

## POW-6 AC/DC-DC Step Down Voltage Converter DIY Kit

### 1.Introduction:

POW-6 is a AC/DC-DC Step Down Voltage Converter DIY Kit. It can input AC15V or DC18V power supply and optional output voltage DC 3V, 4.5V, 5V, 6V, 9V, 12V by switch button. Each output voltage value can also be fine tuned or calibrated. It is a small mini desktop power supply that is very suitable for laboratories.

### 2.Feature:

- 1>.AC15V or DC18V Power Supply Input
- 2>.Optional Fixed Output DC 3V/4.5V/5V/6V/9V/12V
- 3>.Calibratable Output Voltage Value
- 4>.DIY manual soldering
- 5>.Simple and easy to operate

### 3.Parameter:

- 1>.Input voltage: AC15V or DC18V
- 2>.Output voltage: DC 3V/4.5V/5V/6V/9V/12V
- 3>.Output current: 1A(MAX)
- 2>.Output Indicator: Red
- 3>.Work Temperature:-20℃~85℃
- 4>.Work Humidity:0%~95%RH
- 5>.Size(Installed):93\*67\*41mm

### 4.Note:

- 1>.Be sure to calibrate each output voltage value first after connect input voltage.
- 2>.It can input AC15V or DC18V, but when in use, only one power input can be selected.
- 3>.AC input method does not differentiate between positive and negative power poles.
- 4>.The potentiometer can only fine tune and calibrate the output value after selecting the output voltage.The potentiometer cannot significantly adjust the output voltage value.
- 5>.AC100-240V to DC18V/1A Power Adapter is optional. It will not be included in the list if you purchase an adapter that is not included.

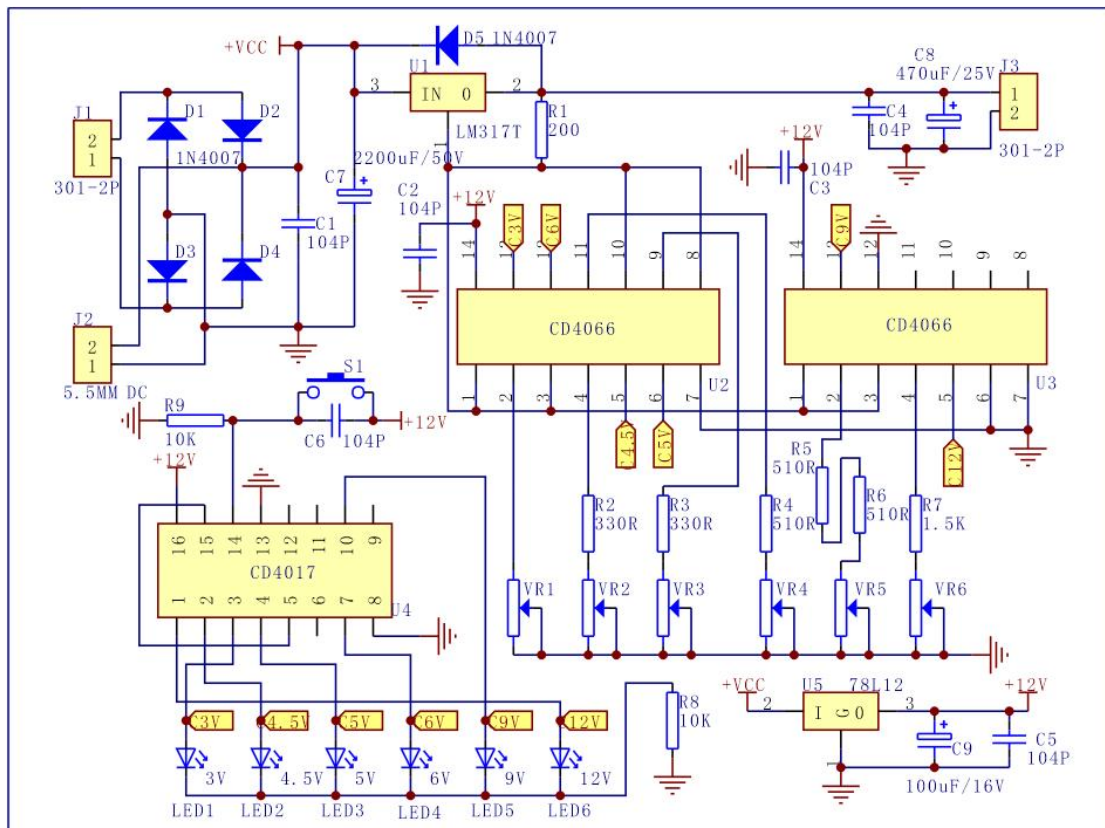
### 5.Component listing:

NO.	Component Name	PCB Marker	Parameter	QTY
1	Metal Film Resistor	R1	200ohm	1
2	Metal Film Resistor	R2,R3	330ohm	2
3	Metal Film Resistor	R4,R5,R6	510ohm	3
4	Metal Film Resistor	R7	1.5Kohm	1
5	Metal Film Resistor	R8,R9	10Kohm	2
6	W3296 Potentiometer	VR1-VR6	200ohm	6
7	Ceramic Capacitor	C1-C6	0.1uF 104	6
8	Electrolytic Capacitor	C7	2200uF 50V	1
9	Electrolytic Capacitor	C8	470uF 25V	1
10	Electrolytic Capacitor	C9	100uF 16V	1
11	1N4007 Diode	D1-D5	DO-41	5
12	Red LED	LED1-LED6	5mm	6
13	LM317T Voltage Regulator	U1	TO-220	1
14	CD4066BE Switch Chip	U2,U3	DIP-14	2
15	CD4017BE CMOS Counter	U4	DIP-16	1
16	78L12 Voltage Regulator	U5	TO-92	1
17	Black Button	S1	6*6*16mm	1
18	Button Cap	S1		1
19	KF301-2P Terminal	J1,J3	5.08mm	2

20	DC-005 Power Socket	J2		1
21	Aluminum Radiator	U1	30*30*25mm	1
22	AC100-240V to DC18V/1A Power Adapter		Optional	1
23	LED Nylon Sleeve	LED1-LED6	M5.2*14mm	6
24	Nylon Screw Column		M3*10mm	4
25	Nylon Isolation Column		M3*14mm	4
26	Black Metal Screw		M3*8mm	1
27	Black Metal Screw		M3*22mm	4
28	POW-6M PCB		93*67mm	1
29	POW-6T PCB		93*67mm	1

Note:Users can complete the installation according to the PCB silk screen and component list.

