



CRT-32 Audio LED Christmas Tree DIY Kit

1.Introduction:

CRT-32 is a Audio Christmas tree kit consists of circuit board and allows 37pcs LED flash with input audio from 3.5mm socket or microphone and showing a Christmas tree in Red/Yellow/Blue (the night environment has better viewing).

CRT-32 changes the number of lights with the strength of the input audio.It can simulate the spectrum display and the display effect changes with the music.

CRT-32 can be used for Christmas, event celebrations and parties, etc. It can be used to create a festive atmosphere.

2.Feature:

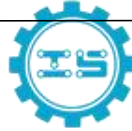
- 1>.37pcs highlight LED
- 2>.Perfect simple circuit
- 3>.Sound Control audio display
- 4>.Support microphone and audio socket input
- 5>.Adjustable sensitivity
- 6>.Two display modes

3.Parameter:

- 1>.Product Name:CRT-32 Audio LED Christmas Tree DIY Kit
- 2>.Product Number:CRT-32
- 3>.Work Voltage:DC 4.0V~5.0V
- 4>.Work Current:60mA
- 5>.Power Type:Battery Box and 3.5mm Power Socket
- 6>.Work Module:Switch Control
- 7>.Color:Red/Yellow/Blue LED
- 8>.Audio input:3.5mm audio socket and microphone
- 9>.Work Temperature:-40℃~85℃
- 10>.Work Humidity:5%~85%RH
- 11>.Size(Installed):135*60*60mm

4.Function:

- 1>.Complete the correct installation according to the installation steps.
- 2>.Input right work voltage from battery box or 3.5mm power socket.
- 3>.Press SW1 self-locking switch to turn ON or OFF work power:
 - 3.1>.CRT-32 is in working state when the key is locked.
 - 3.2>.CRT-32 is out working state when the key is released.



4>.It support microphone MIC and 3.5mm audio socket input audio.

4.1>.CRT-32 receives the audio from the microphone when the audio cable is not connected.

4.2>.CRT-32 receives the audio from the 3.5mm audio socket when the audio cable is connected.

4.3>.3.5mm audio socket has higher priority than microphone MIC.

5>.Set and change display mode by toggle Switch SW2.

5.1>.LED dot display mode:The LED at the highest point of the audio is turn ON but the other LED are OFF.

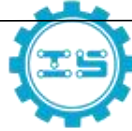
5.2>.LED Line display mode:All LED that meet the audio intensity are lit.

5.3>.The reference display effect is more obvious about two display mode.

6>.Rotate VR1 Potentiometer to adjust audio sensitivity.

5.Component Listing:

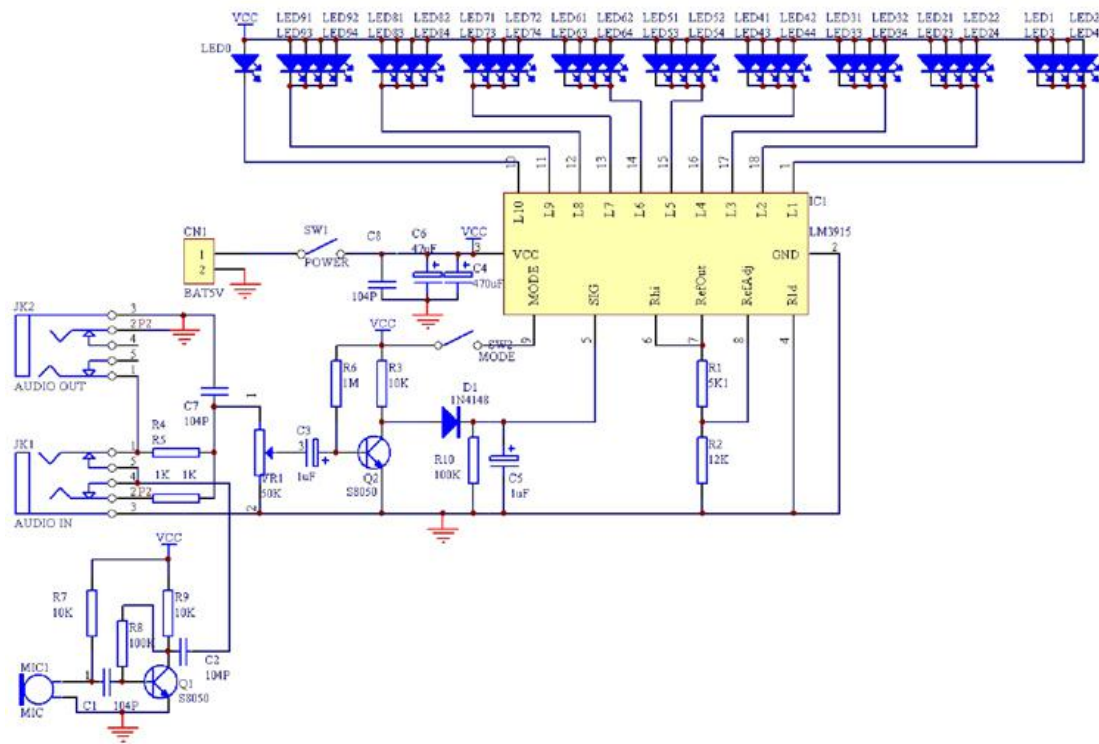
NO.	Component Name	PCB Marker	Parameter	QTY
1	Metal Film Resistor	R4,R5	1Kohm	2
2	Metal Film Resistor	R1	5.1Kohm	1
3	Metal Film Resistor	R3,R7,R9	10Kohm	3
4	Metal Film Resistor	R2	12Kohm	1
5	Metal Film Resistor	R8,R10	100Kohm	2
6	Metal Film Resistor	R6	1Mohm	1
7	Ceramic Capacitor	C1,C2,C7,C8	0.1uF 104	4
8	Electrolytic Capacitor	C3,C5	1uF	2
9	Electrolytic Capacitor	C6	47uF	1
10	Electrolytic Capacitor	C4	470uF	1
11	1N4148 Diode	D1	DO-35	1
12	S8050 Transistor	Q1,Q2	TO-92	2
13	Potentiometer	VR1	50Kohm	1
14	Red LED	LED0-LED4,LED41-LED44,LED71-LED74	3mm	13
15	Yellow LED	LED21-LED24,LED51-LED54,LED81-LED84	3mm	12
16	Blue LED	LED31-LED34,LED61-LED64,LED91-LED94	3mm	12
17	Self-locking Switch	SW1	5.8*5.8mm	1
18	Toggle Switch	SW2	SS12D07	1
19	3.5mm Audio Socket	JK1,JK2	5Pin	2
20	Microphone	MIC1	9*7mm	1
21	LM3915 Driver IC	IC1	DIP-18	1
22	Power Supply Socket	CN1	DC3.5*1.3mm	1
23	Battery Box	BAT4.5V	AA*3	1



