

PASTYFACE2020

FX TYPE: Fuzz

Based on the Fulltone® Soul Bender™

Enclosure Size: 1590B, 1590B2, 125B

"Softie" compatibility: Softie1&2

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Overview

The Fulltone SoulBender™ is a monster. Part Tonebender and part Burns Buzzaround (actually, it has more in common with the latter), and all attitude. I first got into this effect because the other guitar player in my band had one of the early 90's big box versions. Every time he kicked it on it was like a wall of magic sand gliding over his tone. That's the best descriptor I can muster.

In the past I've referred to it as a Tonebender variation but it's probably more accurate to call it a Baldwin Burns Buzzaround™ clone but without the Balance control. However you want to label it: what a great fuzz!

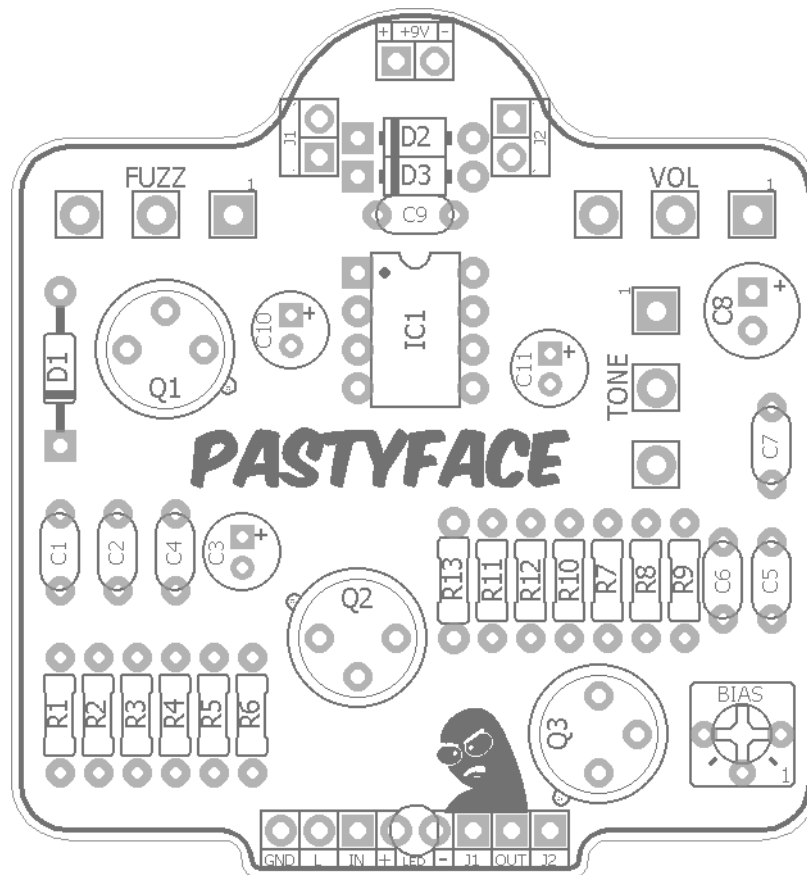
The main difference b/w the PastyFace and the original SoulBender™ is the addition of a voltage inverter. This allows you to run the fuzz off a standard 9v supply to power the positive ground circuit.

