MINI (CLONE) PCB

LAST UPDATE: July 19, 2023

DISCLAIMER: I am not responsible for any harm or injury or even fatality that may arise from the building and usage of this device/PCB.

BUILD OF MATERIALS

Capacitors

C1	10u
C2	1n
C3	220n
C4	1u
C5	10u
C6	1u
C7	10u
C9	15n
C13	100n
C14	1u
C15	220u

Diodes

D1	LED
D100	1N5817

Semiconductors

Q2	J201
Q3	2N5457
Q4	J201
Q6	2N5089

Resistors

R1	1m
R2	47k
R3	1m
R4	1k
R5	1k
R6	33k
R7	4k7
R8	1k
R9	4k7
R10	1k
R11	1k
R15	1k
R23	10R
R25	4k7
RLED	3K3

Potentiometers

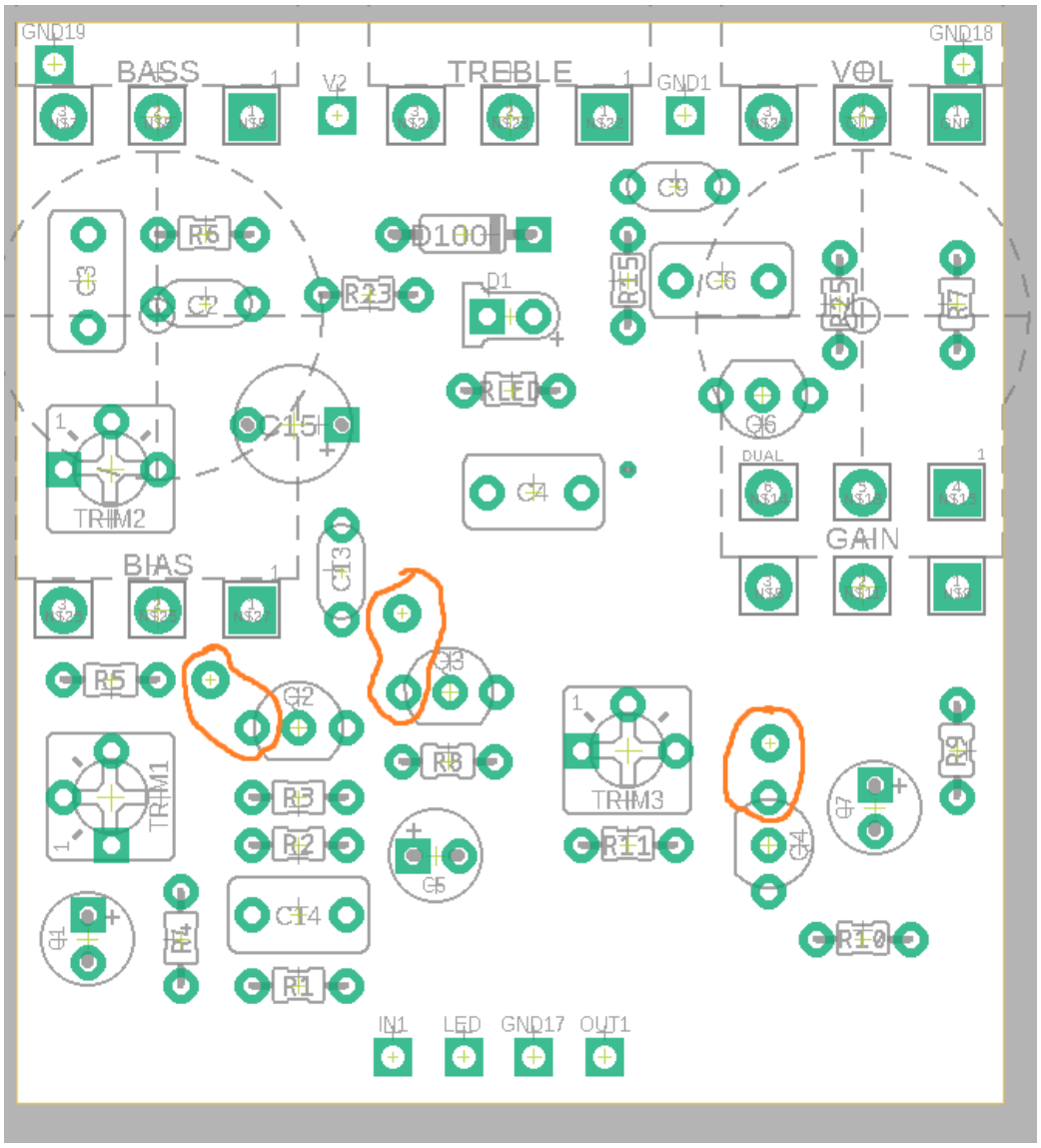
TREBLE	B10K
GAIN	B100K (dual gang)
VOL	A100K
BASS	C1M
BIAS	B10K

