Freeman Crate

Based on:
Friedman Small Box

Amount of parts:
Average, total 77 components

Enclosure type:
125b

Effect type:
Classic Plexi overdrive

Technology:
Op Amp

Get your board at:
Freeman Crate

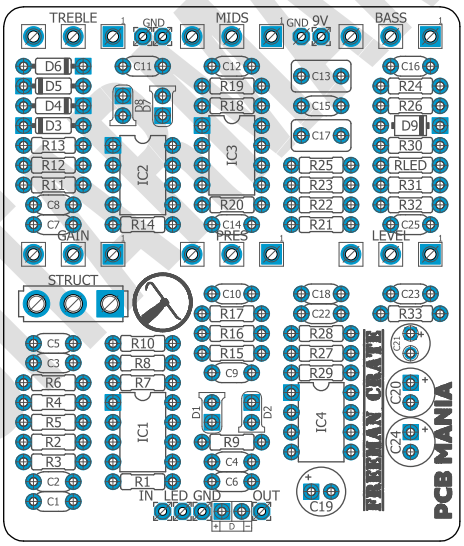
Build difficult:
Advanced

Power consumption:
9V

Get your kit at:
Das Musikding (Europe)

Project overview:

Classic Plexi overdrive that will get you the same tonal versatility, sensitivity, and harmonically rich overdrive as the famous Dave Friedman's Small Box amp, all enclosure inside a pedal.



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Introduction

Freeman Crate is the pedal version of the all-tube amplifier known for being one of the most flexible and touch-responsive amplifiers on today's market. This little overdrive board can deliver mighty rock 'n' roll tones while still being surprisingly versatile!

The circuit has the same intuitive control set as the amplifier, letting you dial in the exact tone of rock you want, from vintage Plexi to high gain annihilation. Whether you want a high-output cleaner tone for pushing your amp hard or a thick rough drive that will sit well in both classic or modern rock, all you have to is sweep of the gain control and get there in no time.

Controls

- Bass
- Gain
- Level
- Mids
- Pres
- Treble
- Structure Toggle

Bill of materials

Resistors	
Part	**Value**
R1	1M
R2	330K
R3	10K
R4	39K
R5	22K
R6	22K
R7	10K
R8	22K
R9	22K
R10	470K
R11	22K
R12	220K
R13	22K
R14	27K
R15	10K
R16	27K
R17	2K2
R18	33K
R19	33K
R20	47K
R21	470K
R22	2K2
R23	2K2
R24	22K
R25	100K
R26	3K3
R27	20K
R28	22K
R29	2K2
R30	10R
R31	20K
R32	22K
R33	2K2

RLED	4K7

Capacitors	
Part	**Value**
C1	22n
C2	47p
C3	10n
C4	1n
C5	47p
C6	100n
C7	47n
C8	220p
C9	220p
C10	10n
C11	4n7
C12	22n
C13	220n
C14	470p
C15	2n2
C16	10n
C17	220n
C18	100n
C22	100n
C23	100n
C25	100n

Electrolytics Capacitors	
Part	**Value**
C19	22u
C20	22u
C21	47u
C24	22u

Potentiometers	
Part	**Value**
BASS	100K C
GAIN	1M A
LEVEL	50K A
MIDS	100K A
PRES	10K C
TREBLE	100K B

IC	
Part	**Value**
IC1	TL072
IC2	TL072
IC3	TL072
IC4	TL072

Diods	
Part	**Value**
D1	3mm red LED
D2	3mm red LED
D3	1N4148
D4	1N4148
D5	1N4148
D6	1N4148
D7	3mm red LED
D8	3mm red LED
D9	1N5817

Shopping list

Resistors		
Qty	**Value**	**Parts**
1	100K	R25
3	10K	R3, R7, R15
1	10R	R30
1	1M	R1
2	20K	R27, R31
1	220K	R12
9	22K	R5, R6, R8, R9, R11, R13, R24, R28, R32
2	27K	R14, R16
5	2K2	R17, R22, R23, R29, R33
1	330K	R2
2	33K	R18, R19
1	39K	R4
1	3K3	R26
2	470K	R10, R21
1	47K	R20
1	4K7	RLED

Capacitors		
Qty	**Value**	**Parts**
5	100n	C6, C18, C22, C23, C25
3	10n	C3, C10, C16
1	1n	C4
2	220n	C13, C17
2	220p	C8, C9
2	22n	C1, C12
1	2n2	C15
1	470p	C14
1	47n	C7
2	47p	C2, C5
1	4n7	C11

