EQKIT

Tools you need:
①Iron (30W) ④Tweezers
②Solder wire ⑤Wire cutters
③Multimeter

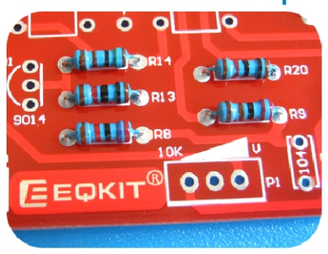
Precautions:
①Check part values & quantities against part list
②Always meter resistor values before soldering
③Understand all part polarities and orientations

Technical Specifications:
Input Voltage:24V alternating(max) Input Current:3A (max)
Output Voltage:0-30V Output Linit Current:2mA-3A
Output Voltage Ripple:0.01% PCB size:：94. 2*80mm

POW-CC Power supply installation instructions

Rev. 1. 0 December 13, 2016 Produce by yiqi

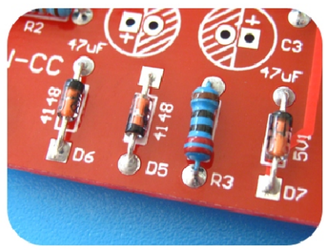
Installation steps: 1.Resistance 1/4W



R2		82Ω
R3		220Ω
R4		4. 7K
R8	R11	27K
R9	R19	2. 2K
R10		270K
R12	R18	56K
R14		1. 5K

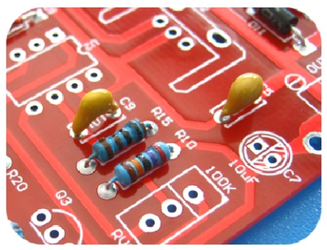
R15 R16 1K
R17 33Ω
R5 R6 R13 R20 R21 R22 10K

2. Diode(Figure 5)



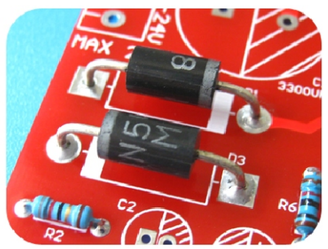
D5 D6 D9 D10: 1N4148
D7 D8: 5V1
D11: 1N4007

3. Multi-layer ceramic capacitor



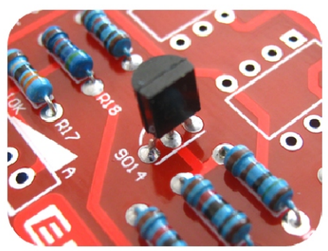
C4:104P C8:331P
C5:224P
C6 C9:101P

4. Rectifier diode(Figure 1)



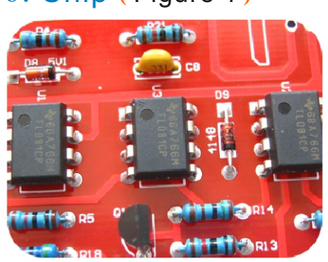
D1 D2 D3 D4:1N5408

5. Low power triode



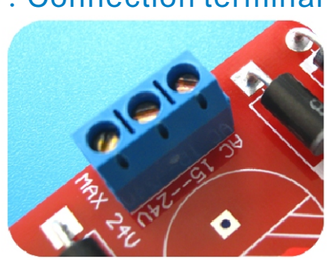
Q1:S9014 Q3:S9015

6. Chip (Figure 4)



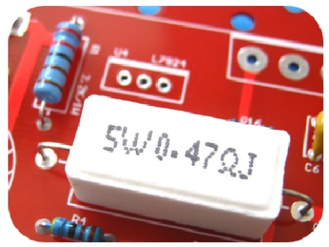
U1 U2 U3:TL081

7. Connection terminal



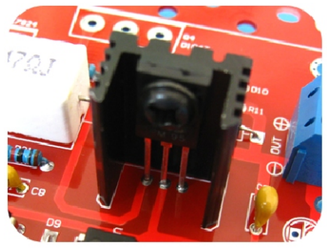
J1:KF301-3P
J2:KF301-2P J3:2. 54 2P

8. High power resistors



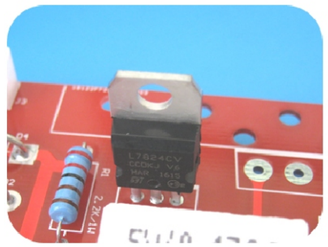
R1 2K/1W
R7 0. 47Ω/5W

9. Triode Q2



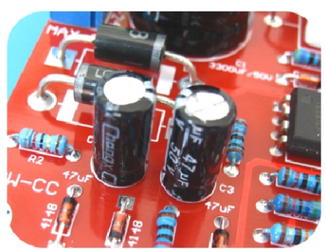
Q2:2SD882

10. Three-terminal regulator



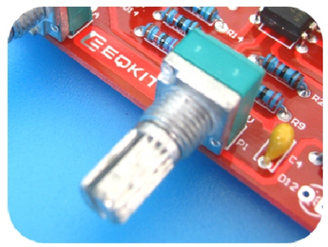
U4:L7824

11. Electrolytic capacitor(Figure 2)



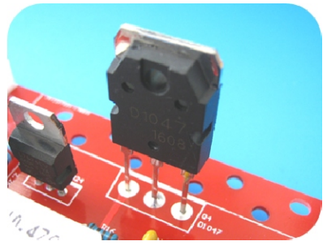
C1:3300uF/50V C7:10uF/50V
C2 C3:47uF/50V

