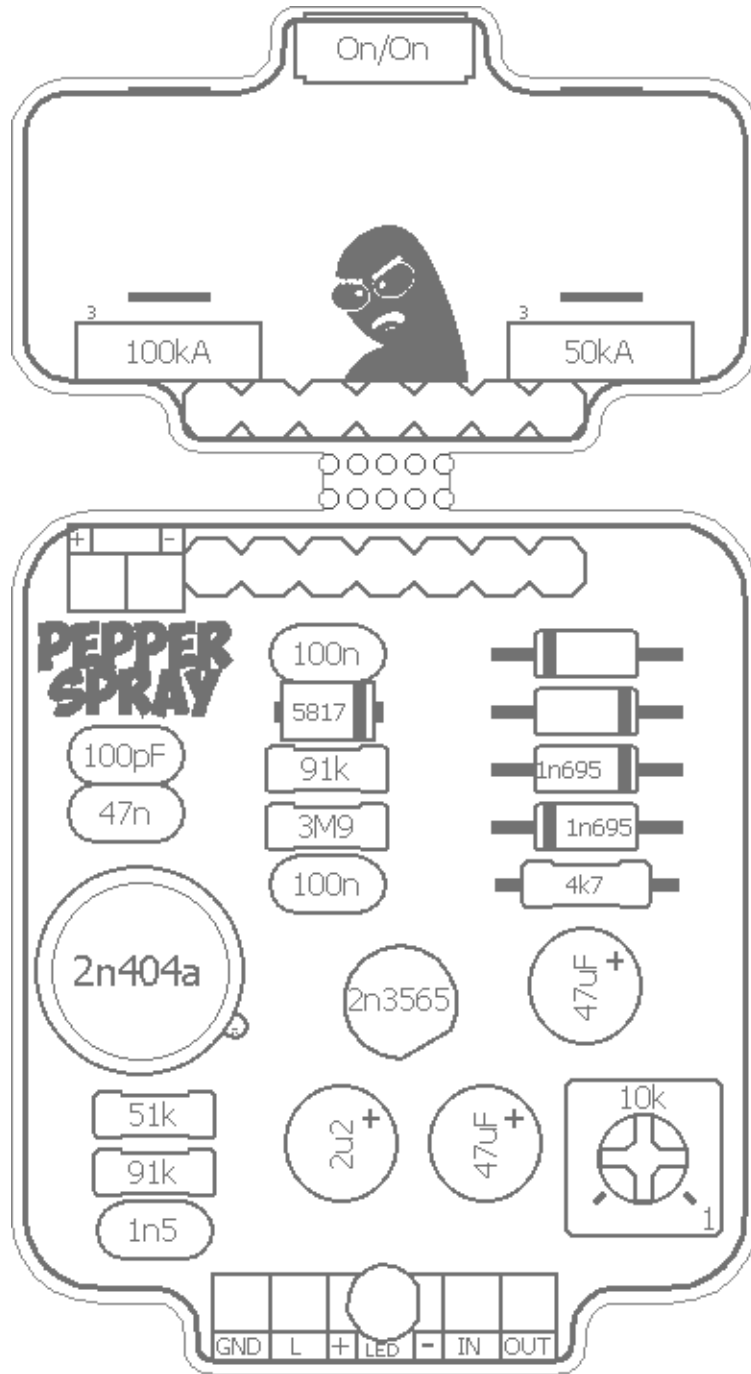
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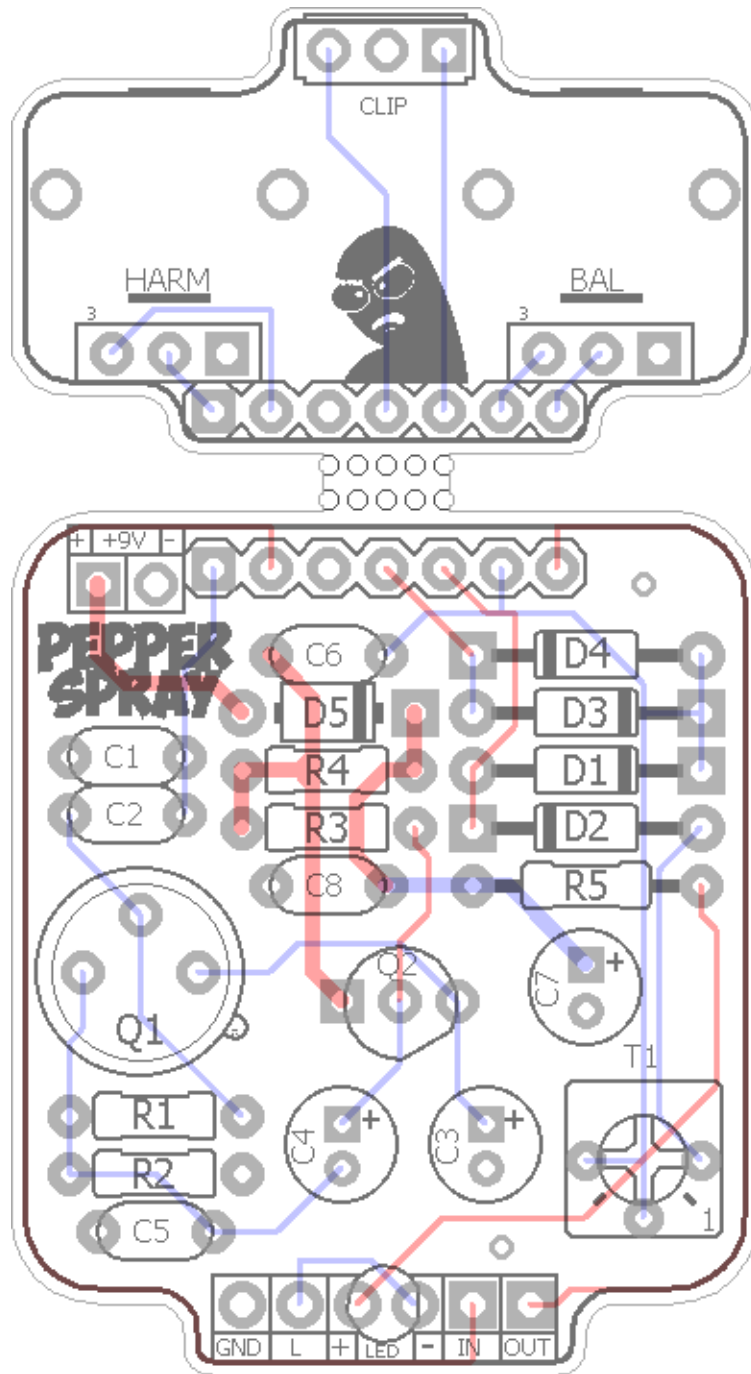
**Correction:** Schematic and BOM mistakenly listed Q2 as "2n3965" and it should be 2n3565. The link in the "Parts Guide" was for the correct transistor, however.

