



VFE FIERY RED HORSE

FX TYPE: Saturated Fuzz

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From the VFE Website:

<http://vfe pedals.com/fiery-red-horse.html>

The FIERY RED HORSE v2 is our most versatile fuzz pedal ever. It offers over-the-top saturation and sustain, as well as big, dynamic fuzzstortion tones. Sag the power and adjust the compression to dial in a buttery, warm fuzz, or go the other way for a HUGE sound that cleans up nicely with the guitar's volume knob. The active treble and bass EQ allows for more versatile uses, as well as a lower noise floor.

HOW THE FIERY RED HORSE CAME TO BE

"The v2 Fiery Red Horse ends my search for a fuzz pedal that blurs the line between distortion and fuzz. I knew from my experience with the first Fiery Red Horse what I wanted to add - variable compression, active EQ, and more dynamic range. The v2 Fiery Red Horse was born after several prototypes, a pre-production run, and lots of great feedback from VFE customers.

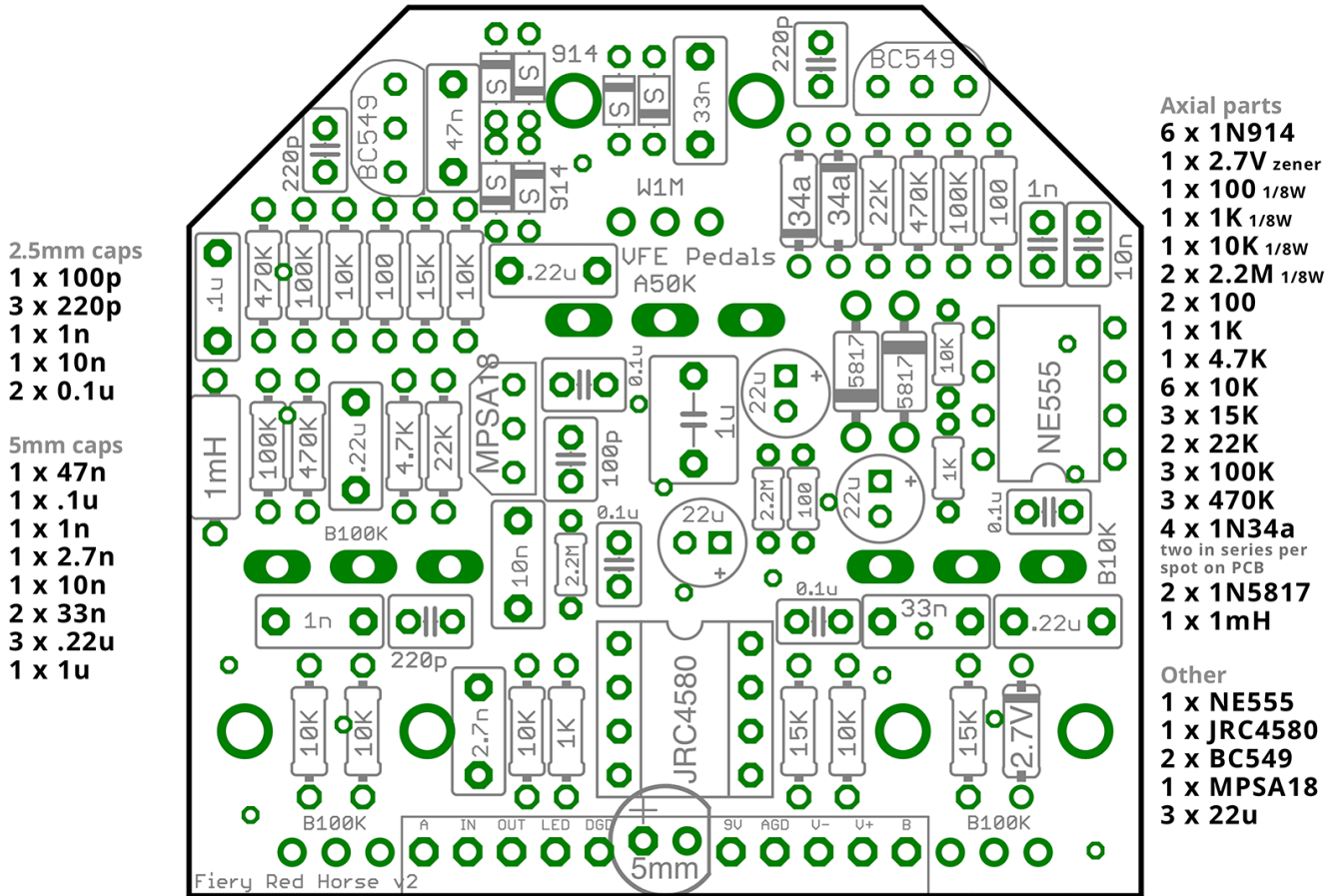
Want endless sustain? Check. Want a fuzz that cleans up nicely? Check. Want a big, yet saturated distortion? Check. Mid-scooped fuzz? Check. Mid-boost fuzz? Check. Bass-friendly fuzz? Check. Bright, gritty fuzz? Check. Sagging, warm...do I really have to keep answering these questions?"

