HE016 WS2812B RGB Christmas Tree Music Player DIY Kit

1.Introduction:

HE016 is a WS2812B RGB Christmas Tree Music Player LED Automatic Flashing Circuit Electronic Soldering DIY Kit. It adopts a 6-layer LED tower design, collecting 73 RGB LED lights in colorfully, and can play Christmas music songs. It is very suitable for birthday parties, Christmas and other activities

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

2.Feature:

1>.WS2812B RGB LED Flashing Automatically
2>.6-Layer RGB LED Tower Design
3>.7 Automatic Flashing Mode
4>.Adjustable Flashing Speed
5>.Play Christmas Music Song
6>.Adjustable ON/OFF Music
7>.DIY Hand Electronic Soldering

3.Parameter:

1>.Work Voltage:DC 4.5V-5V
2>.Power Type: USB
3>.LED Color: RGB
4>.Work Temperature:-40℃~85℃
5>.Work Humidity:5%~95%RH
6>.Size(Installed):90*90*135mm

4.Use Methods:

1>.Connect USB Power Wire to provide working power.
2>.RGB LED Flashing Automatically after power ON.
3>.Press ‘ Mod ’ button to switch LED Flashing Mode.
4>.Switch Toggle Switch to start or stop music playback.

5.Component Listing:

NO.	Component Name	PCB Marker	Parameter	QTY
1	STC8G1K17A-36I Controller	U1	DIP-8	1
2	KT148A Music Chip	U2	SOP-8	1
3	AMS1117-5.0V Voltage Regulator	U3,U4	SOT-223	2
4	8ohm 1W Speaker	Beep	D23mm	1
5	SMD 5050 WS2812B RGB LED	L1-L73	4Pin	73
6	IC Socket	U1	DIP-8	1
7	Monolithic Capacitor	C1,C2	1uF(105)	2
8	Electrolytic Capacitor	C3,C4	22uF 16V 4*7mm	2
9	Ceramic Capacitor	C5	0.1UF 104	1
10	Metal Film Resistor	R1	5.1Kohm	1
11	DC-005 Power Socket	DC_5V	5.5*2.1mm	1
12	Black Button	Mod	6*6*7mm	1
13	SS-12F23G5 Toggle Switch	Music	3Pin	1
14	USB to DC-005 Power Supply Wire	DC_5V	100cm	1
15	M3*5mm Screw	/	/	4
16	M3*20mm Copper Pillar	/	/	4
17	PCB HE016-A Circuit Board	/	90*90*1.6mm	1
18	PCB HE016-B Circuit Board	/	80*80*1.6mm	1

19	PCB HE016-C Circuit Board	/	70*70*1.6mm	1
20	PCB HE016-D Circuit Board	/	60*60*1.6mm	1
21	PCB HE016-E Circuit Board	/	45*45*1.6mm	1
22	PCB HE016-F Circuit Board	/	85*5*1.6mm	1
23	PCB HE016-G Circuit Board	/	40*39*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>.Crafts collection
8>.Home decoration
9>.Souvenir collection
10>.Graduation design
11>.Holiday gifts

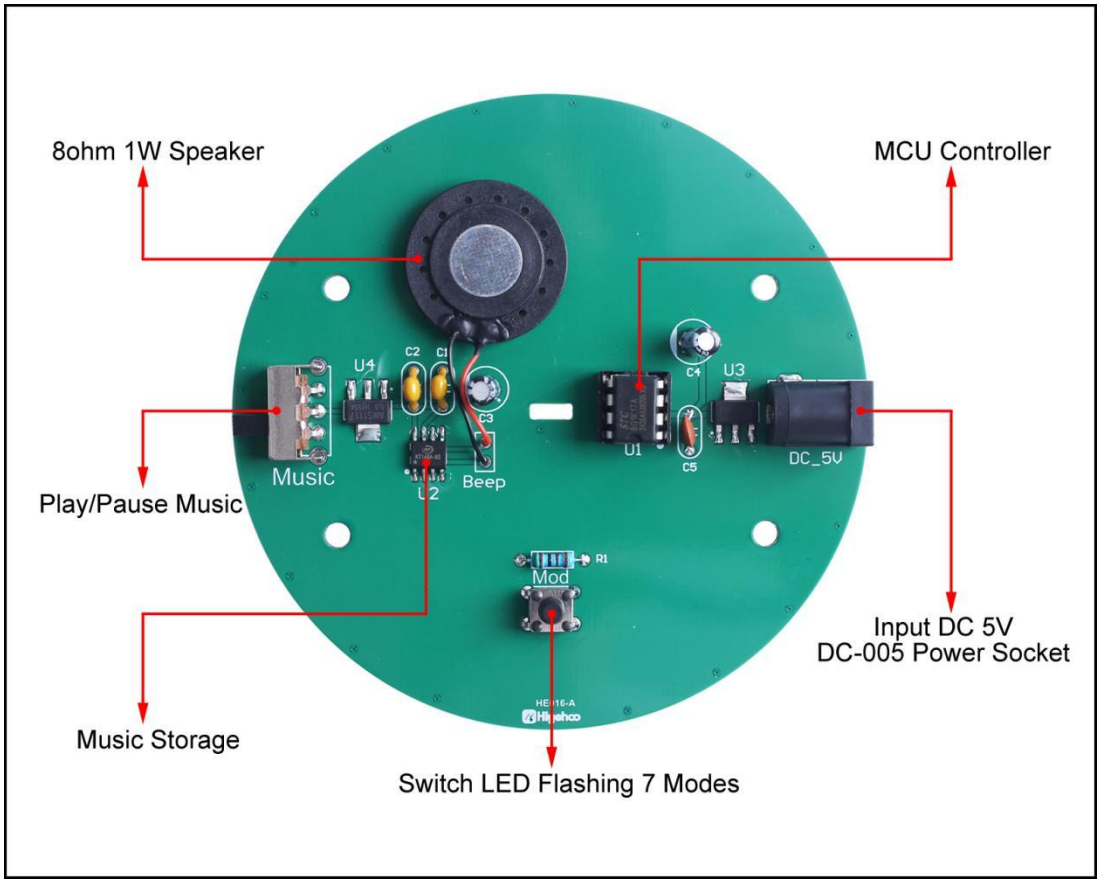
7.Note:

1>.LED round PCB board must be in the same sides which can make sure by silk screen ‘ A ’.
2>.LED round PCB board must be perpendicular to rectangle PCB.

8.Installation Tips:

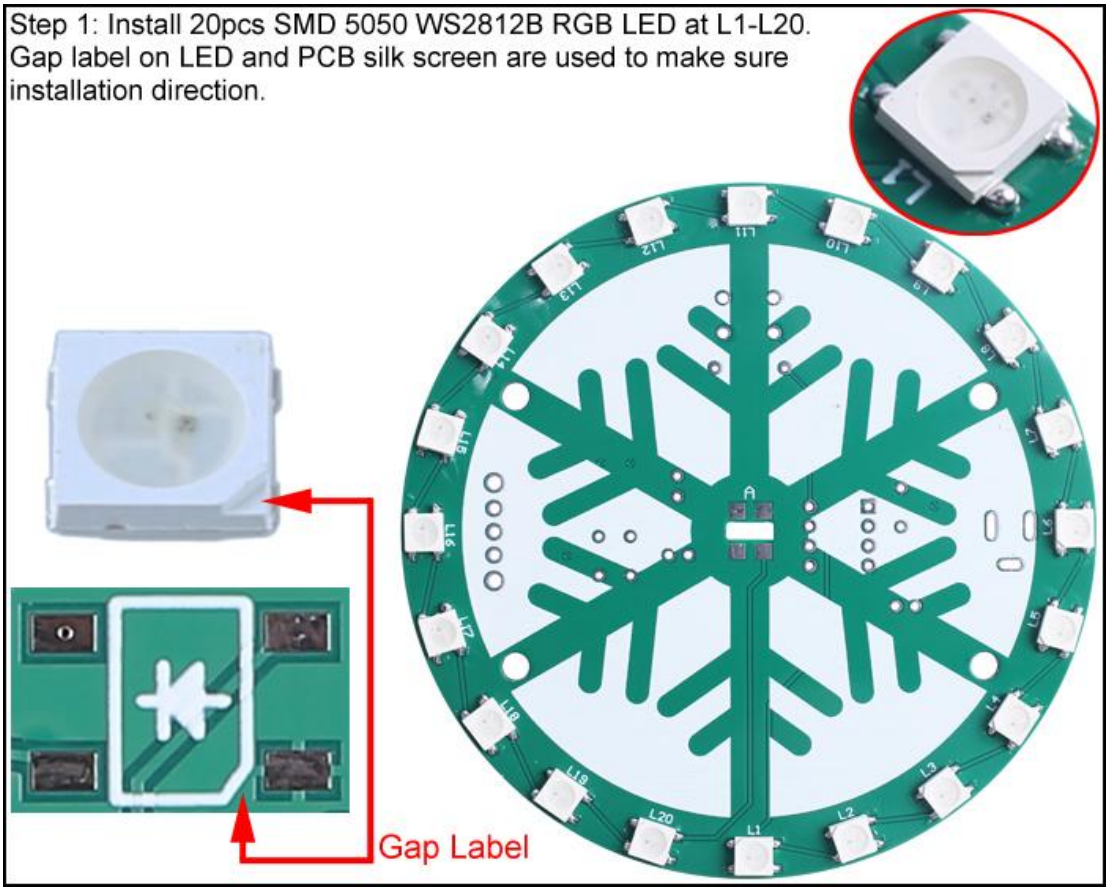
1>.User needs to prepare the welding tool at first.
1.1>.Soldering iron (<50 Watt)
1.2>.Rosin core ("radio") solder
1.3>.Wire cutters
1.4>.Wire strippers
1.5>.’ + ’ screwdriver
2>.Please be patient until the installation is complete.
3>.The package is DIY kit.It need finish install by user.
4>.The soldering iron can't touch 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>.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!!!):

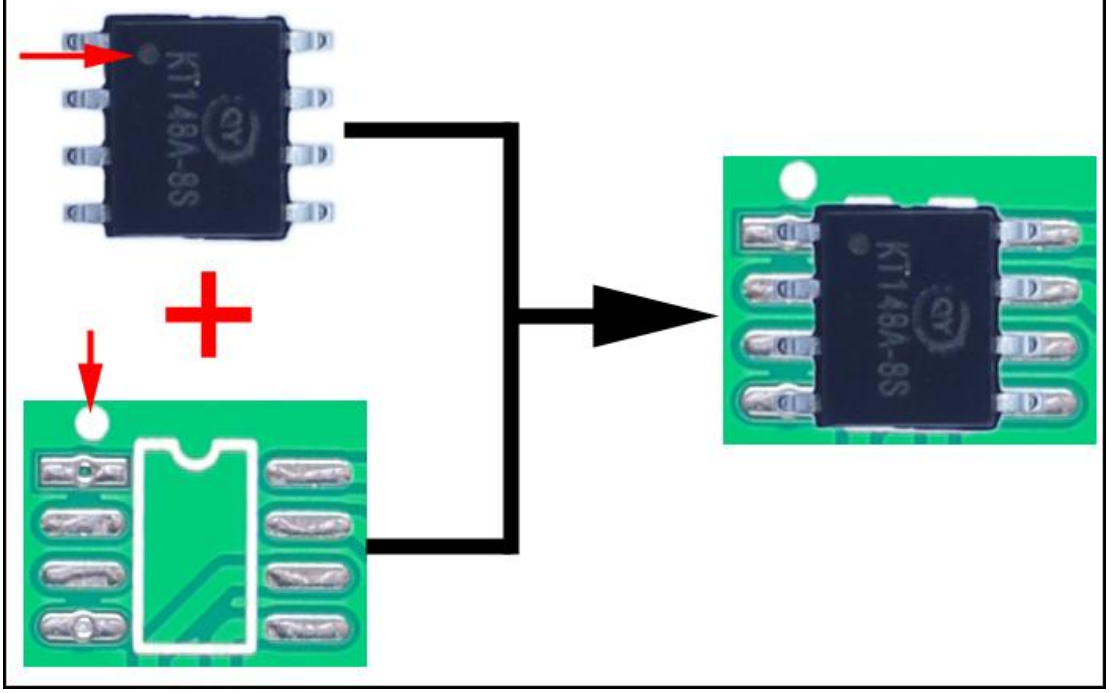

8ohm 1W Speaker
MCU Controller
Play/Pause Music
Music
Beep
Mod
Input DC 5V
DC-005 Power Socket
Music Storage
Switch LED Flashing 7 Modes
U4
C2
C1
C3
L2
U1
C4
U3
C5
DC_5V
R1


