

Ojo Diablo!

Based on:
Okko Diablo+
Effect type:
Overdrive
Build difficult:
Advanced

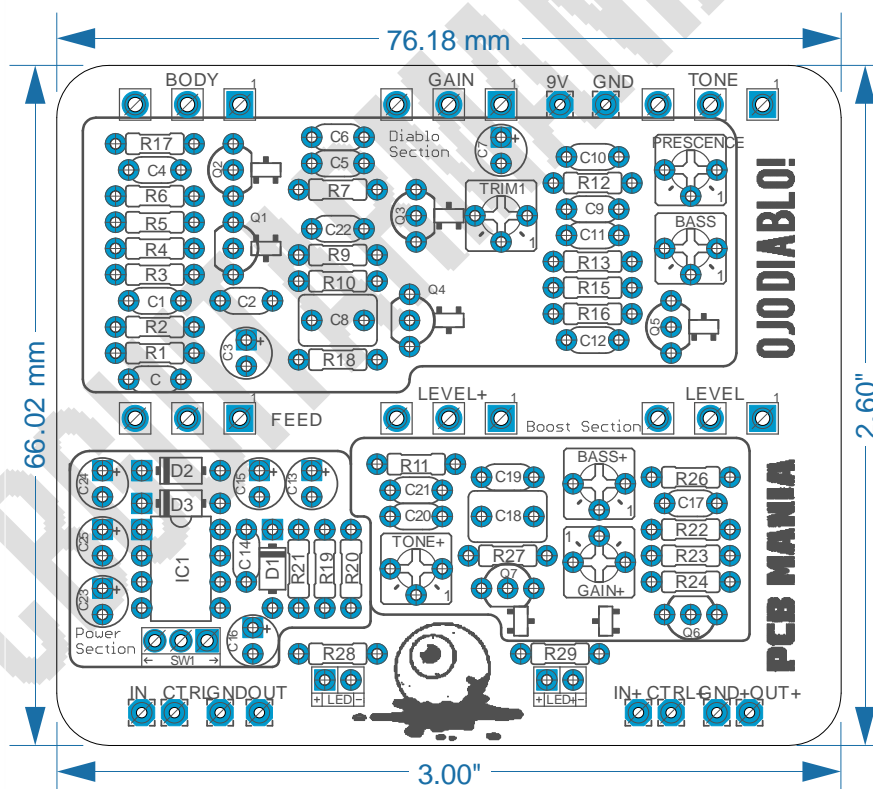
Amount of parts:
High, total 52 components
Technology:
Jfet Cascade Stages
Power consumption:
20mA (9v)

Enclosure type:
1590bb
Get your board at:
[Horn Device](#)
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.



Index

- | | |
|-----------------------------------|-------------------------|
| 1. Project overview | 6. Build Notes |
| 2. Index, Introduction & Controls | 7. Schematic |
| 3. Bills of Materials, BOM | 8. Wiring Diagram |
| 4. Shopping Lists | 9. Drill Template |
| 5. Components Recommendations | 10. Licensing and Usage |

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 | |
|-----------|---------|
| 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 |

| Transistors | |
|-------------|------|
| Q1 | J201 |
| Q2 | J201 |
| Q3 | J201 |
| Q4 | J201 |
| Q5 | J201 |
| Q6 | J201 |
| Q7 | J201 |

| Capacitors | |
|------------|---------|
| C | 1n |
| C1 | 3n3 |
| C2 | 470p |
| C3 | 10uf |
| C4 | 75n |
| 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 |

| Semiconductor | |
|---------------|----------|
| D1 | 1n4001 |
| D2 | 1n4001 |
| D3 | 1n4001 |
| IC1 | MAX 1044 |
| LED | 3mm LED |
| LED+ | 3mm LED |

| pots | |
|--------|--------|
| TONE | 100k B |
| FEED | 1M A |
| GAIN | 500K A |
| LEVEL | 100K A |
| LEVEL+ | 100K A |
| BODY | 1M B |

