

FUZZYBRITCHES

FX TYPE: Fuzz

Based on the Jordan® Boss Tone™

Enclosure Size: 1590B

Softie compatibility: Softie3

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Overview

The **FuzzyBritches** project allows you to build either a Jordan Boss Tone™ or the more modern take, the KMA Fuzzy Bear™. You can also mix and match elements from both, if you like. It's a very simple yet highly effective circuit that can easily be tweaked into different tones with just small modifications.

I suggest listening to some demos of both before you decide which version to build. This doc will show how to build both. For an excellent overview, I recommend watching the JHS takedown of the Boss Tone™. It provides an in-depth presentation of the different versions along with sound samples.

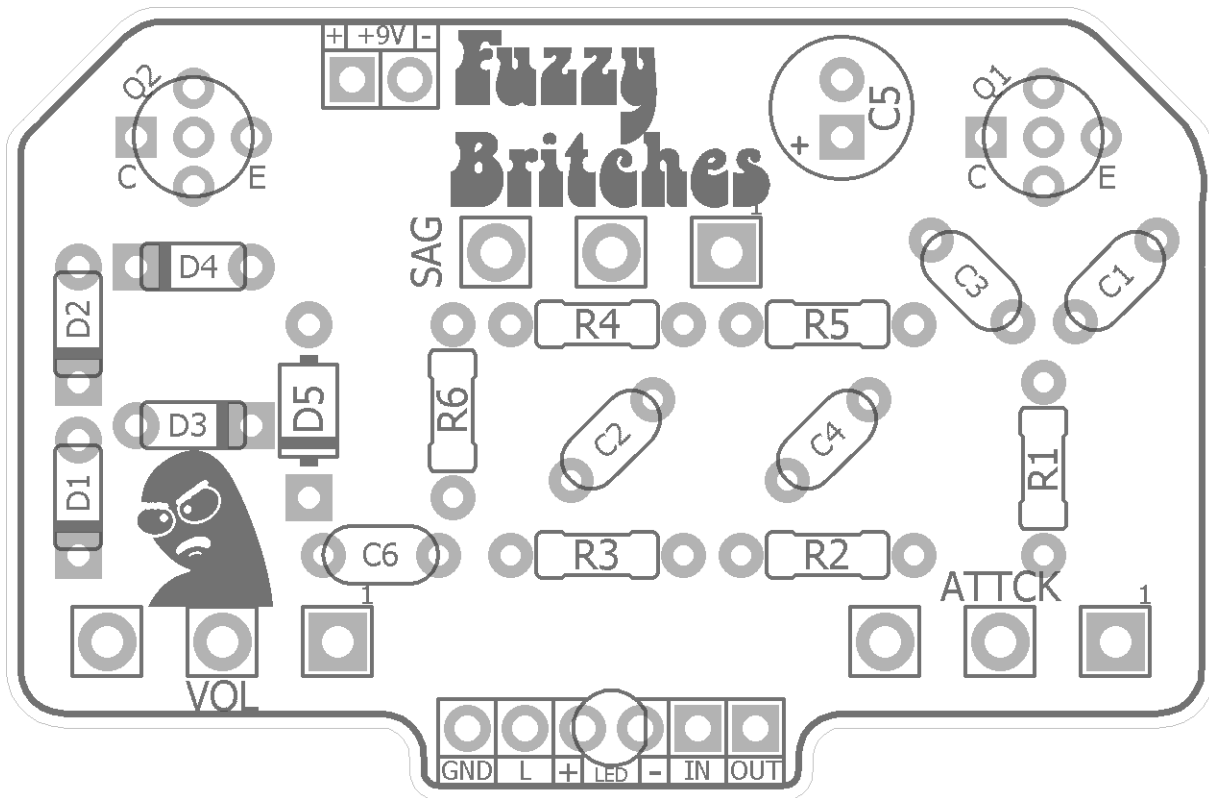
<https://www.youtube.com/watch?v=DTXUYTxWtdI>

