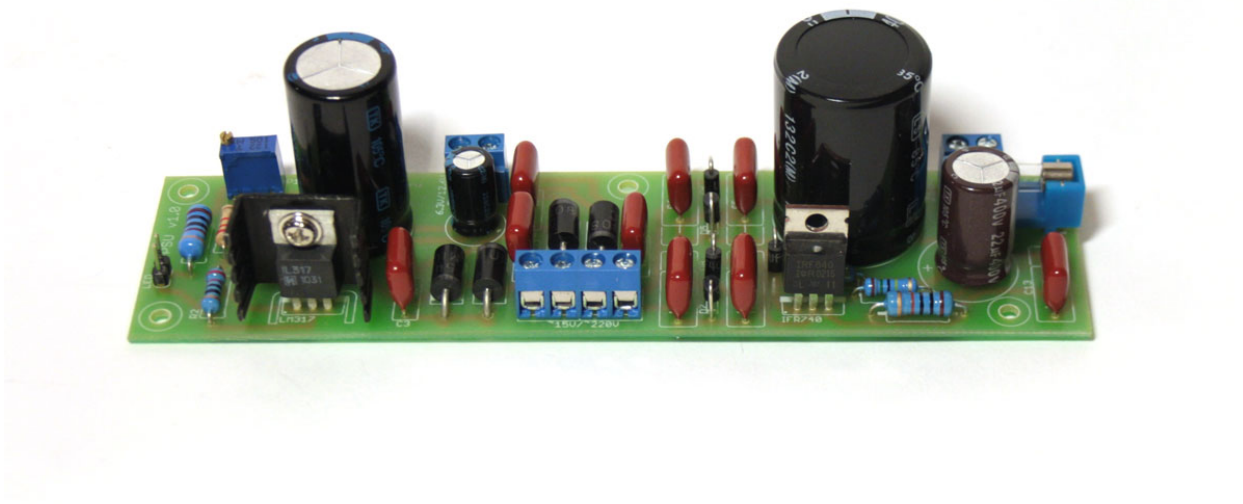
Universal Power Supply
for tube preamp
(plate, filament, phantom)

Warning

This document is distributed for educational purposes only. This equipment operates at potentially lethal voltages. Only trained, qualified personnel should operate, maintain, or service it.

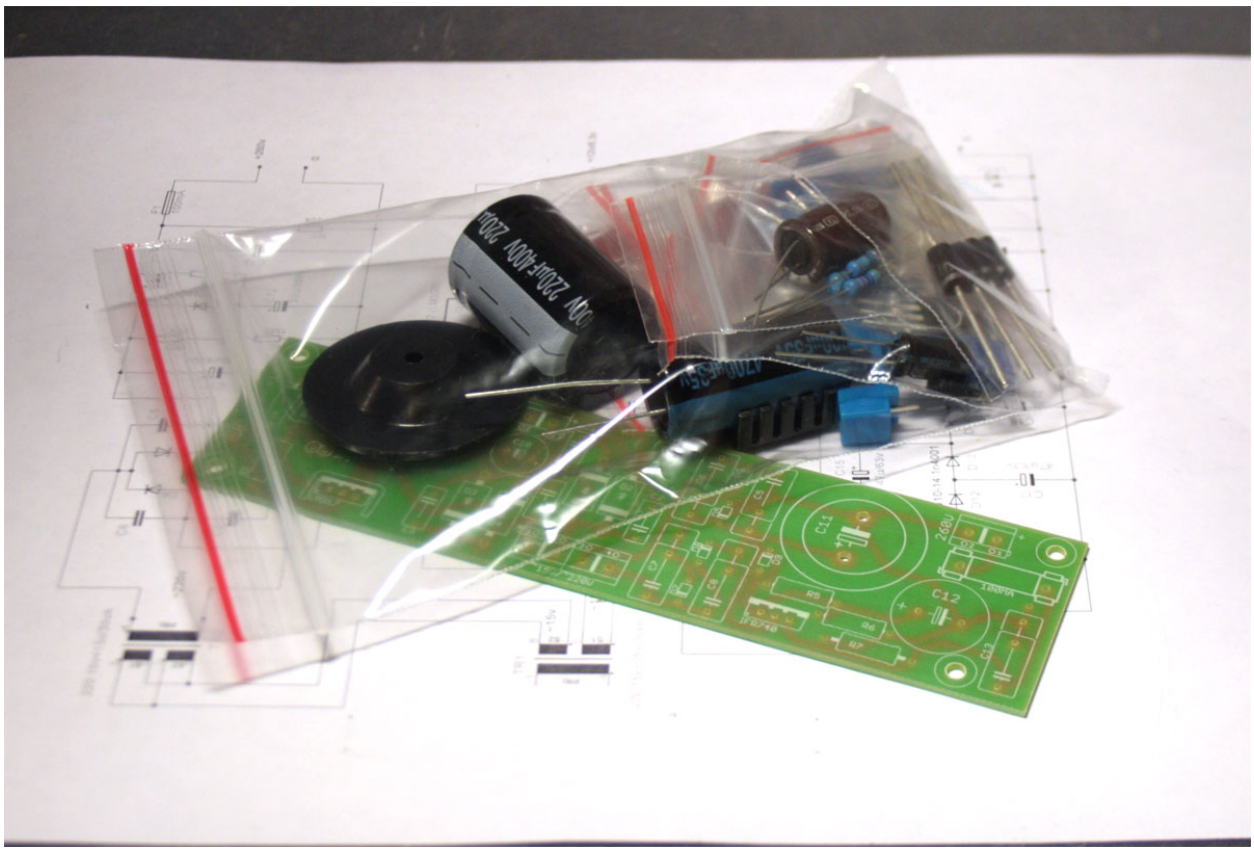
Plate and filament PSU PCB



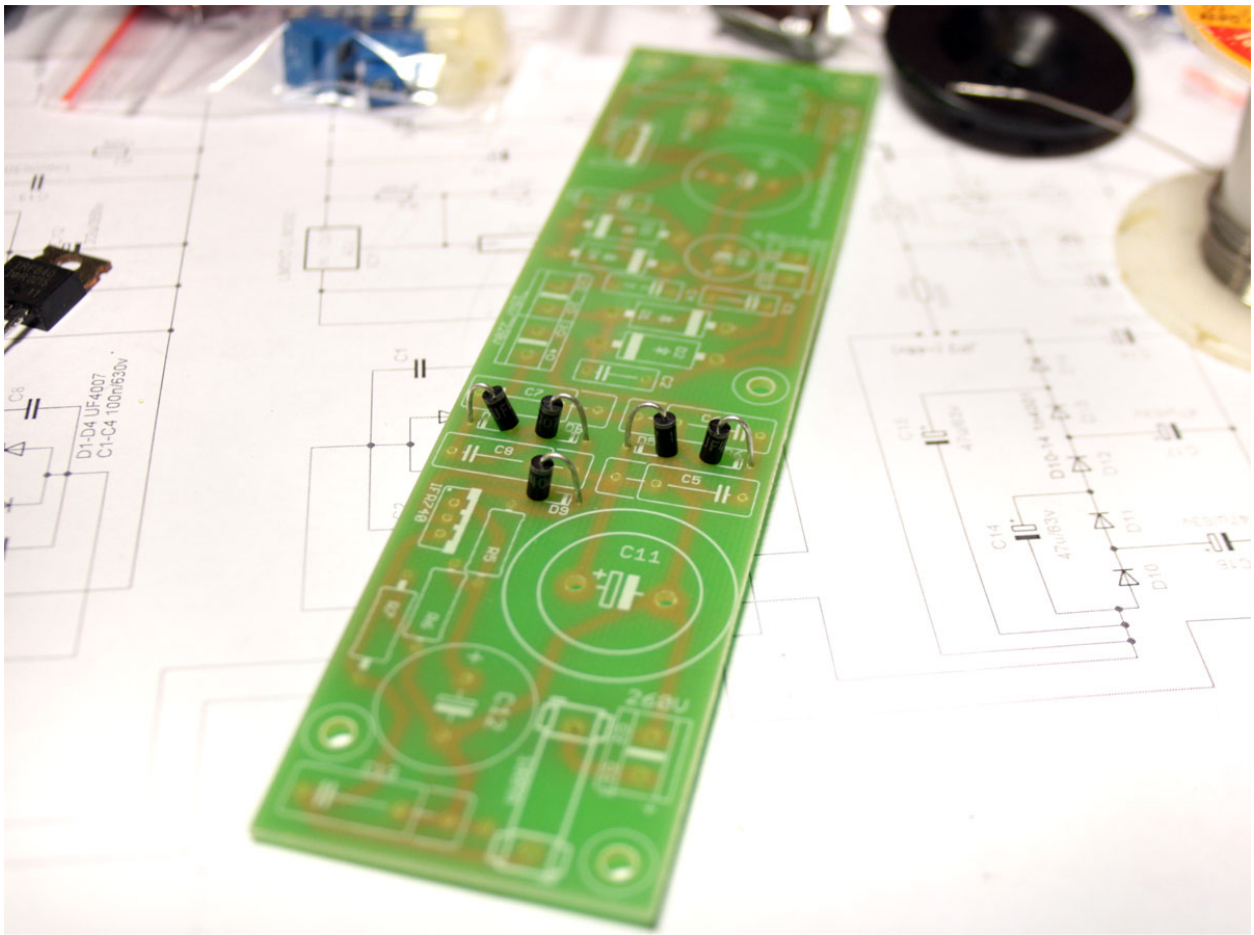
The kit includes:

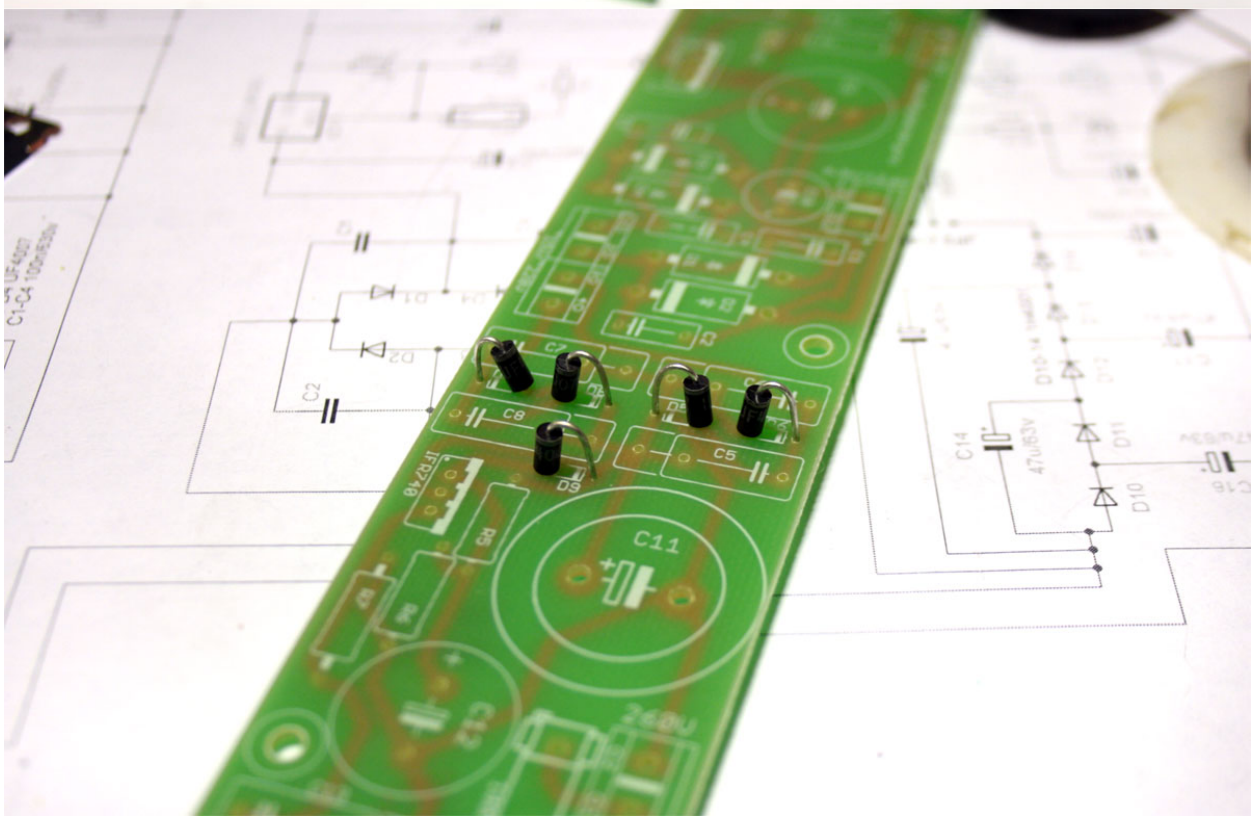
PCB
Rectifiers
Resistors
Film Capacitors
Electrolytic capacitors
Trimmer
Connectors
Voltage Regulators, Transistors
The radiator for the filament voltage regulator circuit

As a bonus - stands for a PCB, and hardware for a toroidal transformer (screws not supplied).

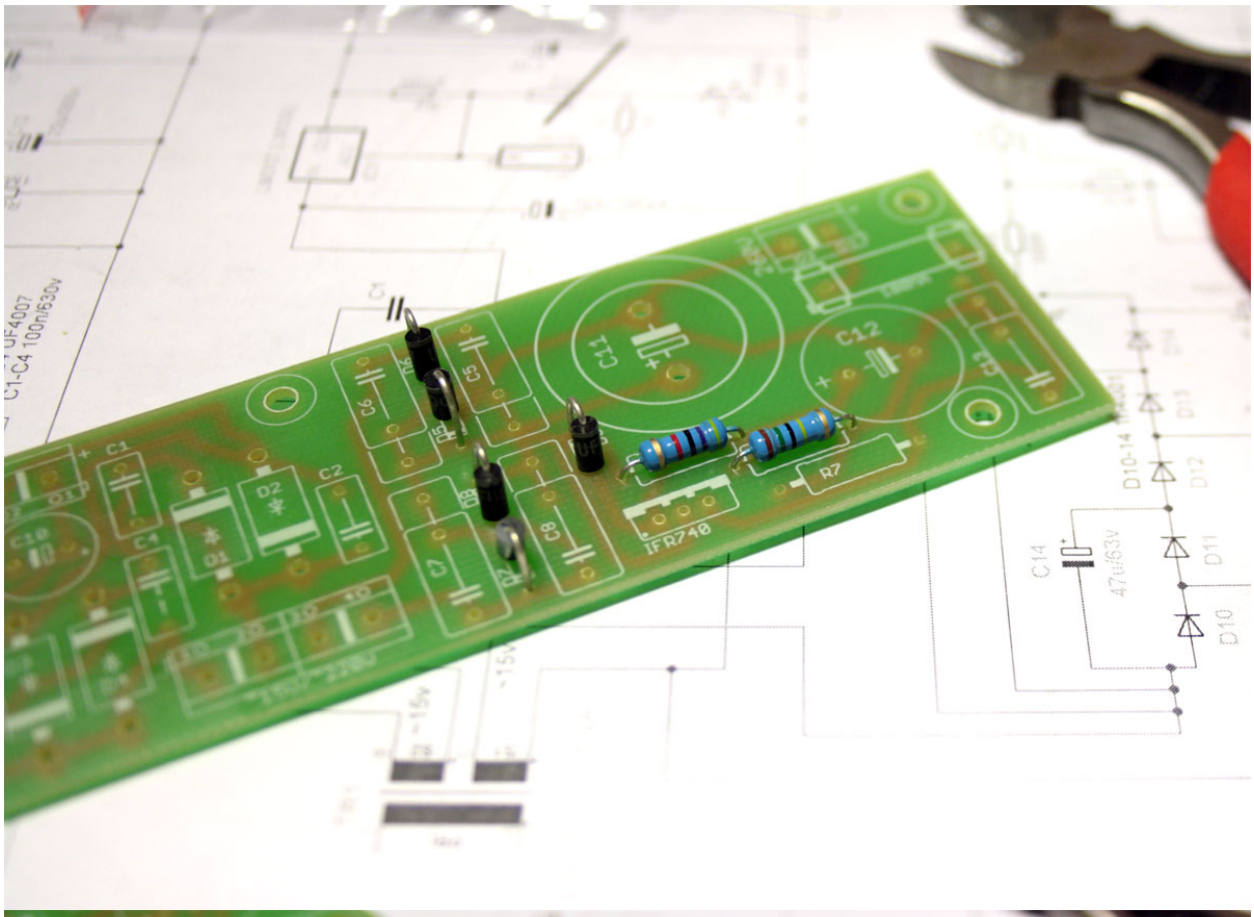


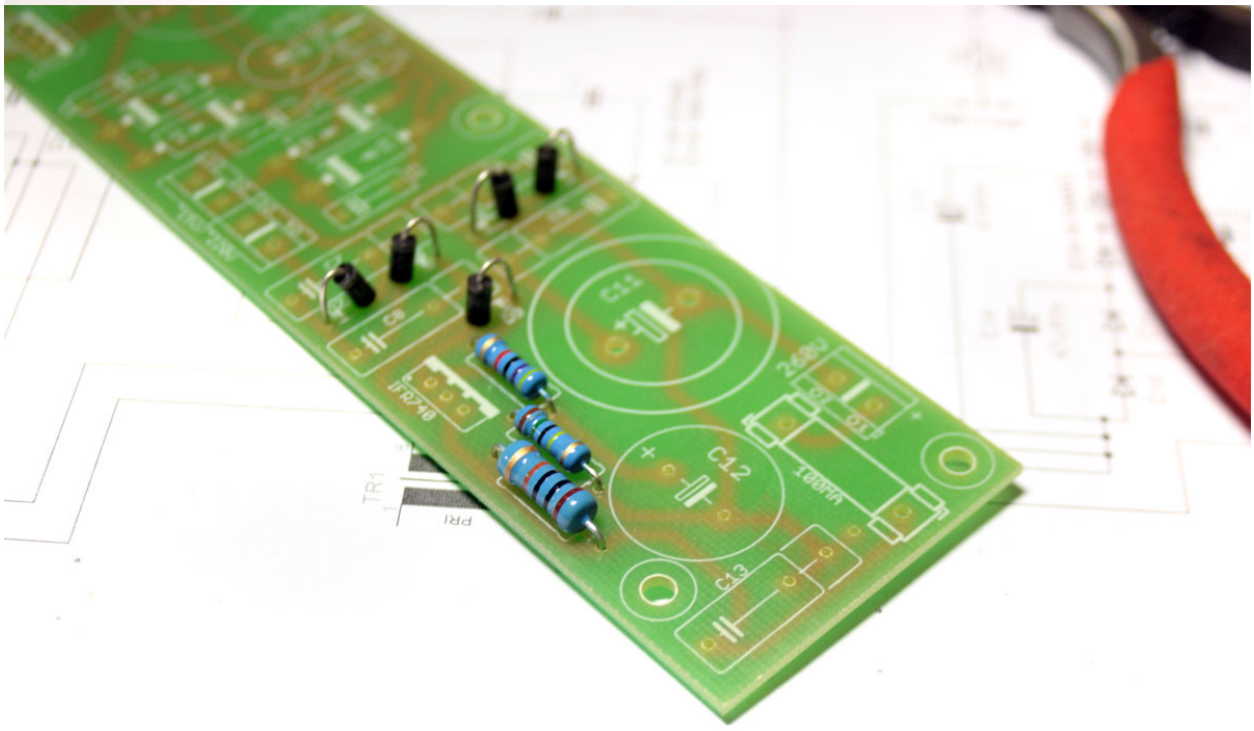
Start installation of the power supply diode in anode circuit (D5-D9). Pay attention to how the diodes are oriented on the board.



