

HE009 Flashing LED Astronaut Electronic Soldering DIY Kit

1.Introduction:

HE009 is a Flashing LED Rotating Astronaut Electronic Soldering DIY Kit. It adopts a PCB three-dimensional structure design combined with motor rotation and RGB LED light flashing circuit. Built-in 3 music at automatic looping playing mode if turn ON music play switch. Also can adjusting the rotational speed.

It is a very interesting DIY electronic product which enables users to understand the circuit more clearly and learn soldering skills.

2.Function:

- 1>.16 LED Flashing Automatically
- 2>.3 Music Automatic Playing
- 3>.Adjustable Rotational Speed
- 4>.Adjustable ON/OFF Rotational
- 5>.Adjustable ON/OFF Music
- 6>.DIY Hand Electronic Soldering

3.Parameter:

- 1>.Work Voltage:DC 4.5V-5V
- 2>.Power Type: DC-005
- 3>.LED Color: RGB
- 4>.Work Temperature:-40℃~85℃
- 5>.Work Humidity:5%~95%RH
- 6>.Size(Installed):75*75*150mm

4.Use Methods:

- 1>.Connect USB Power Wire to provide working power.
- 2>.Switch Toggle Switch SW1 to turn ON/OFF music playing function.
- 3>.Switch Toggle Switch SW2 to turn ON/OFF rotation function.
- 4>.Rotate the potentiometer to change the rotation speed.

5.Component Listing:

NO.	Component Name	PCB Marker	Parameter	QTY
1	KT148A Music IC	U1	SOP-8	1
2	8ohm 1W Speaker	BEEP+,BEEP-	D23mm	1
3	JS-30 DC Motor	motor+,motor-	6V100RPM	1
4	RV0931 B102K Potentiometer	R1	1K	1
5	SS-12F44G5 Toggle Switch 1P2T	SW1,SW2	5Pin	2
6	Ceramic Capacitor	C2,C3	0.1UF 104	2
7	Electronic Capacitor	C1	22uF 16V 4*7mm	1
8	Metal Film Resistor	R2	47ohm	1
9	Metal Film Resistor	R1	100ohm	1
10	RGB LED	D1-D16	3mm	16
11	DC-005 Power Socket	DC_5V	5.5*2.1mm	1
12	USB to DC005 Power Wire	DC_5V	100cm	1
13	M3 Nut	/	/	4
14	M3*5mm Screw	/	/	13
15	M3*10mm Screw	/	/	4

16	M3*10mm Copper Pillar	/	/	4
17	M3*30mm Copper Pillar	/	/	4
18	Metal Spring	/	0.4*4*10mm	2
19	304 Stainless Steel Flat Gasket	/	3*5*0.3	2
20	PCB HE009-A Circuit Board	/	75*75*1.6mm	1
21	PCB HE009-B Circuit Board	/	55*55*1.6mm	1
22	PCB HE009-C Circuit Board	/	55*55*1.6mm	1
23	PCB HE009-D Circuit Board	/	99*50*1.6mm	1

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

6.Application:

- 1>.Training welding skills
- 2>.Student school
- 3>.DIY production
- 4>.Project Design
- 5>.Electronic competition
- 6>.Gift giving
- 7>.Home decoration
- 8>.Souvenir/Crafts collection
- 9>.Graduation design
- 10>.Holiday gifts

7.Note:

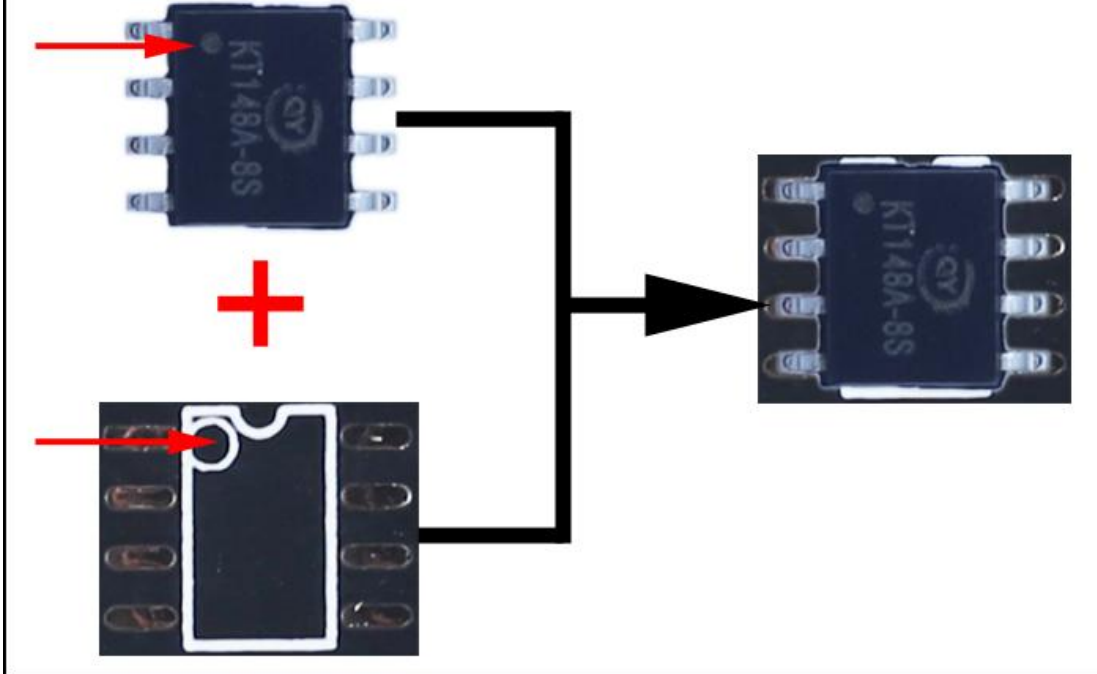
1>.It uses springs to connect different PCB internally to provide power, so the springs produce noise when rotating, which cannot be avoided.

8.Installation Tips:

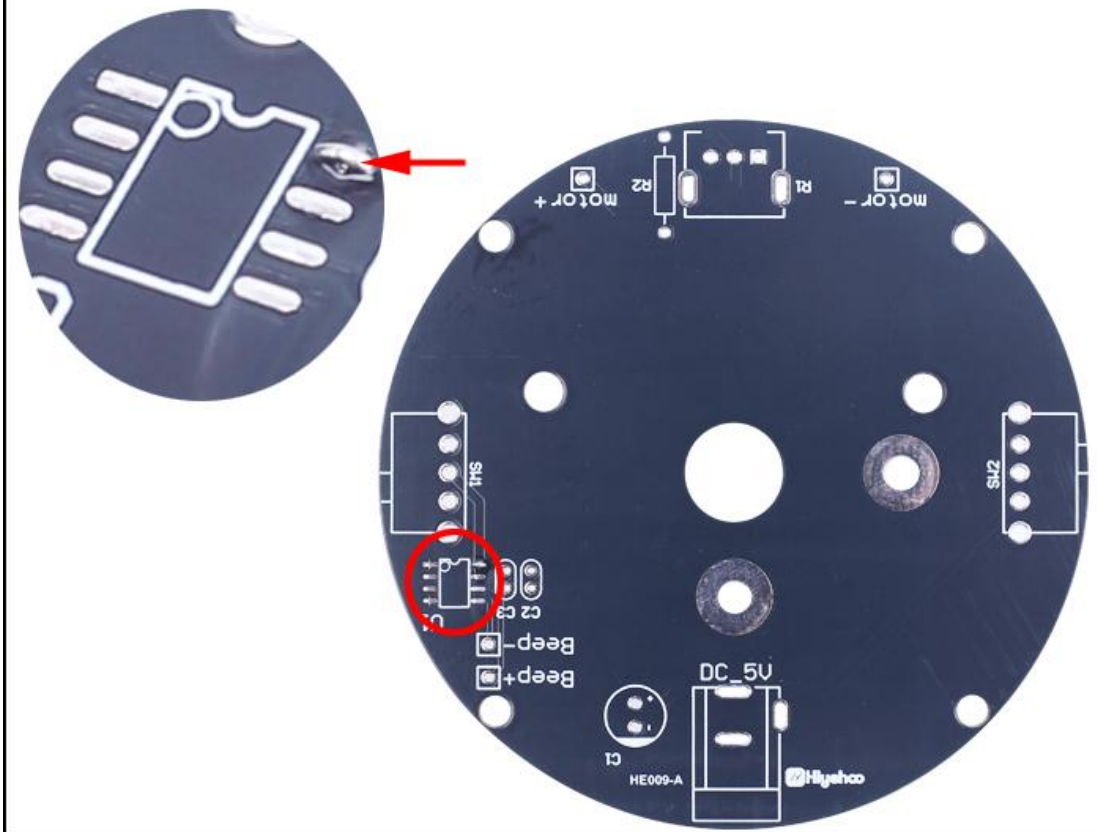
- 1>.User needs to prepare the welding tool at first.
 - 1.1>.Soldering iron (<50 Watt)
 - 1.2>.Rosin core ("radio") solder
 - 1.3>.Wire cutters/strippers
 - 1.4>.' + ' screwdriver
- 2>.Please be patient until the installation is complete.
- 3>.The package is DIY kit.It need finish install by user.
- 4>.The soldering iron can't touch components for a long time(1.0s), otherwise it will be damaged.
- 5>.Pay attention to the positive and negative of the components.
- 6>.Strictly prohibit short circuit.
- 7>.User must install the LED according to the specified rules.Otherwise some LED will not light.
- 8>.Install complex components preferentially.
- 9>.Make sure all components are in right direction and right place.
- 10>.It is strongly recommended to read the installation manual before starting installation!!!
- 11>.Please wear anti-static gloves or anti-static wristbands when installing electronic components.