TRIM1	50k
TRIM2	10-20k
TRIM3	50k

Notes:

- JFETS
  - Knowledge of biasing and/or selecting JFETs is **HIGHLY RECOMMENDED** and use of SMT JFETs is **HIGHLY RECOMMENDED**.
  - Depending on what JFETs are used (model, specs, etc.), you may need to alter the source resistor (Rs). I recommend socketing R4, R8, and R10. From my own experience, biasing Q3 and finding the appropriate source resistor (R8) is imperative to gain the full potential of the Bias knob.
  - There is a difference in the schematic JFETs and BOM due to the variance in reports about these parts. For example, in Gray Bench's analysis of the pedal, he identified the pedal had three 2N5457 JFETs for Q2, Q3, Q4. In some schematics like Effects Layouts' Liliput, Q2 and Q4 are J201 and Q3 is 2N5457. My builds match the similar JFET choice of Effects Layouts. Furthermore, if you use 2N5457, you will need R4, R8, and R10 accordingly because of the variance in Rs.
- Trimmers
  - Different schematics contain varying values for the trimmers. I personally use 50K in all my builds.
- Bias Knob
  - Preface that there is a Bias knob and there is the action of biasing a JFET's drain voltage.
  - To adjust Q3, the gain stage associated with the Bias knob, set the Bias to noon (50% wiper). Use TRIM2 to bias the drain voltage of Q3 to 4.5V. When turning the Bias knob, your drain voltage should change between 2 to 7V. If the knob does not work, you can either try to adjust the source resistor (make it higher or even lower).
  - If this does not work, you may need to try out another JFET from your supply pile. In my experience (anecdotal), one out of ten of my 2N5457s will not react correctly to the Bias knob.

- Pot Selection
    - For Gain, B100K dual-gang potentiometer was noted in the initial schematic posted on an online forum and corroborated by the initial creator himself. However, Gray Bench noted it is an A100K dual-gang potentiometer in his analyzed model.
    - For Bass, C500K was noted in the initial schematic posted on an online forum and corroborated by the initial creator himself. However, Gray Bench noted it is a C1M potentiometer in his analyzed model.