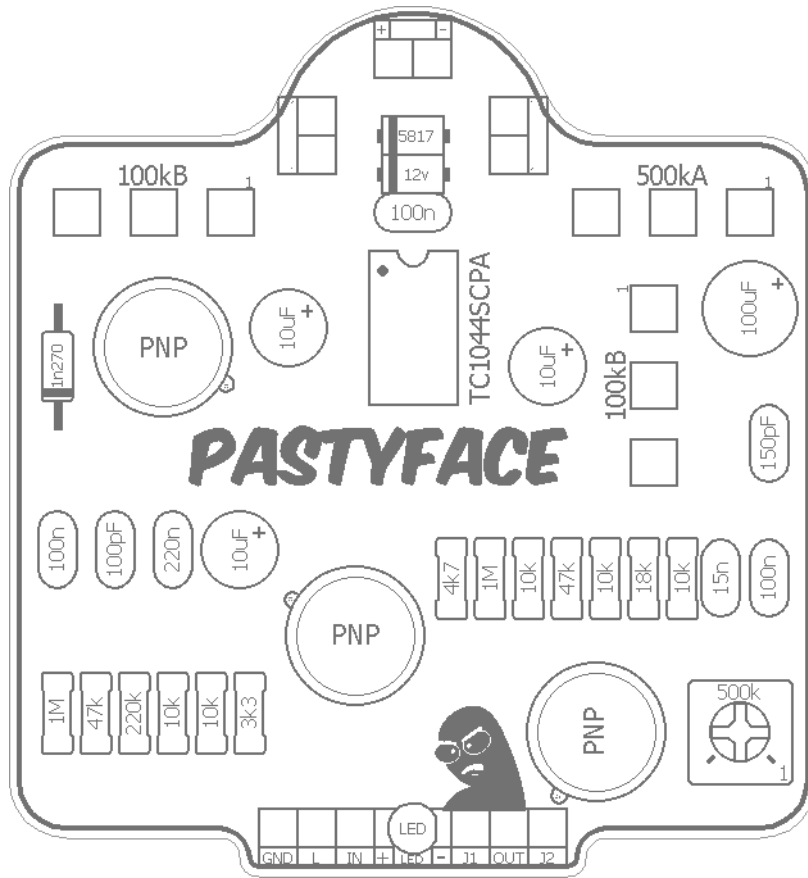
Controls

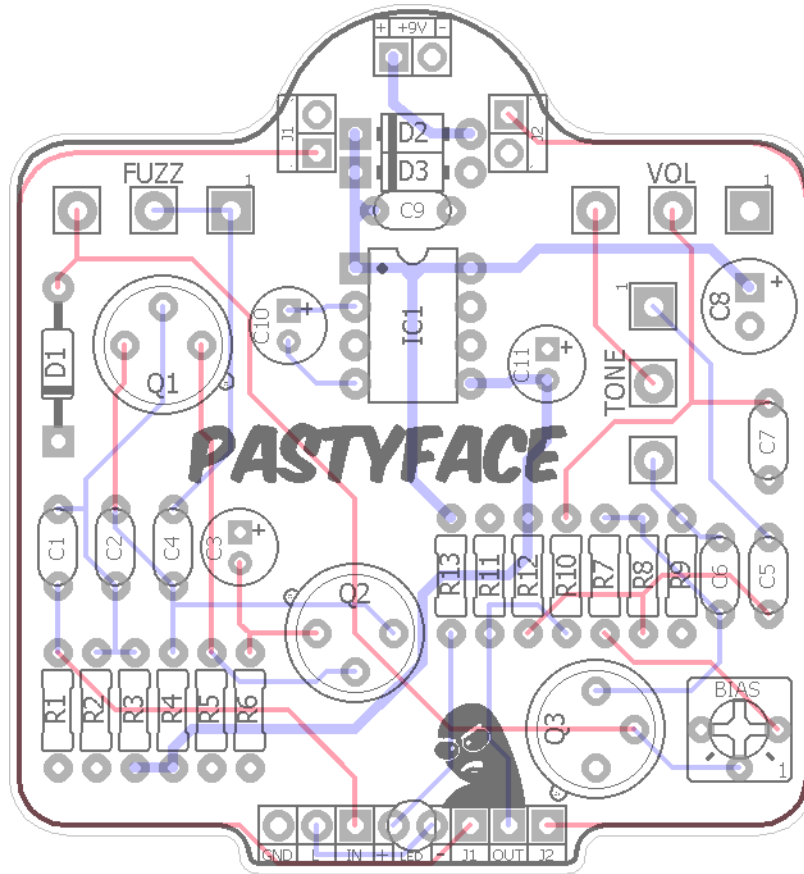
- **VOL, TONE, FUZZ:** Self-explanatory
- **BIAS** - This trimmer sets the bias of the Q3 collector for maximum fuzz.