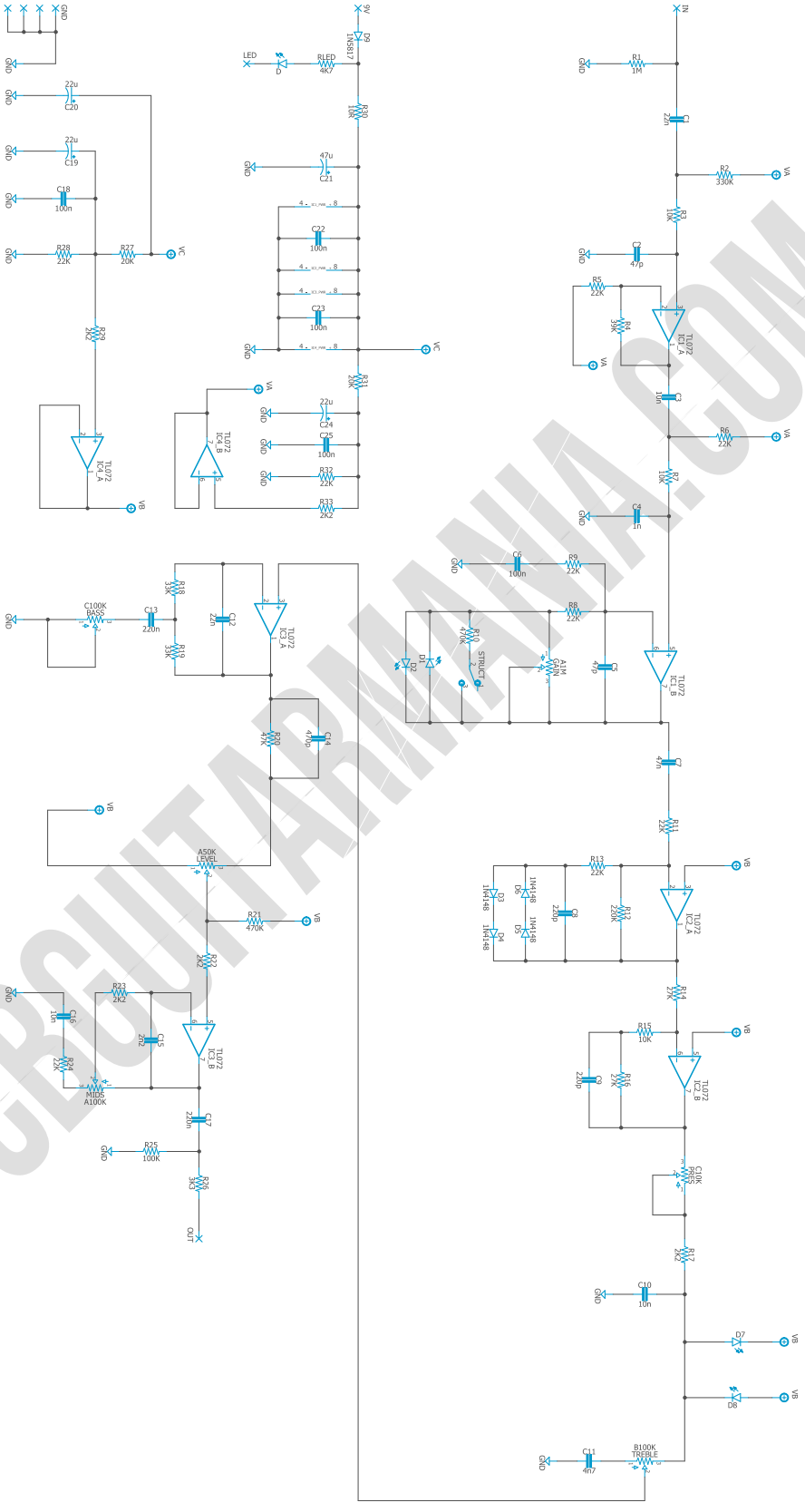
Electrolytics Capacitors		
Qty	**Value**	**Parts**
3	22u	C19, C20, C24
1	47u	C21

Potentiometers		
Qty	**Value**	**Parts**
1	100K A	MIDS
1	1M A	GAIN
1	50K A	LEVEL
1	100K B	TREBLE
1	100K C	BASS
1	10K C	PRES

IC		
Qty	**Value**	**Parts**
4	TL072	IC1, IC2, IC3, IC4

Diods		
Qty	**Value**	**Parts**
4	1N4148	D3, D4, D5, D6
1	1N5817	D9
4	RED 3mm	D1, D2, D7, D8

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

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 125b 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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