L73
73pcs WS2812B RGB LED
H: 135mm
W: 90mm
L: 90mm

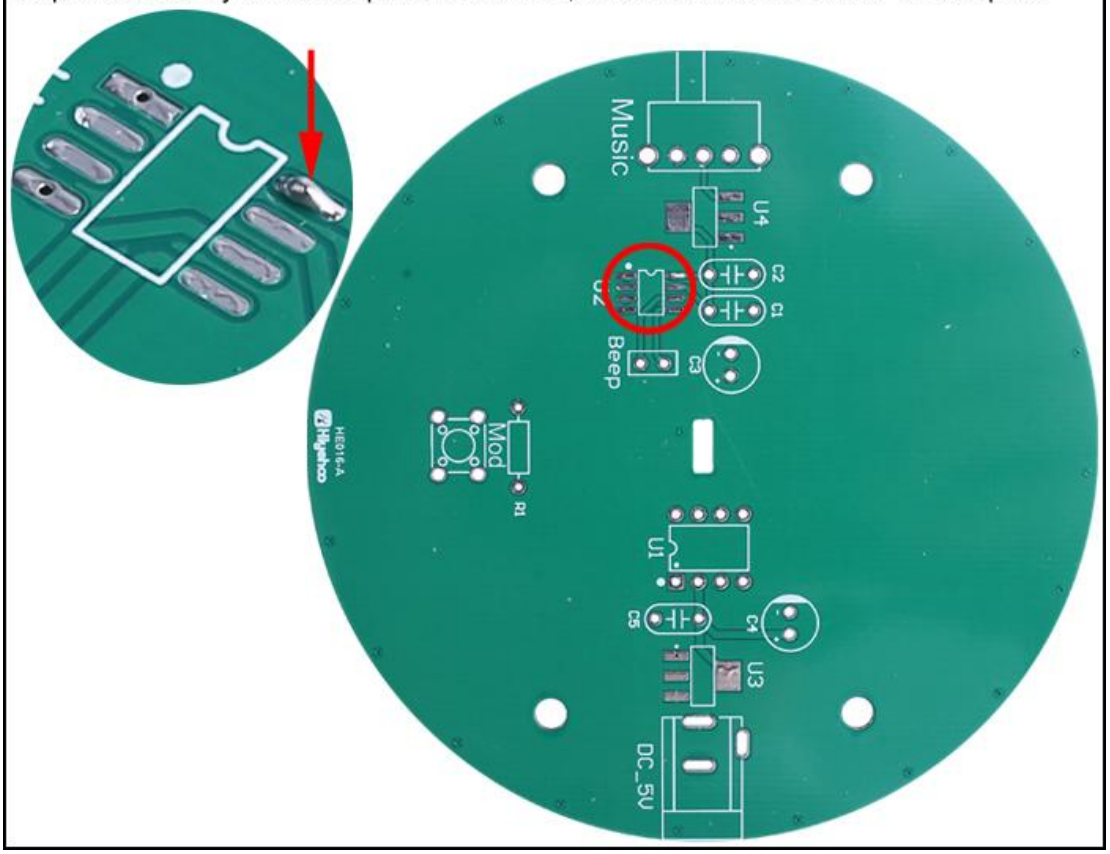
Step 1: Install 20pcs SMD 5050 WS2812B RGB LED at L1-L20. Gap label on LED and PCB silk screen are used to make sure installation direction.



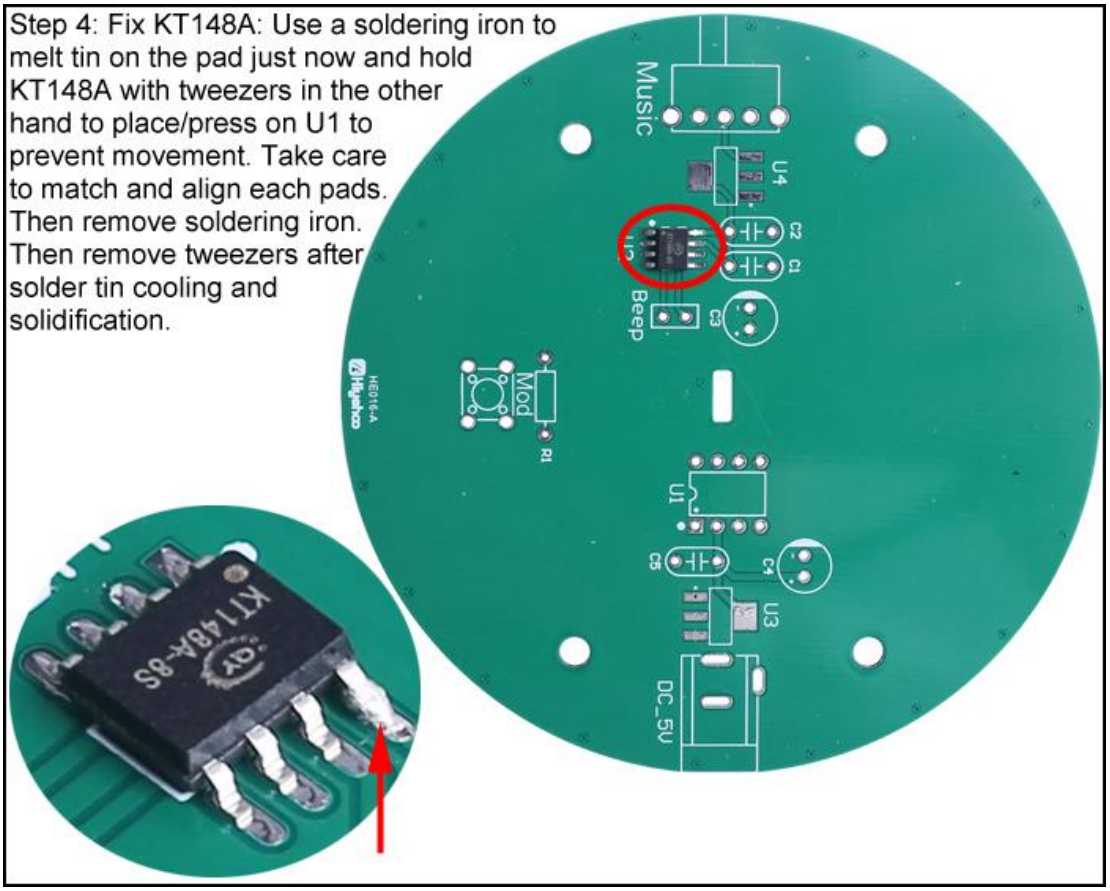
Step 2: Install 1pcs SMD components SOP-8 KT148A Music IC at U2. Verify & confirm the installation direction of KT148A.There is a dot mark on one end of the IC and there is a gap mark on PCB silk screen where the IC can place on.These two marks are corresponding to each other and are used to specify the installation direction of the IC.



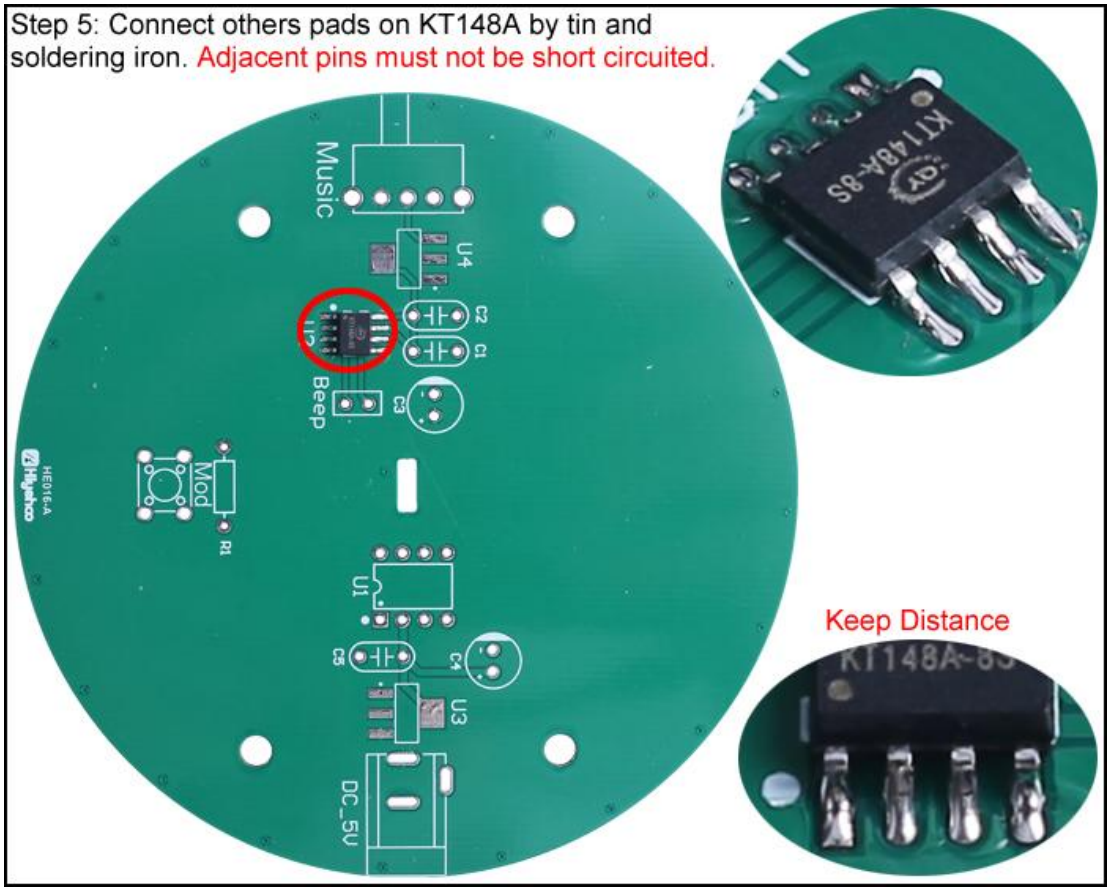
Step 3: Randomly choose a pad on the PCB, and then melt the solder on this pad.



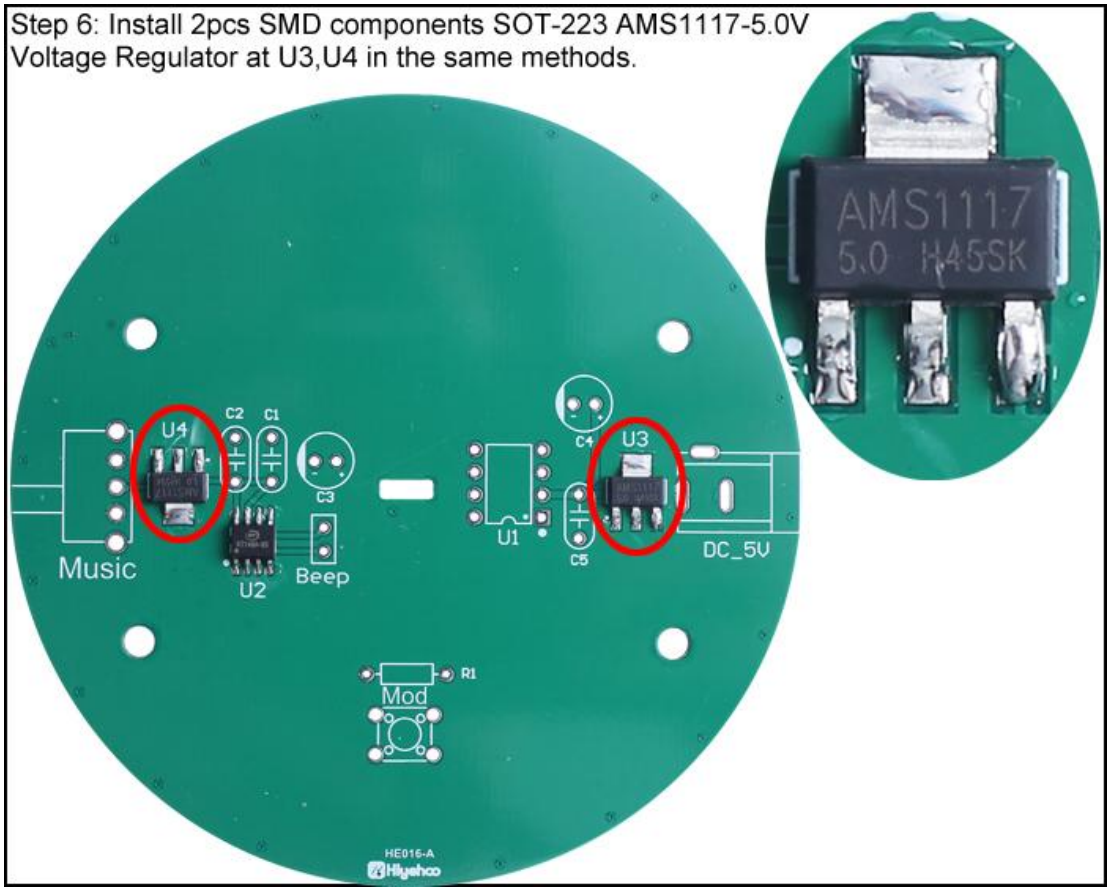
Step 4: Fix KT148A: Use a soldering iron to melt tin on the pad just now and hold KT148A with tweezers in the other hand to place/press on U1 to prevent movement. Take care to match and align each pads. Then remove soldering iron. Then remove tweezers after solder tin cooling and solidification.



