



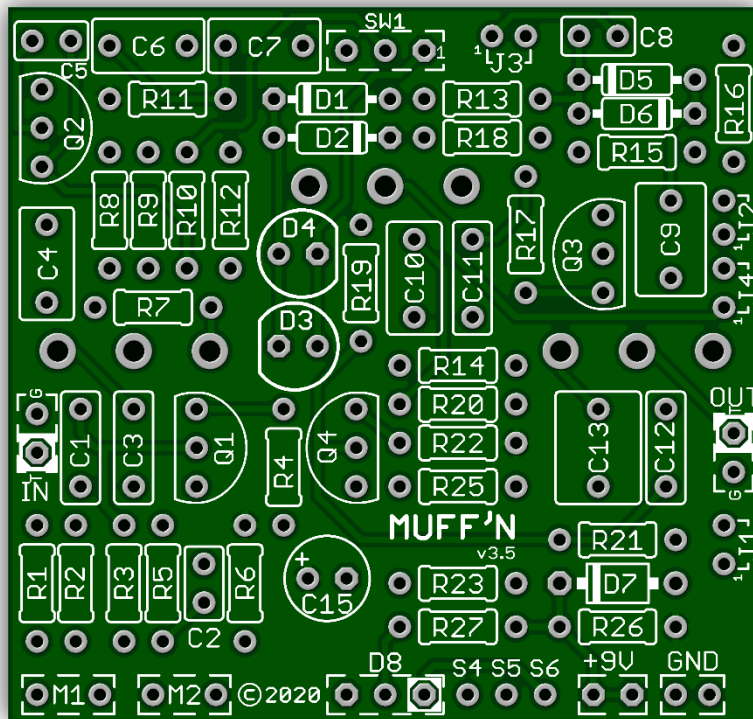
2020 v3.5 – Best DIY Muff PCB in the business.

Note: The only difference in v3.5 is the removal of R24 & C14 which were omitted in all previous versions anyway. We were going to use R24 & C14 as an additional mod option which we decided against. These two values were never part of any original Muff circuit.

There have been a number of Muff variants over the past 40 years. The Triangle, Ram's Head, Violet Ram's Head, Russian, Creamy Dreamer, etc. They are all here! Use our handy chart on Page 3 to easily recreate your favorite variant.

What sets our MUFF'N apart from the rest is our Unique Jumper System. Incorporate (7) popular Mods easily to the main board.

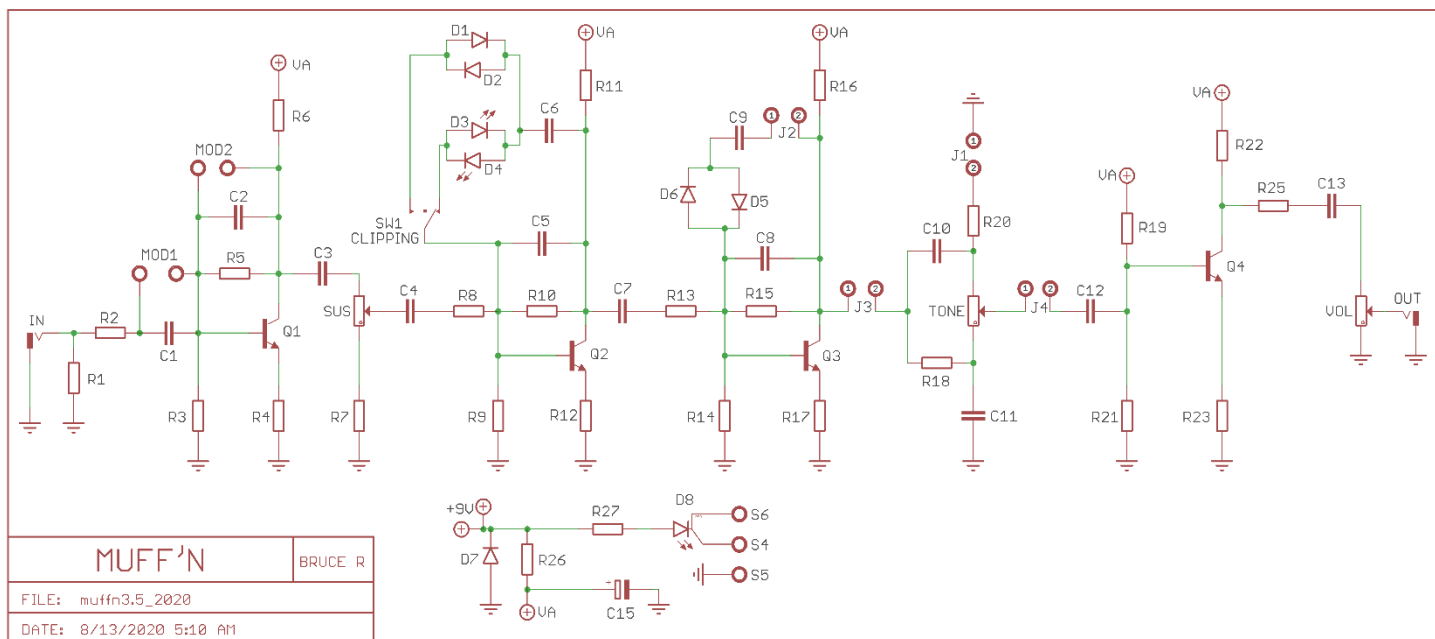
Mods include the Tone Bypass, Muff Bender, Mid Scoop Control, High Pass Filter, Low Pass Filter, LED/Opamp clipping & more!