Controls

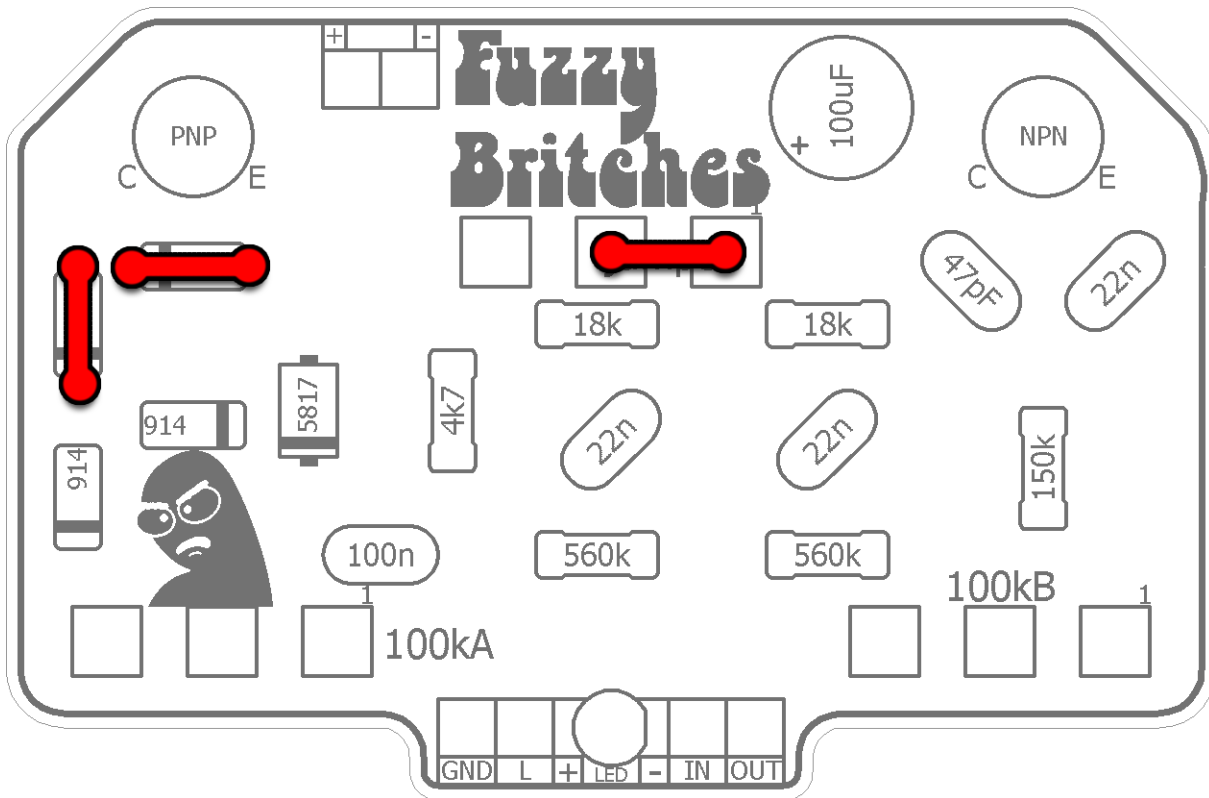
- **ATTACK** - Effect input level. This control gives a range from overdrive up to full on fuzz. It also has some effect on the amount of lows going into the circuit.
- **VOL** - Effect output level.
- **SAG** - Simulates a dying battery for more compressed, bumblebee fuzz sounds. This control is not in the Bosstone, but can be used if you like.