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

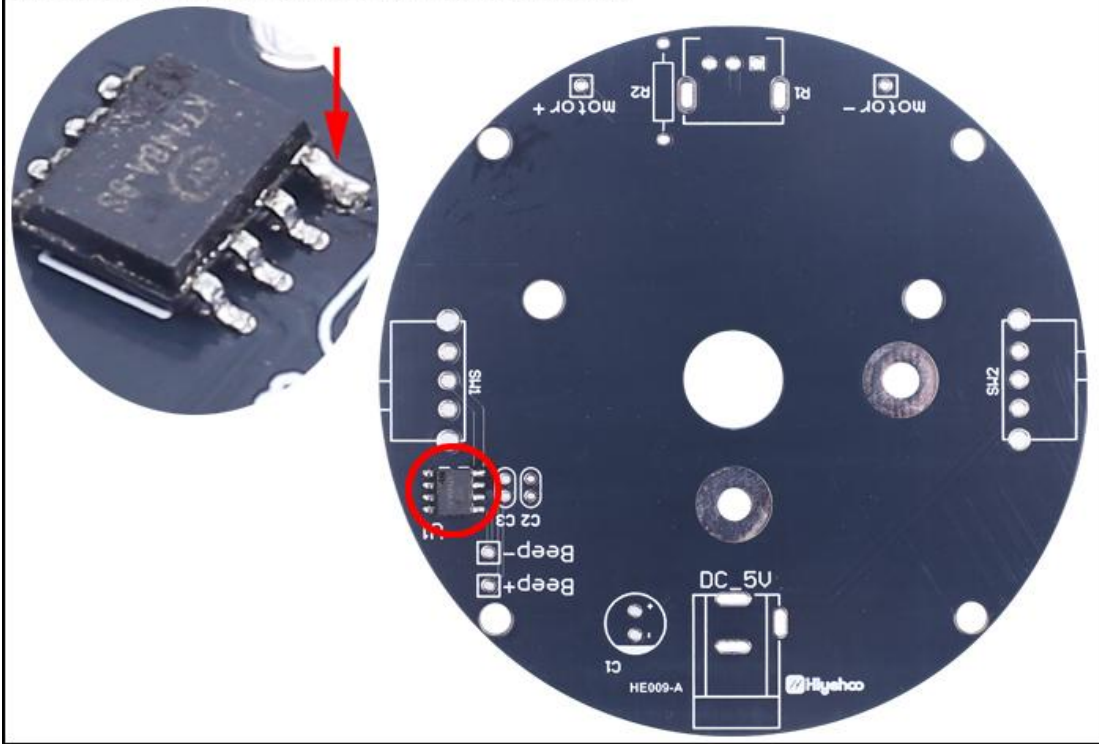
Step 1: Install 1pcs SMD components SOP-8 KT148A Music IC at U1. Verify & confirm the installation direction of KT148A. There is a dot mark on one end of the IC and there is a gap mark on PCB silk screen where the IC can place on. These two marks are corresponding to each other and are used to specify the installation direction of the IC.



Step 2: Randomly choose a pad on the PCB, and then melt the solder on this pad.



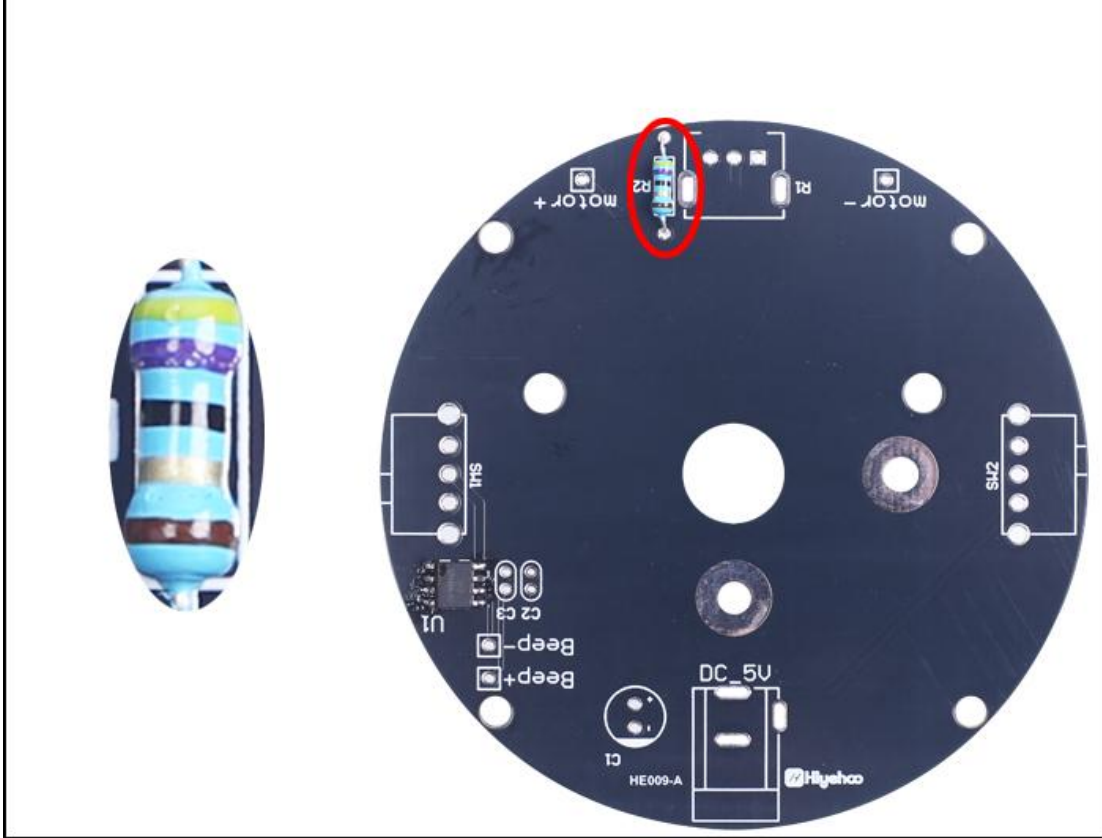
Step 3: Fix KT148A: Use a soldering iron to melt tin on the pad just now and hold KT148A with tweezers in the other hand to place/press on U1 to prevent movement. Take care to match and align each pads. Then remove soldering iron. Then remove tweezers after solder tin cooling and solidification.



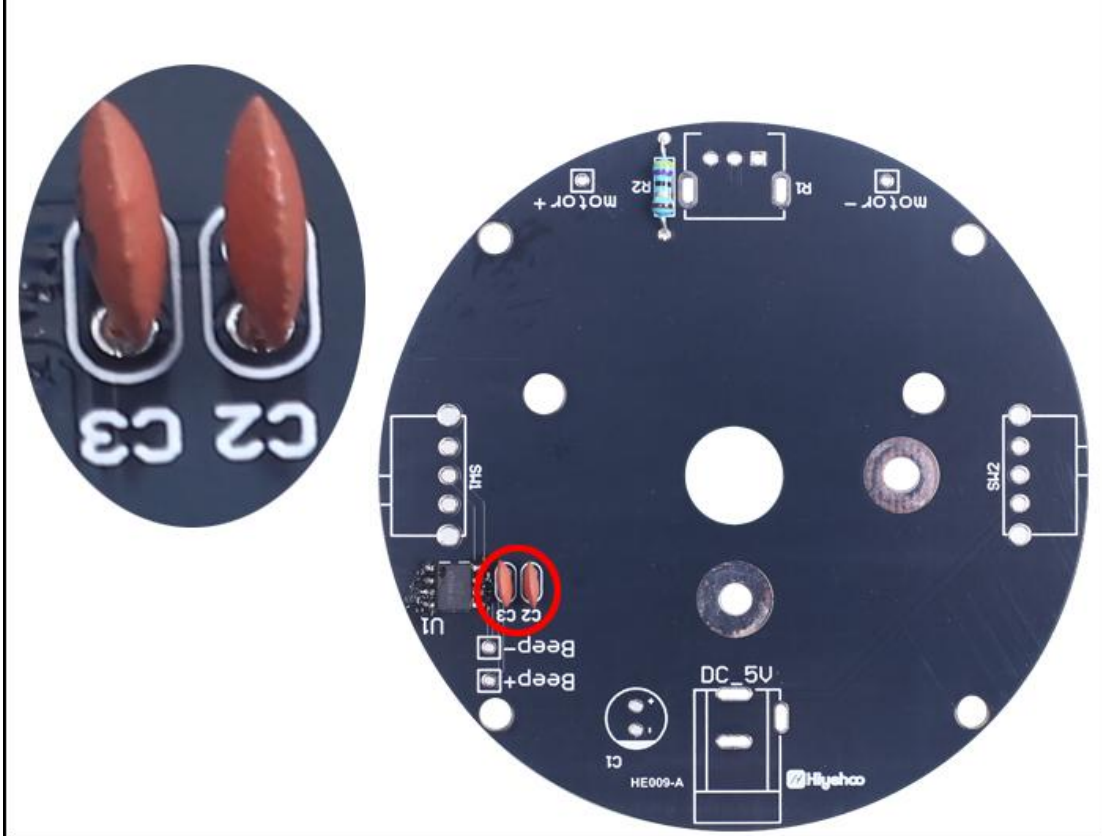
Step 4: Connect others pads on KT148A by tin and soldering iron.



Step 5: Install 1pcs 47ohm Metal Film Resistor at R2.