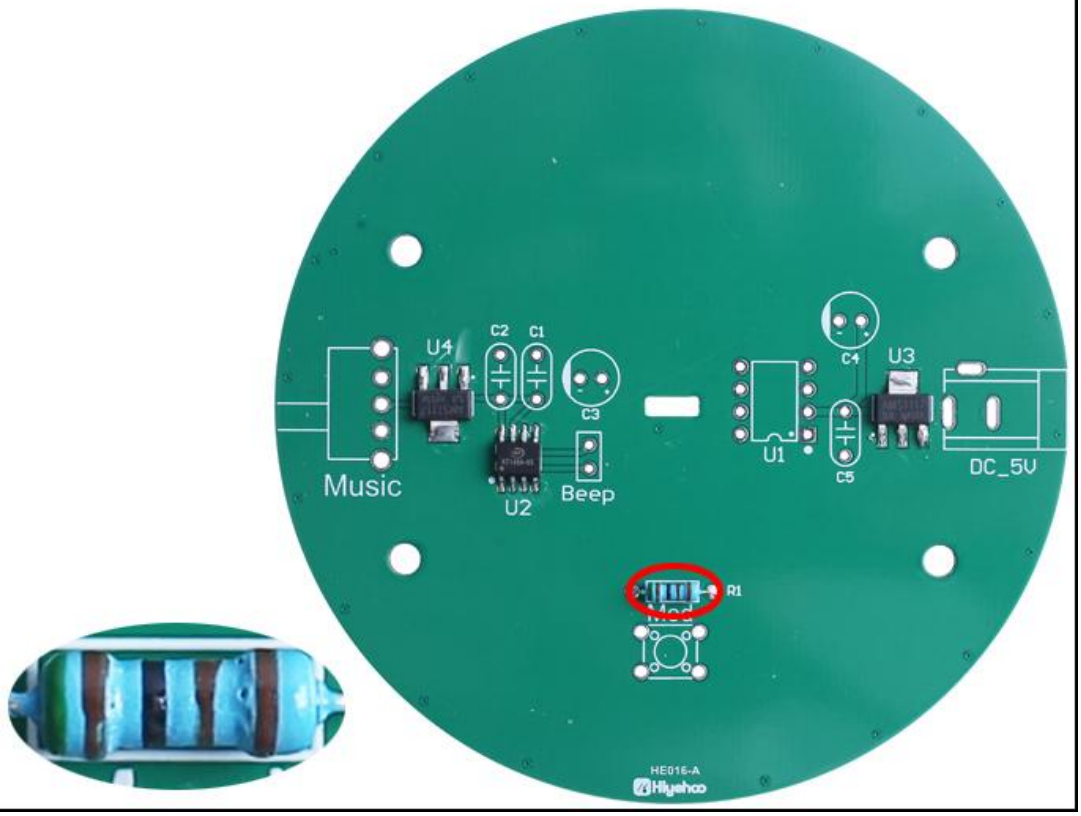
Step 5: Connect others pads on KT148A by tin and soldering iron. Adjacent pins must not be short circuited.



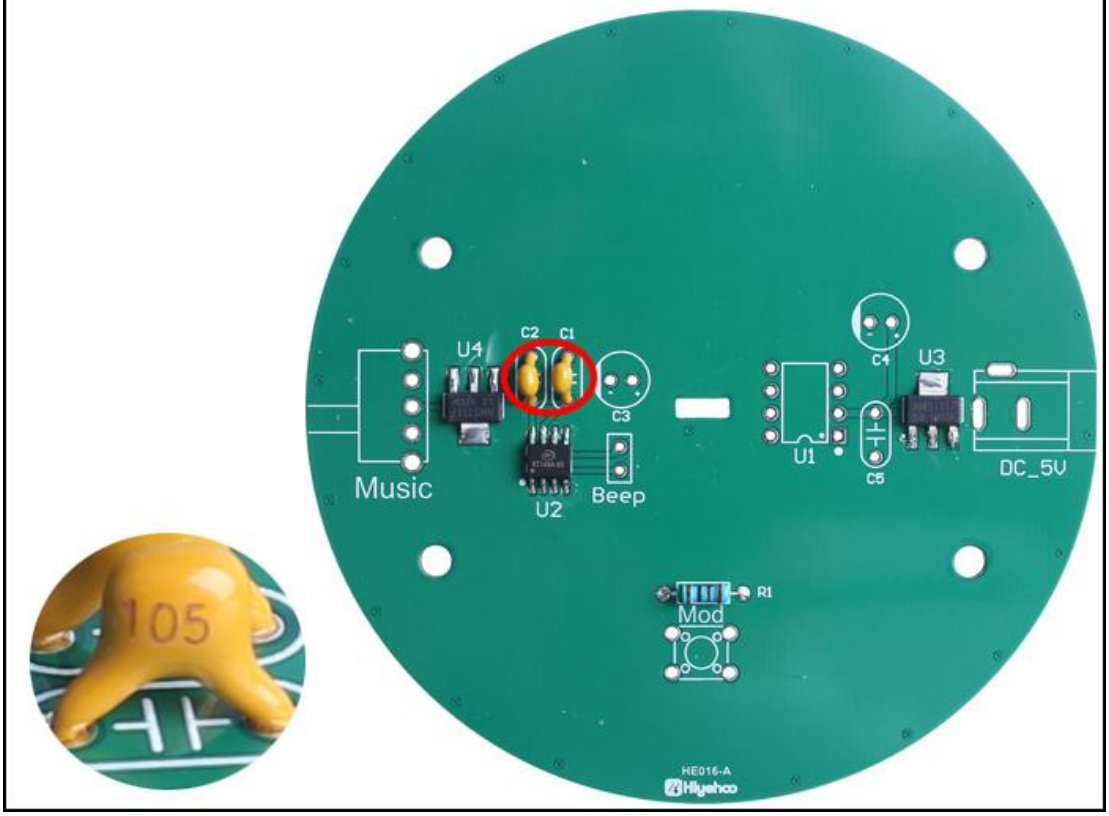
Step 6: Install 2pcs SMD components SOT-223 AMS1117-5.0V Voltage Regulator at U3,U4 in the same methods.



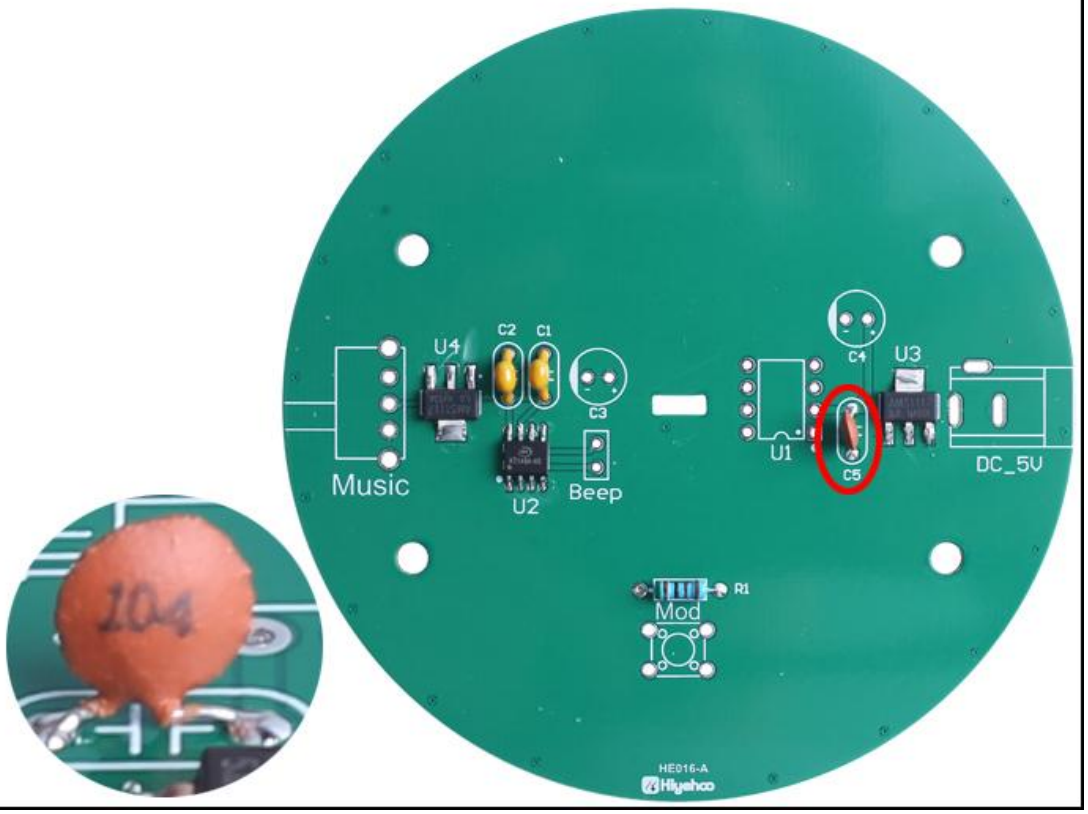
Step 7: Install 1pcs 5.1Kohm Metal Film Resistor at R1.



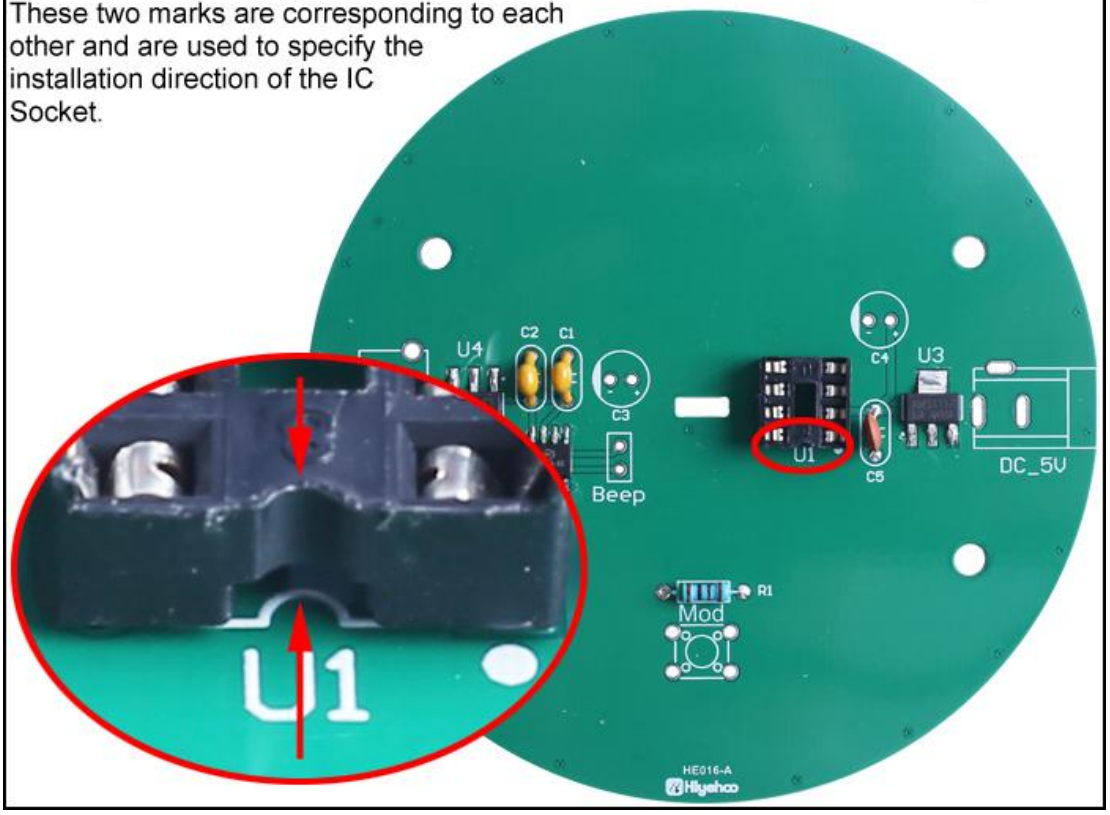
Step 8: Install 2pcs 1uF(105) Monolithic Capacitor at C1,C2.



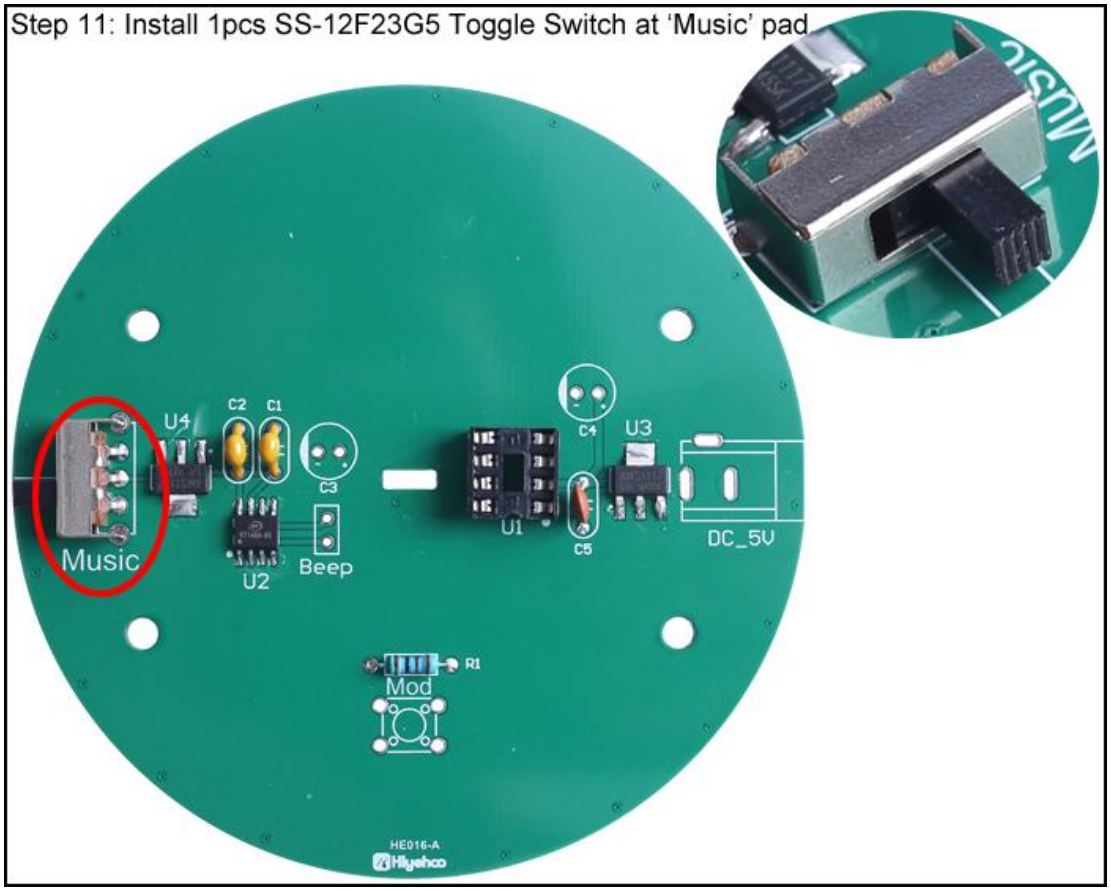
Step 9: Install 1pcs 0.1UF 104 Ceramic Capacitor at C5.