Board Dimensions are 1.95" x 1.85" (W x H).

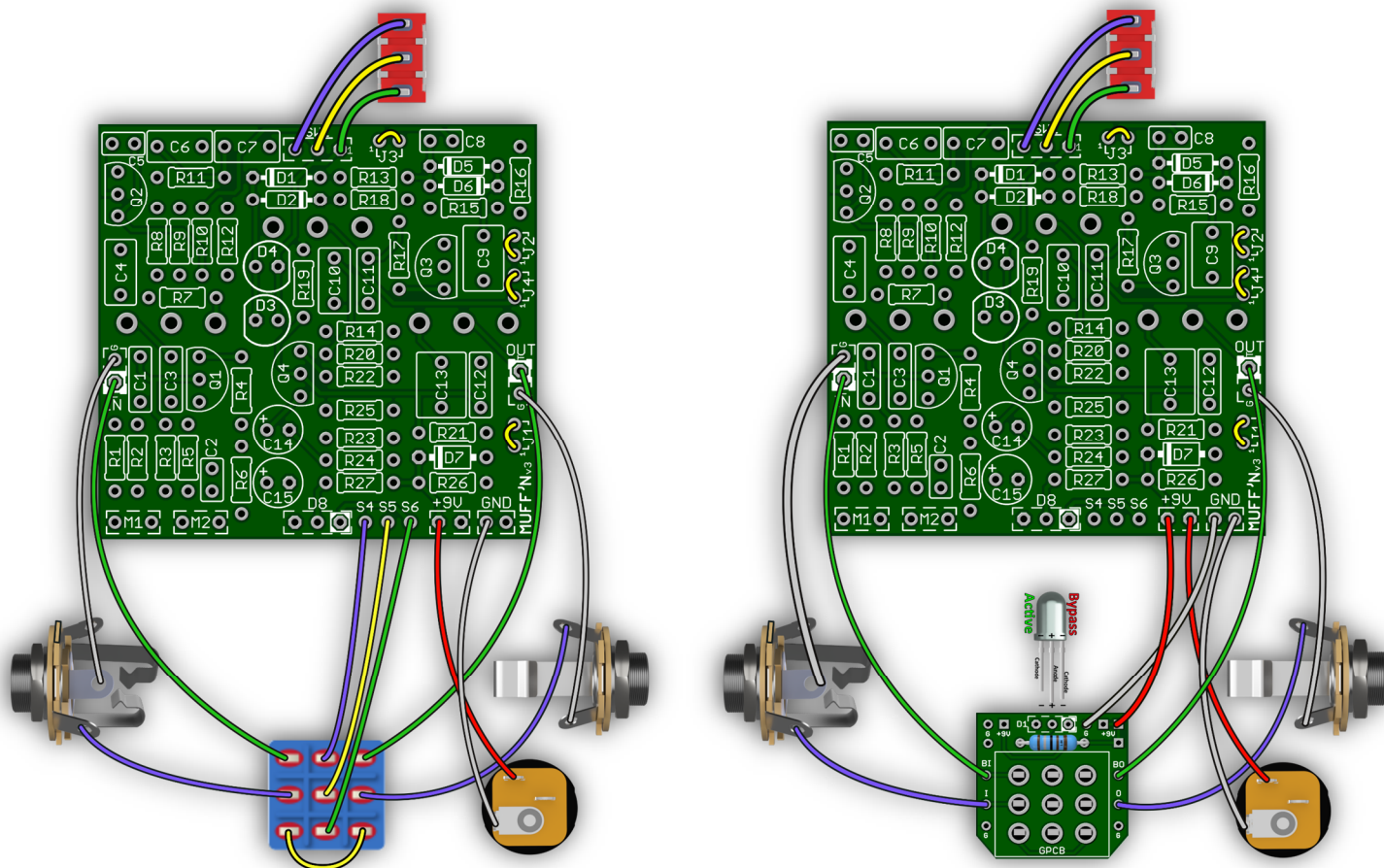
It is not necessary to perform any Modifications however for the more adventurous they are all quite fun and useful.

Mod Components are not included with Kits.



READ ALL INSTRUCTIONS BEFORE STARTING THE BUILD! IF YOU DON'T, YOU MAY MISS AN IMPORTANT STEP.