Step 6: Install 2pcs 0.1UF 104 Ceramic Capacitor at C2,C3.



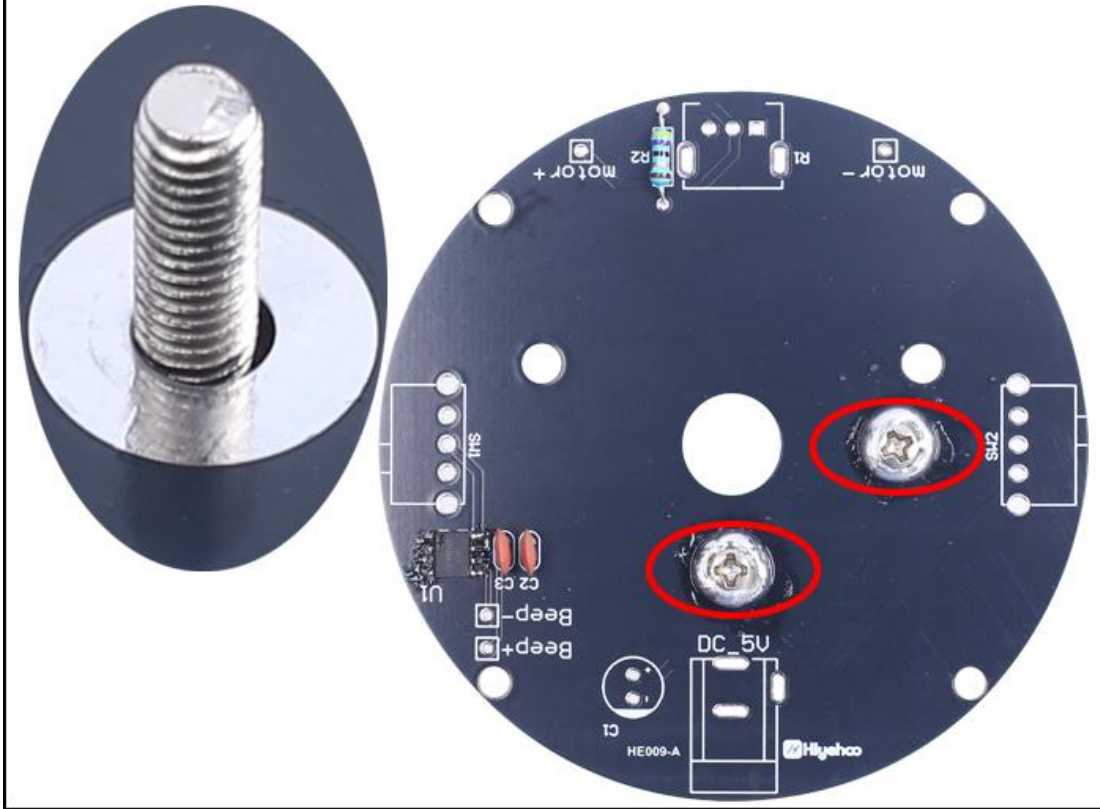
Step 7: Insert 2pcs M3*10mm Screw into 2pcs 3*5*0.3mm 304 Stainless Steel Flat Gasket.



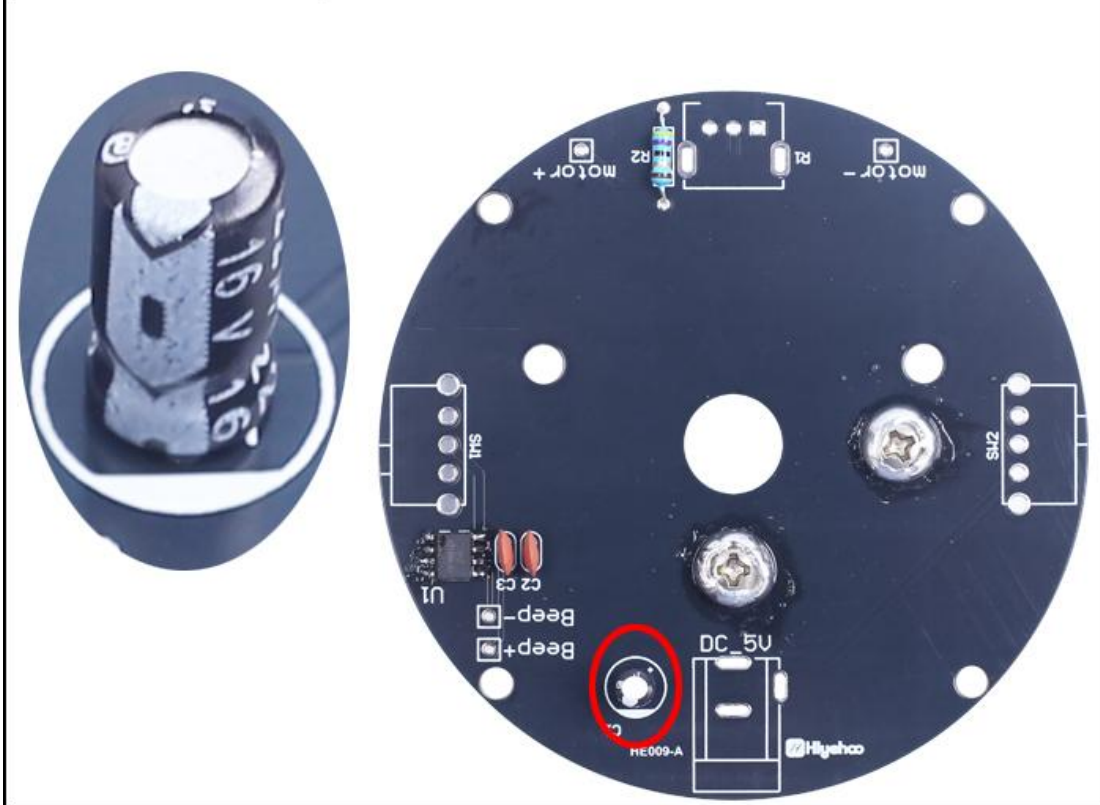
Step 8: Insert Screw with Gasket on PCB as showing.



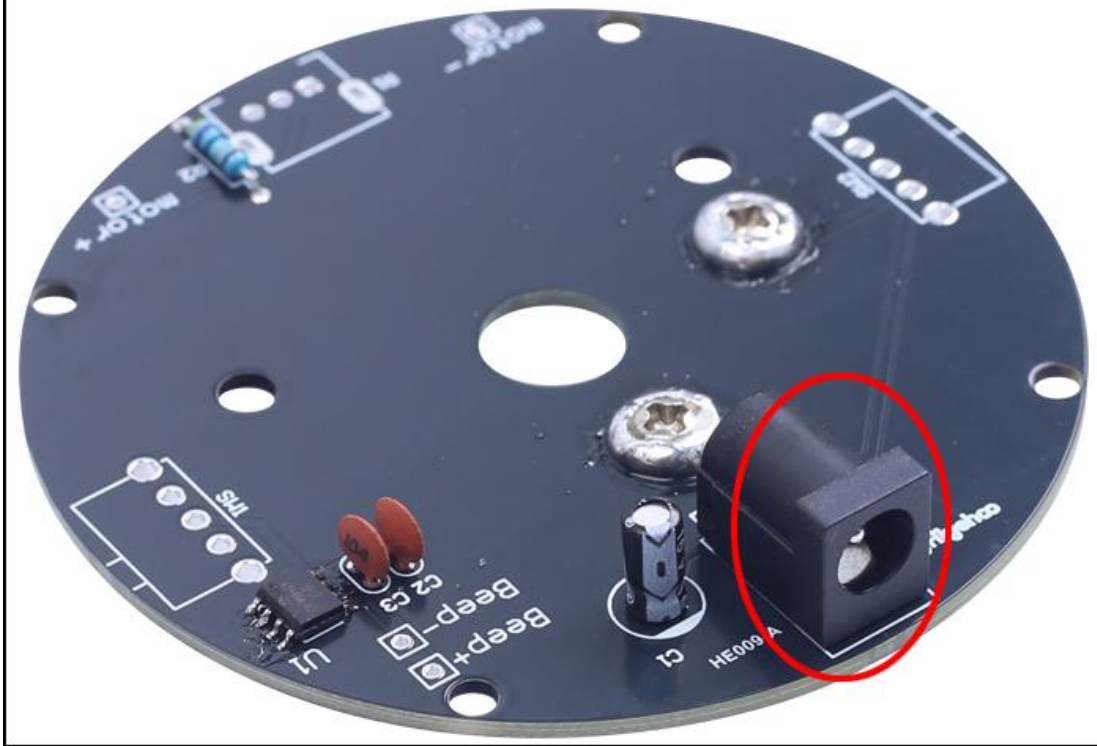
Step 9: Fix M3*10mm Screw and Gasket on PCB with a large amount of soldering tin to avoid screw movement.



