

# Black Sun of Doom

## Based on:

Coda Effects Black Hole

## Effect type:

High gain Preamp + Booster

## Build difficult:

Intermediate

## Amount of parts:

Average, total 65 components

## Technology:

JFET + Op-amp gain recovery

## Power consumption:

9V

## Enclosure type:

1590bb

## Get your board at:

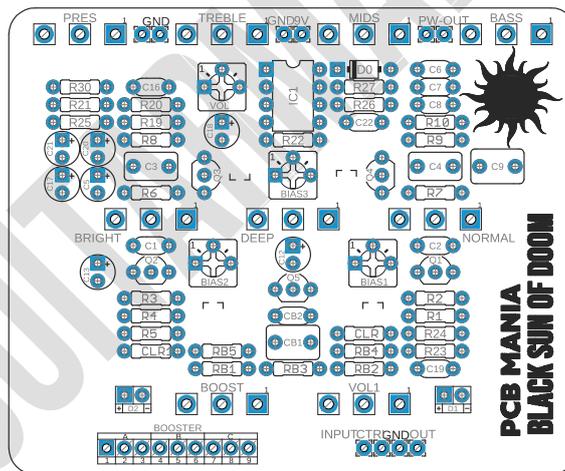
[Black Sun of Doom](#)

## Get your kit at:

[Das Musikding \(Europe\)](#)

## Project overview:

JFET Sunn Model T in a box, featuring dual-channel, extended EQ section featuring Depth and Presence control like Benzin VH4(link). This board also includes an LPB1 booster at the beginning of the signal path for getting things even nastier.



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# Introduction

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Sunn amps are some of the most regarded in the guitarist community due to their huge thick sound, deep bass, and loudness. Every Stoner rocker dream!

However, these amplifiers can get pretty rare and expensive to purchase, often going for price tags above \$3000. Even the 2008 Fender reissue can be quite hard to find.

The Sunn tone demand increased incredibly fast through the years due to the hype generated online, with many pedals claiming to nail its tone. Maybe the most popular being EQD Acapulco Gold, which delivers quite good tones but not even close to the Sunn Model T.

Meanwhile, in France, Coda effects developed the Black Hole, following the Sunn Model T's original schematic, replacing the tubes for JFETS and making some other adjustments to squeeze more gain out of it we did with our Lemon Rockverb ([link](#)).

After being blown away by the Black Hole's tone, I started asking myself, 'How can we make this even better?'

So, I started experimenting with the EQ section, which most often the weakest point of the JFET preamps in a box.

I wanted to try some of the EQs sections we have seen in other modern amps in a box, just like our Active EQ or Hybrid eq, both from Freeman BEOD or the Revolution series, respectively ([links](#) in every name). Finally, choosing Benzin EQ as the winner. Keeping the traditional structure of an amp alike tone stack, while adding a Depth control to make your bass growl and a presence knob to make sure you'll cut through the mixes, as a cherry on the top, we have a recovery gain stage after the tone stack, making sure this beast will tear your house down.

## Controls

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- BASS
- BOOST
- BRIGHT
- DEEP
- MIDS
- NORMAL
- PRES
- TREMBLE
- VOL1

# Bill of materials

Resistors	
Part	Value
R1	68k
R2	1m
R3	68k
R4	1m
R5	680r
R6	470k
R7	470k
R8	820r
R9	100k
R10	56k
R19	100k
R20	10k
R21	4k7
R22	1k
R23	150k
R24	100k
R25	100r
R26	56k
R27	47r
R30	1k
RB1	1m
RB2	470k
RB3	47k
RB4	10k
RB5	390r
CRL	4k7
CRL1	4k7

Capacitors	
Part	Value
C1	22n
C2	22nf
C3	470p
C4	220p
C6	22n
C7	22n
C8	270p
C9	1u - jumper
C16	1n
C19	2n2
C22	330n
CB1	100n
CB2	100n

Electrolytics Capacitors	
Part	Value
C5	22u
C12	47u
C13	220u
C17	10u
C18	10u
C20	2u2
C21	1u