24	USB to 3.5mm Power Cable		70cm	1
25	3.5mm Audio Cable	JK1	50cm	1
26	Screw		M2*5	2
27	Nut		M2	2
28	CRT-32 PCB1	PB00031	116*60*1.6mm	1
29	CRT-32 PCB2	PB00032	116*60*1.6mm	1
30	CRT-32 PCB3	PB00033	60*60*1.6mm	1

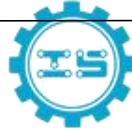
Note: Users can complete the installation according to the PCB silk screen and component list.

6.Schematic:



7.Application:

- 1>.Training welding skills
- 2>.Student school
- 3>.DIY production
- 4>.Project Design
- 5>.Electronic competition
- 6>.Gift giving



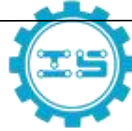
- 7>.Crafts collection
- 8>.Home decoration
- 9>.Souvenir collection
- 10>.Graduation design
- 11>.Holiday gifts

8.Installation Tips:

- 1>.User needs to prepare the welding 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>.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>.Check that all of the LED can be illuminated.
- 11>.It is strongly recommended to read the installation manual before starting installation!!!
- 12>.Please wear anti-static gloves or anti-static wristbands when installing electronic components.

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

- 1>.Step 1: Install 1pcs 5.1Kohm Metal Film Resistor at R1.
- 2>.Step 2: Install 1pcs 12Kohm Metal Film Resistor at R2.
- 3>.Step 3: Identification LED.The Longer pin is positive pole.
- 4>.Step 4: The longer pin is inserted into the rectangular pad.The shorter pins are inserted into the oval pads.
- 5>.Step 5: Reserve the LED pins about 3mm and then bend LED pins.Then use soldering iron and solder wire to fix the LED.
- 6>.Step 6: Install 6pcs 3mm Red LED at LED1, LED2, LED41, LED42, LED71, LED72 at PCB1.Bend the LED at the same time.
- 7>.Step 7: Install 6pcs 3mm Yellow LED at LED21, LED22, LED51, LED52, LED81, LED82 at PCB1.Bend the LED at the same time.
- 8>.Step 8: Install 6pcs 3mm Blue LED at LED31, LED32, LED61, LED62, LE91, LED92 at PCB1.Bend the LED at the same time.
- 9>.Step 9: Install 1pcs DIP-18 LM3915 at IC1 at PCB1.There is a dot on one end of the IC and there is a mark on PCB 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.



10>.Step 10: Install 1pcs 47uF Electrolytic Capacitor at C6.Pay attention to distinguish between positive and negative.The Longer pin is positive pole.The longer pin is inserted into the rectangular pad.

11>.Step 11: Install 1pcs SS12D07 Toggle Switch at SW2.So far, PCB1 is installed.

12>.Step 12: Install 7pcs 3mm Red LED at LED0, LED3, LED4, LED43, LED44, LED73, LED74 at PCB2.Bend the LED at the same time.

13>.Step 13: Install 6pcs 3mm Yellow LED at LED23, LED24, LED53, LED54, LED83, LED84 at PCB2.Bend the LED at the same time.

14>.Step 14: Install 6pcs 3mm Blue LED at LED33, LED34, LED63, LED64, LED93, LED94 at PCB2.Bend the LED at the same time.So far, PCB2 is installed.

15>.Step 15: Install 1pcs DO-35 1N4148 Diode at D1 at PCB2.The black mark is negative pole.

16>.Step 16: Install 2pcs 1Kohm Metal Film Resistor at R4,R5.

17>.Step 17: Install 3pcs 10Kohm Metal Film Resistor at R3,R7,R9.

18>.Step 18: Install 2pcs 100Kohm Metal Film Resistor at R8,R10.

19>.Step 19: Install 1pcs 1Mohm Metal Film Resistor at R6.

20>.Step 20: Install 4pcs 0.1uF 104 Ceramic Capacitor at C1,C2,C7,C8.

21>.Step 21: Install 2pcs TO-92 S8050 Transistor at Q1,Q2.

22>.Step 22: Install 1pcs DC3.5*1.3mm Power Supply Socket at CN1.

23>.Step 23: Fix the power socket with the extra pins of the resistor.

24>.Step 24: Install 1pcs 9*7mm Microphone at MIC1.The marked pin is negative pole.

25>.Step 25: Install 2pcs 5Pin 3.5mm Audio Socket at JK1,JK2.

26>.Step 26: Install 1pcs 470uF Electrolytic Capacitor at C4.Pay attention to distinguish between positive and negative.The Longer pin is positive pole.The longer pin is inserted into the rectangular pad.

