Wolfgang 5051

Based on:
Peavey EVH 5150™

Effect type:
High Gain Preamp

Build difficult:
Intermediate/Advanced

Amount of parts:
High, total 89 components

Technology:
Dual OpAmp tube emulation.

Power consumption:
9V

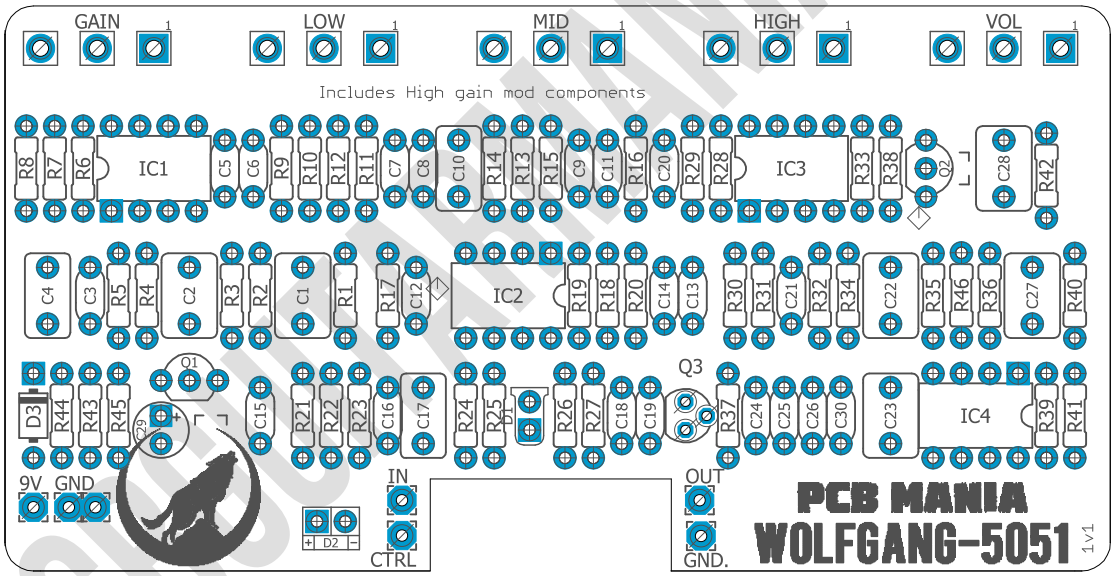
Enclosure type:
1590bb

Get your board at:
Wolfgang 5051

Get your kit at:
Das Musikding (Europe)

Project overview:

Six gain stages preamp with a lot of attenuation and select filtering between each stage to get the desired frequency and phase response characteristics of the original Peavey EVH 5150 head preamp section. Features a 3 band tone stack with an additional gain recovery stage. Even if this PCB is pedal friendly, due to the immense amount of output, this beast shines the best as a Preamp on the FX loop.



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Introduction

Wolfgang is based on the signature Amp one of the most influencing guitar players of all time and most likely the reason for many of you to start playing guitar! I mean, you read the name and have the riffs in your head, aren't you? But some of you may still not be 100% sure who we are talking about. Okay, I will stop to rave about this guitar genius with the black and white strips running all over his red axes and come back to the topic.

For this pedal, we went back to the roots and stick with the original Schematic of the Tube preamp, modeling it to make a useful Distortion for the old fans, the modern players, and most importantly, for the DIY builders. The board allows using either T0-92 or SMD Footprint. We also added a 3-Band EQ like the newer versions to tame this angry beast for your needs and pressed all this insane amount of Gain and Volume this build offers in a 1590BB enclosure. This is not a beginner project but a rewarding one. This beast has an insanely loud output, so remember, you can achieve great results with this pedal in your board, but it is on the FX loops where this beast shines.

We added the positivity of choosing between the standard approach and a High gain mod that improves the amount of distortion this board can give.

