

Sun Beta-lead

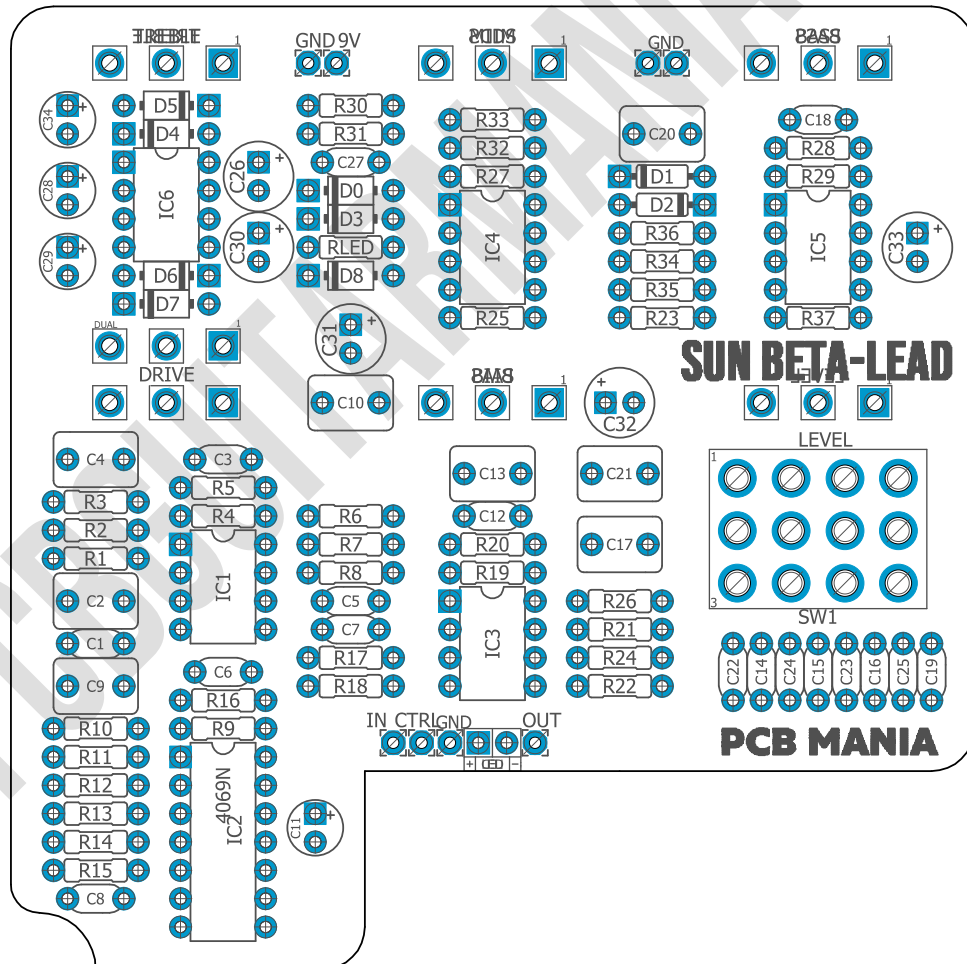
Based on:
Sunn Beta Lead
Sunn Beta Bass
Effect type:
Pre-amp
Build difficult:
Average

Amount of parts:
Average, total 94 components
Technology:
Dual OpAmp + CMOS
Power consumption:
9V

Enclosure type:
1590bb
Get your board at:
[Sun Beta-lead](#)
Get your kit at:
[Das Musikding \(Europe\)](#)

Project overview:

Inspired by Sunn Beta amplifiers series. Combining the best of the Lead and Bass versions at the flick of a switch.



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Introduction

If you love nasty and gritty stoner grunge sludgy doom tones, the Sun Beta lead will nail all your dirty deeds!

Inspired by one of the most famous solid-state amps, this board combines the best of both versions bass and lead versions, just at the flick of a switch, making it suitable for standard tunings and lower sludgy dropped strings or bass!

This preamp is nothing related to anything you have seen before, presenting a unique design, tone, or functionality.

Its EQ is super powerful and certainly doesn't require to have Tube Screamer in front of it to tighten up its tone. The magic of this amp is on its sludginess and grit. Why would you like to tighten up that?

But does it DOOOOOOM? for sure it does! Crank the drive at max and play some pentatonic glissandos on your drop-down favorite humbucker guitar. It will melt your face off into a sea of grungy sludginess doom.