27>.Step 27: Install 2pcs 1uF Electrolytic Capacitor at C3,C5.Pay attention to distinguish between positive and negative.The Longer pin is positive pole.The longer pin is inserted into the rectangular pad.

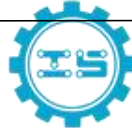
28>.Step 28: Install 1pcs 5.8*5.8mm Self-locking Switch at SW1.There is a concave on switch and there is a white mark on PCB where the switch can place on.These two marks are corresponding to each other and are used to specify the installation direction of the switch.

29>.Step 29: Install 1pcs 50Kohm Potentiometer at VR1.

30>.Step 30: So far, all 3pcs PCB have been installed and then they need to be assembled together.

31>.Step 31: Assemble PCB1 and PCB2. At the same time, fix only a pair of pads for adjusting the position.The direction of assembly must be in accordance with the arrow on PCB.

32>.Step 32: Adjust height and position cooperate with PCB3 and make sure they fit properly.



33>.Step 33: Fix PCB1 and PCB2 through 11 pairs of pads.

34>.Step 34: Fix PCB1 and PCB2 on PCB through 8 pairs of pads.The direction of assembly must be in accordance with the arrow on PCB.

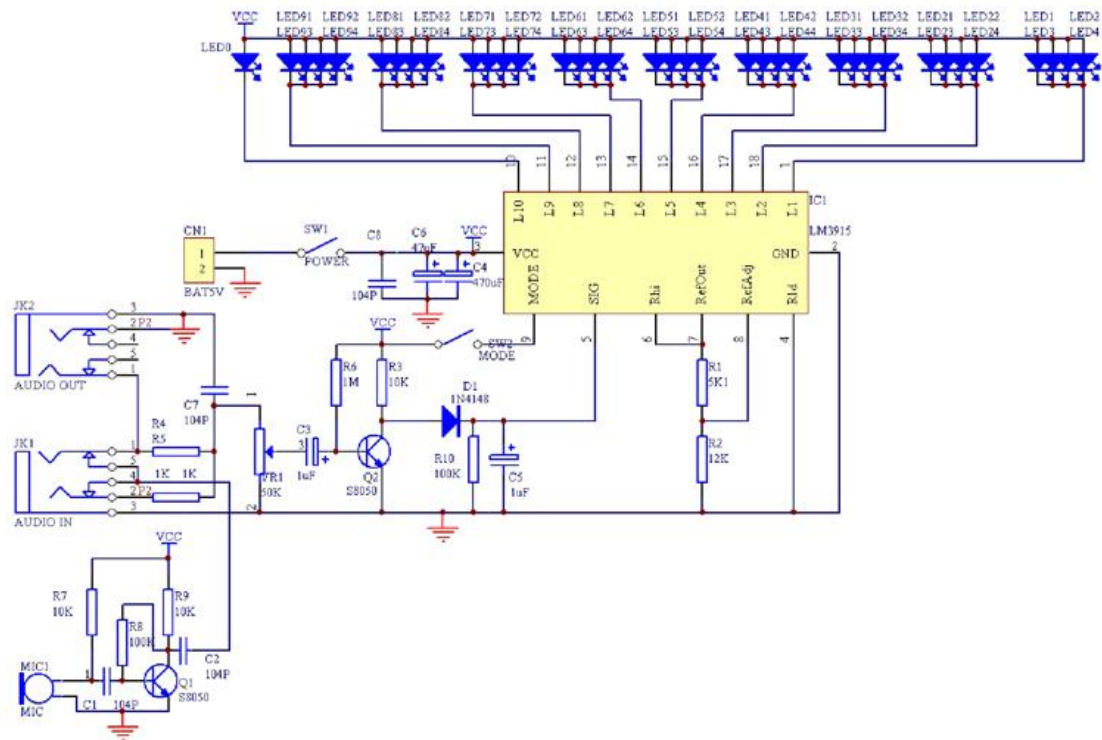
35>.Step 35: Keep the wire of the battery box about 15cm.

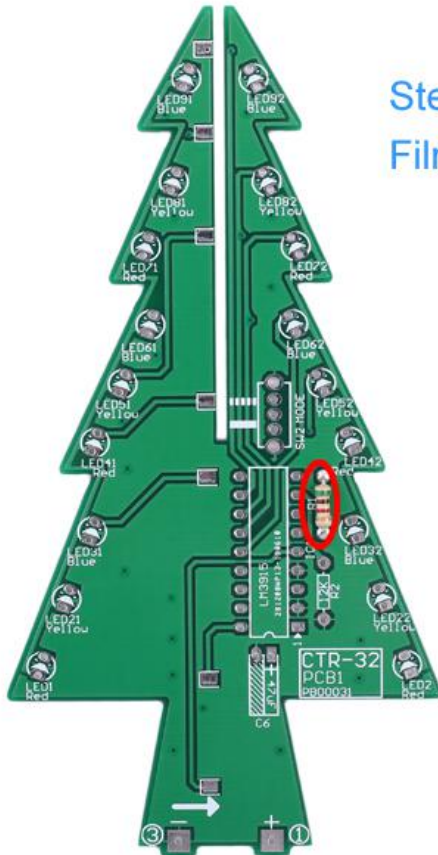
36>.Step 36: Install 1pcs AA*3 Battery Box at BAT4.5V. Red wire connect to '+' and black wire connect to '-'.

37>.Step 37: Fix the battery box on PCB3 and fix by 2pcs M2*5mm Screw and 2pcs M2 Nut.