- **POWER:** Sets the power fed to the dual gain stages. More power = bigger, more dynamic distortion. With a standard 9V power supply, the circuit is fed 3V up to 16V. With a 15V power supply, the circuit is fed 3V up to 27V!
- **GAIN:** Sets the strength of the signal fed to the gain stages. More gain = more distortion & volume.
- **LEVEL:** This simple passive attenuator sets the output volume of the FRH.
- **COMP:** Variable HCC circuitry controls the compression and harmonic character of the fuzz. Turn clockwise for a grittier, biting silicon fuzz. Turn counterclockwise for a warm, ultra-saturated germanium fuzz. Turn towards 12:00 for a huge volume boost and dynamic distortion tone.
- **BASS:** Active Baxandall EQ - turn clockwise to boost bass response, and counterclockwise to cut bass.
- **TREBLE:** Active Baxandall EQ - turn clockwise to boost treble response, and counterclockwise to cut treble.

Terms of Use: You are free to use purchased **Fiery Red Horse** circuit boards for both DIY and small commercial operations. You may not offer **Fiery Red Horse** PCBs for resale or as part of a "kit" in a commercial fashion. Peer to peer re-sale

Build Guide

Dimensions: 2.17" W x 2.025" H



Note: Use the values listed on the image above – not the values indicated on the silk-screen of the PCB. Some values changed over time in the VFE product cycles.

REMINDER: PETER RUTTER / VFE DOES NOT PROVIDE SUPPORT FOR THESE PROJECTS. PLEASE DO NOT CONTACT HIM FOR QUESTIONS OR TECHNICAL SUPPORT. VISIT THE VFE SECTION OF THE MADBEANPEDALS FORUM FOR QUESTIONS AND ANSWERS!

Shopping List

QTY	Value	Type	Rating	Spacing
1	100R	Metal / Carbon Film	1/8W	5mm
1	1k	Metal / Carbon Film	1/8W	5mm
1	10k	Metal / Carbon Film	1/8W	5mm
2	2M2	Metal / Carbon Film	1/8W	5mm
2	100R	Metal / Carbon Film	1/4W	7.5mm
1	1k	Metal / Carbon Film	1/4W	7.5mm
1	4k7	Metal / Carbon Film	1/4W	7.5mm
6	10k	Metal / Carbon Film	1/4W	7.5mm
3	15k	Metal / Carbon Film	1/4W	7.5mm
2	22k	Metal / Carbon Film	1/4W	7.5mm
3	100k	Metal / Carbon Film	1/4W	7.5mm
3	470k	Metal / Carbon Film	1/4W	7.5mm
1	100pF	MLCC	25v min.	2.5mm
3	220pF	MLCC	25v min.	2.5mm
1	1n	MLCC	25v min.	2.5mm
1	10n	MLCC	25v min.	2.5mm
3	100n	MLCC	25v min.	2.5mm
1	1n	Film	25v min.	5mm
1	2n7	Film	25v min.	5mm
1	10n	Film	25v min.	5mm
2	33n	Film	25v min.	5mm
1	47n	Film	25v min.	5mm
1	100n	Film	25v min.	5mm
3	220n	Film	25v min.	5mm
1	1uF	Film	25v min.	5mm
3	22uF	Electrolytic	25v min.	2mm
4	1n34a	or, similar GE diode		7.5mm
2	1n5817			7.5mm
1	2.7v	Zener		7.5mm
1	1mH	inductor		9mm
1	NE555			
1	4580D	or, 4580DD		
2	BC549	BC549c preferred		
1	MPSA18			
2	100kB	PCB Mount, Plastic Shaft		9mm
1	W1M	PCB Mount, Plastic Shaft		9mm
1	100kB	PCB Mount		16mm
1	10kB	PCB Mount		16mm
1	50kA	PCB Mount		16mm

