

3D Flash RGB Christmas Tree DIY Kit

1.Introduction:

It is a 3D RGB Music Christmas tree kit consists of circuit board and allows 37pcs LED flash with music and showing a Christmas tree in RGB (the night environment has better viewing).

It can be used for Christmas, event celebrations and parties, etc. It can be used to create a festive atmosphere.

2.Feature:

- 1>.37pcs highlight LED
- 2>.Perfect simple circuit
- 3>.Simple music effect
- 4>.Enable/disable music playing
- 5>.RGB LED flashes automatically

3.Parameter:

- 1>.Product Name:3D Flash RGB Music Christmas Tree DIY Kit
- 2>.Work Voltage:DC 4.5V~5.0V
- 3>.Work Current:500mA
- 4>.Power Type:DC3.5mm Power Socket or AA*3 Battery Box
- 5>.Color:RGB LED
- 6>.Work Temperature:-40℃~85℃
- 7>.Work Humidity:5%~85%RH
- 8>.Size(Installed):153*153*315mm

4.Function:

- 1>.Complete the correct installation according to the installation steps.
- 2>.Input right work voltage from 3.5mm power socket or battery box.
- 3>.The Christmas tree starts blinking automatically.
- 4>.Start playing simple music automatically.

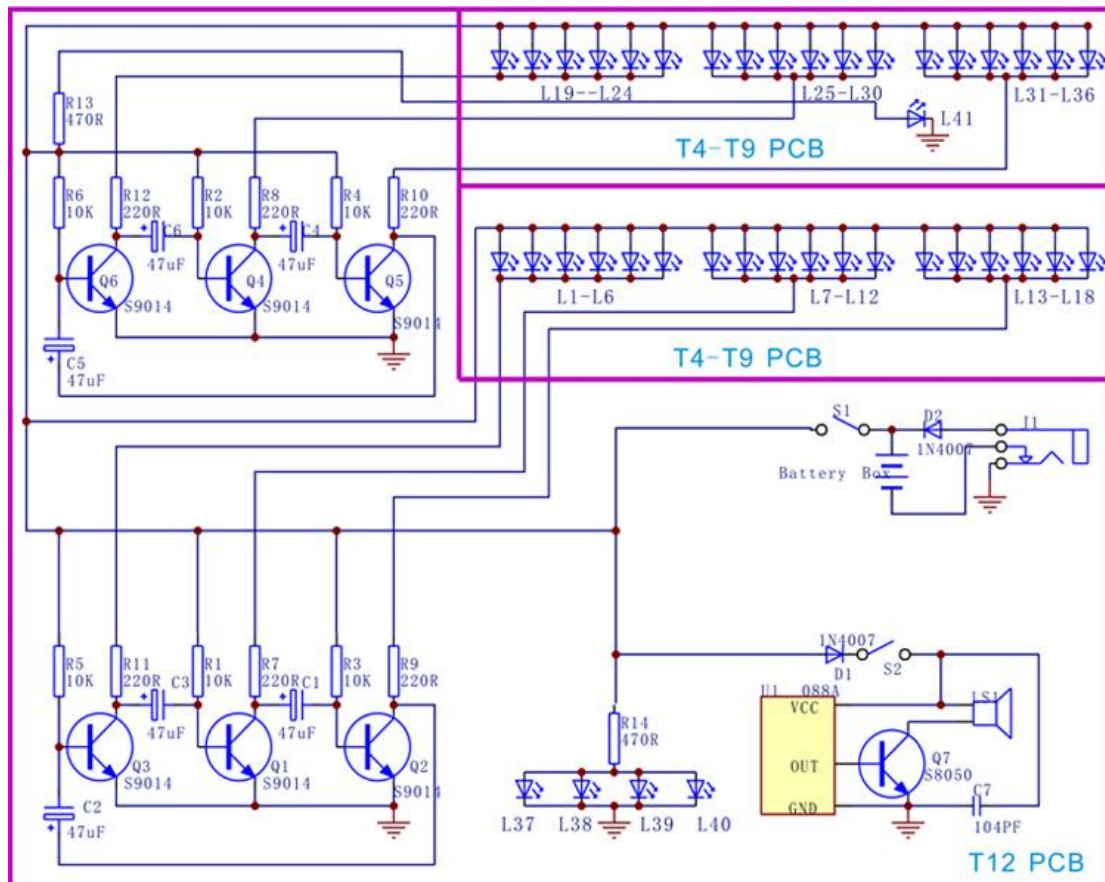
5.Component List:

NO.	Component Name	PCB Marker	Parameter	QTY
1	Metal Film Resistor	R7-R12	220ohm	6
2	Metal Film Resistor	R13,R14	470ohm	2
3	Metal Film Resistor	R1-R6	10Kohm	6
4	Ceramic Capacitor	C7	0.1uF 104	1
5	Electrolytic Capacitor	C1-C6	47uF 16V	6
6	1N4007 Diode	D1,D2	DO-41	2
7	S9014 Transistor	Q1-Q6	TO-92	6
8	S8050 Transistor	Q7	TO-92	1
9	RGB LED	L1-L41	5mm	41
10	Self-locking Switch	S1,S2	5.8*5.8mm	2
11	PX088A Music Chip	U1		1
12	Passive Buzzer	LS1	5V	1
13	Spacer		1.D3*8mm	4
14	DC Power Socket	J1	3.5mm	1
15	Battery Box		AA*3	1
16	USB Power Wire		80cm	1

17	Screw		M2*6mm	2
18	Nut		M2	2
19	CHR-T1 PCB Bracket	CHR-T1	40*8*1.6mm	4
20	CHR-T2 PCB Bracket	CHR-T2	52*8*1.6mm	4
21	CHR-T3 PCB Bracket	CHR-T3	60*8*1.6mm	4
22	CHR-T4 PCB Bracket	CHR-T4	79*8*1.6mm	2
23	CHR-T5 PCB Bracket	CHR-T5	79*8*1.6mm	2
24	CHR-T6 PCB Bracket	CHR-T6	98*8*1.6mm	2
25	CHR-T7 PCB Bracket	CHR-T7	98*8*1.6mm	2
26	CHR-T8 PCB Bracket	CHR-T8	111*8*1.6mm	2
27	CHR-T9 PCB Bracket	CHR-T9	111*8*1.6mm	2
28	CHR-T10A PCB Spindle	CHR-T10A	128*20*1.6mm	1
29	CHR-T10B PCB Spindle	CHR-T10B	164*20*1.6mm	1
30	CHR-T11A PCB Spindle	CHR-T11A	164*20*1.6mm	1
31	CHR-T11B PCB Spindle	CHR-T11B	128*20*1.6mm	1
32	CHR-T12 PCB Controller	CHR-T12	77*77*1.6mm	1

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

6.Schematic:



7. Installation Tips:

- 1>.User needs to prepare the welding tool at first.
- 2>.Please be patient until the installation is complete.
- 3>.The soldering iron can't touch the components for a long time(1.0 second), otherwise it will damage the components.
- 4>.Pay attention to the positive and negative of the components.
- 5>.Strictly prohibit short circuit.
- 6>.User must install the LED according to the specified rules.Otherwise some LED will not light.
- 7>.Install complex components preferentially.
- 8>.Make sure all components are in right direction and right place.
- 9>.Check that all of the LED can be illuminated.
- 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.

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

- 1>.Step 1: Use pliers to separate the PCB bracket and taking care not to damage the PCB.
- 2>.Step 2: Splicing PCB spindle CHR-10A and CHR-10B.The interface are marked with W that can connect two PCB.Note that it must be aligned, otherwise it will affect the subsequent installation.The fixed pads on the other side of the PCB does not need to be fixed now, and fix it after all components has installed, because it can be used to facilitate installation as following.
- 3>.Step 3: Splicing 2pcs CHR-T3 PCB Bracket to CHR-T10B PCB Spindle where the interface are marked with E. The fixed pads on the other side of the PCB does not need to be fixed now.
- 4>.Step 4: Splicing 2pcs CHR-T2 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with E. The same note about align and back fixed pads.
- 5>.Step 5: Splicing 2pcs CHR-T1 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with E. The same note about align and back fixed pads.
- 6>.Step 6: Splicing 1pcs CHR-T9 PCB Bracket to CHR-T10B PCB Spindle where the interface are marked with C and K. The same note about align and back fixed pads.
- 7>.Step 7: Splicing 1pcs CHR-T8 PCB Bracket to CHR-T10B PCB Spindle where the interface are marked with G and Q. The same note about align and back fixed pads.
- 8>.Step 8: Splicing 1pcs CHR-T7 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with B and K. The same note about align and back fixed pads.
- 9>.Step 9: Splicing 1pcs CHR-T6 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with F and Q. The same note about align and back fixed pads.
- 10>.Step 10: Splicing 1pcs CHR-T5 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with A and K. The same note about align and back fixed pads.
- 11>.Step 11: Splicing 1pcs CHR-T4 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with D and Q. The same note about align and back fixed pads.
- 12>.Step 12: 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:
 - 12.1>.According to the length of the LED lead to distinguish. The longer pin is positive(anode) lead. The shorter pin is negative(cathode) lead.
 - 12.2>.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.
 - 12.3>.Identify by edge of plastic case.The negative(cathode) lead of the LED should be the pin nearest the flat on the plastic case.
 - 12.4>.Test by 3V battery or multimeter.The pin is positive(anode) lead which has connect to the positive of 3V if LED can light up after connect 3V power supply.(LED

should not be powered directly from the 3V for a short time:less then 0.5second)
12.5>.It is positive(anode) where the white mark “+” pointing to on PCB.

13>.Step 13: Reserve the LED pins about 3mm and then bend LED pins.Then use soldering iron and solder wire to fix the LED.

14>.Step 14: Install 18pcs 5mm RGB LED at L1~L19.Bend the LED at the same time.

15>.Step 15: The fixed pads on the other side of the CHR-T1 ~ CHR-T10 where has been left in Step2~Step11.

16>.Step 16: Splicing PCB spindle CHR-11A and CHR-11B.The interface are marked with H that can connect two PCB.Note that it must be aligned, otherwise it will affect the subsequent installation.The fixed pads on the other side of the PCB does not need to be fixed now, and fix it after all components has installed, because it can be used to facilitate installation as following.

17>.Step 17: Splicing CHR-T1~CHR-T9 PCB Brackets CHR-T11 PCB Spindle as the same methods.

18>.Step 18: Install 19pcs 5mm RGB LED at L20~L37.Bend the LED at the same time.

19>.Step 19: The fixed pads on the other side of the CHR-T1 ~ CHR-T11 where has been left in Step17.

20>.Step 20: Splicing CHR-T10 and CHR-T11 through 16 pairs of pads and must be aligned.The direction of assembly must be in accordance with the arrow on PCB.

21>.Step 21: Install 6pcs 220ohm Metal Film Resistor at R7-R12 on CHR-T12 PCB Controller.

22>.Step 22: Install 2pcs 470ohm Metal Film Resistor at R13,R14.

23>.Step 23: Install 6pcs 10Kohm Metal Film Resistor at R1-R6.

24>.Step 24: Install 2pcs DO-41 1N4007 Diode at D1,D2. Pay attention to the white mark and PCB mark.

25>.Step 25: Install 1pcs 0.1uF 104 Ceramic Capacitor at C7. Note:Don't cut the extra pins!!!

26>.Step 26: Install 6pcs 47uF 16V Electrolytic Capacitor at C1~C6.Pay attention to distinguish between positive and negative.The Longer pin is positive pole.

27>.Step 27: Install 6pcs TO-92 S9014 Transistor at Q1~Q6.Pay attention to the installation direction. The arc on the PCB corresponds to the arc of the components.

28>.Step 28: Install 1pcs DC3.5*1.3mm Power Supply Socket at J1. It needs to be fixed with metal pin from resistor.

29>.Step 29: Install 2pcs 5.8*5.8mm Self-locking Switch at S1,S2.There is a concave on switch and there is a white mark on PCB where the switch can place on.These two marks are corresponding to each other and are used to specify the installation direction of the switch.

30>.Step 30: Install 1pcs Passive Buzzer at LS1.

31>.Step 31: Install S8050 Transistor at Q7 and PX088A Music Chip at U1. Note The pins of S8050 need to pass through the PCB and PX088A.

32>.Step 32: Fixed pins and pads from S8050,PX088A and C7 Ceramic Capacitor.

33>.Step 33: Install 4pcs spacer and 4pcs 5mm RGB LED on another side.Don't cut pins!!!

34>.Step 34: Bend LED pins and connect to the next pads as showing.