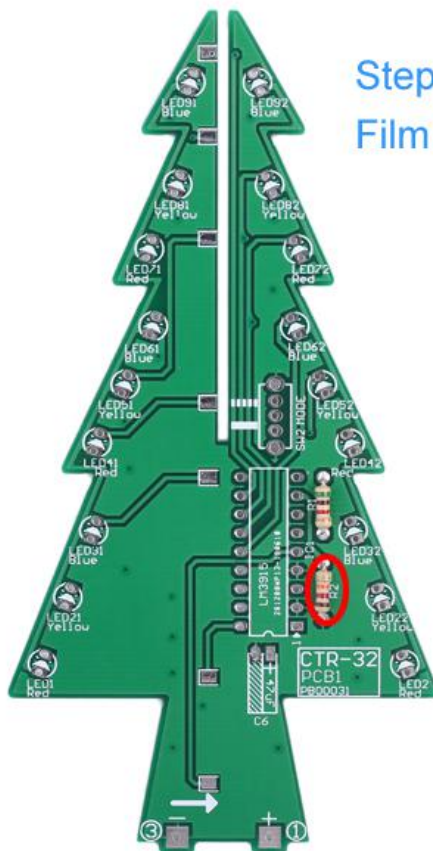
38>.Step 38: Connect to power supply and enjoy the effect.

10.Install shown steps:





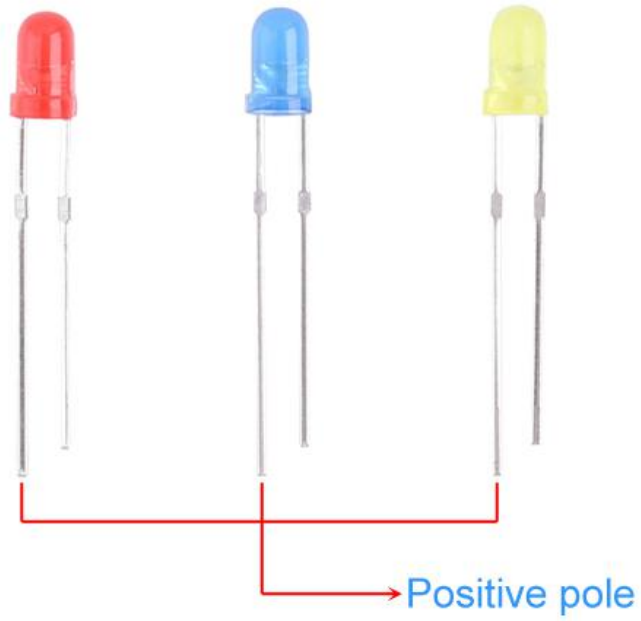
Step 1: Install 1pcs 5.1Kohm Metal Film Resistor at R1.



Step 2: Install 1pcs 12Kohm Metal Film Resistor at R2.