Controls

Potentiometers

- DRIVE
- BASS
- LEVEL
- MIDS
- TREBLE

Switches

- Sw1

Bill of materials

Resistors	
Part	Value
R1	1m
R2	47k
R3	47k
R4	2m2
R5	100k
R6	120k
R7	1m
R8	100k
R9	47k
R10	330k
R11	22k
R12	68k
R13	22k
R14	68k
R15	10k
R16	100k
R17	100k
R18	470k
R19	100k
R20	120k
R21	15k
R22	4k7
R23	10k
R24	330k
R25	1m
R26	1k5
R27	1m
R28	12k
R29	22k
R30	15k
R31	3k3
R32	12k
R33	33k
R34	12k
R35	220k
R36	150r
R37	470r
RLED	470r

Capacitors	
Part	Value
C1	200p
C2	2.2u np
C3	33p
C4	2.2u np
C5	5p
C6	47n
C7	2n2
C8	82p
C9	2.2u np
C10	2.2u np
C12	33p
C13	2.2u np
C14	56n
C15	8n2
C16	15n
C17	2.2u np
C18	100n
C19	47n
C20	2.2u np
C21	2.2u np
C22	22n
C23	8n2
C24	5n
C25	27n
C27	47n

Electrolytics Capacitors	
Part	Value
C11	10u
C26	100u
C28	10u
C29	10u
C30	100u
C31	100u
C32	100u
C33	470u
C34	10u

Potentiometers	
Part	Value
DRIVE	1M B (Dual gang stereo)
BASS	100K B
LEVEL	100K B
MIDS	100K B
TREBLE	100K B
BIAS	Jumper pads 2 & 3

IC	
Part	Value
IC1	JRC4558
IC2	CD4069
IC3	JRC4558
IC4	JRC4558
IC5	JRC4558
IC6	LT1054*

Switches	
Part	Value
SW1	4PDT

Diodes	
Part	Value
D0	1n5817
D1	1n4148
D2	1n4148
D3	1n4742
D4	1n5817
D5	1n5817
D6	1n5817
D7	1n5817
D8	1n5817

Shopping list

Resistors		
Qty	Value	Parts
5	100k	R5, R8, R16, R17, R19
2	10k	R15, R23
2	120k	R6, R20
3	12k	R28, R32, R34
1	150r	R36
2	15k	R21, R30
1	1k5	R26
4	1m	R1, R7, R25, R27
1	220k	R35
3	22k	R11, R13, R29
1	2m2	R4
2	330k	R10, R24
1	33k	R33
1	3k3	R31
1	470k	R18
2	470r	R37, RLED
3	47k	R2, R3, R9
1	4k7	R22
2	68k	R12, R14

Capacitors		
Qty	Value	Parts
1	100n	C18
1	15n	C16
8	2.2u NP**	C17, C20, C21, C2, C4, C9, C10, C13
1	200p	C1

1	22n	C22
1	27n	C25
1	2n2	C7
2	33p	C3, C12
3	47n	C6, C19, C27
1	56n	C14
1	5n	C24
1	5p	C5
1	82p	C8
2	8n2	C15, C23

Electrolytic Capacitors		
Qty	Value	Parts
4	100u	C26, C30, C31, C32
4	10u	C11, C28, C29, C34
1	470u	C33

Potentiometers		
Qty	Value	Parts
1	1M B (Dual gang-Stereo)	DRIVE
4	100K B	BASS, LEVEL, MIDS, TREBLE
1	JUMPER PADS 2 & 3	BIAS