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Controls

Potentiometers

- Gain
- Volume
- Bass
- Treble
- Mids

Bill of materials (High gain mod in red)

Resistors	
Part	**Value**
R1	1m
R2	1m
R3	10k
R4	1m
R5	68k
R6	8k2 or 7k5*
R7	1k
R8	1k8
R9	47k
R10	100k
R11	47k
R12	100k
R13	2k7 or 30k*
R14	1k5
R15	2k2
R16	47k
R17	100k
R18	2k7 or 4k5*
R19	2k7
R20	33k
R21	22k
R22	2k7 or 6k2*
R23	1k8
R24	1k
R25	2k2
R26	100k or 91k**
R27	10k
R28	18k or 13k*
R29	1k5
R30	2k2
R31	100k
R32	100k
R33	2k7 or 1k8*
R34	2k7
R35	1m
R36	10k
R37	47k
R38	47k
R39	1m
R40	4k7
R41	1k
R42	1M
R43	10k
R44	10k
R45	2k7-4k7
R46	360k****

Capacitors	
Part	**Value**
C1	1u
C2	1u
C3	150pf
C4	680n
C5	220n
C6	22n
C7	10n
C8	220pf
C9	18n
C10	680n
C11	220n
C12	47pf
C13	220n
C14	10n
C15	5n6
C16	5n6
C17	680n
C18	220n
C19	1n
C20	180pf
C21	220n
C22	1u
C23	1u
C24	560pf
C25	22n
C26	22n
C27	1u
C28	1u
C30	680p*****

Electrolytic Capacitors	
Part	**Value**
C29	220uf

Transistors	
Part	**Value**
Q1	J201
Q2	J201
Q3* **	BC557

Diodes	
D1	3mm red LED
D2	5mm red LED
D3	1N5817

IC	
IC1	TL062
IC2	TL062
IC3	TL062
IC4	TL062

Potentiometers	
Part	**Value**
HIGH	250k B
VOL	100k A
LOW	1M A
MID	50k B
GAIN	100K A

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Shopping list (High gain mod in red)

Resistors		
Qty	**Value**	**Parts**
6	1m	R1, R2, R4, R35, R39, R42
6	100k	R10, R12, R17, **R26****, R31, R32
6	2k7	**R13*, R18*,** R19, **R22*, R33***, R34
2	1k5	R14, R29
3	2k2	R15, R25, R30
1	33k	R20
1	22k	R21
1	18k	**R28***
5	10k	R3, R27, R36, R43, R44
1	4k7	R40
1	2k7-4k7	R45
1	68k	R5
1	8k2	**R6***
3	1k	R7, R24, R41
2	1k8	R8, R23
5	47k	R9, R11, R16, R37, R38
1	7k5	R6*
1	30k	R13*
1	4k5	R18*
1	6k2	R22*
1	91k	R26*
1	13k	R28*
1	1k8	R33*
1	360k	R46***

Capacitors		
Qty	**Value**	**Parts**
6	1u	C1, C2, C22, C23, C27, C28
1	47pf	C12
2	5n6	C15, C16
1	1n	C19
1	180pf	C20
1	560pf	C24
1	150pf	C3
3	680n	C4, C10, C17
5	220n	C5, C11, C13, C18, C21
3	22n	C6, C25, C26
2	10n	C7, C14
1	220pf	C8
1	18n	C9
1	680p	C30****

Electrolytic Capacitors		
Qty	**Value**	**Parts**
1	220uf	C29

Potentiometers		
Qty	**Value**	**Parts**
1	100k A	VOL
1	100k A	GAIN
1	250k B	HIGH
1	1M A	LOW
1	50k B	MID