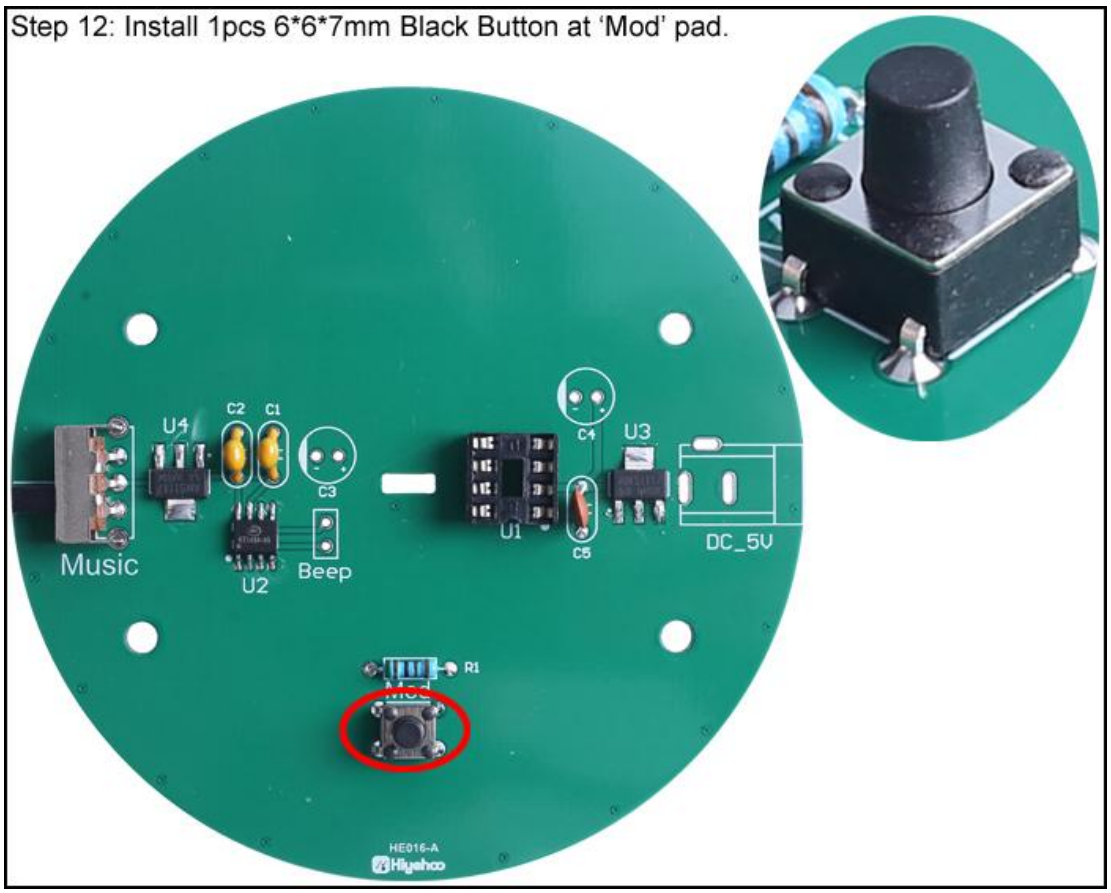
Step 10: Install 1pcs DIP-8 IC Socket at U1.There is a gap mark on one end of the IC Socket and there is a gap mark on PCB silk screen where the IC Socket can place on. These two marks are corresponding to each other and are used to specify the installation direction of the IC Socket.



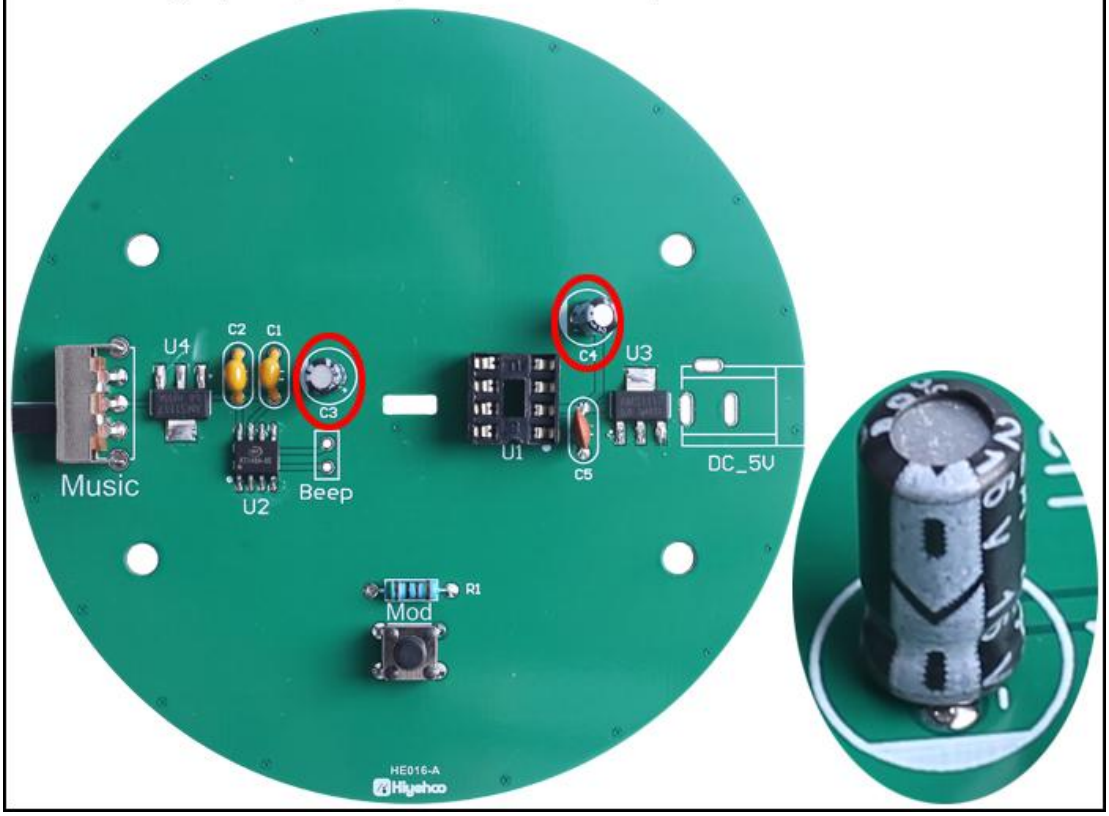
Step 11: Install 1pcs SS-12F23G5 Toggle Switch at 'Music' pad.



Step 12: Install 1pcs 6*6*7mm Black Button at 'Mod' pad.

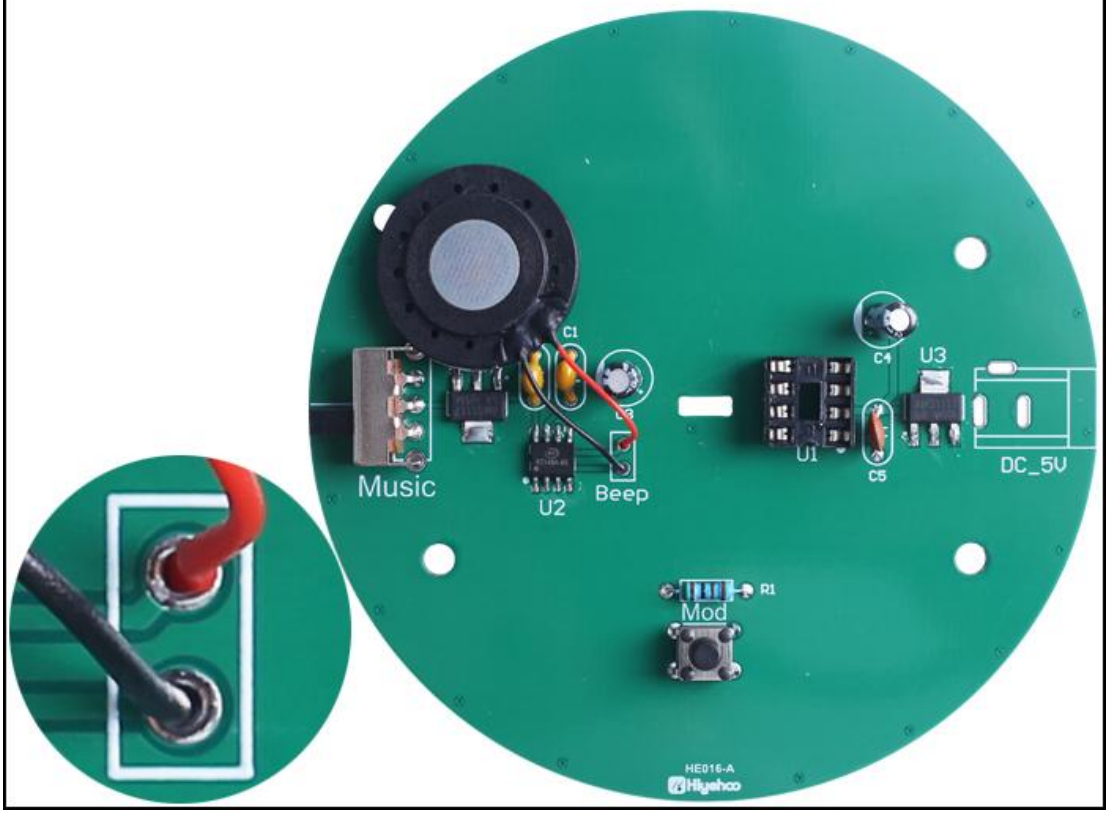


Step 13: Install 2pcs 22uF 16V Electrolytic Capacitor at C3,C4.
Note: the longer pin is positive pole connect to ' + ' pad.

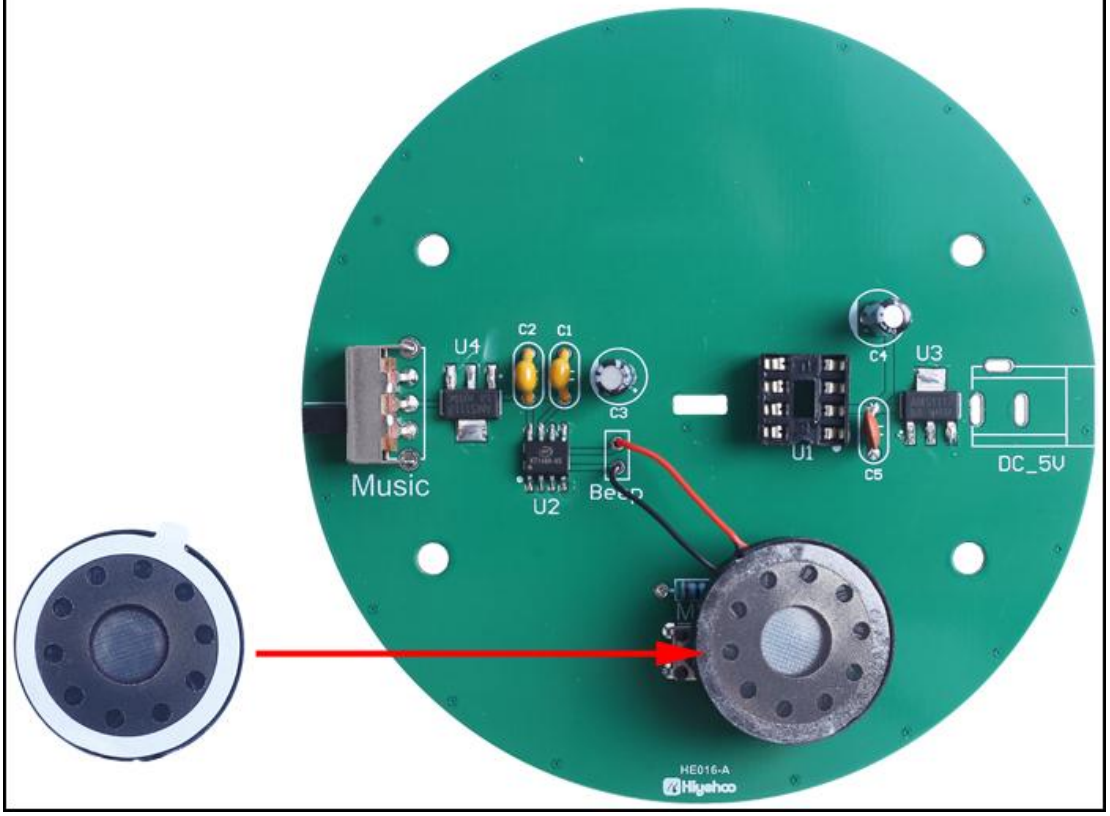


Step 14: Cut and reserve 3cm wire from speaker.