**Terms of Use:** You are free to use purchased **PepperSpray2019** circuit boards for both DIY and small commercial operations. You may not offer **PepperSpray2019** 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.







Resistors		Diodes	
R1	51k	D1, D2	1n695
R2	91k	D3, D4	your choice
R3	3M9	D5	1N5817
R4	91k	Transistors	
R5	4k7	Q1	2n404a
Caps		Q2	2n3565
C1	100pF	Switch	
C2	47n	CLIP	On/On
C3	47uF	Trimmer	
C4	2u2	T1	10k
C5	1n5	Pots	
C6	100n	BAL	50kA
C7	47uF	HARM	100kA
C8	100n		

Value	QTY	Type	Rating
4k7	1	Metal / Carbon Film	1/4W
51k	1	Metal / Carbon Film	1/4W
91k	2	Metal / Carbon Film	1/4W
3M9	1	Metal / Carbon Film	1/4W
100pF	1	Ceramic / MLCC / Mica	16v min.
1n5	1	Film	16v min.
50n	1	Film	16v min.
100n	2	Film	16v min.
2u2	1	Electrolytic / Tantalum	16v min.
47uF	2	Electrolytic / Tantalum	16v min.
1n695	2	or, 1n34a, BAT41	
diodes	2	1n914, 1N4001, LED, etc	
1N5817	1		
2n404a	1		
2n3565	1		
On/On	1	Mini SPDT	
10k	1	Bourns 3362p	
50kA	1	PCB Right Angle	9mm
100kA	1	PCB Right Angle	9mm

**Low-Profile Electrolytic:**

<http://smallbear-electronics.mybigcommerce.com/electrolytic-radial-low-profile-16v-1-f-100-f/>

**Tantalum:**

<http://www.smallbear-electronics.mybigcommerce.com/dipped-tantalum-15-f-10-f-16-volt/>

<http://www.smallbear-electronics.mybigcommerce.com/dipped-tantalum-47-f-16-volt/>