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

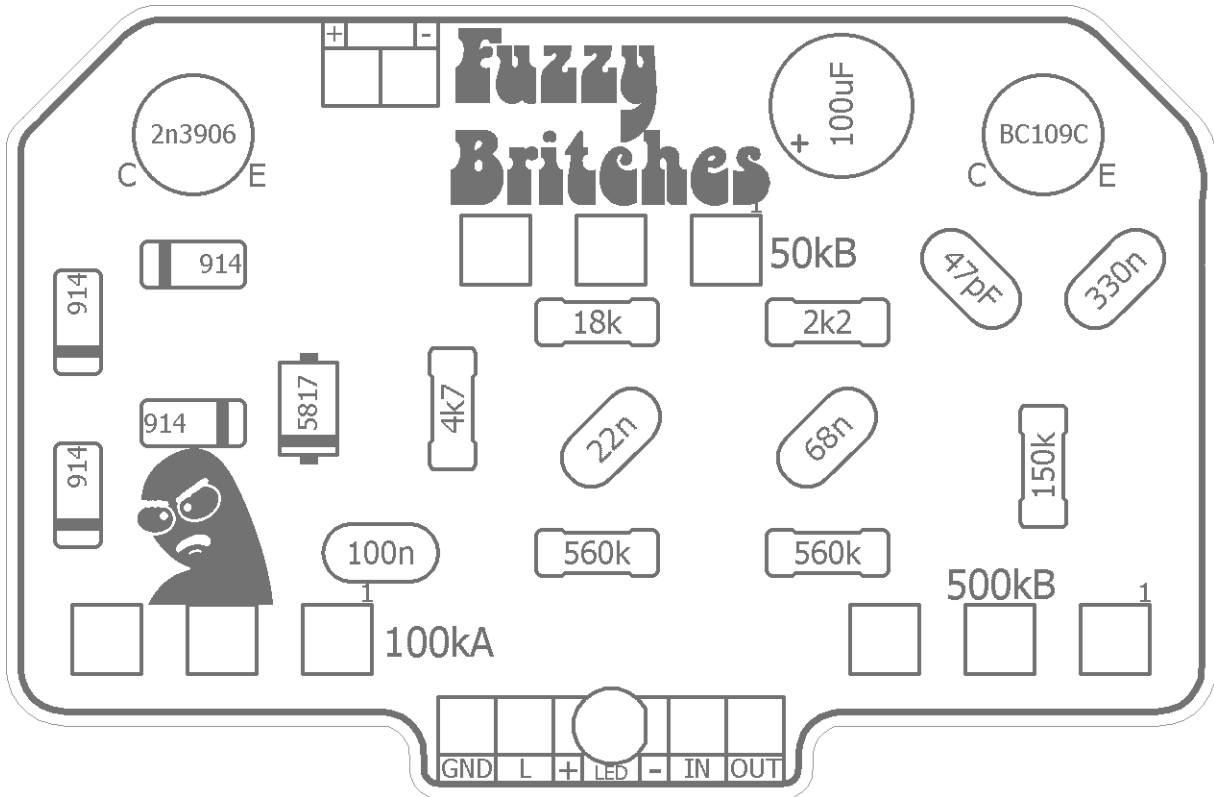
Technical assistance for your build(s) is available via the [madbeanpedals forum](http://madbeanpedals.com). Please go there rather than emailing me for assistance on builds. This is because (1) I'm not always available to respond via email in a timely and continuous manner, and (2) posting technical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