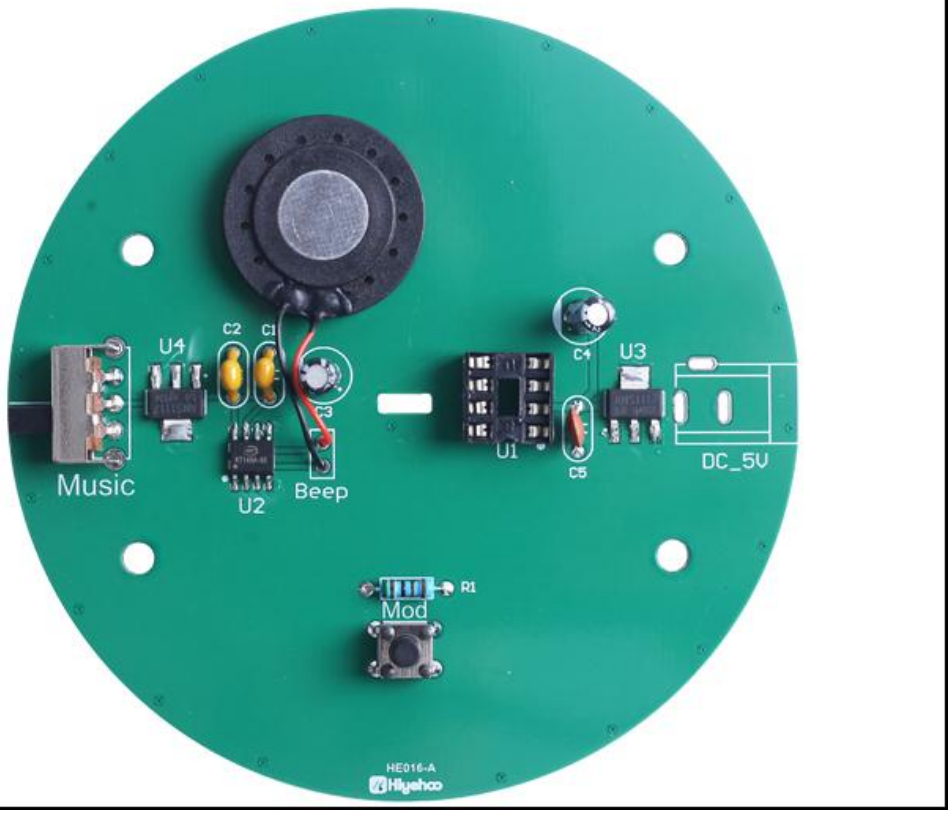
Step 15: Connect 8ohm 1W Speaker at Beep.Wires/pads can be connected arbitrarily.



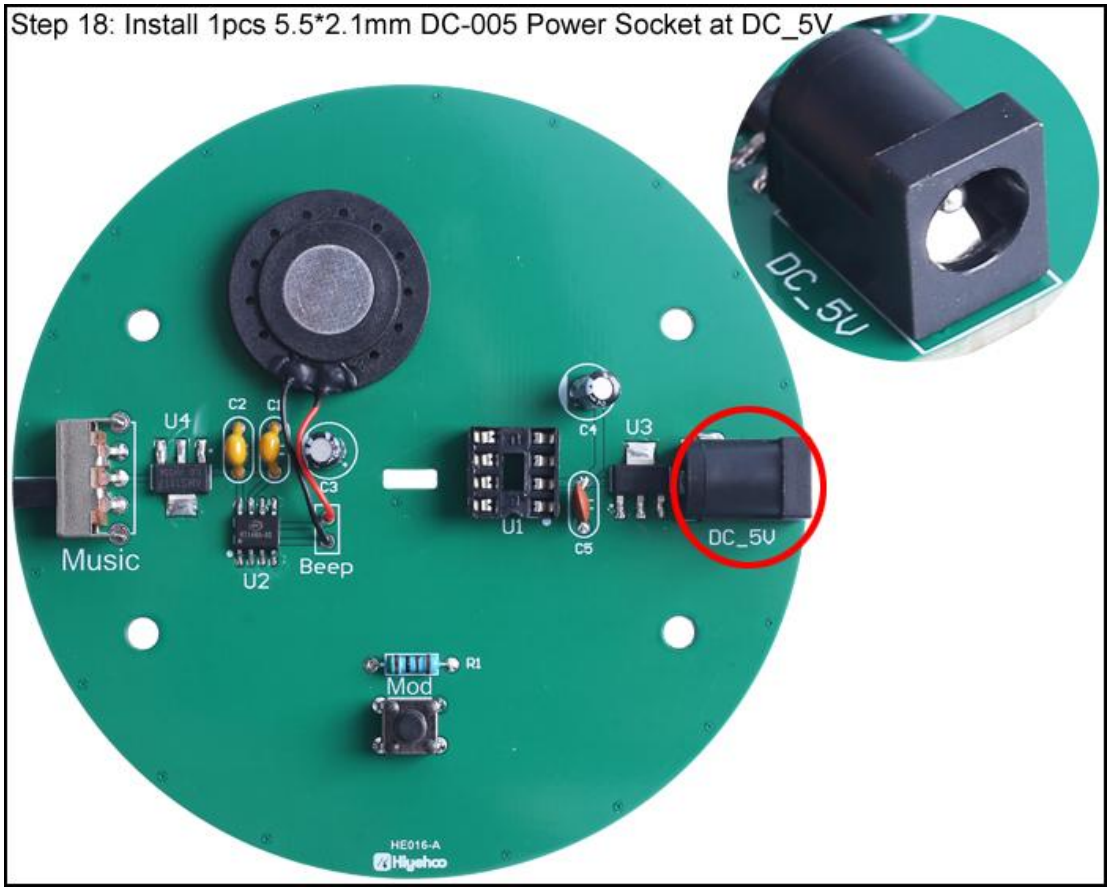
Step 16: Tear off the protective film on the surface from speaker.



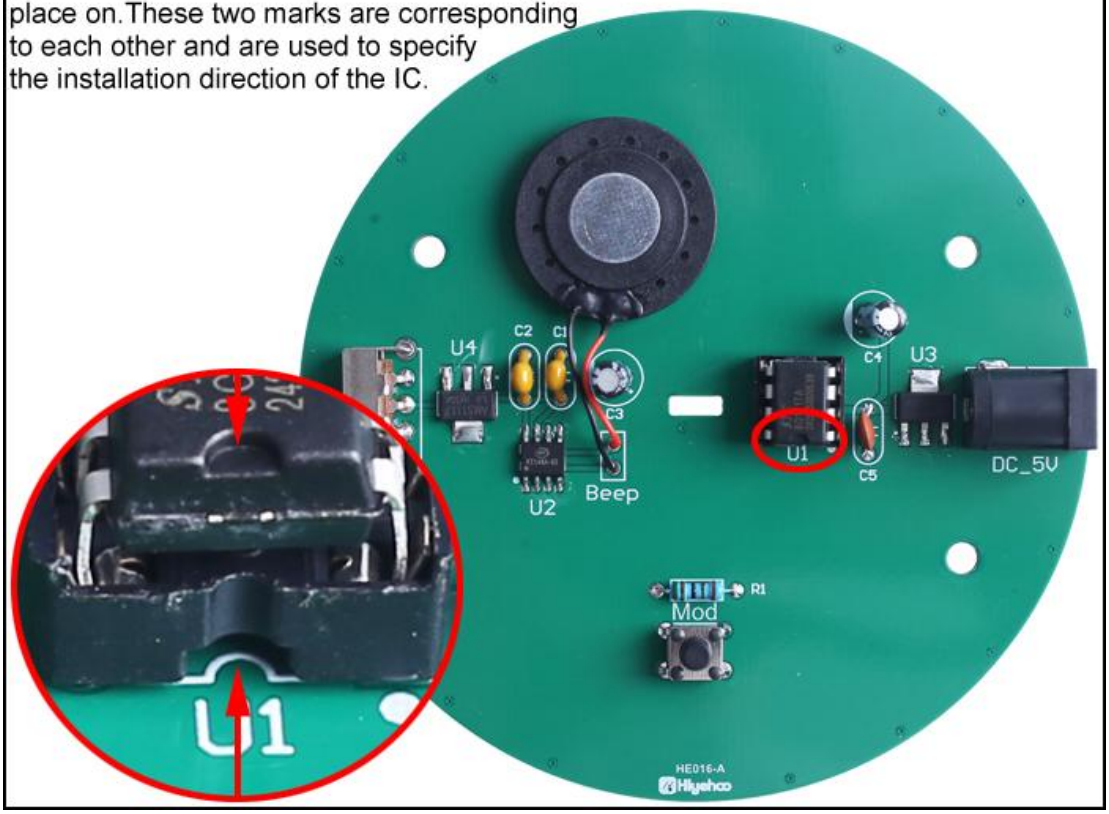
Step 17: Stick the speaker at the position shown in the picture.



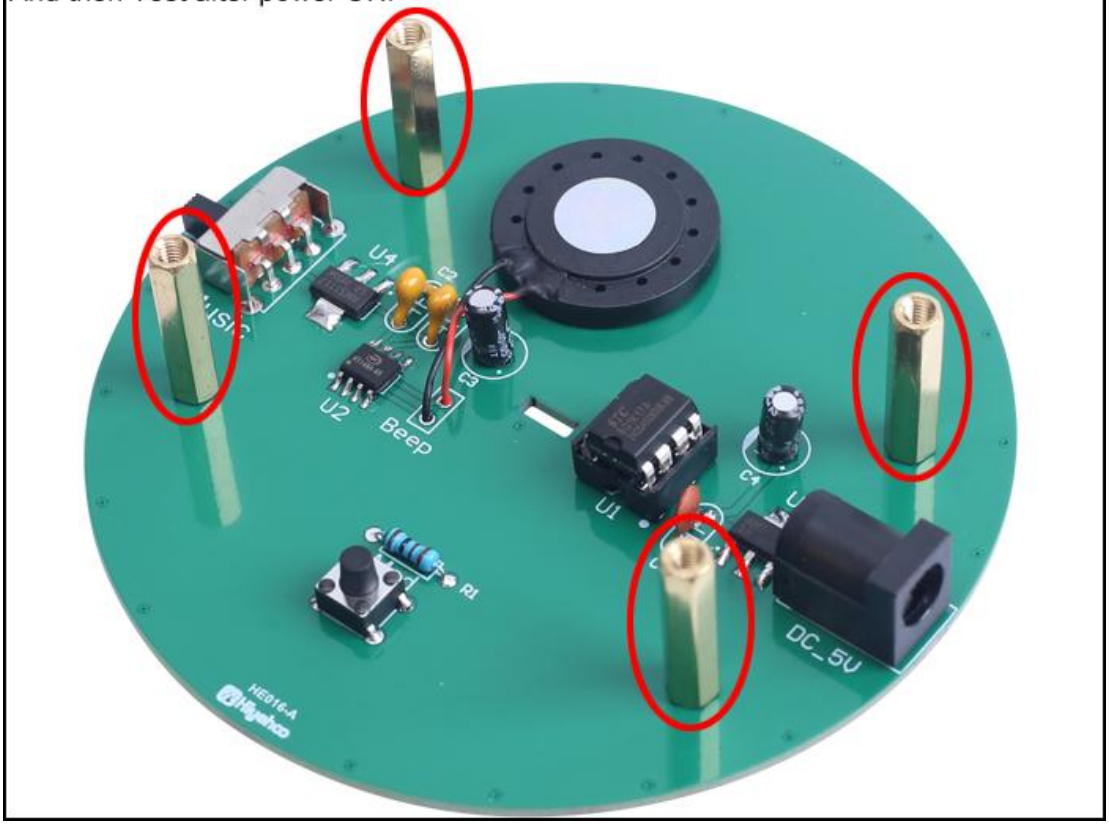
Step 18: Install 1pcs 5.5*2.1mm DC-005 Power Socket at DC_5V