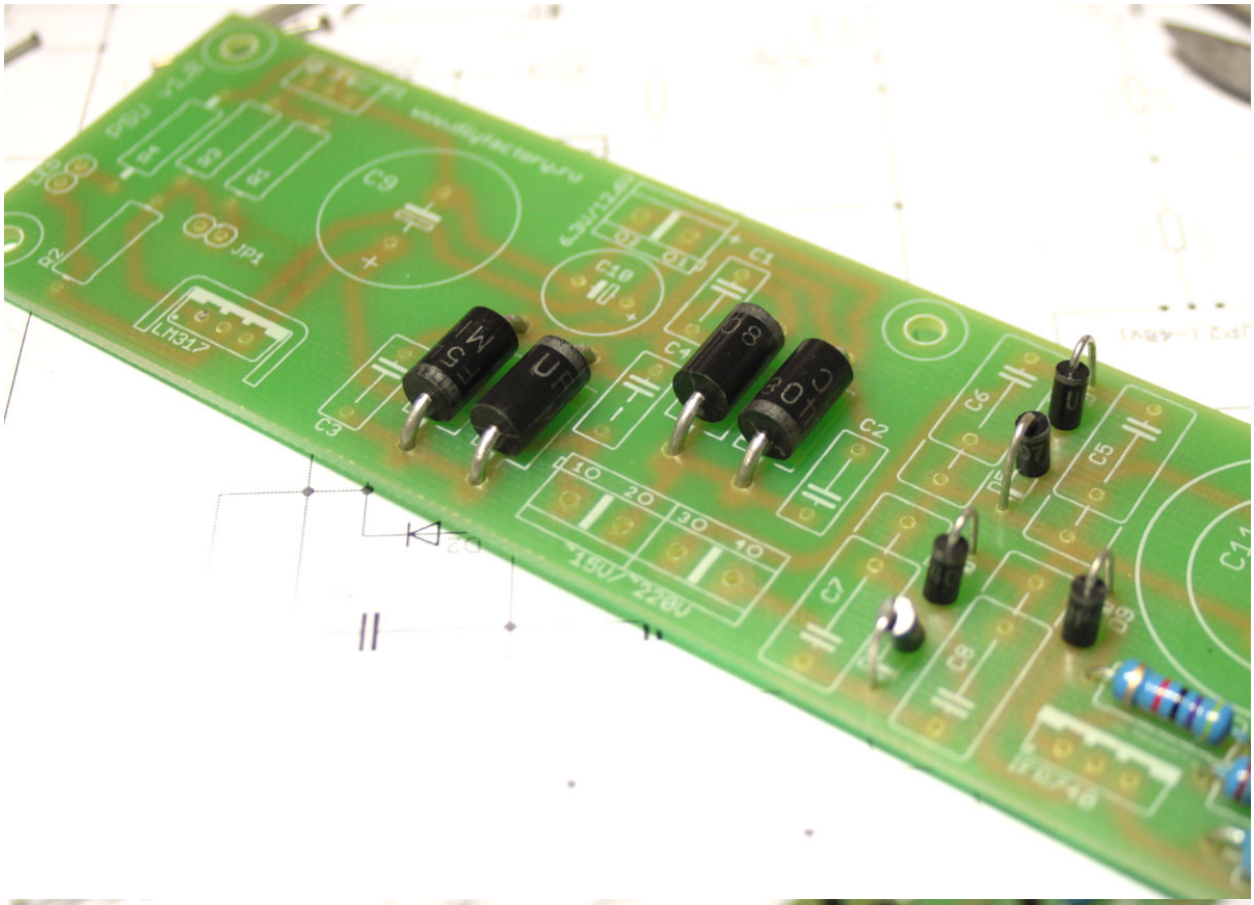


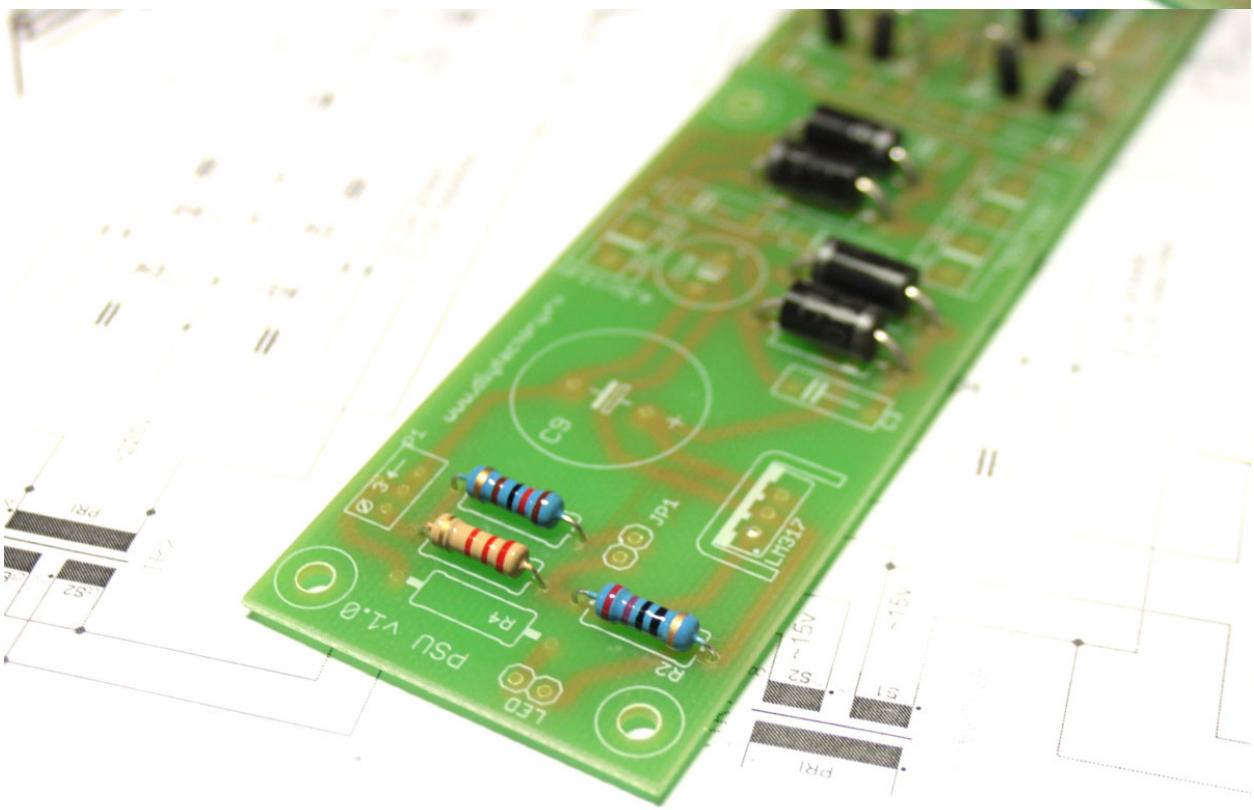
Solder resistors R5, R6, R7 (47k, 1M5, 100k).

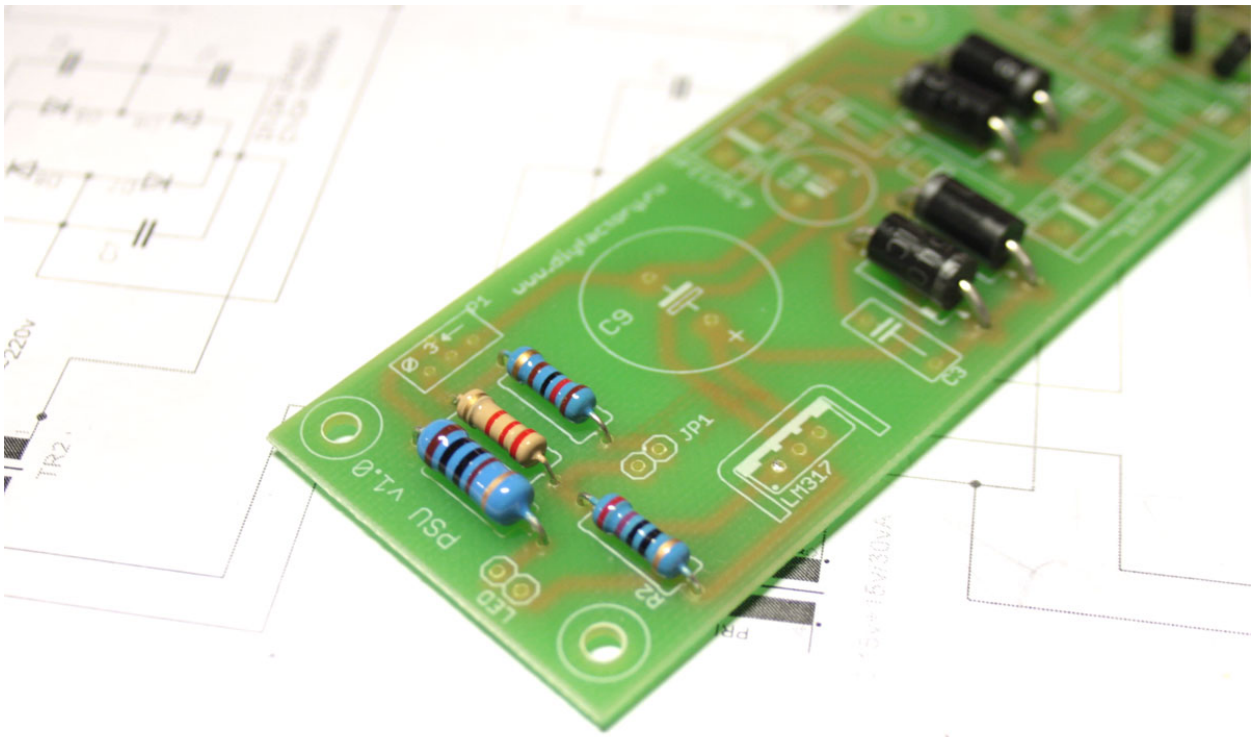




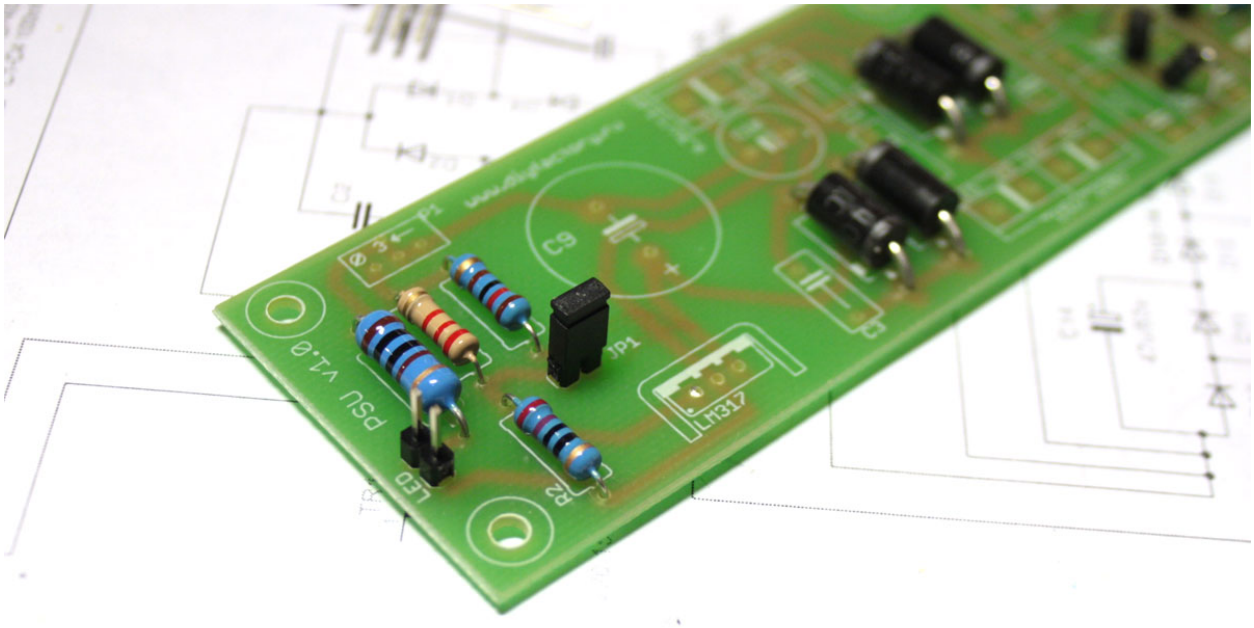
Solder filament circuit diodes. Pay attention to how the diodes are oriented on the board. Next solder R1-R4 (1k2, 270R, 2k2, 1k)



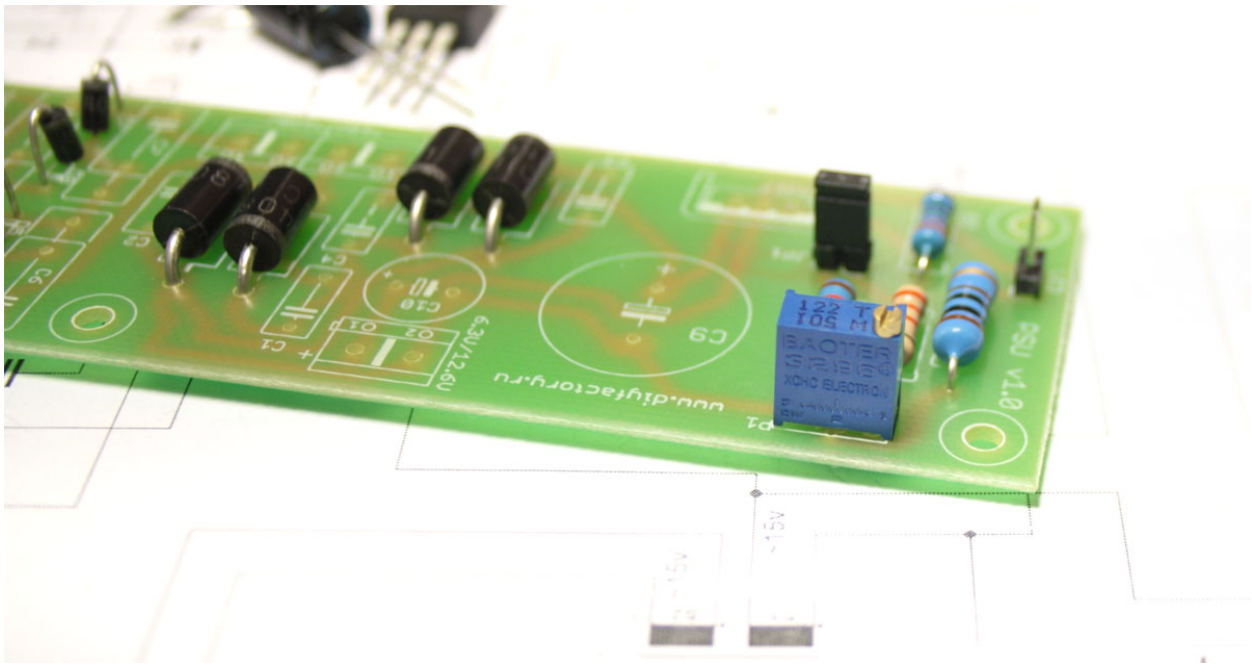




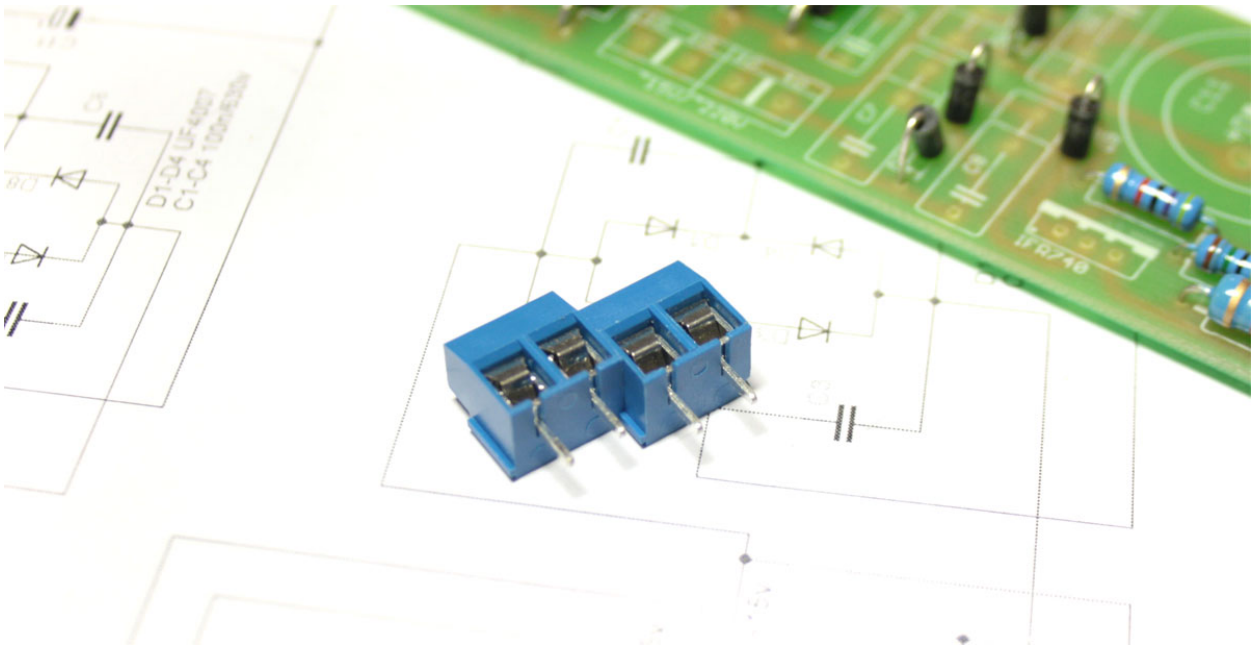
Solder the jumper (12.6v/6.3v). Jumper should be installed if we want to get to the heater supply 6.3 volts. Mount connector for LED (led) (optional).