Terms of Use: You are free to use purchased **Pastyface2020** circuit boards for both DIY and small commercial operations. You may not offer **Pastyface2020** 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	1n270
R2	47k	C2	100pF	D2	1N5817
R3	220k	C3	10uF	D3	12v
R4	10k	C4	220n	Transistors	
R5	10k	C5	100n	Q1 - Q3	PNP
R6	3k3	C6	15n	IC	
R7	10k	C7	150pF	IC1	TC1044SCPA
R8	18k	C8	100uF	Trimmer	
R9	10k	C9	100n	BIAS	500k
R10	47k	C10	10uF	Pots	
R11	1M	C11	10uF	FUZZ	100kB
R12	10k			TONE	100kB
R13	4k7			VOL	500kA

Value	QTY	Type	Rating
3k3	1	Metal / Carbon Film / Carbon Comp	1/4W
4k7	1	Metal / Carbon Film / Carbon Comp	1/4W
10k	5	Metal / Carbon Film / Carbon Comp	1/4W
18k	1	Metal / Carbon Film / Carbon Comp	1/4W
47k	2	Metal / Carbon Film / Carbon Comp	1/4W
220k	1	Metal / Carbon Film / Carbon Comp	1/4W
1M	2	Metal / Carbon Film	1/4W
100pF	1	Ceramic / MLCC	16v min.
150pF	1	Ceramic / MLCC	16v min.
15n	1	Film	16v min.
100n	3	Film	16v min.
220n	1	Film	16v min.
10uF	3	Electrolytic	16v min.
100uF	1	Electrolytic	16v min.
1n270	1	or, 1n34a	
1N5817	1		
12v	1	Zener	
PNP	3	GE PNP	
TC1044SCPA	1		
500k	1	Bourns 3362p	
100kB	2	PCB Mount, Right Angle	16mm
500kA	1	PCB Mount, Right Angle	16mm

PNP transistors:

Smallbear is currently down for COVID-19 but they have matched Tonebender and Buzzaround sets that will work well with this project.

You can use any 1n270, 1n34a or work-alike for the germanium diode:

<http://www.smallbear-electronics.mybigcommerce.com/diode-nos-germanium/>

12v Zener:

<https://www.mouser.com/ProductDetail/78-1N4742A-TAP>

TC1044SCPA:

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

Bourns 3362p (500k):

<https://www.mouser.com/ProductDetail/652-3362P-1-504LF>

<https://www.taydaelectronics.com/potentiometer-variable-resistors/cermet-potentiometers/3362p/500k-ohm-trimmer-potentiometer-cermet-1-turn-3362-3362p.html>

100kB, 500kA: <http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-16mm-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/>

Lumberg Mono:

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

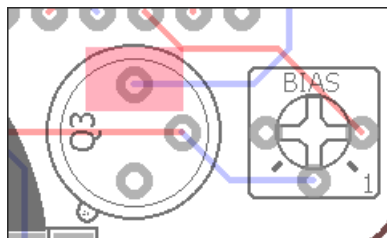
A matched Tonebender or Buzzaround set of germanium transistors is recommended. You must use PNP germanium transistors for all three, however. Target gains for Q1-Q3 are 70-90, 80-100, and 100-120. Matched sets can be purchased from Smallbear or similar suppliers. Smallbear usually supplies either a list or set of resistors that correctly bias the transistors in a standard Tonbender circuit. You can use these values if the provided test circuit is close to the Pastyface schematic. If not, stick with the BOM in this project.

The TC1044SCPA is recommended for the voltage inverter. You can also use the MAX1044CPA or the ICL7660SCPA. Make sure to pay attention to the CPA/SCPA designations. Only use the SCPA versions of the TC1044 or ICL7660. The MAX chip only comes with the CPA designation, but it actually has identical functionality to the other two (makes a lot sense there, doesn't it?)

One thing: Like most fuzz effects, the PastyFace isn't exactly spectacular sounding at lower fuzz settings. The magic happens in the last 1/3rd of the control when the fuzz comes on strong. However, it does respond wonderfully to volume control changes on the guitar. It cleans up!

