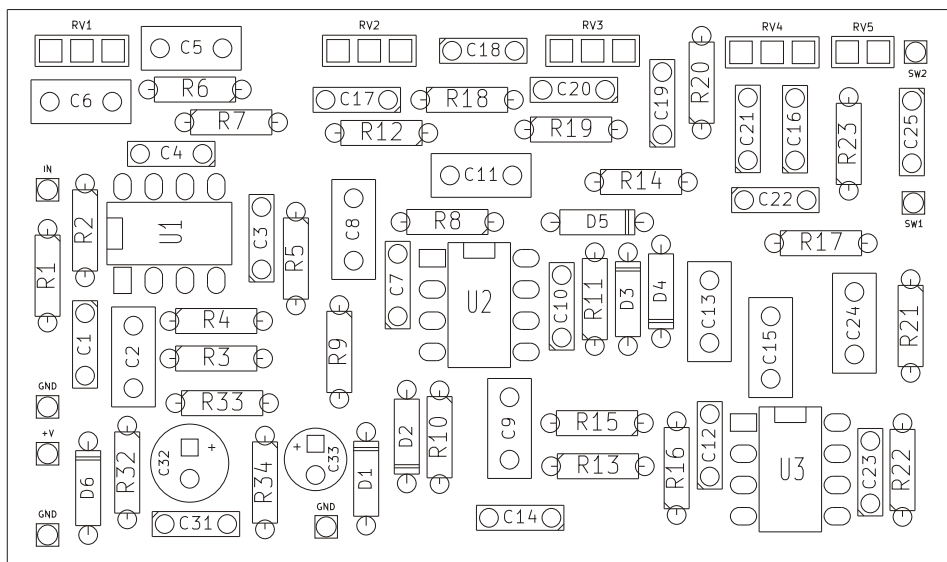
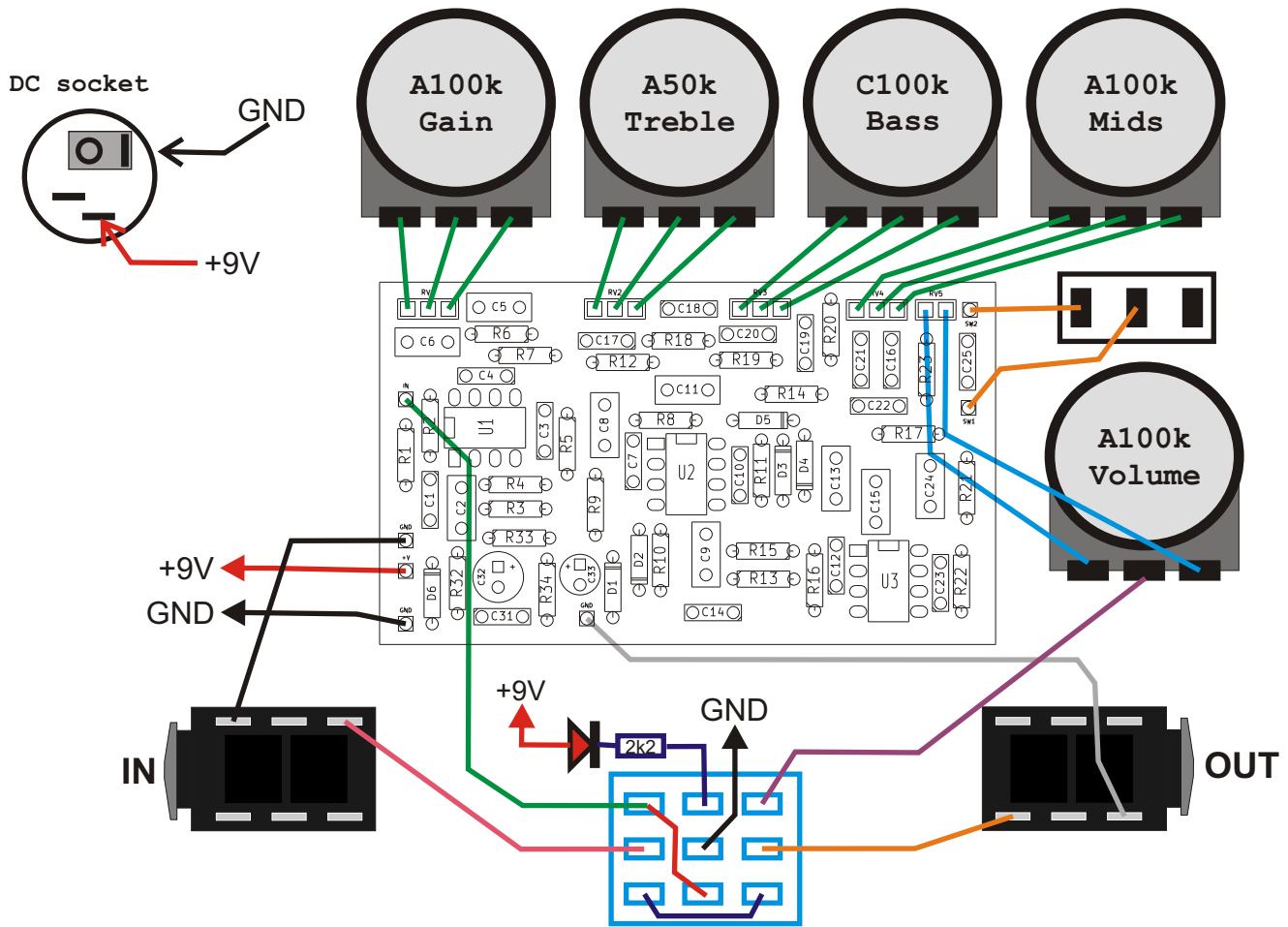