**1n695:**

<http://www.smallbear-electronics.mybigcommerce.com/diode-1n695/>

**2n404a:**

<http://www.smallbear-electronics.mybigcommerce.com/transistor-2n404a/>

**2n3565:**

<http://www.smallbear-electronics.mybigcommerce.com/transistor-2n3565/>

**Mini SPDT:**

<http://smallbear-electronics.mybigcommerce.com/spdt-on-on-mountain-10tc410/>

**Bourns 3362p:**

<https://www.taydaelectronics.com/potentiometer-variable-resistors/cermet-potentiometers/3362p/10k-ohm-trimmer-potentiometer-cermet-1-turn-3362p.html>

<https://www.mouser.com/ProductDetail/Bourns/3362P-1-103LF?qs=sGAEpiMZZMvygUB3GLcD7k%252bod3ZqvEIQboRRPdOKB6M%3d>

**9mm Pots:**

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

**Thinline DC Jack:**

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

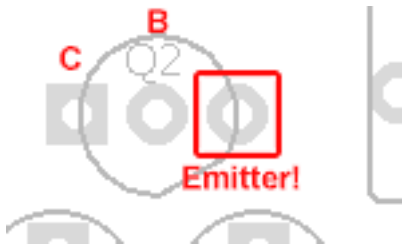
**Enclosed Mono:**

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

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

- C2 is 50n in all versions. I subbed the much more common 47n for this cap.
- The 2u2 and 47uF were tantalum in the production unit. But, you can sub regular electrolytic there, too.
- The second set of clipping diodes is up to you. If you want stark contrast between the two options, use 3mm LEDs (diffused red). 1n914 or 1N4001 will be louder and less grainy than the 1n695 but not as aggressive as LEDs.
- **You can use BAT41 diodes as subs for the 1n695.** I've used them in a couple of builds and they sound great!

