

FET Spring Reverb DIY PCB Information

This FET Spring Reverb PCB is designed so you can build an outboard reverb unit similar to a 6G15 unit. There is no bypass in this circuit. The control layout is similar to a 6G15. The main difference is that it is FET-based instead of tube-based. It has been designed so the instrument jacks and potentiometers mount directly on the board.

Suggested potentiometers are Alpha R-VAM50KL-SS-PC for the 50K and for the 250K pot you can use a 500K Alpha R-VAM500KL-SS-PC with a 500K resistor across pins 1 and 3.

Power should be supplied by a 12 volt DC adapter rated to at least 1 amp. The PCB includes multiple options for reverse polarity protection. The 12V+ first connects to a Schottky diode (1N5817). If you do not wish to use the Schottky diode, you can insert a jumper wire. There is also an option for a 1N4002 rectifier diode for circuit protection.

The 100uF C2, C3, C6, and C9 capacitors you use should be low ESR types.

The IRF510 and IRF9510 MOSFETs get extremely hot and must be on heatsinks. The holes surrounding the MOSFET pads are spaced at 25.4mm to accept many common heatsinks designed for TO-220 packages. Alternatively, you can screw the MOSFETs to the inside of a metal enclosure so the metal enclosure acts as a heatsink. You can then connect the remote MOSFETs to the board via wire. It is suggested that you put a small dab of heatsink compound on the back of the MOSFETs. Be sure to select a heatsink that will sufficiently dissipate the heat produced by the MOSFETs.

The trimpot (U4) in conjunction with 30K resistor labeled R25 controls the voltage at test point 1 (TP1). Adjust the trimpot until you get a reading of 6 volts (or just under) at TP1. Alternatively, you can solder a jumper wire in place of the trimpot and increase the value of R25 accordingly.

This circuit uses five 2N5457 JFETs. The original circuit designer suggests using Fairchild JFETs selected for V_p : -1.58V, I_{dss} : 3.27mA, +/- 20%. Because stock of TO-92 package 2N5457's is often limited, you may also use the SMT MMBF5457 JFETs. The pads on this circuit board are positioned to make contact with MMBF5457. The SMT package can be soldered on the same side because the source and drain are interchangeable.

This PCB has holes/pads for two output capacitors labeled "C1" and "C10". You only need to install one capacitor. The second capacitor holes/pads are there so you can change the output capacitor if you want to alter the tone. This allows you to try the "C10" mod if you want.

R9 is the LED resistor. R9 value should be chosen to match the LED you place in CN3 header. LED polarity is shown below CN3.

CN2 is the power header. Polarity is shown below CN2.

CN3 is for connecting a power toggle. The power toggle should be an ON/ON SPDT type. Connect the pole and one throw to this 2P header. This functions as a power switch by connecting and disconnecting V- from ground.

All headers on the board are designed for 2.54mm pin spacing.

This circuit is designed to work with an 8 ohm input impedance spring tank. The 4P header is where the spring tank RCA cables connect to the board. The pad labeled "to" should connect to the tip wire of the RCA cable going to the spring tank (usually white). The pad marked "RTN" connects to the tip wire of the RCA cable that returns the signal from the spring tank (usually red). The pad labeled "GND" is for the RCA cable ground. Which RCA cable you ground depends on the grounding configuration of the spring tank you select. There is an extra RTN pad in case you want to add a footswitch.

