Ojo Diablo!

Based on:
Okko Diablo+

Amount of parts:
High, total 52 components

Enclosure type:
1590bb

Effect type:
Overdrive

Technology:
Jfet Cascade Stages

Get your board at:
Ojo Diablo!

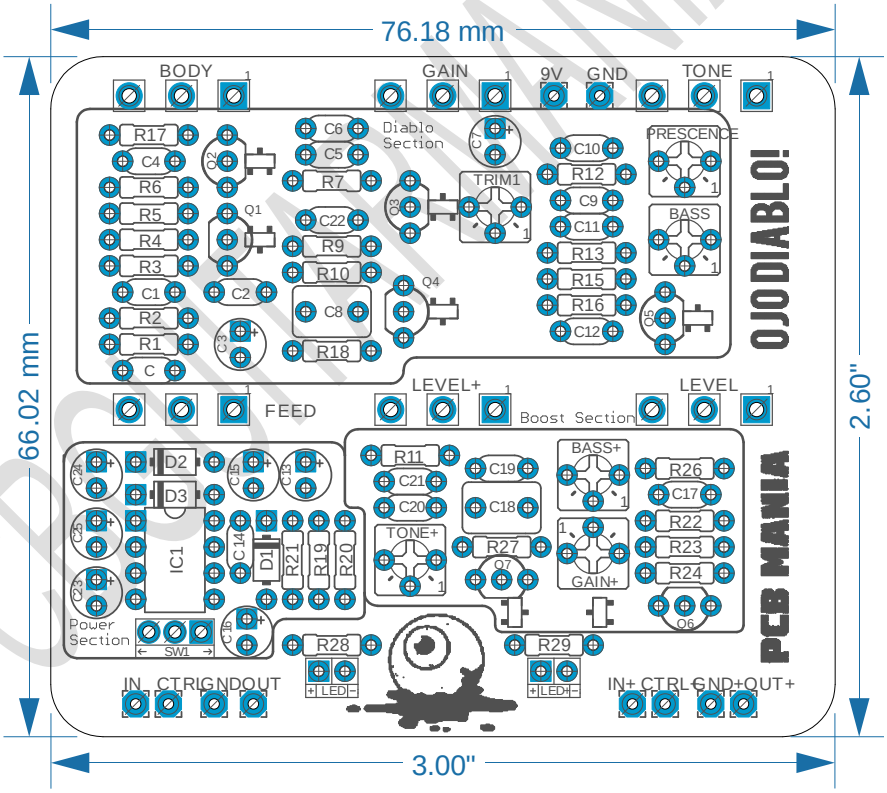
Build difficult:
Advanced

Power consumption:
20mA (9v)

Get your kit at:
Das Musikding (Europe)

Project overview:
The Ojo Diablo! Is a versatile low to medium gain overdrive with an exceptionally dynamic response. It preserves the character of your instruments and is very sensitive to your playing technique.

Thanks to the effective and musical controls, the Diablo works equally well with any kind of guitar, amp or playing style.



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Introduction

Definitely one of the most complete overdrives there's out there! Featuring six potentiometers, six internal trimmers and a headroom toggle we can assure that the Ojo Diablo! Is by far one of the most versatile overdrives ever built.

Controls

External Controls

- Feed: Pre-gain control, adjust the amount of bass in the input signal for a tight and transparent sound even with the fattest neck pickups
- Body: Takes effect on lower mids and compression. To the LEFT tight and open, to the RIGHT Fat and singing.
- Tone: Set your tone preferences all the way from dark to bright. You can further fine-tune its response with the internal trim pots
- Gain: Controls the intensity of distortion. Set it to the desired level of distortion and roll back the guitar volume for cleaner tones.
- Level: Overall volume level of the pedal
- Level+: Controls the second gain settings. This control works in addition with the gain control, so if Gain is already on maximum, engaging the LEVEL + won't give you any more distortion, just a slight fattening of the sound.
- Headroom Switch: Activates the internal Voltage doubler.