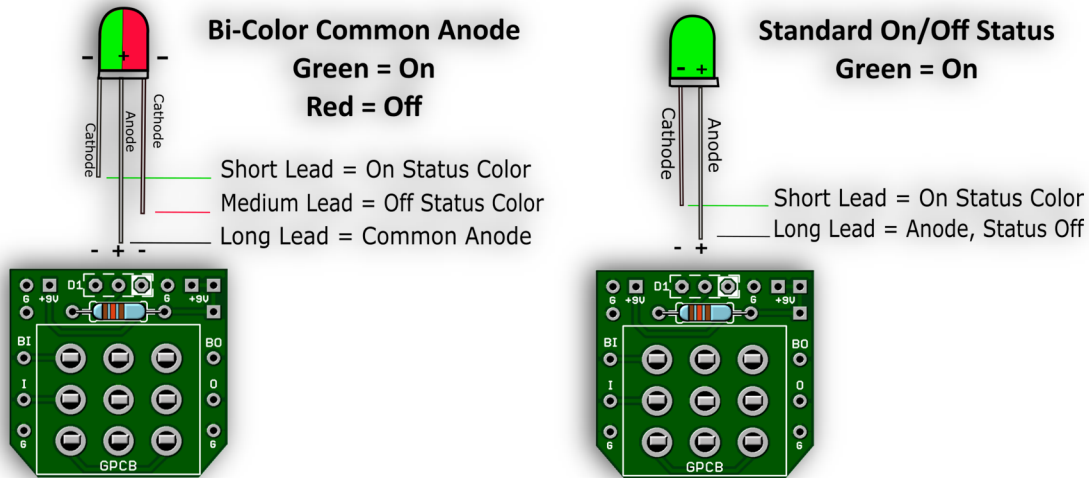
JUMPERS: Be sure to jumper J1, J2, J3 and J4 for all standard builds unless you plan on incorporating an advanced Mod.



Jumpers: Always jumper J1 through J4 for a standard build. These pads are for the GuitarPCB advanced mods starting on Page 5.

	MUFF Variant									
MUFF'N Part #	Ram	Violet Ram	Triangle	3rd Edition	Creamy Dreamer	Foxy Lady	Green Russian	Black Russian	Civil War	Mayo
R1	1M	1M	1M	1M	1M	1M	1M	1M	1M	1M
R2	39k	39k	33k	39k	33k	33k	39k	39k	39k	33k
R3	47k	100k	82K	100k	82k	100k	100k	100k	100k	100k
R4	120R	100R	820R	100R	jumper	100R	390R	390R	390R	100R
R5	470k	470k	390k	470k	470k	470k	470k	470k	470k	470k
R6	10k	15k	22k	15k	22k	12k	12k	12k	12k	18k
R7	1k	1k	1k	1k	1k	8k2	1k	1k	1k	820R
R8	10k	8k2	8k2	8k2	15k or 22k	7k5	10k	10k	10k	8k2
R9	100k	100k	82K	100k	82k	100k	100k	100k	100k	56k
R10	470k	470k	390k	470k	470k	470k	470k	470k	470k	470k
R11	10k	10k	12k	15k	22k	12k	12k	12k	12k	10k
R12	150R	100R	150R	100R	jumper	100R	390R	390R	390R	100R
R13	10k	8k2	8k2	8k2	15k or 22k	7k5	10k	10k	10k	8k2
R14	100k	100k	82k	100k	82k	100k	100k	100k	100k	100k
R15	470k	470k	390k	470k	470k	470k	470k	470k	470k	470k
R16	15k	15k	22k	15k	22k	12k	12k	12k	12k	18k
R17	150R	100R	820R	100R	jumper	100R	390R	390R	390R	150R
R18	22k	39k	39k	39k	39k	100k	20k	22k	20k	33k
R19	430k	390k	390k	390k	470k	390k	470k	470k	470k	390k
R20	39k	39k	39k	100k	39k	33k	22k	22k	22k	33k
R21	100k	100k	100k	100k	3k3	100k	100k	100k	100k	100k
R22	15k	10k	12k	10k	2k2	12k	10k	10k	10k	8k2
R23	3k3	2k7	2k7	2k2	390R	3k3	2k	2k7	2k7	2k7
R24	R24 - Only available on v3.0 or earlier			omit	omit	omit	omit	omit	omit	omit
R25	33k	33k	33k	33k	33k	33k	33k	33k	33k	2k7-see text
R26	100R	100R	100R	100R	100R	100R	100R	100R	100R	100R
R27	3k3	3k3	3k3	3k3	3k3	3k3	3k3	3k3	3k3	3k3
D1,D2,D5,D6	1N914/4148	1N914/4148	1N914/4148	1N914/4148	1N914/4148	1N914/4148	1N914/4148	1N914/4148	1N914/4148	1N914/4148
D3,D4	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED
D7	1N4001	1N4001	1N4001	1N4001	1N4001	1N4001	1N4001	1N4001	1N4001	1N4001
C1	10μ	100n	100n	1μ	100n	120n	100n	100n	100n	100n
C2	560p	470p	omit	500p	560p	omit	470p	430p	560p	470p
C3	100n	100n	100n	1μ	100n	120n	100n	100n	100n	100n
C4	100n	100n	100n	1μ	100n	120n	100n	100n	100n	220n
C5	560p	470p	560p	500p	560p	470p	470p	430p	560p	470p
C6	100n	100n	47n	100n	47n	120n	47n	47n	47n	220n
C7	100n	100n	100n	1μ	100n	120n	100n	100n	100n	220n
C8	560p	470p	560p	500p	560p	470p	470p	430p	560p	470p
C9	1μ	100n	47n	100n	47n	120n	47n	47n	47n	220n
C10	4n7	3n9	3n9	3n9	3n9	3n9	3n9	3n9	3n9	4n7
C11	10n	10n	10n	10n	10n	100n	10n	10n	10n	10n
C12	100n	100n	100n	100n	100n	120n	100n	100n	100n	100n
C13	1μ	100n	100n	1μ	100n	120n	100n	100n	100n	100n
C14	C14 - Only available v3.0 or earlier			omit	omit	omit	omit	omit	omit	omit
C15	100μ	100μ	100μ	100μ	100μ	100μ	100μ	100μ	100μ	100μ
Q1-Q4	2N5133 or 2N5088*	2N5088	2N5133 or 2N5088*	2N5088	2N5088	2N5133 or 2N5088*	BC549C	BC549C	BC549C	2N5133 or 2N5088*
P1-Sus/Fuzz	A100k	A100k	A100k	A100k	A100k	A100k	A100k	A100k	A100k	B100k
P2-Tone	B100k	B100k	B100k	B100k	B100k	B100k	B100k	B100k	B100k	B100k
P3-Volume	A100k	A100k	A100k	A100k	A100k	A100k	A100k	A100k	A100k	A100k
SW1	SPDT**	SPDT**	SPDT**	SPDT**	SPDT**	SPDT**	SPDT**	SPDT**	SPDT**	SPDT**
D8	Bi-Color Common Anode LED	Bi-Color Common Anode LED	Bi-Color Common Anode LED	Bi-Color Common Anode LED	Bi-Color Common Anode LED	Bi-Color Common Anode LED	Bi-Color Common Anode LED	Bi-Color Common Anode LED	Bi-Color Common Anode LED	Bi-Color Common Anode LED