Note: If you plan to try the Fiery Red Horse at 15v (as mentioned on pg.1) then use capacitors rated for 35v instead of 25v. You can use BAT41 diodes in place of the 1n34a. Remember you need four (two in series)!

BOM Notes

100pf: <http://www.mouser.com/ProductDetail/KEMET/C320C101J5G5TA/?qs=sGAEpiMZZMt3KoXD5rJ2N54QGdmtVht-g63%252bt7NgZMo0%3d>

220pF: <http://www.mouser.com/ProductDetail/KEMET/C320C221J2G5TA/?qs=sGAEpiMZZMt3KoXD5rJ2N%252bwg-B1a522xefKI%252bxFregl%3d>

1n: <http://www.mouser.com/ProductDetail/KEMET/C320C102J5G5TA/?qs=sGAEpiMZZMt3KoXD5rJ2NyCoF5j9nbtORIOI-gJ9L0hY%3d>

10n: <http://www.mouser.com/ProductDetail/TDK/FG18C0G1H103JNT06/?qs=sGAEpiMZZMt3KoXD5rJ2N5U4Cys%-2fUpTlgSWmruA3wbyX7d2yhizmuA%3d%3d>

100n: <http://www.mouser.com/Search/ProductDetail.aspx?R=C320C104K5R5TAvirtualkey64600000virtualkey80-C320C104K5R>

1n34a: <http://www.smallbear-electronics.mybigcommerce.com/diode-nos-germanium/>

BAT41:

<http://www.smallbear-electronics.mybigcommerce.com/diode-schottky-bat41/>

<https://www.mouser.com/ProductDetail/STMicroelectronics/BAT41?qs=sGAEpiMZZMvAvBNgSS9LquujaTxlB93>

2.7v Zener: <https://www.mouser.com/ProductDetail/Vishay-Semiconductors/1N5223B-TR?qs=sGAEpiMZZMtQ8nqTK-tFS%2fC7KvLOWmmQCTqBVv99Ys6o%3d>

1mH Inductor (same inductor as used on the Switching Board): <https://www.mouser.com/ProductDetail/652-78F102J-TR-RC>

NE555: <https://www.mouser.com/ProductDetail/Texas-Instruments/NE555P?qs=sGAEpiMZZMsG1k5vdNM%2fc6UN-h9pCnCAm>

4580D: <http://www.smallbear-electronics.mybigcommerce.com/ic-njm4580d/>

4580DD: <https://www.mouser.com/ProductDetail/NJR/NJM4580DD?qs=%2fha2pyFadujgijvCOzDD%252byxUGddmTIGU-cMxFRwHSul4%3d>

BC549c: <https://www.mouser.com/ProductDetail/ON-Semiconductor-Fairchild/BC549CTA?qs=sGAEpiMZZMvAvB-NgSS9LqswdcRP7YWwO>

MPSA18:

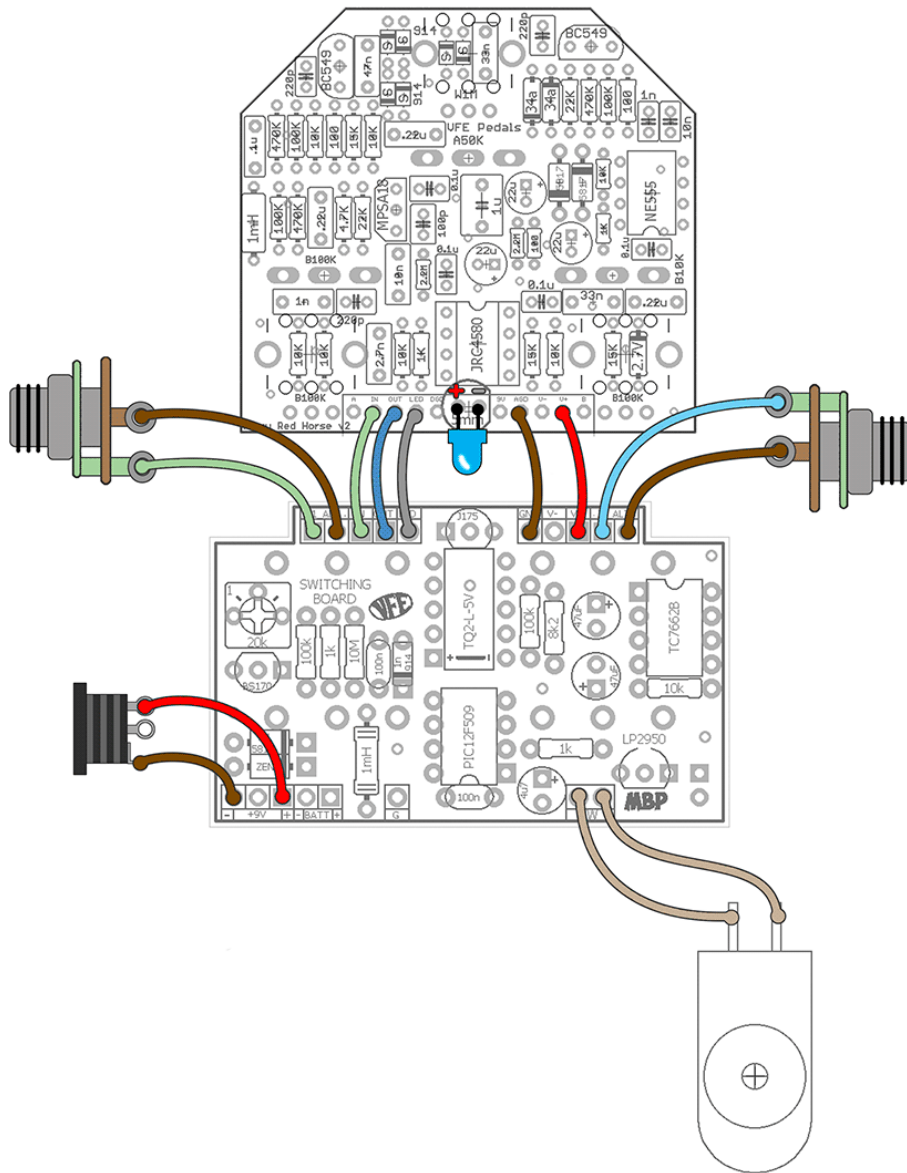
<https://www.mouser.com/ProductDetail/Central-Semiconductor/MPSA18?qs=sGAEpiMZZMshyDBzk1%2fWiw99kSkYzPx-mglTcplOZtXI%3d>

<http://www.smallbear-electronics.mybigcommerce.com/transistor-mpsa18/>

9mm Plastic Shaft (Use 1MB in place of W1M): <http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-9mm-right-angle-pc-mount-w-knurled-plastic-shaft/>

16mm PCB Mount: <http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-16mm-right-angle-pc-mount/>