Internal Controls

- Presence: Controls High frequencies of the main section.
- Bass: Affects lower mids and Bass frequencies of the main section.
- TRIM1: Originally a 100r resistor, this trimmer allows you to regulate the gain of Q3
- Tone+: Set the Tone response of the second section
- Bass+: Set the Bass response of the second section
- Gain+: This trimmer allows you to do the fine-tuning of the second section gain.

Bill of materials

Resistors	
Parts	**Value**
R1	10k
R2	1m
R3	1m
R4	47k
R5	1k
R6	1k
R7	10k
R9	1k
R10	47k
R11	1m
R12	39k
R13	43k
R15	1m
R16	3k3
R17	470k
R18	470k
R19	10k
R20	10k
R21	100E
R22	1m
R23	10k
R24	1m
R26	1k
R27	470k
R28	2k7-4k7
R29	2k7-4k7

Capacitors	
Parts	**Value**
C	1n
C1	3n3
C2	470p
C3	10uf
C4	47n
C5	100n
C6	470p
C7	47uf
C8	1u NP
C9	3n3
C10	8n2
C11	100n
C12	100n
C13	47uf
C14	10n
C15	100uf
C16	100uf
C17	100n
C18	1u NP
C19	10n
C20	100n
C21	47n
C22	**150pf****
C23	47uf
C24	47uf
C25	47uf

pots	
Parts	**Value**
TONE	100k B
FEED	1M A
GAIN	500K A
LEVEL	100K A
LEVEL+	100K A
BODY	1M B

TRIMMERs	
Parts	**Value**
TONE+	100k
TRIM1*	**1K***
GAIN+	5k
BASS	100k
BASS+	100K
PRESCENCE	100k

Switches	
Parts	**Value**
SW1	SPDT on-on

Transistors	
Parts	**Value**
Q1	J201
Q2	J201
Q3	J201
Q4	J201
Q5	J201
Q6	J201
Q7	J201

Semiconductor	
Parts	**Value**
D1	1n4001
D2	1n4001
D3	1n4001
IC1	MAX 1044
LED	3mm LED
LED+	3mm LED

Shopping list

Resistors		
Qty	**Value**	**Parts**
5	10k	R1, R7, R19, R20, R23
1	39k	R12
1	43k	R13
1	3k3	R16
3	470k	R17, R18, R27
6	1m	R2, R3, R11, R15, R22, R24
1	100r	R21
2	2k7-4k7	R28, R29
2	47k	R4, R10
4	1k	R5, R6, R9, R26

Capacitors		
Qty	**Value**	**Parts**
1	1n	C
2	3n3	C1, C9
1	8n2	C10
2	10n	C14, C19
2	100uf	C15, C16
2	470p	C2, C6
1	150p	C22
1	10u	C3
2	47n	C4, C21
5	100n	C5, C11, C12, C17, C20
5	47uf	C7, C13, C23, C24, C25
2	1u NP	C8, C18

Trimpots		
Qty	**Value**	**Parts**
4	100k	BASS, PRESCENCE, TONE+, BASS+
1	5k	GAIN+
1	1K	TRIM1

Potentiometer		
Qty	**Value**	**Parts**
1	100k B	TONE
1	1M A	FEED
1	500K A	GAIN
1	1M B	BODY
2	100K A	LEVEL, LEVEL+

Semiconductors		
Qty	**Value**	**Parts**
1	MAX 1044	IC1
2	LED 3mm	LED, LED+
3	1n4001	D1, D2, D3
7	J201	Q1, Q2, Q3, Q4, Q5, Q6, Q7

Switches		
Qty	**Value**	**Parts**
1	SPTDT ON-ON	SW1
1	3PDT Stomp food	-

Components Recommendations

Always ensure the max tolerance of your **electrolytic capacitors** is over 25v.

This board has been tested using Film box capacitors for most of the values over 1nf, and ceramics discs for the ones 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 exclusively regarding this project. It doesn't include all the hardware like the 3PDT bypass switch, audio/dc jacks, enclosure, etc.

The **Transistors JFET J201 are the heart of this build. Make sure to get high quality ones from trusted vendors and not cheap Asian counterfeits! I strongly recommend the use of SMD transistors as they are much more reliable quality wise.**

TRIM1*: This is an add on over the original 100r resistor in order to have a better control of the total amount of gain on the unit, especially if you feel to experiment with other JFET such as 2n5457. If you want to stick to the traditional version just place a 100r in between the pads.