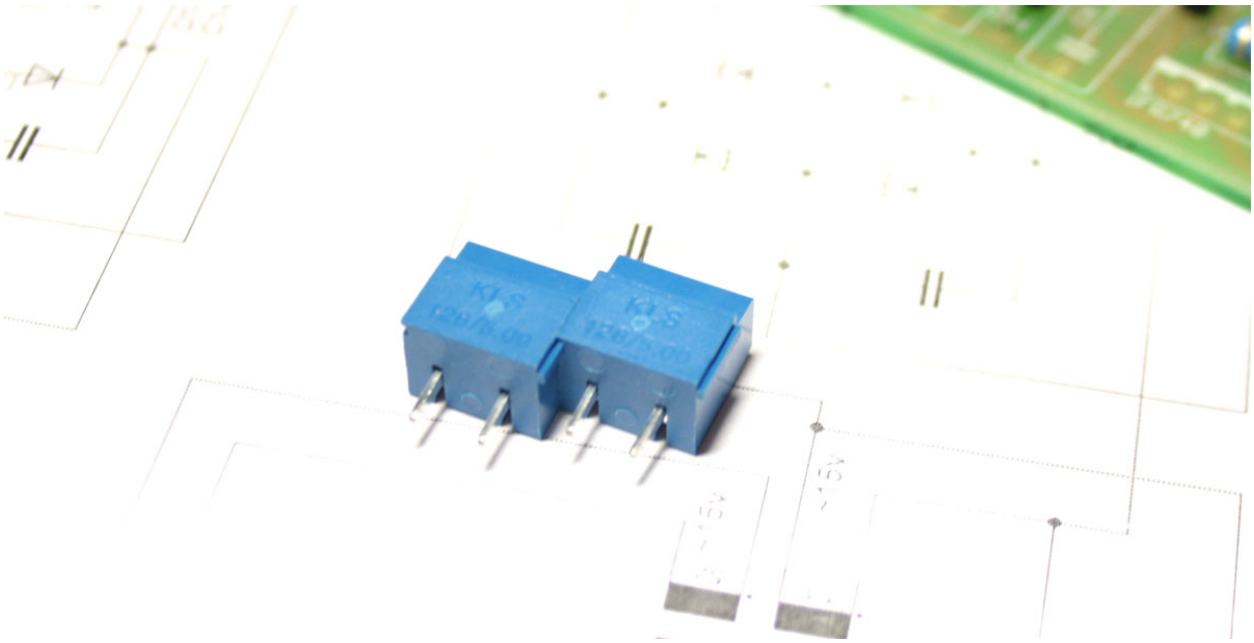


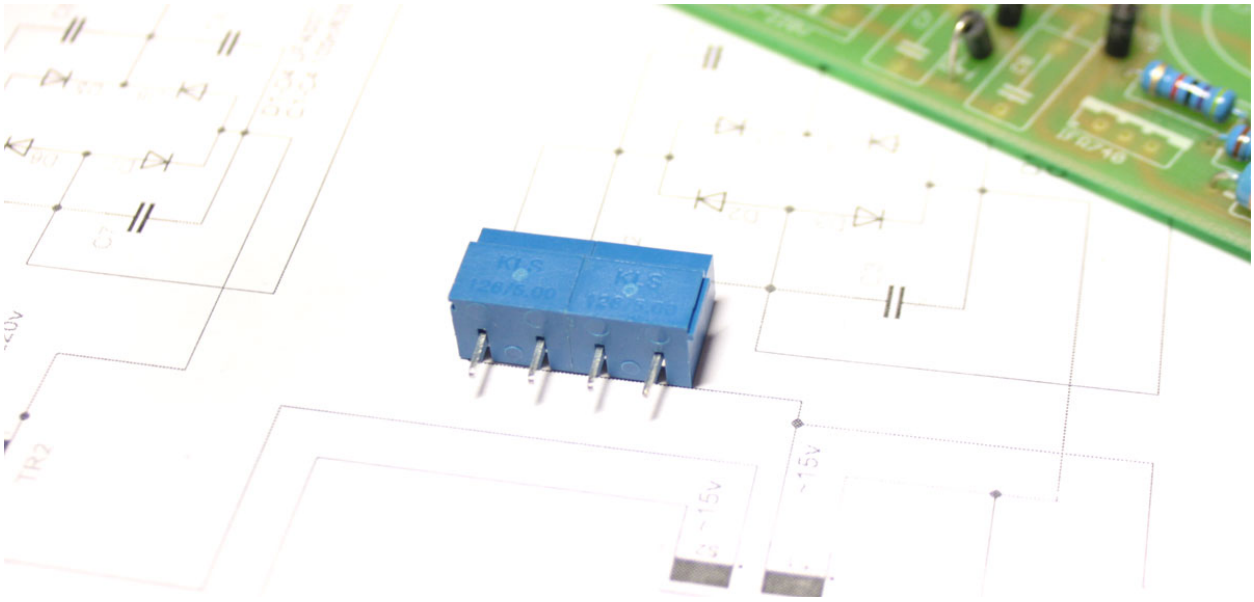
Solder filament circuit trimmer. It will let us set the voltage correctly.



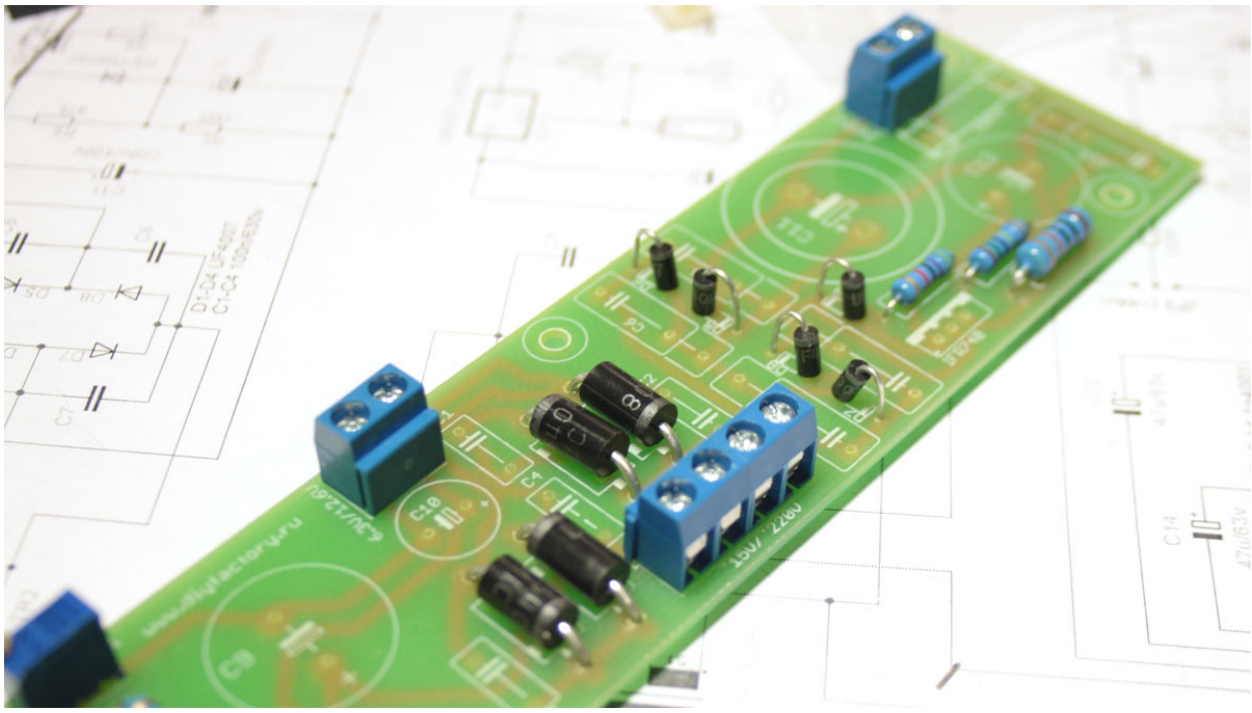
Prepare connectors. Combine two two-pin connector - groove and comb let us get a single 4-pin block.

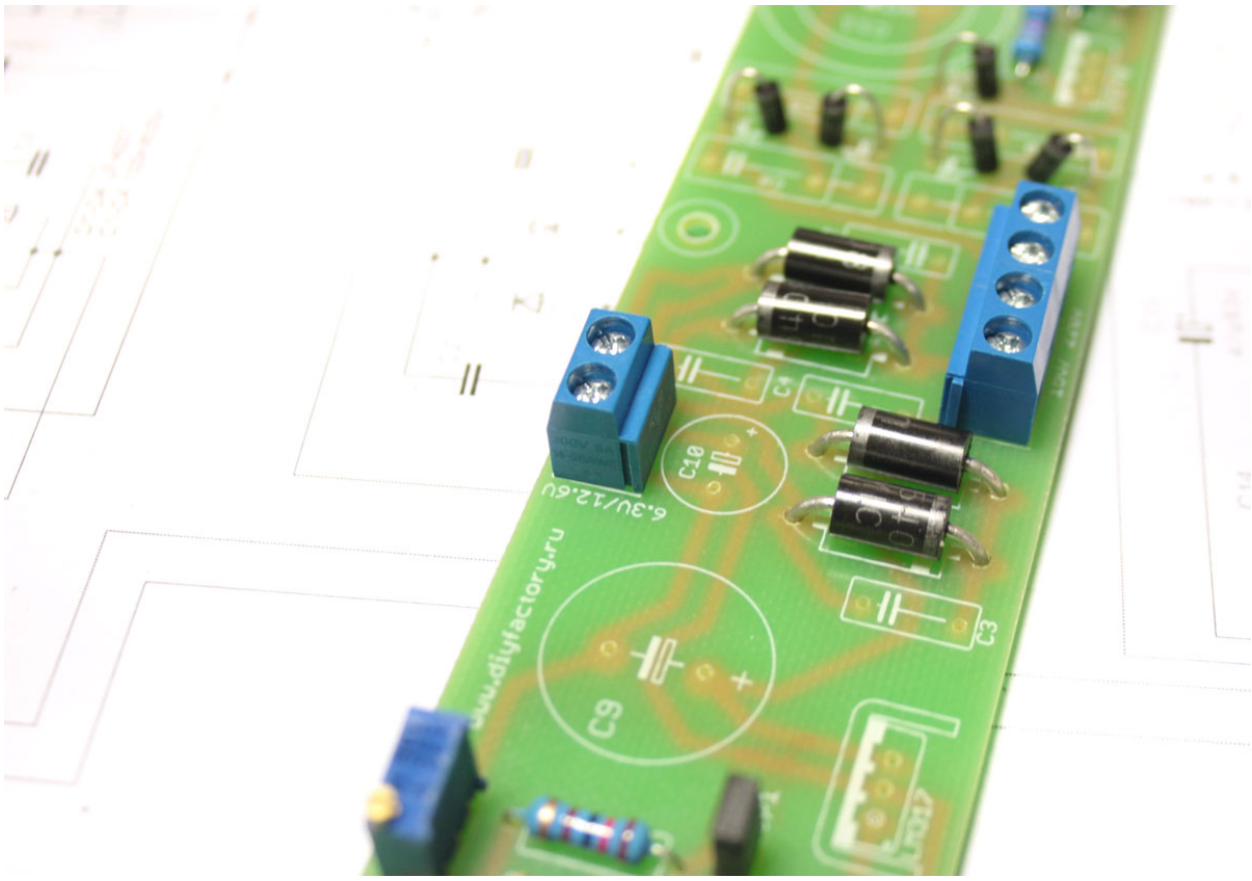


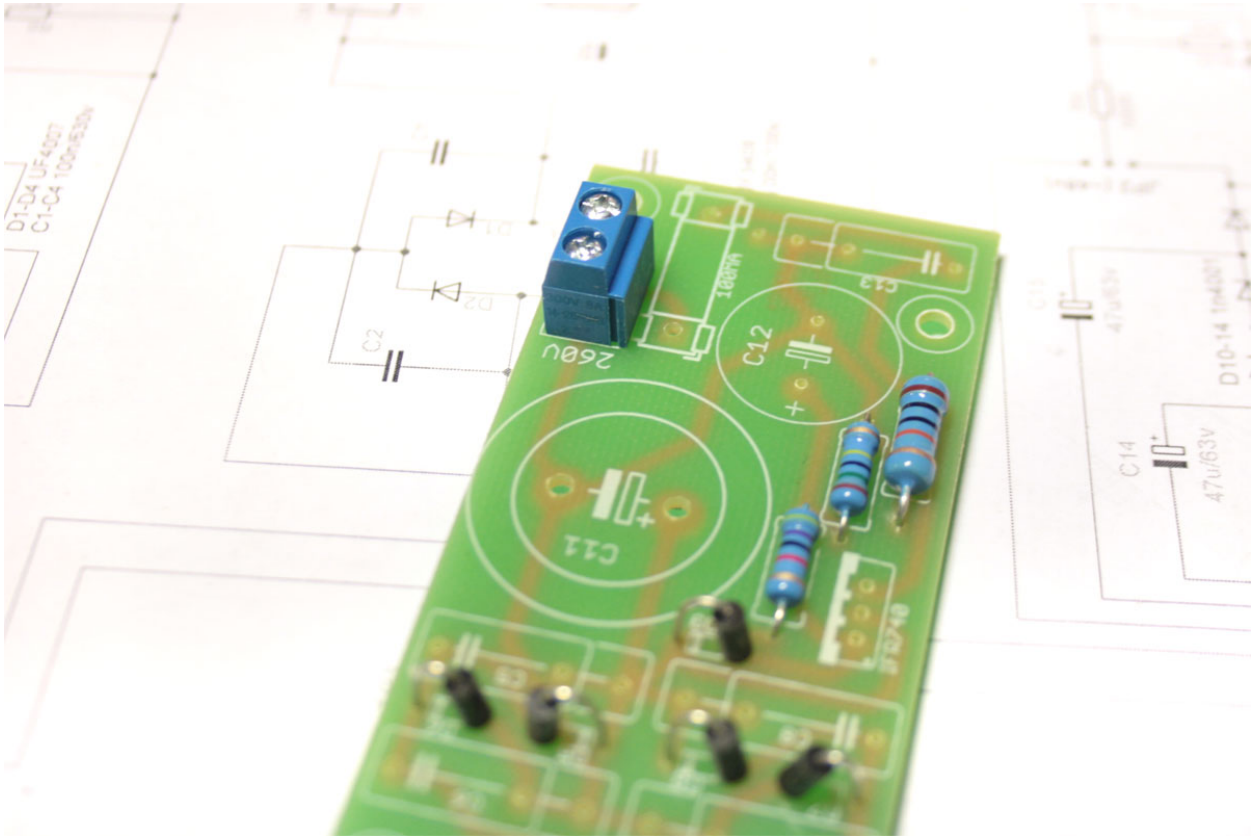




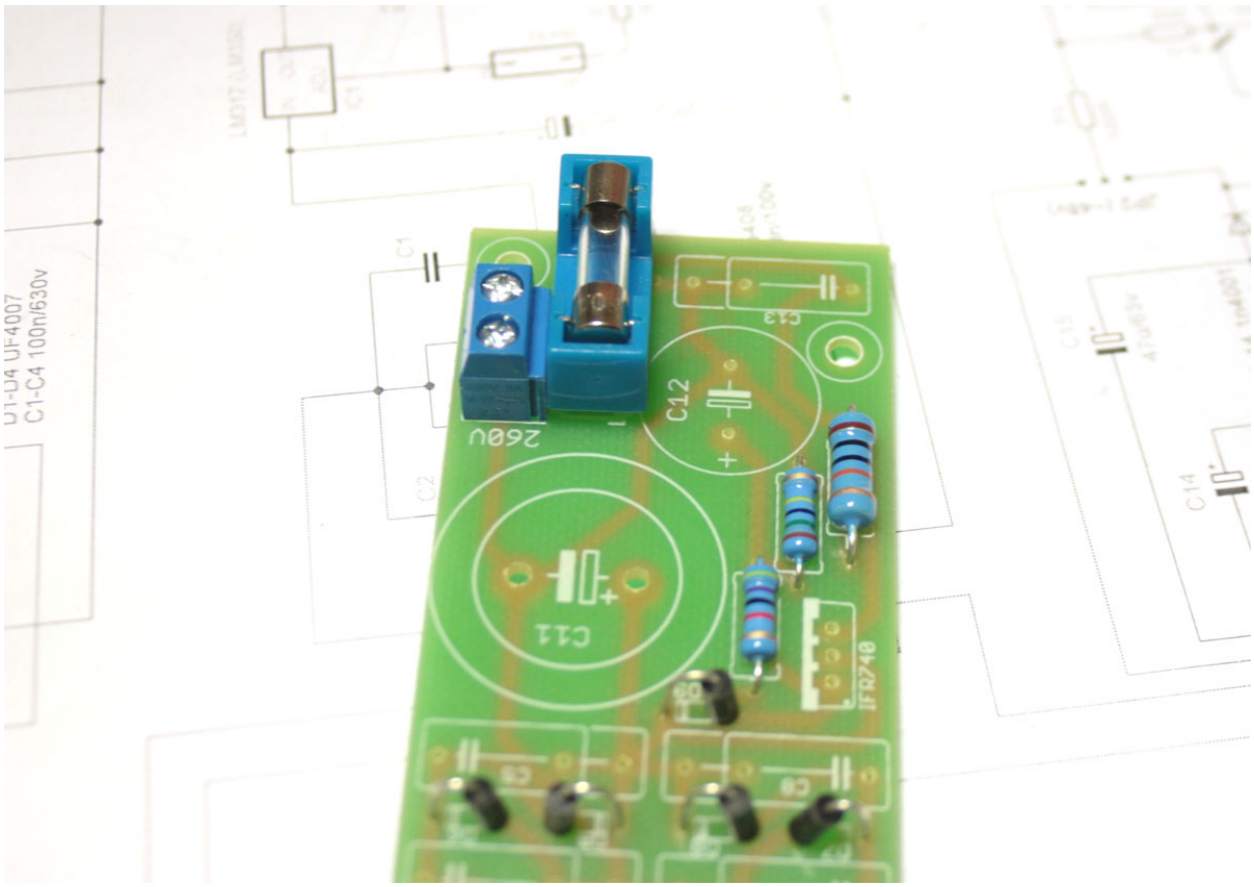
Solder the sockets.