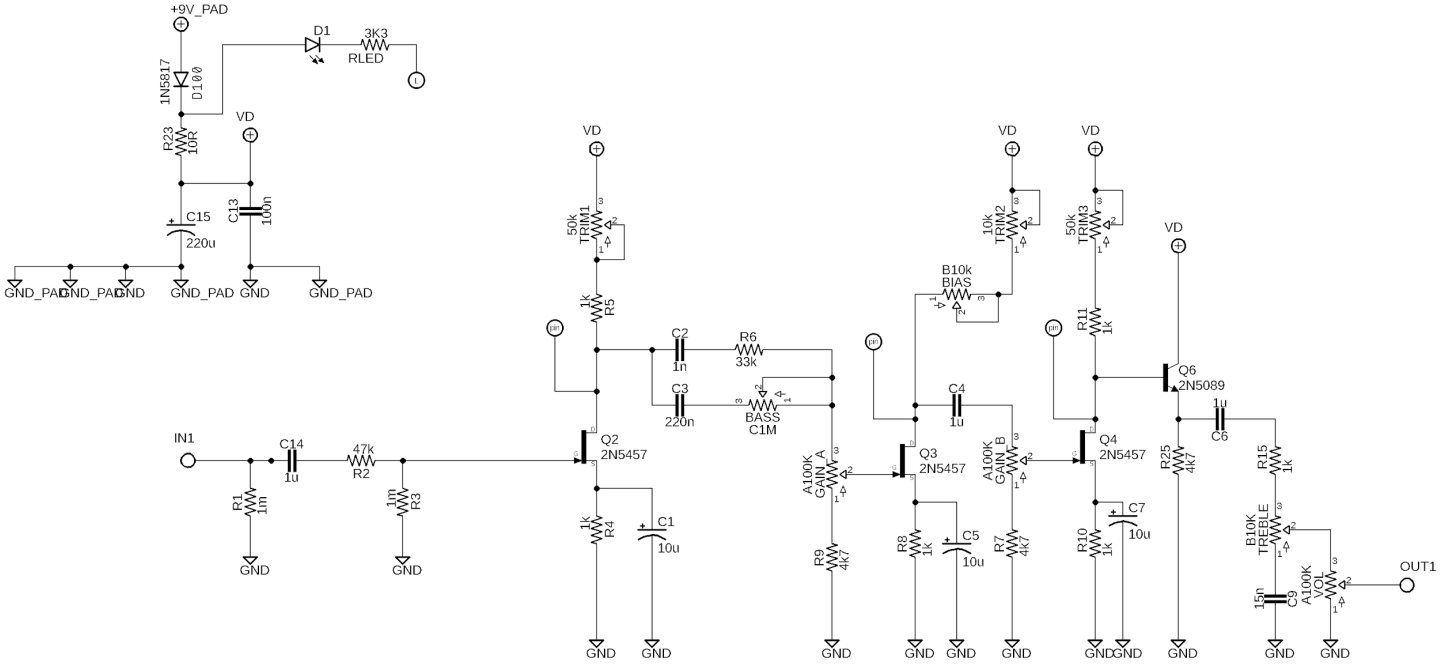
Bias all the drain voltages as follows:

- Q2 = 5.1 V +/- 0.2V
- Q3 = 4.5 V (adjust