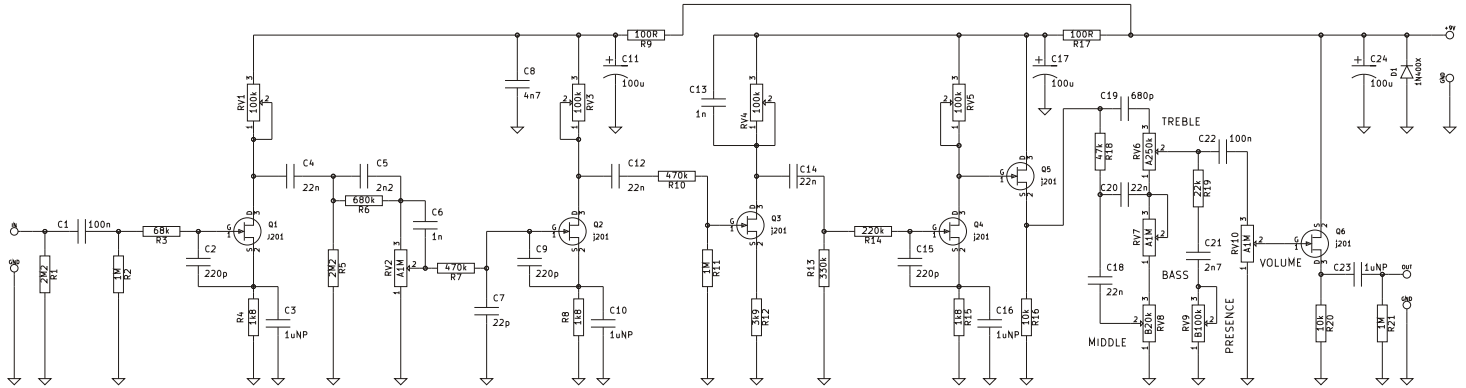
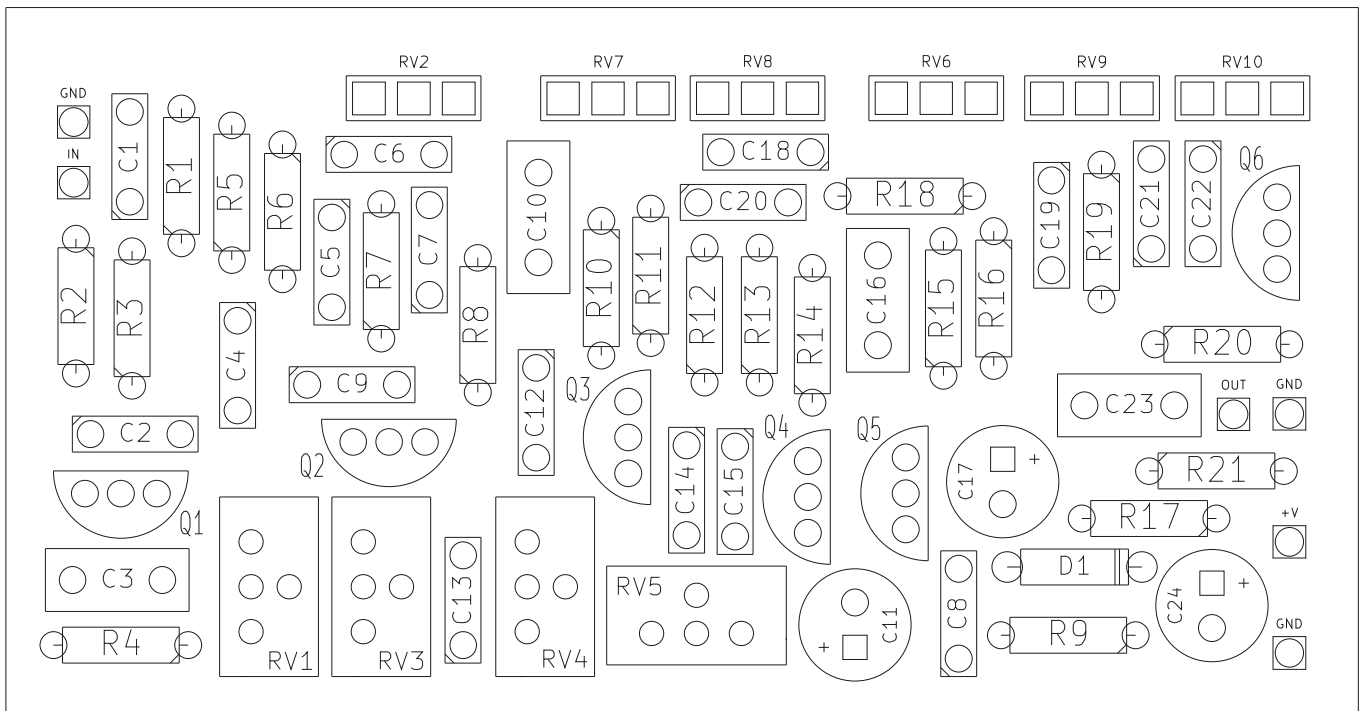


