Sushi Box FX – Space Heater

The Space Heater is a simple single-tube preamp with minimal controls. It can go from squeaky clean to moderate overdrive and hit everywhere between. Use it as a clean boost, an overdrive, or just a clean, tube tone-sweetener.

DISCLAIMER AND WARNING

This circuit contains high voltages exceeding 200V, and is EXTREMELY DANGEROUS. Sushi Box FX is not responsible for any damage or injury caused by improper use or assembly, and I encourage you to use the utmost care when building, testing, and using this pedal. If high voltages make you uncomfortable, DO NOT BUILD THIS. Just don't. This is not a beginner project and should not be treated as such. It was designed to be as easy as possible to assemble and make it work, but **you have to be careful**.

Normally I would recommend testing a circuit before putting it into the box, but in this case I recommend fully boxing the unit before testing for the sake of safety. If for any reason you need to probe voltages inside the box, do so with extreme caution, and only keep one hand near the box at a time, do not allow both hands to touch the box/circuit at the same time.

Recommended Build Instructions

This will go similar to most pedal builds; I recommend starting with smaller components and working your way up to the larger components. I recommend assembling in the following order:

1. resistors
2. diodes
3. IC socket
4. ceramic capacitors
5. film capacitors
6. electrolytic capacitors
7. inductor
8. BJT transistor
9. power MOSFET
10. tube socket
11. potentiometers
12. ribbon cable

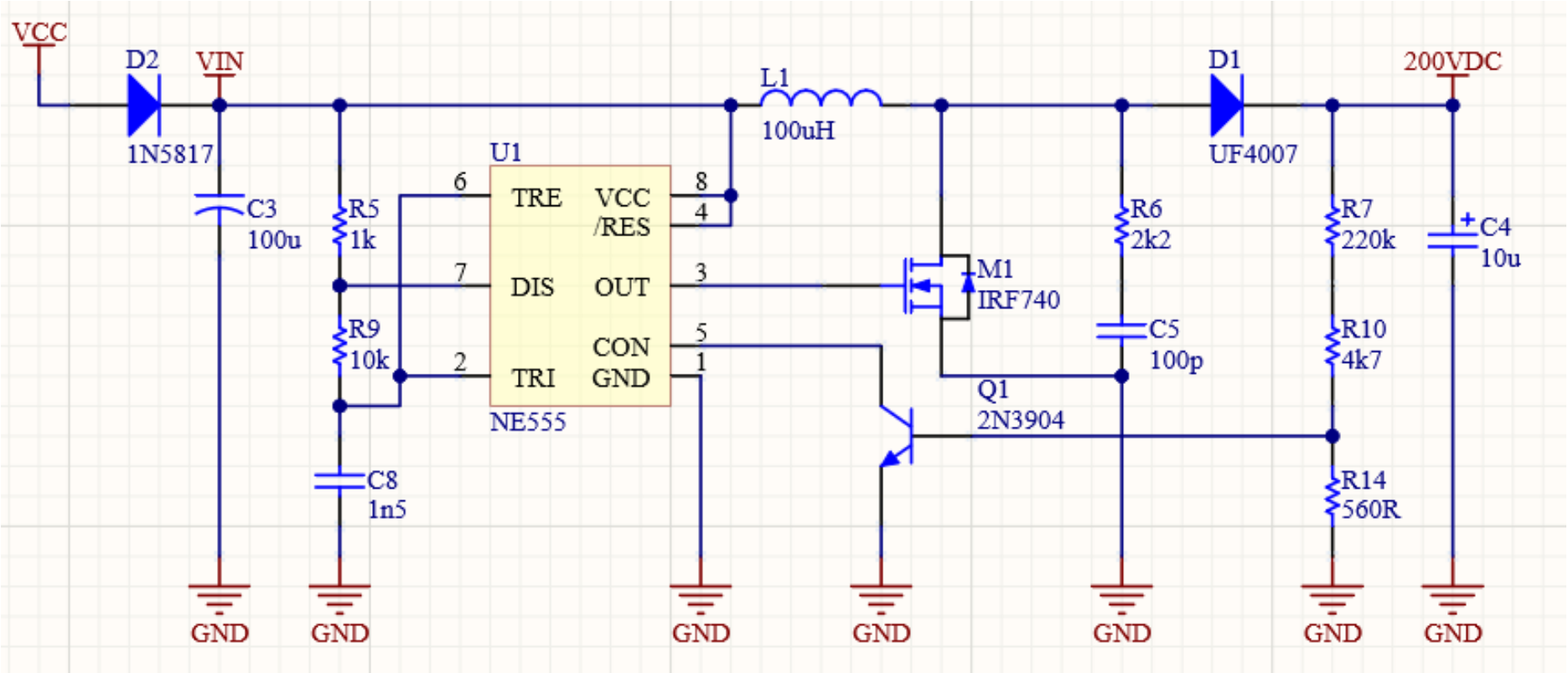
The power jack and ¼" jacks need to be inserted into the box prior to the board being inserted, and I recommend soldering the wires to the all jacks prior to putting the board in, as there won't be much room to reach in to solder them afterward. After the wires have been soldered to the jacks insert the board, then connect each wire to its corresponding pad on the board. Lastly connect the ribbon cable to the footswitch board, and you're good to go.