Biasing the effect

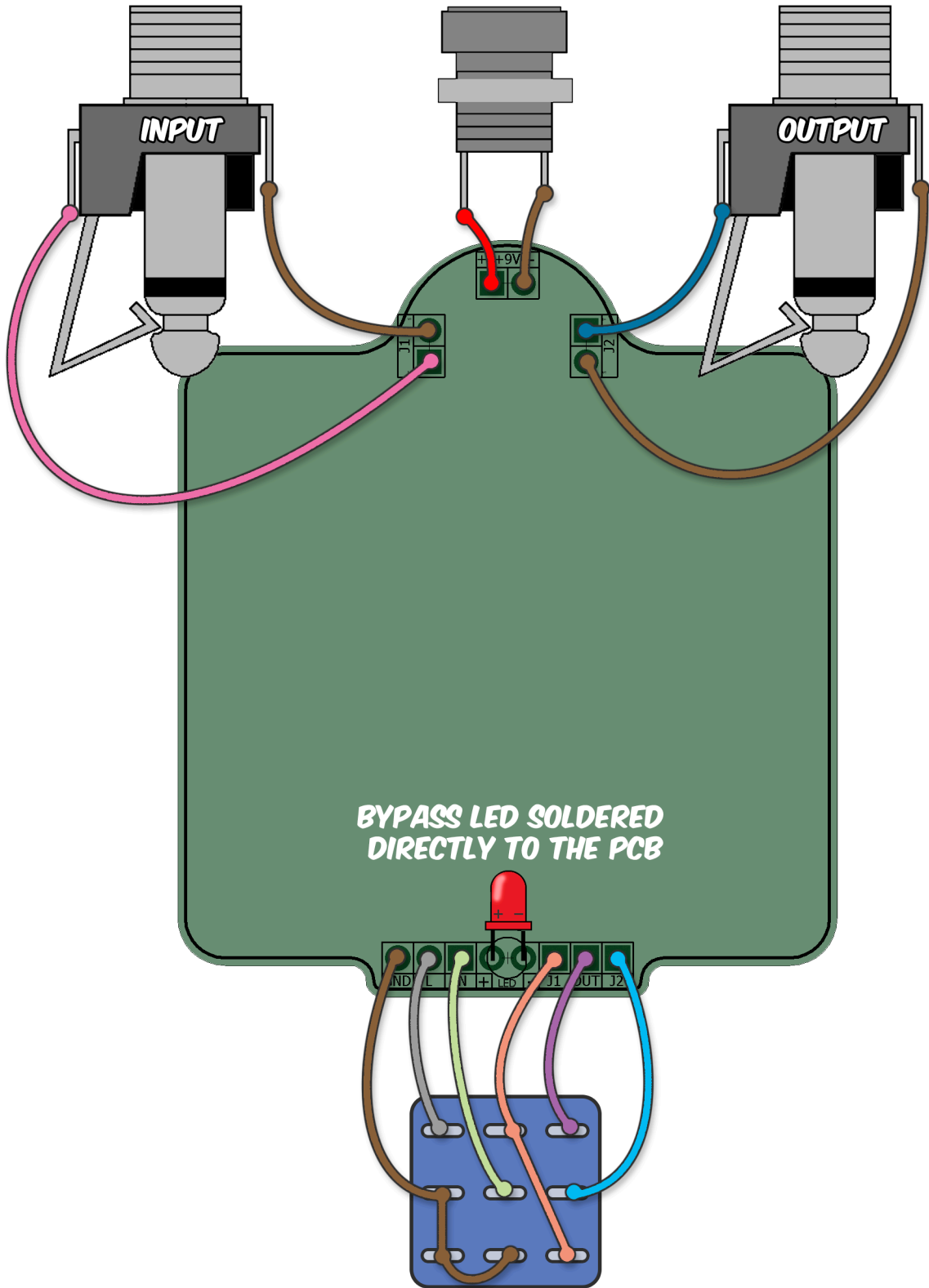
In the past I've instructed to adjust the Bias trimmer until you have approximately -4.5v on the collector of Q3. This is actually not critical. The Pastyface sets its bias via collector/base feedback rather than a fixed resistance to the collector pin (as is the case with many fuzzes). You only need to adjust the Bias trimpot clockwise until you get a thick fuzzy tone (leave the Fuzz control at the max setting when doing this). You can continue to adjust the trimmer further up (which changes the resultant voltage downward since we are using negative voltage) but once you hit the sweetspot there is little detectable difference in trying to match a specific voltage target.