### 6.Schematic:



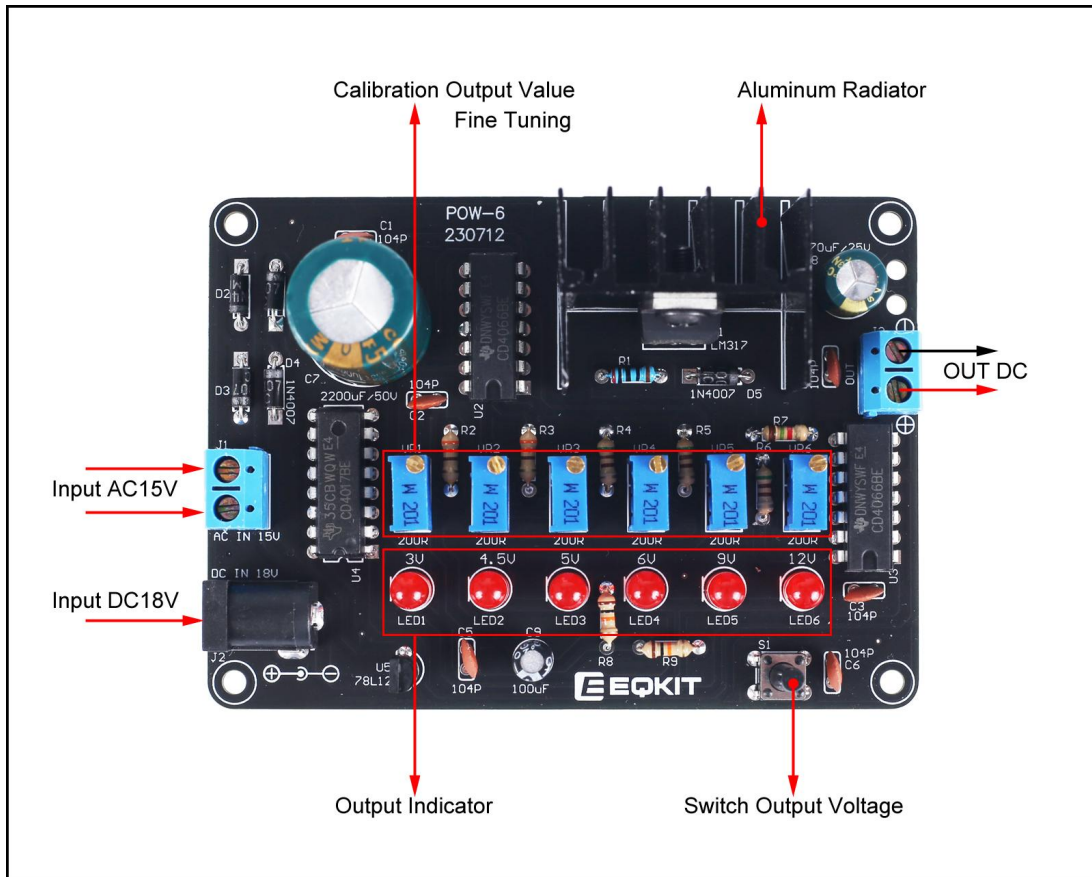
### 7.Application:

- 1>.Electronic laboratory
- 2>.Indoor power supply conversion
- 3>.Power supply modification and replacement

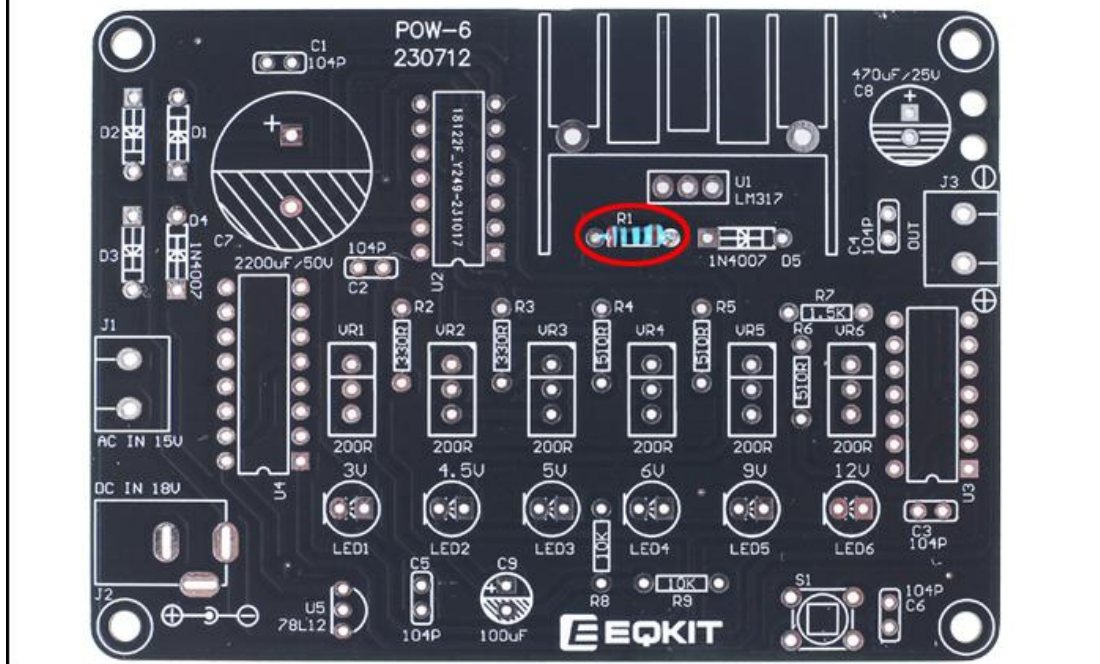
### 8.Installation Tips:

- 1>.User needs to prepare the soldering tool at first.
- 2>.Please be patient until the installation is complete.
- 3>.The package is DIY kit.It need finish install by user.
- 4>.The soldering iron can't touch the components for a long time(1.0 second), otherwise it will damage the components.
- 5>.Pay attention to the positive and negative of the components.
- 6>.Strictly prohibit short circuit.
- 7>.Install complex components preferentially.
- 8>.Make sure all components are in right direction and right place.
- 9>.Please wear anti-static gloves or anti-static wristbands when installing electronic components.
- 10>.It is strongly recommended to read the installation manual before starting installation!!!

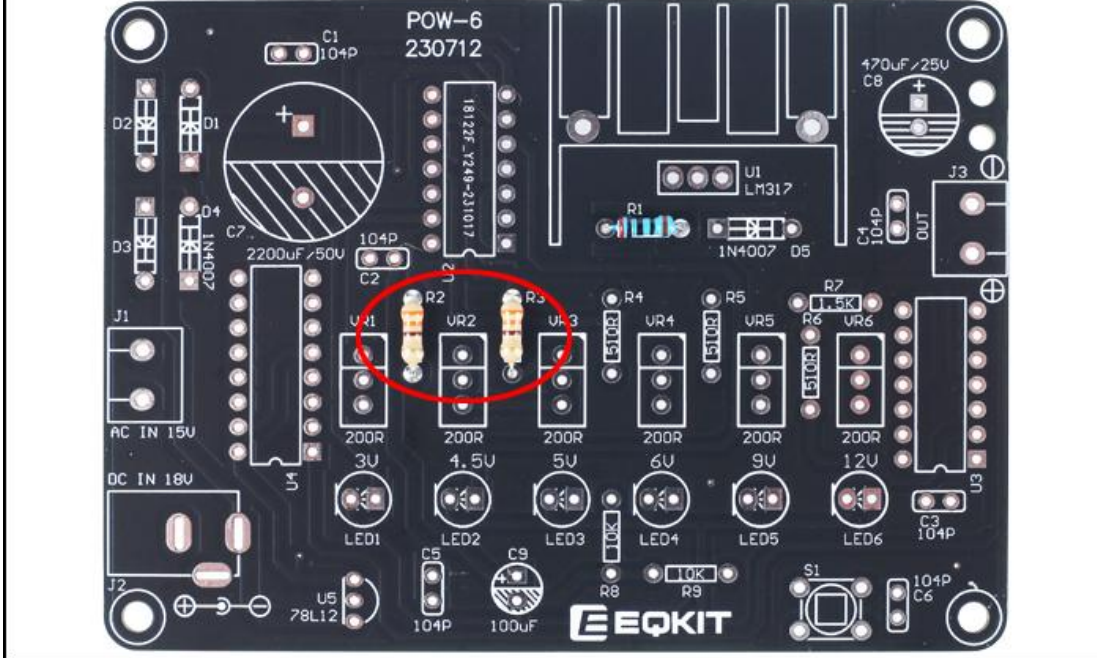
9. Installation Steps(Please be patient install!!!):