STATUS LED

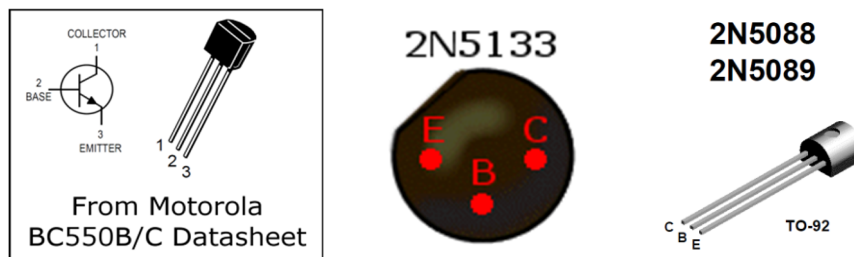


Note: If wiring the LED to our 3PDT board no need to connect S4, S5 & S6 or populate D8 or R27 (CLR) on the main board since you are wiring your LED directly to our board.

Build Notes - More often than not you will likely use easily attainable transistors, however:

- Transistors may require a different orientation on the PCB than what is marked, depending on which transistor make/model is used. The board is printed showing the correct orientation for a Fairchild 2N5088. Since not all muffs use the same transistor, it is **critical** that you check by Googling for the datasheet of the transistor you are using, and verify the pin orientation. Below are a few quick results from an internet search for some common muff transistors.

As you can see, the Motorola BC550C and Fairchild 2N5088 pin-outs are reversed from one another.