C22** is not present on the original unit, however is an interesting add-on to keep the unwanted noises down.

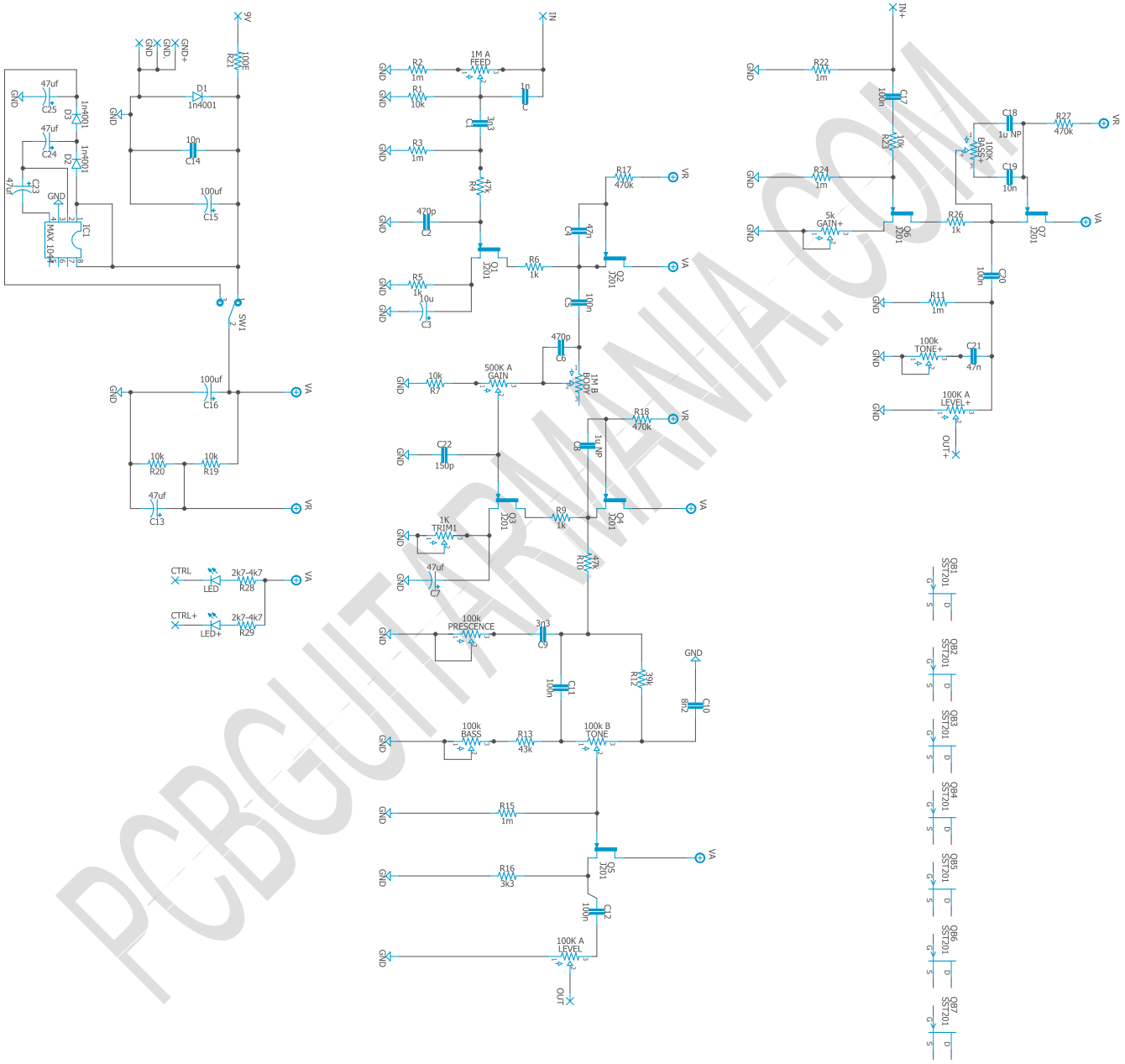
Build Notes

If this is one of your first projects I recommend you to take a look on 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