IC		
Qty	**Value**	**Parts**
4	TL062	IC1, IC2, IC3, IC4

Transistors		
2	J201	Q1, Q2
1	BC557	**Q3*** **

Diodes		
1	3mm RED LED	D1
1	5mm LED	D2

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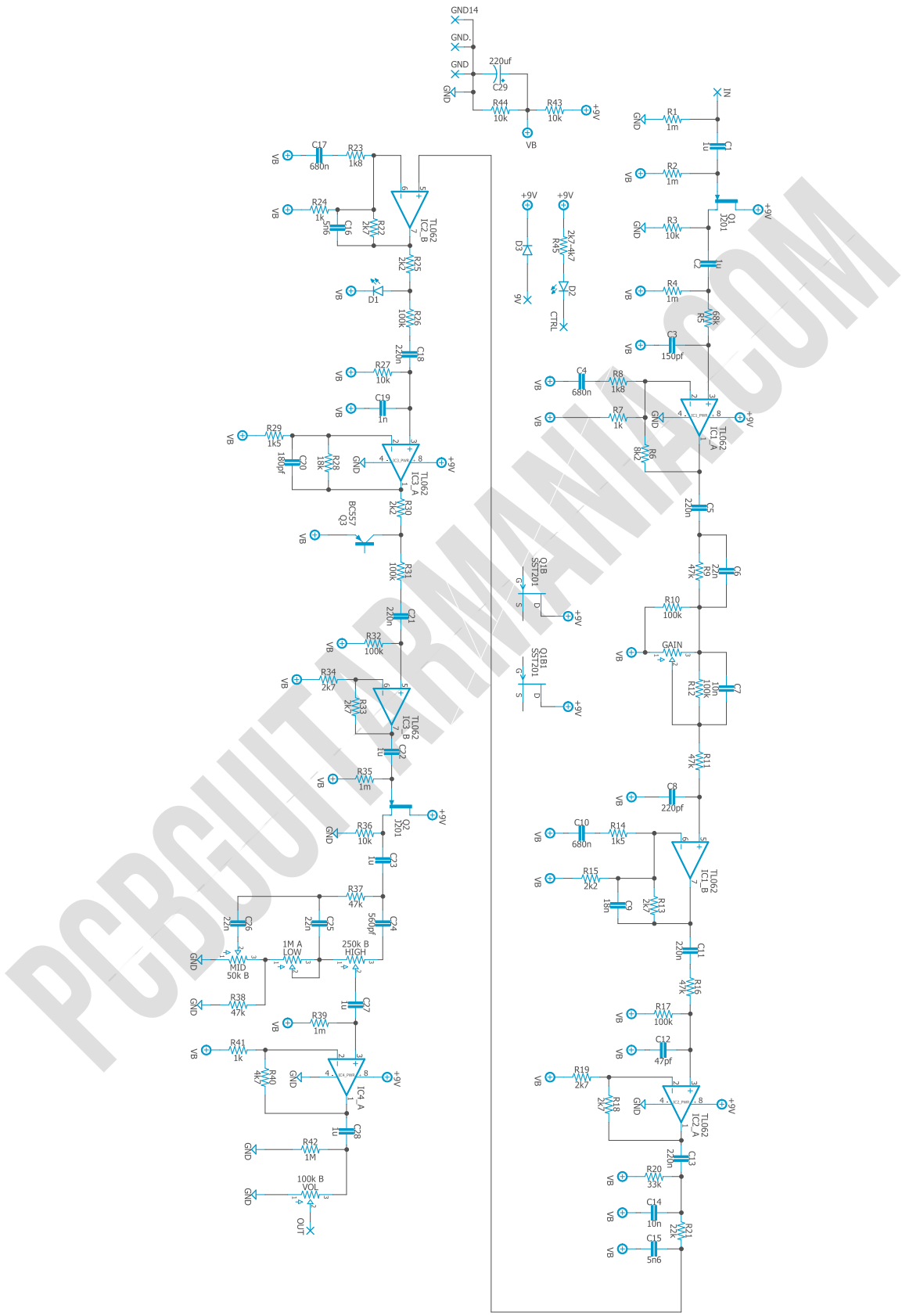
Schematic standard version