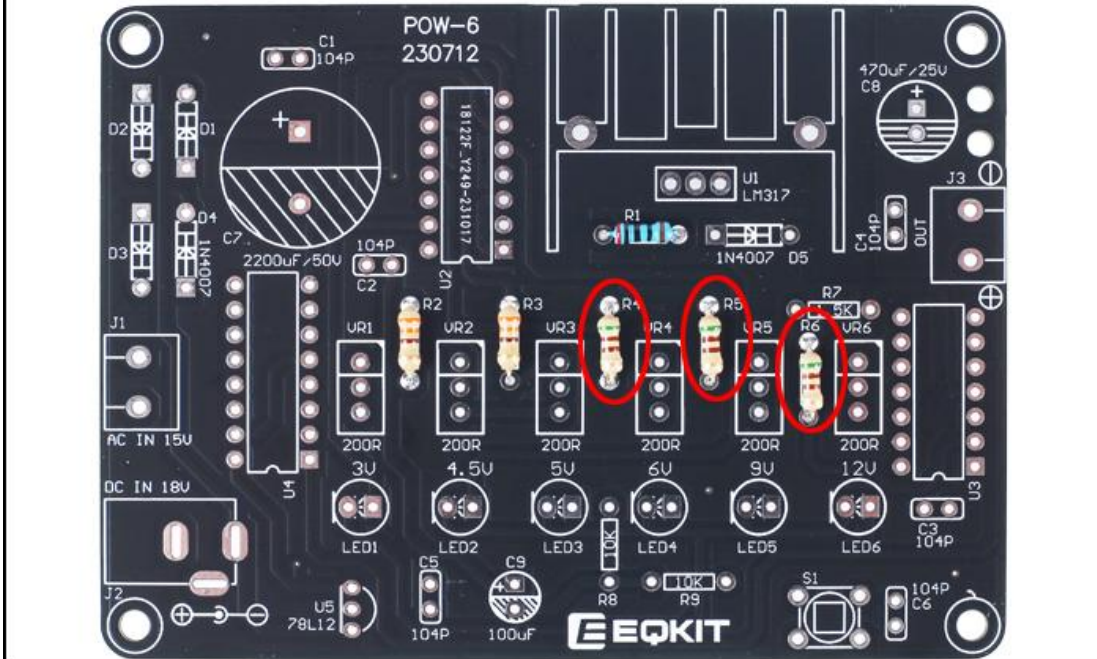
Step 1: Install 1pcs 200ohm Metal Film Resistor at R1.



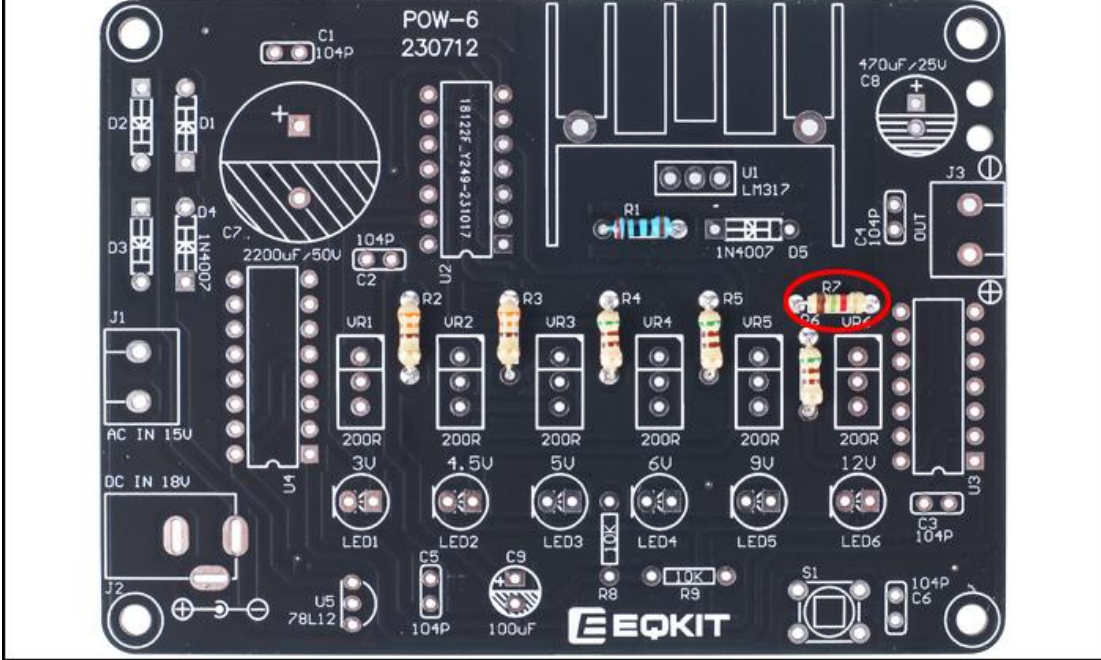
Step 2: Install 2pcs 330ohm Metal Film Resistor at R2,R3.



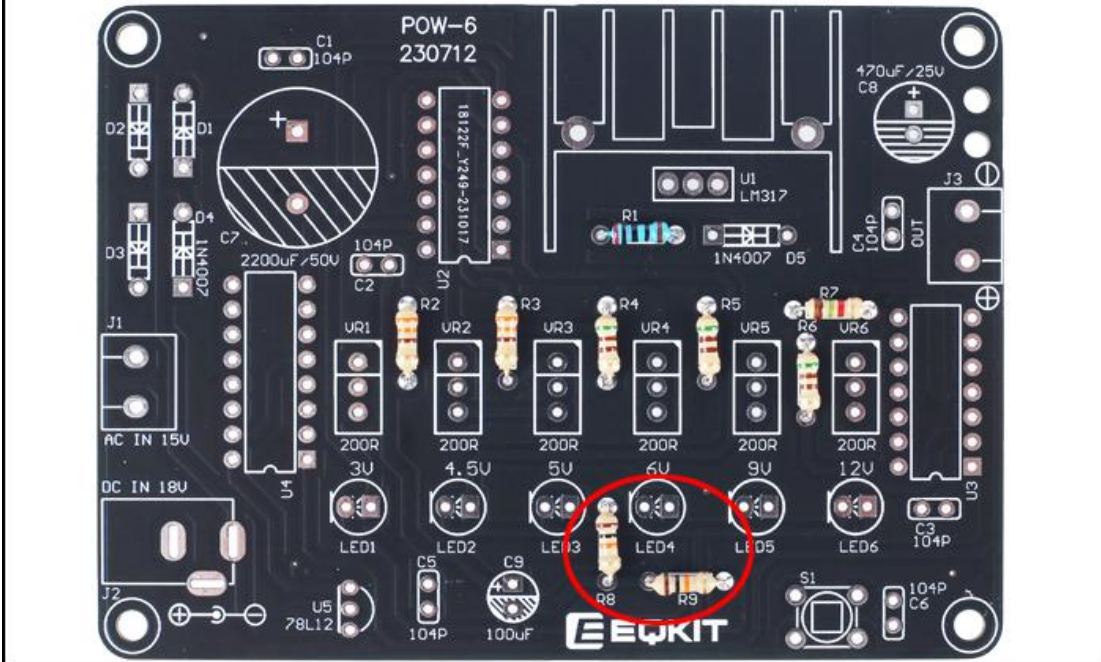
Step 3: Install 3pcs 510ohm Metal Film Resistor at R4,R5,R6.