Wiring

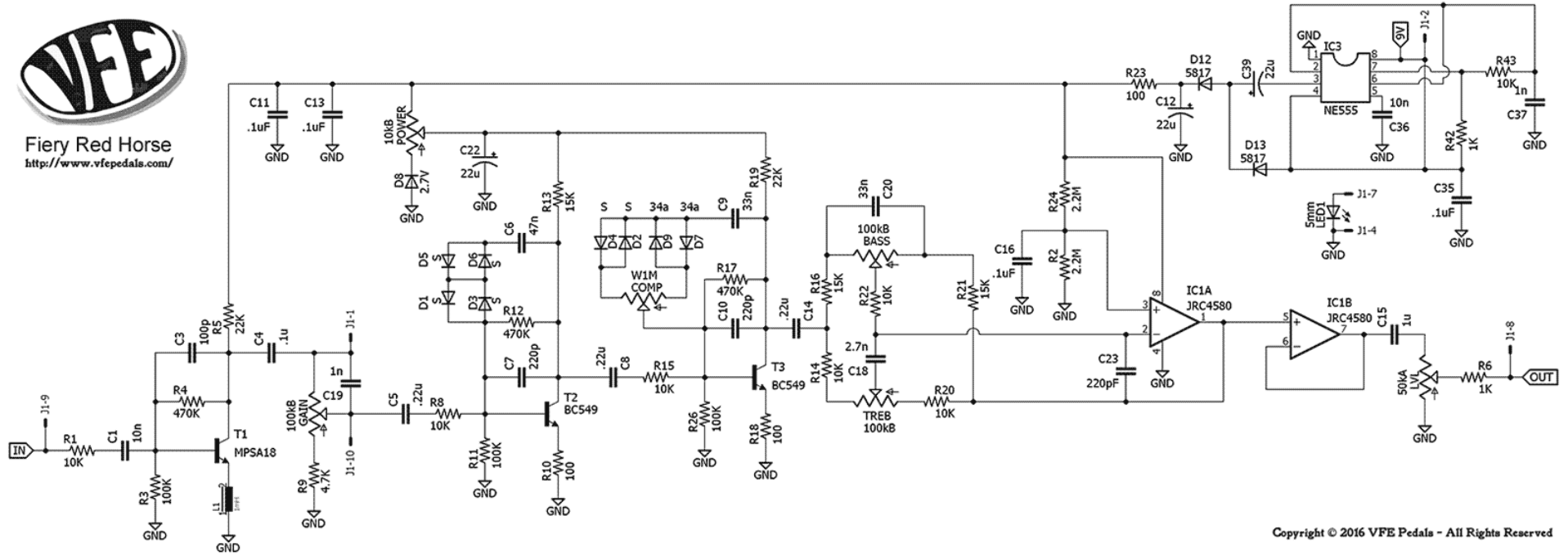


This project does not require a charge pump on the Switching Board. The charge pump duties are handled on the audio PCB via the NE555 timer.