35>.Step 35: Install 1pcs AA*3 Battery Box at BAT. Note: Red wire connect to + pad and Black wire connect to - pad. Pay attention to choosing a suitable length of wire.Fix Battery Box by 2pcs M2*6 Screw and 2pcs M2 Nuts.

36>.Step 36: Fix CHR-T10 and CHR-T11 on CHR-T12 through 8 pairs of pads and must be aligned.The direction of assembly must be in accordance with the arrow on PCB.

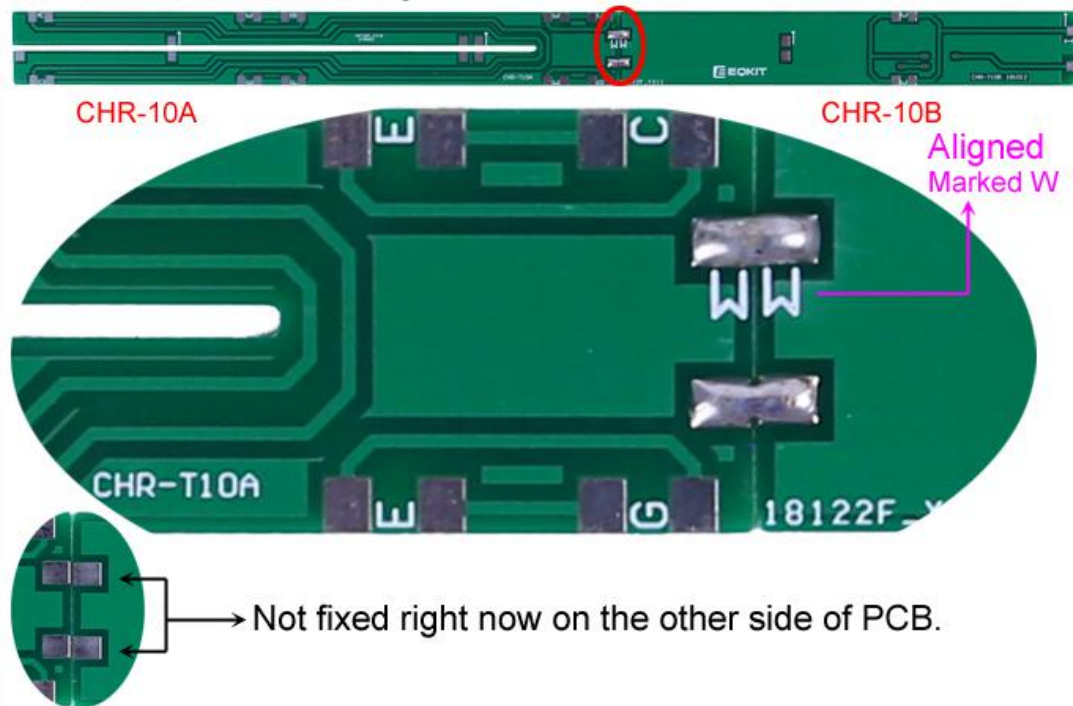
37>.Step 37: Connect to power supply and enjoy the effect.

8. Install shown steps:

Step 1: Use pliers to separate the PCB bracket and taking care not to damage PCB.



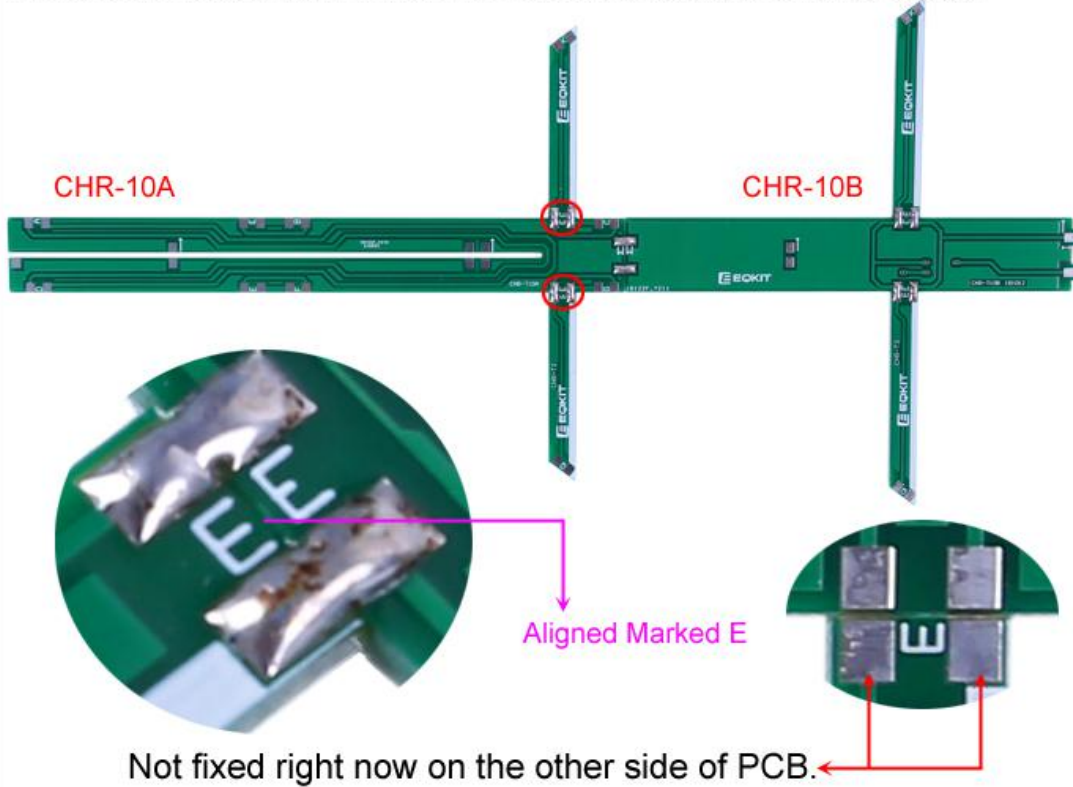
Step 2: Splicing PCB spindle CHR-10A and CHR-10B. The interface are marked with **W** that can connect two PCB. Note that it must be aligned, otherwise it will affect the subsequent installation. The fixed pads on the other side of the PCB does not need to be fixed now, and fix it after all components has installed, because it can be used to facilitate installation as following.



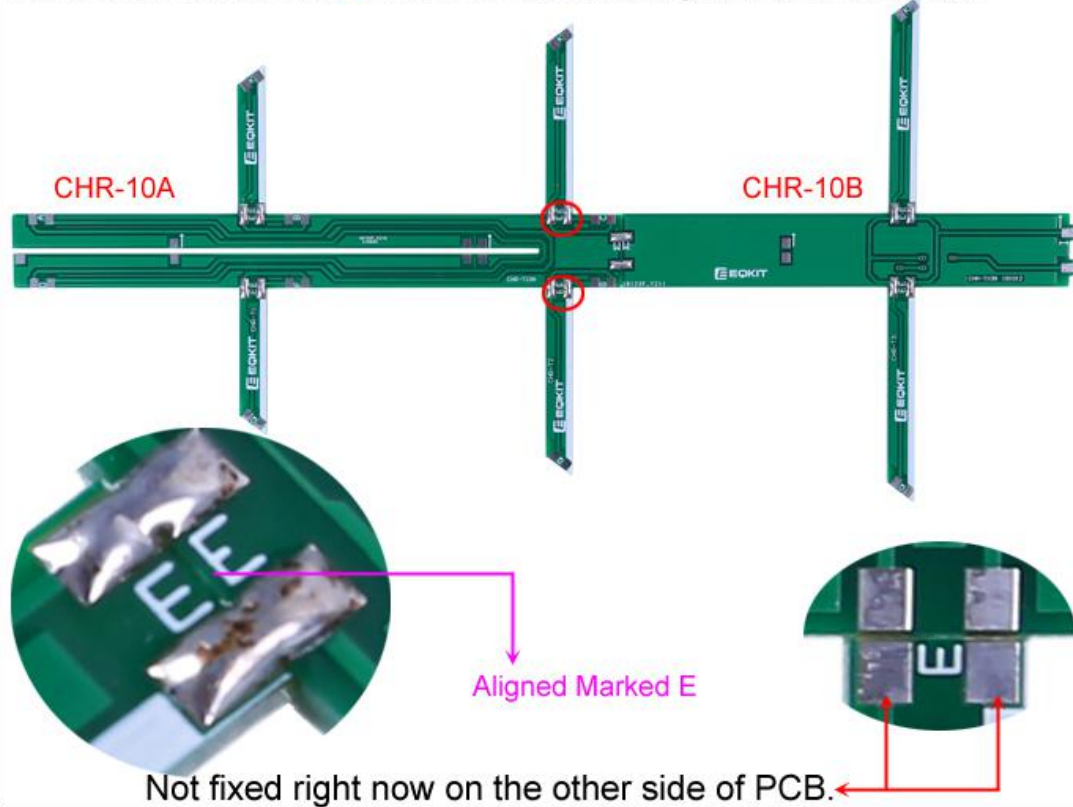
Step 3: Splicing 2pcs CHR-T3 PCB Bracket to CHR-T10B PCB Spindle where the interface are marked with **E**. The fixed pads on the other side of the PCB does not need to be fixed now.



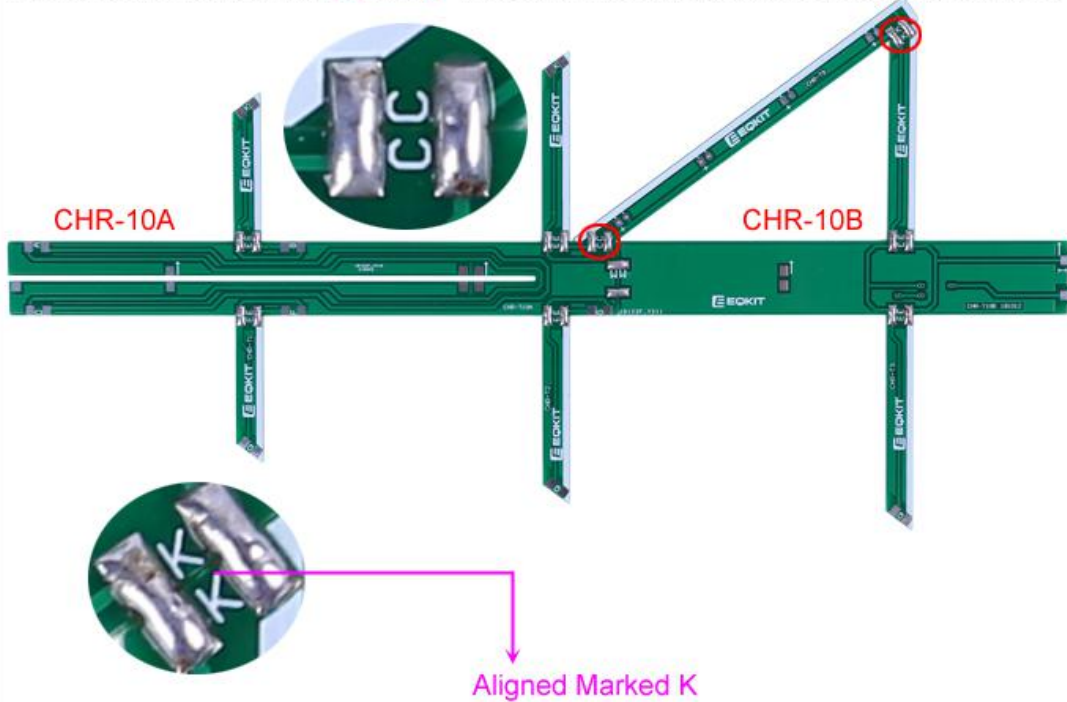
Step 4: Splicing 2pcs CHR-T2 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with E. The same note about align and back fixed pads.



Step 5: Splicing 2pcs CHR-T1 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with E. The same note about align and back fixed pads.