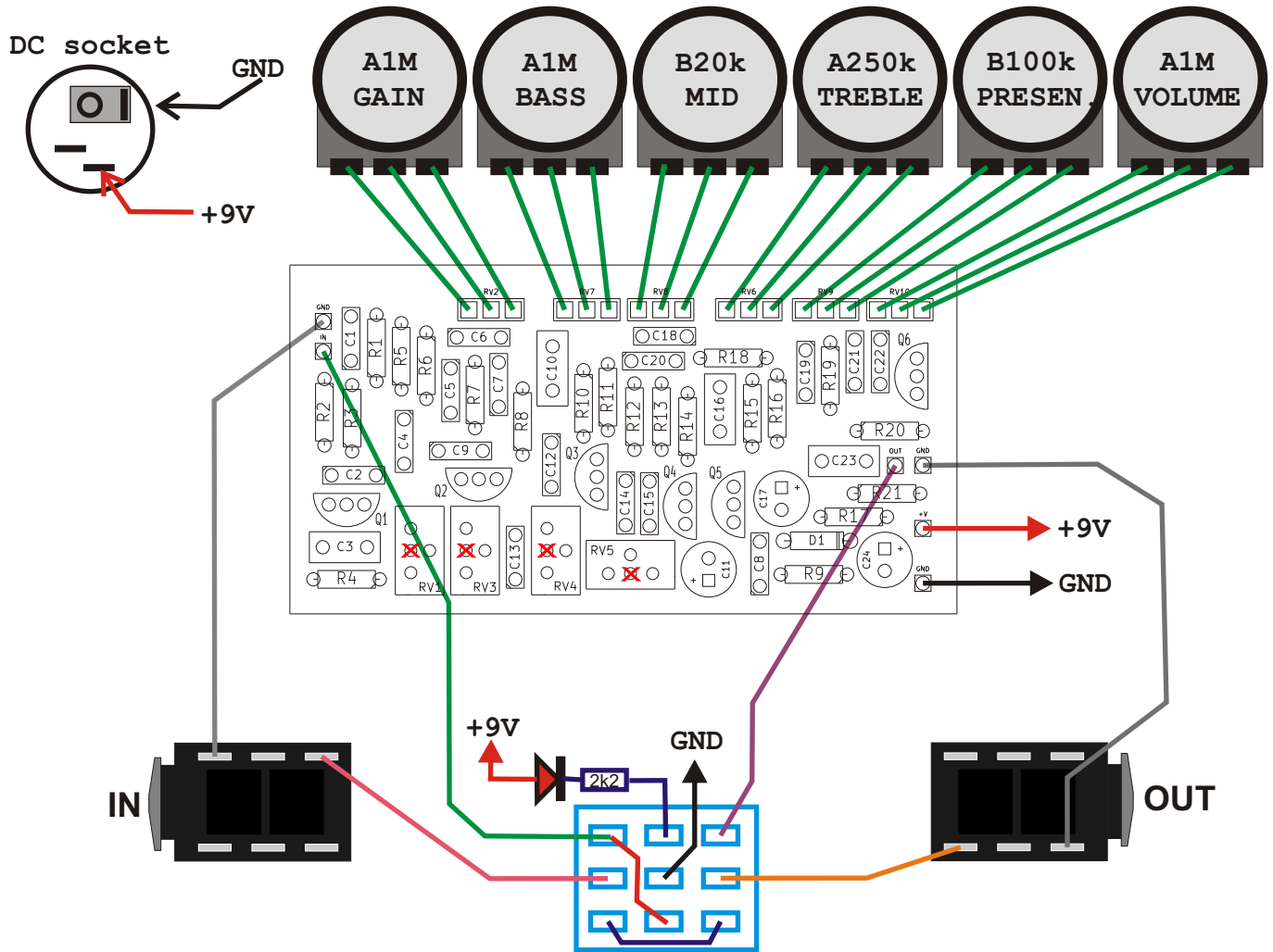


PCB parts placement diagram:



R1 2M2	R17 100R	C1 100n	C17 100u	D1 1N400X
R2 1M	R18 47k	C2 220p	C18 22n	Q1 j201
R3 68k	R19 22k	C3 1uNP	C19 680p	Q2 j201
R4 1k8	R20 10k	C4 22n	C20 22n	Q3 j201
R5 2M2	R21 1M	C5 2n2	C21 2n7	Q4 j201
R6 680k	RV1 100k Tr.	C6 1n	C22 100n	Q5 j201
R7 470k	RV2 A1M	C7 22p	C23 1uNP	Q6 j201
R8 1k8	RV3 100k Tr.	C8 4n7	C24 100u	
R9 100R	RV4 100k Tr.	C9 220p		
R10 470k	RV5 100k Tr.	C10 1uNP		
R11 1M	RV6 A250k	C11 100u		
R12 3k9	RV7 A1M	C12 22n		
R13 330k	RV8 B20k	C13 1n		
R14 220k	RV9 B100k	C14 22n		
R15 1k8	RV10 A1M	C15 220p		
R16 10k		C16 1uNP		

Wiring (bottom view):



Use metal enclosure connected to ground. Power supply: 9V DC.
Adjustments: short IN to GND and connect power supply.
Set trimpots to get 4,5V in marked points.

SPIS ELEMENTÓW:

Resistors:

100R 2pcs. "R9 R17"
1k8 3pcs. "R4 R8 R15"
2k2 1pcs. "LED"
3k9 1pcs. "R12"
10k 2pcs. "R16 R20"
22k 1pcs. "R19"
47k 1pcs. "R18"
68k 1pcs. "R3"
220k 1pcs. "R14"
330k 1pcs. "R13"
470k 2pcs. "R7 R10"
680k 1pcs. "R6"
1M 3pcs. "R2 R11 R21"
2M2 2pcs. "R1 R5"

Capacitors:

22p 1pcs. "C7"
220p 3pcs. "C2 C9 C15"
680p 1pcs. "C19"
1n 2pcs. "C6 C13"
2n2 1pcs. "C5"
2n7 1pcs. "C21"
4n7 1pcs. "C8"
22n 5pcs. "C4 C12 C14 C18 C20"
100n 2pcs. "C1 C22"
1u 4pcs. "C3 C10 C16 C23"

Electrolytic capacitors:

100u 3pcs. "C11 C17 C24"

Semiconductors:

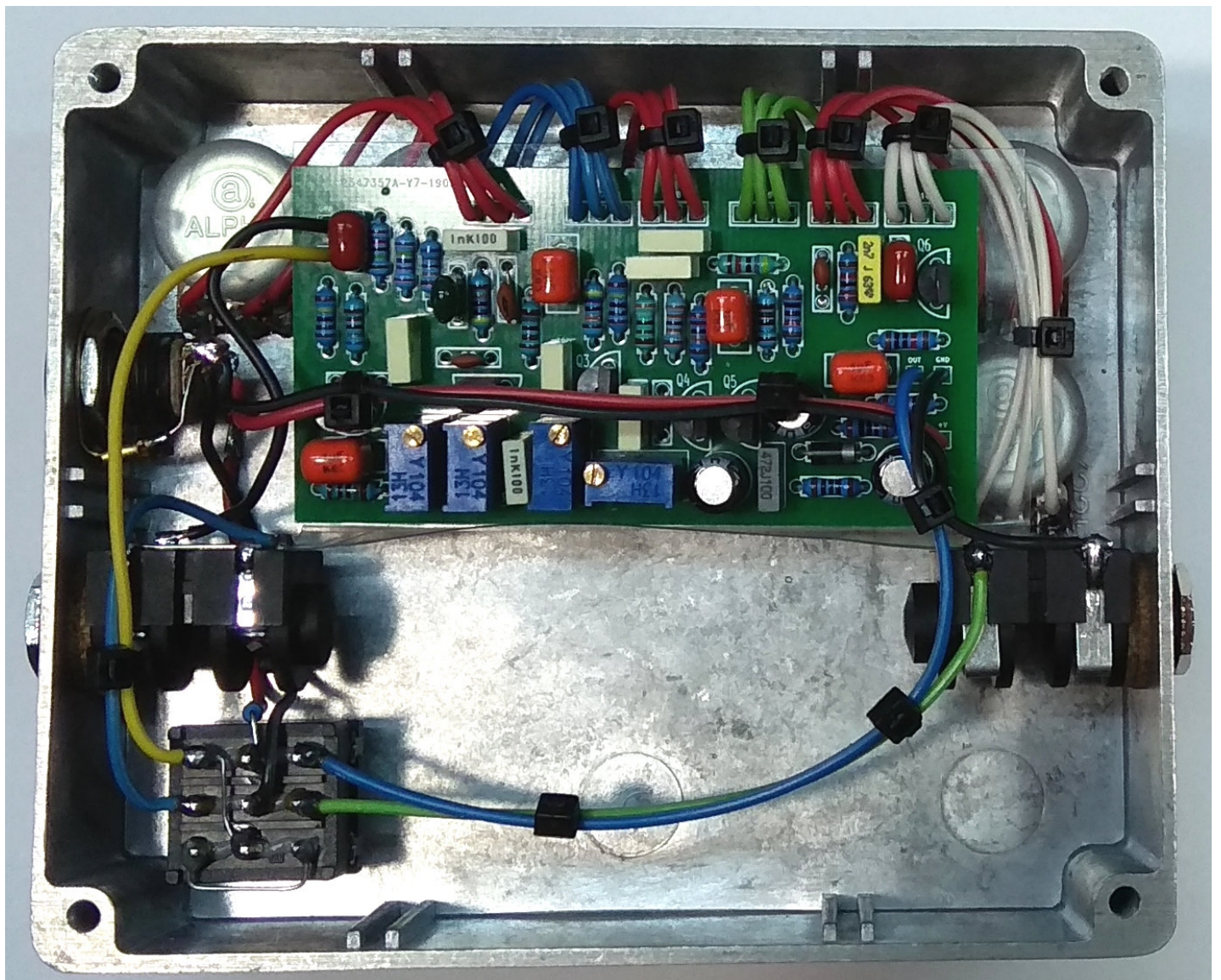
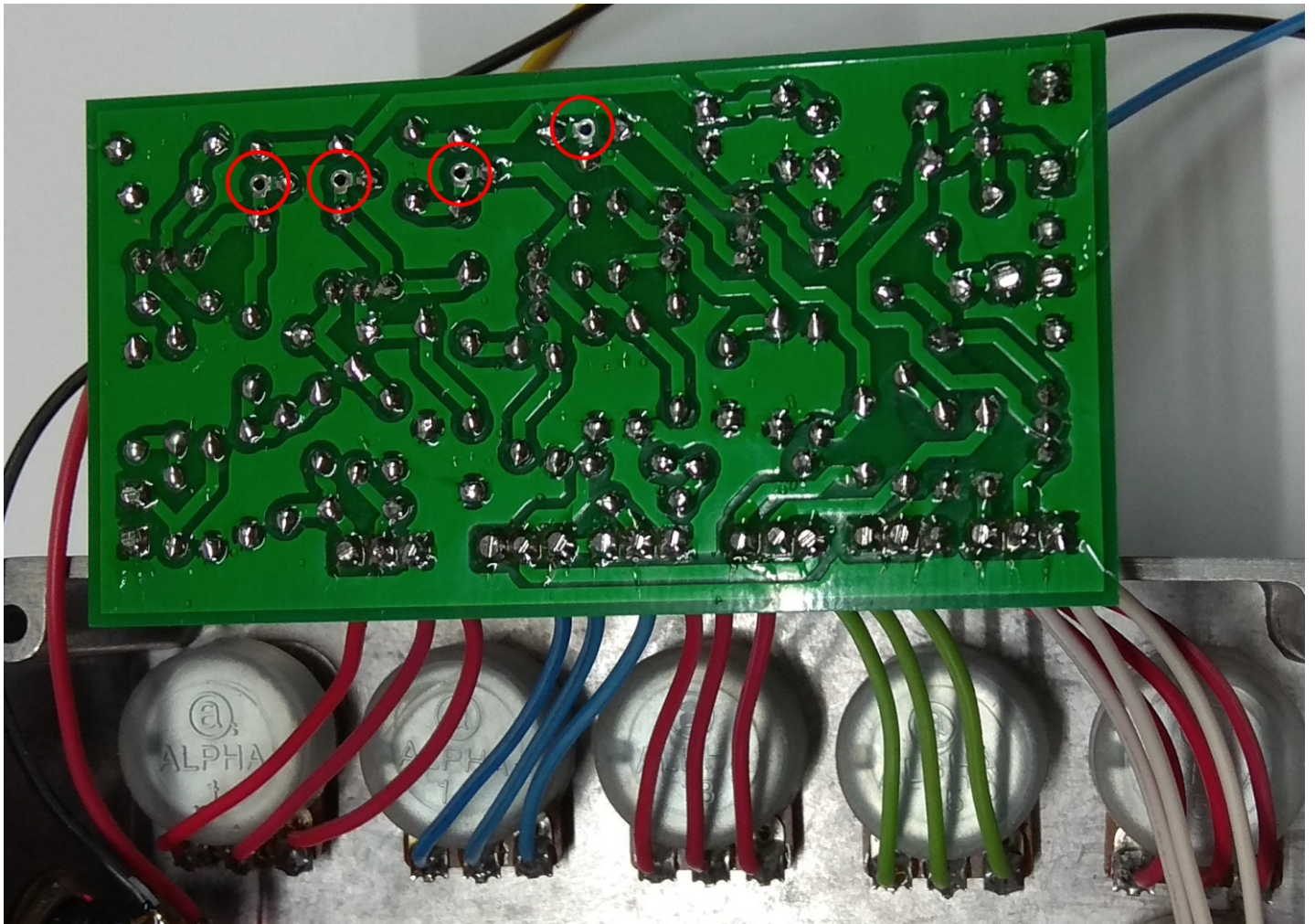
1N400X 1pcs. "D1"
j201 6pcs. "Q1 Q2 Q3 Q4 Q5 Q6"
LED 1pcs.