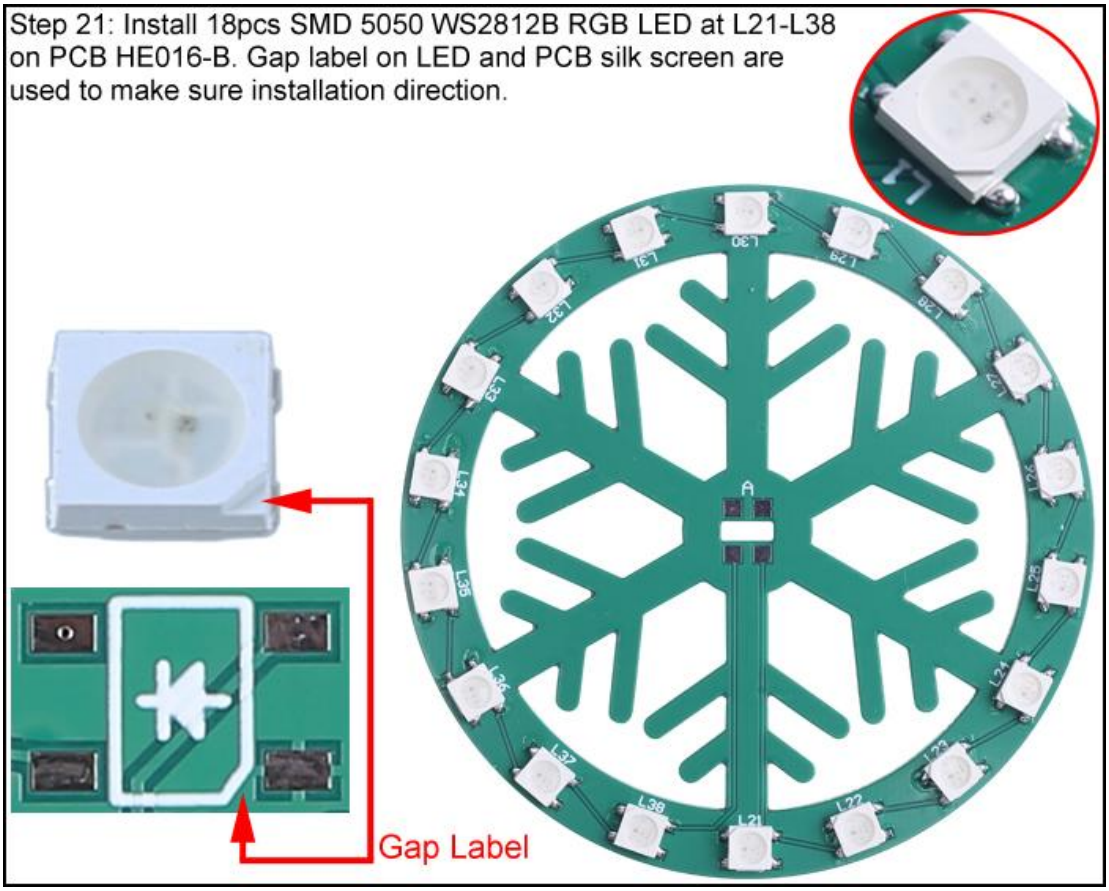
Step 19: Install 1pcs DIP-8 STC8G1K17A-36I Controller MCU at U1.There is a gap mark on one end of the IC and there is a gap mark on IC Socket where the IC can place on.These two marks are corresponding to each other and are used to specify the installation direction of the IC.



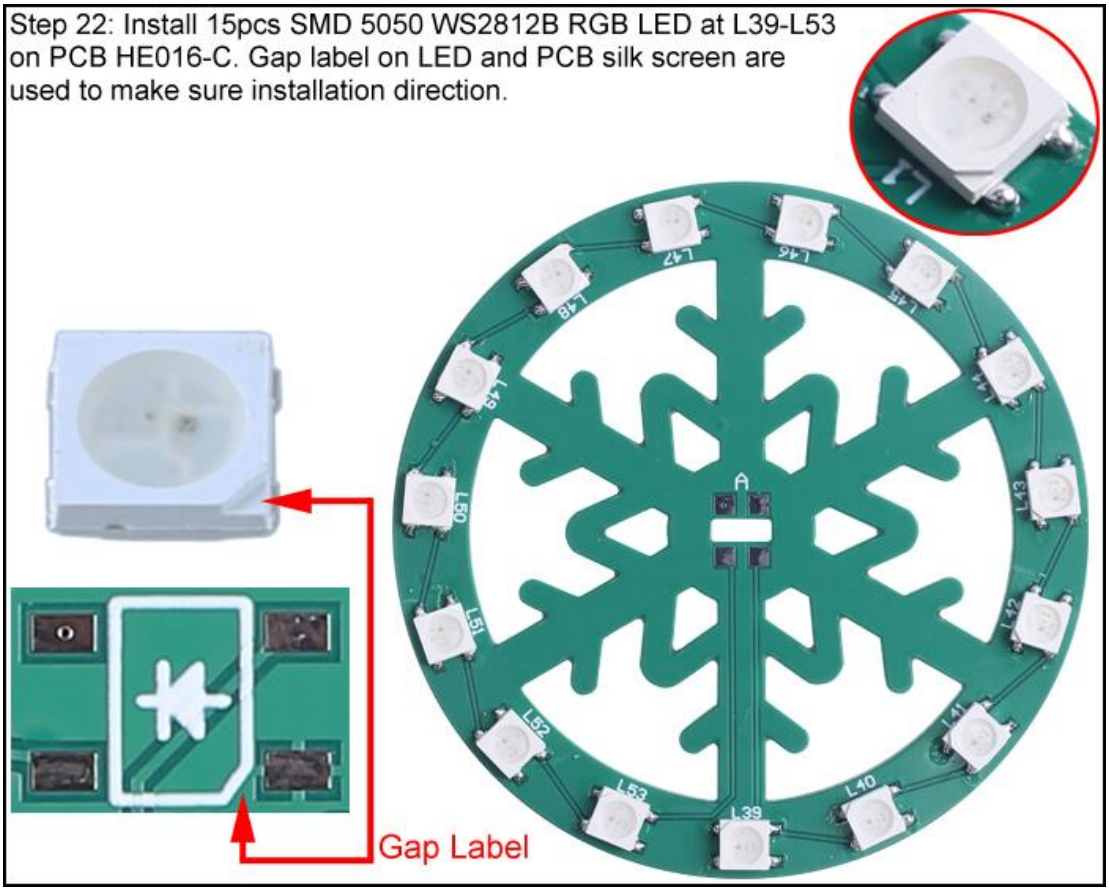
Step 20: Fix 4pcs M3*20mm Copper Pillar on PCB by 4pcs M3*5mm Screw. And then Test after power ON.



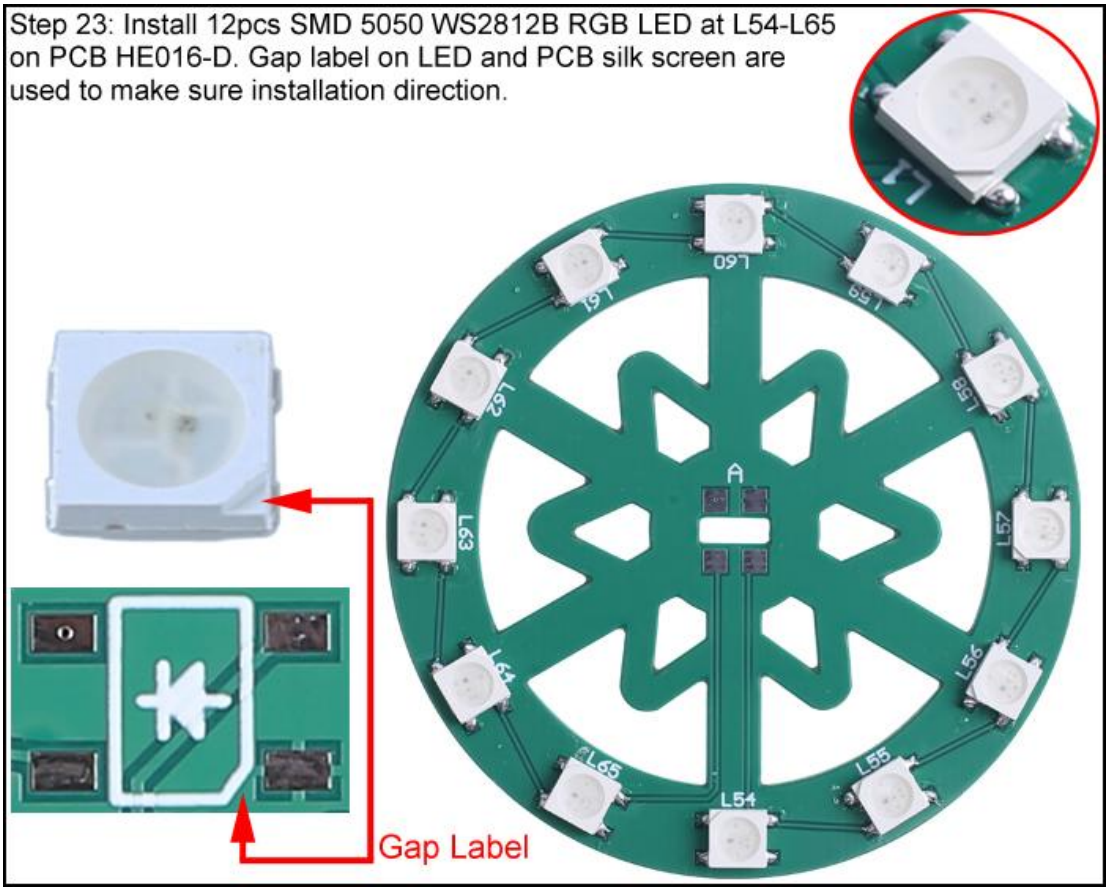
Step 21: Install 18pcs SMD 5050 WS2812B RGB LED at L21-L38 on PCB HE016-B. Gap label on LED and PCB silk screen are used to make sure installation direction.



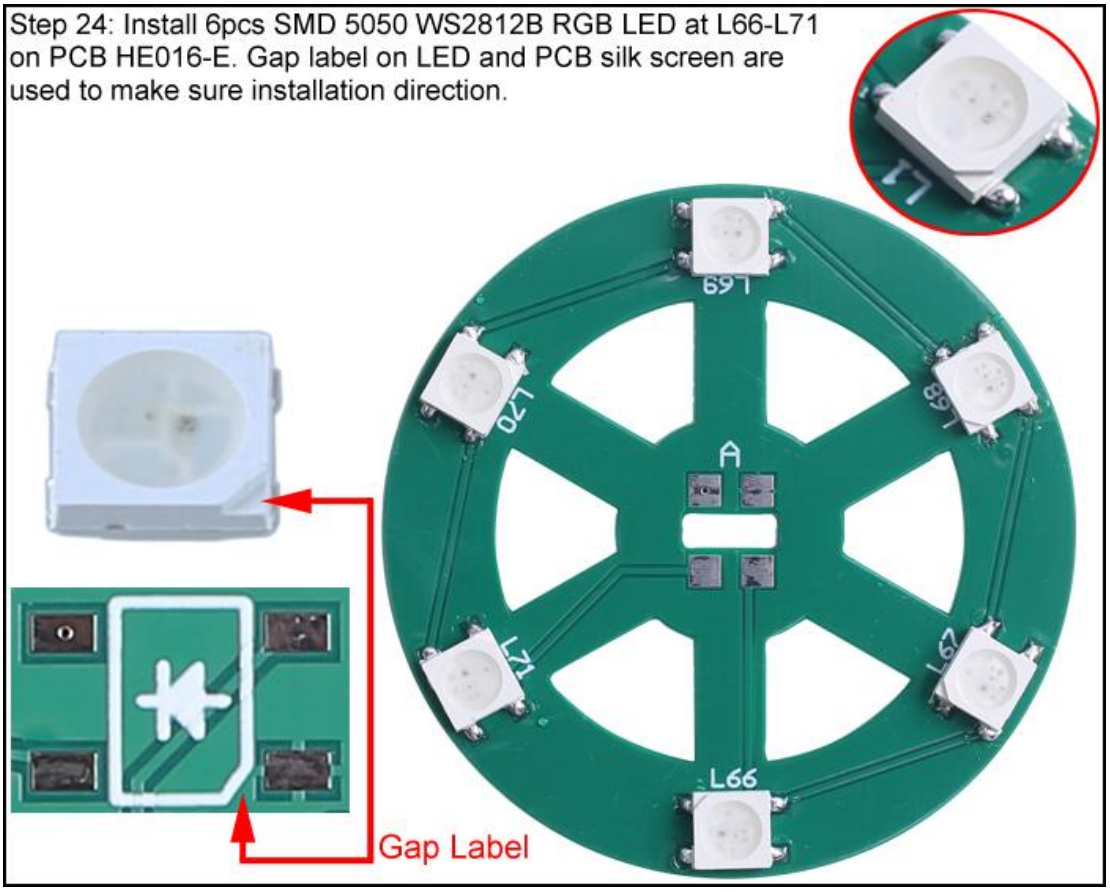
Step 22: Install 15pcs SMD 5050 WS2812B RGB LED at L39-L53 on PCB HE016-C. Gap label on LED and PCB silk screen are used to make sure installation direction.