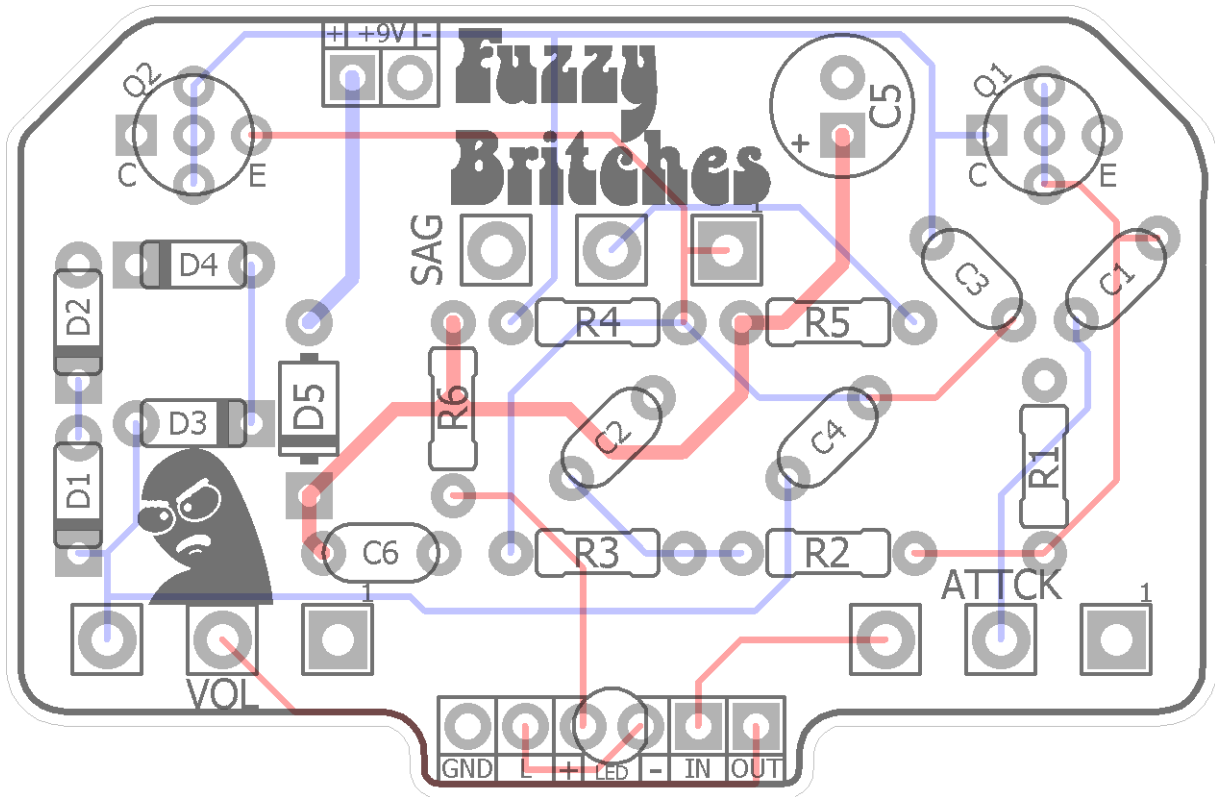
The parts numbering is the same whichever version you build.



Boss Tone™ values. This version requires three jumpers:
The Sag control is not used and is jumpered.
Two of the clipping diodes are jumpered.



KMA Fuzzy Bear™ values. This version does not require jumpers.



Boss Tone™

Resistors		Caps		Diodes	
R1	150k	C1	22n	D1	1n914
R2	560k	C2	22n	D2	jumper
R3	560k	C3	47pF	D3	914
R4	18k	C4	22n	D4	jumper
R5	18k	C5	100uF	D5	1n5817
R6	4k7	C6	100n	Transistors	
				Q1	NPN
				Q2	PNP
				Pots	
				SAG	jumper
				VOL	100kA
				ATTCK	100kB

See Notes for info about transistors for the Boss Tone™

KMA Fuzzly Bear™

Resistors		Caps		Diodes	
R1	150k	C1	330n	D1 - D4	1n914
R2	560k	C2	22n	D5	1n5817
R3	560k	C3	47pF	Transistors	
R4	18k	C4	68n	Q1	BC109C
R5	2k2	C5	100uF	Q2	2n3906
R6	4k7	C6	100n	Pots	
				SAG	50kB
				VOL	100kA
				ATTCK	500kB