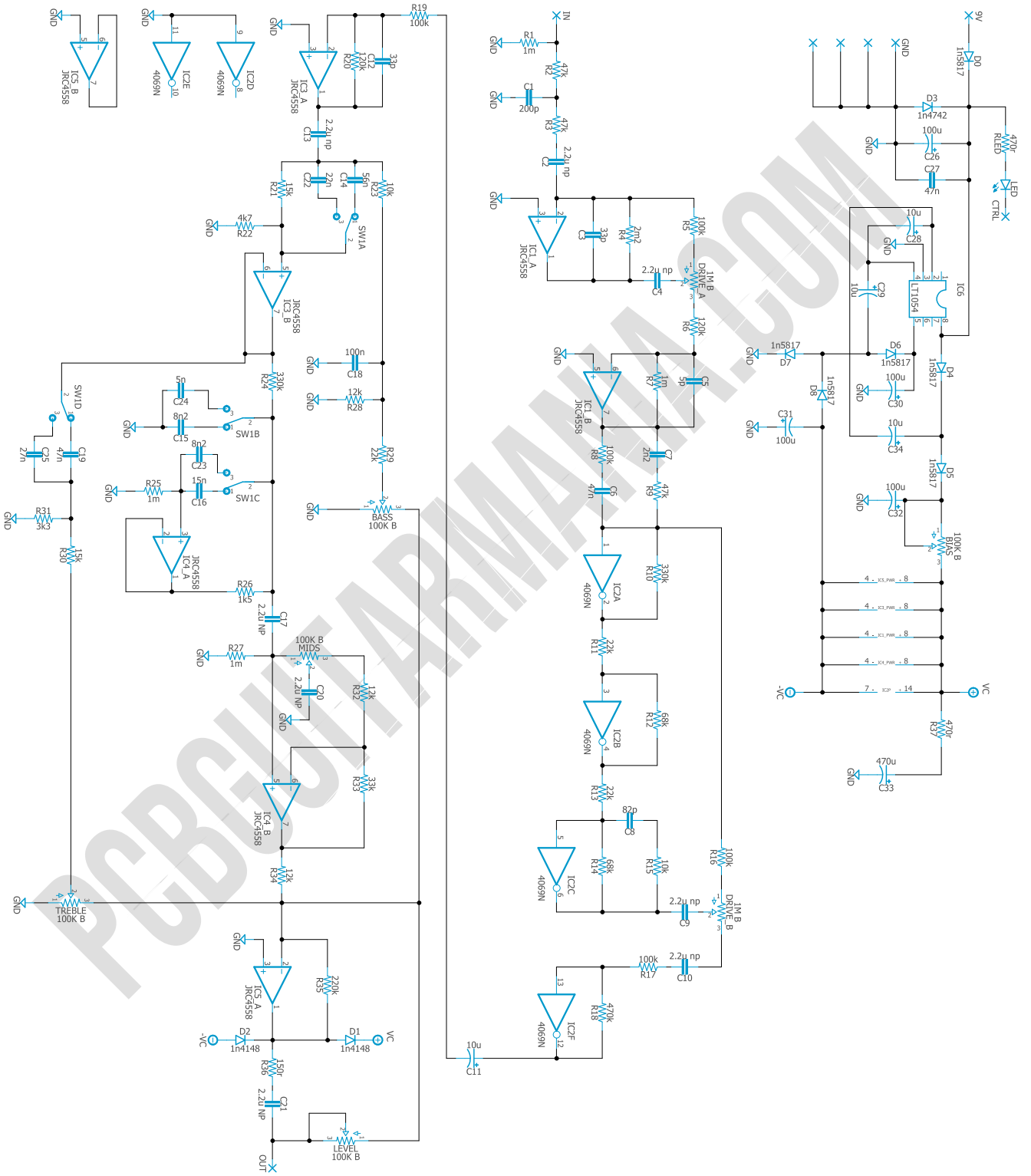
IC		
Qty	Value	Parts
1	CD4069	IC2
4	JRC4558	IC1, IC3, IC4, IC5
1	LT1054*	IC6

Switches		
Qty	Value	Parts
1	4PDT	SW1
1	3PDT Stomp foot	-

Diodes		
Qty	Value	Parts
2	1n4148	D1, D2
1	1n4742	D3
6	1n5817	D0, D4, D5, D6, D7, D8

Jacks		
Qty	Value	Parts
1	DC Jack	-
2	Audio Jack	-

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. 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

LT1054* This IC is in charge of Sun Beta's power section and guarantees the lowest noise levels. However, you can replace it with other alternatives such as MAX1044 and similar ICs. To do so, you **MUST** place a jumper in between pins 1 and 8.