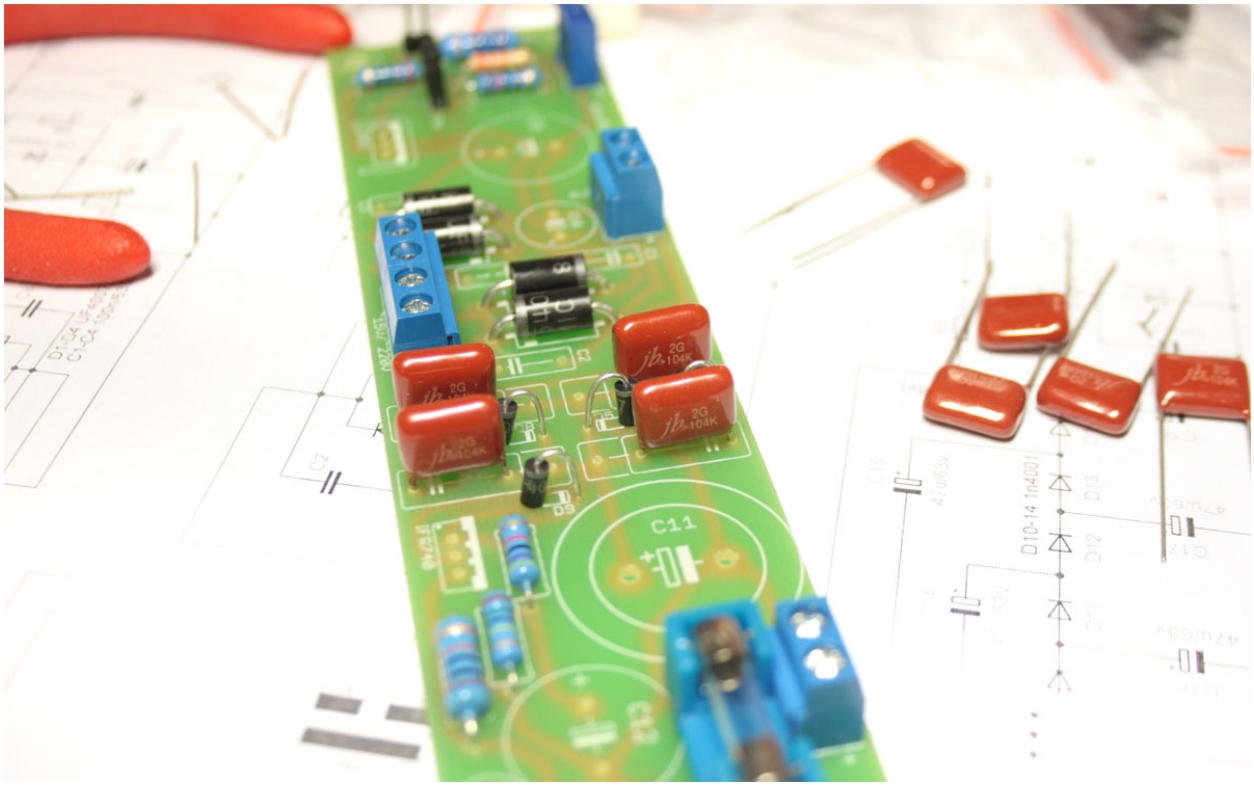


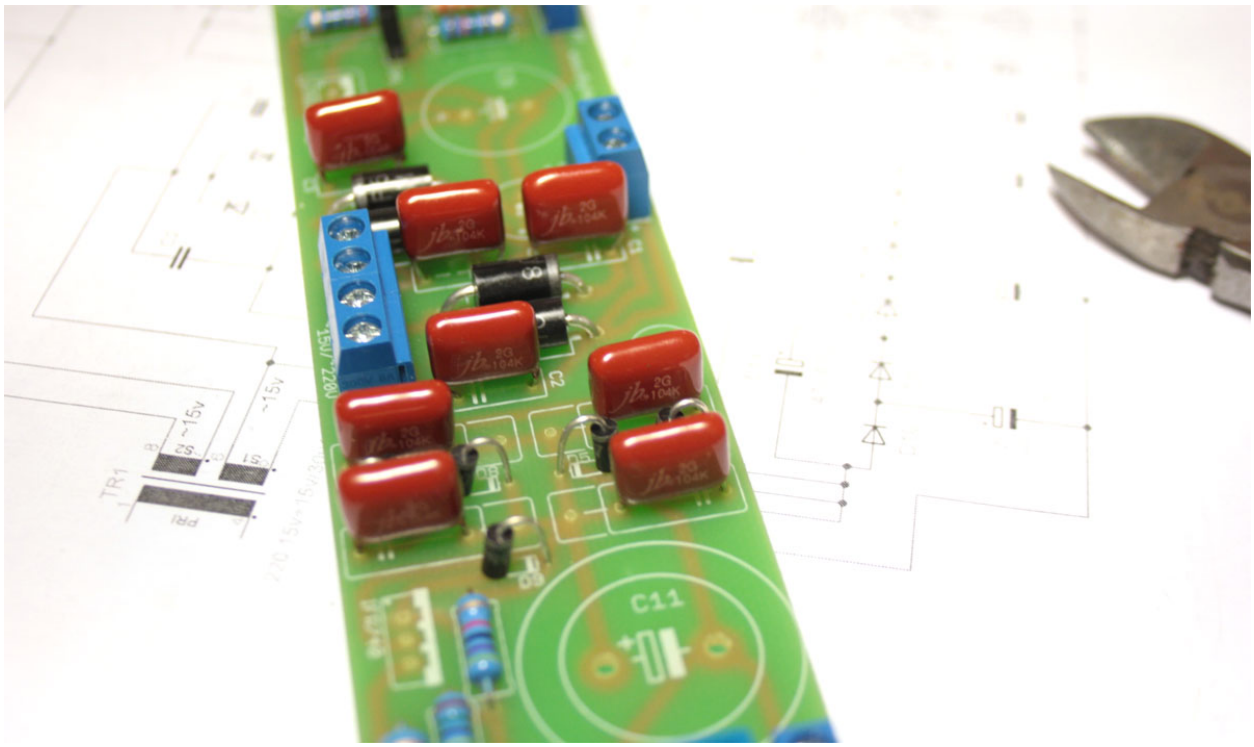


Solder fuse holder.

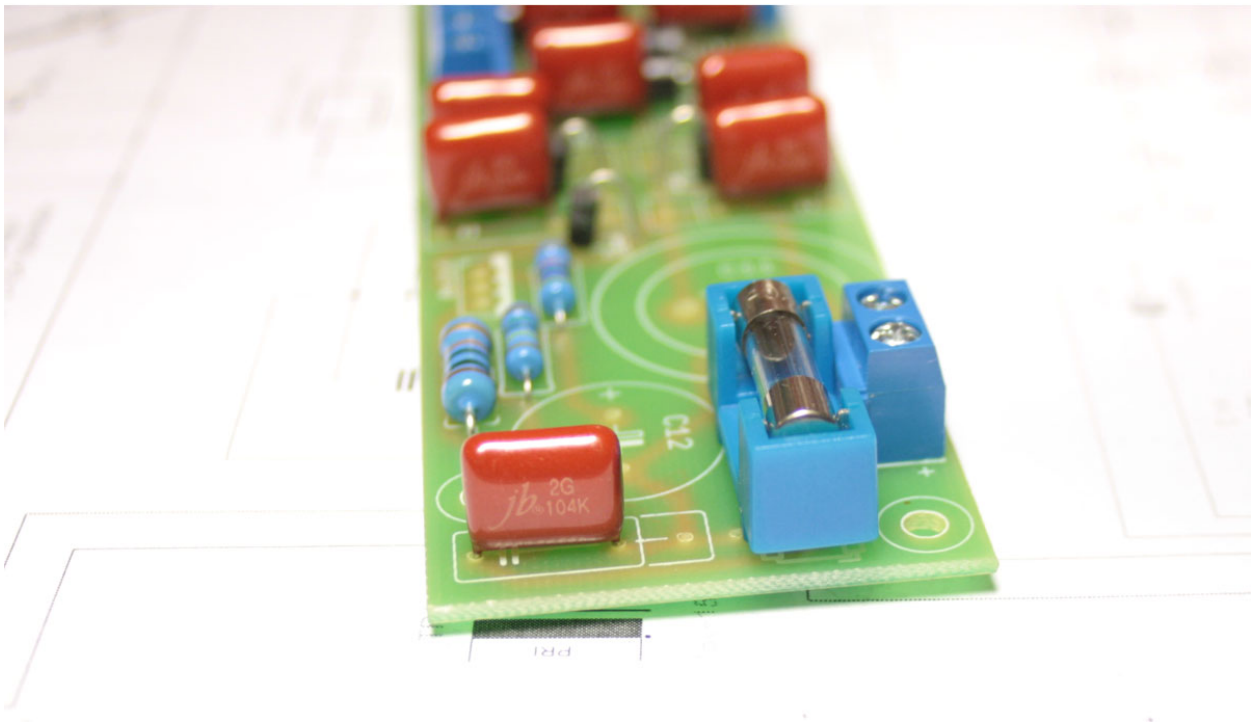


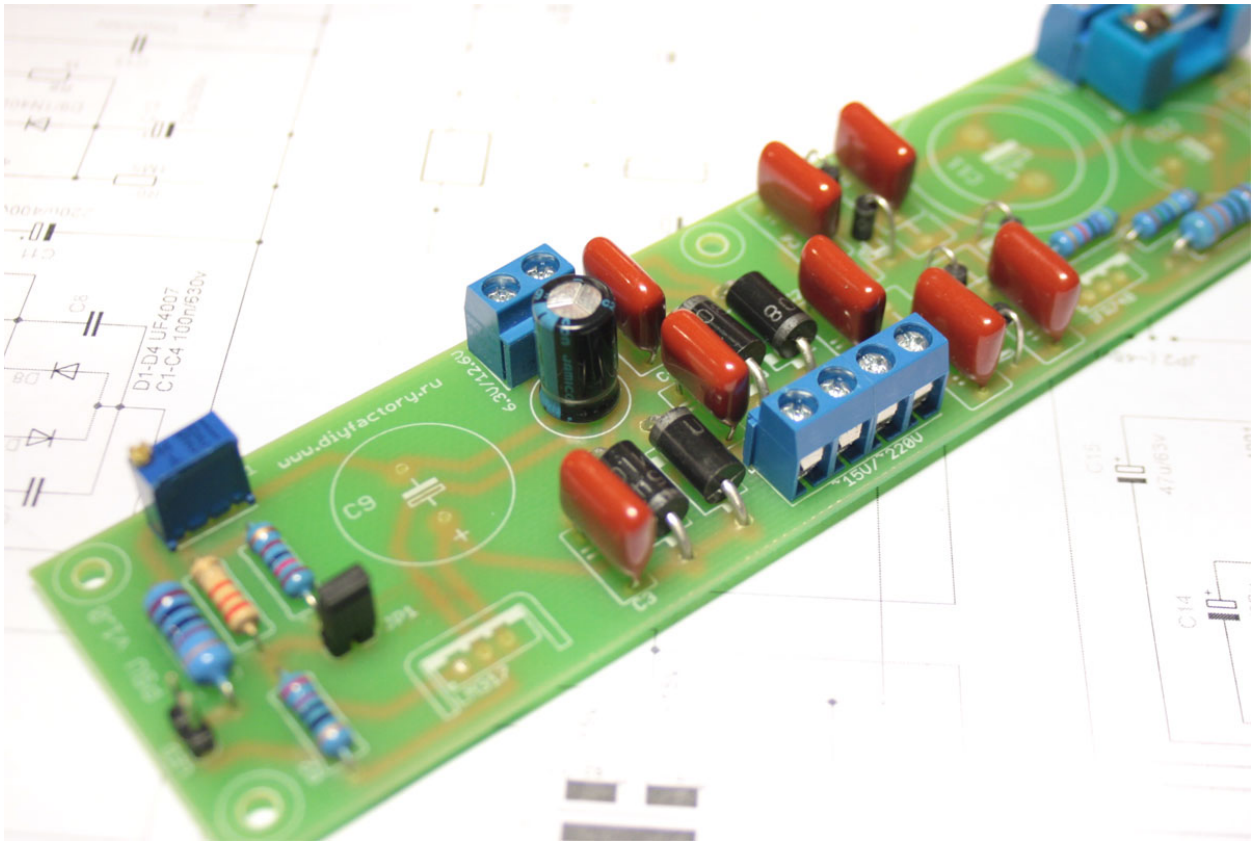
Solder film capacitors shunting rectifier diodes (C1-C8)). All capacitors are rated at 400 volts.



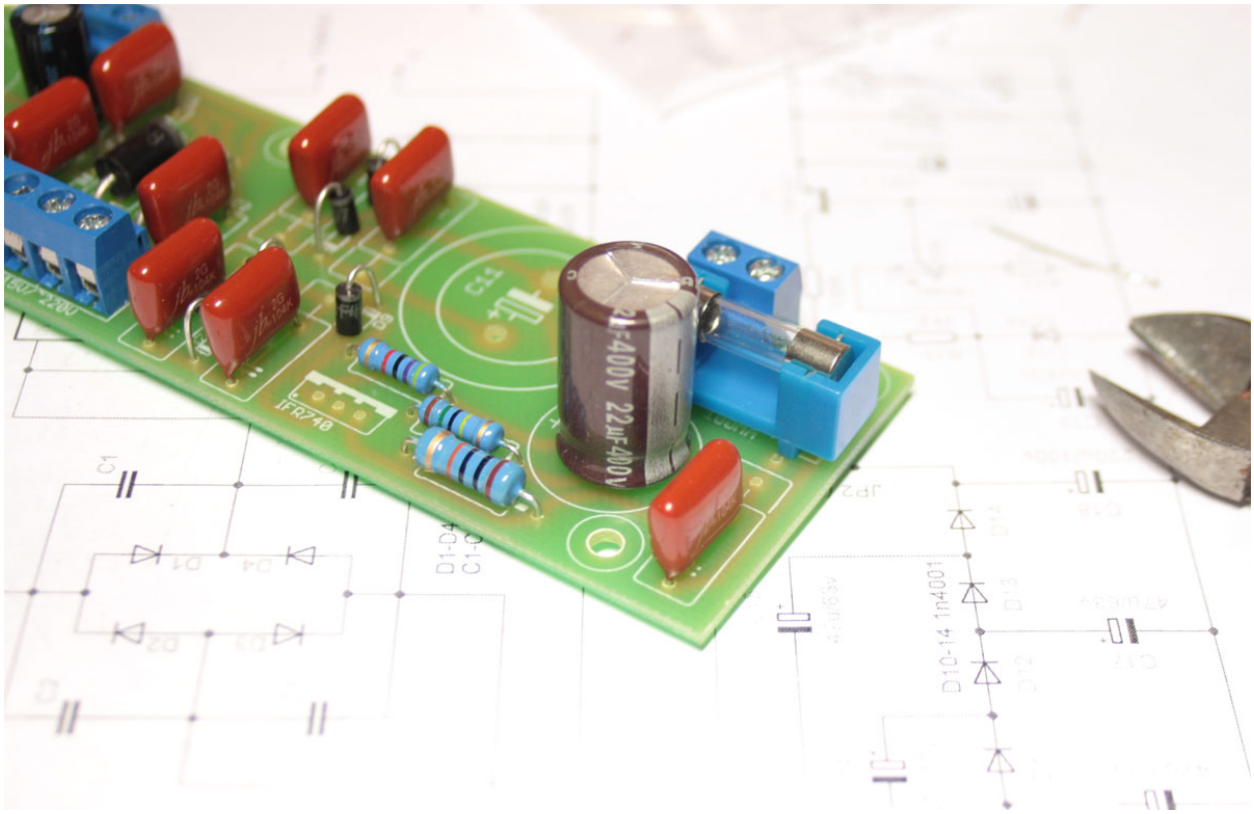


Solder capacitors C13, C10.