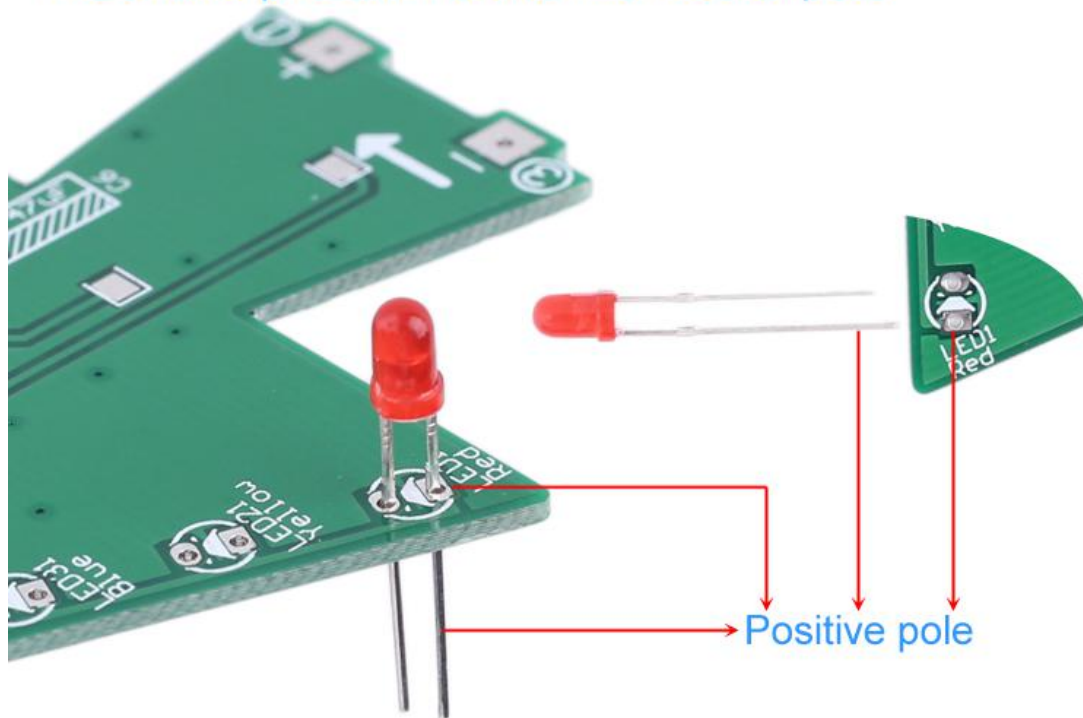


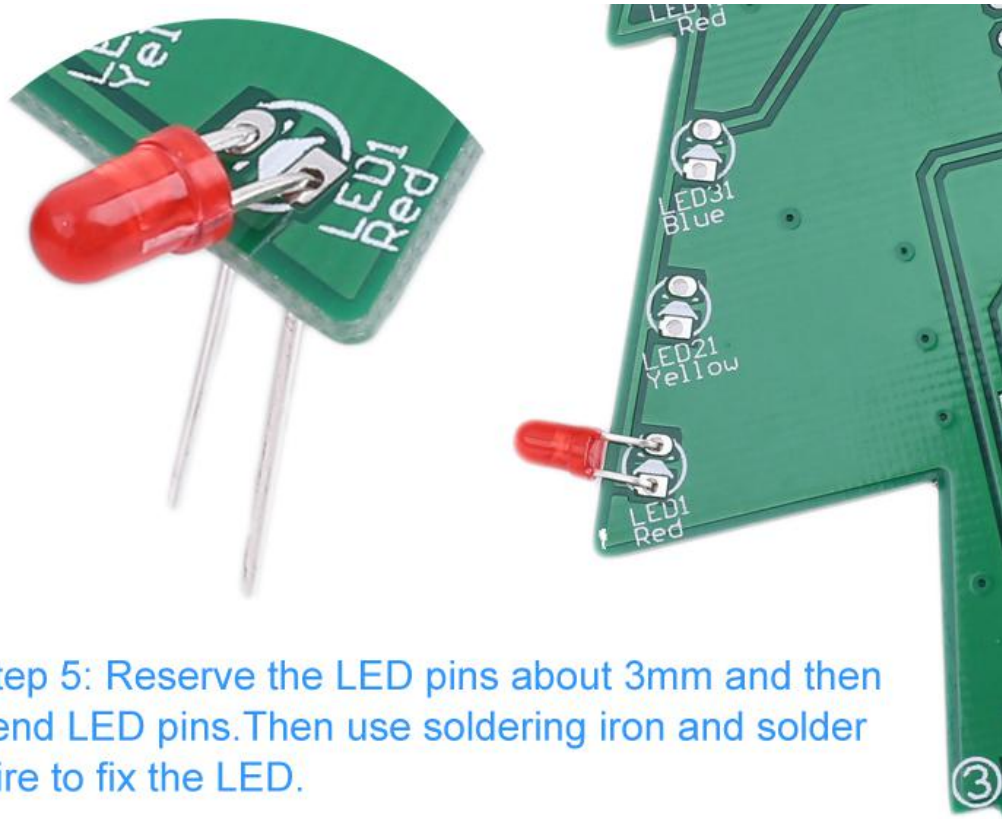
Step 3: Identification LED. The Longer pin is positive pole.





Step 4: The longer pin is inserted into the rectangular pad.
The shorter pins are inserted into the oval pads.

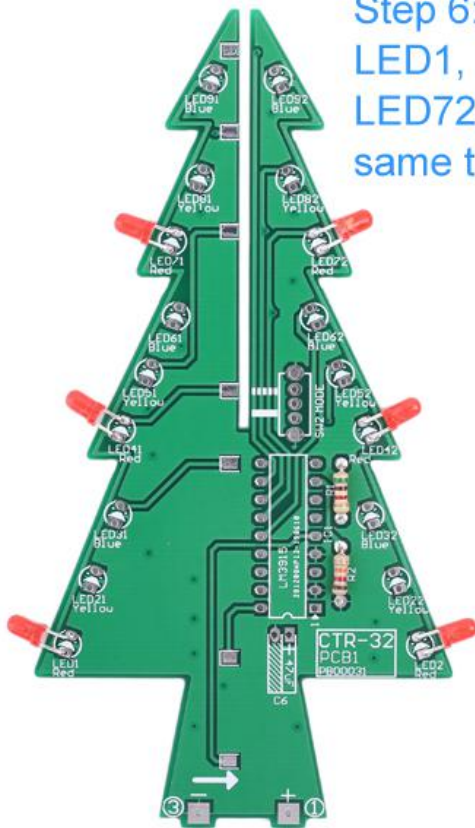


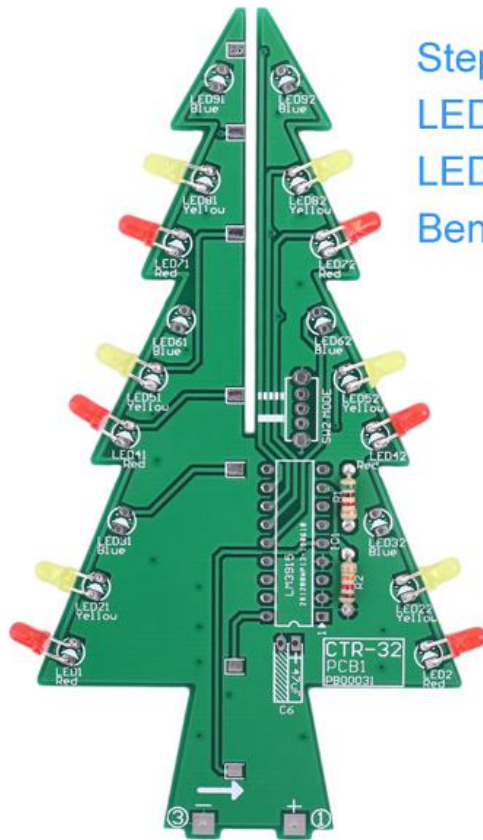
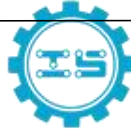


Step 5: Reserve the LED pins about 3mm and then bend LED pins. Then use soldering iron and solder wire to fix the LED.