See Notes for my recommendation on the Sag control for the Fuzzly Bear™

Boss Tone™

Values	QTY	Type	Rating
4k7	1	Metal / Carbon Film	1/4W
18k	2	Metal / Carbon Film	1/4W
150k	1	Metal / Carbon Film	1/4W
560k	2	Metal / Carbon Film	1/4W
47pF	1	MLCC / Ceramic	16v min.
22n	3	Film	16v min.
100n	1	Film	16v min.
100uF	1	Electrolytic	16v min.
1n914	2		
1n5817	1		
NPN	1	*your choice	
PNP	1	*your choice	
100kA	1	PCB Right Angle	16mm
100kB	1	PCB Right Angle	16mm

KMA Fuzzly Bear™

Values	QTY	Type	Rating
2k2	1	Metal / Carbon Film	1/4W
4k7	1	Metal / Carbon Film	1/4W
18k	1	Metal / Carbon Film	1/4W
150k	1	Metal / Carbon Film	1/4W
560k	2	Metal / Carbon Film	1/4W
47pF	1	MLCC / Ceramic	16v min.
22n	1	Film	16v min.
68n	1	Film	16v min.
100n	1	Film	16v min.
330n	1	Film	16v min.
100uF	1	Electrolytic	16v min.
1n914	4		
1n5817	1		
BC109C	1		
2n3906	1		
50kB	1	PCB Right Angle	16mm
100kA	1	PCB Right Angle	16mm
500kB	1	PCB Right Angle	16mm

BC109:

<https://stompboxparts.com/semiconductors/bc109-npn-transistor-metal-can-njs/>

2n2222a:

<https://stompboxparts.com/2n2222a-npn-transistor-metal-can/>

16mm Pots:

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

<https://lovemyswitches.com/16mm-potentiometers-1-4-smooth-shaft-right-angle-pcb-mount/>

Low Profile DC Jack:

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

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

Mono 1/4" jacks:

<https://stompboxparts.com/audio-jacks/>

<https://lovemyswitches.com/categories/1-4-jacks-and-cables/mono-jacks.html>

My preferred 3PDT switch:

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

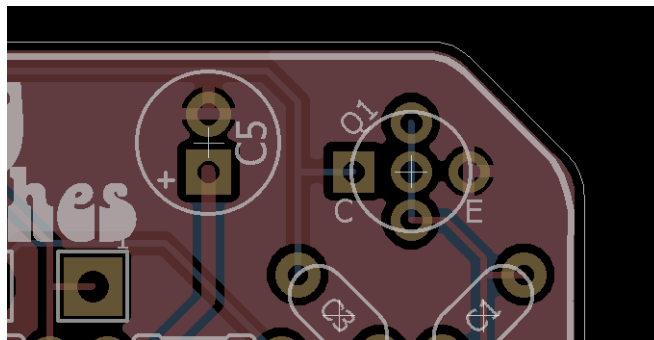
Stompboxparts "Essentials" kit:

<https://stompboxparts.com/jacks/the-essentials-hardware-pack/>

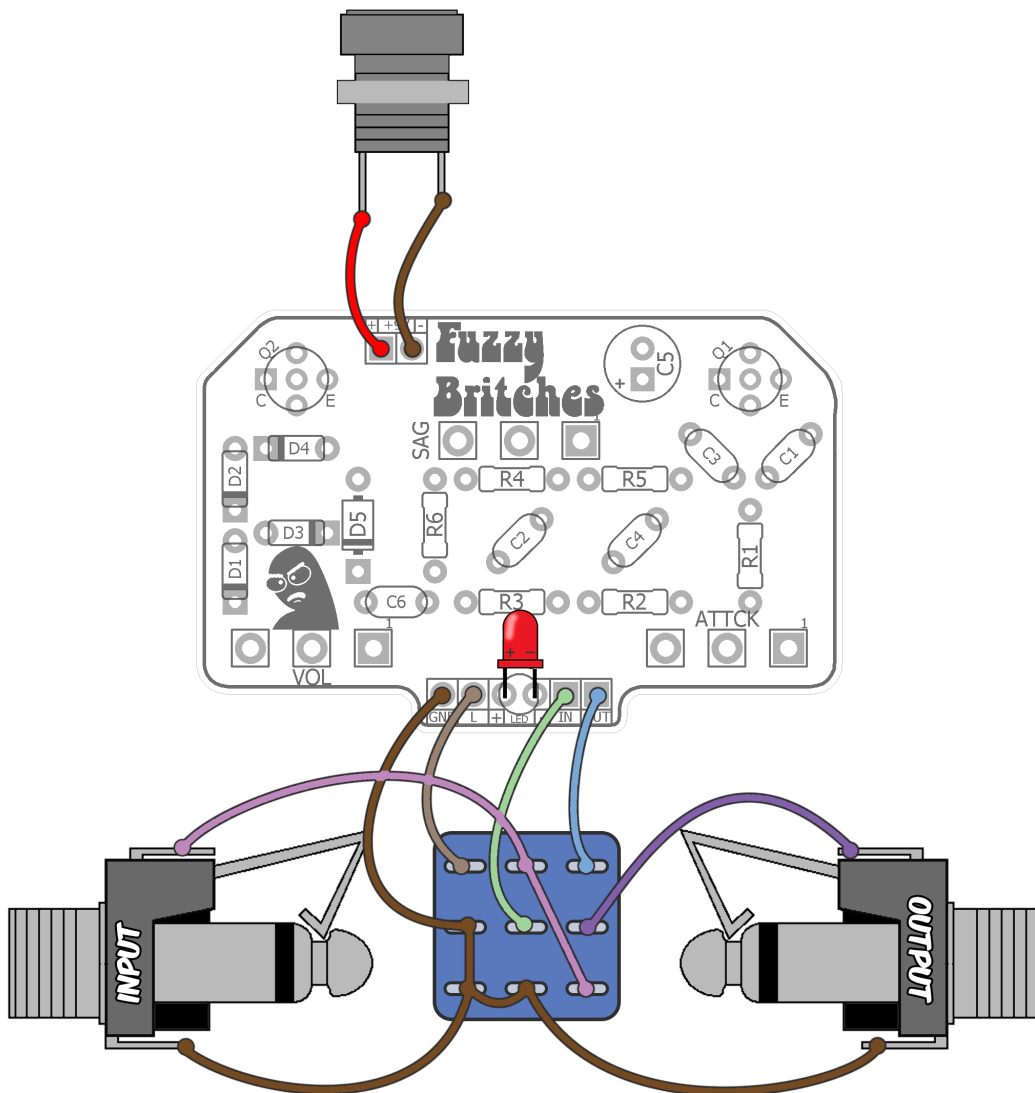
The FuzzyBritches is being introduced as a giveaway board so I only had time to build one version. For mine I chose the Fuzzly Bear™. At some point I hope to build up a couple variations of the Boss Tone™ as well. For the KMA version, I could not quite reproduce the same “voltage sag” effect I heard on the demos. Built stock, I got maybe 50% of the way there. I did sub in a BC108 for the BC109C, so it’s possible the lower gain transistor had something to do with it.

However, I did find that by simply increasing the Sag pot value I could get all the range of the demos and much, much more! So, I chose a 250kA pot for my Sag control. This value takes it to “just about broken” fuzz territory which I think sounds great in this circuit. Also, about 2/3rd up on the control I was getting some really cool sub-octaves on the lower notes. Give it a try!

For the Boss Tone™ it seems there were a variety of transistors used. I’ve seen quite a few builds using 2n2222a for Q1 and 2n3906 for Q2. I recommend using any NPN in Q1 with an HFE in the 300-600 range and probably stick with the 2n3906 for Q2. The PCB is laid out in a multipin format so if you are experimenting with transistors that have different pinouts, it should be easy to do so on the FuzzyBritches.