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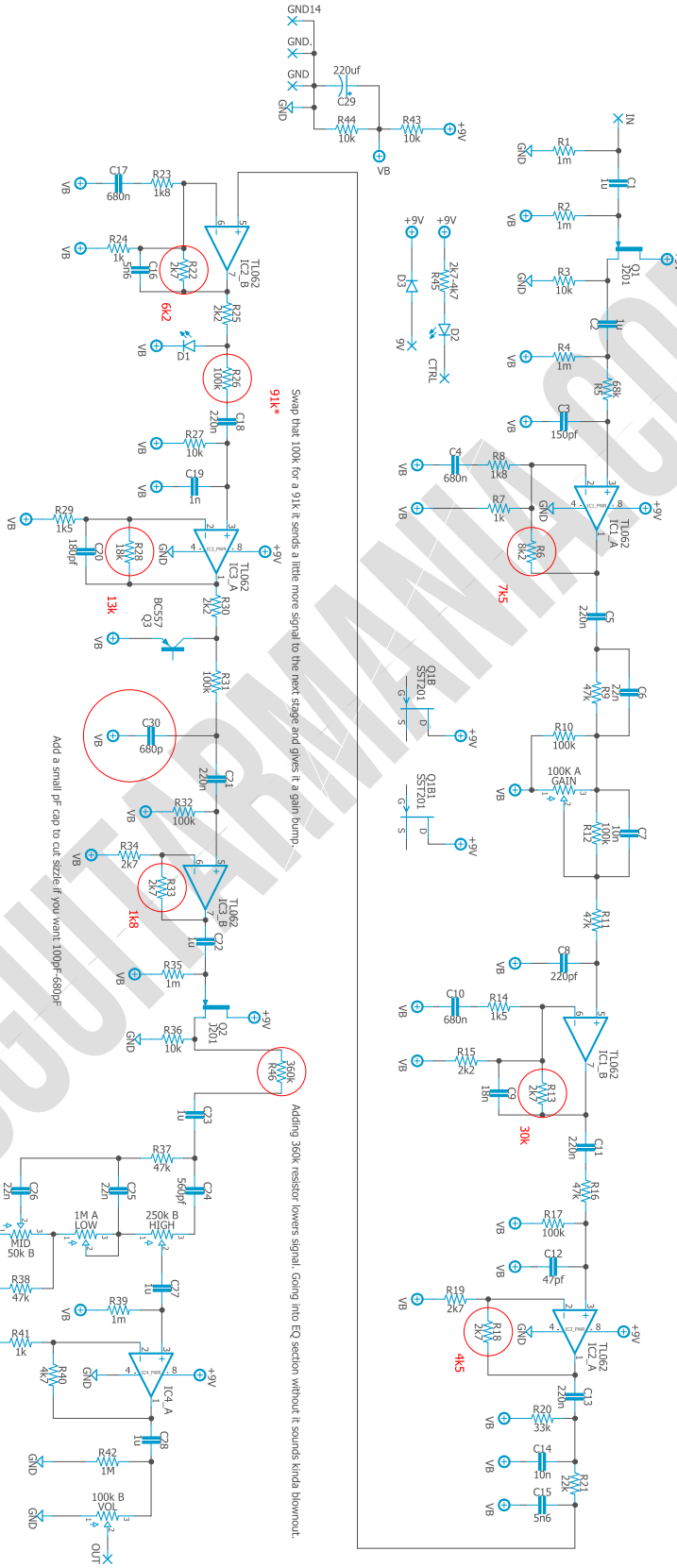
Schematic High Gain mod



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Components Recommendations

As many people like to experiment with some pedals with higher voltage, always ensure your **electrolytic capacitors'** max tolerance is over 25v.

This board has been tested using Film box capacitors for most of the values over 1nf and ceramics discs for those under 1nf. However, high-quality components such as Wima's Capacitors and Panasonic's electrolytics can deliver a better performance.

All the resistors used for testing this project are 1/4W Metal Film.

The BOM and Shopping list are exclusive regarding this project. It doesn't include all the hardware like the 3PDT bypass switch, audio/dc jacks, enclosure, etc.

Build Notes

If this is one of your first projects, I recommend you to take a look at our Pedal Building Guide.

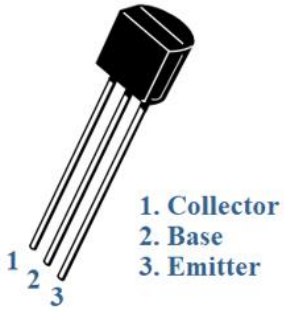
For a successful and tidy build, it's recommended the following order:

1. Resistors & diodes
2. Capacitors, starting with the smaller ones and the ceramic ones.
3. Electrolytic capacitors (always check the polarity)
4. Transistors
5. Wires
6. Potentiometers and switches
7. Off-board wiring

High Gain mod*
You can choose between the standard version or the High Gain mod by changing values as indicated.

R26**
If you want a gain bump, swap that 100k for a 91k to send a little more signal to the next stage.

Q3**
For the correct behavior of the clipping transistors, place BC557's BASE leg in the place of the COLLECTOR space in the PCB. Leave the COLLECTOR LEG of the transistor unsolder. You can even cut that leg off if you want.



