Thunder Lead

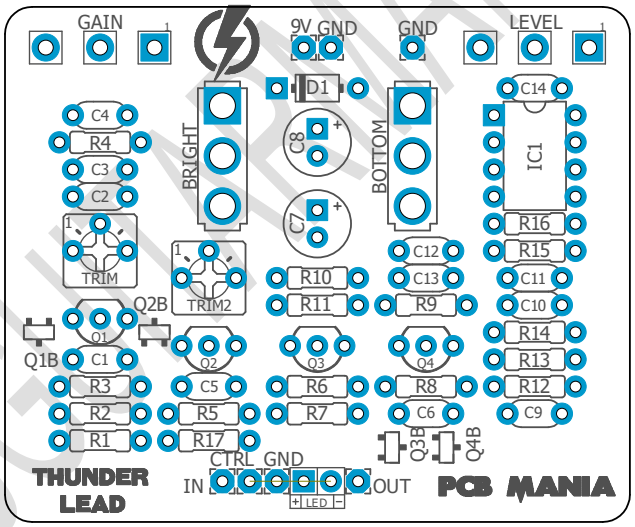
Based on:
Marshall Super Lead
ROG THOR
Effect type:
Vintage voiced reverb
Build difficult:
Average

Amount of parts:
Low, total 26 components
Technology:
JFET J201
Power consumption:
9V

Enclosure type:
125b
Get your board at:
Thunder Lead
Get your kit at:
Das Musikding (Europe)

Project overview:

Inspired on the tone of the Marshall Superlead, part of the series 'Develop your own Preamp' where you can combine preamp sections of iconic amplifiers with different types of eqs in order to create your own custom boutique pedal.



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Introduction

You love that massive British Rock´n´Roll tone, but are tired that there are almost all related to the Plexi? Here is something for you. Run-off-Groove´s Thor is a take on the Marshall Super Lead ™. They replaced the Tubes with jets and tweaked it till they got it right. They even came up with a solution for the problem that this kind of circuits usually tempt to have to much gain compared to the original. Btw, the documents on their Page goes deeper in this circuit if you want to know more about the theory behind how this circuit has designed.

Back to the sound and what you can expect from it. ROG is known for their amazing sounding takes on existing designs. So what we did is I pretty much 1 to 1 copy of it but with the major benefits that you do not have to deal with tagboard to make one.

Sound wise I was pretty surprised that this circuit isn't done many more times. It Rocks way more then you need for your rhythm playing, if gives you creamy leads you know from your favorite records from the 80s with pretty authentic tube triode like response. Also the two toggles for brightness and low end adjustment make way more sense than one would expect from just the flip of a switch. I really enjoyed playing with this little and easy to build project.

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Controls

- Gain
- Level
- Bright switch
- Bottom Switch

Bill of materials

Resistors	
Part	**Value**
R1	1M
R2	33k
R3	390r
R4	470k
R5	1k
R6	220k
R7	390r
R8	390r
R9	1M
R10	10k
R11	10k
R12	120k
R13	39k
R14	56k
R15	100k
R16	33k
R17	2k7

Capacitors	
Part	**Value**
C1	220p
C2	1n
C3	470p
C4	470p
C5	100n
C6	100n
C9	100n
C10	470p
C11	1n
C12	22n
C13	22n
C14	100n

Electrolytics Capacitors	
Part	**Value**
C7	100u
C8	100u

Potentiometers	
Part	**Value**
GAIN	1M A
LEVEL	100k A

Trimpots*	
Part	**Value**
TRIM	5k
TRIM2	20k

Part	Value
IC1	TL072

Transistors	
Part	**Value**
Q1	J201
Q2	J201
Q3	J201
Q4	J201

Diods	
Part	**Value**
D1	1n5817
LED	3mm led

Switches	
Part	**Value**
Bright	SPDT ON-ON
Bottom	SPDT ON-ON

Shopping list

Resistors		
Qty	**Value**	**Parts**
1	100k	R15
2	10k	R10, R11
1	120k	R12
2	1M	R1, R9
1	1k	R5
1	220k	R6
1	2k7	R17
2	33k	R2, R16
3	390r	R3, R7, R8
1	39k	R13
1	470k	R4
1	56k	R14

Capacitors		
Qty	**Value**	**Parts**
4	100n	C5, C6, C9, C14
2	1n	C2, C11
1	220p	C1
2	22n	C12, C13
3	470p	C3, C4, C10

Electrolytics Capacitors		
Qty	**Value**	**Parts**
2	100u	C7, C8

Potentiometers		
Qty	**Value**	**Parts**
1	100k A	LEVEL
1	1M A	GAIN

Trimpots*		
Qty	**Value**	**Parts**
1	20k	TRIM2
1	5k	TRIM

IC		
Qty	**Value**	**Parts**
1	TL072	IC1

Transistors		
Qty	**Value**	**Parts**
4	J201	Q1, Q2, Q3, Q4

Switches		
Qty	**Value**	**Parts**
2	SPDT ON-ON	Bright, Bottom

Diods		
Qty	**Value**	**Parts**
1	1n5817	D1
1	3mm led	LED

Components Recommendations

As many people like to experiment some pedals with higher voltage, 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.