while Bias knob is 0:00)
- Q4 = 4.5-4.7V

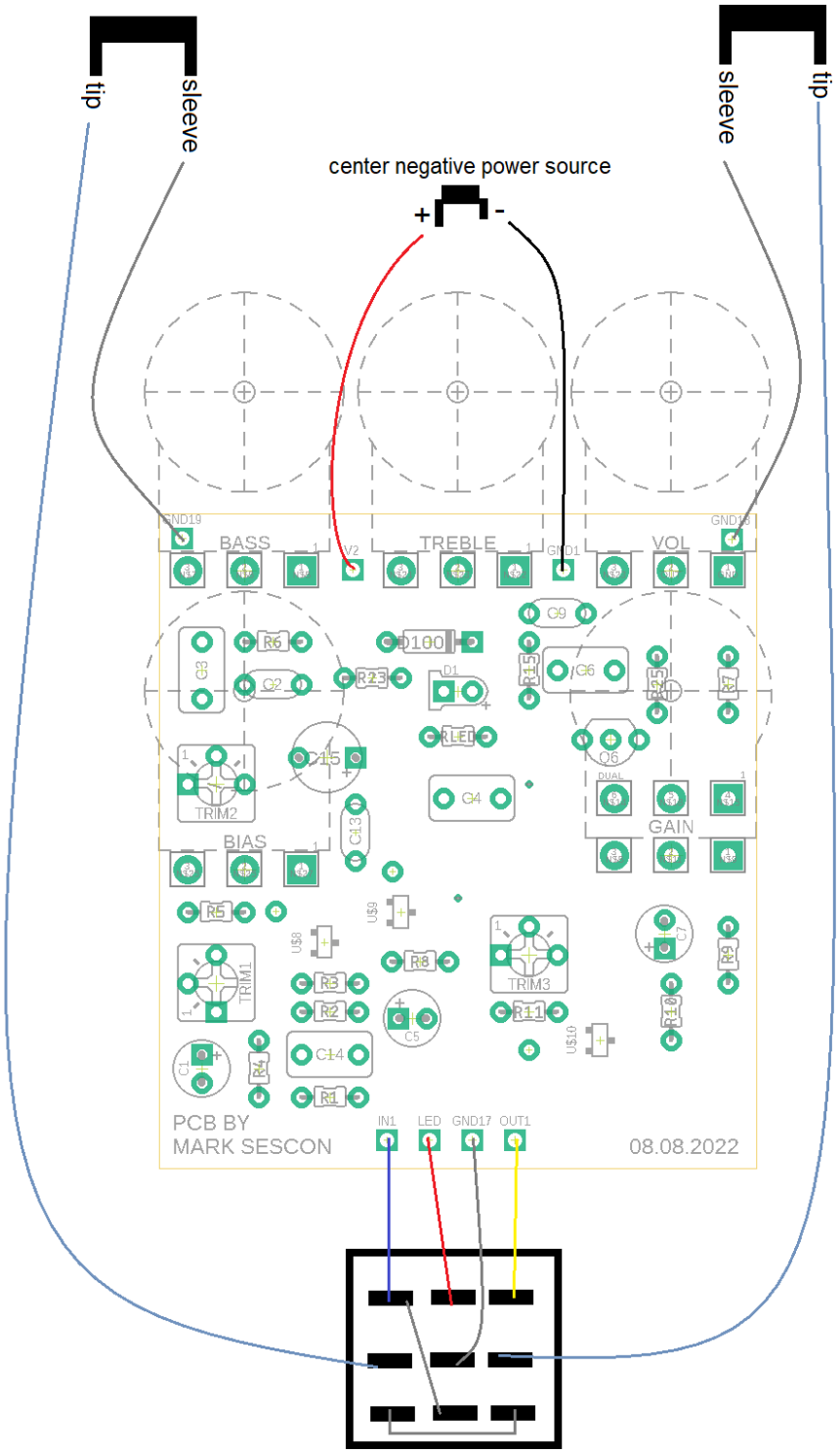
(I personally do 4.5V for all of these.)