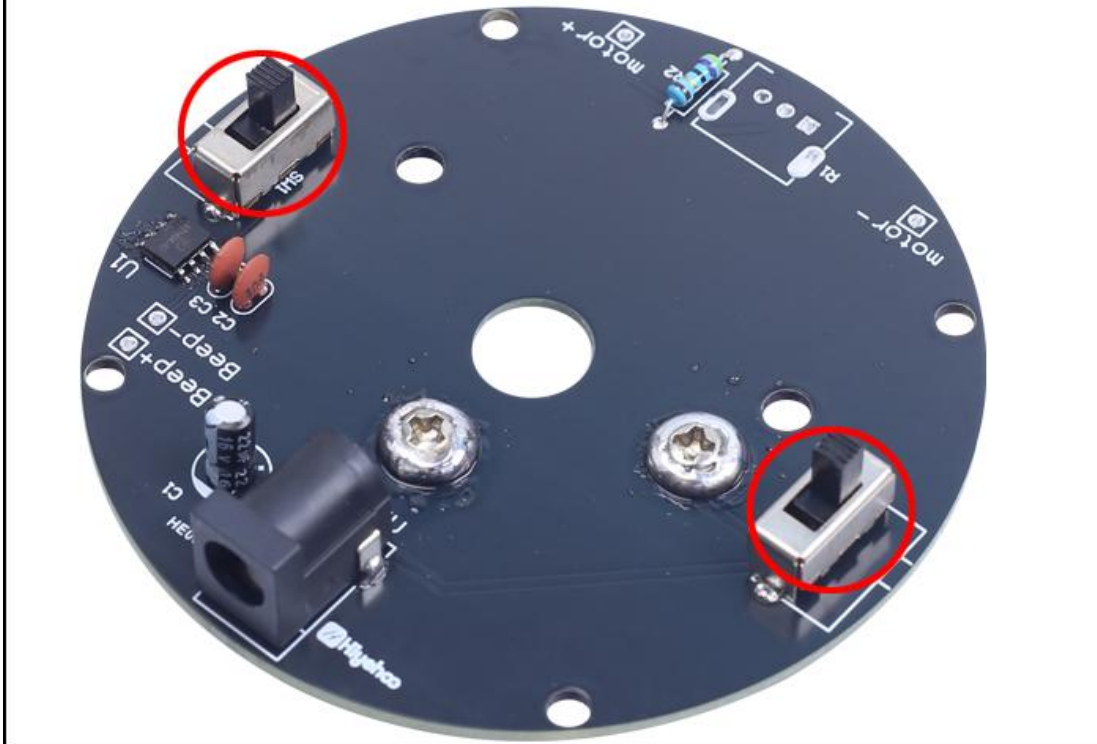
Step 10: Install 1pcs 22uF 16V Electronic Capacitor at C1. The longer pin is positive pole and connect to ' + ' pad.



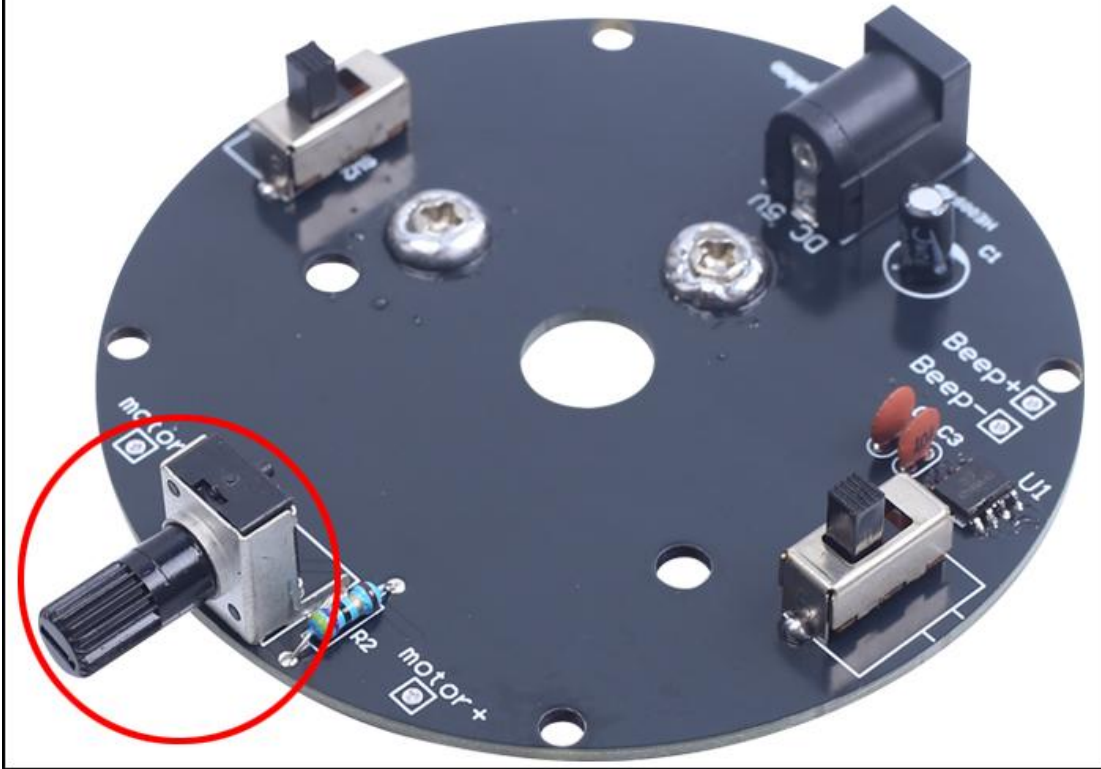
Step 11: Install 1pcs DC-005 Power Socket at DC_5V.



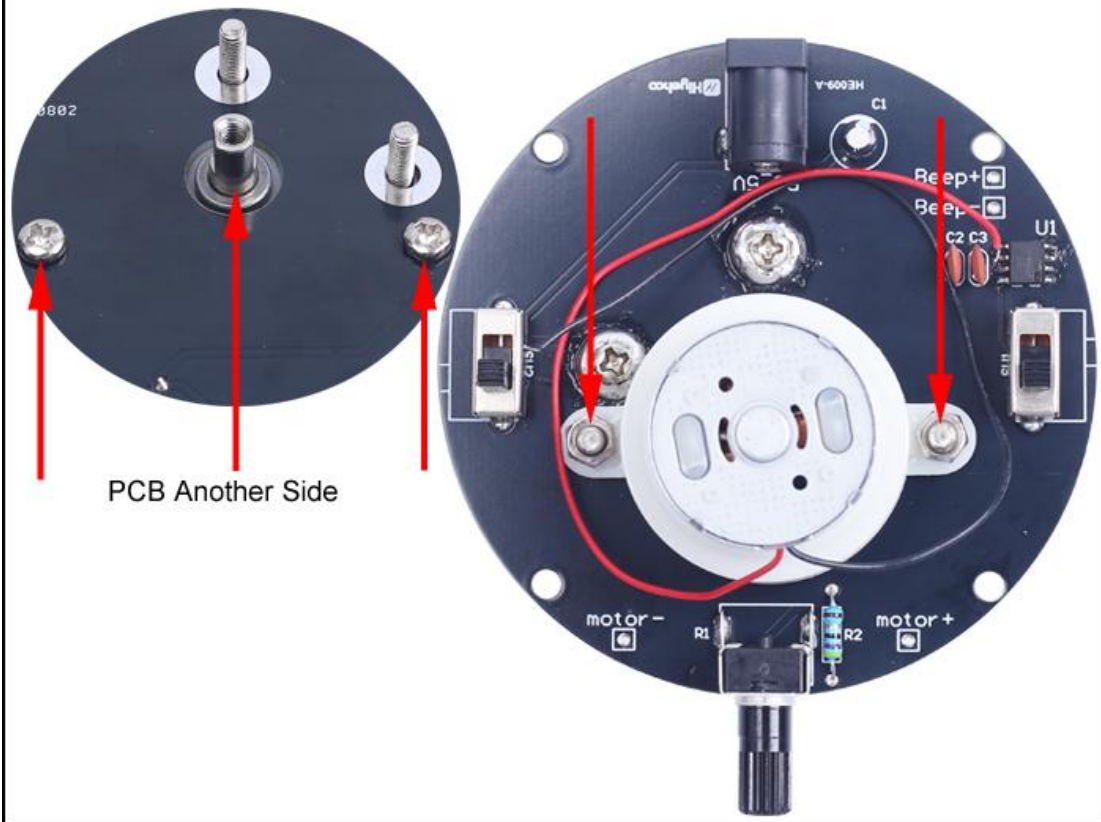
Step 12: Install 1pcs SS-12F44G5 Toggle Switch 1P2T at SW1,SW2.



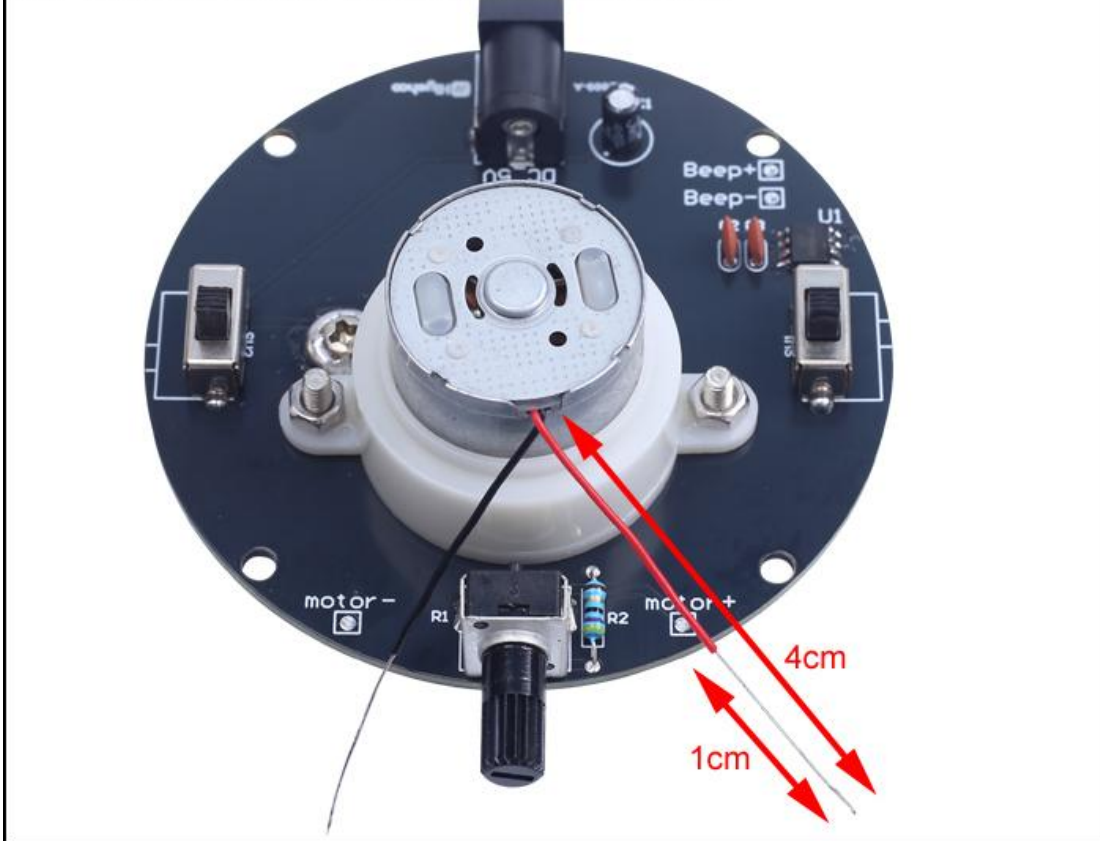
Step 13: Install 1pcs 1K RV0931 B102K Potentiometer at R1.