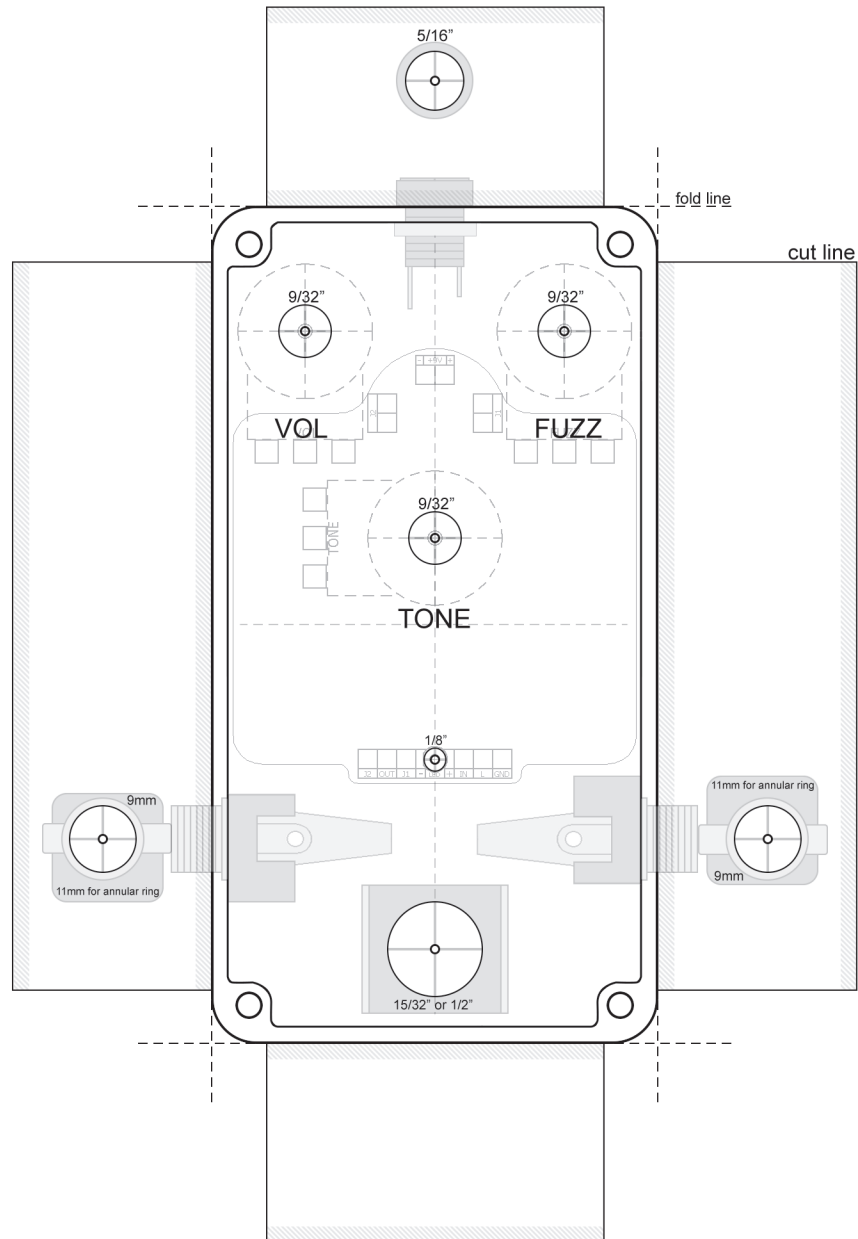
Red area indicates Collector pin.

Build Tip

Before soldering your expensive PNP transistors in place (or inserting them in TO-5 sockets, if you are using them) I suggest first powering up the circuit and verify you have approximately -9v on pin5 of the charge pump. Doing so will ensure that your voltage inverter is working properly and prevent any potential damage to your transistors. Although the risk is small why take chances?