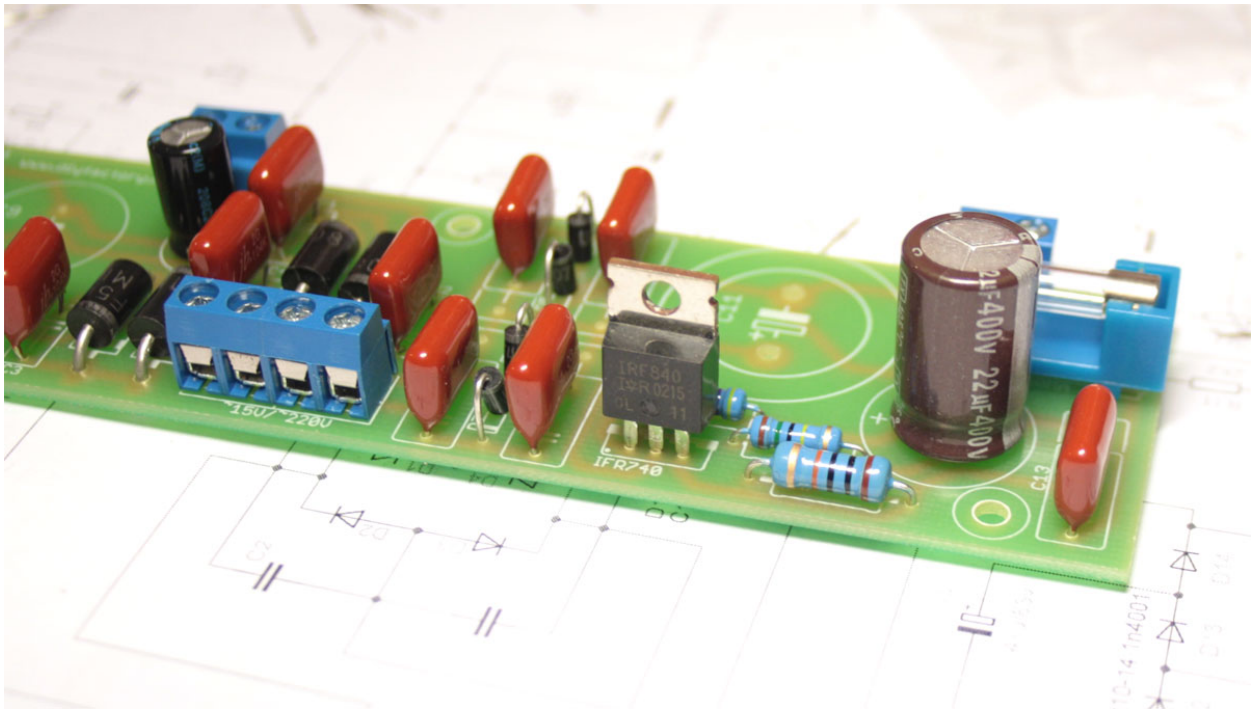




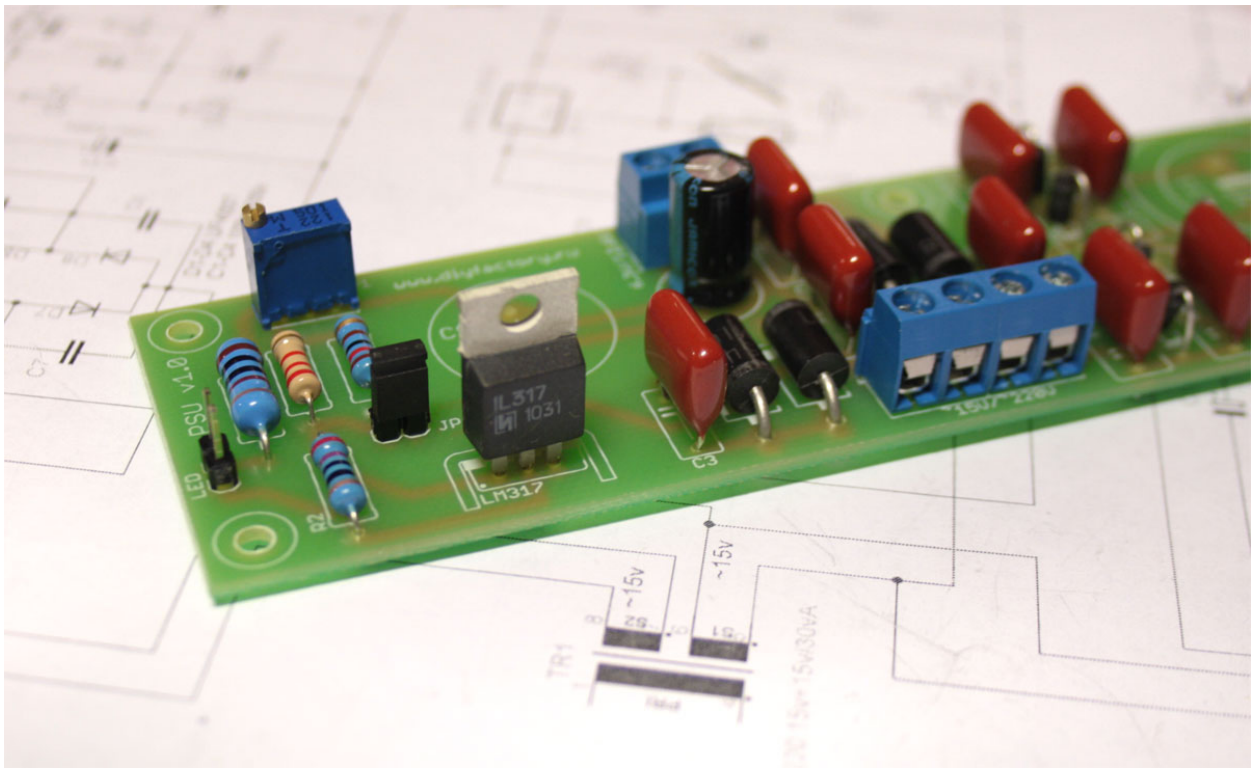
Gradually move to higher elements. Solder capacitor 22u 400v (low ESR). Pay attention to how the capacitor is oriented on the board.



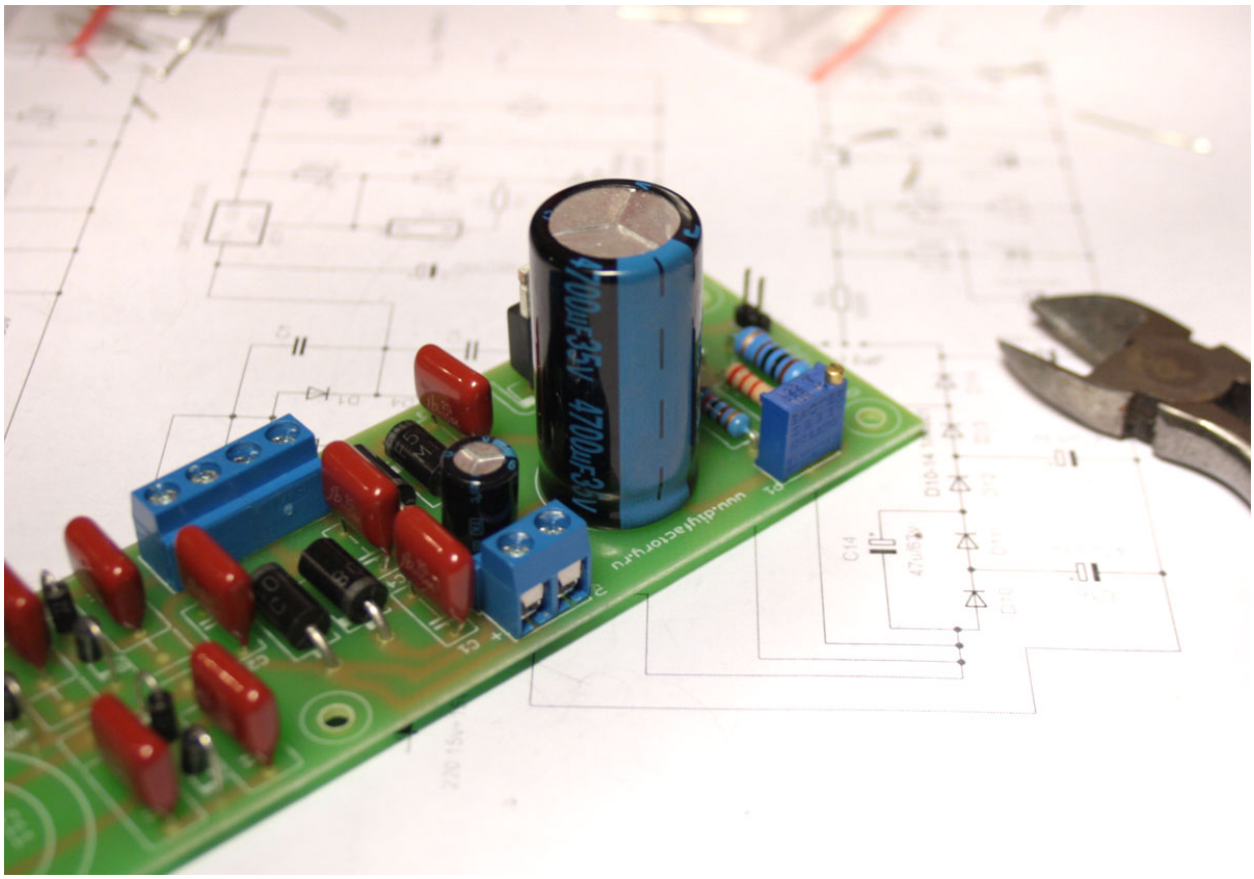
Solder high voltage mosfet transistor IRF840.



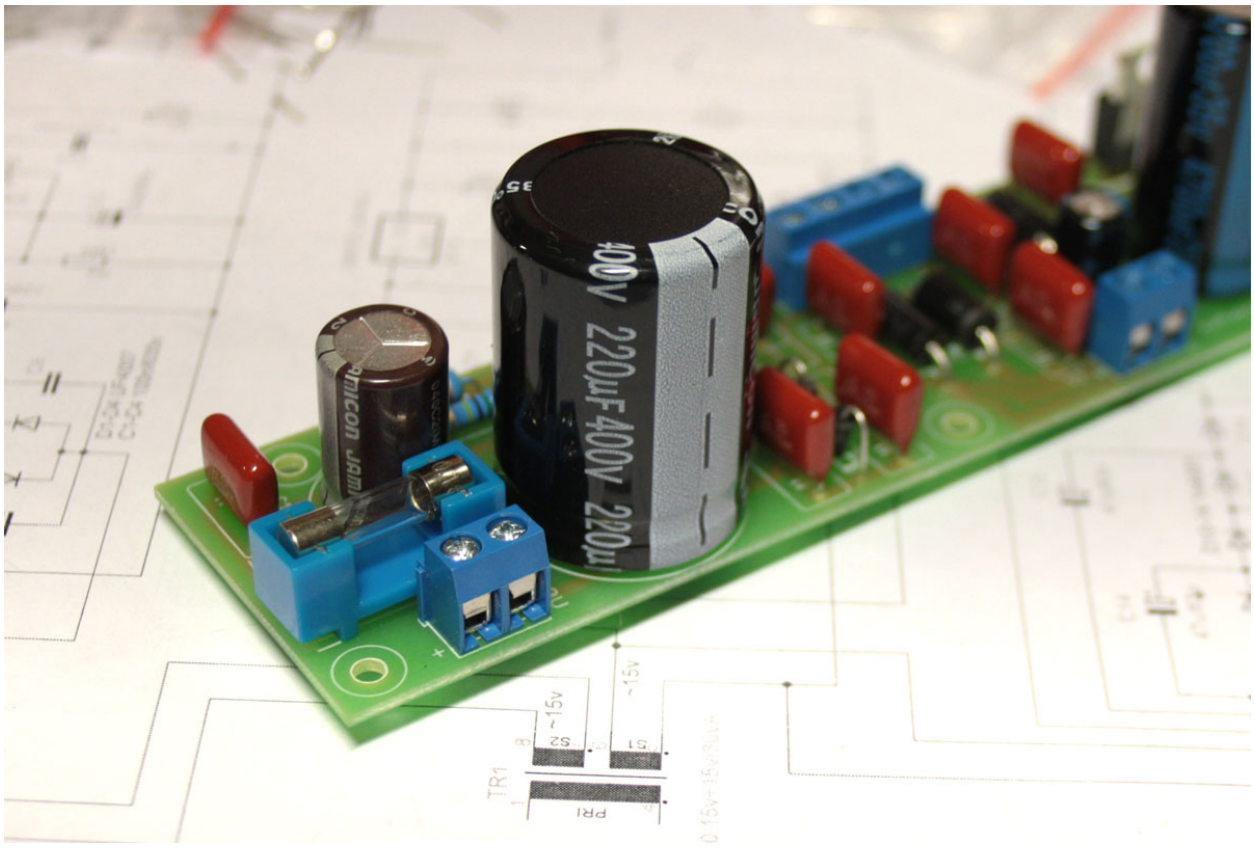
Then solder voltage regulator LM317 in the heater supply chain.



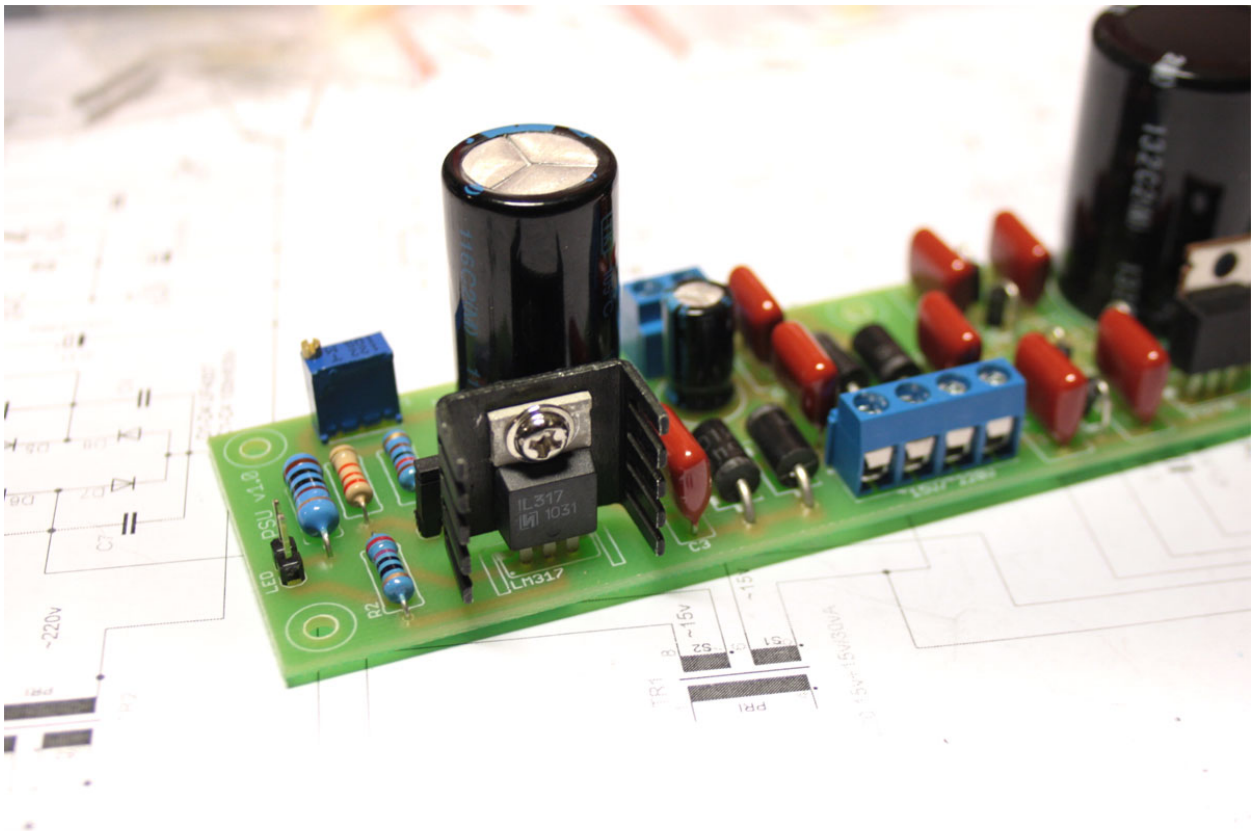
Electrolyte capacitor (4700u) is in the heater circuit. Pay attention to how the capacitor is oriented on the board. The negative pole is marked on the body of the condenser with light stripe.



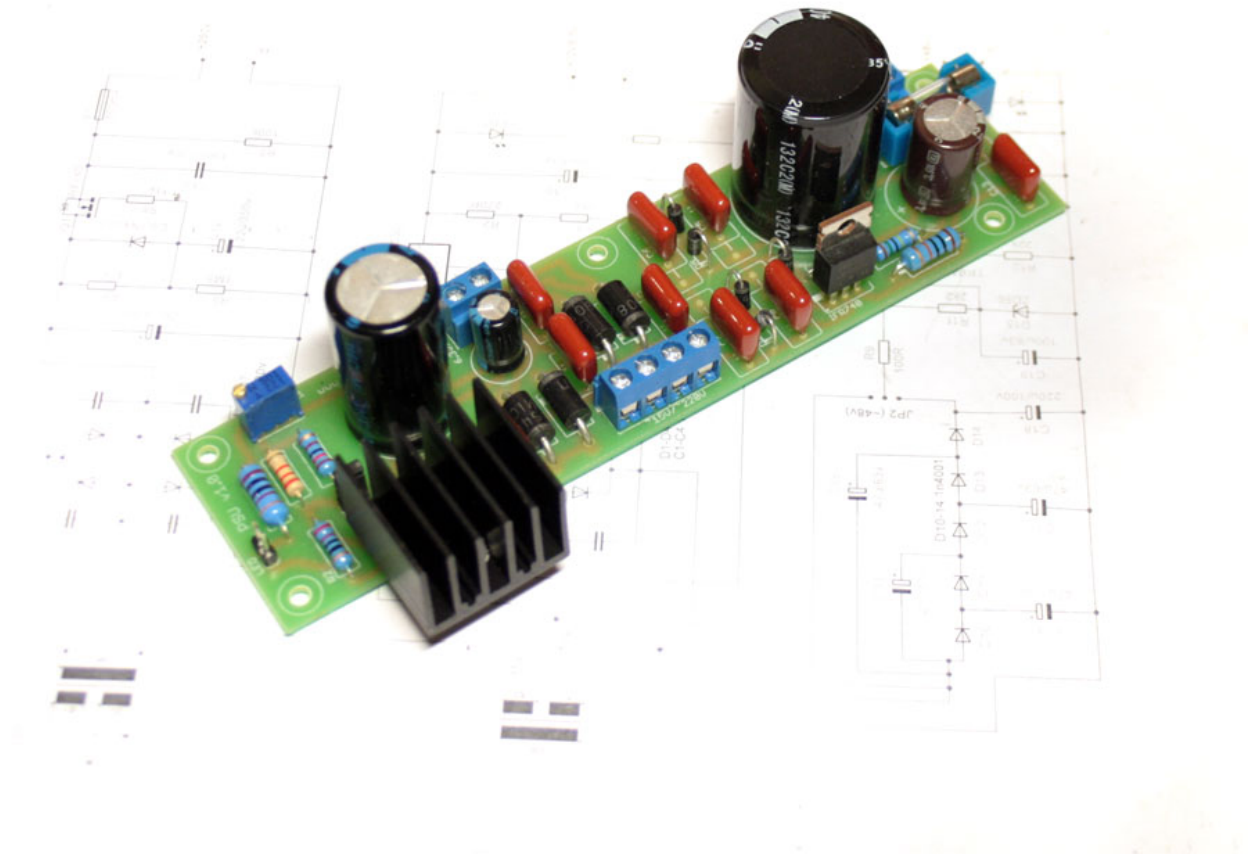
Mount capacitor C11 (220u 400v) in the anode circuit. Pay attention to how the capacitor is oriented on the board. The negative pole is marked on the body of the condenser with light stripe.