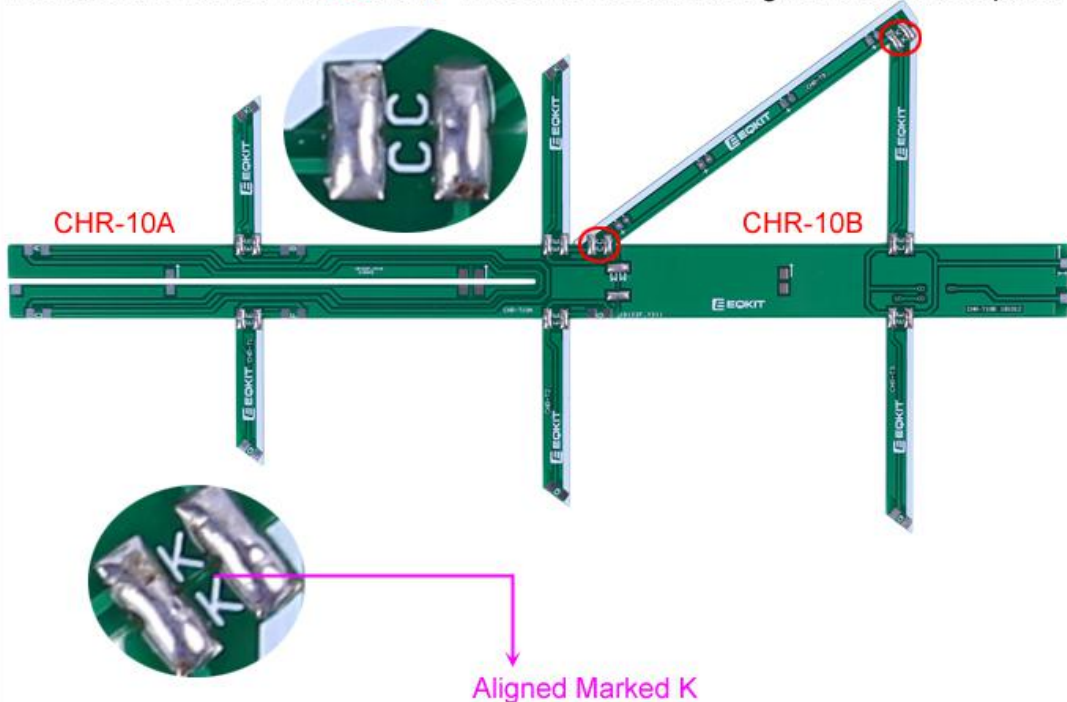


Step 6: Splicing 1pcs CHR-T9 PCB Bracket to CHR-T10B PCB Spindle where the interface are marked with **C** and **K**. The same note about align and back fixed pads.



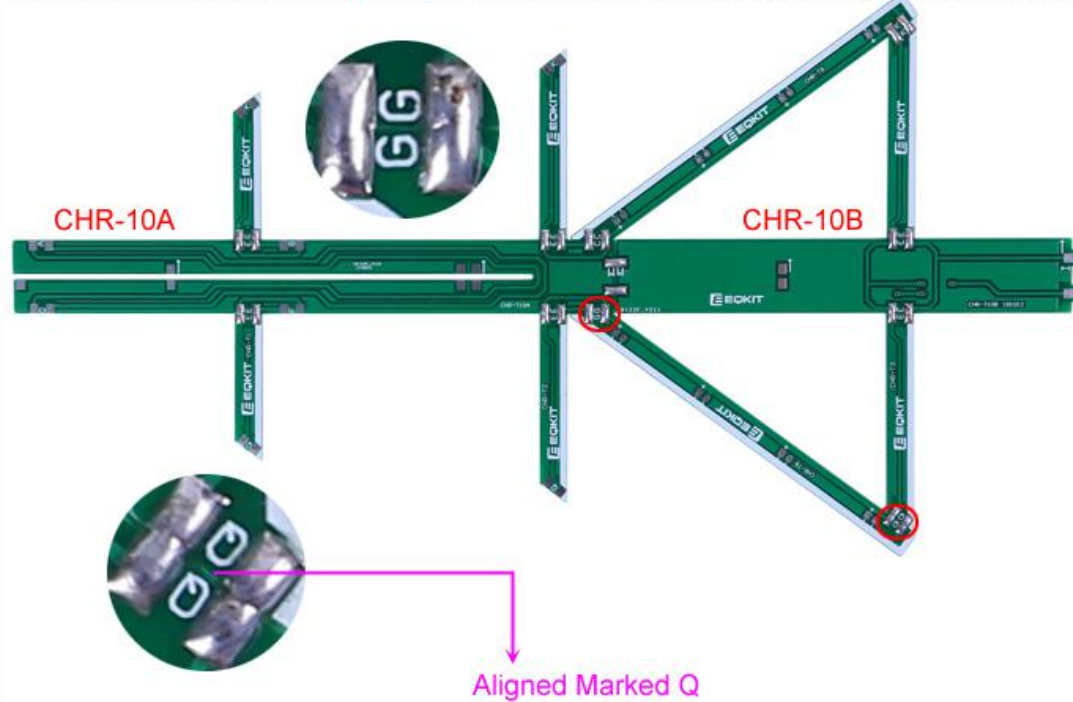
Not fixed right now on the other side of PCB.

Step 6: Splicing 1pcs CHR-T9 PCB Bracket to CHR-T10B PCB Spindle where the interface are marked with **C** and **K**. The same note about align and back fixed pads.



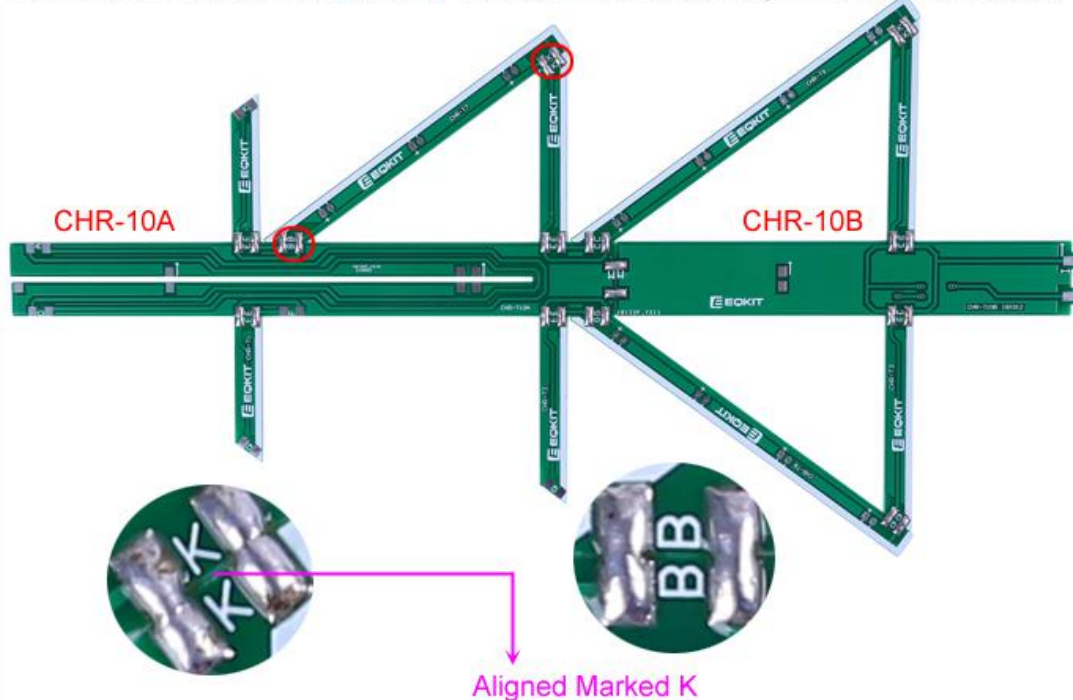
Not fixed right now on the other side of PCB.

Step 7: Splicing 1pcs CHR-T8 PCB Bracket to CHR-T10B PCB Spindle where the interface are marked with **G** and **Q**. The same note about align and back fixed pads.



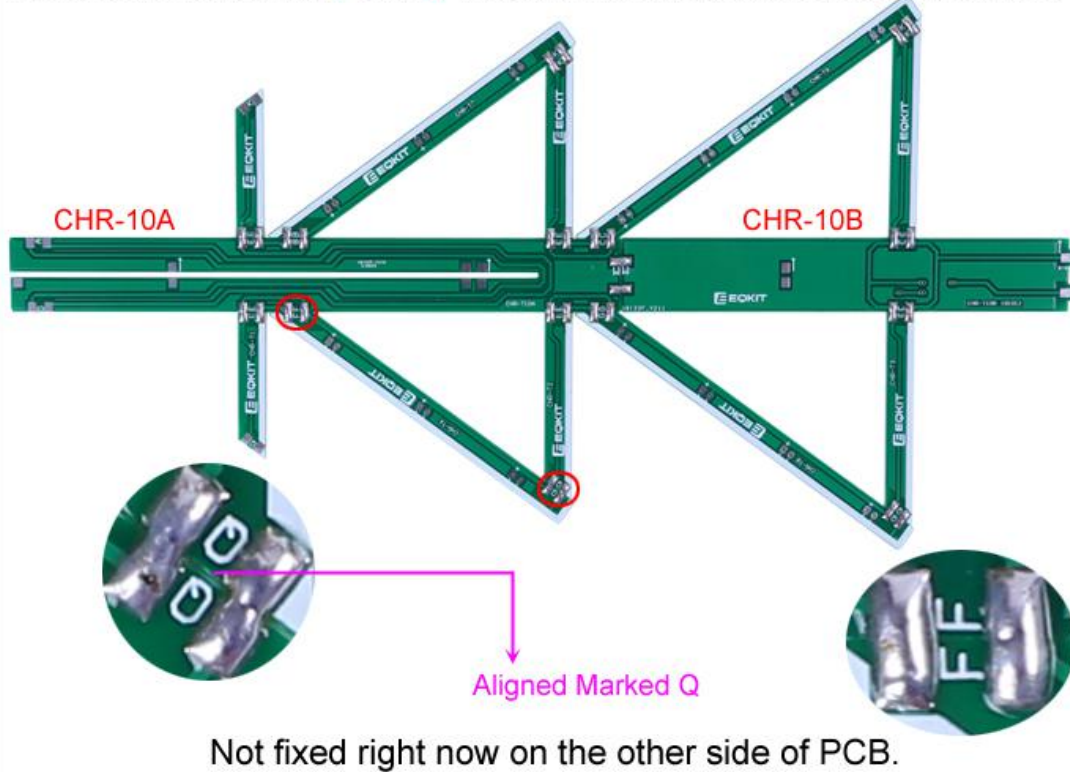
Not fixed right now on the other side of PCB.

Step 8: Splicing 1pcs CHR-T7 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with **B** and **K**. The same note about align and back fixed pads.

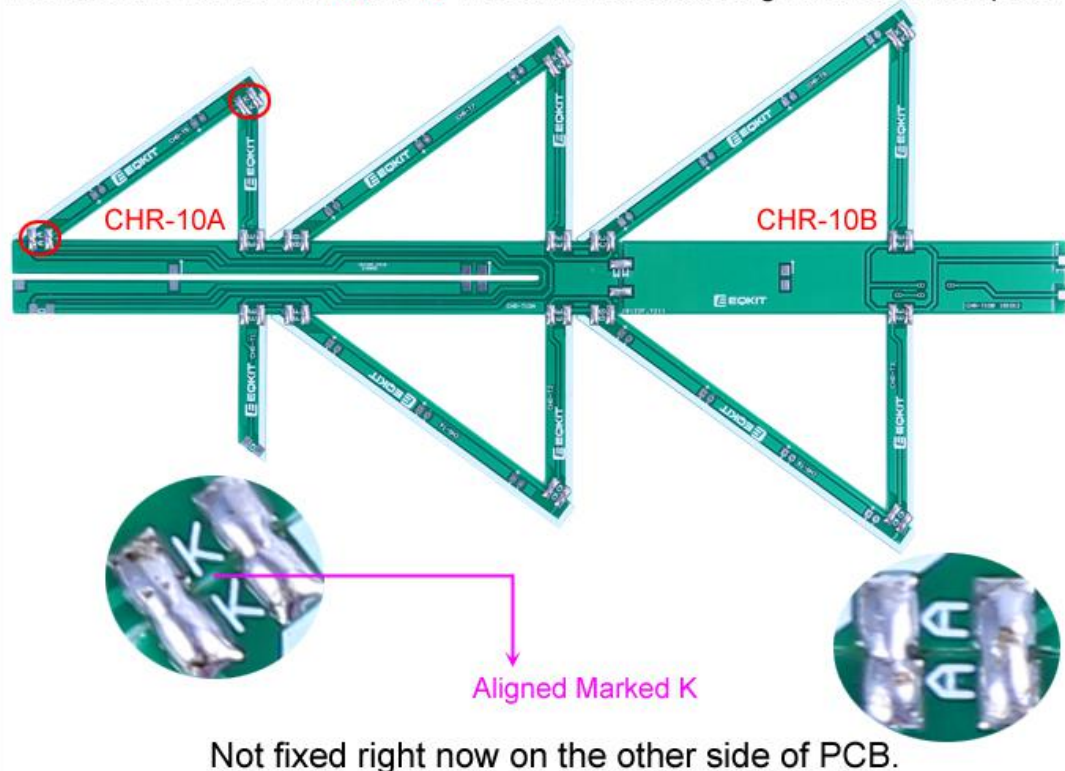


Not fixed right now on the other side of PCB.