Potentiometers	
Part	Value
BASS	25K C

BOOST	100K B
BRIGHT	1M A
DEEP	25K C
MIDS	25K C
NORMAL	1M A
PRES	25K C
TREBLE	25K C
VOL1	10K A

IC	
Part	Value
IC1	TL072CP

Transistors	
Part	Value
Q1	J201
Q2	J201
Q3	J201
Q4	J201
Q5	2N5088

Diodes	
Part	Value
D0	n5817
D1	LED 3mm
D2	LED 3mm

# Shopping list

Resistors		
Qty	Value	Parts
2	100k	R19, R24
1	100r	R25
2	10k	R20, RB4
1	150k	R23
2	1k	R22, R30
1	47r	R27
3	4k7	R21, CRL, CRL1
2	56k	R10, R26
2	68k	R1, R3
3	1m	R2, R4, RB1
1	680r	R5
4	470k	R6, R7, RB2, RB3
1	820r	R8
1	100k	R9
1	390r	RB5

Capacitors		
Qty	Value	Parts
1	100n	CB2
1	100n	CB1
1	1n	C16
1	1u - jumper	C9
1	220p	C4
3	22n	C1, C6, C7
1	22nf	C2
1	270p	C8
1	2n2	C19
1	330n	C22
1	470p	C3

Electrolytics Capacitors		
Qty	Value	Parts
1	22u	C5
1	47u	C12
1	220u	C13
2	10u	C17, C18
1	1u	C21
1	2u2	C20

Potentiometers		
Qty	Value	Parts
1	100k B	BOOST
1	10K A	VOL1
2	1M A	BRIGHT, NORMAL
5	25K C	BASS, DEEP, MIDS, PRES, TREBLE

IC		
Qty	Value	Parts
1	TL072CP	IC1

Transistors		
Qty	Value	Parts
1	2N5088	Q5
4	J201	Q1, Q2, Q3, Q4

Diodes		
Qty	Value	Parts
2	LED 3mm	D1, D2
1	n5817	D0



# Components Recommendations

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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

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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

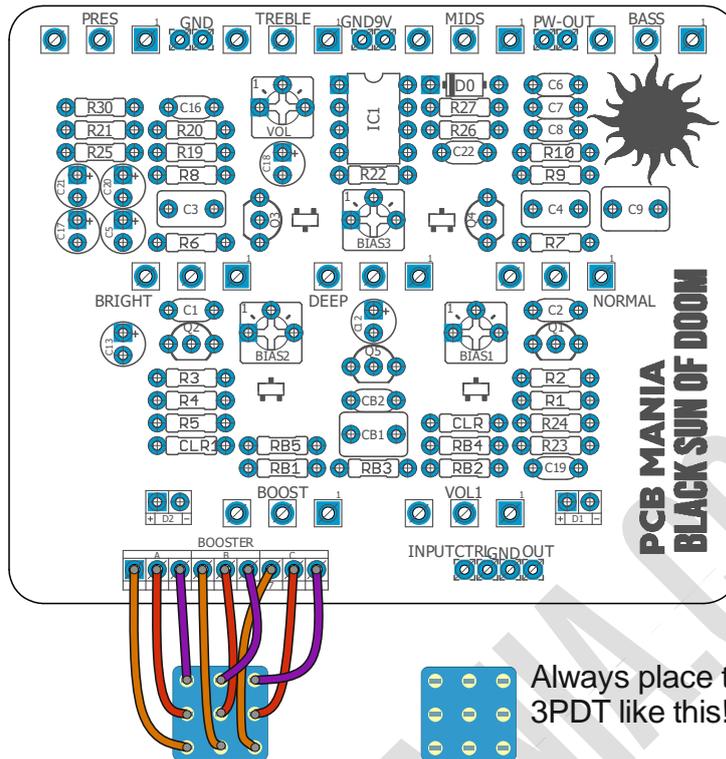
## Wiring Diagram

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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.

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.

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