12. Potentiometer(Figure 6)



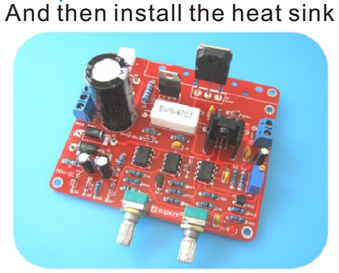
Rv1: 100K
P1 P2:10K

13. Triode Q4



Q4:2SD1047

Pad a piece of mica under the Q4
And then install the heat sink

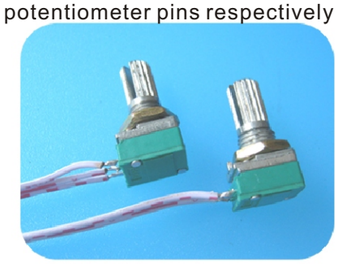


If the potentiometer needs to be installed outside the circuit board Please refer to the following steps.

Potentiometer installed outside the circuit board

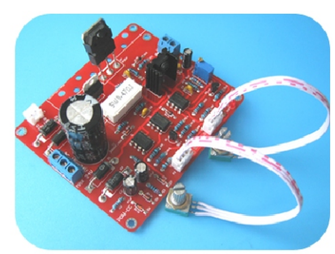
1. Cut from the middle

2. They are welded on the potentiometer pins respectively



Note the order of the wires

3. Welding 3P socket



4. Plug in the terminal line

Pad a piece of mica under the Q4
And then install the heat sink

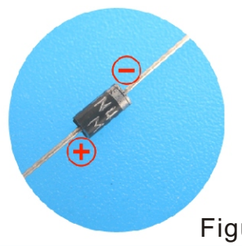


Figure 1

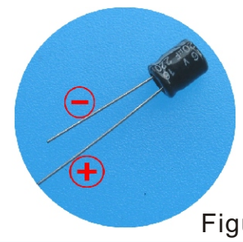


Figure 2

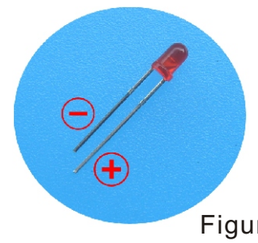


Figure 3

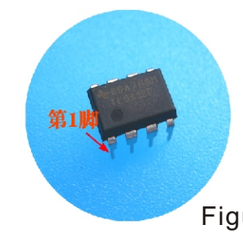


Figure 4

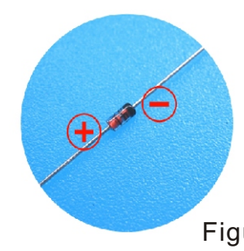


Figure 5

Figure 6

Precautions before power on:

1. Only input AC (15--24V), and the maximum can not exceed 24V。 2. Please make sure that the cooling fin is insulated from the circuit when it is installed on Q4(D1047). The circuit is of a linear stabilized electricity power, and the power dissipation of Q4 is at a relatively high level, thus please ensure that D1047 has a good cooling effect.

Circuit debugging:

1. Voltage Conditioning

Turn potentiometer P1 to the minimum, and then adjust the RV1 potentiometer, Make the output voltage is 0V.

2. Current Conditioning

Connect the load resistance to the output point,for example,10Ω(make sure there is enough power), and the current potentiometer set at its max and the voltage potentiometer at its min,turn on the device,build up the voltage to 1V slowly,rotate the current potentiometer counterclockwise till the LED begin to emit light,at which point the current of the circuit is limited at 0.1A and the position could be marked. Adjust to 2V,5V,10V,20V,30V successively,and you could calibrate different input current,the formula is:I=U/R. For example,if the load of 10Ω is used,and U at 30V,I=3A (max output).You could substitute other load resistance with different values,but please make sure there is enough power and cooling.

Component list

Name	Type	Num	Qty
Res	2.2K/1W	R1	1
	82Ω	R2	1
	220Ω	R3	1
	4.7K	R4	1
	10K	R5 R6 R13 R20 R21 R22	6
	0.47Ω/5W	R7	1
	27K	R8 R11	2
	2.2K	R9 R19	2
	270K	R10	1
	56K	R12 R18	2
	1.5K	R14	1
	1K	R15 R16	2
	33Ω	R17	1
Pot	100K（3296W）	RV1	1
	10K	P1 P2	2
E.cap	3300UF/50V	C1	1
	47UF/50V	C2 C3	2
	10UF/50V	C7	1
MLCC	104P	C4	1
	224P	C5	1
	101P	C6 C9	2
MLCC	331P	C8	1
Diode	1N5408	D1 D2 D3 D4	4
	1N4148	D5 D6 D9 D10	4
	1N4007	D11	1
LED	3mm Red	D12	1
Z.diode	5V1	D7 D8	2
Triode	S9014	Q1	1
	2SD882	Q2	1
	S9015	Q3	1
	2SD1047	Q4	1
Chip	TL081	U1 U2 U3	3
	L7824	U4	1
C.termin	KF301-3P	J1	1
	KF301-2P	J2	1
	XH2.54 2P	J3	1
	XH2.54 3P	P1 P2	2
PCB	94.2*80mm	FR4 Thickness 1.2mm	1
Cable	3P Cable	L=300mm	1
C. fin	TO-220	Q2 Dissipate heat	1
Screw	M3*6	Fixed Q2	1
	M3*22	Fixed Q4	1
Nut	M7	Fixed P1 and P2	2

Attentions:The output of the transformer is single 24V or dual 12V(same as 24V),and the power could be determined according to your need. If a full load output (30V 3A) is needed,the power of the transformer should be greater than 90W.