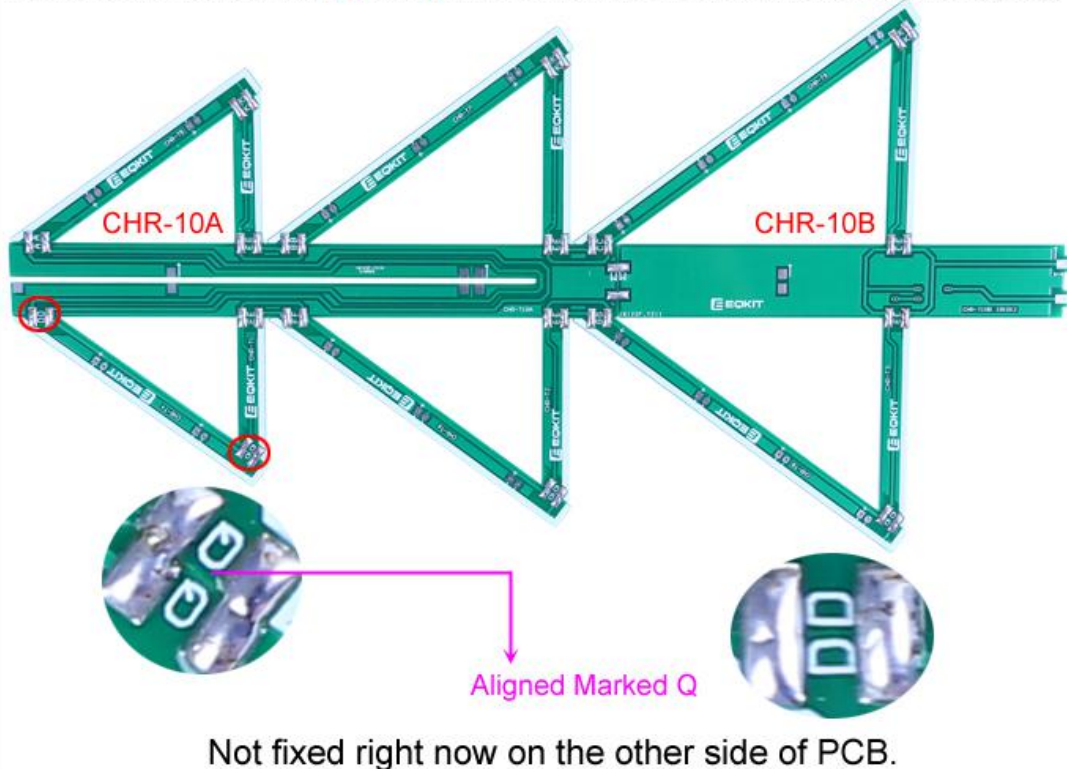
Step 9: Splicing 1pcs CHR-T6 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with **F** and **Q**. The same note about align and back fixed pads.



Step 10: Splicing 1pcs CHR-T5 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with **A** and **K**. The same note about align and back fixed pads.



Step 11: Splicing 1pcs CHR-T4 PCB Bracket to CHR-T10A PCB Spindle where the interface are marked with **D** and **Q**. The same note about align and back fixed pads.



Step 12: 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:

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

12.2>.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.

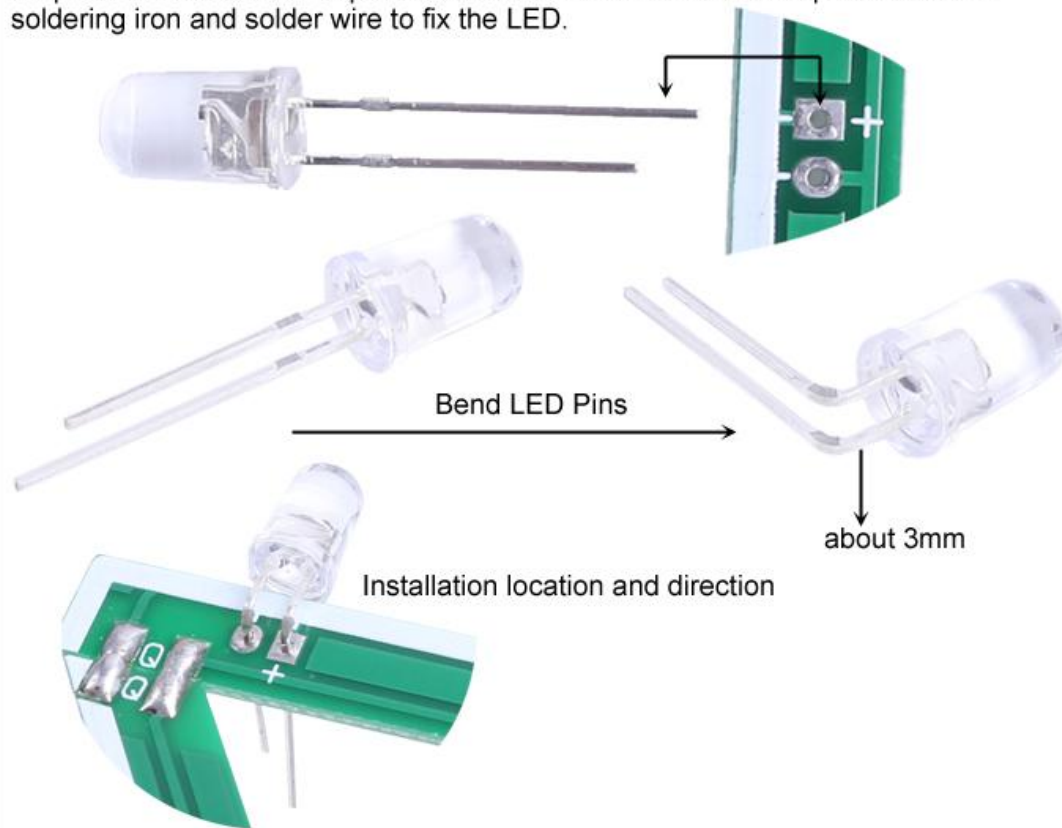
12.3>.Identify by edge of plastic case. The negative(cathode) lead of the LED should be the pin nearest the flat on the plastic case.

12.4>.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)

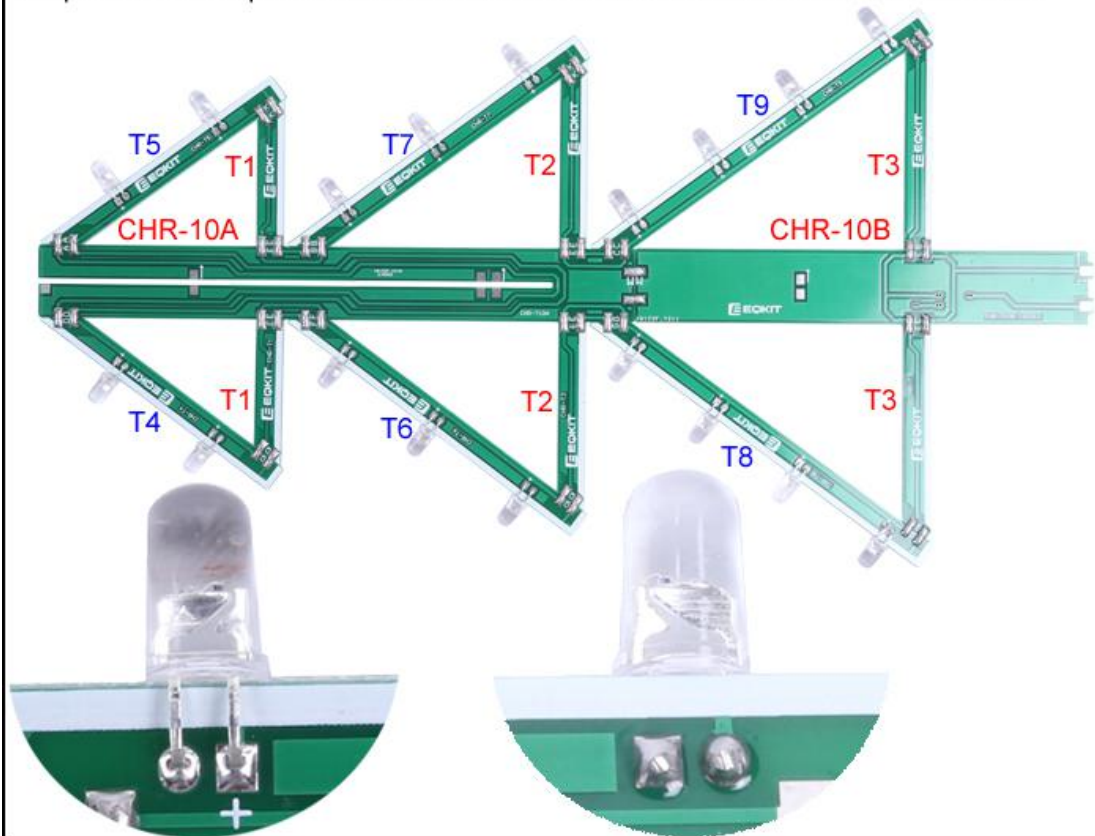
12.5>.Note:If the flat on package disagrees with other indicators(short lead,large cathode lead end), then other indicators take priority. I.e. if the flat disagrees with the lead length,use the lead length as the cathode indicator.



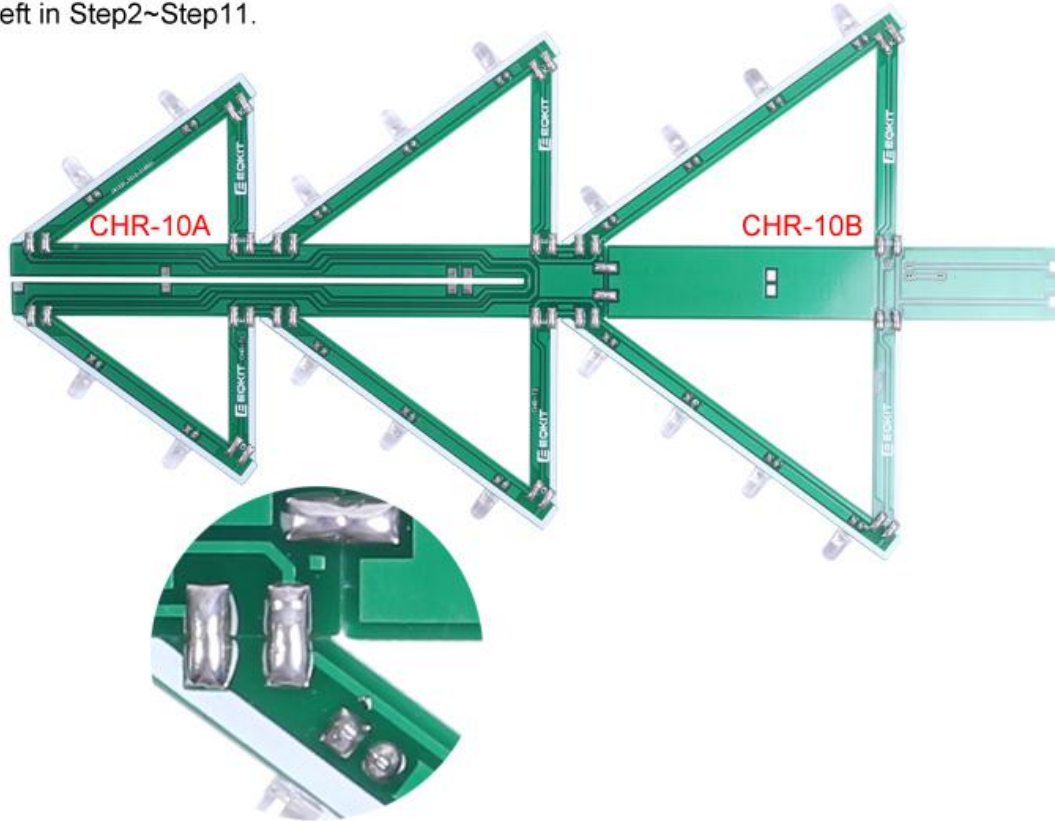
Step 13: Reserve the LED pins about 3mm and then bend LED pins. Then use soldering iron and solder wire to fix the LED.



