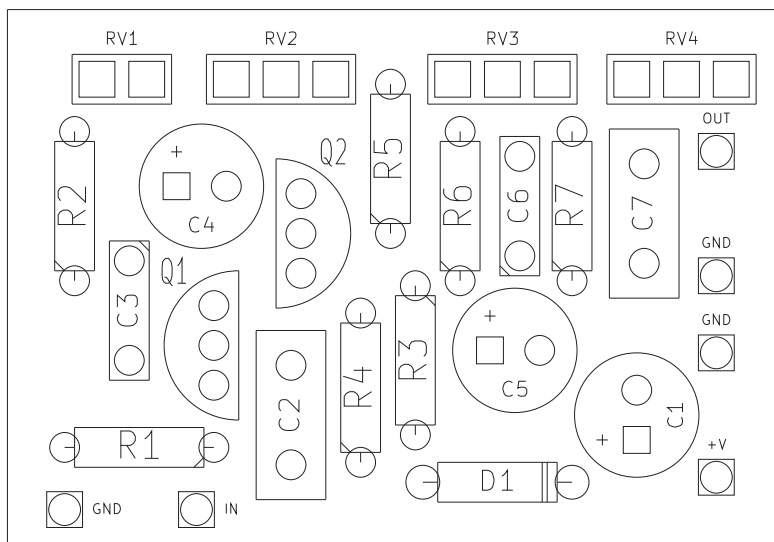
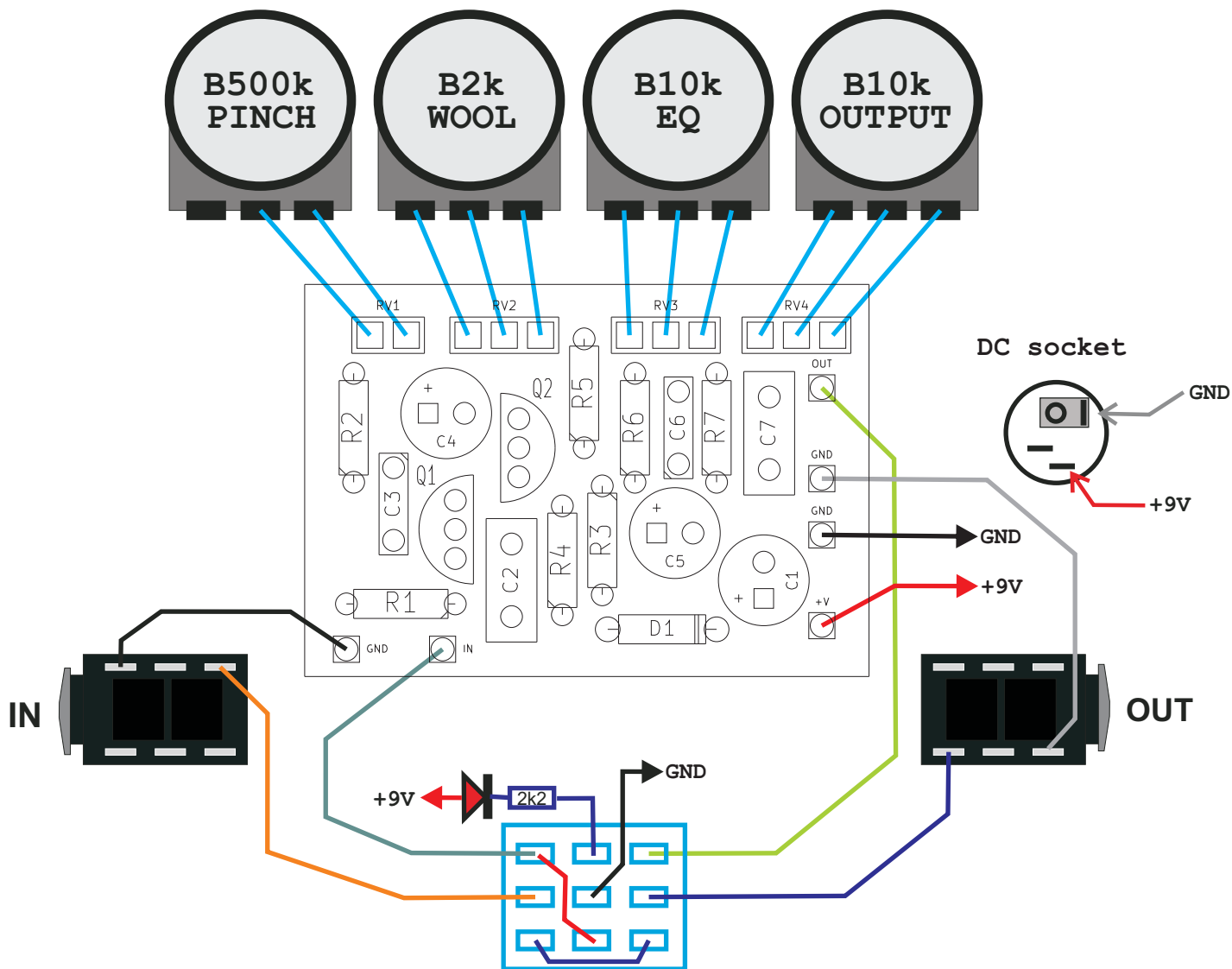


PCB parts placement diagram:



R1	1M	C1	47u
R2	100k	C2	220n
R3	51k	C3	10n
R4	20k	C4	100u
R5	2k2	C5	100u
R6	10k	C6	10n
R7	5k1	C7	220n
RV1	B500k	D1	1N400X
RV2	B2k	Q1	2N3904
RV3	B10k	Q2	2N3904
RV4	B10k		

Wiring (bottom view):



Use metal enclosure connected to ground.

Power supply: 9V DC

Bill of materials:

Resistors:

2k2 2pcs. "R5 LED"
 5k1 1pcs. "R7"
 10k 1pcs. "R6"
 20k 1pcs. "R4"
 51k 1pcs. "R3"
 100k 1pcs. "R2"
 1M 1pcs. "R1"

Capacitors:

10n 2pcs. "C3 C6"
 220n 2pcs. "C2 C7"

Electrolytic capacitors:

47u 1pcs. "C1"
 100u 2pcs. "C4 C5"

Potentiometers:

B500k 1pcs. "RV1"
 B2k 1pcs. "RV2"
 B10k 2pcs. "RV3 RV4"

Semiconductors:

1N400X 1pcs. "D1"
 2N3904 2pcs. "Q1 Q2"
 LED 1pcs.

Other:

Footswitch 3PDT 1pcs.
 Knobs 4pcs.
 JACK socket 2pcs.
 DC socket 5.5/2.1 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:

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

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

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

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

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

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

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

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

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

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

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

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