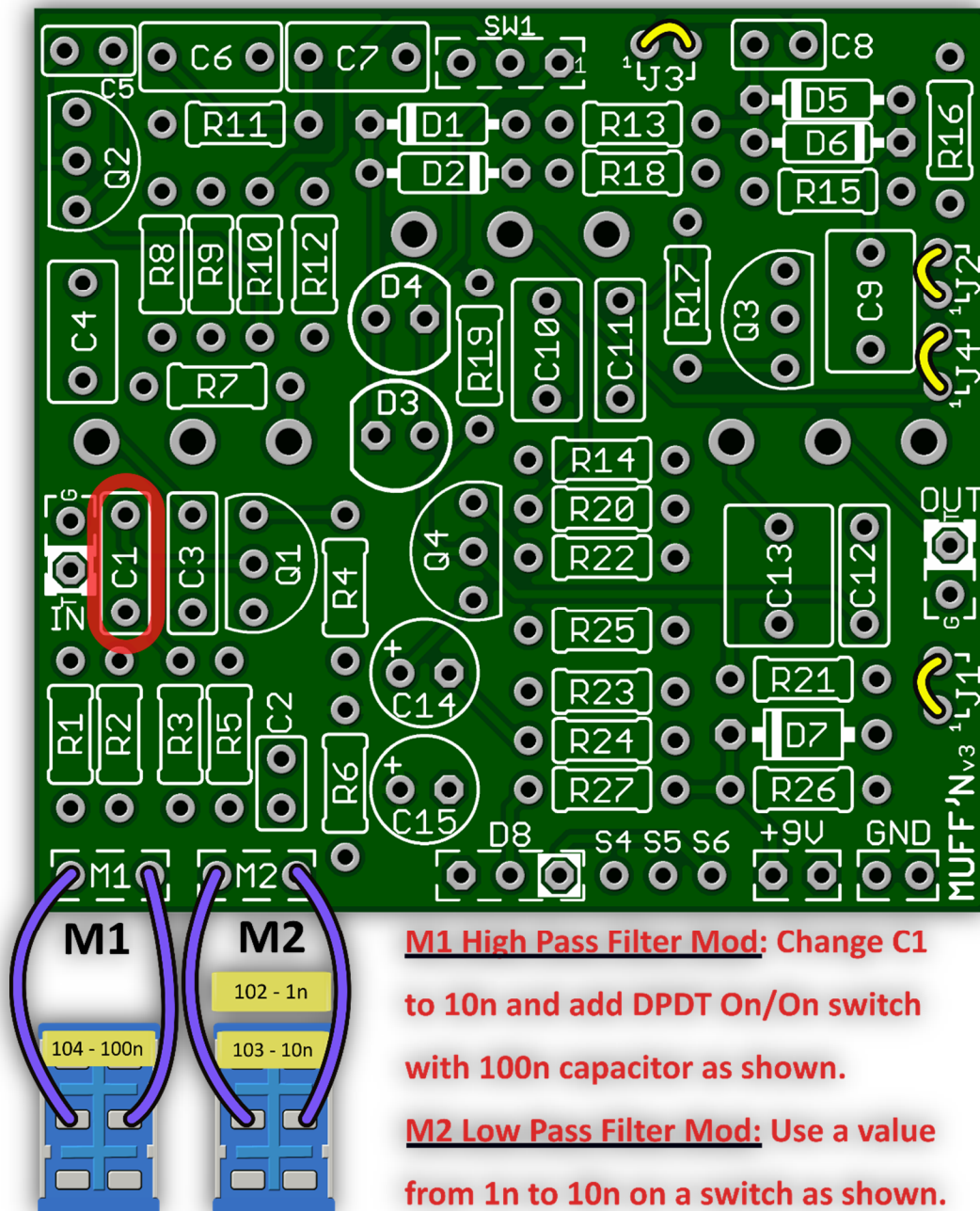
- Transistors: The original 2N5133 was lower gain, in fact, the specs state the minimum gain as 60hFE, whereas the 2N5088 used widely has a minimum gain of 300hFE. If you do choose a Low Gain transistor then R25 should be a jumper. If you use a higher gain transistor, you will need to insert a resistor in R25 to keep the pedal from squealing when all knobs are all turned completely up. 33K is a good value to start with.
- Socketing the board's transistor pads may be worthwhile if you plan to experiment with this. Transistors used in muffs include 2n5088 (our personal favorite and is widely available), 2N5133, BC550C, BC549 and many more. Some of the transistors are out of production and may be difficult to acquire and actually may not sound as good as an available part.
- Commercial muff manufacturers are known to have slightly modified part values, even within a particular muff variant. We collected values from various sources and put what we felt was the most accurate values in the table on the previous page.
- The muff is one of the most popular circuits of all time, there are a lot of variations, and there is a ton of information on the internet for those that want to learn more. Check the [KITRAE SITE](#).

Advanced Mod 1 (M1) and Mod 2 (M2):

Mod M1 is a High Pass Filter. This will reduce the available amount of Bass frequency, tightening your tone. This is known as a High Pass Filter since it will let High Frequencies Pass normally.

Mod M2 is a Low Pass Filter. This will roll off higher frequency notes producing a warm tone. This is called a Low Pass Filter because it lets Low Frequency Pass normally. We suggest you try values from 1n to 10n.

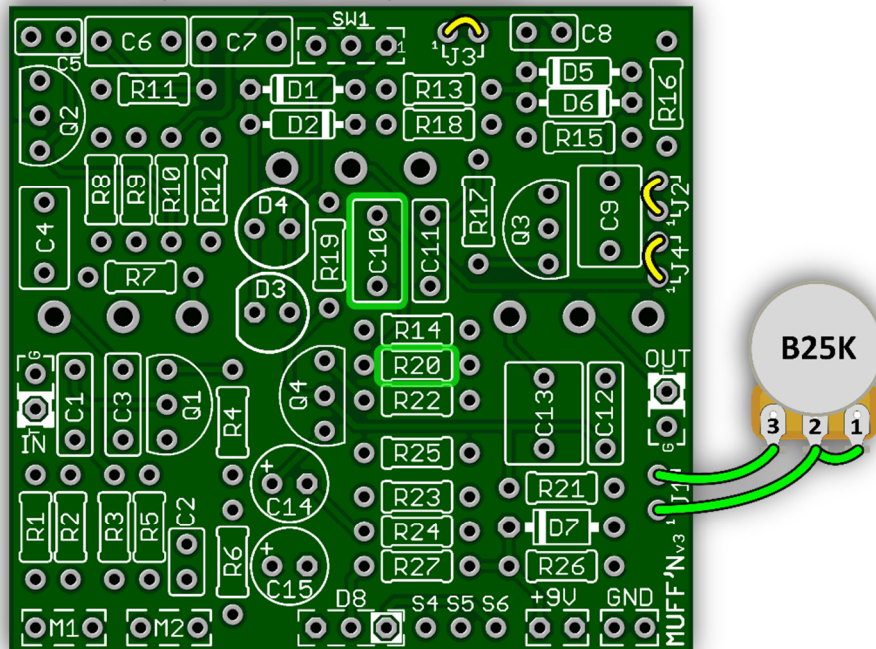
Note that you may use a 3PDT switch allowing you to add an LED to each Mod.
There is no need to Jumper M1 or M2 if you are not using these mods.



