Calvin Vai

Based on:
Carvin Vai preamp

Amount of parts:
Average, total 62 components

Enclosure type:
125b

Effect type:
Overdrive

Technology:
JFET

Get your board at:
Calvin Vai

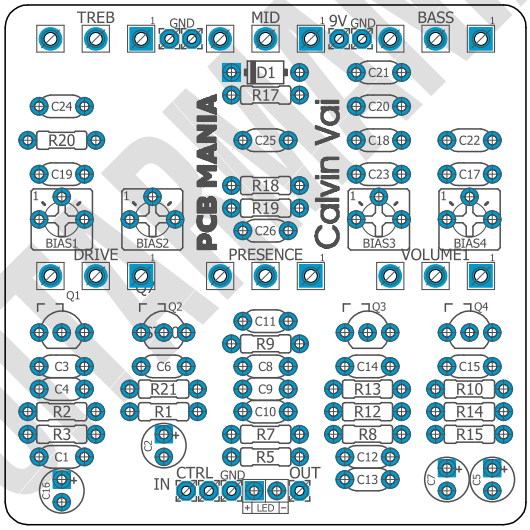
Build difficult:
Intermediate

Power consumption:
9V

Get your kit at:
Das Musikding (Europe)

Project overview:

For the love of god! Get your double-neck guitar and your animal print yoga pants ready because the audience is waiting. Forget Calvin Klein; it's time for Calvin Vai!



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Introduction

Yes! The legendary tones of Steve Vai's Carvin Legacy amps are now available in a compact version. Since we wanted to keep the size of this pedal as small as possible, the preamp tubes have been replaced with JFET transistors to make sure there are no compromises made to the sound. This circuit is so outstanding that you can easily skip your amp's preamp and connect this bad horsie right to the effects loop.

The Calvin Vai board comes with 6 knobs - VOLUME, DRIVE, PRESENCE, BASS, MID, and TREBLE. With the VOLUME control you can set the loudness of the effect from barely audible, through unity gain, right to a full stadium blast. DRIVE is how you operate the saturation of the distortion - from delicate crunch to endless leads; it's all here. The EQ section contains 4 pots - BASS, MID, TREBLE and also PRESENCE. With the first three you control the amount of low, mid and high frequencies coming out of the speaker, while PRESENCE is a fantastic tool when you want to make sure your guitar is heard in a dense mix.

You have your tone in your fingers and now you also have the tone on your pedalboard, so there are no more excuses, but to practice those sweeps until you experience erotic nightmares... and trust us, you will!

Controls

- Bass
- Drive
- Mid
- Presence
- Treb
- Volume1

Bill of materials

Resistors	
Part	**Value**
R1	220k
R2	910r
R3	4m7
R5	1k5
R7	470k
R8	1m
R9	68k
R10	3k3
R12	470k
R13	220k
R14	470k
R15	2k2
R17	100k
R18	100k
R19	47k
R20	4k7
R21	2m2

Capacitors	
Part	**Value**
C1	10pF
C3	47n
C4	2n2
C6	560pF
C8	560pF
C9	2n2
C10	560p
C11	4n7
C12	560p
C13	560p
C14	560p
C15	2n2
C17	560p
C18	10n
C19	250pF
C20	10n
C21	10n
C22	560p
C23	560p
C24	2n2
C25	33n
C26	2n2

Electrolytics Capacitors	
Part	**Value**
C2	1u
C5	47u
C7	220u
C16	1u

Potentiometers	
Part	**Value**
BASS	1m B
DRIVE	500k A
MID	25k A
PRESENCE	500k A
TREB	1m B
VOLUME1	1m B

Trimpots	
Part	**Value**
BIAS1	100k
BIAS2	100k
BIAS3	100k
BIAS4	100k

Transistors	
Part	**Value**
Q1	2N5457
Q2	2N5457
Q3	2N5457
Q4	2N5457

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

Shopping list

Resistors		
Qty	**Value**	**Parts**
2	100k	R17, R18
1	1k5	R5
1	1m	R8
2	220k	R1, R13
1	2k2	R15
1	2m2	R21
1	3k3	R10
3	470k	R7, R12, R14
1	47k	R19
1	4k7	R20
1	4m7	R3
1	68k	R9
1	910r	R2