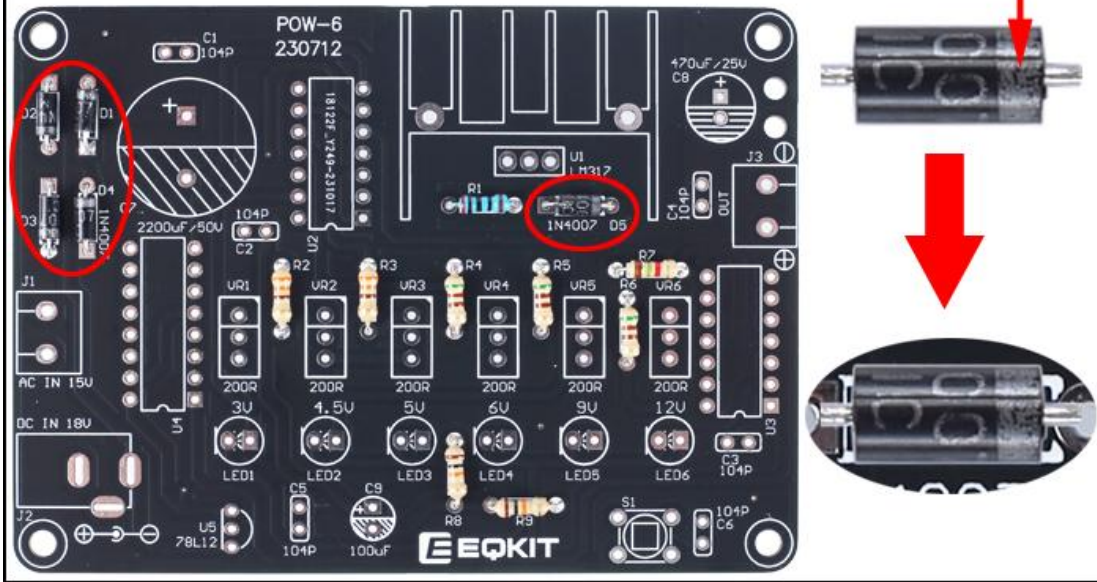
Step 4: Install 1pcs 1.5Kohm Metal Film Resistor at R7.



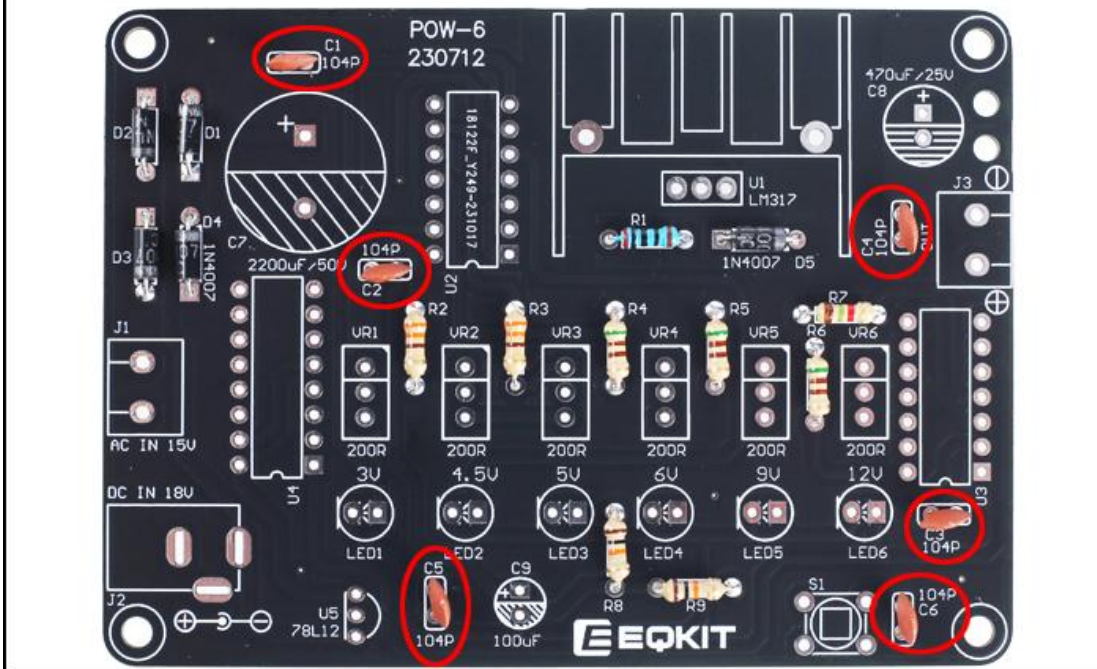
Step 5: Install 2pcs 10Kohm Metal Film Resistor at R8,R9.



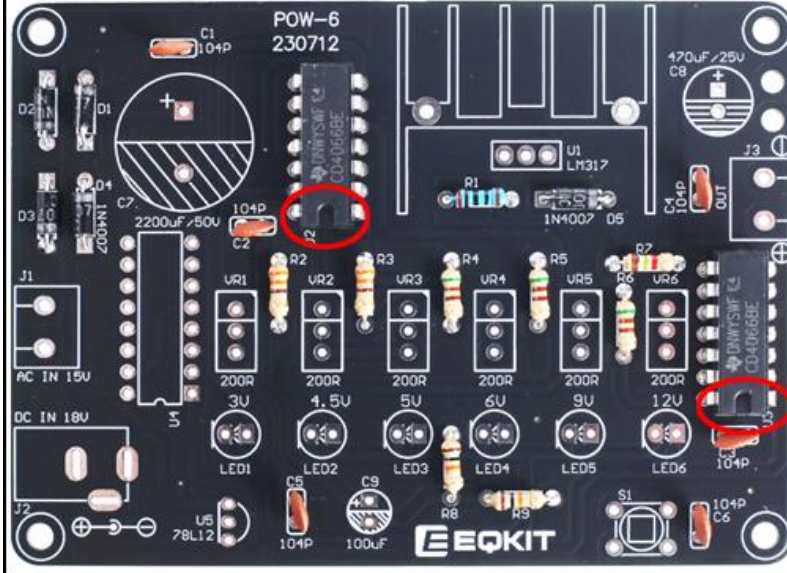
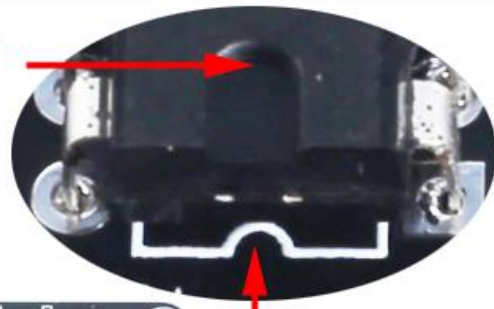
Step 6: Install 5pcs DO-41 1N4007 Diode at D1-D5.  
 Pay attention to the installation direction.  
 Note: The black mark on Diode and the white mark on PCB are corresponding.



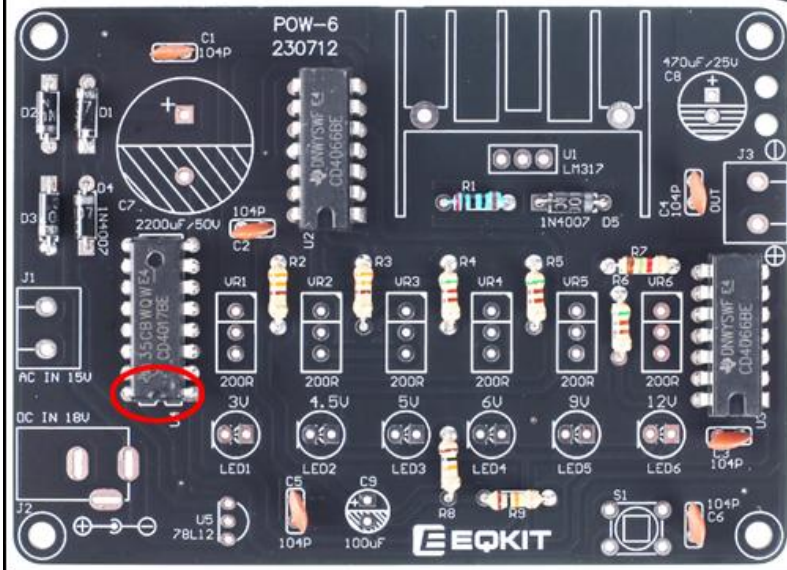
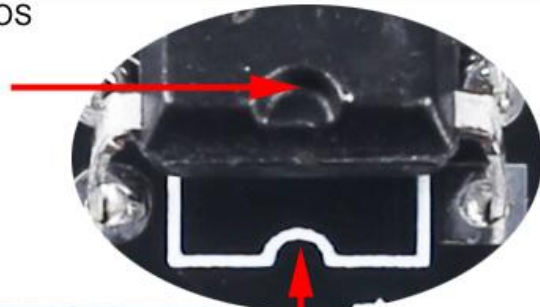
Step 7: Install 6pcs 0.1uF 104 Ceramic Capacitor at C1-C6.