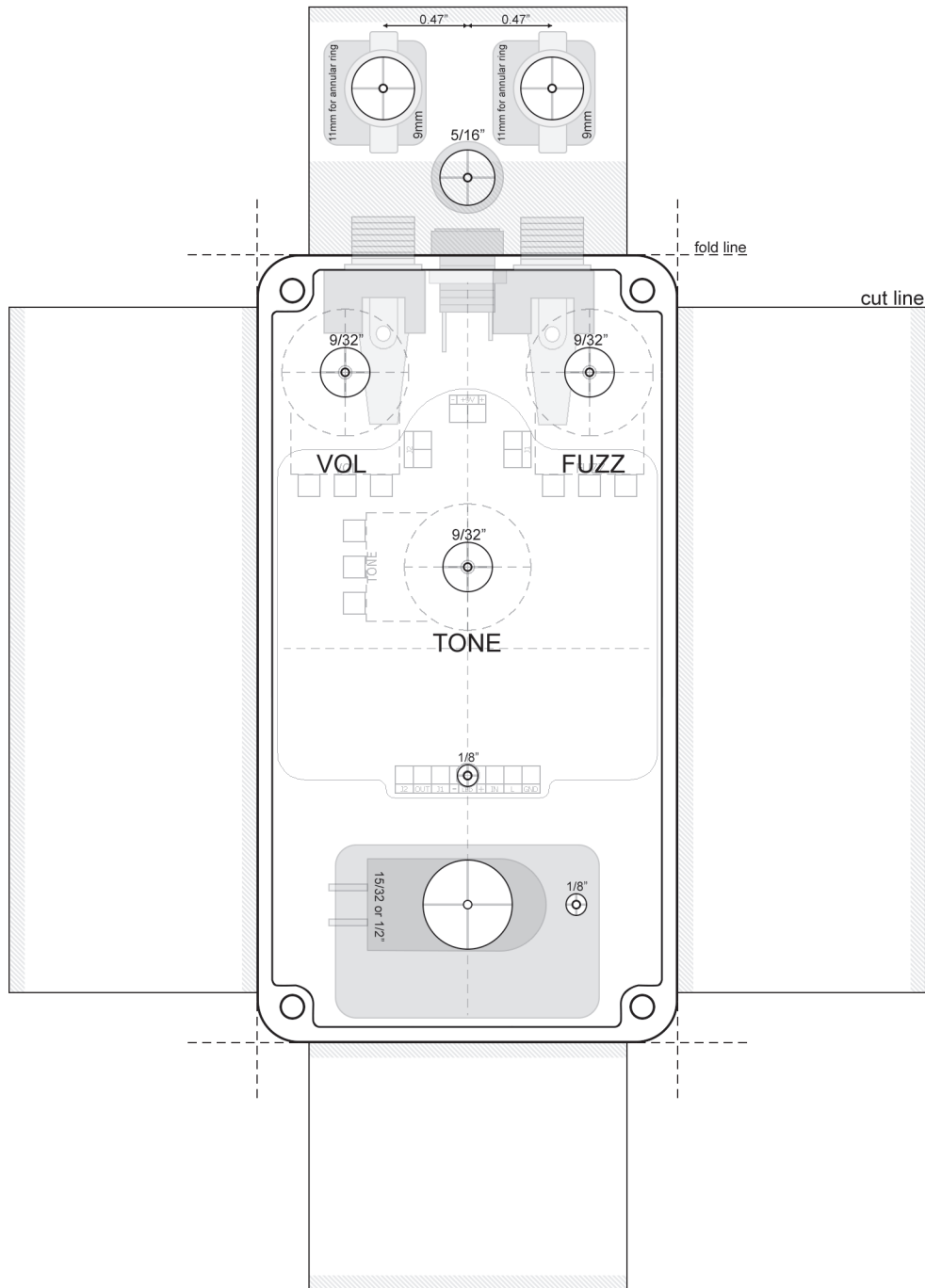


Note: Drill Guides are approximate and may require tweaking depending on the types of jacks, switches and pots you use.