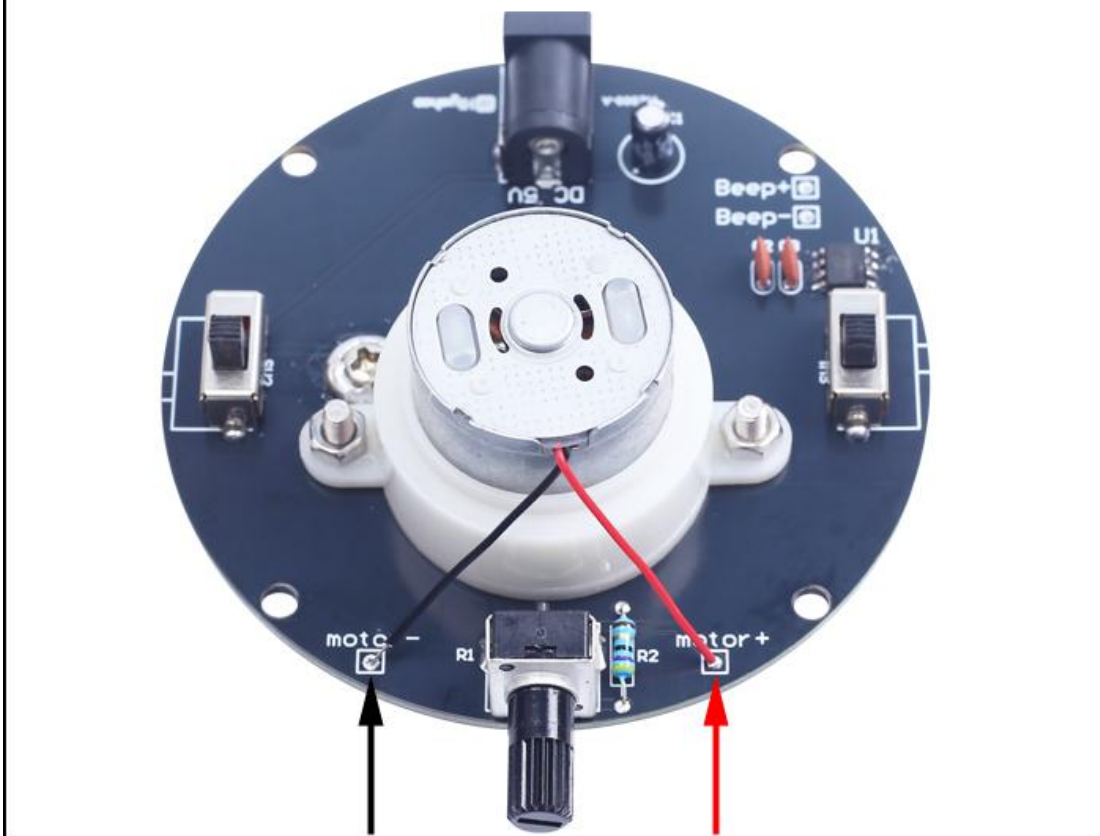
Step 14: Fix 1pcs JS-30 DC Motor by 2pcs M3*10mm Screw and Nut.



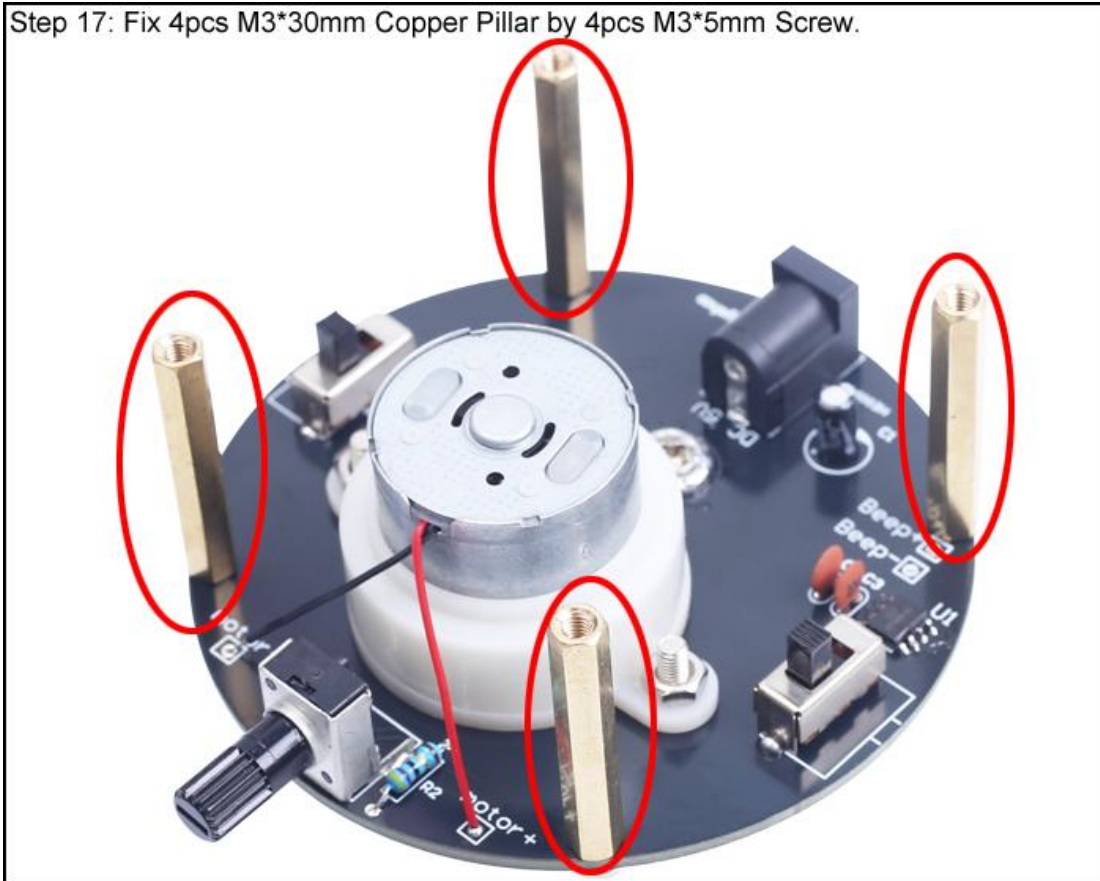
Step 15: Cut and reserve 4cm wire from JS-30 DC Motor.



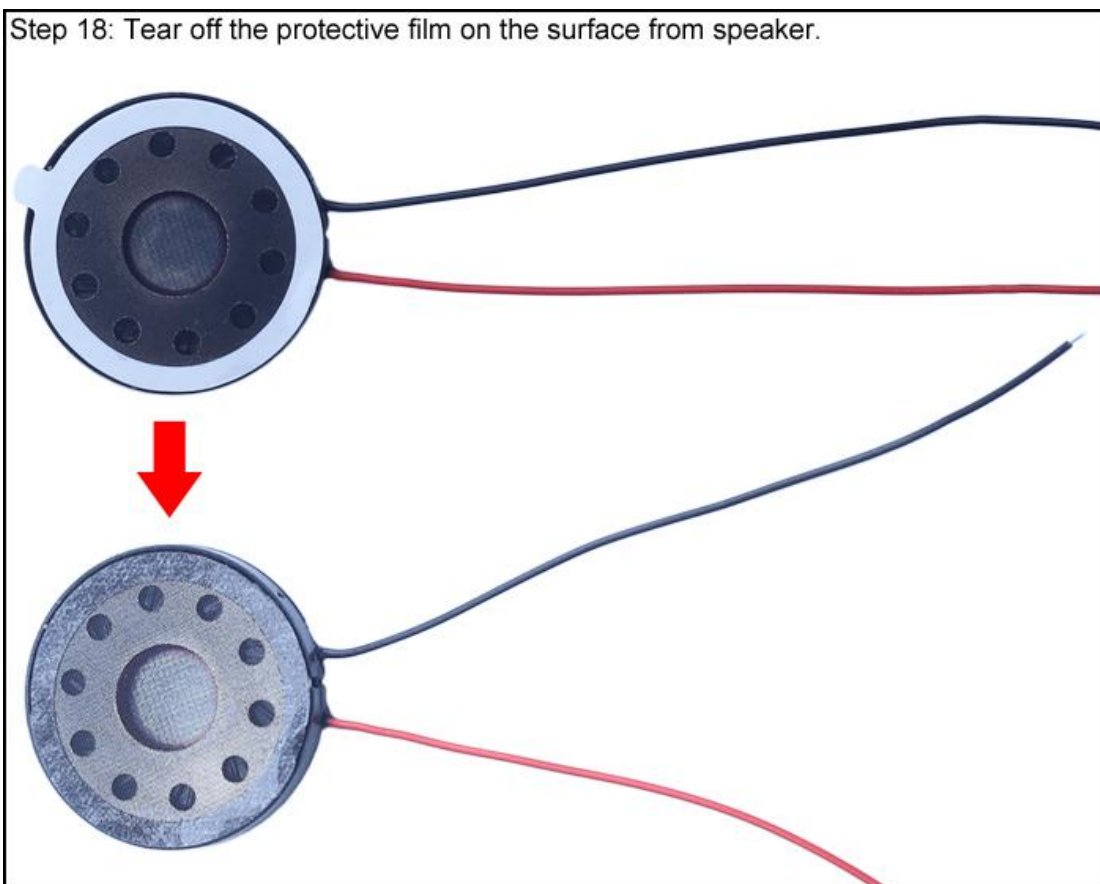
Step 16: Red wire connect to ' motor + ' pad and black wire connect to ' motor - ' pad.