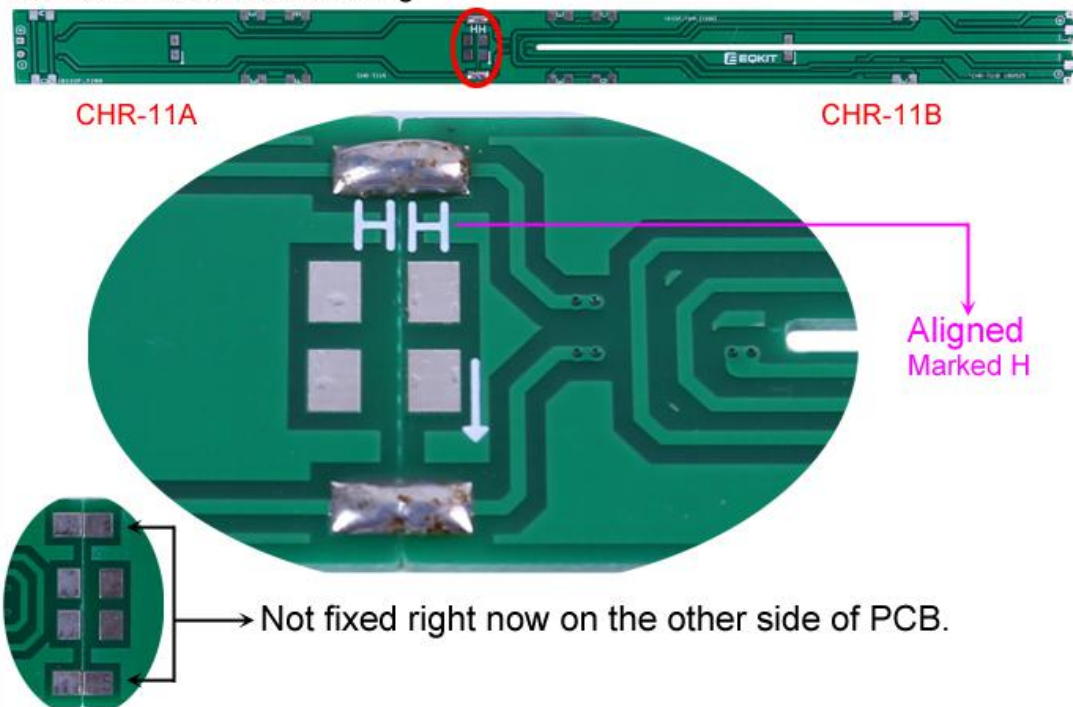
Step 14: Install 18pcs 5mm RGB LED at L1~L19. Bend the LED at the same time.



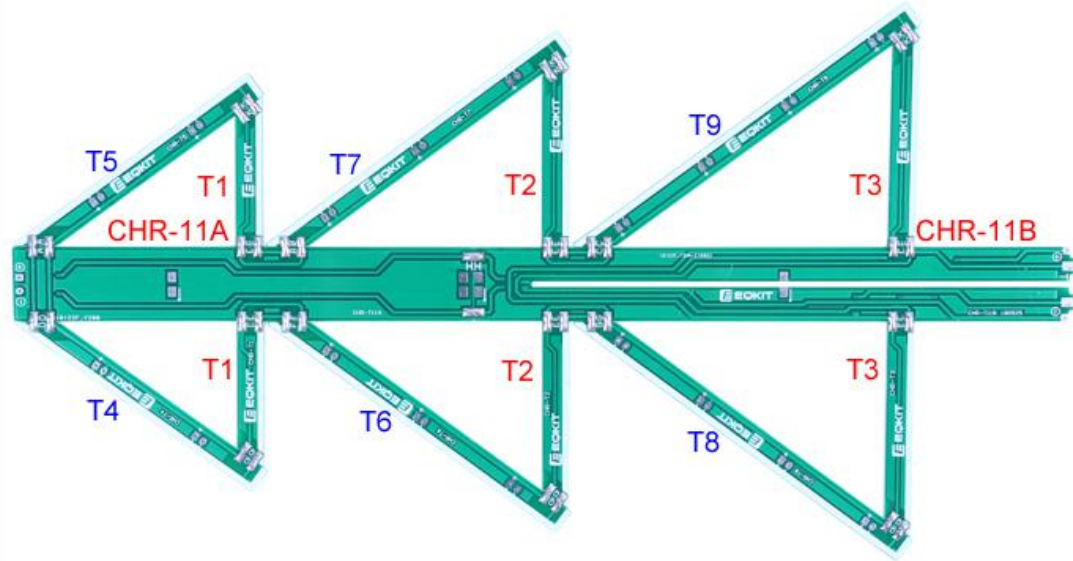
Step 15: The fixed pads on the other side of the CHR-T1 ~ CHR-T10 where has been left in Step2~Step11.



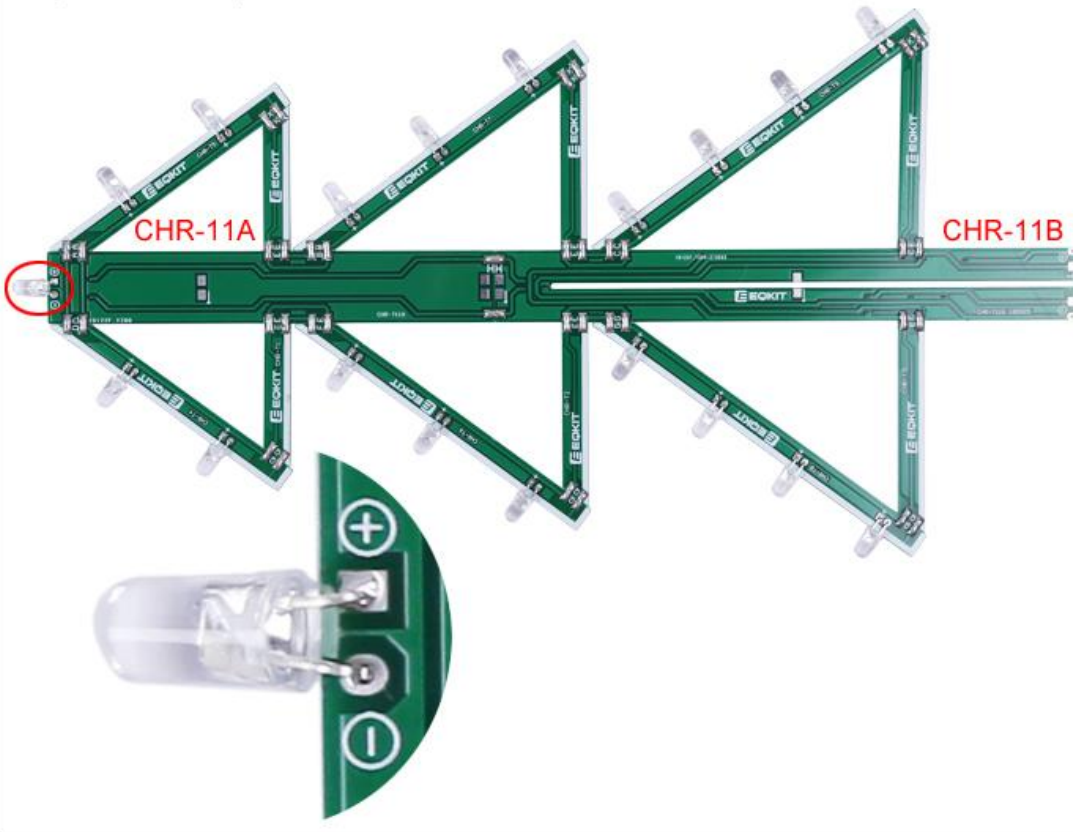
Step 16: Splicing PCB spindle CHR-11A and CHR-11B. The interface are marked with **H** that can connect two PCB. Note that it must be aligned, otherwise it will affect the subsequent installation. The fixed pads on the other side of the PCB does not need to be fixed now, and fix it after all components has installed, because it can be used to facilitate installation as following.



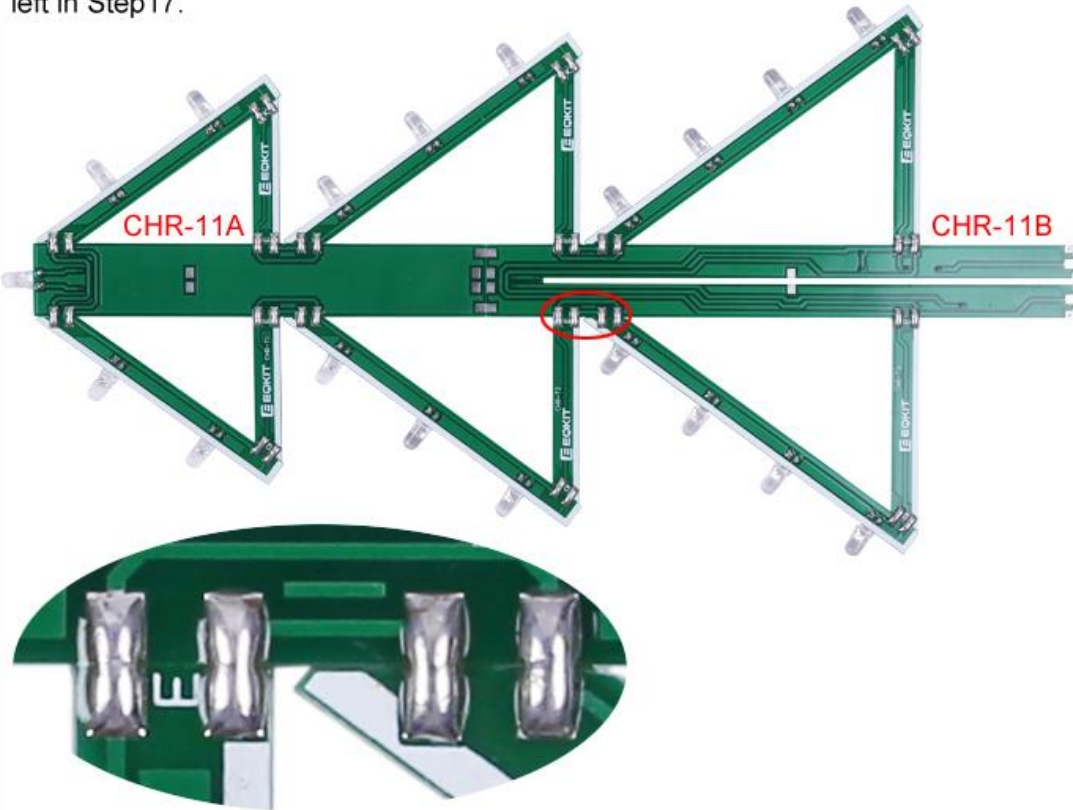
Step 17: Splicing CHR-T1~CHR-T9 PCB Brackets CHR-T11 PCB Spindle as the same methods.



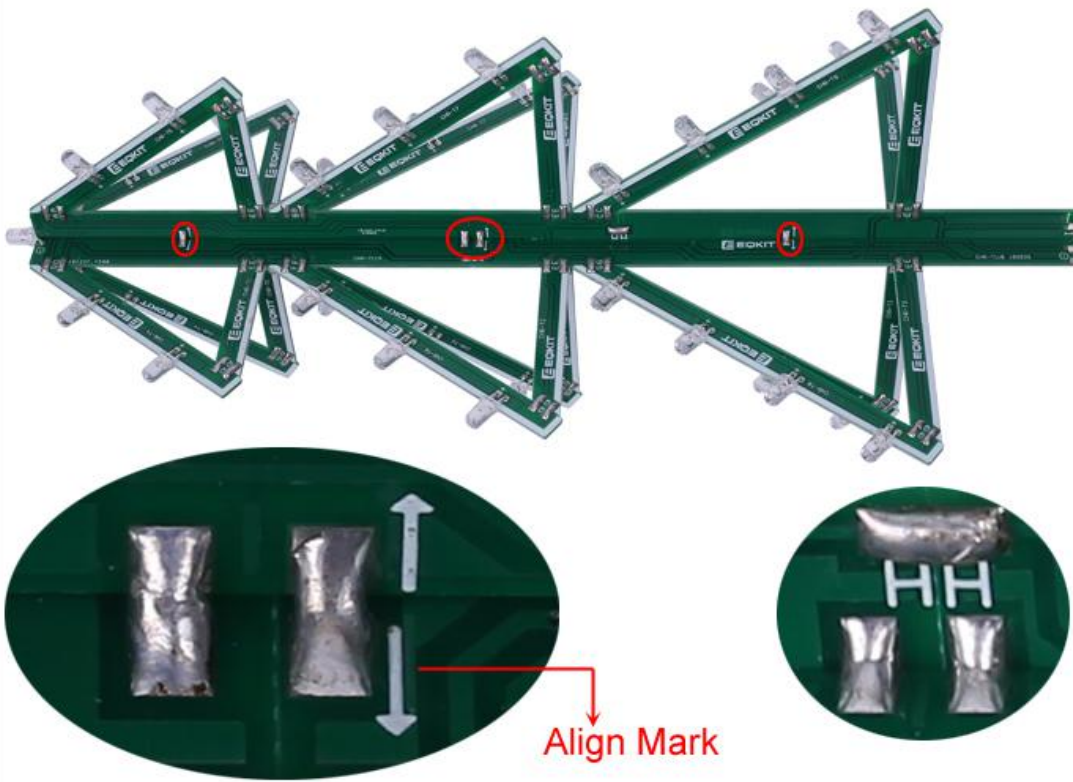
Step 18: Install 19pcs 5mm RGB LED at L20~L37. Bend the LED at the same time.