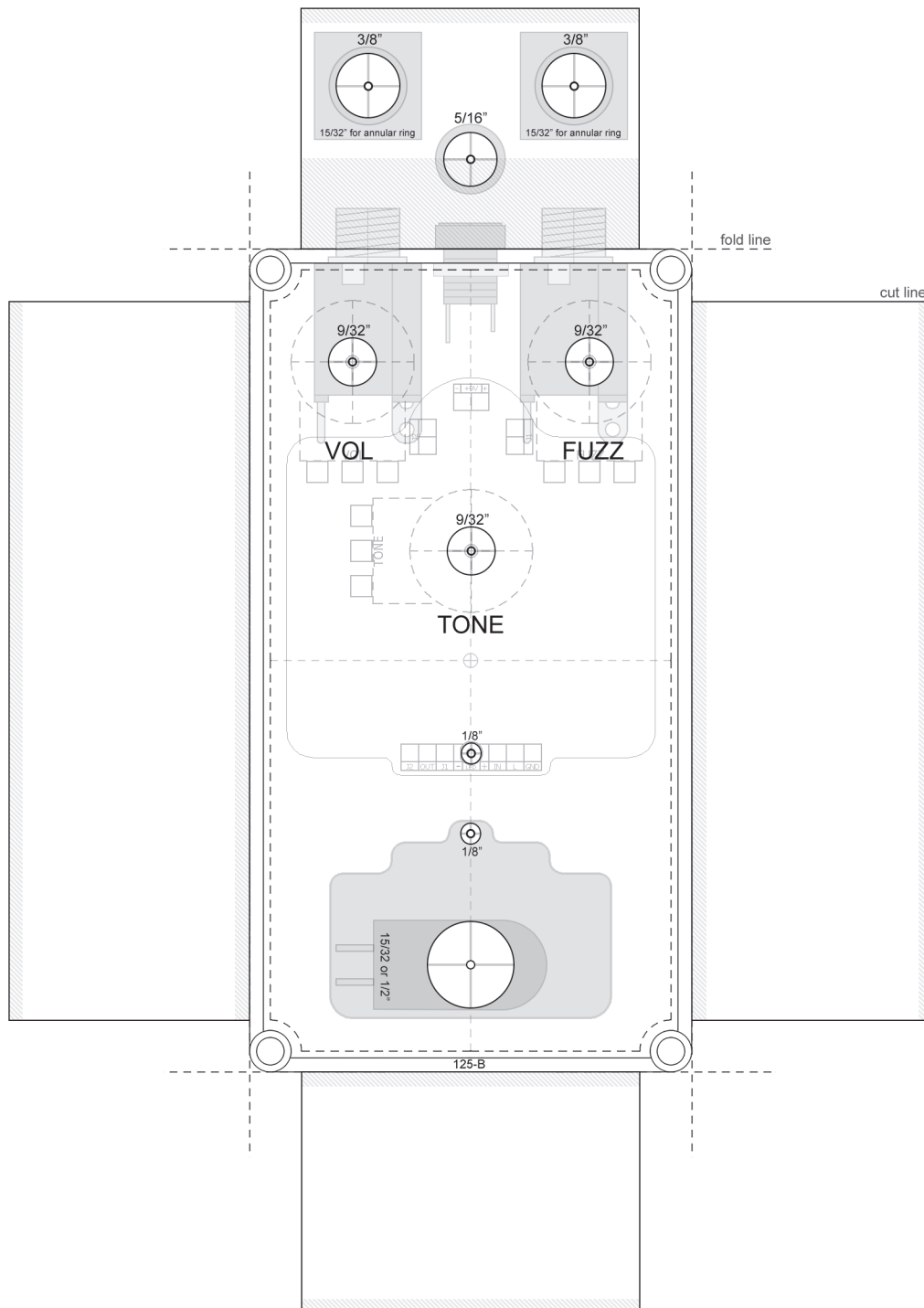
- This is a tight fit, but should work if you use the Lumberg style 1/4" jacks.
- I don't recommend using any of the mbp 3pdt boards for this enclosure.

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



- Shown with Softie 2 relay bypass. If you are using one of the mbp 3pdt bypass boards, or just a 3pdt switch on its own, move the drill spot for the switch a bit lower so you can fit everything properly. Drill only one LED spot!
- Lumberg style jacks are used here but other styles may fit using the same drill locations.