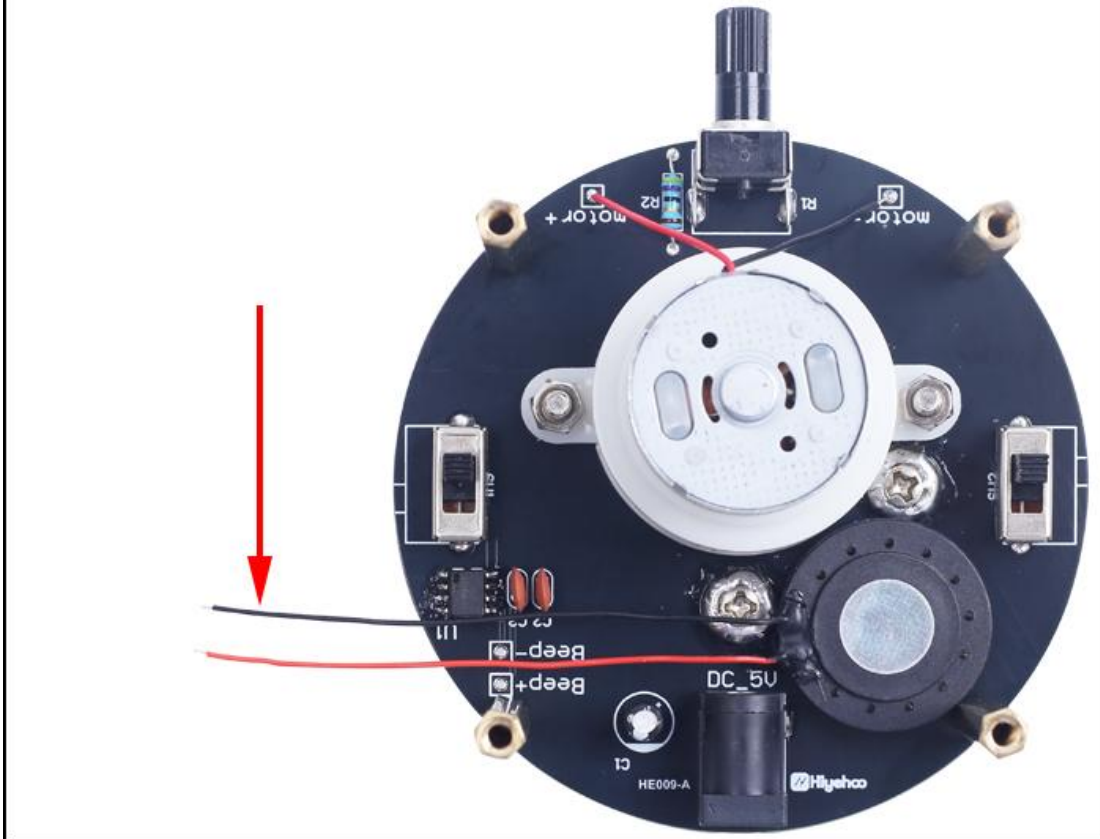
Step 17: Fix 4pcs M3*30mm Copper Pillar by 4pcs M3*5mm Screw.



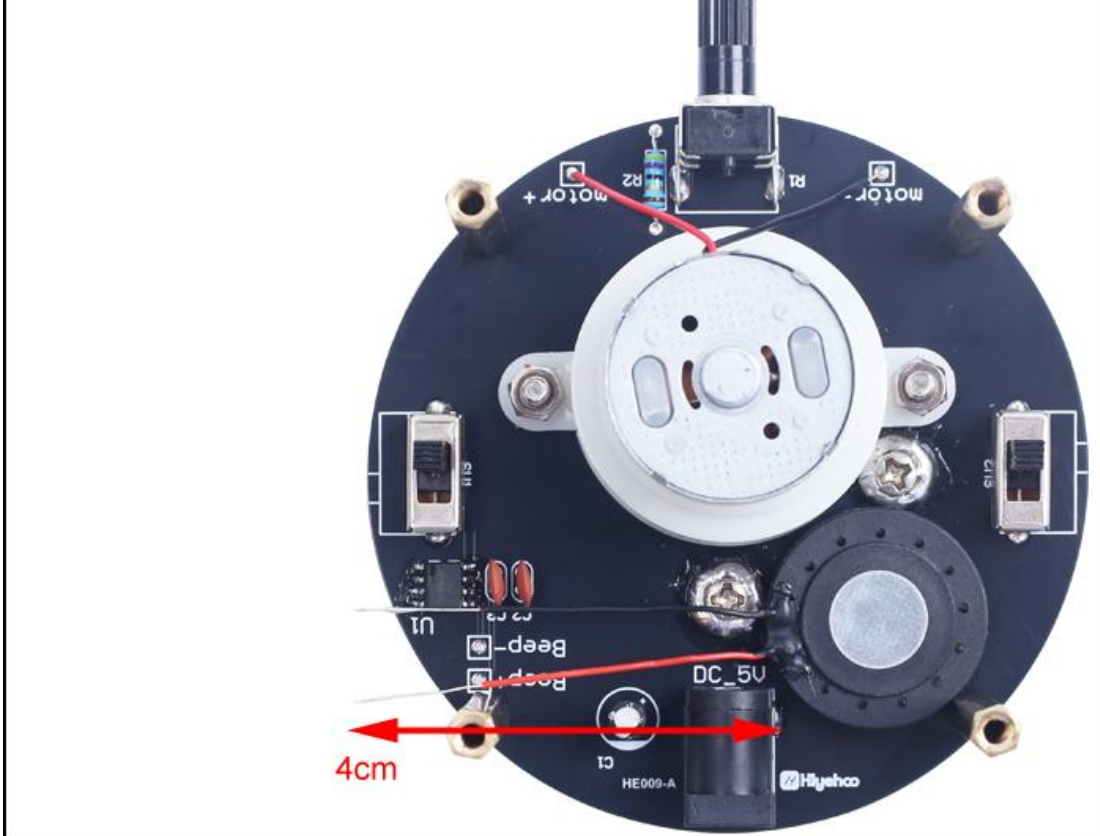
Step 18: Tear off the protective film on the surface from speaker.



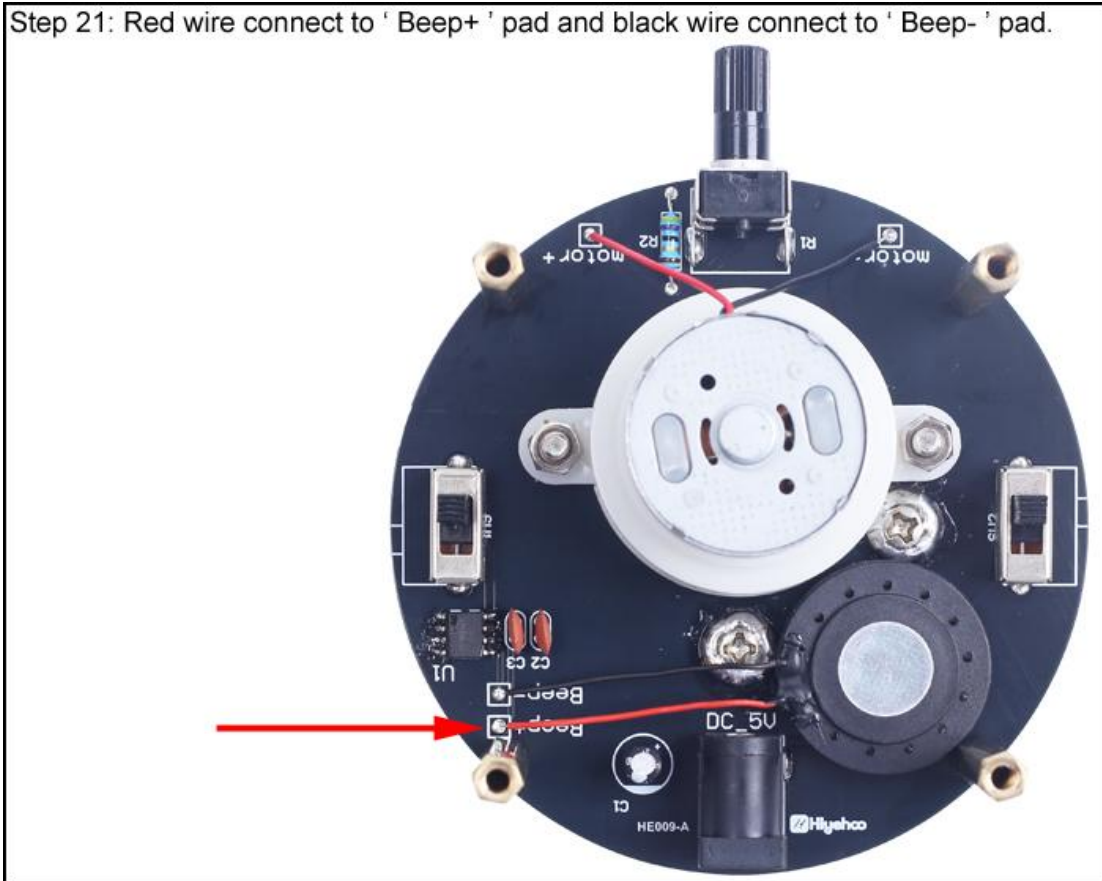
Step 19: Stick the speaker at the position shown in the picture.