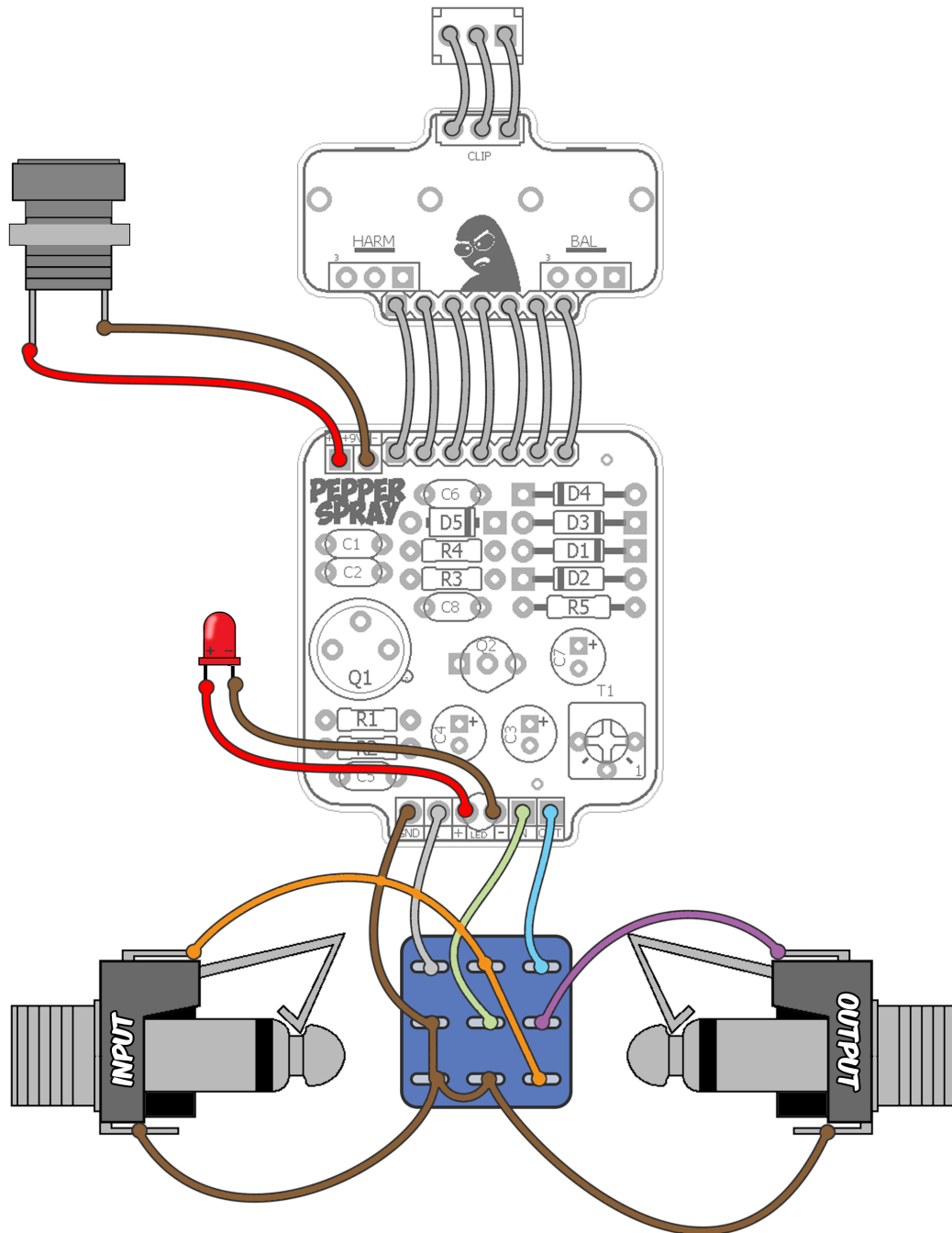
### 2n3565



The 2n3565 has a flattened end on the mushroom style casing. The flattened part indicates the emitter. Be sure to put the transistor in the right way!

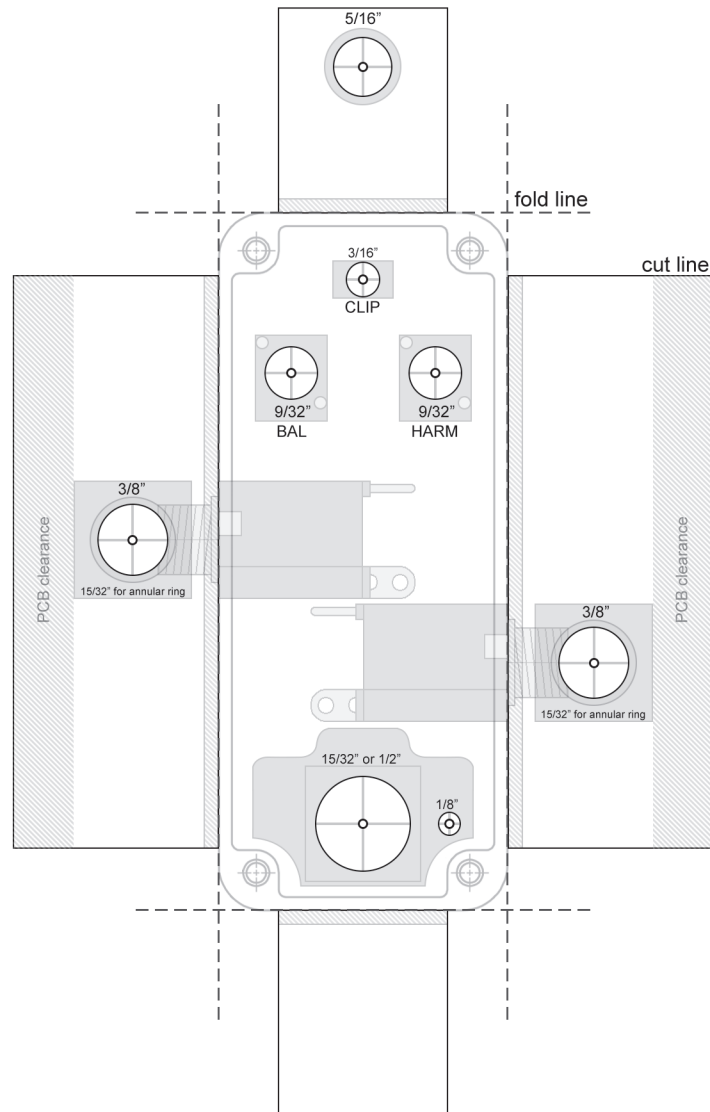
Also, the leads for the 2n3565 are in a triangle formation, so you will need to push them more into a straight line to fit in the transistor package on the PCB.





The mini SPDT was intended to be soldered directly to the breakout PCB, but after looking at it again I felt like it was too close to the pots. Luckily there is plenty of room to just wire the switch and give you more space to work the controls.

**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.
- You should use the “Thinline” style DC jack for this build.
- It also shows the 3PDT02 bypass PCB but this is not required. If you are wiring straight to a 3PDT you can use the same LED location on the right side or choose a different spot.
- The drill spot for the Clip switch is the position for the switch *wired*, not soldered directly to the breakout PCB.