Bias trimpots* This project needs you to adjust the trimpots for the correct functionality of the pedal. We explain that bellow. However if you don't feel like biaising you can replace the trimpots for 15k resistors, and it should work fine. This has not been tested by us but matches what many builders have reported across forums in the web.

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! we strongly recommend the use of SMD transistors as they are more reliable quality wise.

To bias correctly the transistors you must plug your finished build into the power supply first. With your tester on voltage mode (V20) plug the negative tip into the ground of the project, some alligators could be really helpful. With the positive tip touch the Drain leg of your transistor and it should appear the voltage on your tester screen. If you are using a 9v power supply Tweak the trim pot till you read 4.5v. Do the fine adjustment by ear, in order to bias at your own personal taste.

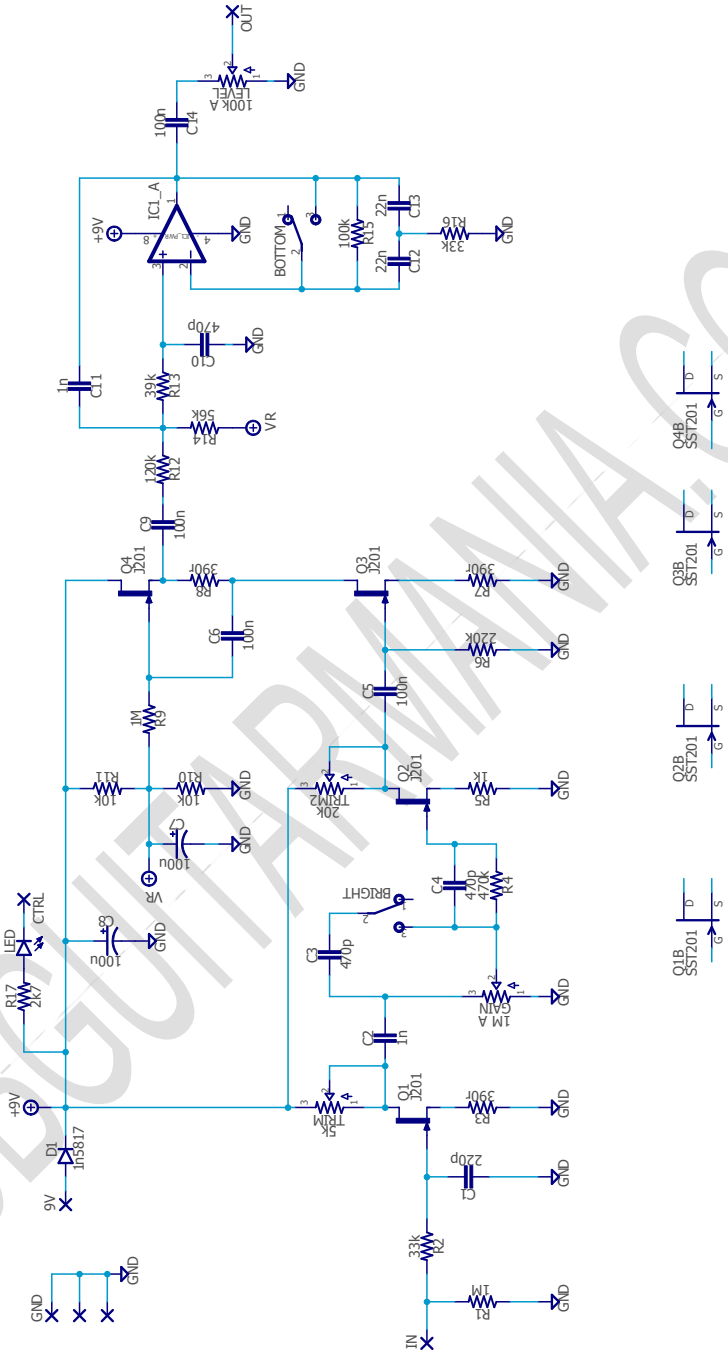
Build Notes

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.

This board has been designed to match our EZ 3PDT PCB check it here to access to 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 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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