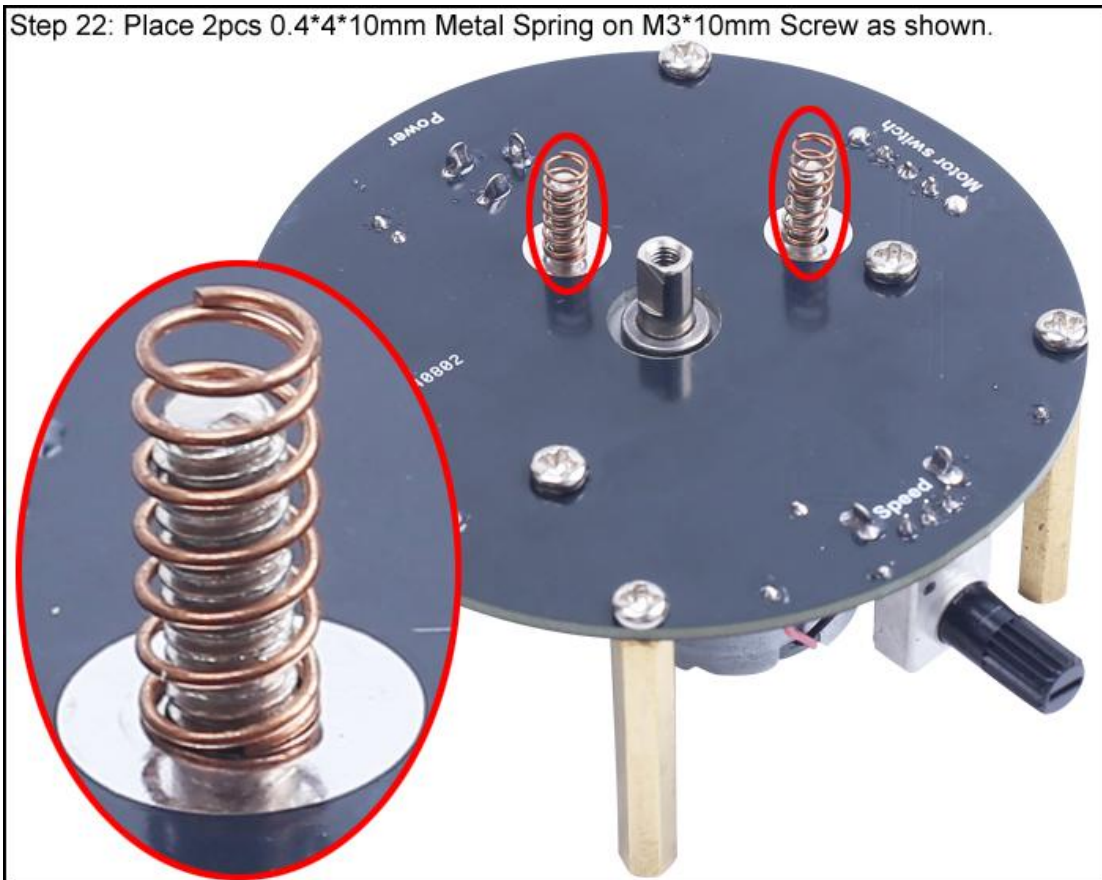
Step 20: Cut and reserve 4cm wire from speaker.



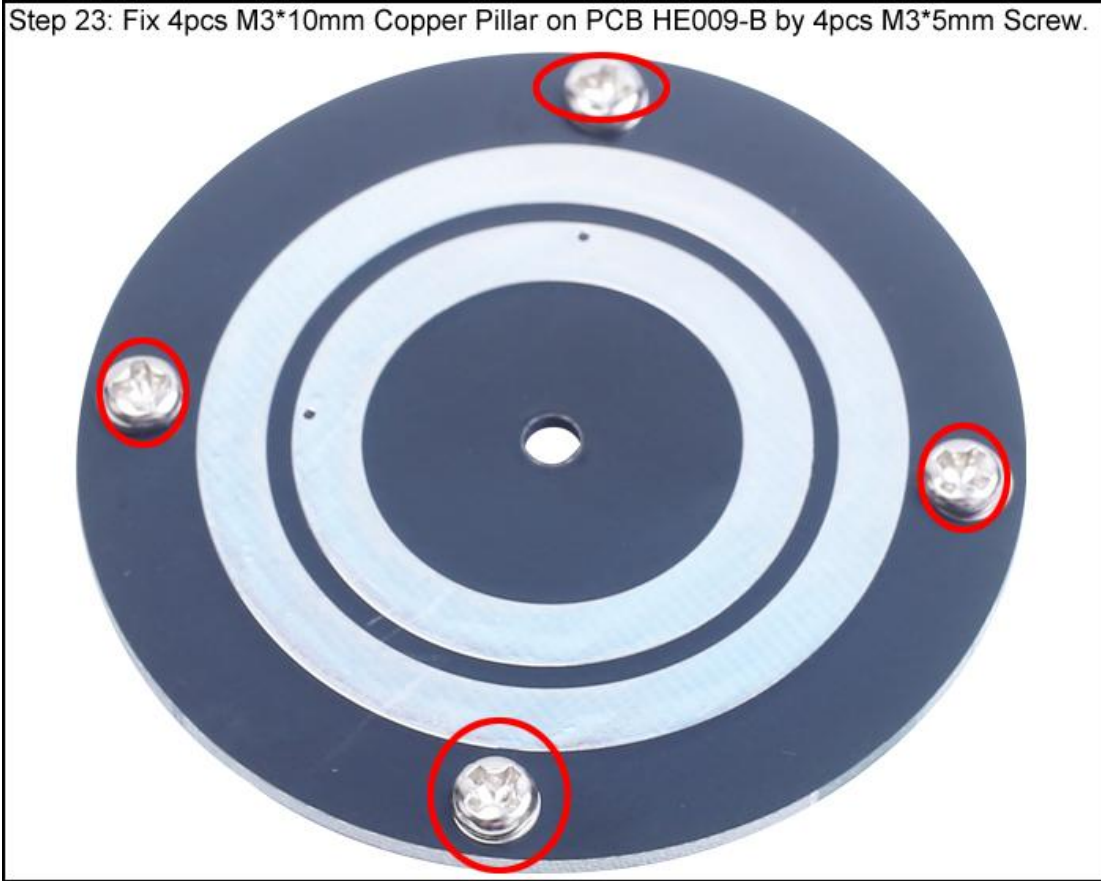
Step 21: Red wire connect to ' Beep+' pad and black wire connect to ' Beep-' pad.



Step 22: Place 2pcs 0.4*4*10mm Metal Spring on M3*10mm Screw as shown.



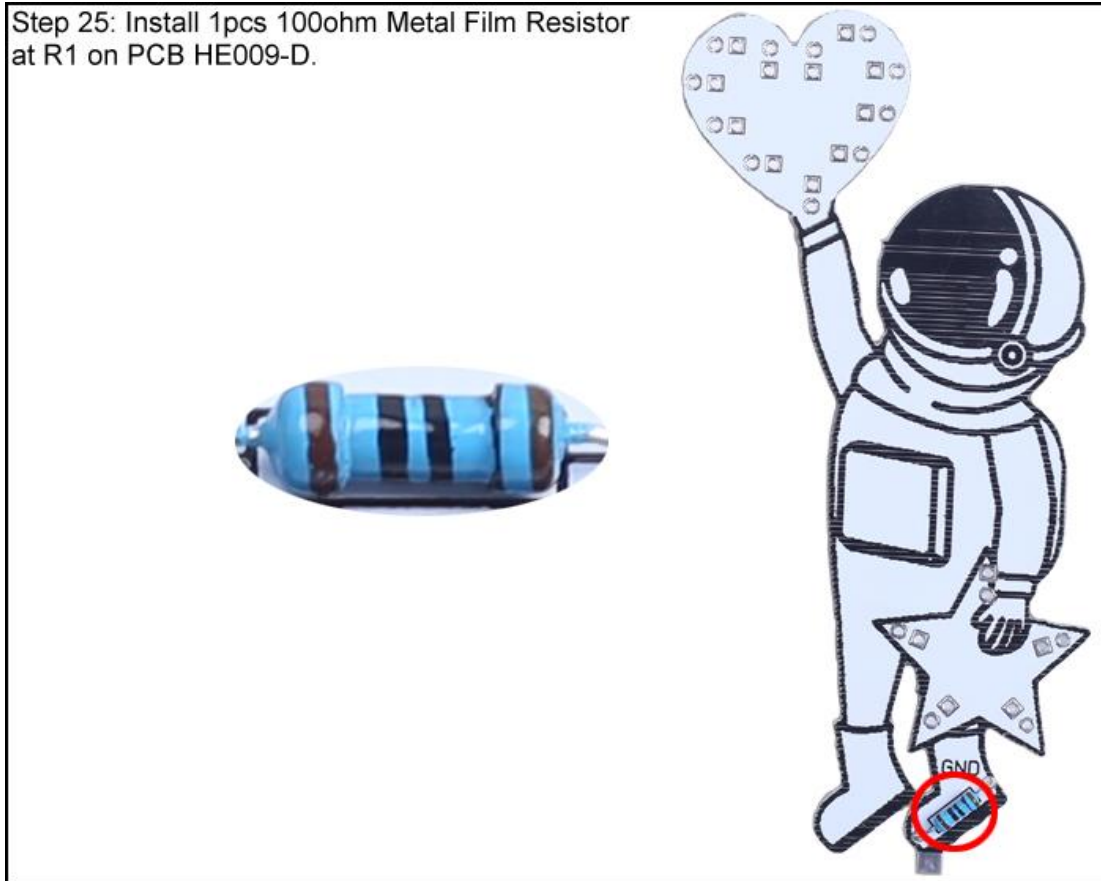
Step 23: Fix 4pcs M3*10mm Copper Pillar on PCB HE009-B by 4pcs M3*5mm Screw.