Other:

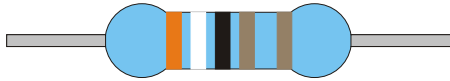
Footswitch 3PDT 1pcs.
Knobs 6pcs.
JACK socket 2pcs.
DC socket 5.5/2.1 1pcs.

Potentiometers:

100k Trimpot 4pcs. "RV1 RV3 RV4 RV5"
A1M 3pcs. "RV2 RV7 RV10"
A250k 1pcs. "RV6"
B20k 1pcs. "RV8"
B100k 1pcs. "RV9"



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:

$$\begin{aligned}
 471 &= 47 \times 10^1 \text{ pF} = 470 \text{ pF} \\
 472 &= 47 \times 10^2 \text{ pF} = 4700 \text{ pF} = 4,7 \text{ nF} \\
 473 &= 47 \times 10^3 \text{ pF} = 47000 \text{ pF} = 47 \text{ nF} \\
 474 &= 47 \times 10^4 \text{ pF} = 470000 \text{ pF} = 470 \text{ nF}
 \end{aligned}$$

$$\begin{aligned}
 100 \text{ pF} &= 100 \text{ p} = 100 = 101 \\
 220 \text{ pF} &= 220 \text{ p} = 220 = 221 \\
 4,7 \text{ nF} &= 4 \text{ n}7 = 0.0047 = 472 \\
 10 \text{ nF} &= 10 \text{ n} = 0.01 = 103 \\
 100 \text{ nF} &= 100 \text{ n} = 0.1 = 104 \\
 220 \text{ nF} &= 220 \text{ n} = 0.22 = 224 \\
 470 \text{ nF} &= 470 \text{ n} = 0.47 = 474 \\
 1000 \text{ nF} &= 1 \mu \text{F} = 1 \mu = 105
 \end{aligned}$$