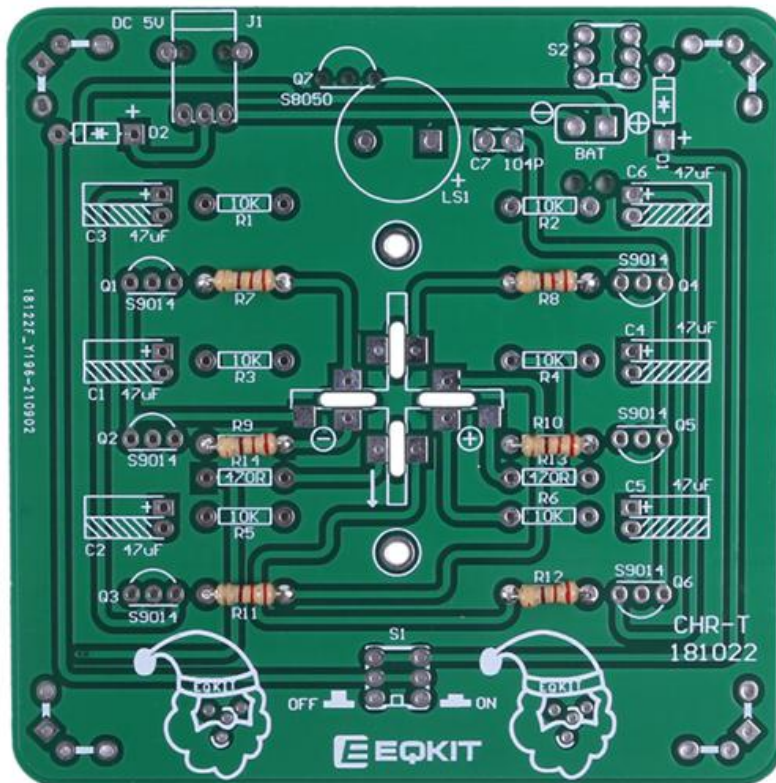
Step 19: The fixed pads on the other side of the CHR-T1 ~ CHR-T11 where has been left in Step17.



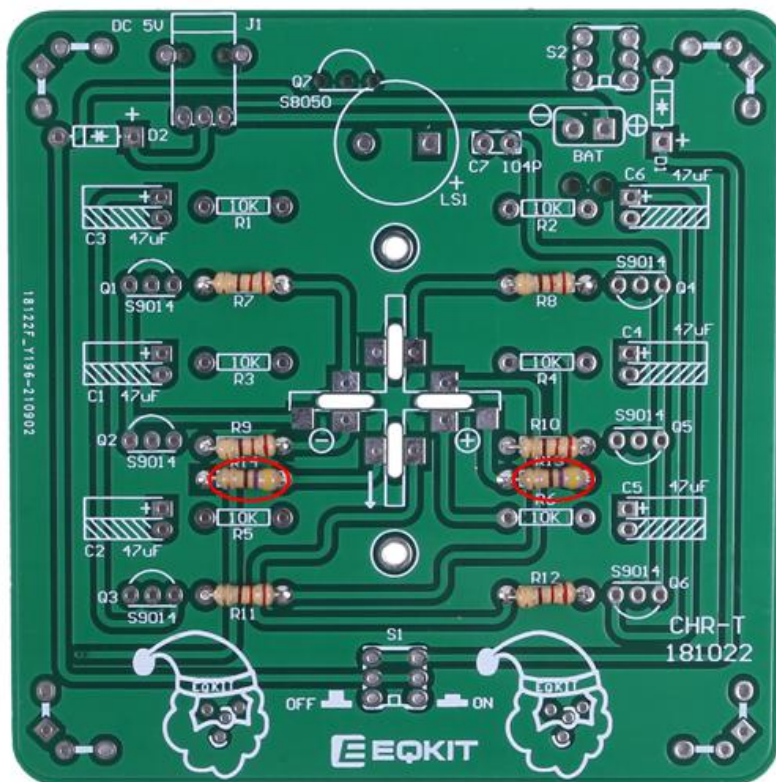
Step 20: Splicing CHR-T10 and CHR-T11 through 16 pairs of pads and must be aligned. The direction of assembly must be in accordance with the arrow on PCB.



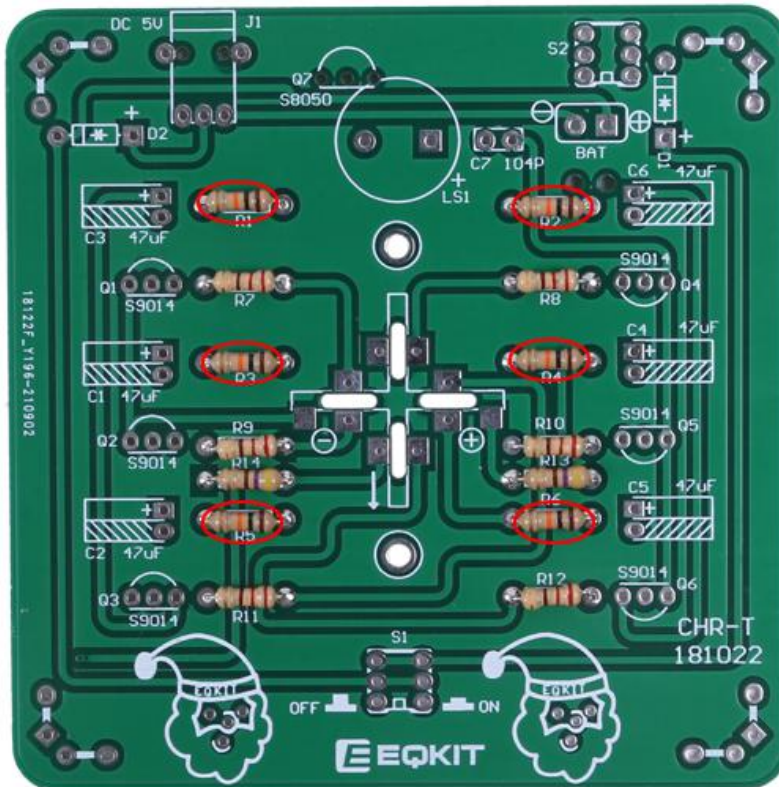
Step 21: Install 6pcs 220ohm Metal Film Resistor at R7-R12 on CHR-T12 PCB Controller.



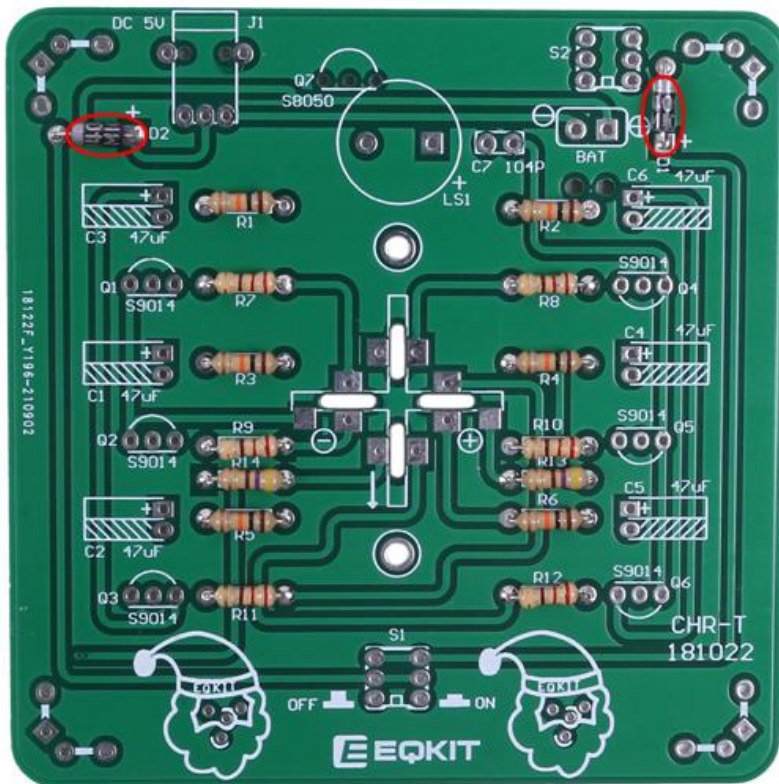
Step 22: Install 2pcs 470ohm Metal Film Resistor at R13,R14.



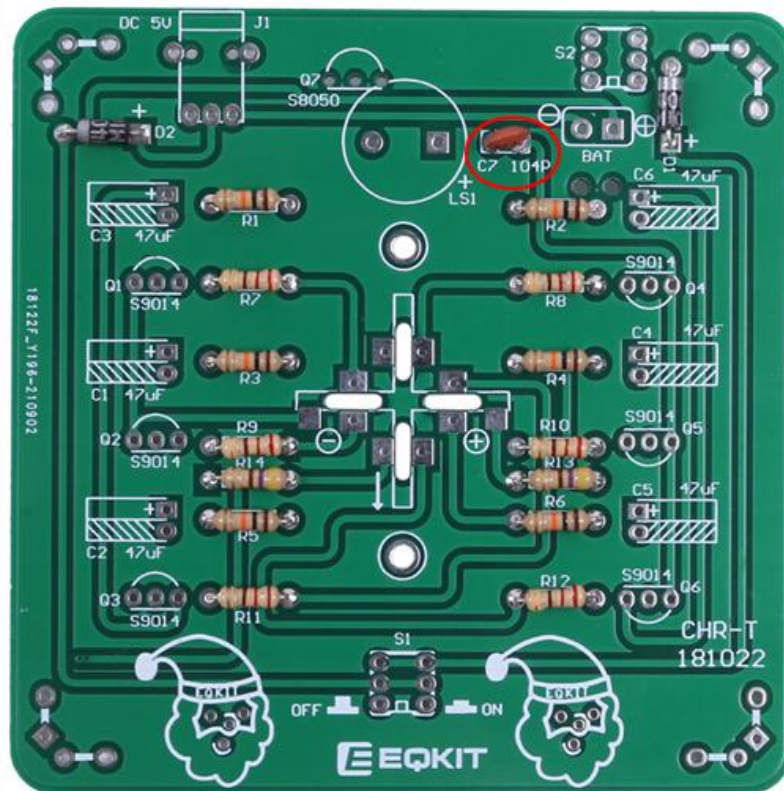
Step 23: Install 6pcs 10Kohm Metal Film Resistor at R1-R6.



Step 24: Install 2pcs DO-41 1N4007 Diode at D1,D2. Pay attention to the white mark and PCB mark.