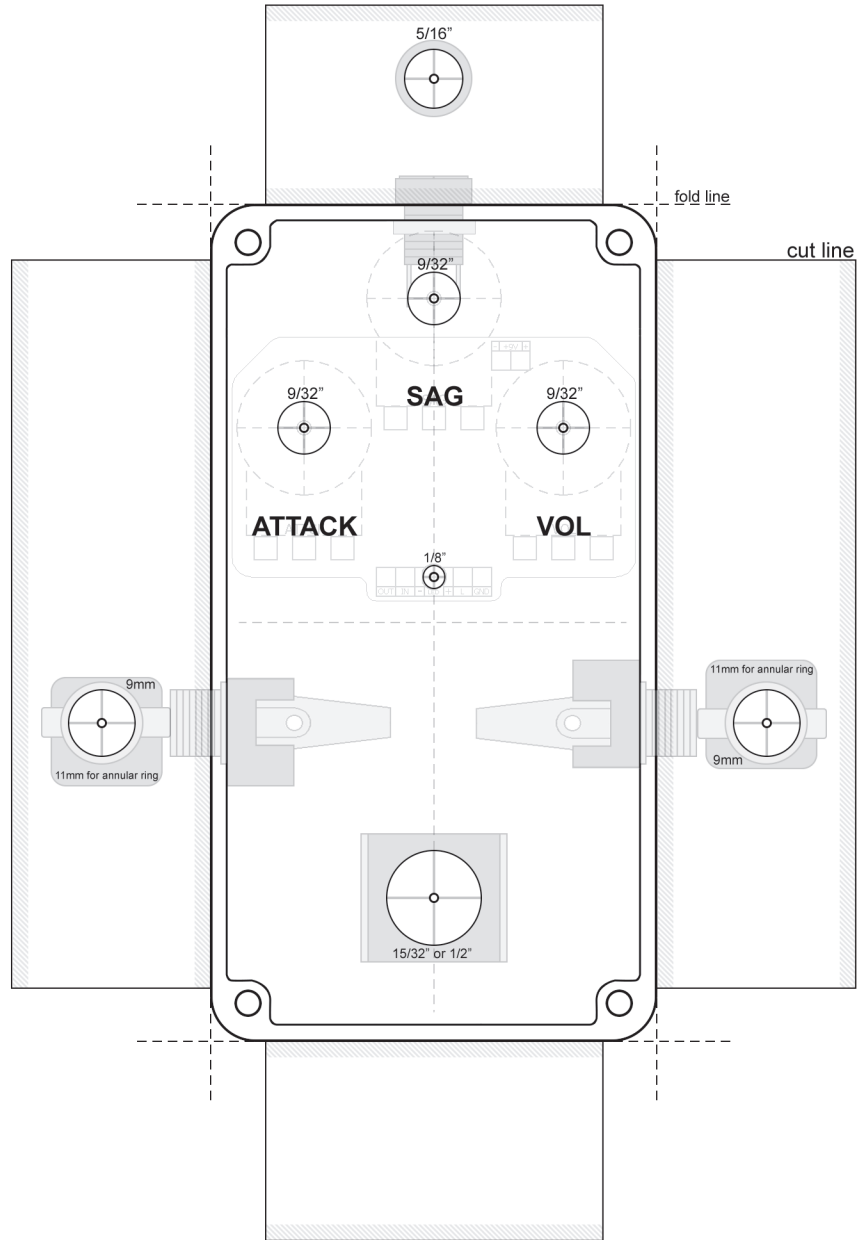


On Q1 and Q2 the center row of three pads is connected to base. This allows you to use any number of transistors with different pin configurations.