Step 24: Fix PCB HE009-B on DC Motor by M3*5mm Screw.



Step 25: Install 1pcs 100ohm Metal Film Resistor at R1 on PCB HE009-D.



Step 26: Identify the positive(anode) and negative(cathode) lead of LED. The leads of the LED must be installed correctly, otherwise the LED cannot be turned on. Here are four methods as following:

26.1>.According to the length of the LED lead to distinguish. The longer pin is positive(anode) lead. The shorter pin is negative(cathode) lead.

26.2>.Identify the negative(cathode) of the LED is to look into the plastic case where one can see that the negative(cathode) is much thicker/bigger inside the plastic case than the anode lead.

26.3>.Identify by edge of plastic case. The negative(cathode) lead of the LED should be the pin nearest the flat on the plastic case.

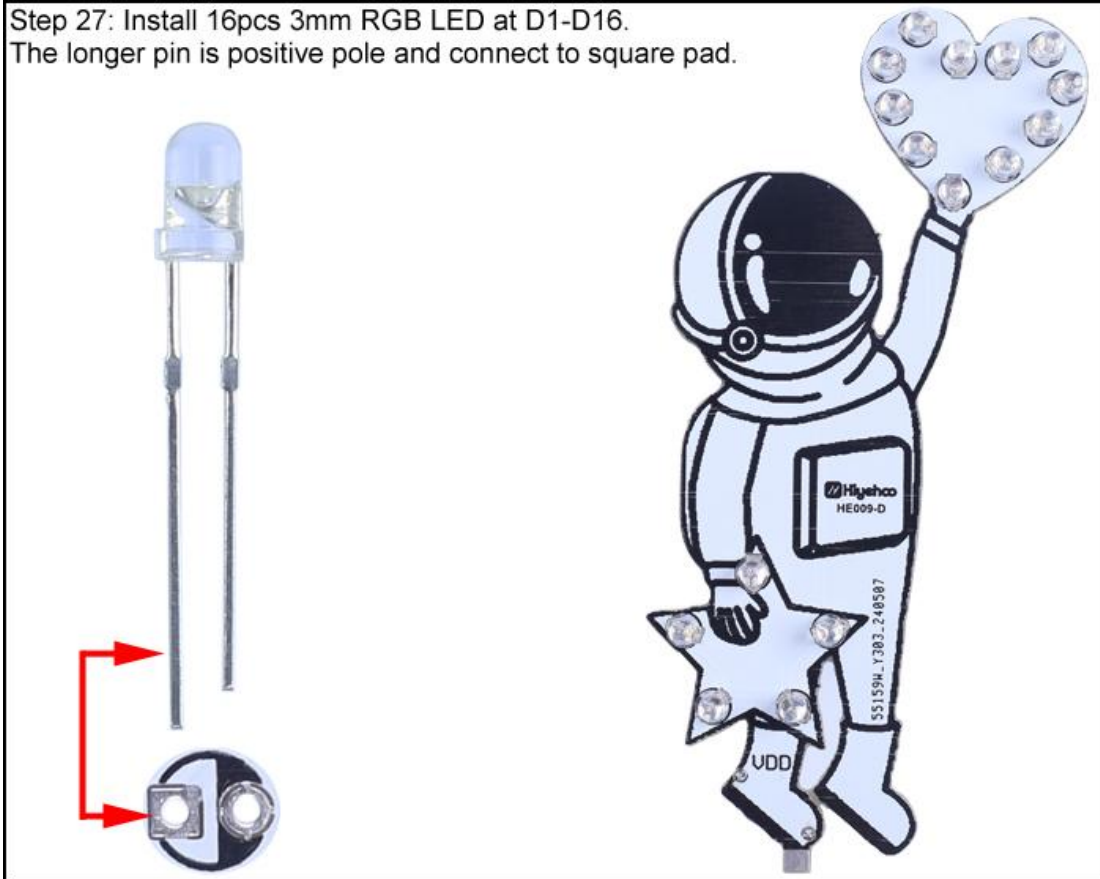
26.4>.Test by 3V battery or multimeter. The pin is positive(anode) lead which has connect to positive of 3V if LED can light up after connect 3V power supply.

(LED can not be powered directly from 3V for a short time:less then 0.5second)

26.5>.Note:If the flat on package disagrees with other indicators(short lead,large cathode lead end), then other indicators take priority. I.e. if the flat disagrees with the lead length,use the lead length as the cathode indicator.



Step 27: Install 16pcs 3mm RGB LED at D1-D16.
The longer pin is positive pole and connect to square pad.

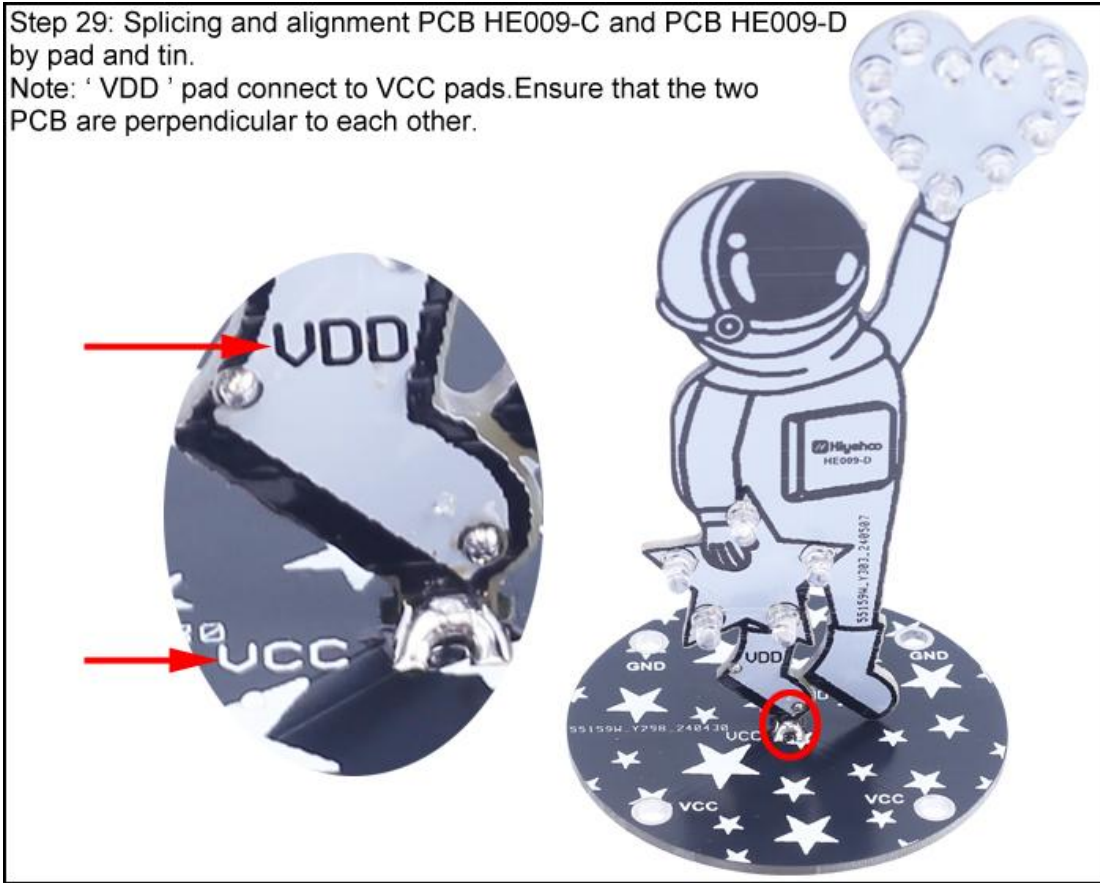


Step 28: Place tin at 6 pad as showing on PCB HE009-C and HE009-D.



Step 29: Splicing and alignment PCB HE009-C and PCB HE009-D by pad and tin.

Note: 'VDD' pad connect to VCC pads. Ensure that the two PCB are perpendicular to each other.



Step 30: Fix PCB HE009-C on PCB HE009-B by 4pcs M3*5mm Screw.

Note: VCC to VCC pads!