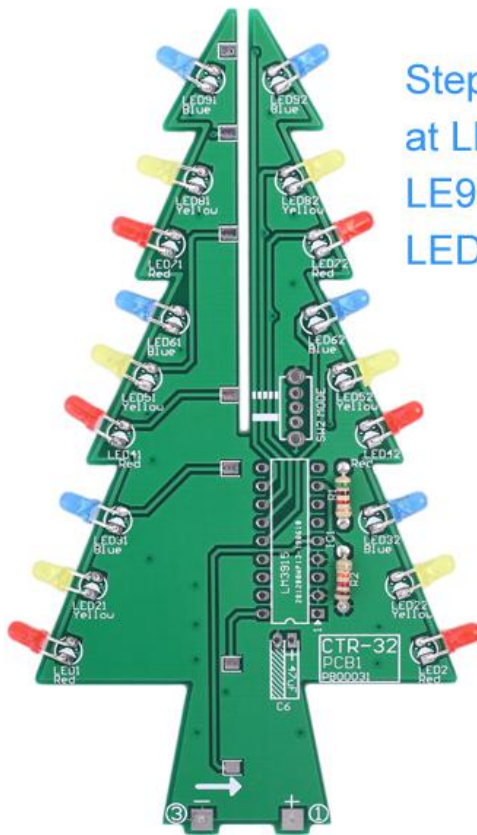
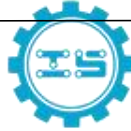


Step 6: Install 6pcs 3mm Red LED at LED1, LED2, LED41, LED42, LED71, LED72 at PCB1. Bend the LED at the same time.

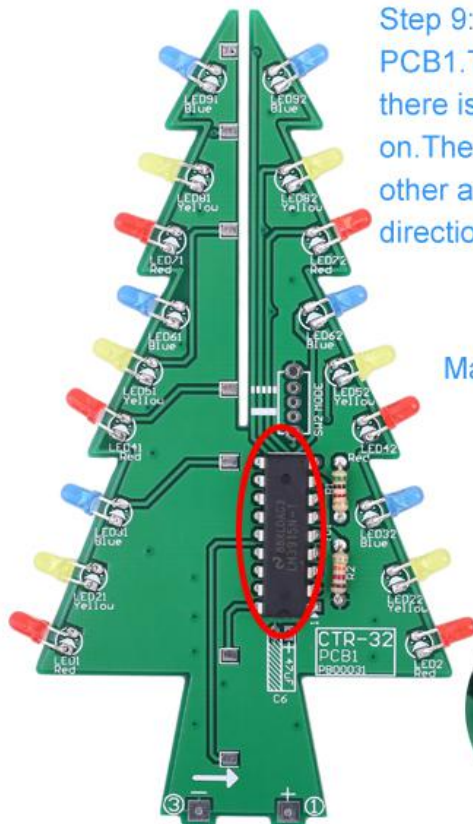




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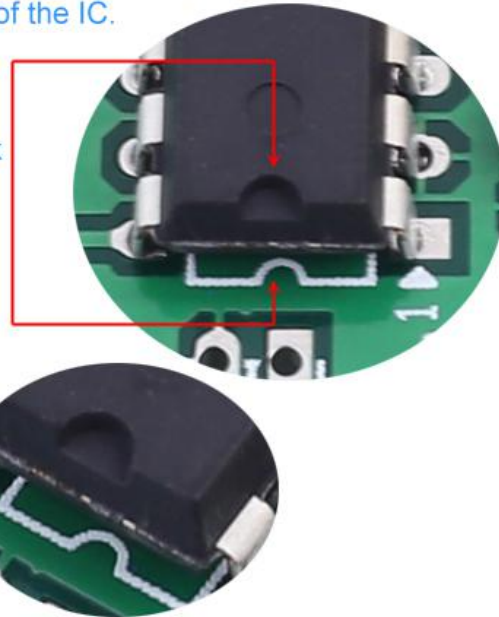


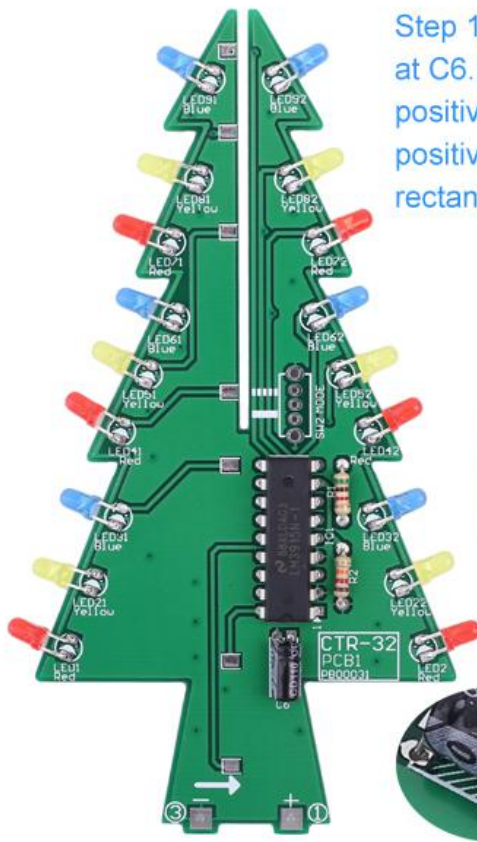
Step 8: Install 6pcs 3mm Blue LED at LED31, LED32, LED61, LED62, LED91, LED92 at PCB1. Bend the LED at the same time.



Step 9: Install 1pcs DIP-18 LM3915 at IC1 at PCB1. There is a dot on one end of the IC and there is a mark on PCB 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.