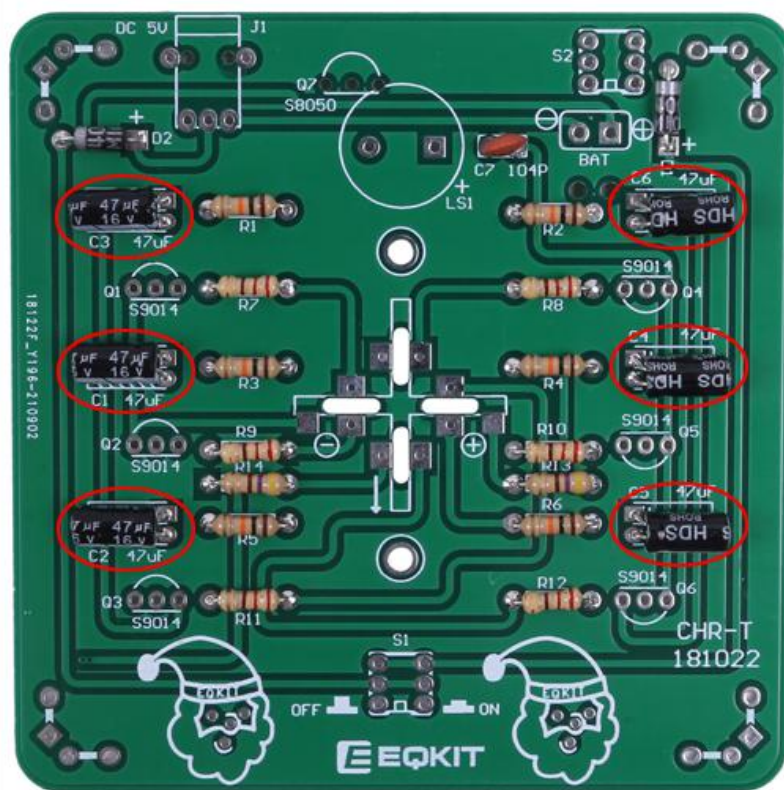


Step 25: Install 1pcs 0.1uF 104 Ceramic Capacitor at C7. Note: Don't cut the extra pins on PCB other side!!!



Don't Cut Pins!!!

Step 26: Install 6pcs 47uF 16V Electrolytic Capacitor at C1~C6. Pay attention to distinguish between positive and negative. The Longer pin is positive pole.

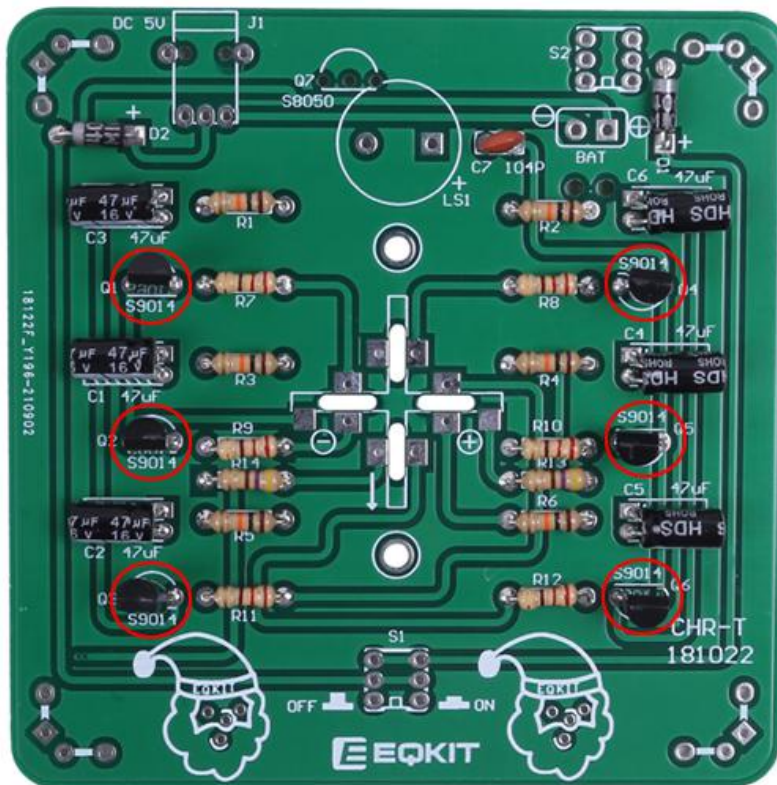


Square Pad
Positive

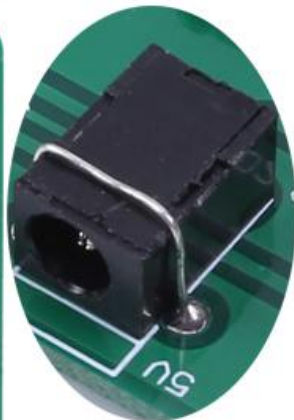
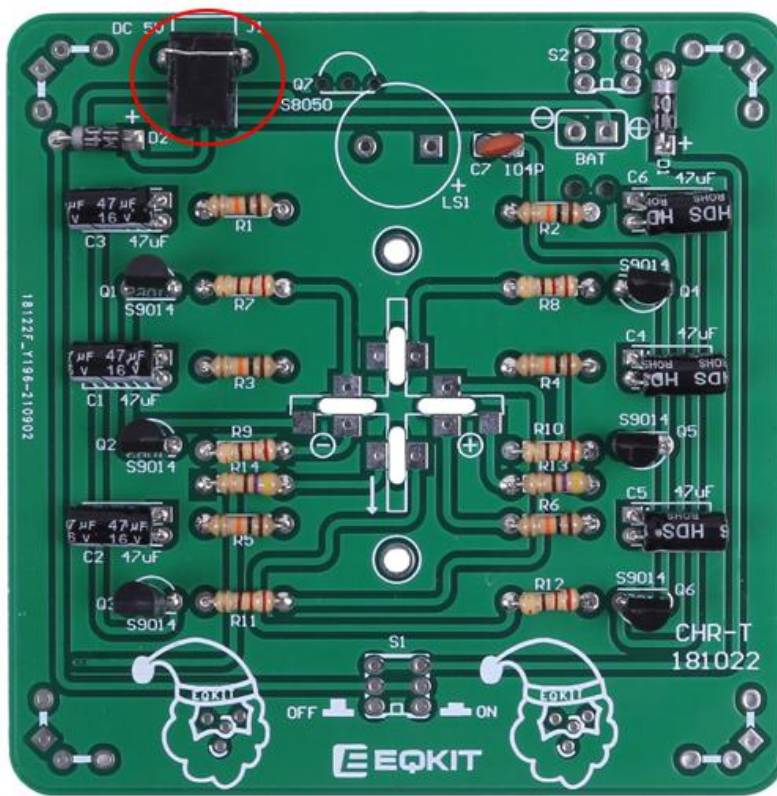


Round Pad
White Mark
Negative

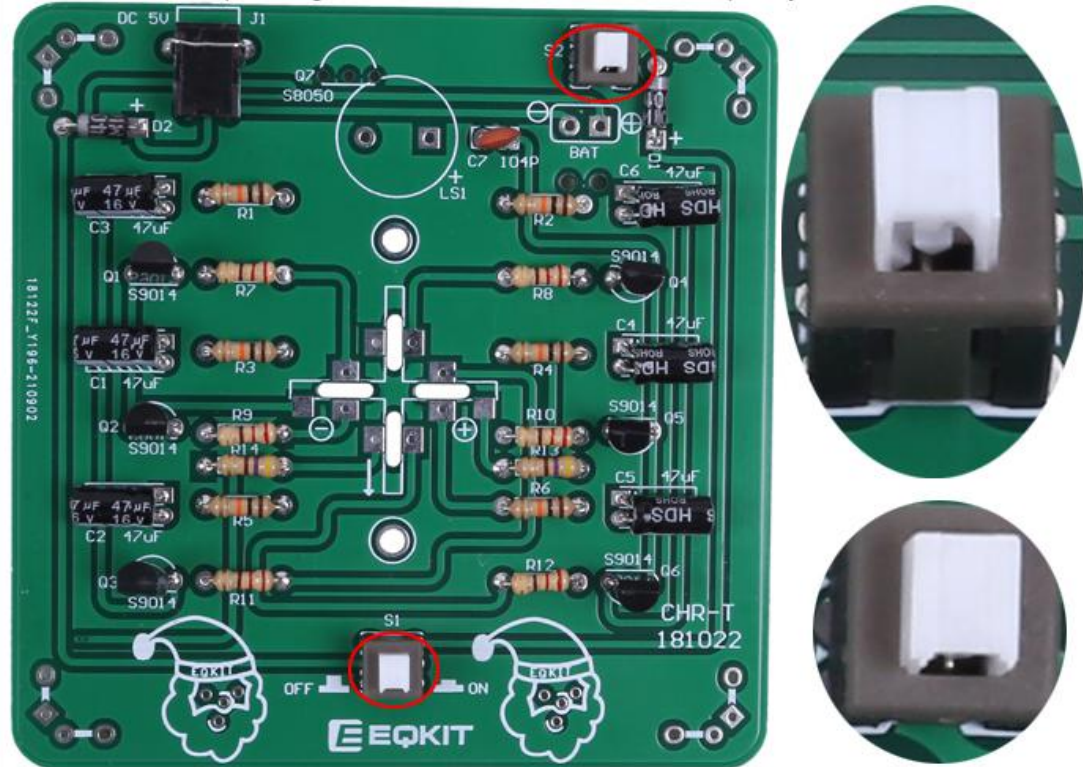
Step 27: Install 6pcs TO-92 S9014 Transistor at Q1~Q6. Pay attention to installation direction. The arc on the PCB corresponds to the arc of the components.



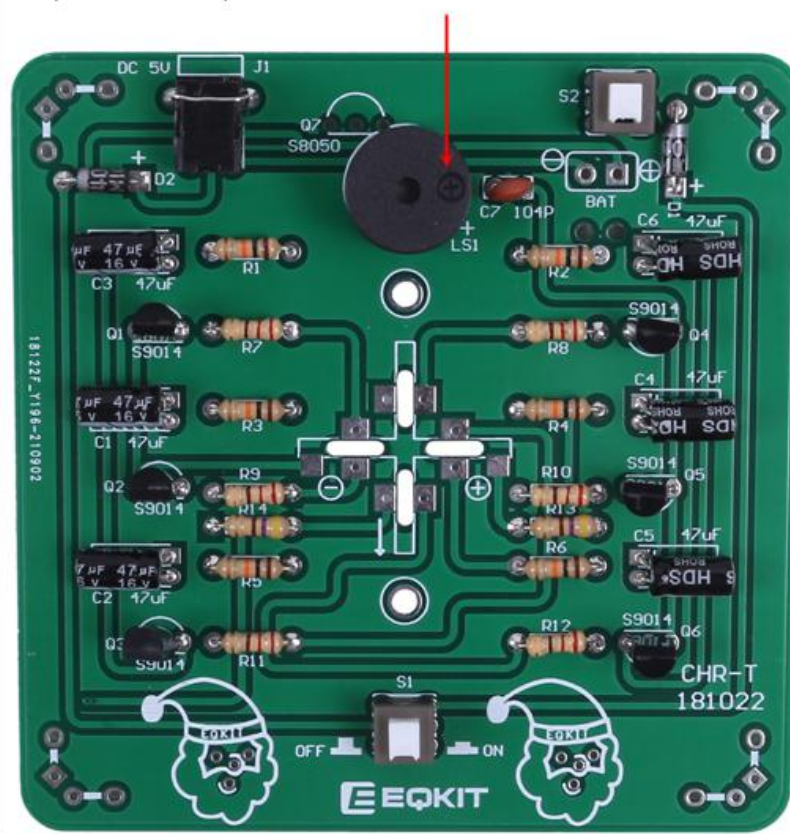
Step 28: Install 1pcs DC3.5*1.3mm Power Supply Socket at J1. It needs to be fixed with metal pin from resistor.



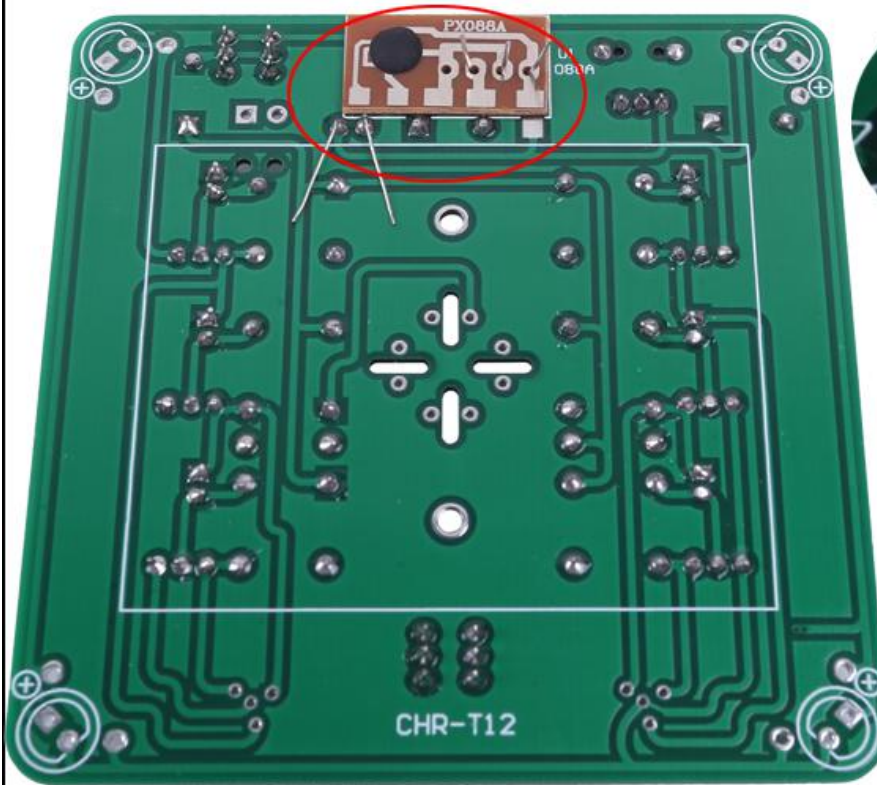
Step 29: Install 2pcs 5.8*5.8mm Self-locking Switch at S1,S2. There is a concave on switch and there is a white mark on PCB where the switch can place on. These two marks are corresponding to each other and are used to specify installation direction.