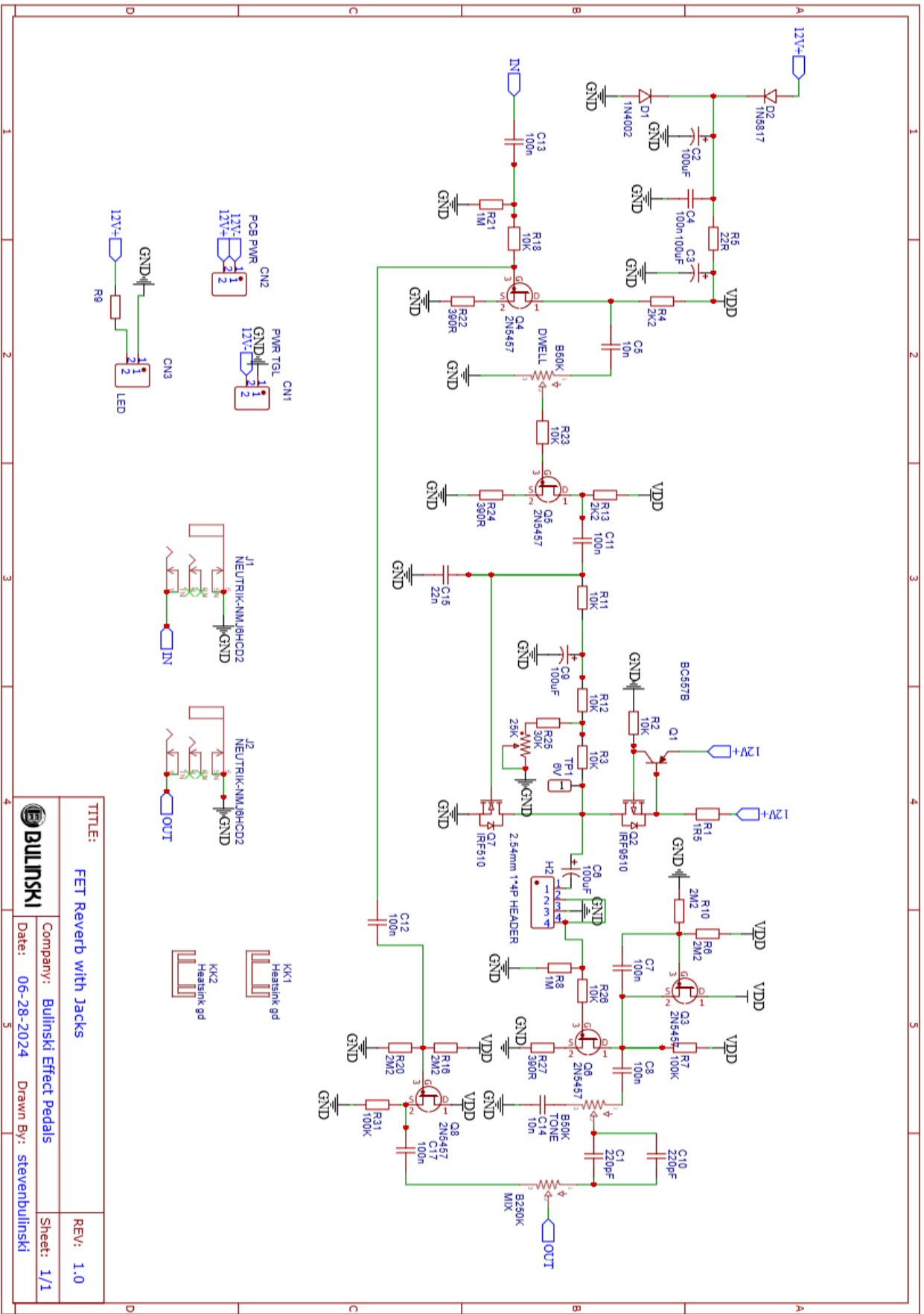
***WARNING:** This project requires knowledge of electronics and soldering. Improper assembly or use is potentially dangerous. Steven Bulinski Music and Bulinski Effect Pedals are not responsible for any damages or injury resulting from the assembly or use of this product.*

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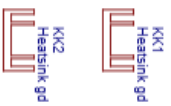
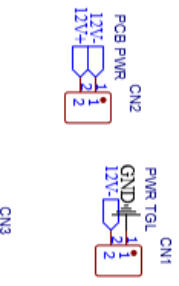
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Parts List

Name	Type	Quantity	Designator
BC557B	BJT Transistor	1	Q1
2N5457	JFET Transistor	5	Q3,Q4,Q5,Q6,Q8
IRF510	MOSFET	1	Q7
IRF9510	MOSFET	1	Q2
220pF	Box Film Capacitor	1	C1
10n	Box Film Capacitor	2	C5,C14
22n	Box Film Capacitor	1	C15
100n	Box Film Capacitor	7	C4,C7,C8,C11,C12,C13,C17
100uF	Electrolytic Capacitor	4	C2,C3,C6,C9
1N4002	Rectifier Diode	1	D1
1N5817	Schottky Diode	1	D2
B50K	Potentiometer	2	DWELL,TONE
B250K	Potentiometer	1	MIX
1R5	Resistor	1	R1
22R	Resistor	1	R5
390R	Resistor	3	R22,R24,R27
2K2	Resistor	2	R4,R13
10K	Resistor	7	R2,R3,R11,R12, R18, R23, R26
30K	Resistor	1	R25
100K	Resistor	2	R7, R31
1M	Resistor	2	R8,R21
2M2	Resistor	4	R6,R10,R16,R20
LED Resistor	Resistor	1	R9
Neutrik-NMJ6HCD2	Stereo Jack	2	J1,J2
Heatsink	TO-220 Heatsink 25.4mm Pins	2	KK1,KK2
25K Trimpot	Trimpot 3362P	1	U4



TITLE:	FET Reverb with Jacks	REV: 1.0
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