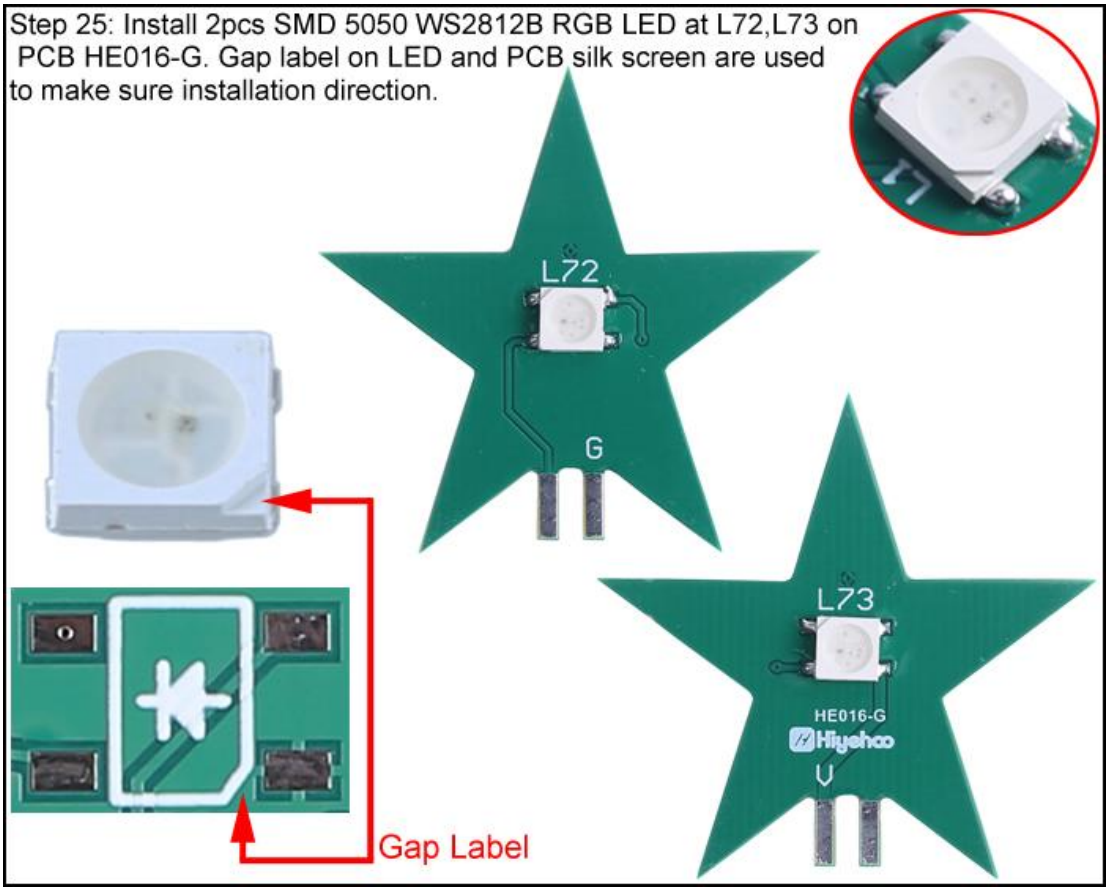
Step 23: Install 12pcs SMD 5050 WS2812B RGB LED at L54-L65 on PCB HE016-D. Gap label on LED and PCB silk screen are used to make sure installation direction.



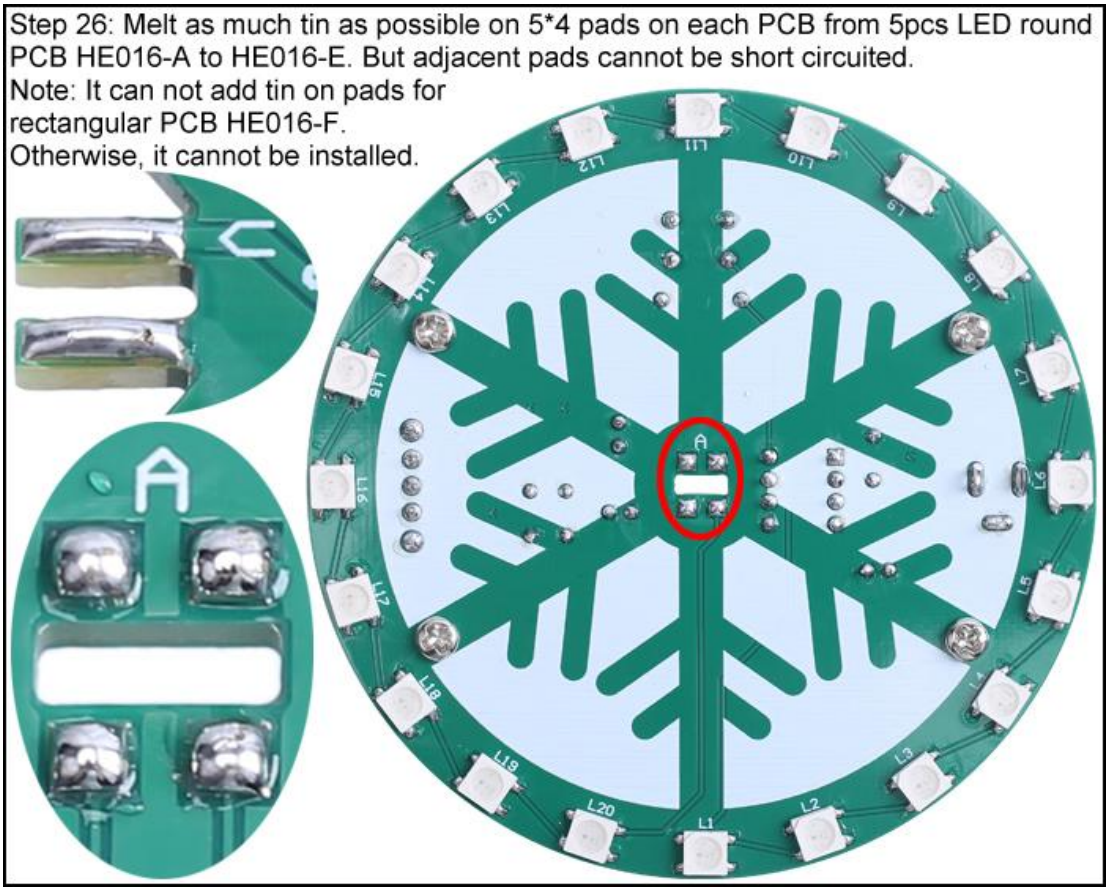
Step 24: Install 6pcs SMD 5050 WS2812B RGB LED at L66-L71 on PCB HE016-E. Gap label on LED and PCB silk screen are used to make sure installation direction.



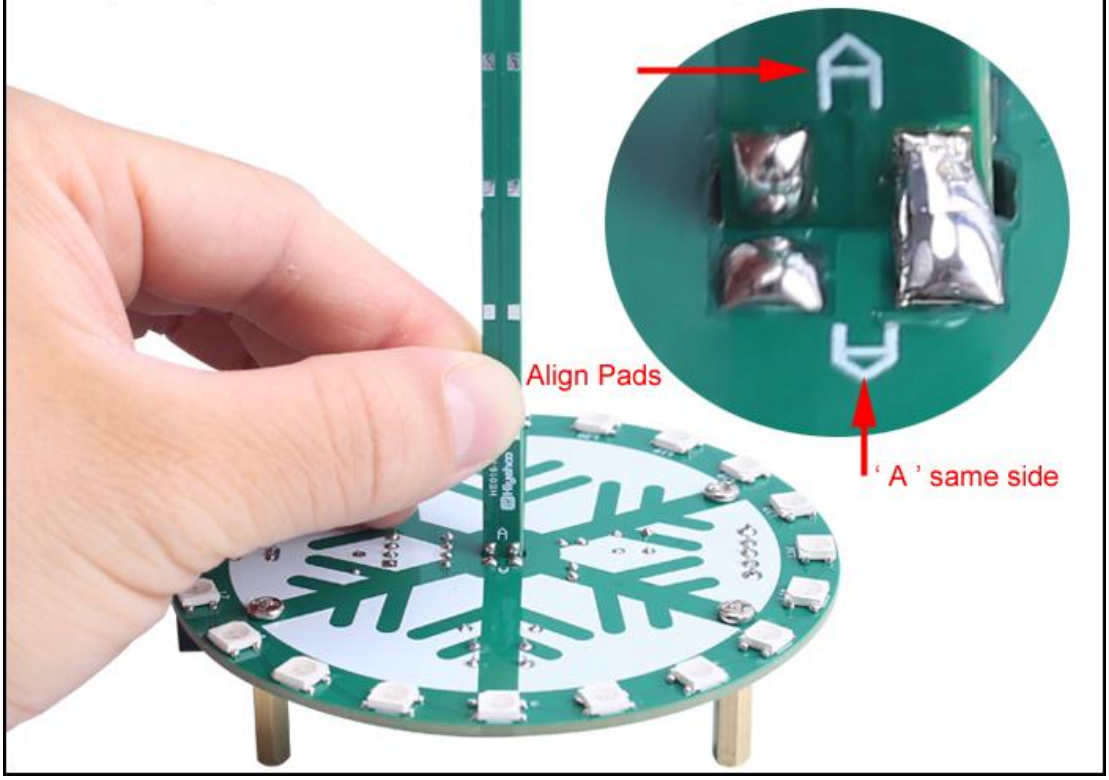
Step 25: Install 2pcs SMD 5050 WS2812B RGB LED at L72,L73 on PCB HE016-G. Gap label on LED and PCB silk screen are used to make sure installation direction.



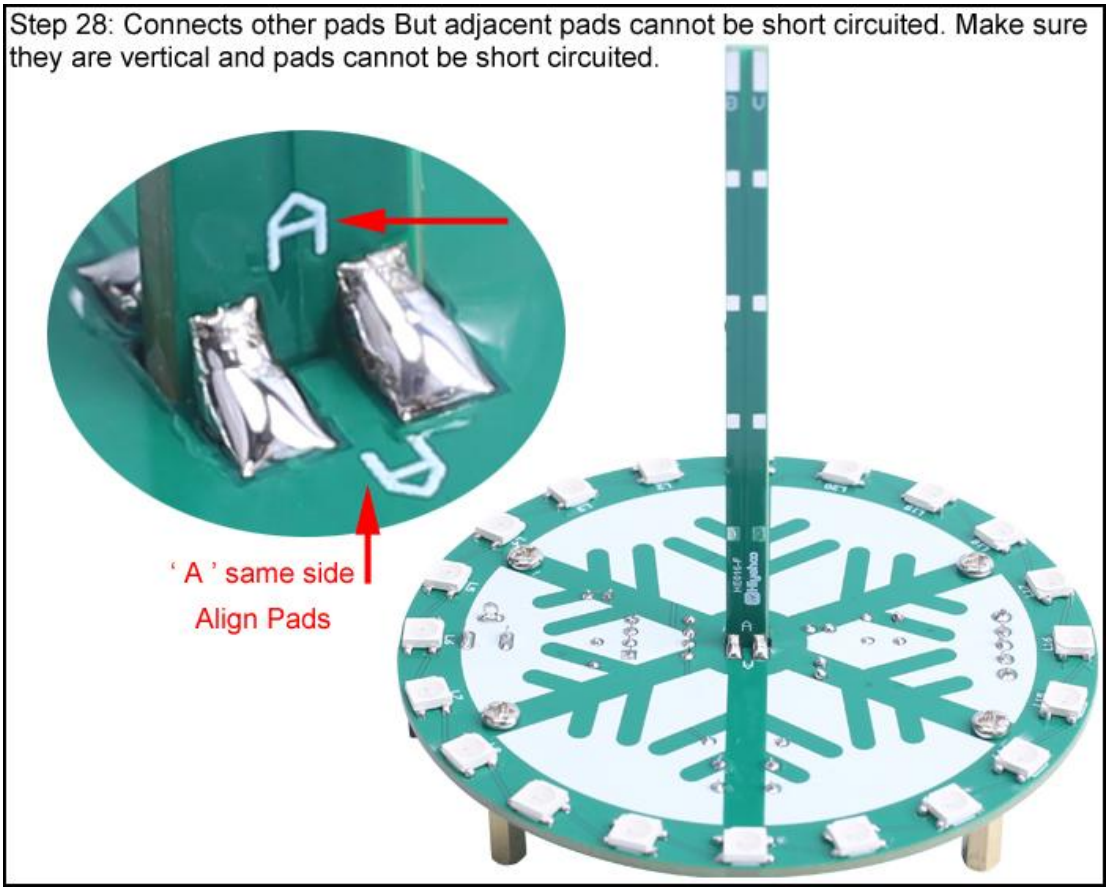
Step 26: Melt as much tin as possible on 5*4 pads on each PCB from 5pcs LED round PCB HE016-A to HE016-E. But adjacent pads cannot be short circuited.
Note: It can not add tin on pads for rectangular PCB HE016-F.
Otherwise, it cannot be installed.