PCB parts placement diagram:



R1	1M	C1	220p
R2	1k	C2	220n
R3	470k	C3	33n
R4	10k	C4	560p
R5	470k	C5	220n
R6	1k	C6	1u
R7	10k	C7	220p
R8	470k	C8	220n
R9	1k	C9	1u
R10	47k	C10	220p
R11	100k	C11	1u
R12	1k	C12	470p
R13	47k	C13	1u
R14	470k	C14	47n
R15	470k	C15	1u
R16	47k	C16	47n
R17	33k	C17	4n7
R18	10k	C18	47n
R19	4k7	C19	100n
R20	1k	C20	47n
R21	33k	C21	100n
R22	680k	C22	1n
R23	10k	C23	330p
R32	47R	C24	1u
R33	10k	C25	4n7
R34	10k	C31	10n
RV1	A100k	C32	100u
RV2	A50k	C33	10u
RV3	C100k		
RV4	A100k		
RV5	A100k		
D1	4148		
D2	4148		
D3	4148		
D4	4148		
D5	4148		
D6	1N400X		
U1	4580		
U2	4580		
U3	4580		

Wiring (bottom view):



Use metal enclosure connected to ground.
Power supply: 9V DC

Bill of materials:

Resistors:

2k2 1pcs. "LED"
47R 1pcs. "R32"
1k 5pcs. "R2 R6 R9 R12 R20"
4k7 1pcs. "R19"
10k 6pcs. "R4 R7 R18 R23 R33 R34"
33k 2pcs. "R17 R21"
47k 3pcs. "R10 R13 R16"
100k 1pcs. "R11"
470k 5pcs. "R3 R5 R8 R14 R15"
680k 1pcs. "R22"
1M 1pcs. "R1"

Capacitors:

220p 3pcs. "C1 C7 C10"
330p 1pcs. "C23"
470p 1pcs. "C12"
560p 1pcs. "C4"
1n 1pcs. "C22"
4n7 2pcs. "C17 C25"
10n 1pcs. "C31"
33n 1pcs. "C3"
47n 4pcs. "C14 C16 C18 C20"
100n 2pcs. "C19 C21"
220n 3pcs. "C2 C5 C8"
1u 6pcs. "C6 C9 C11 C13 C15 C24"

Potentiometers:

A100k 3pcs. "RV1 RV4 RV5"
A50k 1pcs. "RV2"
C100k 1pcs. "RV3"

Electrolytic capacitors:

10u 1pcs. "C33"
100u 1pcs. "C32"

Other:

Knobs 5pcs.
Footswitch 3PDT 1pcs
Jack socket 2pcs.
DC socket 5.5/2.1 1pcs.
Switch MTS102 1pcs.

Semiconductors:

4148 5pcs. "D1 D2 D3 D4 D5"
1N400X 1pcs. "D6"
4580 3pcs. "U1 U2 U3"
LED 1pcs.

Resistor color code:



$$390 \times 10\Omega = 3,9k\Omega$$

Color	Band 1	Band 2	Band 3	Multiplier	Tolerance
Black	0	0	0	1 Ω	
Brown	1	1	1	10 Ω	1%
Red	2	2	2	100 Ω	2%
Orange	3	3	3	1k Ω	
Yellow	4	4	4	10 k Ω	
Green	5	5	5	100 k Ω	0,5%
Blue	6	6	6	1 M Ω	0,25%
Purple	7	7	7	10 M Ω	0,1%
Gray	8	8	8	100 M Ω	0,05%
White	9	9	9	1 G Ω	
Gold				0,1 Ω	5%
Silver				0,01 Ω	10%

Capacitors markings:

$$471 = 47 \times 10^1 \text{ pF} = 470 \text{ pF}$$

$$472 = 47 \times 10^2 \text{ pF} = 4700 \text{ pF} = 4,7 \text{ nF}$$

$$473 = 47 \times 10^3 \text{ pF} = 47000 \text{ pF} = 47 \text{ nF}$$

$$474 = 47 \times 10^4 \text{ pF} = 470000 \text{ pF} = 470 \text{ nF}$$

$$100 \text{ pF} = 100 \text{ p} = 100 = 101$$

$$220 \text{ pF} = 220 \text{ p} = 220 = 221$$

$$4,7 \text{ nF} = 4 \text{ n}7 = 0.0047 = 472$$

$$10 \text{ nF} = 10 \text{ n} = 0.01 = 103$$

$$100 \text{ nF} = 100 \text{ n} = 0.1 = 104$$

$$220 \text{ nF} = 220 \text{ n} = 0.22 = 224$$

$$470 \text{ nF} = 470 \text{ n} = 0.47 = 474$$

$$1000 \text{ nF} = 1 \mu\text{F} = 1 \mu = 105$$