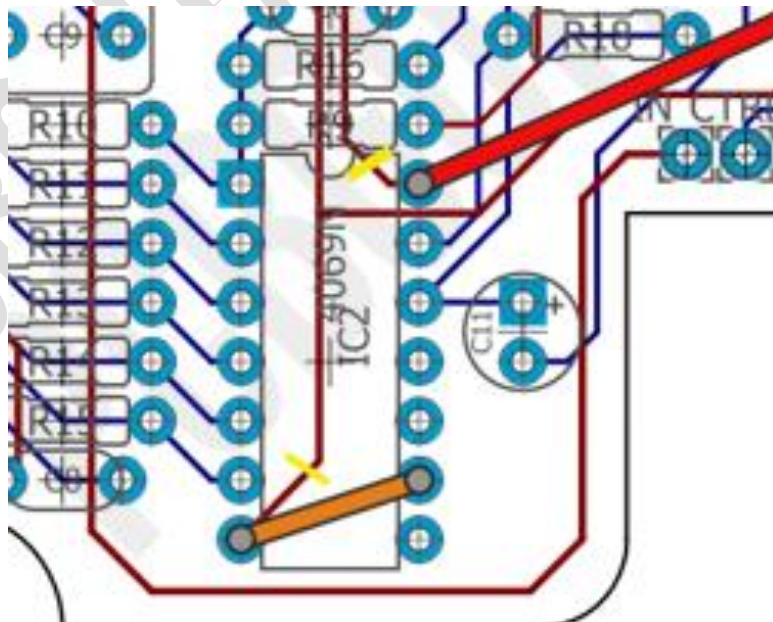
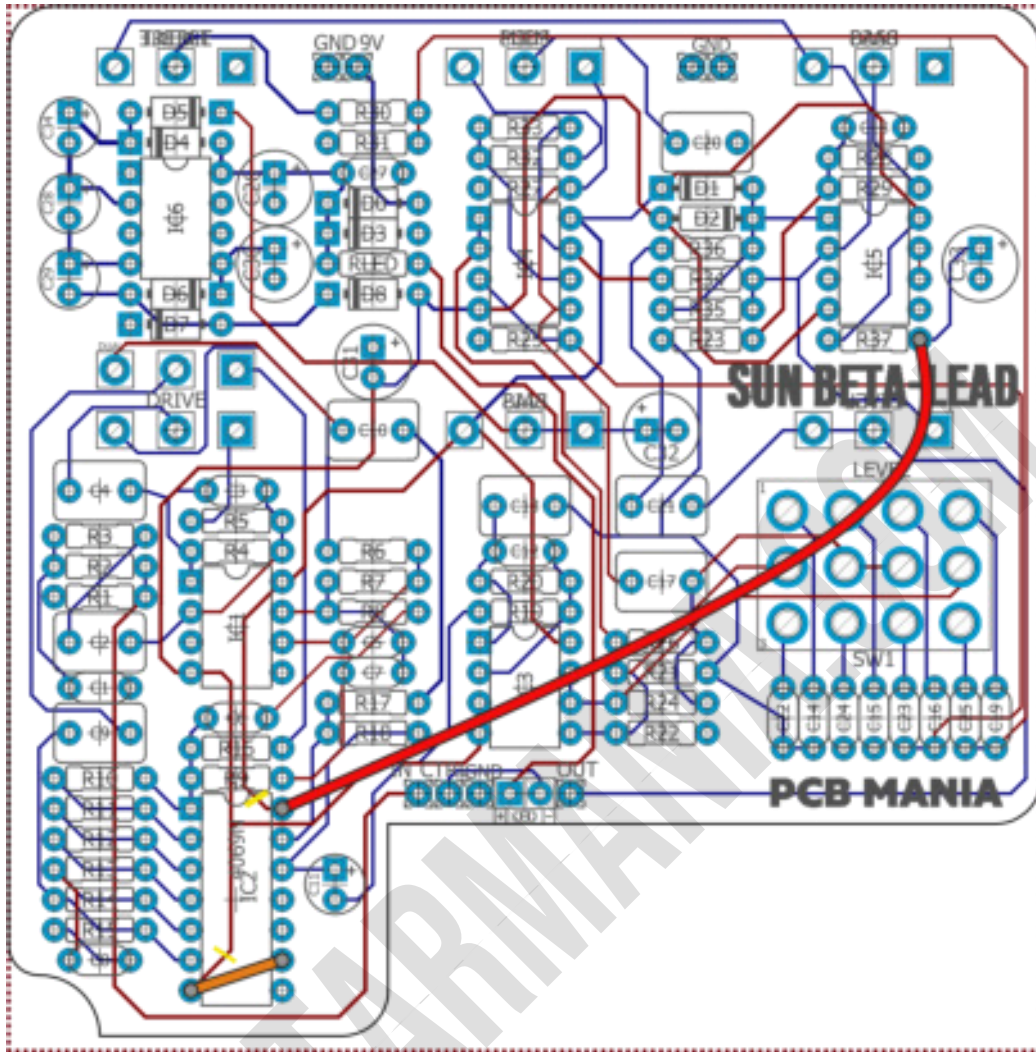
2u2 np these capacitors Must NON-POLARIZED. You can use both non polarized Electrolytic or Box film non-polarized.**

IMPORTANT

The first version of this board has an issue with the power rail of the CD4069. A mistake with the path tracing makes the power drop down once the chip is placed on board.

You can fix that easily by placing the jumpers shown in the graphic below. You will also need to cut the traces on the top layer with the yellow mark and place the following jumpers on the solder side.

A more straightforward way of doing this is just lifting LEG 7 of the IC Cd4069 and connecting it through a jumper to the closest Ground (LEG 9 IC2) offboard.



This issue no longer exists in the current 1v3 version.
 If you received one of the older versions, please get in touch with us for a complete refund.

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. **TIGHT FIT!!**
We really encourage you to use lumber type jacks for this pedal.

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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