

# Black Sun of Doom SMD

## Based on:

Coda Effects Black Hole

## Effect type:

High gain Preamp + Booster

## Build difficult:

Easy

## Amount of parts:

Low, total 27 components

## Technology:

JFET + Op-amp gain recovery

## Power consumption:

9V

## Enclosure type:

1590bb

## Get your board at:

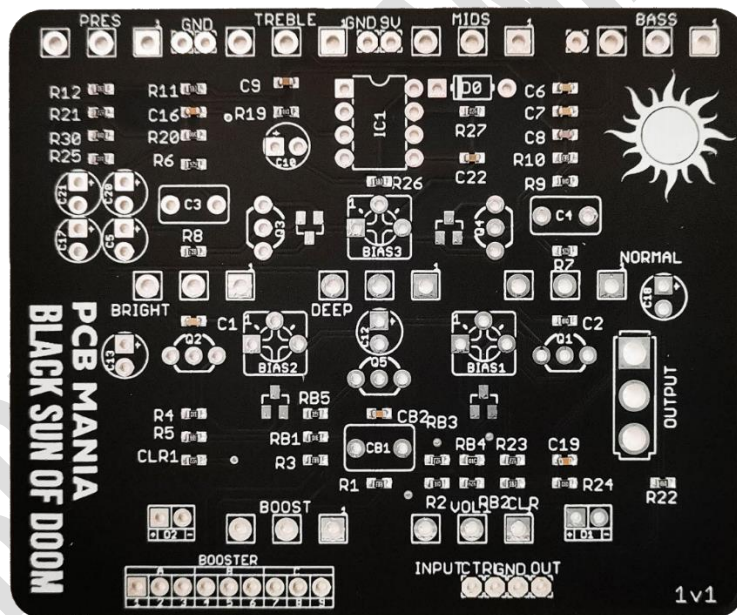
[Black Sun of Doom SMD](#)

## 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.



# About The Pedal Creators

---

**Everyone can build** excellent boutique guitar **pedals**.

Everything **we do** is to make that **experience** more accessible and **user-friendlier**.

The **Pedal Creators** series are the **best and easiest to build PCBs** ever. Including most **resistors** and **capacitors** already **soldered** on board as SMD components, leaving the key values for you to **experiment** and craft **your own tone**.

Now you can **build** a pedal you are **proud** of in **less than an hour** without any previous experience.

What are you waiting for to **become a Pedal Creator**?

## The Pedal creators - key features:

- **Easy to build**, no previous experience required. It's like Lego for musicians.
- **Fast assembly** finish a pedal in less than an hour. Play your favorite record and enjoy the ride along.
- **100% mistake-proof**. Even my grandma can build one while she cooks.
- **Build** your own boutique pedal. Experiment with different values and make the **pedal you always dreamed of**.
- Easy to scale. **Turn your passion into a money-making machine**.

# Index

---

1. Project overview
2. About The Pedal Creators
3. Index, Introduction & Controls
4. Bill of materials
5. Shopping list
6. Schematic
7. Components recommendations, Build Notes, Wiring Diagram
8. Drilling Template, Licensing and Usage

## Introduction

---

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

---

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

# Bill of material

---

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

Capacitors	
Part	Value
CB1	100n
C3	470p
C4	220p

Potentiometers	
Part	Value
BASS	1M A
BOOST	100K B
BRIGHT	1M A
DEEP	25K C
MIDS	25K B
NORMAL	1M A
PRES	25K C
TREBLE	250K B
VOL1	10K A

Trimmers	
Part	Value
BIAS1	20k
BIAS2	20k
BIAS3	20k

IC	
Part	Value
IC1	TL072CP

Switches	
Part	Value
Out Up	SPDT ON/ON
BOOSTER	3PDT

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

Diodes	
Part	Value
D0	1N5817
D1	LED 3mm
D2	LED 3mm

# Shopping list

---

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

Capacitors		
Qty	Value	Parts
1	100n	CB1
1	470p	C3
1	220p	C4

Potentiometers		
Qty	Value	Parts
1	100k B	BOOST
1	10K A	VOL1
2	1M A	BRIGHT, NORMAL
2	25K C	DEEP, PRES
1	1M A	BASS
1	250K B	TREBLE
1	25K B	MIDS