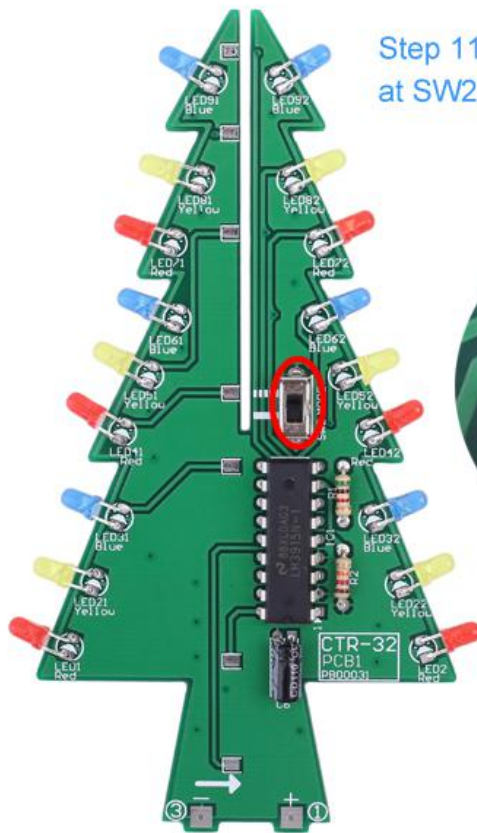
Mark



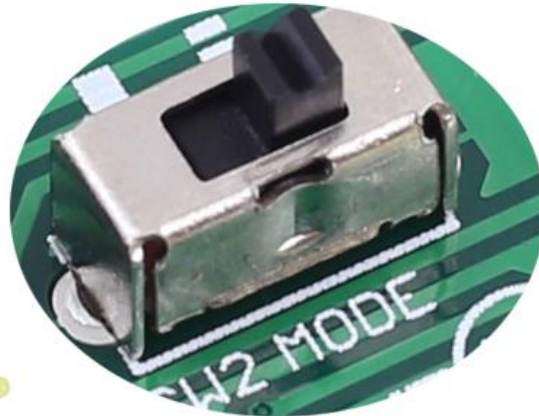


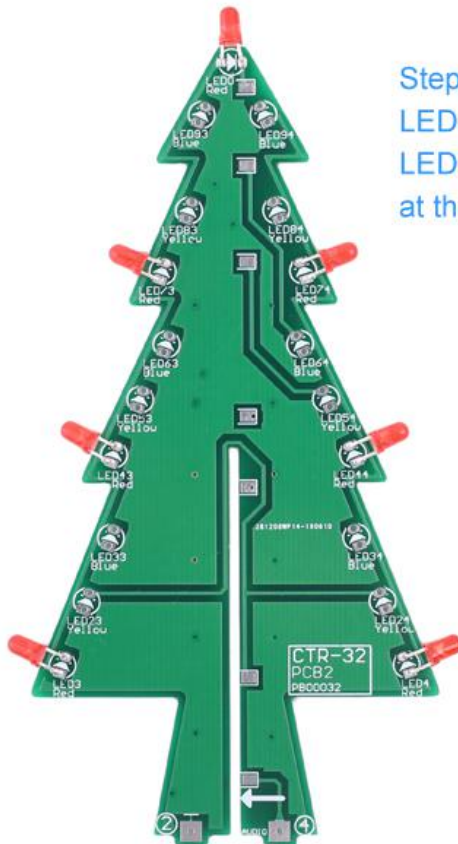
Step 10: Install 1pcs 47uF Electrolytic Capacitor at C6. Pay attention to distinguish between positive and negative. The Longer pin is positive pole. The longer pin is inserted into the rectangular pad.



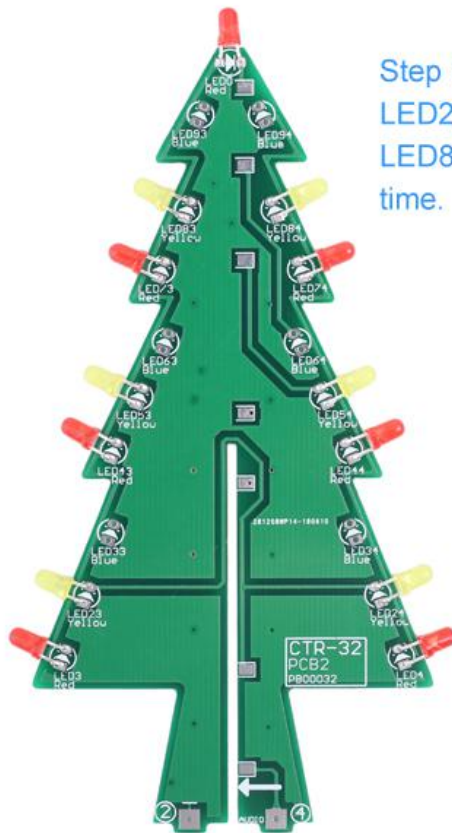


Step 11: Install 1pcs SS12D07 Toggle Switch at SW2. So far, PCB1 is installed.

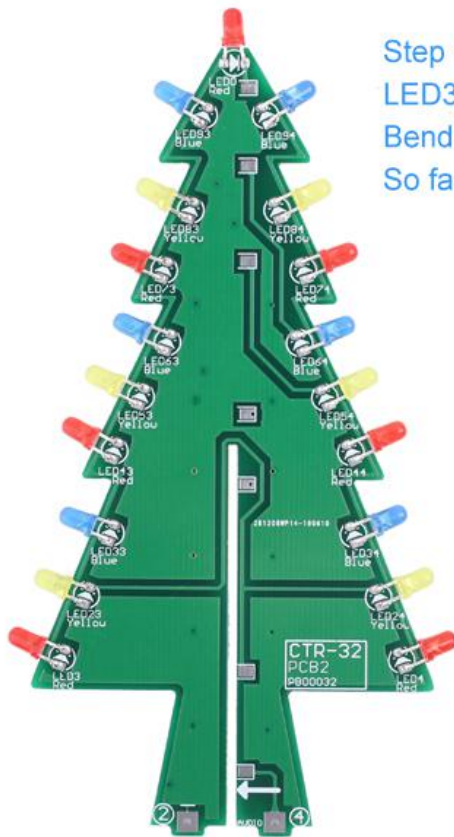
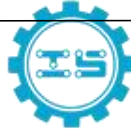