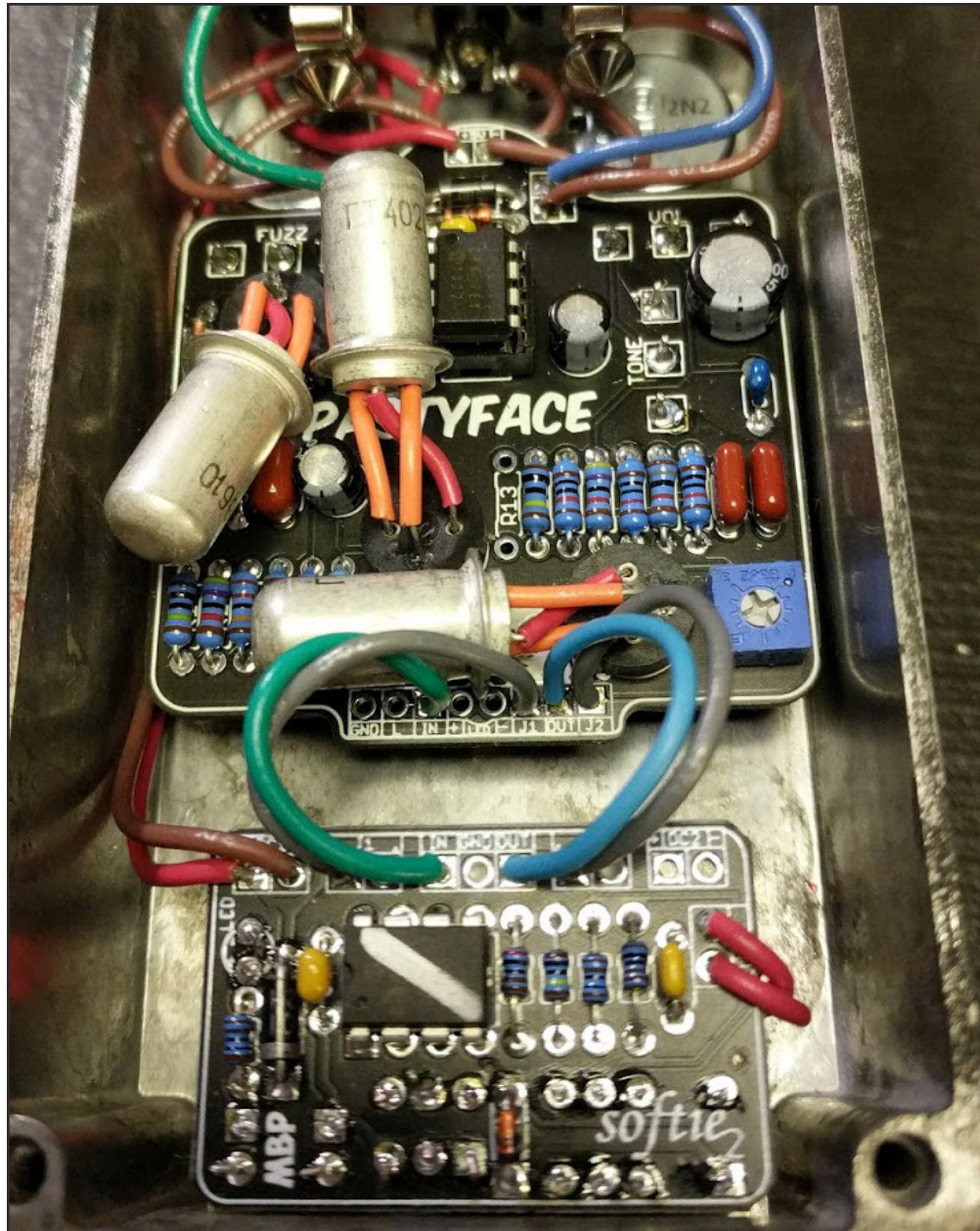
Note: Drill Guides are approximate and may require tweaking depending on the types of jacks, switches and pots you use.



- Shown with Softie 1 relay bypass. Use the same drill spot for 3PDT switch or move to your desired location. Drill only one LED spot!
- Enclosed top jacks are used here, but you should also be able to fit open-frame metal jacks or the Lumberg style.
- You could also use side jacks but you'll need to move the Softie1 drill spot down. If you use side jacks with a regular 3pdt instead of the Softie simply pick your drill spots for the jacks.

IC1	1044SCPA	Q1	PNP
1	9.2	C	-3.49
2	5.47	B	-1.58
3	0	E	-1.49
4	-3.68	Q2	PNP
5	-9.16	C	-3.49
6	4.32	B	-1.49
7	5.65	E	-1.38
8	9.2	Q3	PNP
		C	-4.55
		B	-80mV
		E	0

- 9.42vDC One Spot
- Current Draw ~ 3mA



These are some ancient PNP transistors I got from a forum member many years ago. I kept holding on to them for the right project. Turns out it was the PastyFace2020! The collectors on these were the middle leads so I had to twist them around. I soldered each Base to its socket pin to keep them from coming loose.

Behold their mammoth size. Witness their glory!

HFE: 70, 81, 104, Q1-Q3, resp.