Capacitors		
Qty	**Value**	**Parts**
3	10n	C18, C20, C21
1	10pF	C1
1	250pF	C19
5	2n2	C4, C9, C15, C24, C26
1	33n	C25
1	47n	C3
1	4n7	C11
7	560p	C10, C12, C13, C14, C17, C22, C23
2	560pF	C6, C8

Electrolytics Capacitors		
Qty	**Value**	**Parts**
2	1u	C2, C16
1	220u	C7
1	47u	C5

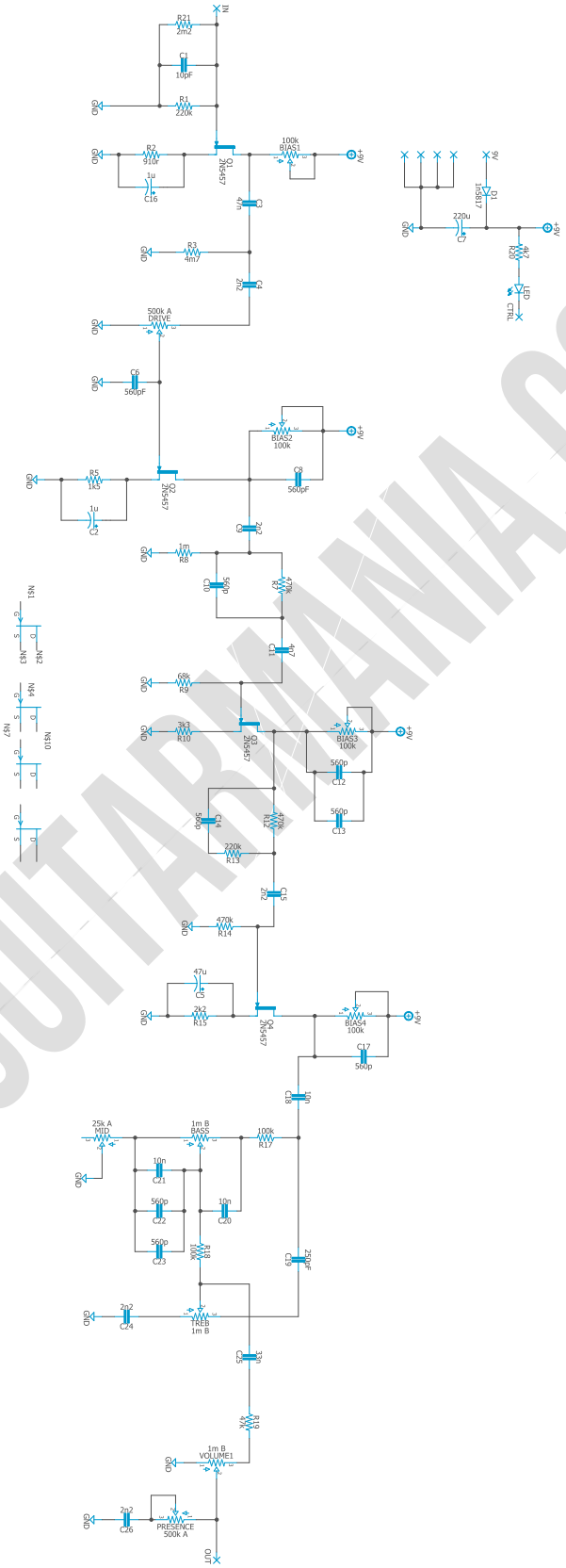
Potentiometers		
Qty	**Value**	**Parts**
3	1m B	BASS, TREB, VOLUME1
1	25k A	MID
2	500k A	DRIVE, PRESENCE

Trimpots		
Qty	**Value**	**Parts**
4	100k	BIAS1, BIAS2, BIAS3, BIAS4

Transistors		
Qty	**Value**	**Parts**
4	2N5457	Q1, Q2, Q3, Q4

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

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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