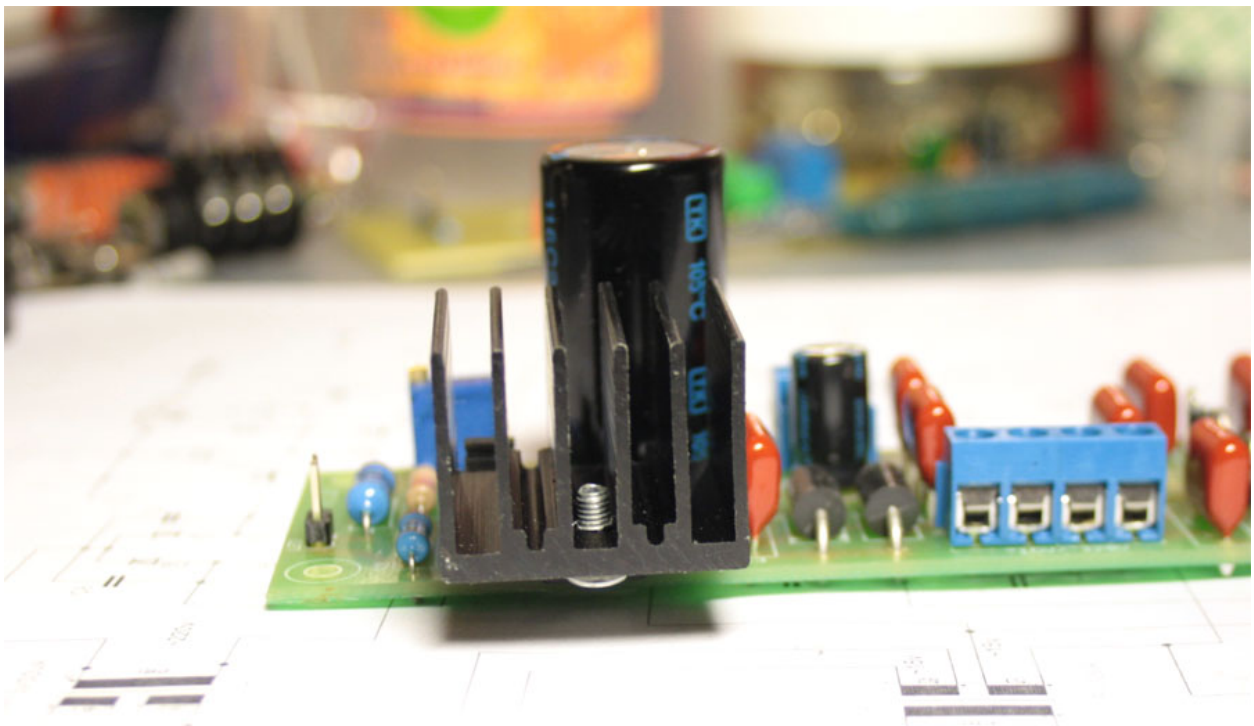
Install the radiator housing LM317.



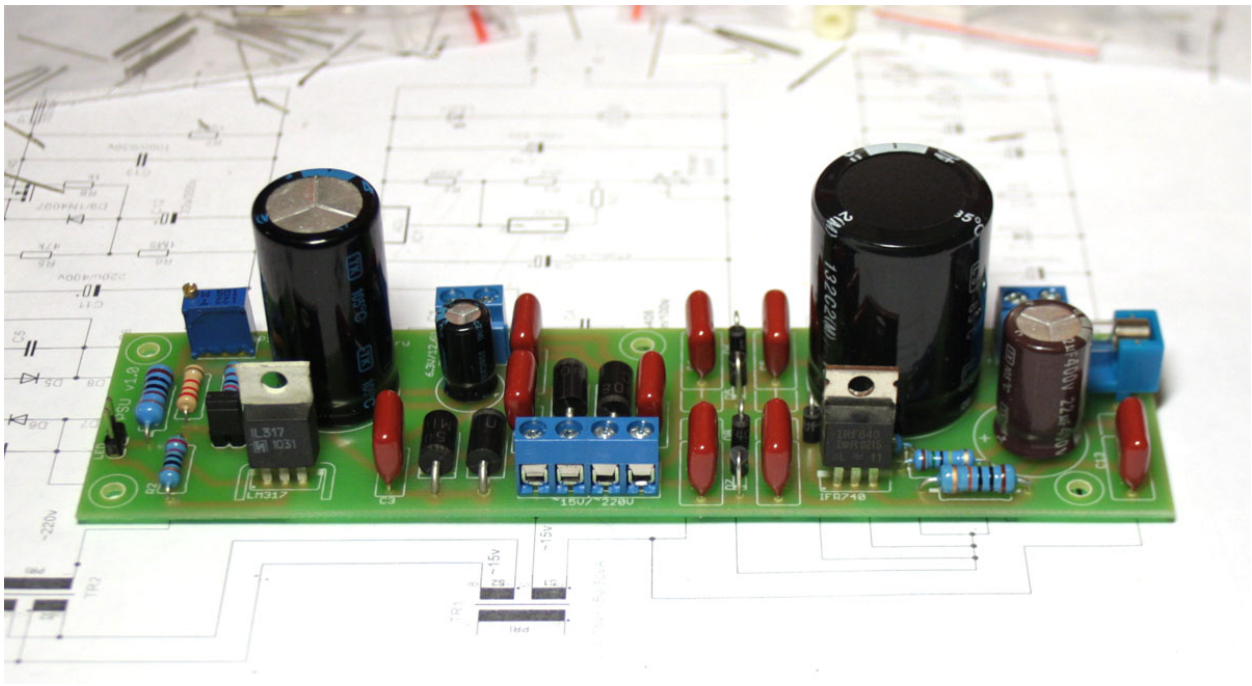
…or more massive type (also included in the kit)



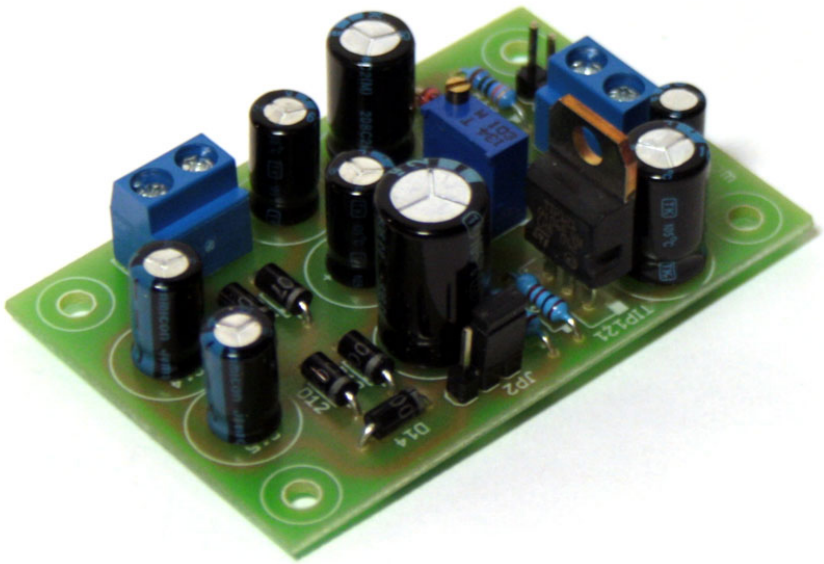
Drill the radiator and mount it with 3mm screw.



General view of the power supply assembly.



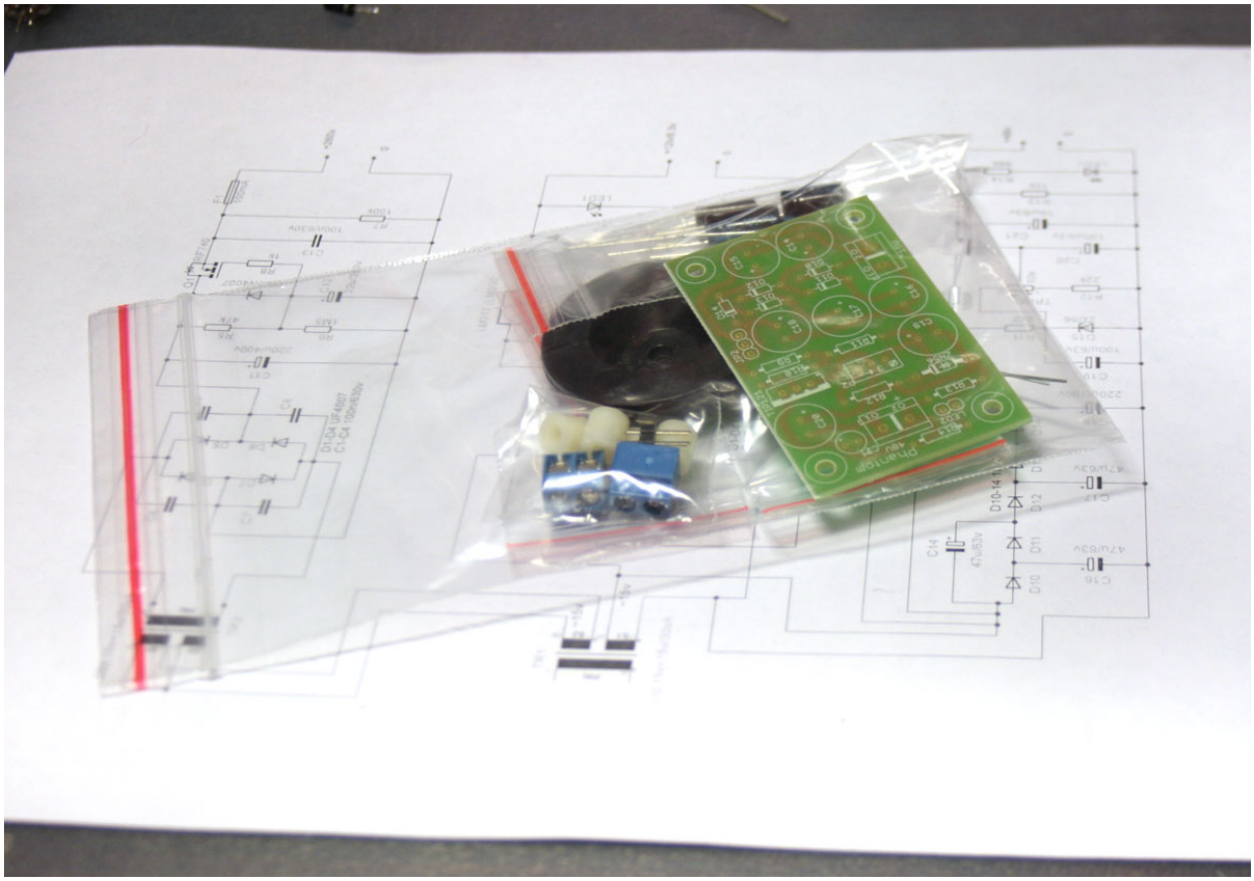
Phantom PSU PCB



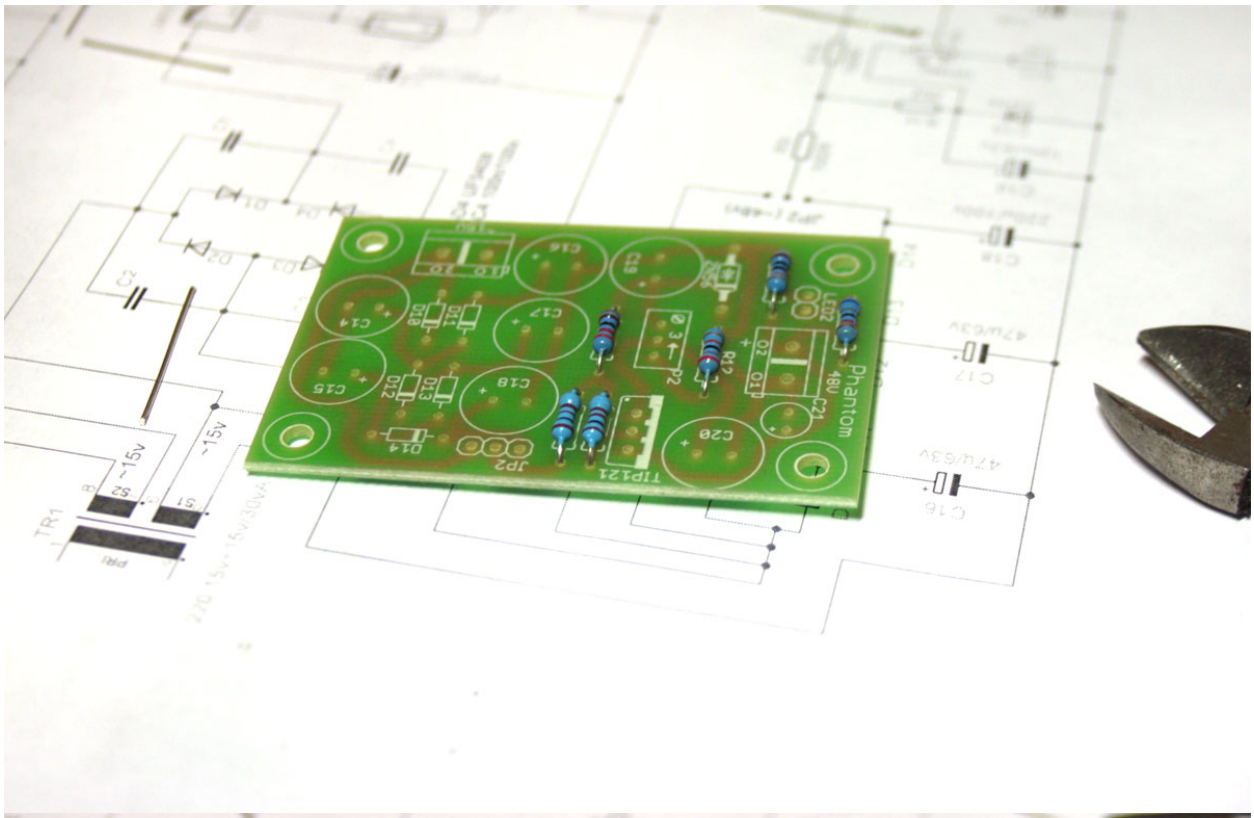
The kit includes:

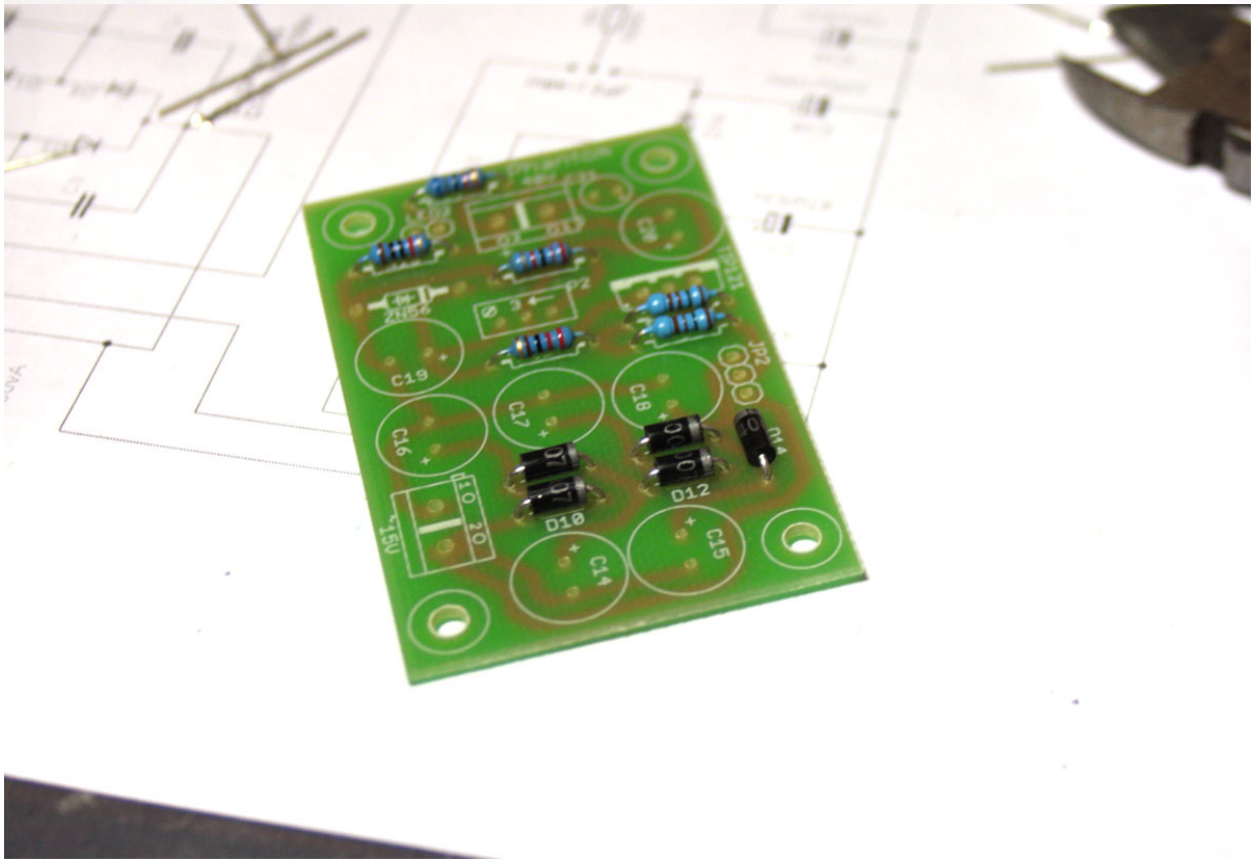
Board power supply
Resistors,
Connectors,
Capacitors
Trimmer,
Transistor TIP121.