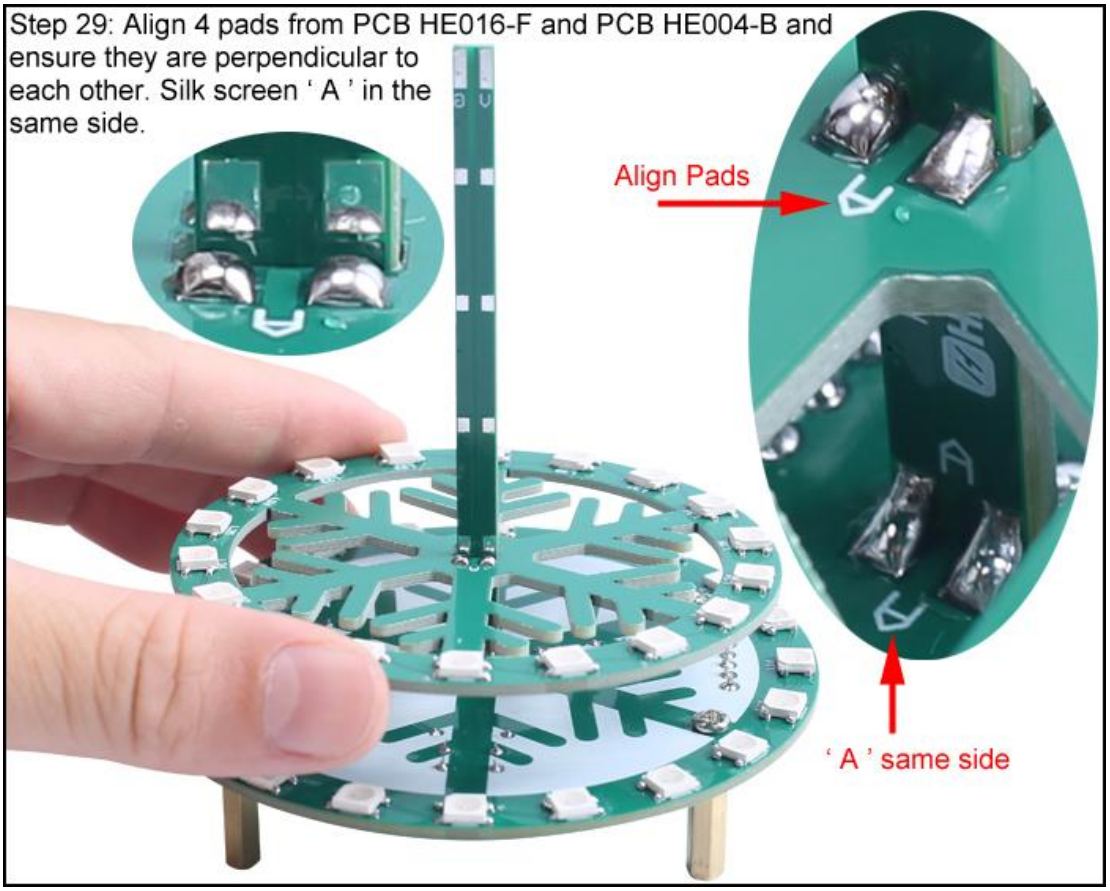
Step 27: Insert PCB HE016-F into HE016-A with the two silk screen ' A ' in the same side which are used to determine installation direction. Fix any one pad at first after align each pad and ensure that the two PCB are perpendicular to each other.



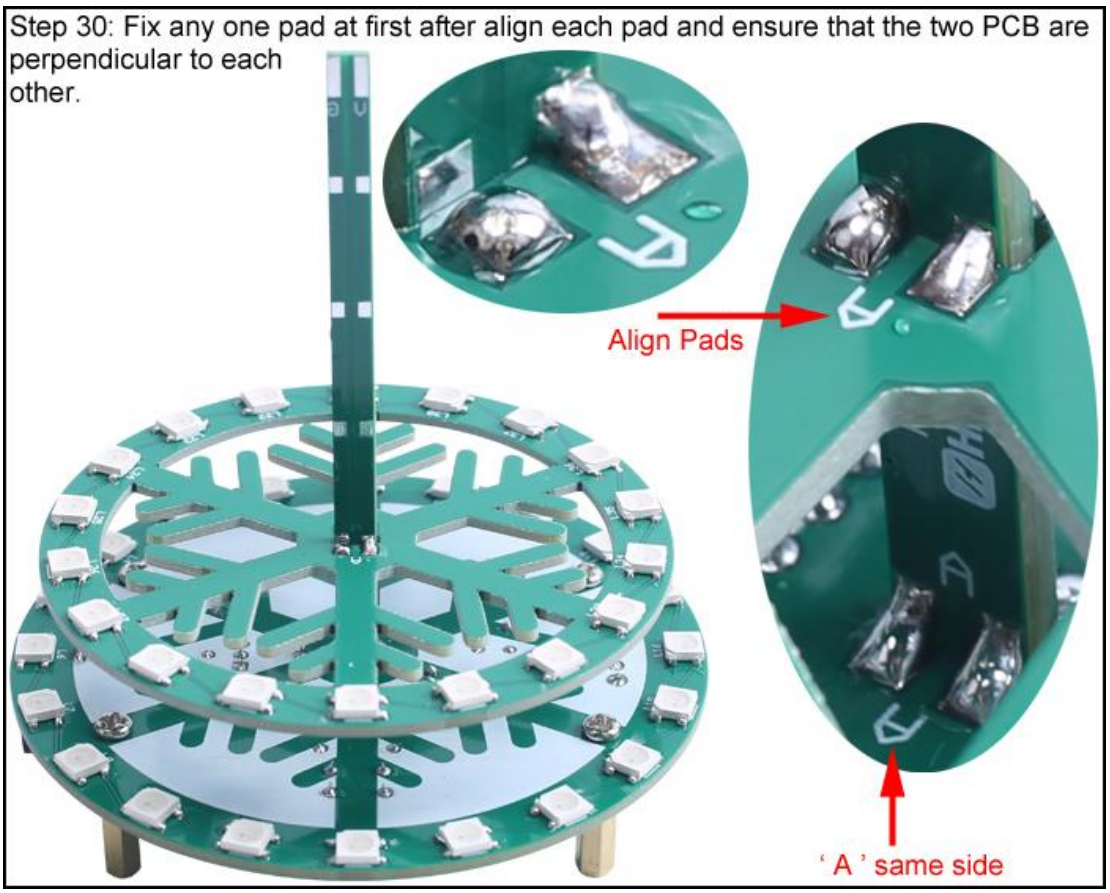
Step 28: Connects other pads But adjacent pads cannot be short circuited. Make sure they are vertical and pads cannot be short circuited.



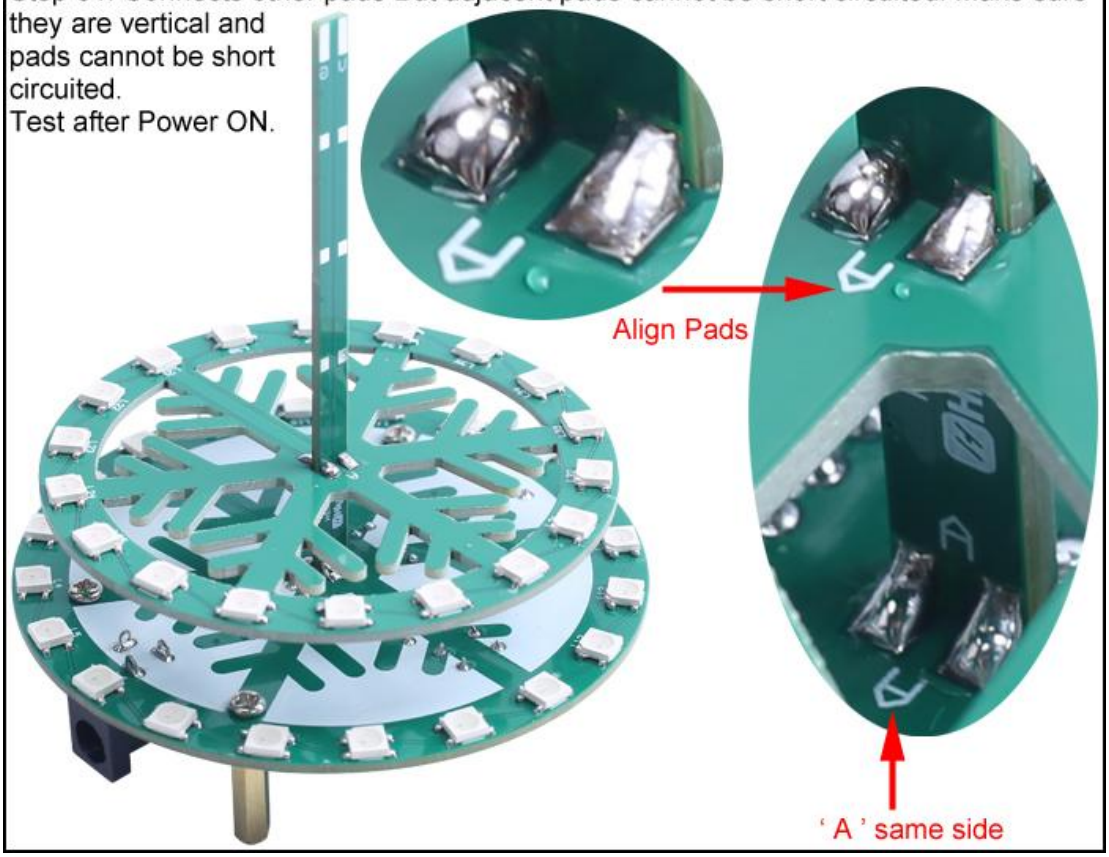
Step 29: Align 4 pads from PCB HE016-F and PCB HE004-B and ensure they are perpendicular to each other. Silk screen ' A ' in the same side.



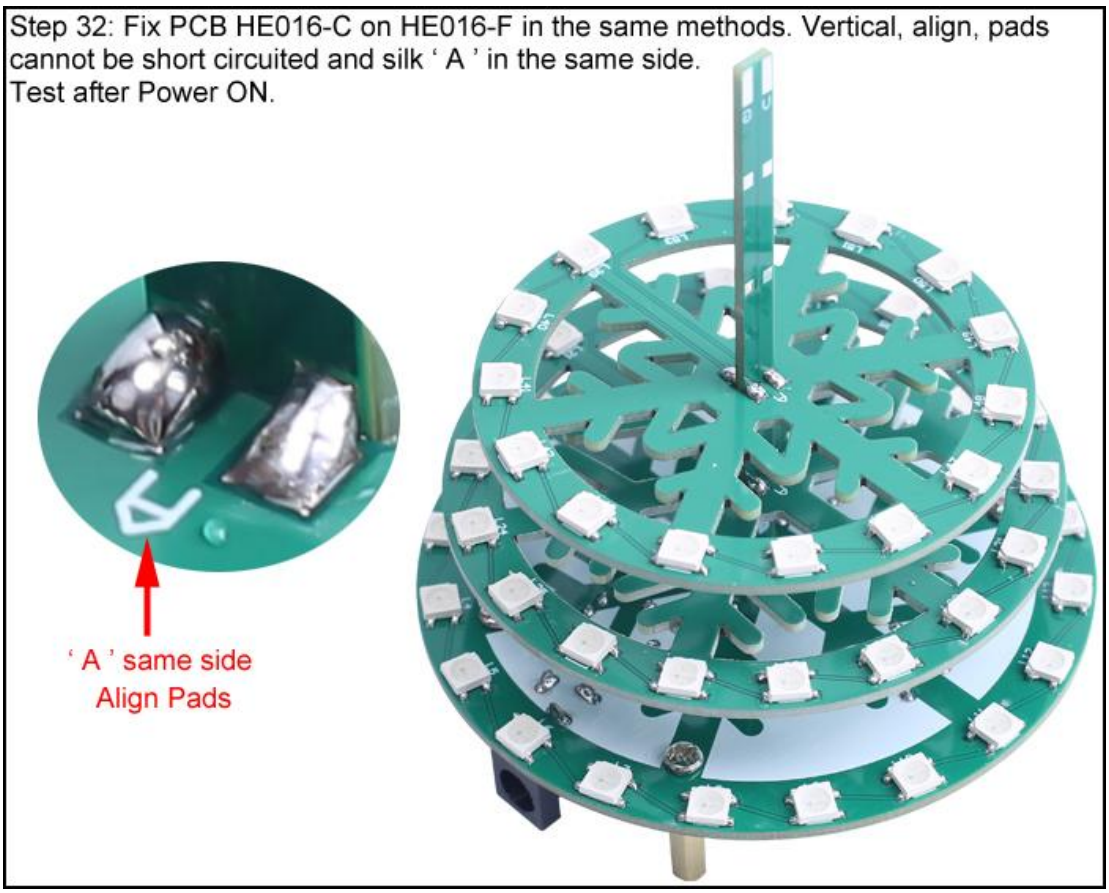
Step 30: Fix any one pad at first after align each pad and ensure that the two PCB are perpendicular to each other.



Step 31: Connects other pads But adjacent pads cannot be short circuited. Make sure they are vertical and pads cannot be short circuited.
Test after Power ON.



Step 32: Fix PCB HE016-C on HE016-F in the same methods. Vertical, align, pads cannot be short circuited and silk ' A ' in the same side.
Test after Power ON.



Step 33: Fix PCB HE016-D on HE016-F in the same methods. Vertical, align, pads cannot be short circuited and silk ' A ' in the same side. Test after Power ON.

' A ' same side
Align Pads

Step 34: Fix PCB HE016-E on HE016-F in the same methods. Vertical, align, pads cannot be short circuited and silk ' A ' in the same side. Test after Power ON.

' A ' same side
Align Pads

Step 35: Fix PCB HE016-G on HE016-F in the same methods. Vertical, align, pads cannot be short circuited and silk ' V ' in the same side. Test after Power ON.