Mod 3 - Mid Scoop Control

Replace C10 with any value 12n through 22n. Replace R20 with 2.7k.

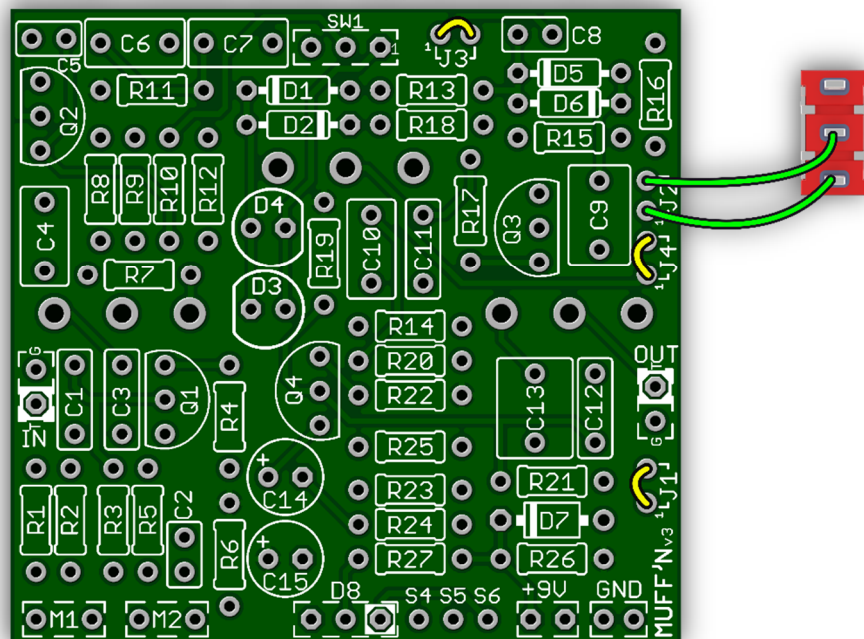
Remove the Jumper at J1 and add a B25K potentiometer.



The stock Muff tone by itself yields a huge tone however it can get lost in the mix. With the Mids scooped out the Bass player already rules the Lows and Drums rule the Highs. This Mod will allow you to dial those Mids back in so you can be heard or easily dial it back out for Stock Tone.

Mod 4 - MUFF BENDER

Remove the Jumper at J2 and install an SPST or SPDT switch. When activated you will get a Tonebender style effect. Simply switch back for Stock Tone.

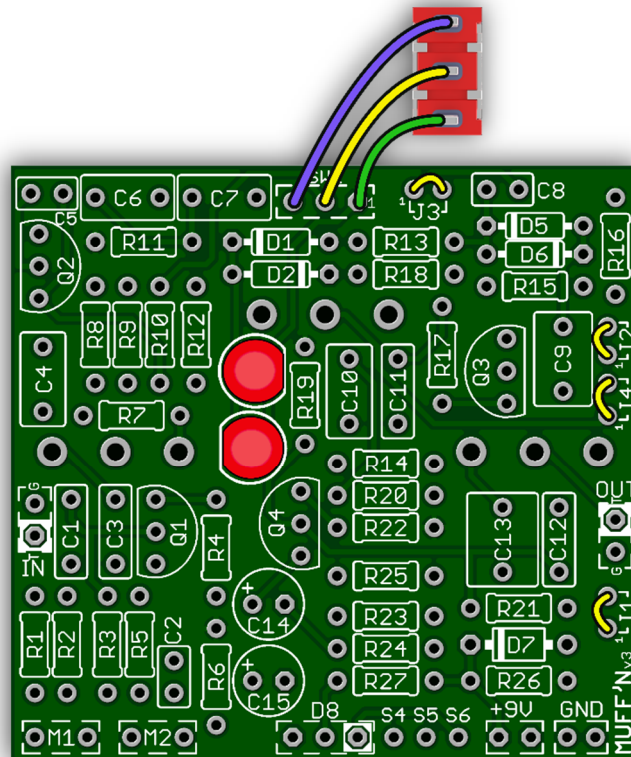
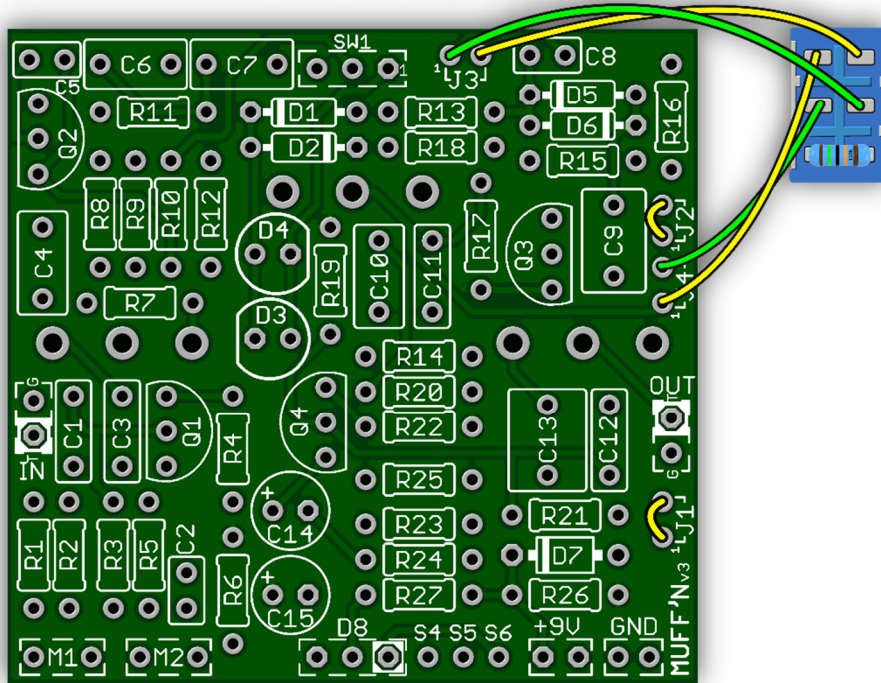