As a bonus - stands for PCB, and hardware for a toroidal transformer (screws not supplied).

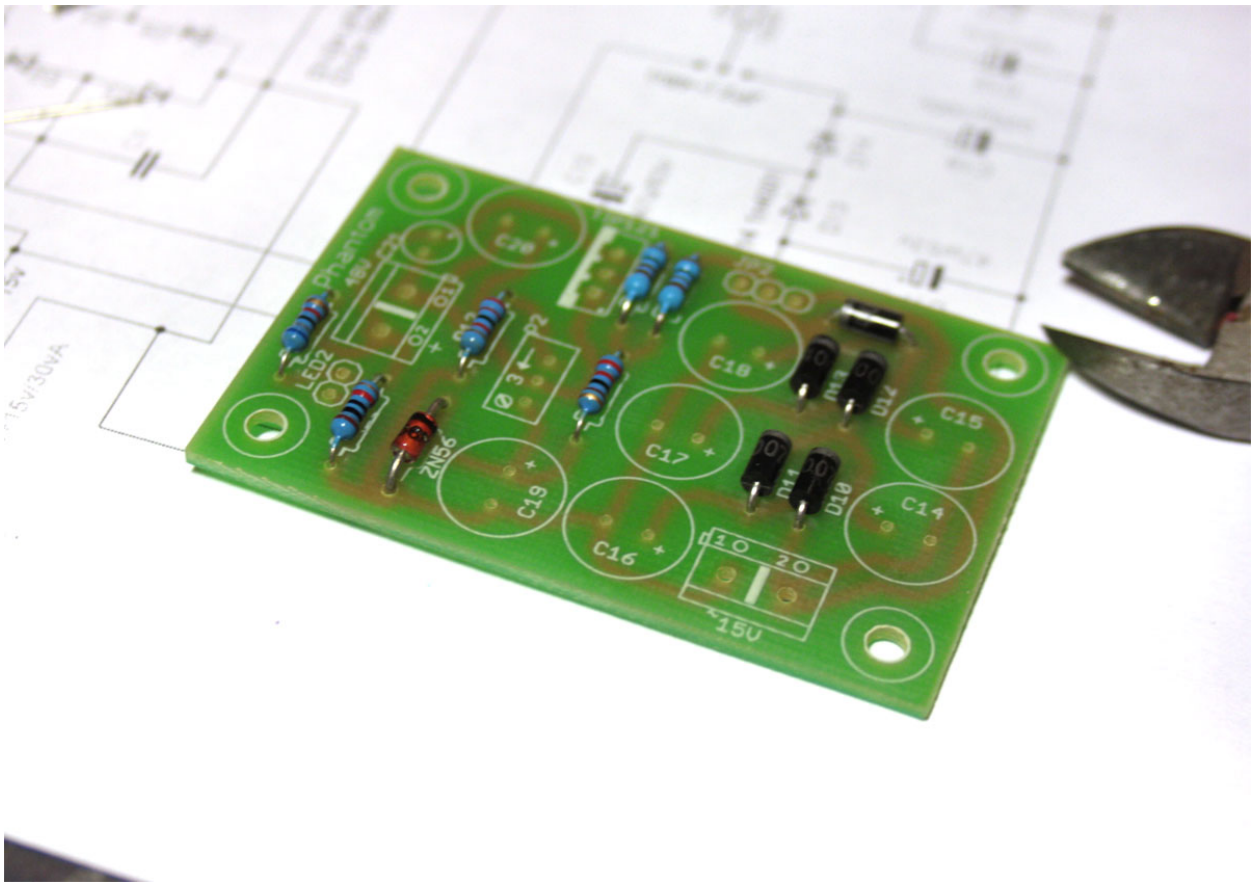


Solder resistors, diodes. Before installation always check the value of resistors with multimeter.

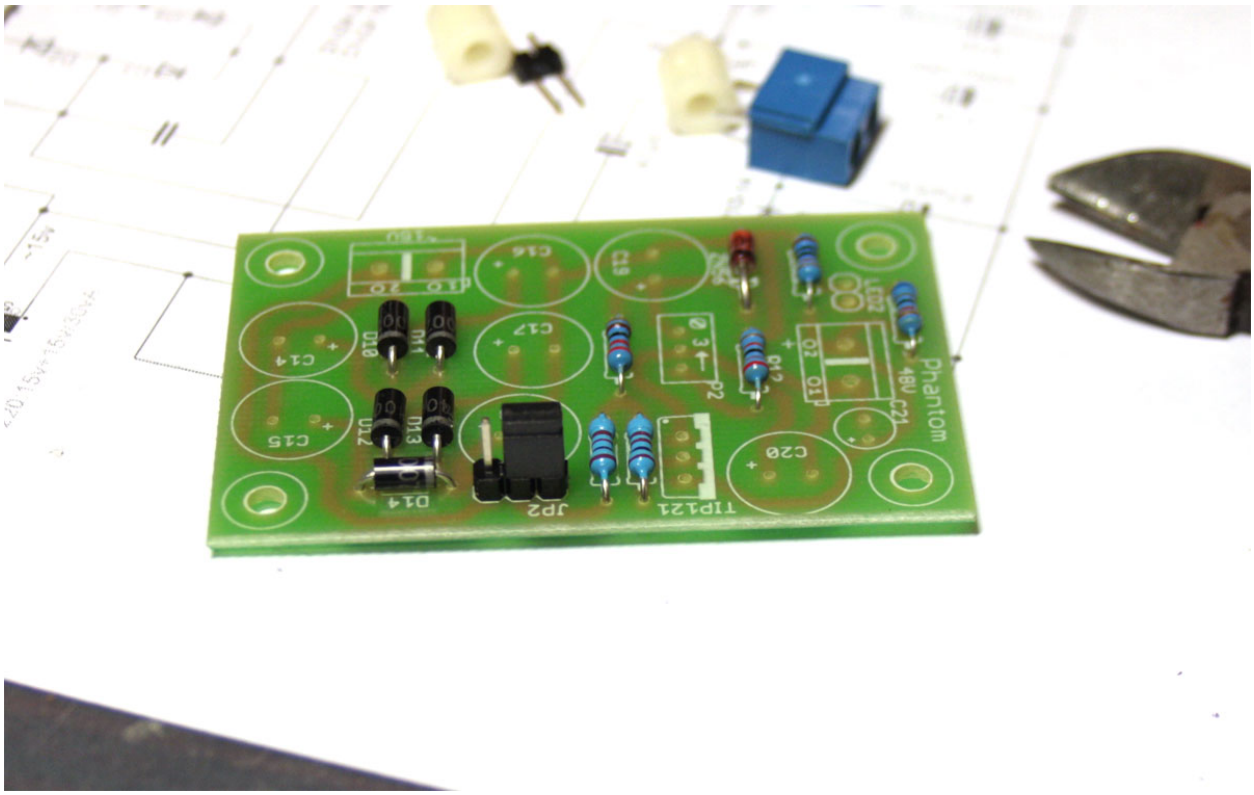




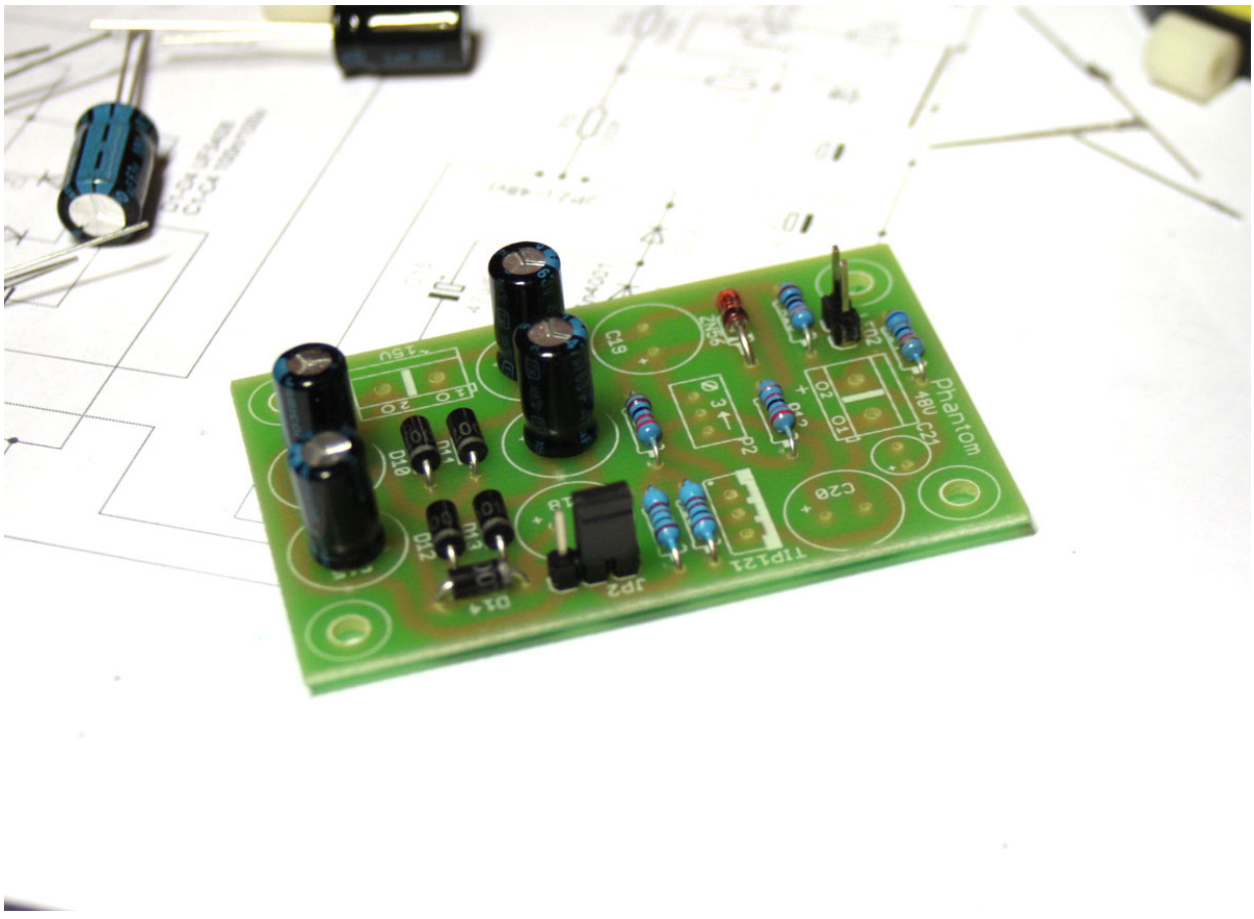
Solder zener diode (ZN56). Pay attention to how the zener diode is oriented on board.



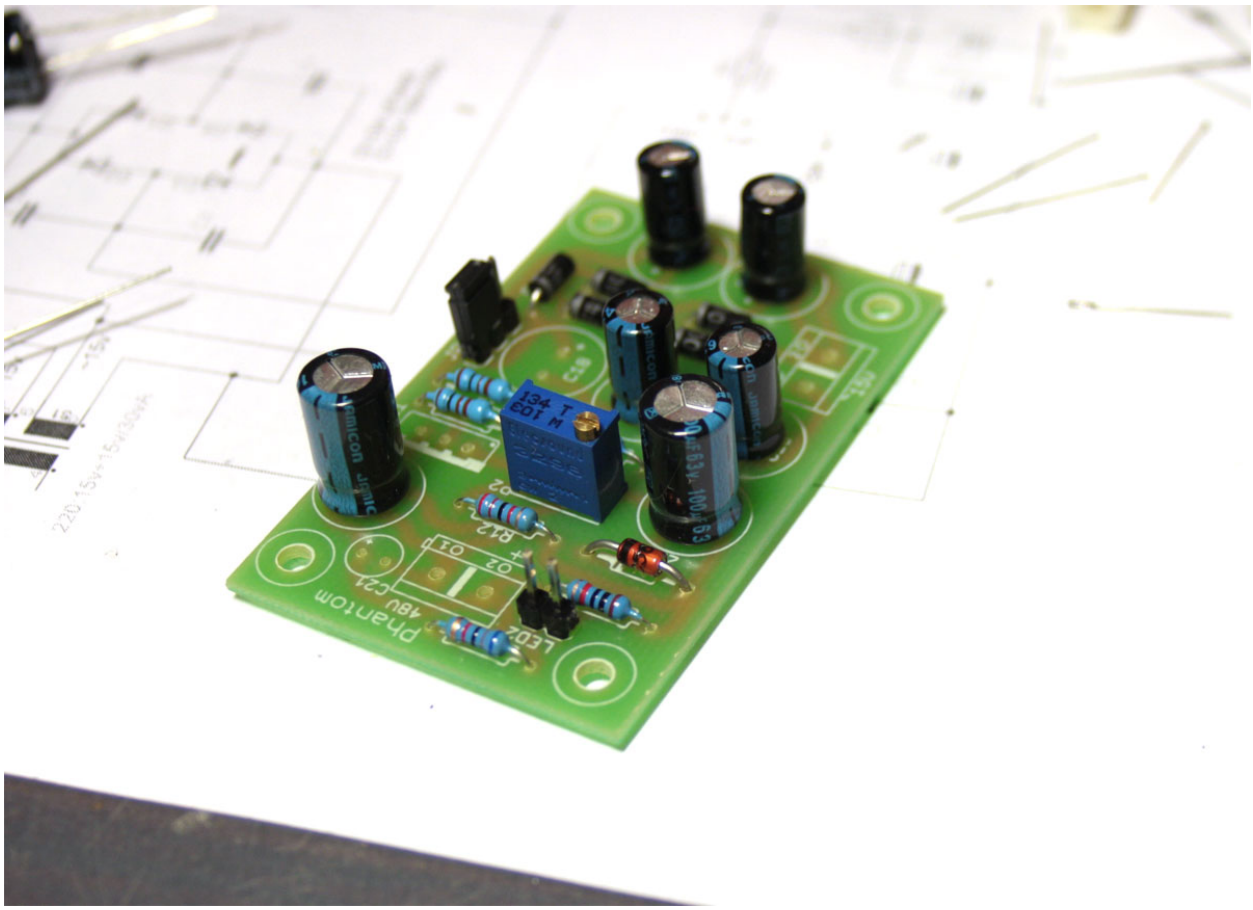
Jumper allows you to use transformers with the secondary winding of 12-15 volts (jumper position installed for circuit with multiplier is on the photo). If you have a transformer with a secondary winding of 48 volts, set the jumper to combine tracks from the input connector with resistor R9.



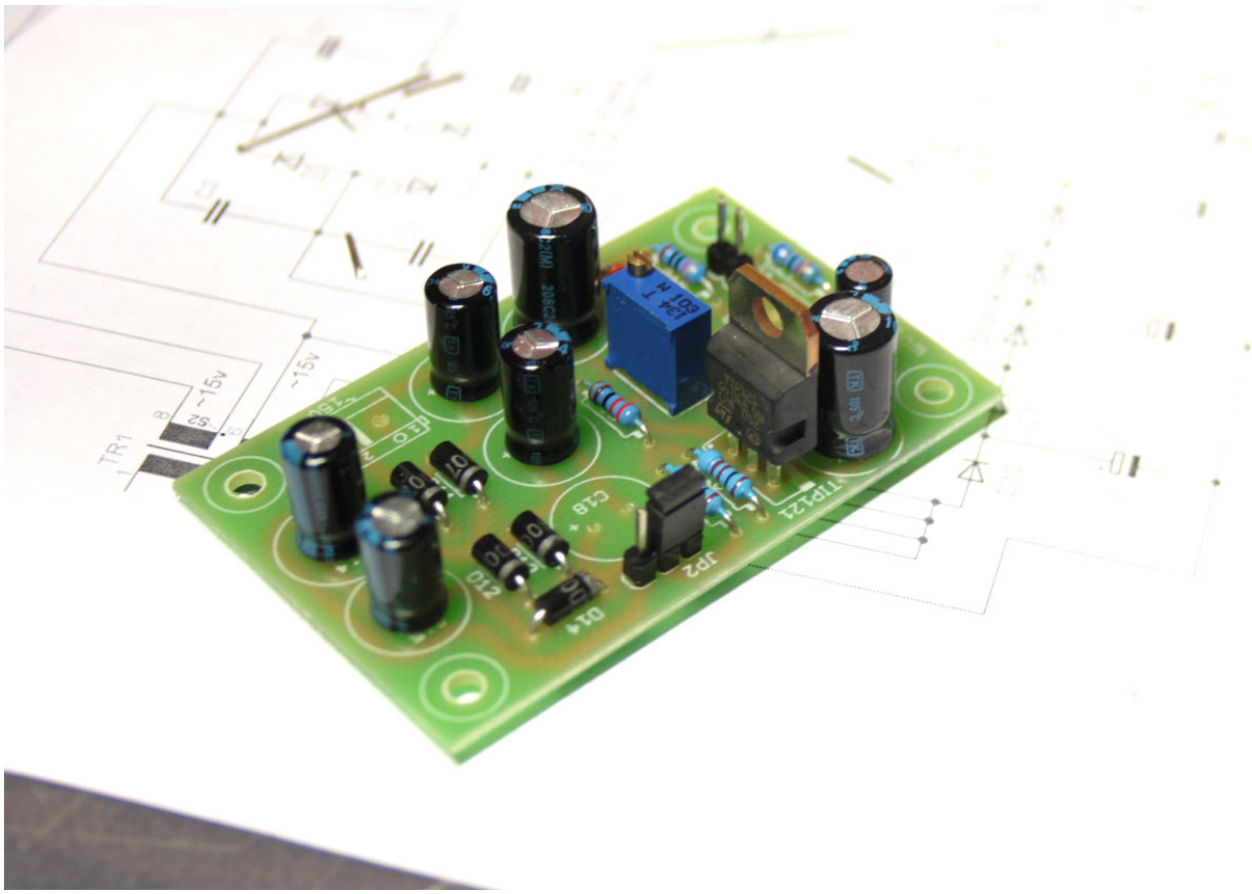
Solder capacitors C14-C17 (47u, 63v)