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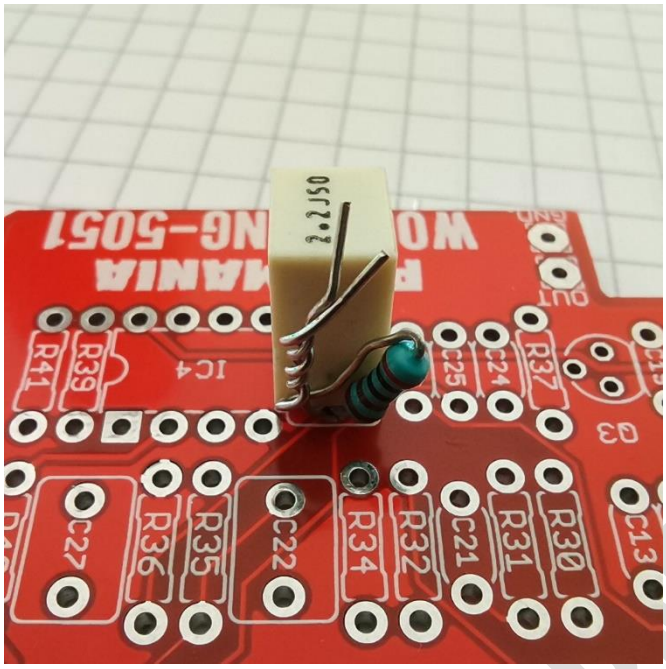
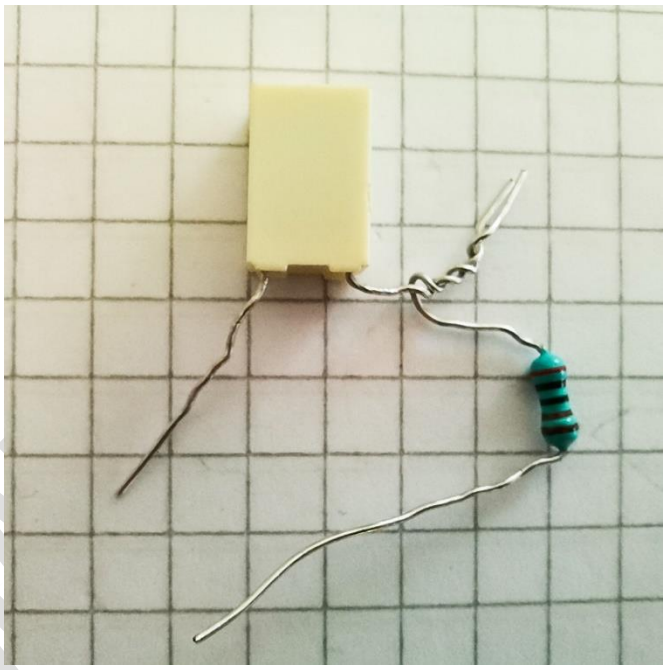
The following building notes are for the 1v version. These issues have been fixed from the 1.1v on.

R46****

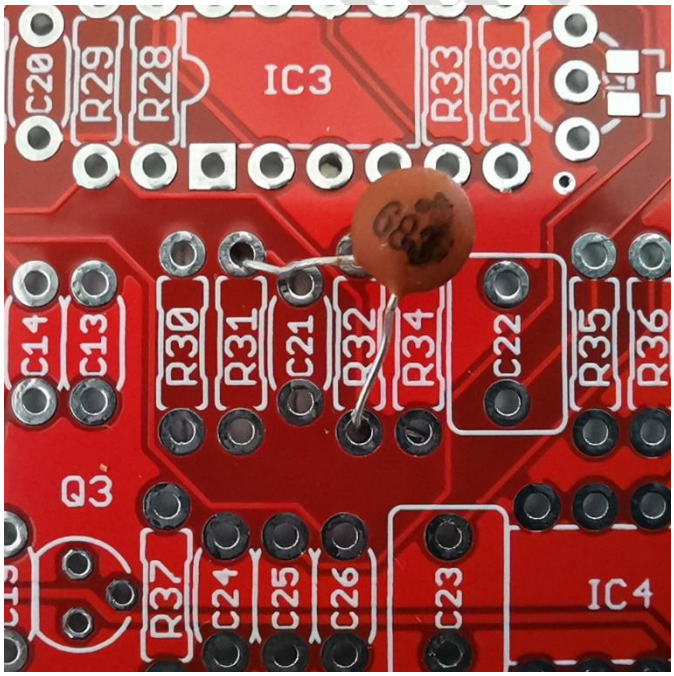
Add the R46 360k resistor if you want to lower the signal.
Place one leg of the resistor on the north face of the C23 silkscreen, and the other leg soldered directly to the leg of C23, making a bridge off-board in between both components. Use the examples below as a reference:

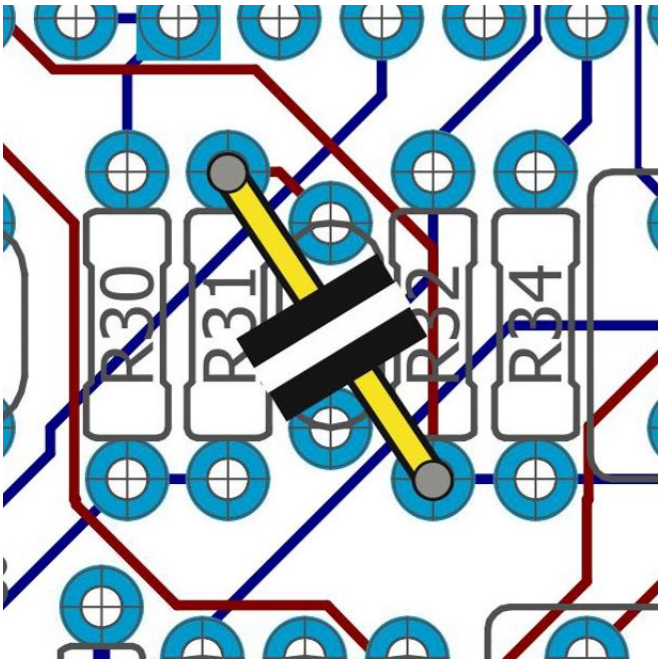




C30*****

To cut the sizzle, add the C30 680pf capacitor. It goes attached between the north face of the R31 silkscreen and the south face of R32. Use the examples below as a reference:





Important:
by buying all the components on the Shopping List you will be able to build any of the possible versions of this board.

Wiring Diagram

All our projects include a free 3PDT Board to make the wiring easier and tidier. Also, all of our PCBs feature the status LED on board.

The pad named "Ctrl" or "LED" is the one that controls the status of the led; wire it to the "LED" pad on the 3PDT board or in the control slug of your 3PDT.

This board has been designed to match our EZ 3PDT PCB; check it here to access our Pedal Wiring Guide.

Drill Template

This Project has been planned to fit into a 1590bb enclosure type.

Check the Attached "Drilling templates" to drill the box properly. The files are on Scale 1:1, ready to print on an A4 page.

Licensing and Usage

We really appreciate your trust and support in buying this PCB, as well as your will to dive into the DIY electronics world. For us, that's why you can make this project work properly and enjoy not only the building process but also experiment and play with it on your rig.

We try to reply to every question we receive on our email or our social media. Still, we try to encourage all our customers to join our PCB Guitar Mania – Builders Group on Facebook to post all your doubts, issues, suggestions, or requests, share your builds, and have some feedback from other fellow builders and us!

We tested all our projects following this same guide on their standard configurations. Although, not all of the variations and mods have necessarily been checked. These are suggestions based on the schematic analysis and the experiences and opinions of others. Feel free to share with us your views and recommendations regarding the mods your personal experimentation.

These boards may be used for commercial endeavors in any quantity unless expressly noted. No attribution is necessary, though accreditation or a link back is always much appreciated.

If you are a builder planning to make your own run of pedals, we also offer the service of custom-made boards with your brand and logo, design according to your specifications.

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The only usage restrictions are that, first, you cannot resell the PCB as part of a kit without prior arrangement with us, and second, you cannot scratch off the silkscreen or other way of trying to hide our logos and the source of the PCBs. Like it's written above, if you want to have your designs with your brand and logo, we could undoubtedly reach an agreement.

Follow us on Instagram and Facebook to stay in tune with the latest projects!

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