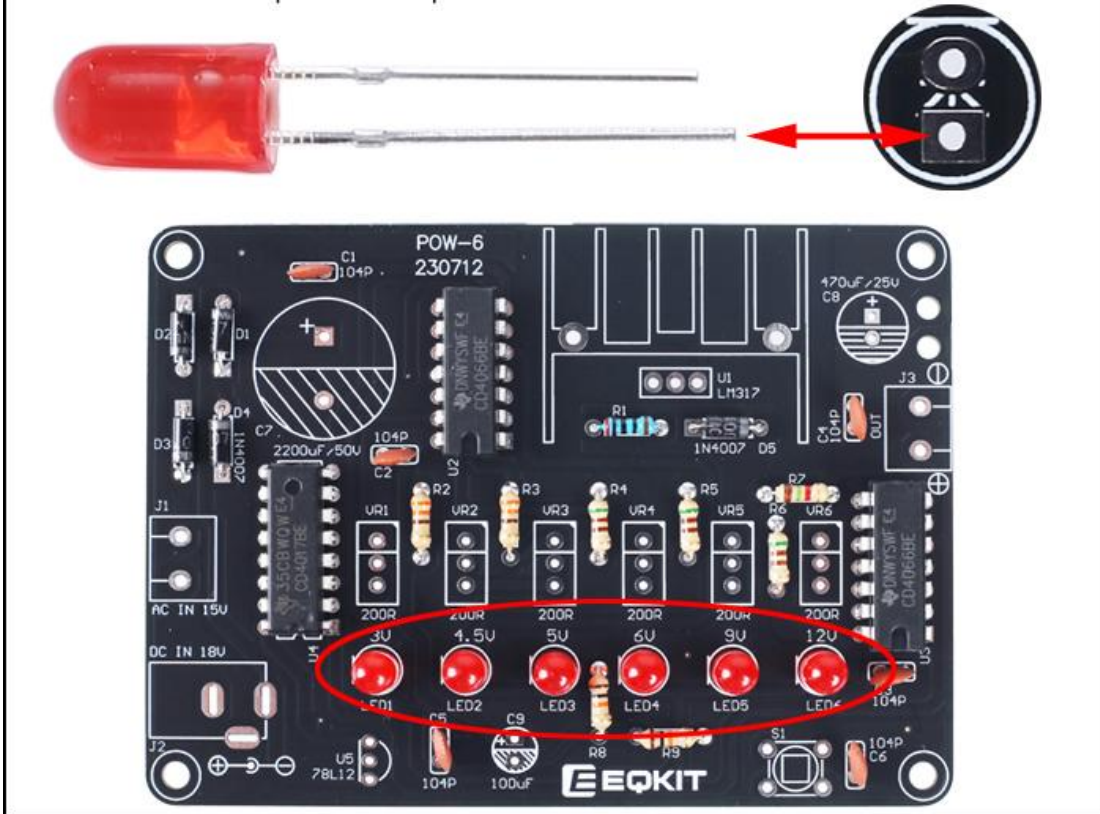
Step 8: Install 2pcs DIP-14 CD4066BE Switch Chip at U2,U3. There is a gap mark on one end of the IC and there is a gap mark on PCB silk screen where the IC can place on. These two marks are corresponding to each other and are used to specify the installation direction of the IC.



Step 9: Install 1pcs DIP-16 CD4017BE CMOS Counter at U4 by the same methods.



Step 10: Install 6pcs 5mm Red LED at LED1-LED6. The longer pin is positive pole and connect to the square solder pad.



Step 11: Install 1pcs TO-92 78L12 Voltage Regulator at U5. Pay attention to the installation direction. The arc on the PCB corresponds to the arc of the components.

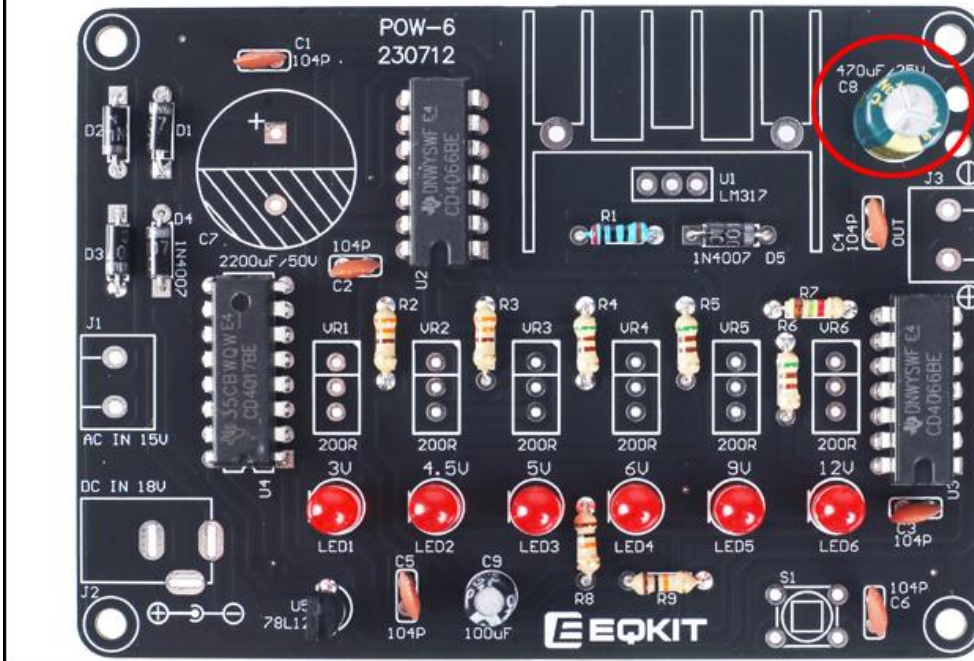




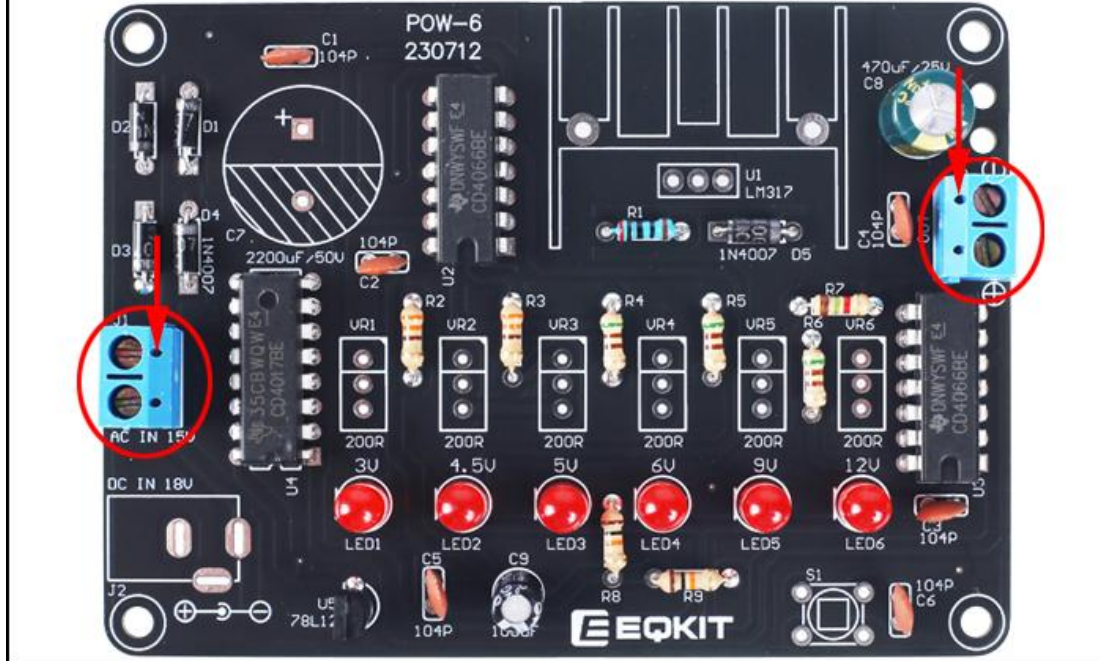
Step 12: Install 1pcs 100uF 16V Electrolytic Capacitor at C9. The longer pin is positive pole and connect to the ' + ' square solder pad.