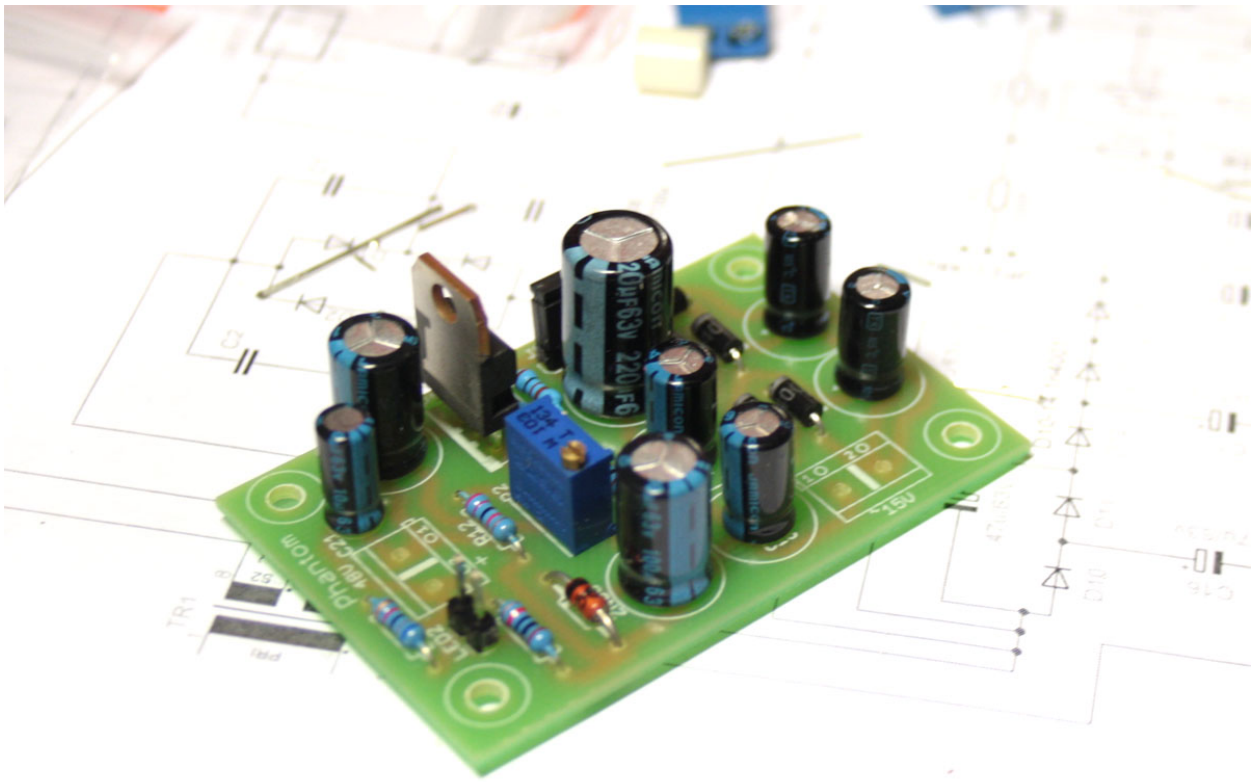
C19-C20 (100u 63v) and trimmer 10k.

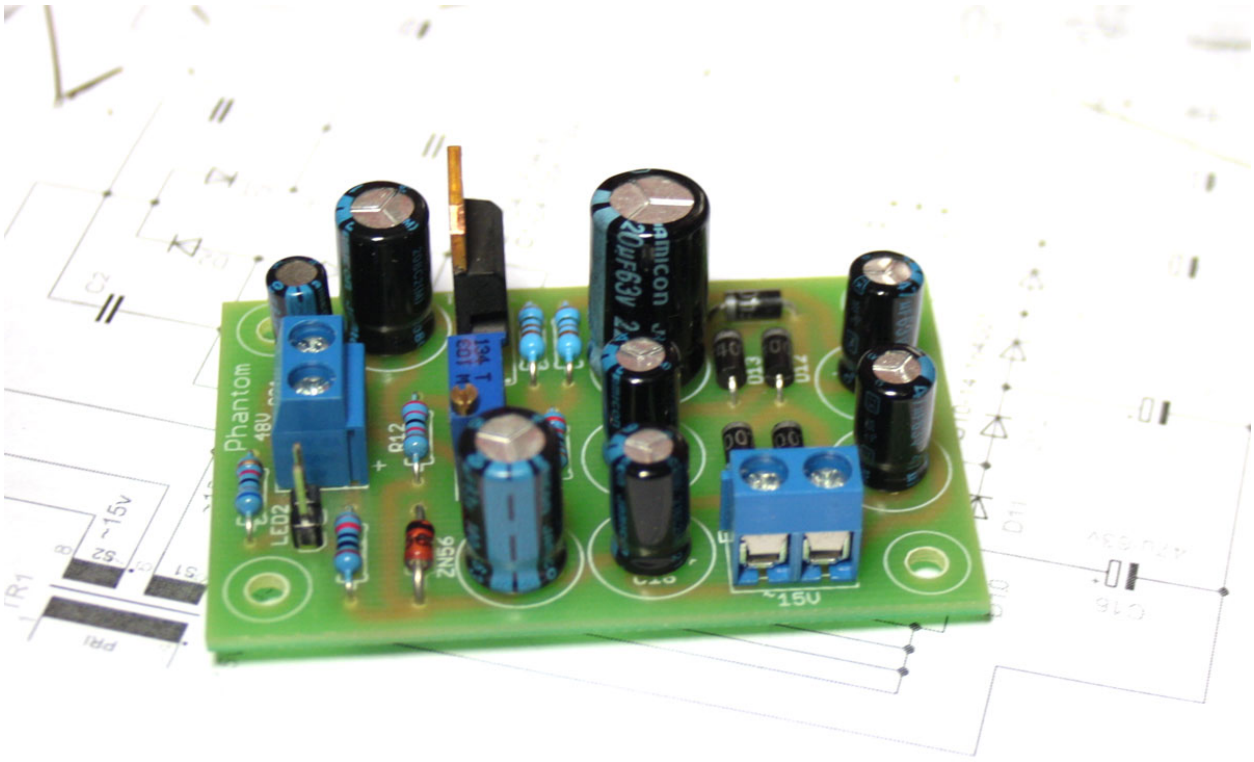


Solder TIP121.



Solder capacitor C18 (220u 63v) and sockets.



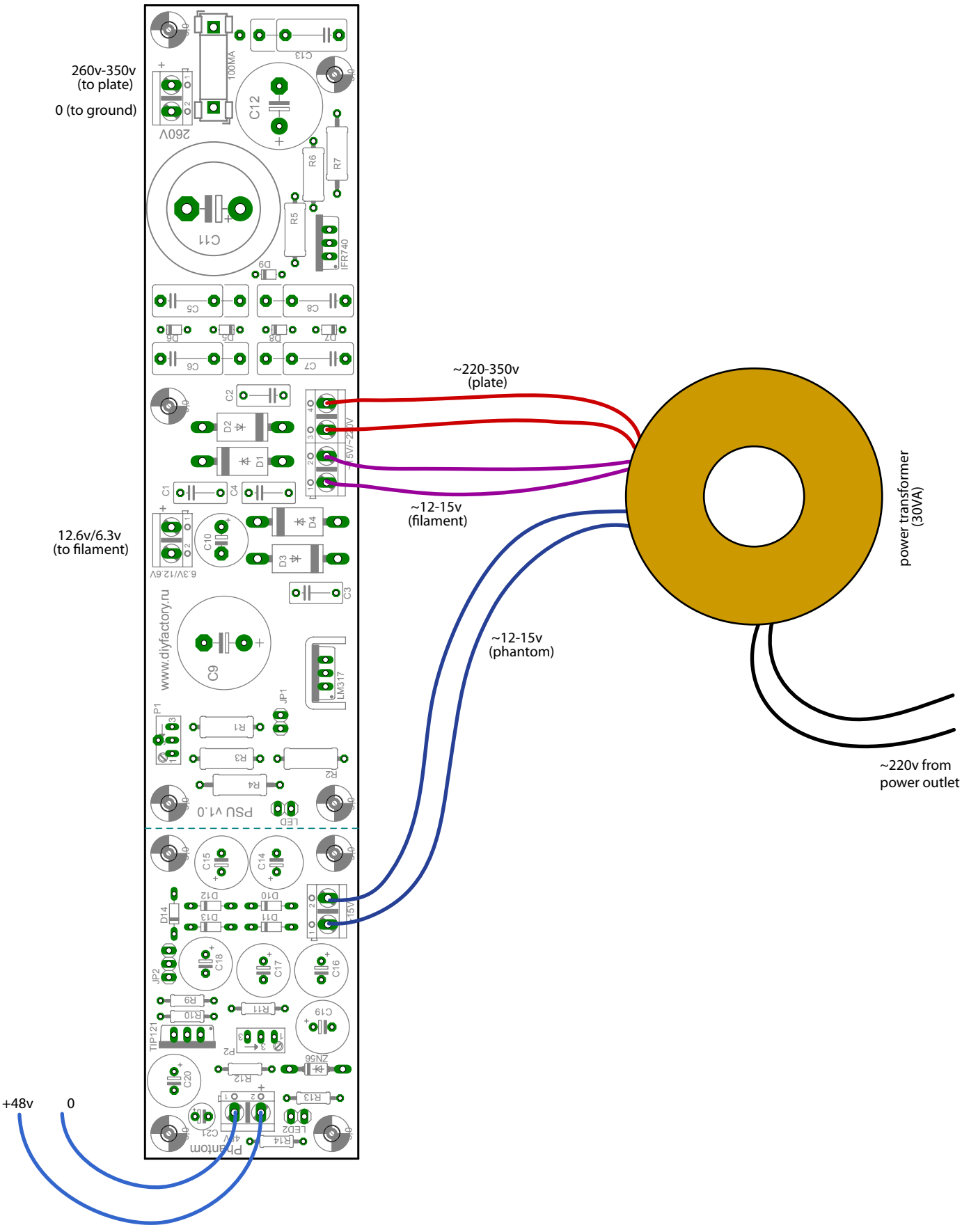


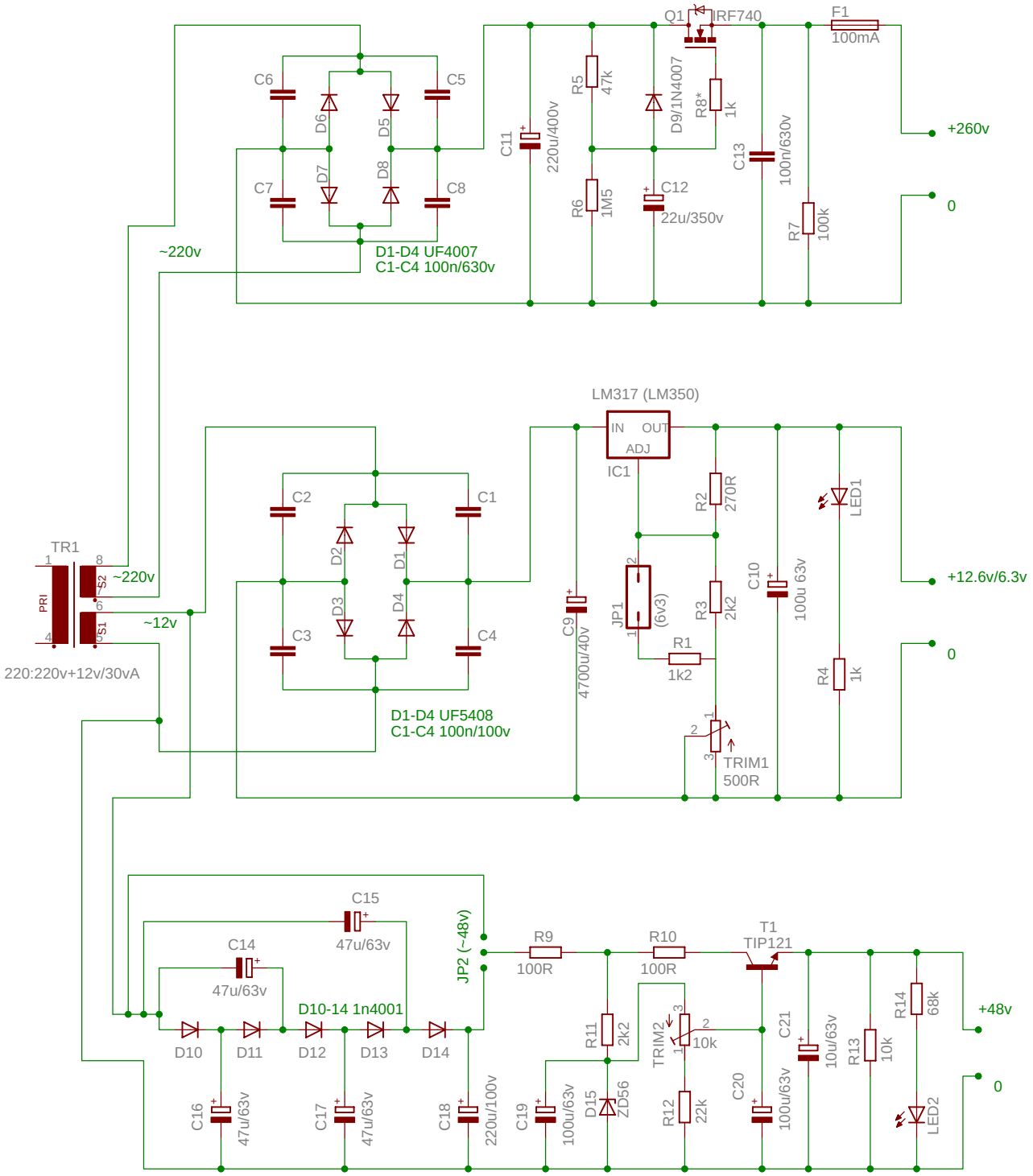
After we finished the installation, it is necessary to connect the secondary winding of the transformer to the appropriate connectors power supply and set the required voltages with jumpers and trimmer potentiometers.

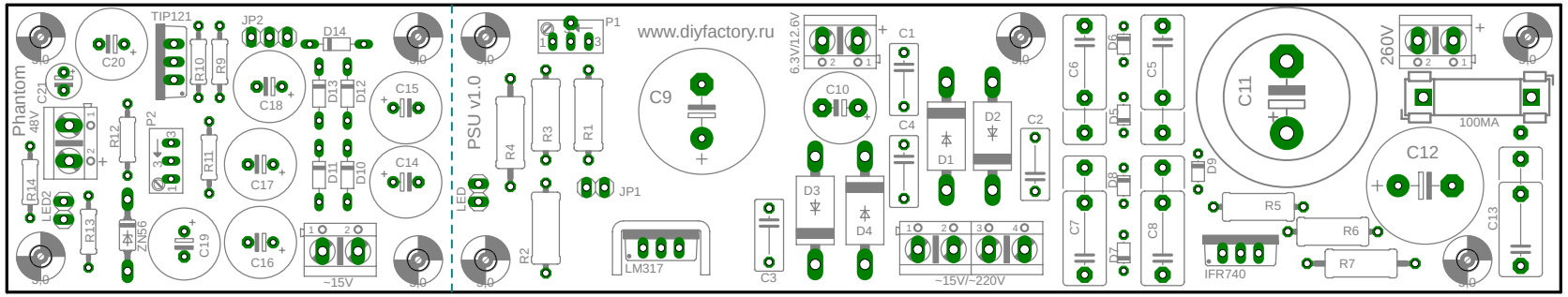
Always remember this PSU operates at potentially lethal voltages. Be warned when operating with transformers and electrolytic capacitors. The charge stored in the capacitor even after disconnecting PSU from the mains.

Typical connection diagrams are shown in the diagrams below.

Typical interconnections




Q1
IRF740
F1
100mA
C6
C5
C7
C8
D6
D5
D7
D8
D1-D4 UF4007
C1-C4 100n/630v
~220v
C11
220u/400v
R5
47k
R6
1M5
D9/1N4007
R8*
1k
C12
22u/350v
C13
100n/630v
R7
100k
+260v
0
LM317 (LM350)
IN
OUT
ADJ
IC1
R2
270R
LED1
C2
C1
C3
C4
D2
D1
D3
D4
D1-D4 UF5408
C1-C4 100n/100v
TR1
PRI
~220v
~12v
220:220v+12v/30vA
C9
4700u/40v
JP1
(6v3)
R3
2k2
R1
1k2
C10
100u 63v
R4
1k
TRIM1
500R
+12.6v/6.3v
0
C15
47u/63v
C14
47u/63v
JP2 (~48v)
D10-14 1n4001
D10
D11
D12
D13
D14
C16
47u/63v
C17
47u/63v
C18
220u/100v
R9
100R
R10
100R
T1
TIP121
R11
2k2
TRIM2
10k
R12
22k
D15
ZD56
C19
100u/63v
C20
100u/63v
C21
10u/63v
R13
10k
R14
68k
LED2
+48v
0


Phantom
48V
PSU v1.0
www.diyfactory.ru
TIP121
JP2
P1
P2
LED
LM317
~15V
~15V/~220V
6.3V/12.6V
260V
100MA
IFR740
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
R1
R2
R3
R4
R5
R6
R7
R9
R10
R11
R12
R13
R14
ZN56