Mod 5 - Tone Control Bypass

Remove the Jumpers J3 and J4. Install a DPDT switch and a 150k resistor on

the end lugs. **Wires must be connected as shown.** This yields a flat tone curve.

You may experiment with the resistor value to adjust Volume of the Mod.



Mod 6 - LED/Silicon/Opamp Clipping

Use a On/Off/On switch at SW1 to have 3 way clipping options. Using an On/On

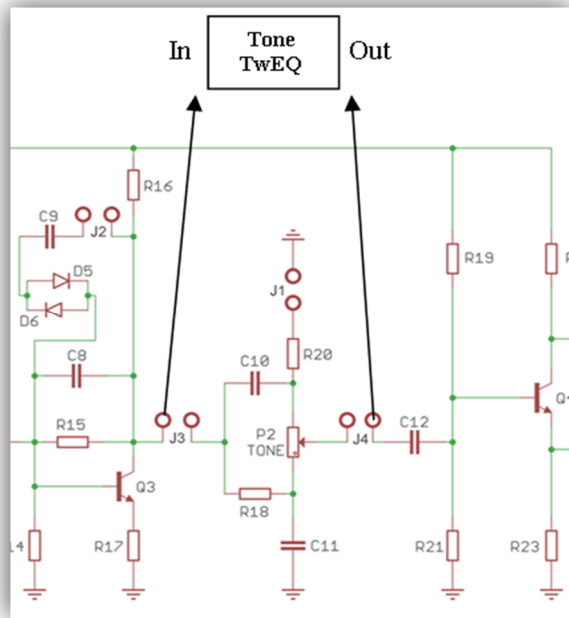
switch will only let you have LED/Silcon Clipping. If you do not want this Mod

place a Jumper between Pads 1 & 2 of SW1 and do not populate D3 & D4.

Mod 7 – Bypass BMP Tone and insert 3 Band Active “Tone TwEQ”

Mod 7 would require purchase of our Tone TwEQ active 3 band EQ. This will replace the simple BMP tone stack.

Attach a pre- tested Tone TwEQ between J3 and J4. Remove jumper J1 also. Discard or ignore all components between J3 and J4. The Volume (100k Trimmer) on the Tone TwEQ can act as an internal fine-tuning level adjustment. You may also mount on the enclosure as an additional on-board EQ Level Pot or you may bypass the Level Pot by simply attaching J4 wiring to the Tone TwEQ Volume pad 3 instead. **You have now seriously upgraded your MUFF'N!**