Schematic

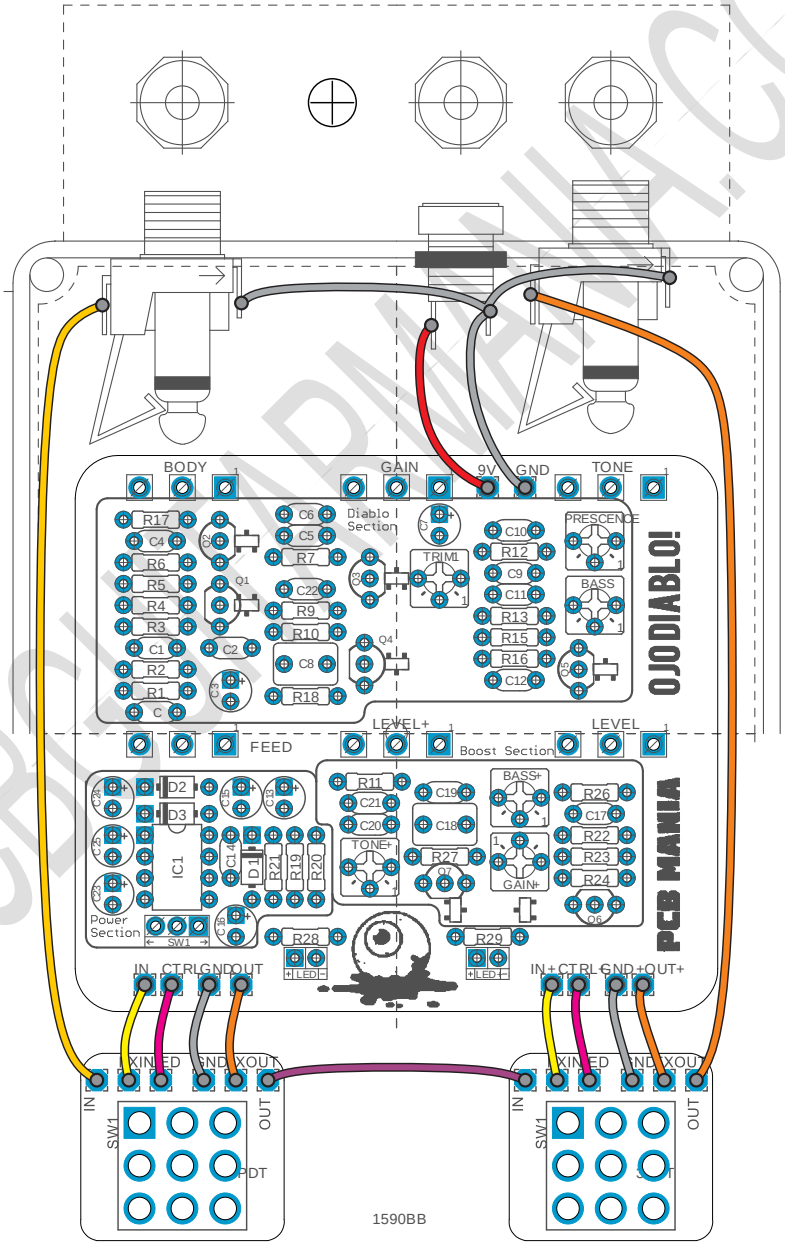


Wiring Diagram

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 control slug of your 3PDT.

You can take a look on the following diagram to understand the general connections. The headroom switch isn’t present on the following diagram. To wire it properly just extend three wires from the pads in the board to the Switch slugs. On my opinion the best place for the switch is in between the audio Input and the DC Jack, just as on the original Okko Diablo +



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 in an A4 page.

Licensing and Usage

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

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

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

These boards may be used for commercial endeavors in any quantity unless specifically noted. No attribution is necessary, though accreditation or a link back is always greatly 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 your specifications.

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 silk screen, 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 own designs, with your brand and logo we could certainly reach an agreement.

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