Trimmers		
Qty	Value	Parts
3	20k	Bias1, Bias2, Bias3

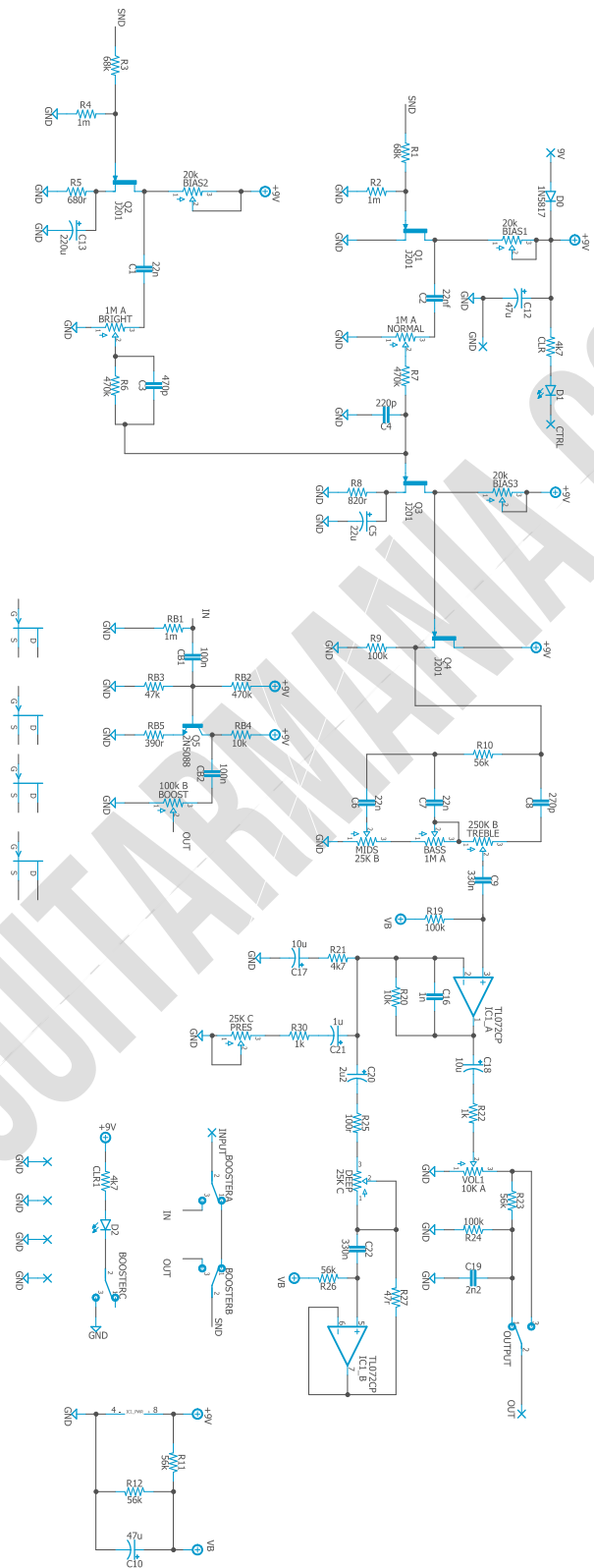
IC		
Qty	Value	Parts
1	TL072CP	IC1

Switches		
Qty	Value	Parts
1	SPDT ON/ON	Out Up
1	3PDT	BOOSTER

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

Diodes		
Qty	Value	Parts
2	LED 3mm	D1, D2
1	1N5817	D0

# Schematic



# 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. Electrolytic capacitors (always check the polarity)
2. Transistors
3. Wires
4. Potentiometers and switches
5. Off-board wiring

**J201\*** Remember, this project requires sourcing some good quality JFET from trusted sources for proper functioning. We always recommend using SMD JFET as their reliability is far superior to the discontinued through-hole counterpart. Also, bear in mind this project requires bias the transistors correctly with the respective trim pots.

To do this correctly, plug the pedal into your 9v power supply/battery, grab your multimeter and plug the black terminal into any ground of the circuit. Simultaneously, with the read touch, the Drain legs of your transistors, if it's done correctly, should appear how much voltage is receiving that leg.

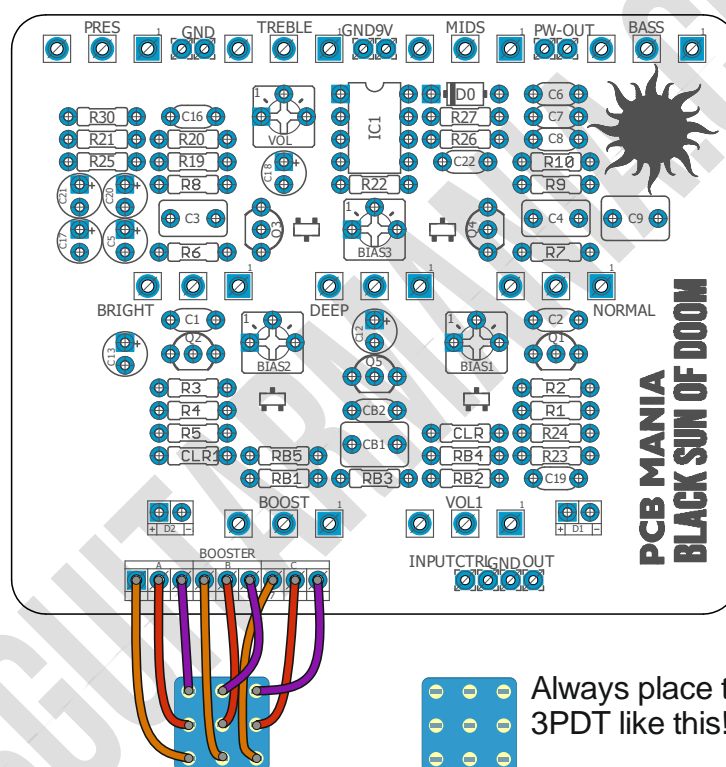
Now turn the trimpot with a screwdriver till you can read 4.5v- or half of your power supply; in case you are using 18v- on the screen of your multimeter. Repeat this process with all transistors and their respective trimpots till all of them are measuring 4.5v, then proceed to do fine-tuning by ear on what you hear are the best settings of each transistor. Don't forget to share your favorite bias settings and pictures of your build on our Facebook group!

# 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.

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!