Step 30: Install 1pcs Passive Buzzer at LS1.

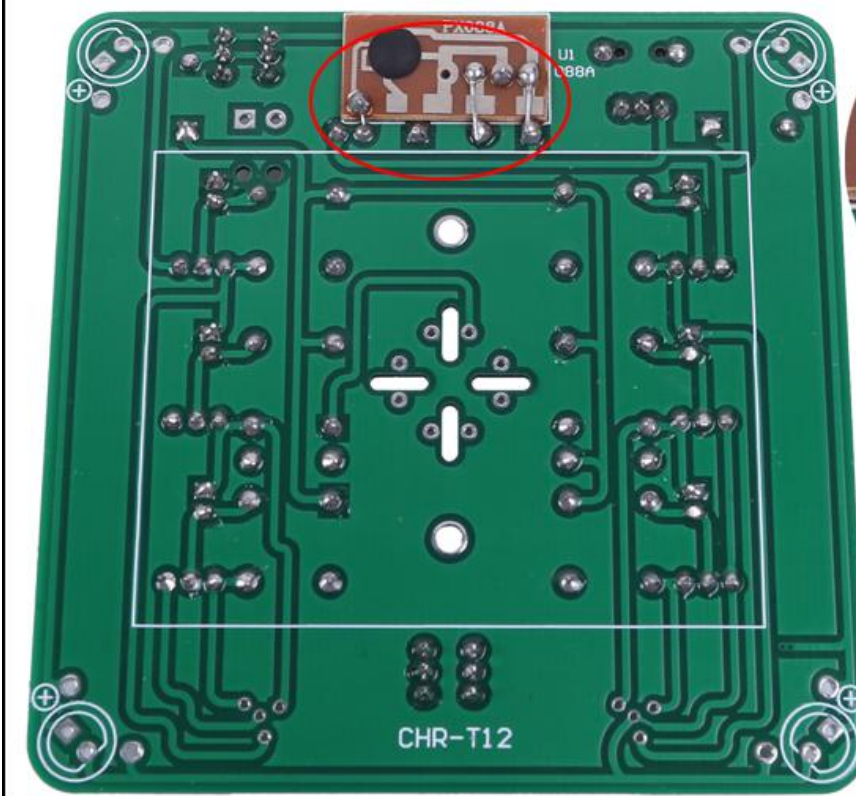


Step 31: Install S8050 Transistor at Q7 and PX088A Music Chip at U1. Note The pins of S8050 need to pass through the PCB and PX088A.

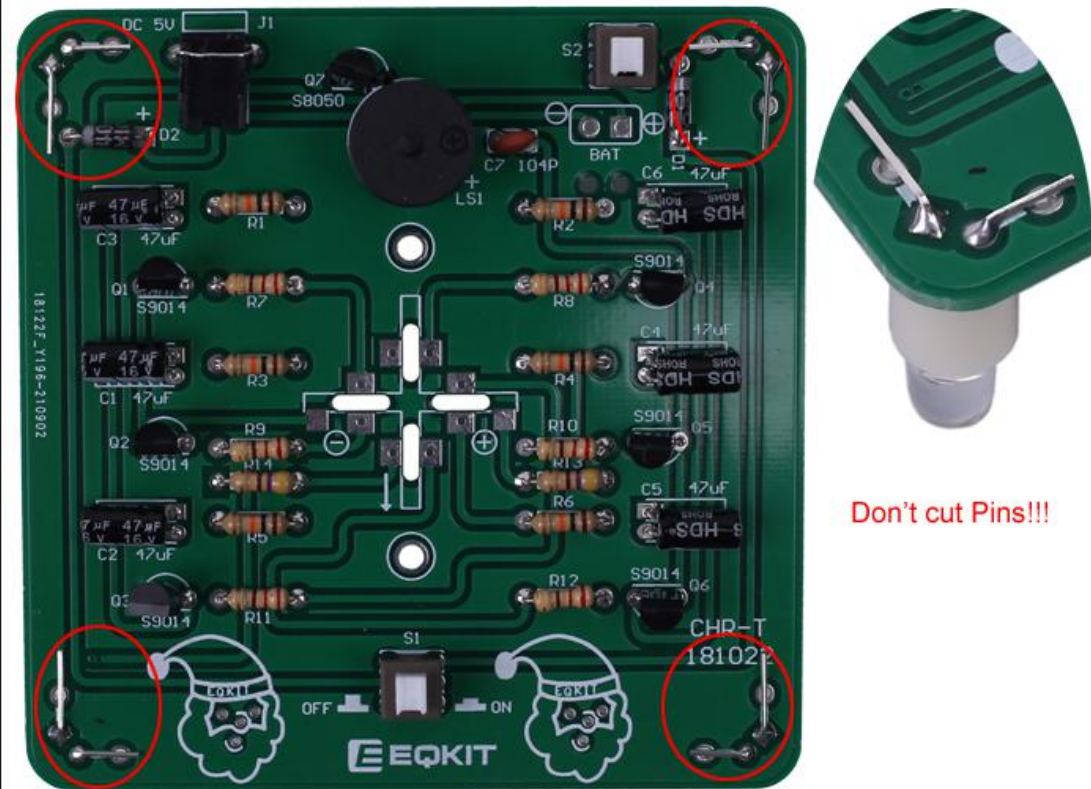


Not Cut Pins!!!

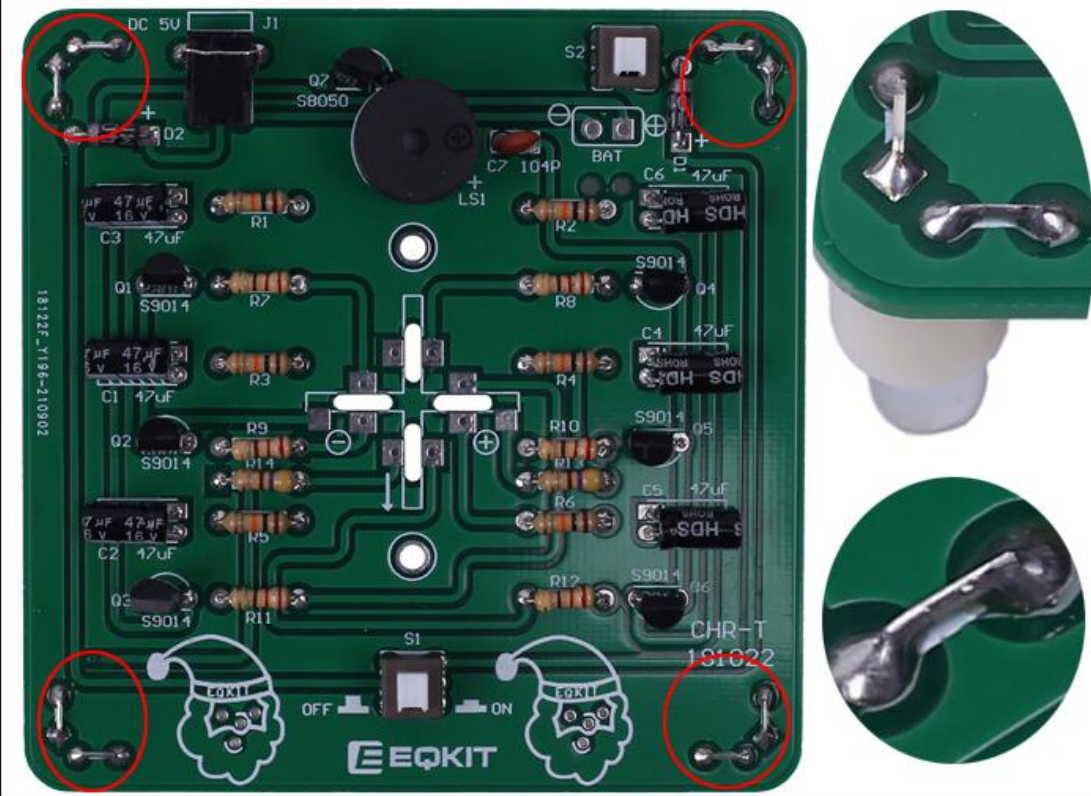
Step 32: Fixed pins and pads from S8050, PX088A and C7 Ceramic Capacitor.



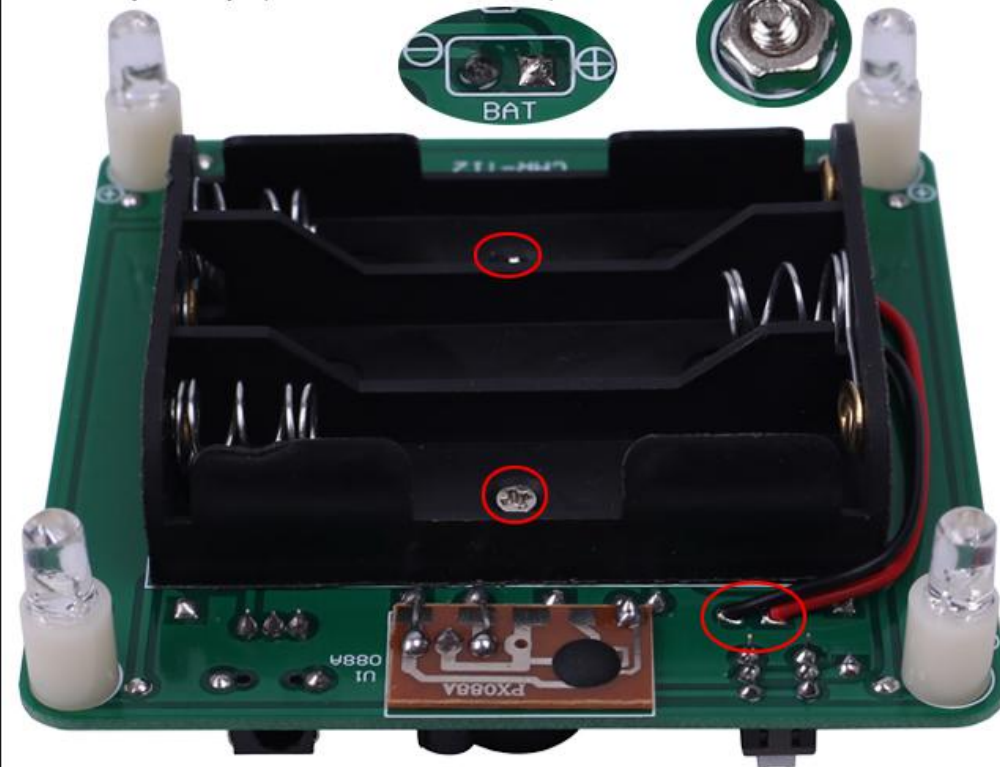
Step 33: Install 4pcs spacer and 4pcs 5mm RGB LED on another side. Don't cut pins!!!



Step 34: Bend LED pins and connect to the next pads as showing.



Step 35: Install 1pcs AA*3 Battery Box at BAT. Note: Red wire connect to + pad and Black wire connect to - pad. Pay attention to choosing a suitable length of wire. Fix Battery Box by 2pcs M2*6 Screw and 2pcs M2 Nuts.



Step 36: Fix CHR-T10 and CHR-T11 on CHR-T12 through 8 pairs of pads and must be aligned. The direction of assembly must be in accordance with the arrow on PCB.

Step 37: Connect to power supply and enjoy the effect.

Align symbol I and arrow