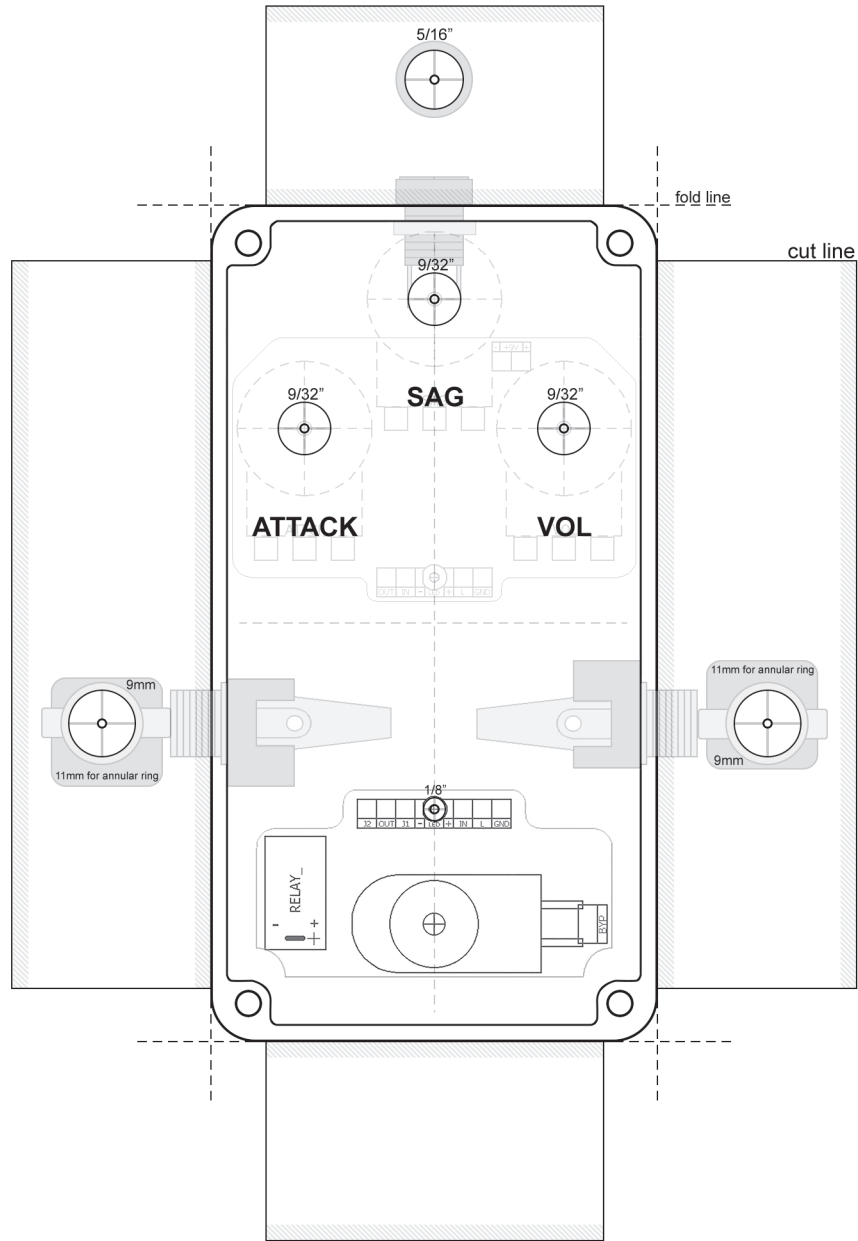
3PDT bypass wiring. If you want to use the Softie3 relay bypass instead (sold separately) please refer to that project documentation for wiring instructions.

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



Use this drill template for regular 3PDT bypass. If you are not using the Sag control be sure you don't mistakenly drill for it!

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



Use this drill template for Softie3 relay bypass (sold separately). Note the different LED location.

KMA build			
"Sag" at 0		"Sag" at 100	
Q1	BC108	Q1	BC108
C	3.89	C	3.93
B	546mV	B	518mV
E	0	E	0
Q2	2n3906	Q2	2n3906
C	0	C	0
B	3.89	B	3.93
E	4.62	E	4.22

9.42v One Spot power supply
 Using a 250k pot for Sag
 Current Draw: 2mA