You can use the empty pads to place a multimeter probe. The circles show which respective drain pin applies to each empty pad.

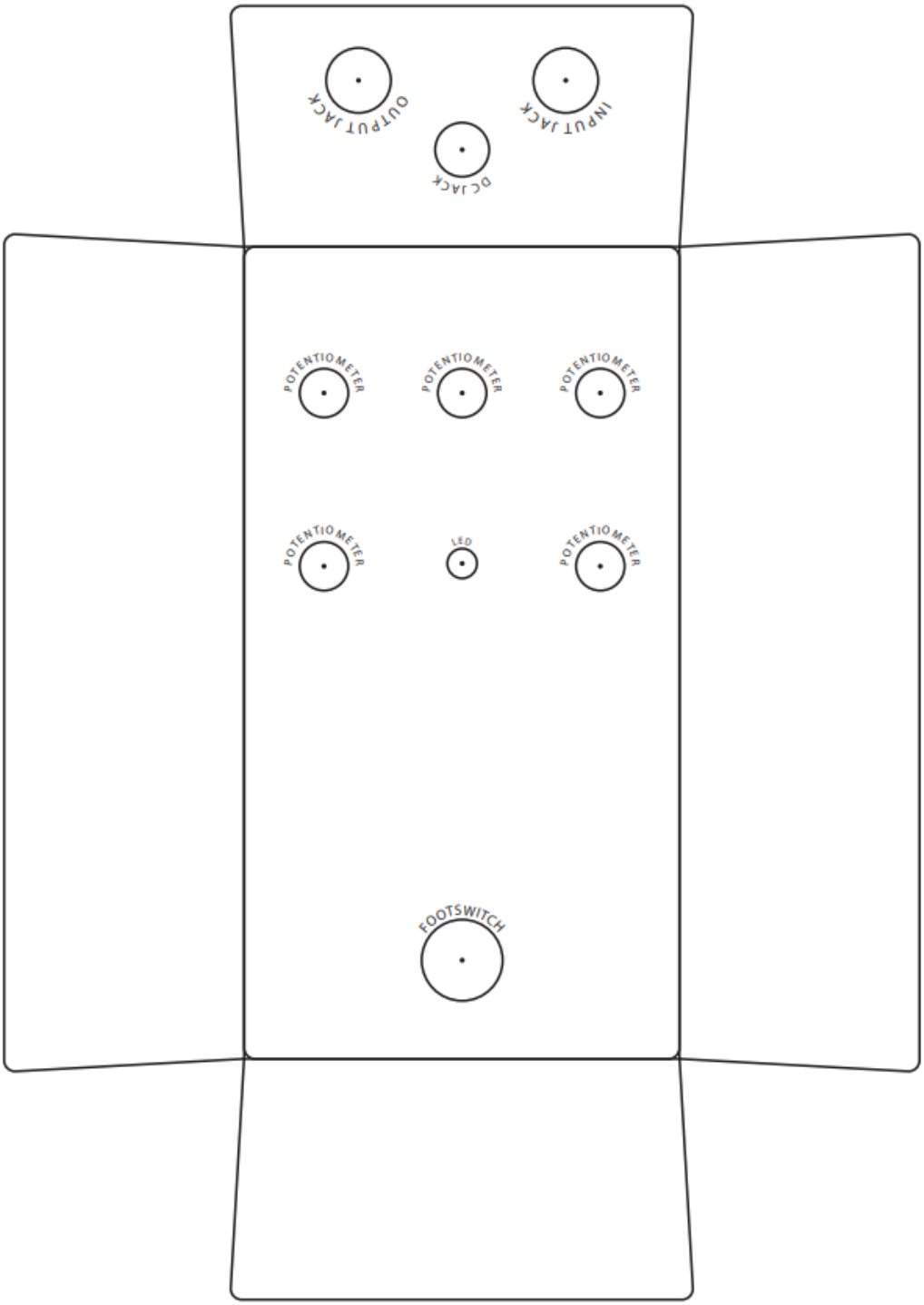
Schematic


+9V_PAD
D1
3K3
RLED
1N5817
D100
R23
10R
VD
C15
220u
C13
100n
GND_PAD
GND
VD
50k
TRIM1
1k
R5
C2
1n
R6
33k
C3
220n
BASS
C1M
IN1
C14
1u
47k
R2
R1
1m
1m
R3
Q2
2N5457
1k
R4
C1
10u
A100K
GAIN_A
R9
4k7
Q3
2N5457
C4
1u
B10k
BIAS
10k
TRIM2
R8
1k
C5
10u
A100K
GAIN_B
R7
4k7
50k
TRIM3
R11
1k
Q4
2N5457
R10
1k
C7
10u
Q6
2N5089
1u
C6
R25
4k7
R15
1k
B10K
TREBLE
15n
C9
A100K
VOL
OUT1

Wiring Diagram



Proposed Drilling Template



DO NOT PRINT THIS OUT AS A DRILLING TEMPLATE. It's meant to be a frame of reference for the *new* PCB layout. Please reference page 5 of this template: https://docs.pedalpcb.com/project/BayonetFuzz.pdfhttps://docs.pedalpcb.com/project/6BandEQ-Potentiometer.pdf.

Be mindful of the LED placement.

Additional Reading:

- Adjusting trimmer of Q3 in light of Bias and the source resistor (R8): https://www.freestompboxes.org/viewtopic.php?t=30921
- Biasing JFETs: http://diy.smallbearelec.com/HowTos/BreadboardBareAss/BreadboardBareAss.htm
- Brian commenting with insight: http://tagboardeffects.blogspot.com/2016/07/smallsoundbigsound-mini-overdrive.html
- Run Off Groove insight on JFETs: http://www.runoffgroove.com/fetzervalve.html

Release Notes

- 2022
  - August 15 - Initial draft.
  - August 21 - Additional instructions about biasing JFETs. Additional instructions about Gain pot selection.
  - August 29 - Additional information about JFET and potentiometer selection. Additional information about how to adjust Bias knob. Wiring diagram.
- 2023
  - May 10 - I have since updated the PCB to accommodate the six knob configuration on Tayda and PedalPCB. No changes to the schematic have been made but some traces have been redone to accommodate this new layout. Included in this BOM is a proposed drill template that references page 5 of this template: https://docs.pedalpcb.com/project/BayonetFuzz.pdfhttps://docs.pedalpcb.com/project/6BandEQ-Potentiometer.pdf. Be mindful of the LED placement.
    - Background: The original PCB is meant to fit in the six knob configuration as proposed by Tayda and PedalPCB. Unfortunately, the spacing of the potentiometers was NOT correct. The original PCB will fit into the six knob configuration on Tayda and PedalPCB but will require the potentiometer legs be bent slightly (0.05 millions of an inch).
  - July - Updated schematic picture and provided additional information about adjusting the drain voltage for Q3. I have come to find that many people are having issues with the Bias knob “not working,” but the solution is quite straightforward albeit does require some cognizance on behalf of the builder.