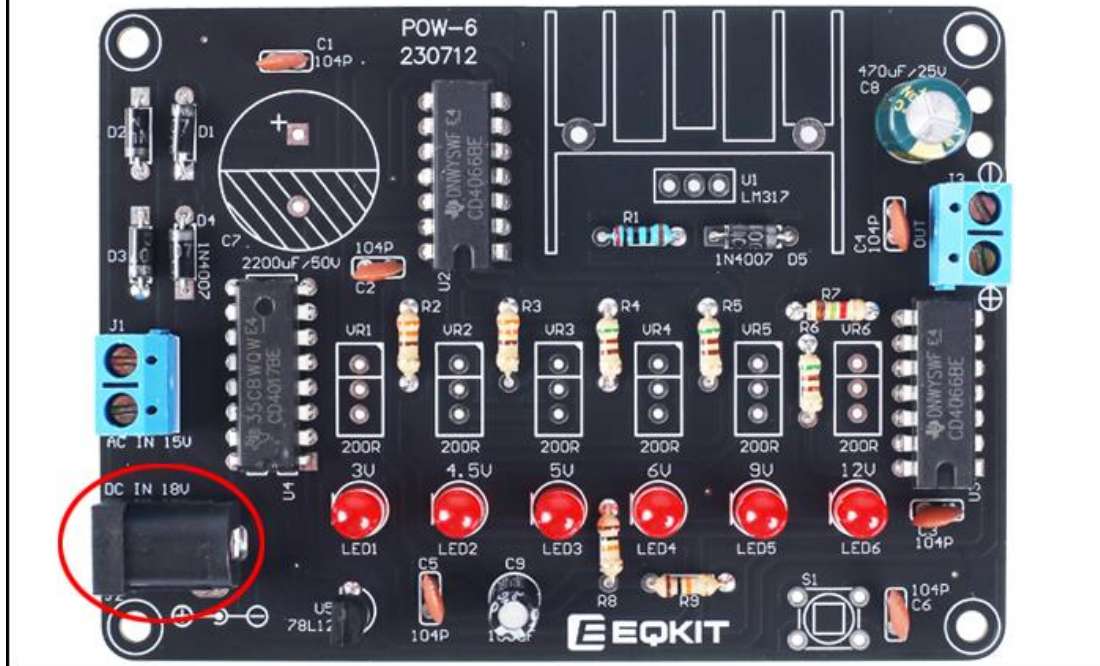
Step 13: Install 1pcs 470uF 25V Electrolytic Capacitor at C8. The longer pin is positive pole and connect to the ' + ' square solder pad.



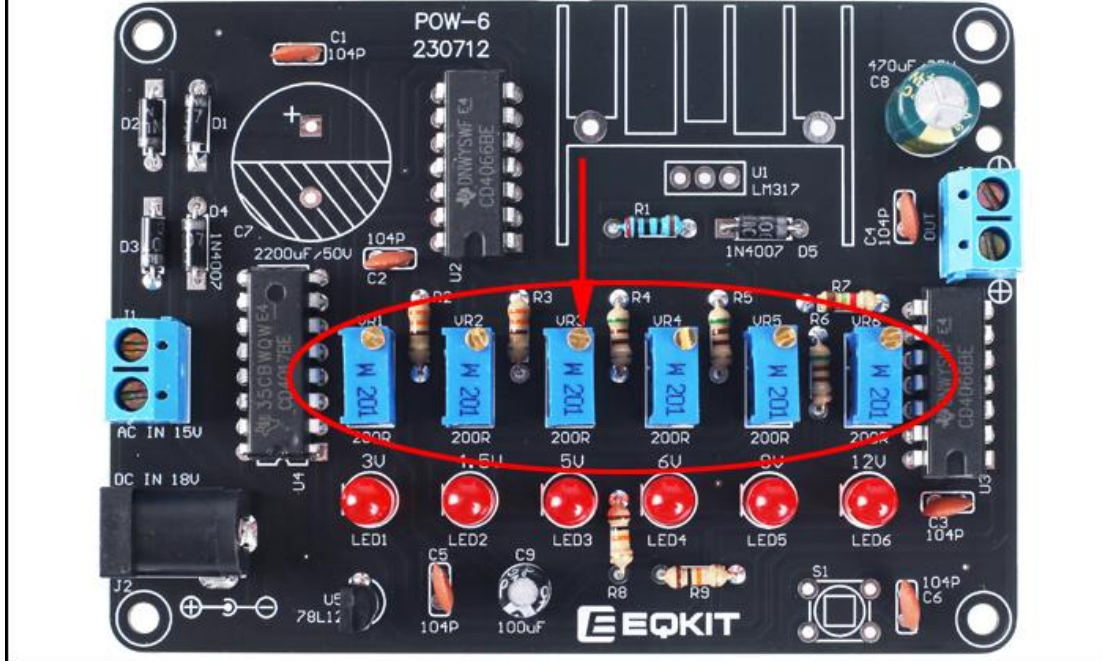
Step 14: Install 2pcs KF301-2P Terminal at J1,J3. Pay attention to installation direction.



Step 15: Install 1pcs DC-005 Power Socket at J2.



Step 16: Install 6pcs 200ohm W3296 Potentiometer at VR1-VR6.  
Pay attention to the installation direction.



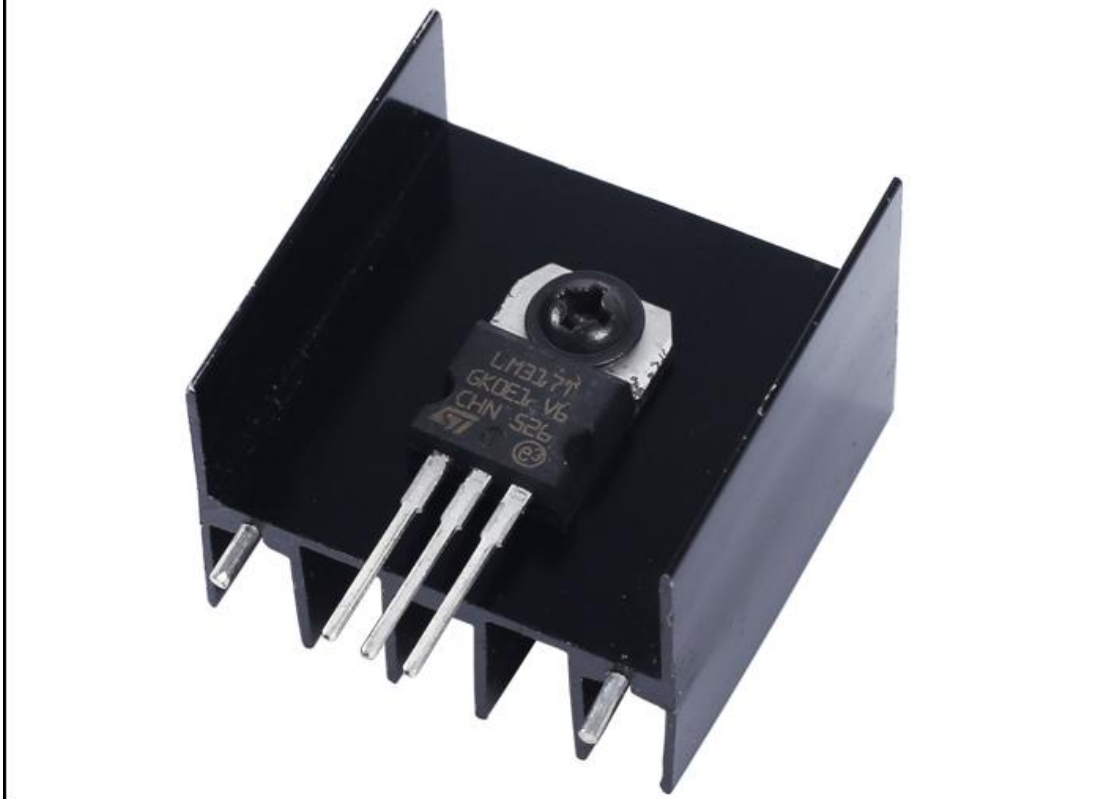
Step 17: Install 1pcs 6\*6\*16mm Black Button at S1.