Albini	
2n404a	DC

C	3.7
B	3.77
E	3.9

Stock	
2n404a	DC

C	1.37
B	1.89
E	2.01

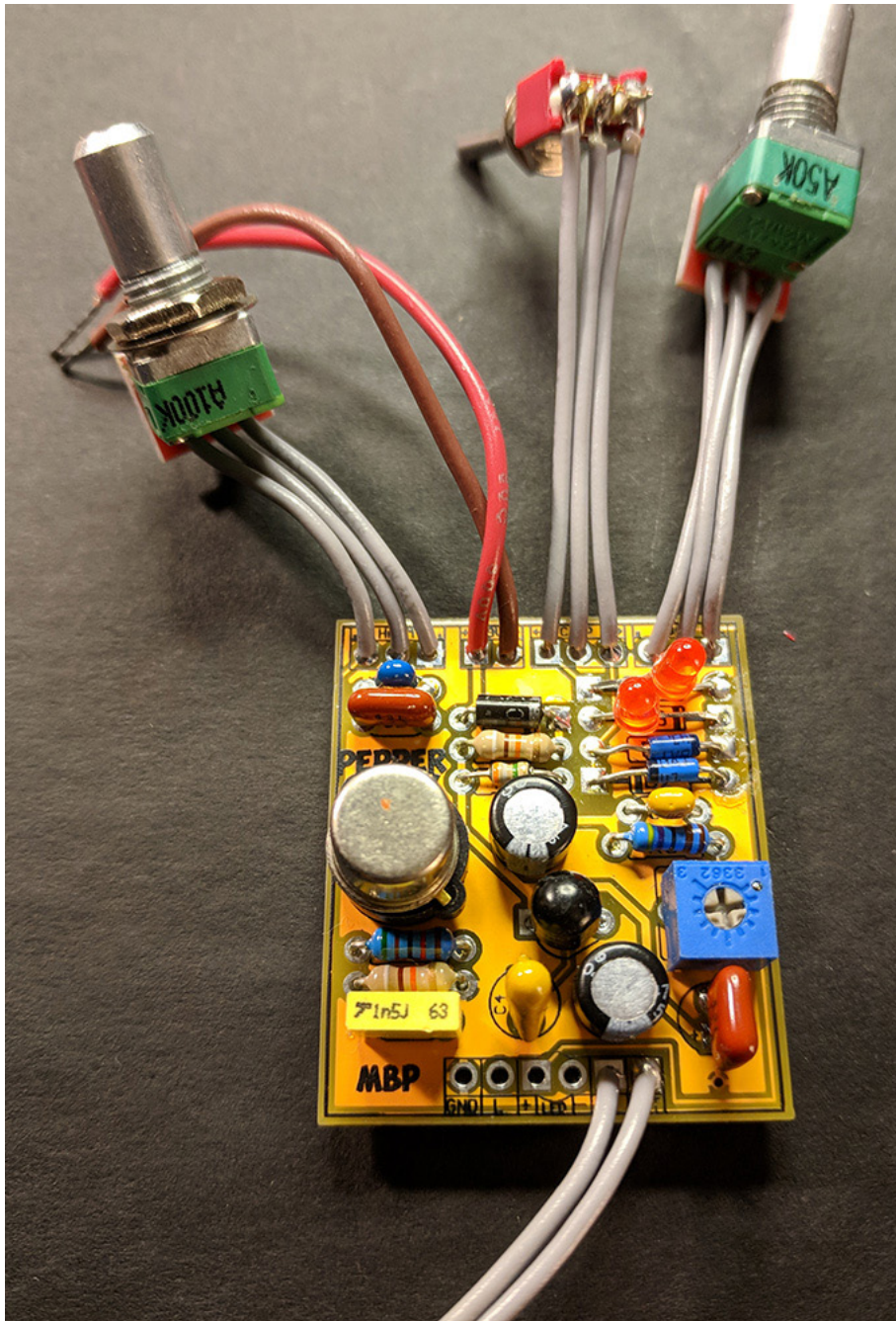
2n3565	DC
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C	5.41
B	3.8
E	3.9

2n3565	DC
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C	2.91
B	2.58
E	2.01

- 9.42vDC One Spot
- Current Draw ~ 2mA



This is the build of the 2018 “giveaway” version of the PepperSpray. The 2019 version adds board-mounted pots on a breakaway PCB and moves a couple caps around (plus fixed one error mentioned in the giveaway version).