Schematic

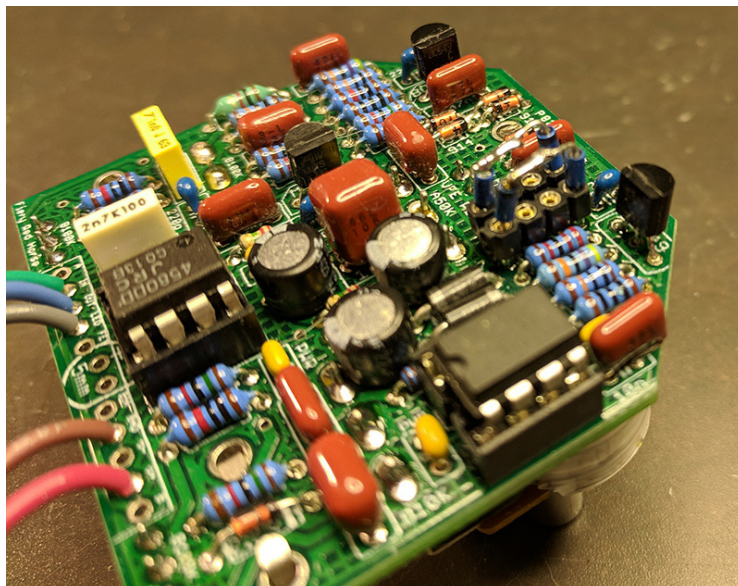
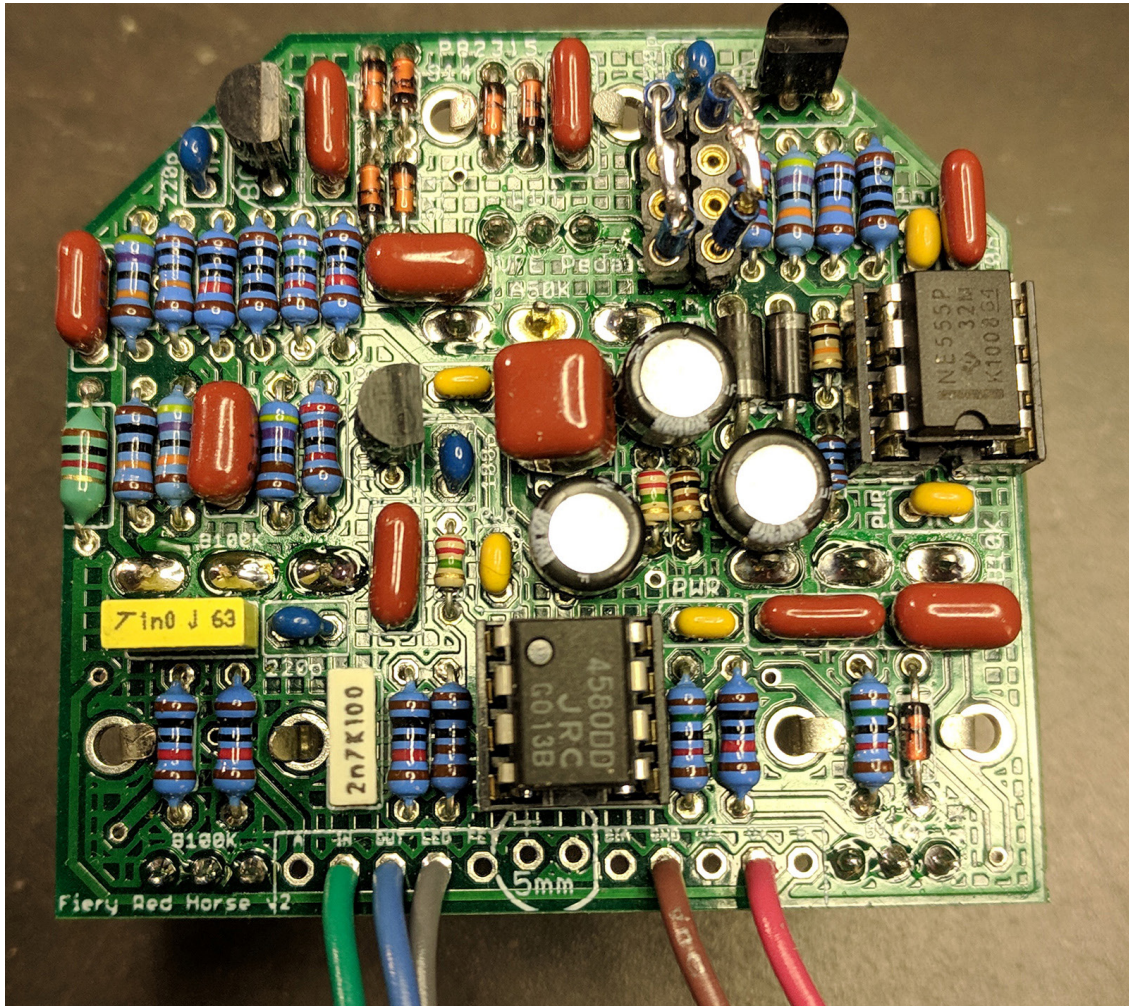


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Build



Diodes in series. I used BAT41 instead of 1n34a.