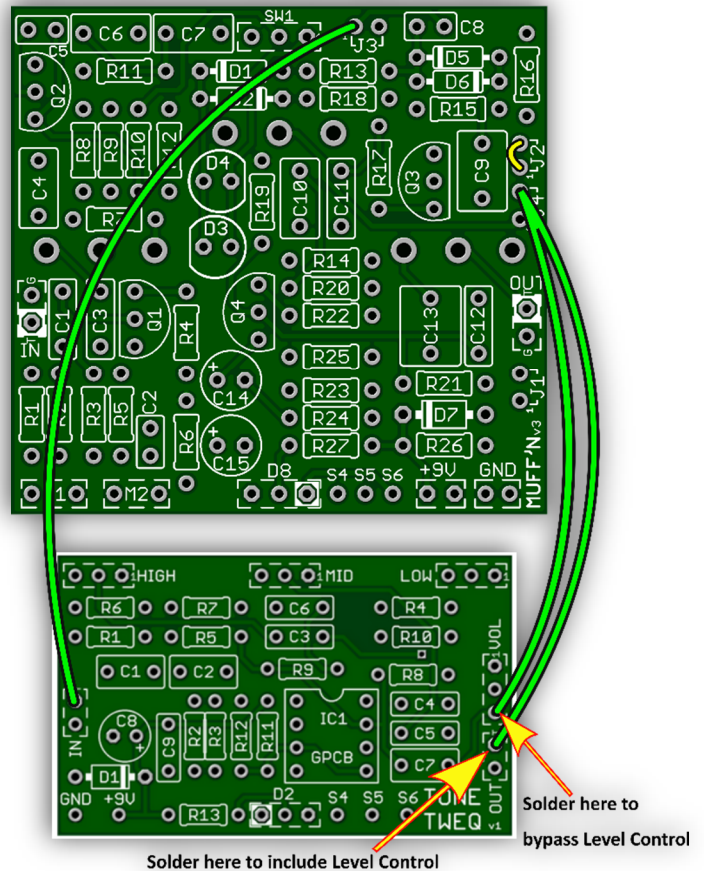


Mod 7 - BMP Tone Bypass - Insert Tone TwEQ

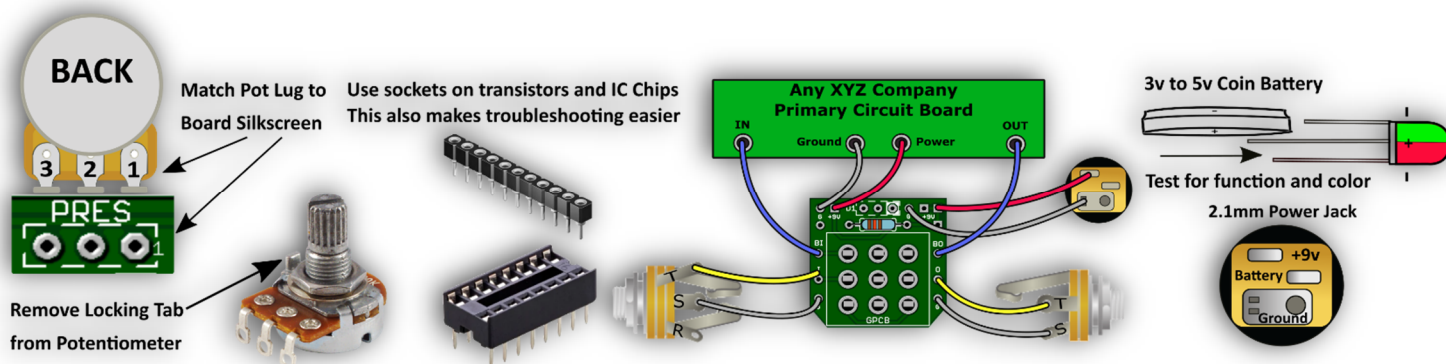
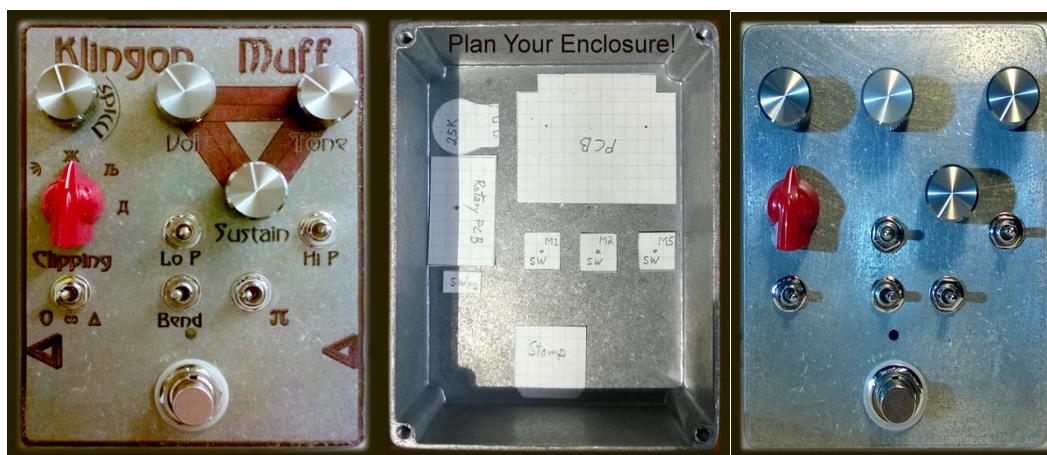
Remove Jumpers J1, J2 & J3. Do not install or ignore tone components.

Wire exactly as show with J4 wire going to either Tone TwEQ T Pad Out to

include Level Control or wire to Volume Pad 3 to Bypass Level control.



Enjoy this seriously modded MUFF'N by Cybercow and read about it in our Forum: [The Klingon Muff](#)



Need a kit? Check out our authorized worldwide distributors:

USA – Check out [PedalPartsAndKits](#) for all your GuitarPCB kit needs in the USA.

Europe – [Das Musikding](#) Order either boards or kits direct from Europe.

[PedalPartsAustralia](#) - Order either boards or kits direct from Australia



This document, PCB Artwork and Schematic Artwork © GuitarPCB.com. Version 1 Schematic and PCB by DCountry13. Version 2 Schematic (based on v1), PCB and this document by Bruce R. Further contributions by Tonmann, Wilkie1 & Barry. Use of PCB and schematic artwork for any purpose other than to build a board purchased from GuitarPCB.com without written permission is prohibited. Distribution of this document is prohibited without written consent from GuitarPCB.com. Trademarks and brands mentioned above belong to their respective owners.