| TRIMMERS | |
|-----------|------|
| TONE+ | 100k |
| TRIM1* | 1K* |
| GAIN+ | 5k |
| BASS | 100k |
| BASS+ | 100K |
| PRESCENCE | 100k |

| | |
|-----|------------|
| SW1 | SPDT on-on |
|-----|------------|

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 |

| Pots | | |
|------|--------|---------------|
| Qty | Value | Parts |
| 1 | 100k B | TONE |
| 1 | 1M A | FEED |
| 1 | 500K A | GAIN |
| 1 | 1M B | BODY |
| 2 | 100K A | LEVEL, LEVEL+ |

| Semi conductors | | |
|-----------------|----------|----------------------------|
| 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 |

| Switch | | |
|--------|-------------|-------|
| Qty | Value | Parts |
| 1 | SPTDT ON-ON | SW1 |

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.

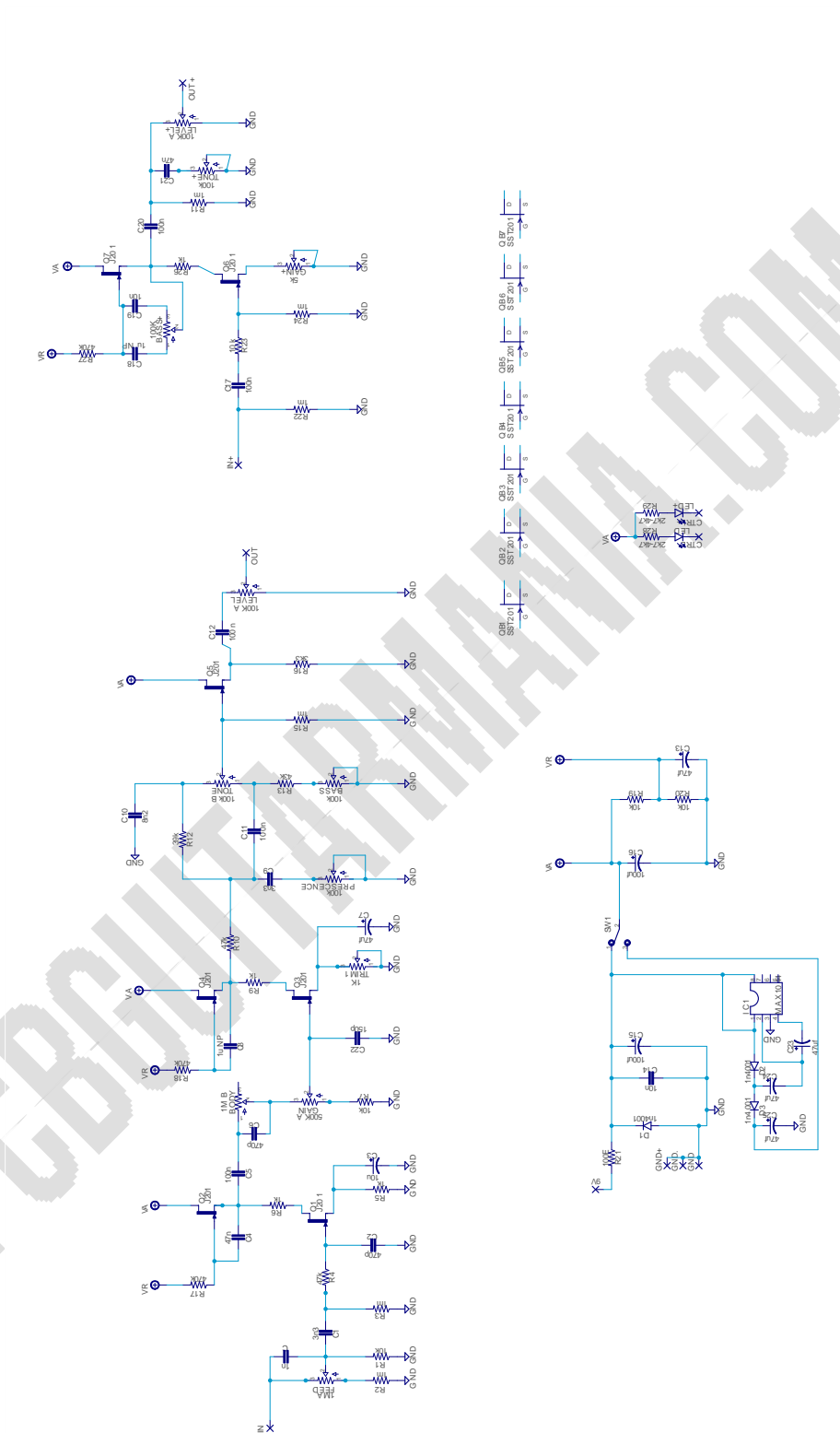
Build Notes

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

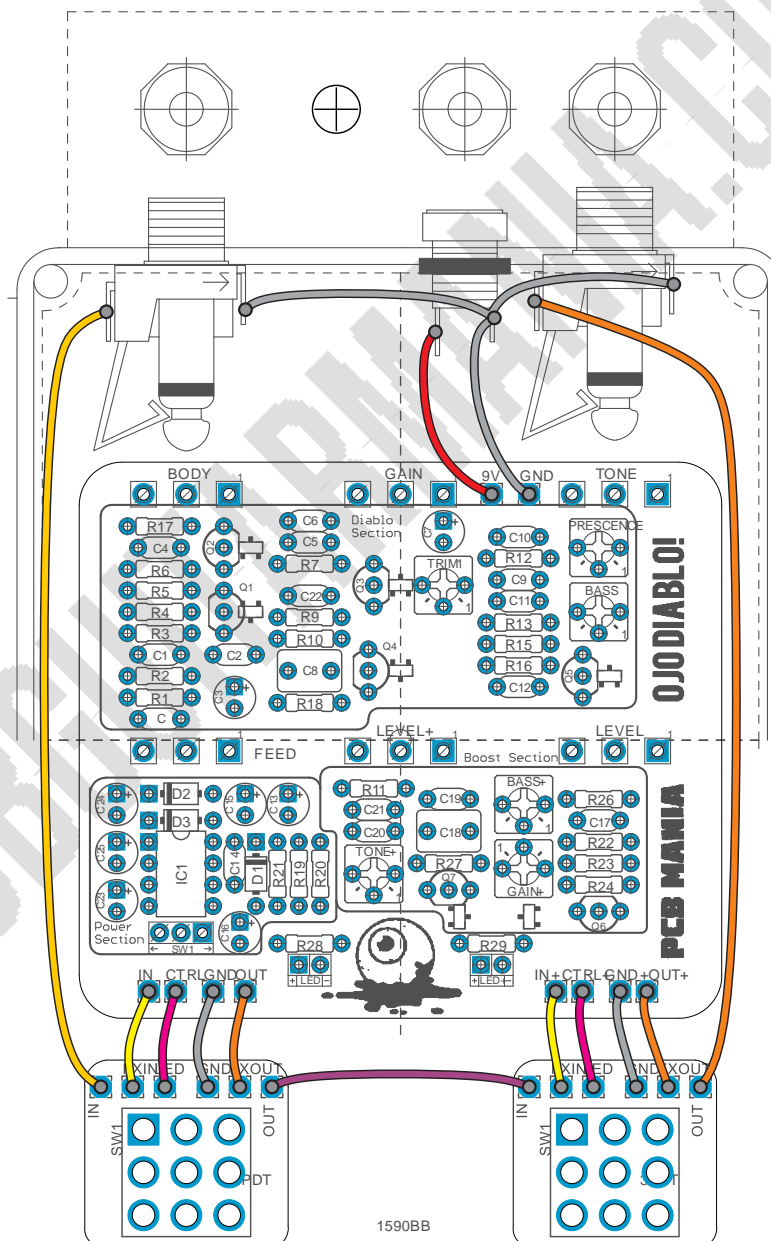


Wiring Diagram

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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