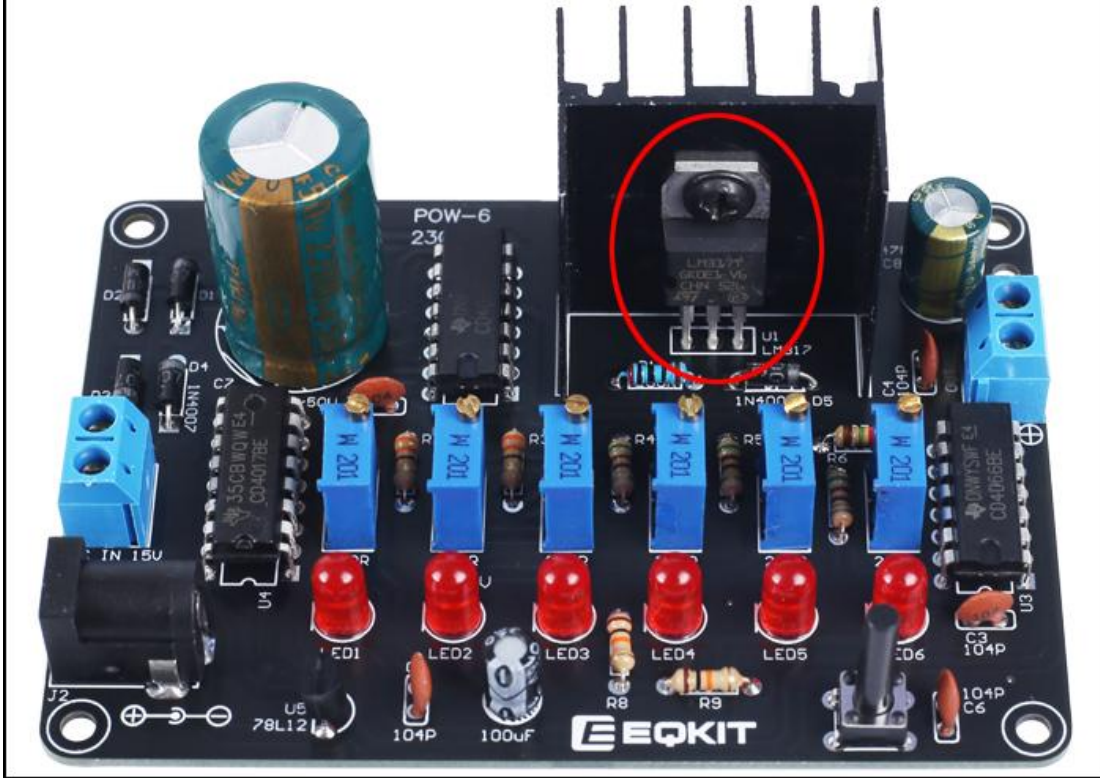
Step 18: Install 1pcs 2200uF 50V Electrolytic Capacitor at C7. The longer pin is positive pole and connect to the ' + ' square solder pad.



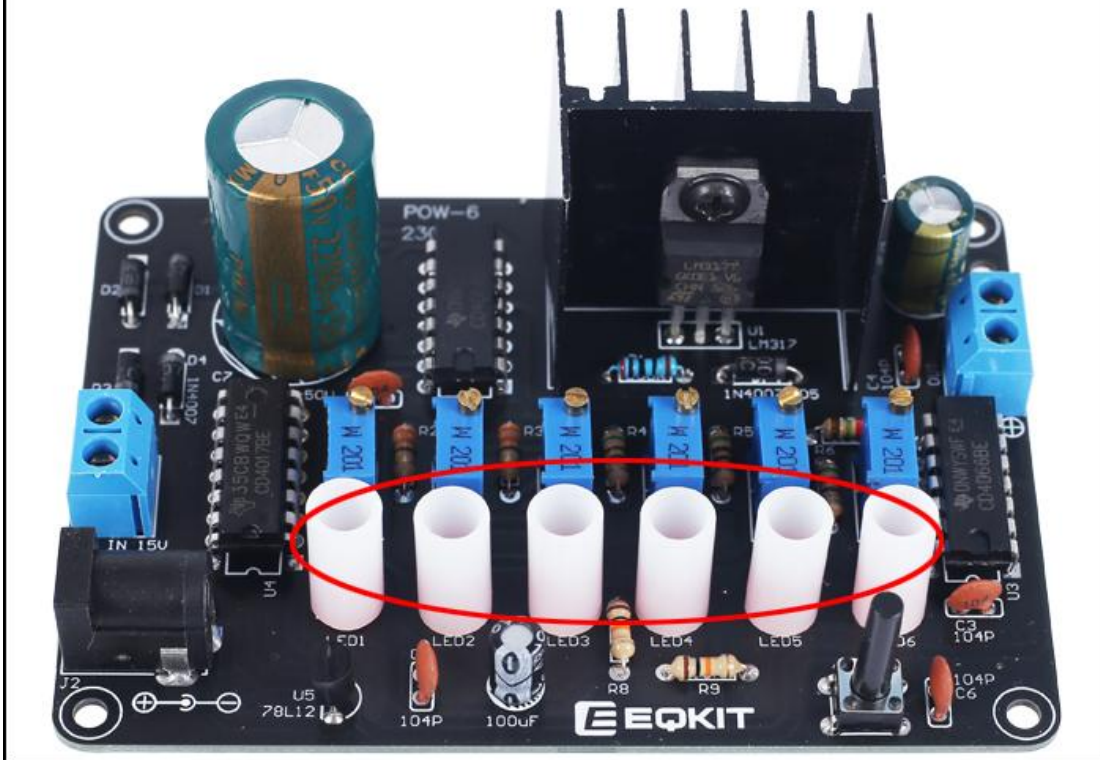
Step 19: Fix 1pcs TO-220 LM317T Voltage Regulator on 30\*30\*25mm Aluminum Radiator by M3\*8mm Black Metal Screw.