Bill of Materials

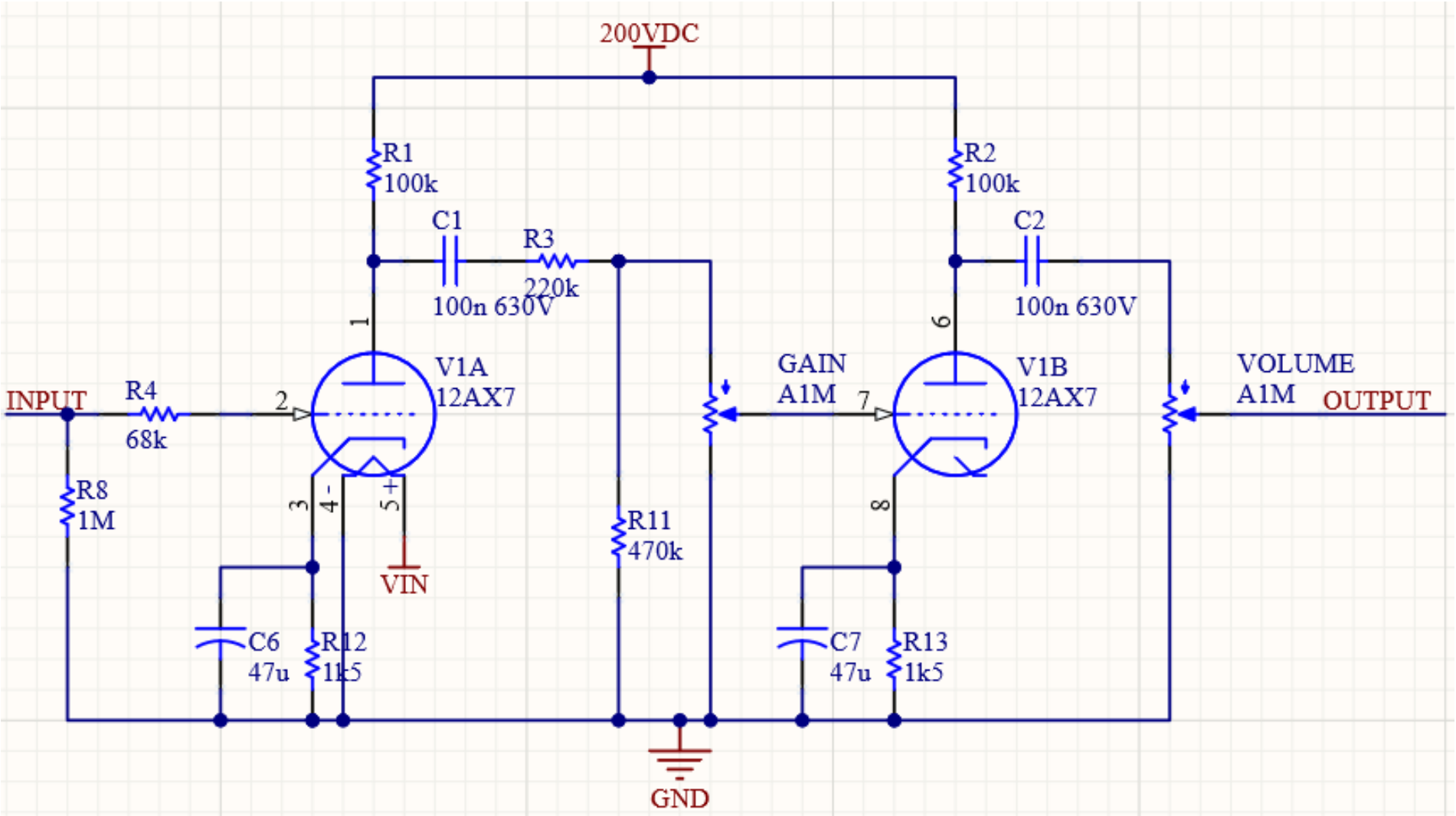
The links below are recommendations and suitable replacements can be used as needed. These are non-affiliated links, I get no compensation of any kind if these links are used.

Comment	Designator	Quantity	Link
100n 630V	C1, C2	2	Tayda Link
100uF 25V	C3	1	Tayda Link
10u 250V	C4	1	Tayda Link
100p 50V	C5	1	Tayda Link
47u 25V	C6, C7	2	Tayda Link
1n5 50V	C8	1	Tayda Link
UF4007	D1	1	Tayda Link
1N5817	D2	1	Tayda Link
100uH inductor	L1	1	Tayda Link
A1M 16mm pot	GAIN, VOLUME	2	Tayda Link
IRF740	M1	1	Tayda Link
2N3904	Q1	1	Tayda Link
100k 1/4W	R1, R2	2	Tayda Link
220k 1/4W	R3, R7	2	Tayda Link
68k 1/4W	R4	1	Tayda Link
1k 1/4W	R5	1	Tayda Link
2k2 1/4W	R6	1	Tayda Link
1M 1/4W	R8	1	Tayda Link
10k 1/4W	R9	1	Tayda Link
4k7 1/4W	R10	2	Tayda Link
470k 1/4W	R11	1	Tayda Link
1k5 1/4W	R12, R13	2	Tayda Link
560R 1/4W	R14	1	Tayda Link
NE555	U1	1	Tayda Link
8-pin DIP socket	U1	1	Tayda Link
12AX7	V1	1	AES Link
9-pin tube socket	V1	1	AES Link
125B enclosure		1	Tayda Link
1/4" jacks		2	BLMS Link
2.1mm jack		1	BLMS Link
3PDT footswitch		1	Tayda Link
LED		1	Any LED
Knobs		2	Any knobs

Schematic – Power Supply



Schematic – Audio



Board Layout