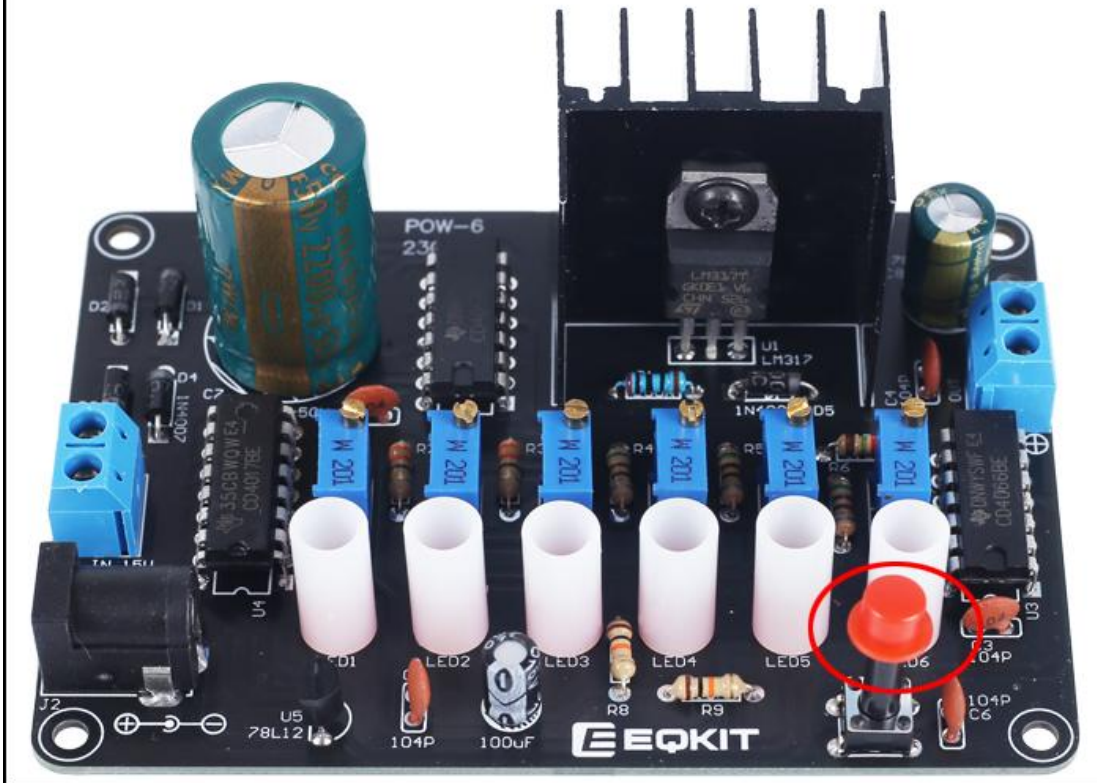
Step 20: Install 1pcs LM317T and Radiator at U1.



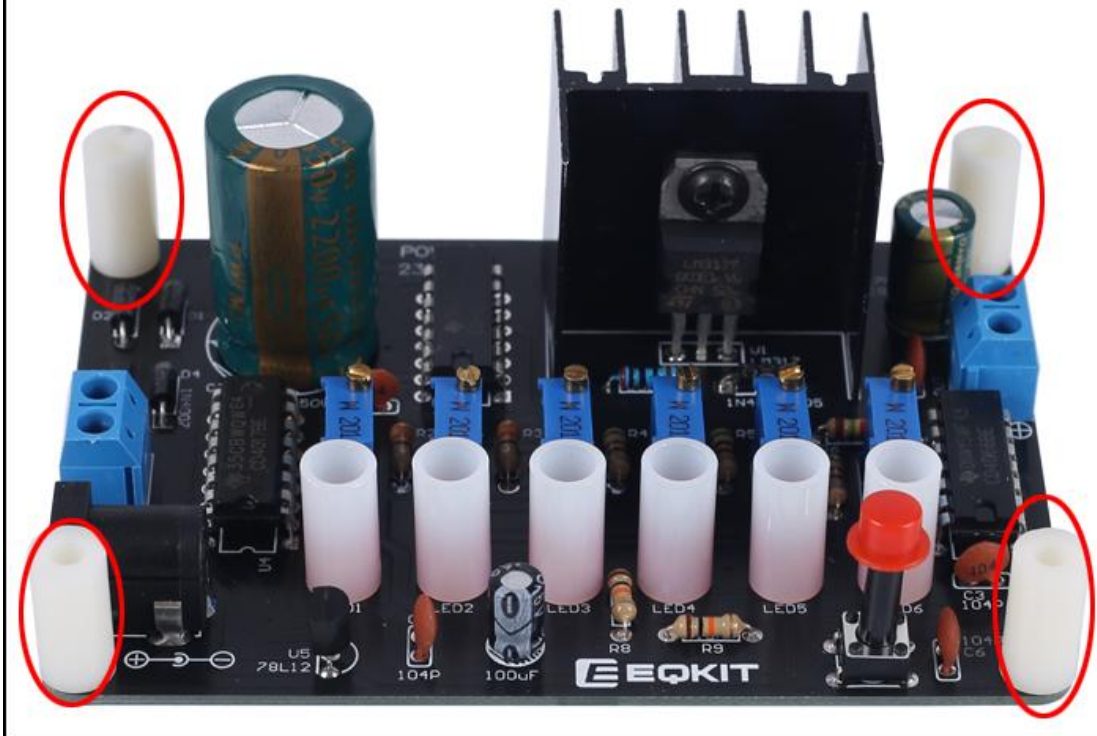
Step 21: Place 6pcs M5.2\*14mm LED Nylon Sleeve on 6pcs LED.



Step 22: Place 1pcs Red button cap on S1 Black Button.



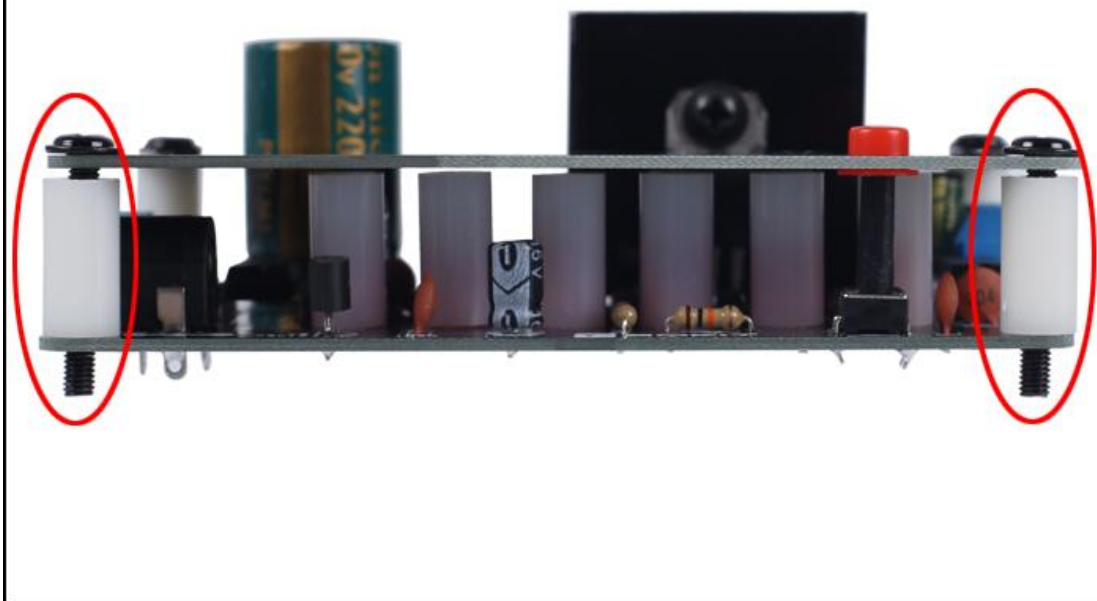
Step 23: Place 4pcs M3\*14mm Nylon Isolation Column on PCB mounting holes.



Step 24: Place 1pc POW-6T PCB and align installation holes.



Step 25: Install 4pcs M3\*22mm Black Metal Screw and passing through two PCB and M3\*14mm Nylon Isolation Column.



Step 26: Fix 4pcs M3\*10mm Nylon Screw Column on M3\*22mm Black Metal Screw.