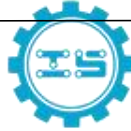
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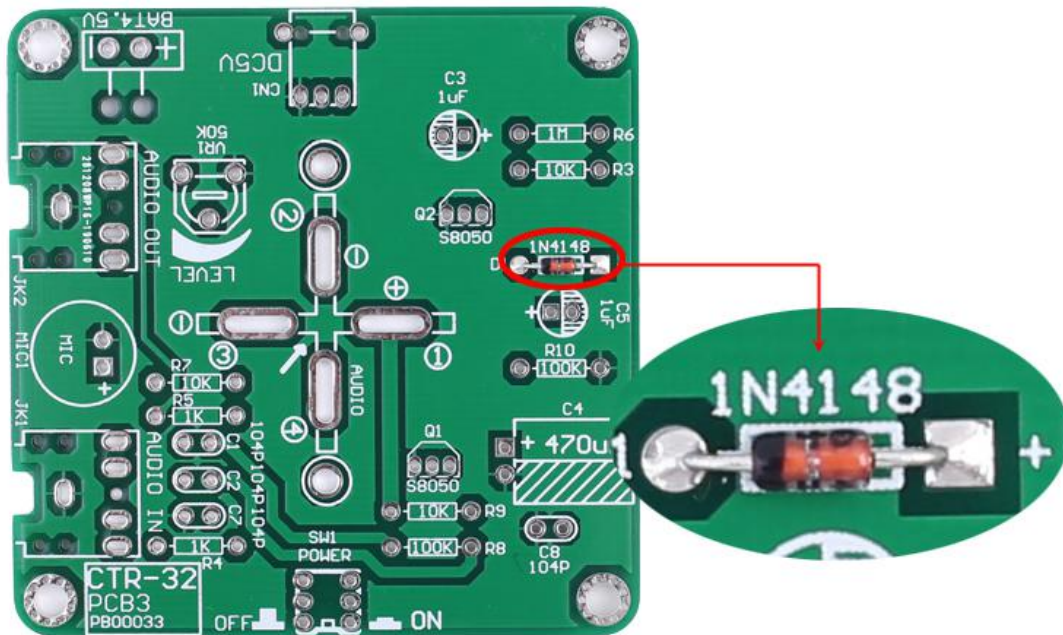
Step 13: Install 6pcs 3mm Yellow LED at LED23, LED24, LED53, LED54, LED83, LED84 at PCB2. Bend the LED at the same time.



Step 14: Install 6pcs 3mm Blue LED at LED33, LED34, LED63, LED64, LED93, LED94 at PCB2. Bend the LED at the same time. So far, PCB2 is installed.

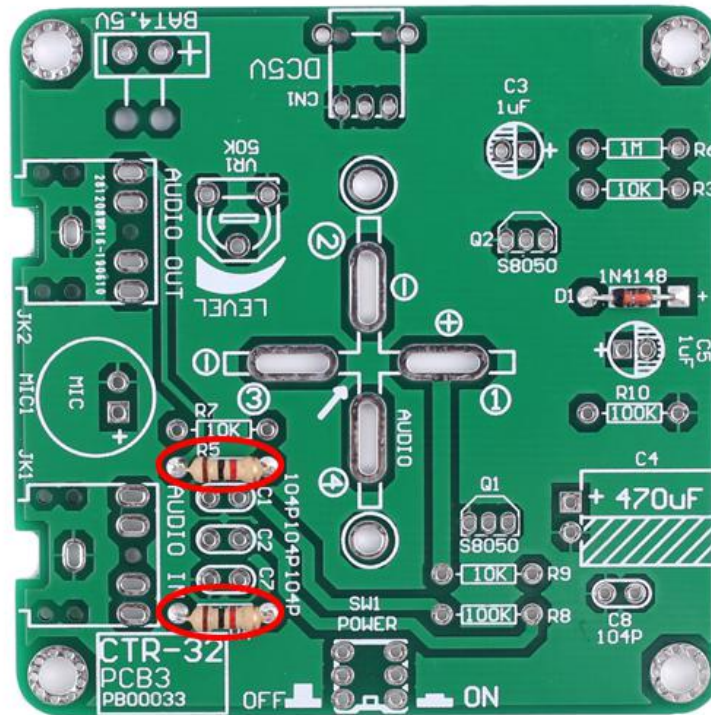


Step 15: Install 1pcs DO-35 1N4148 Diode at D1 at PCB2.
The black mark is negative pole.



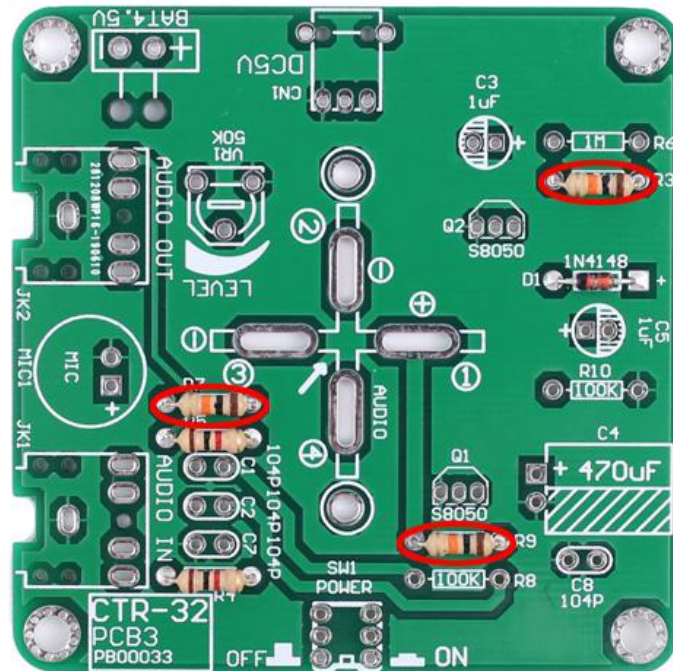


Step 16: Install 2pcs 1Kohm Metal Film Resistor at R4,R5.



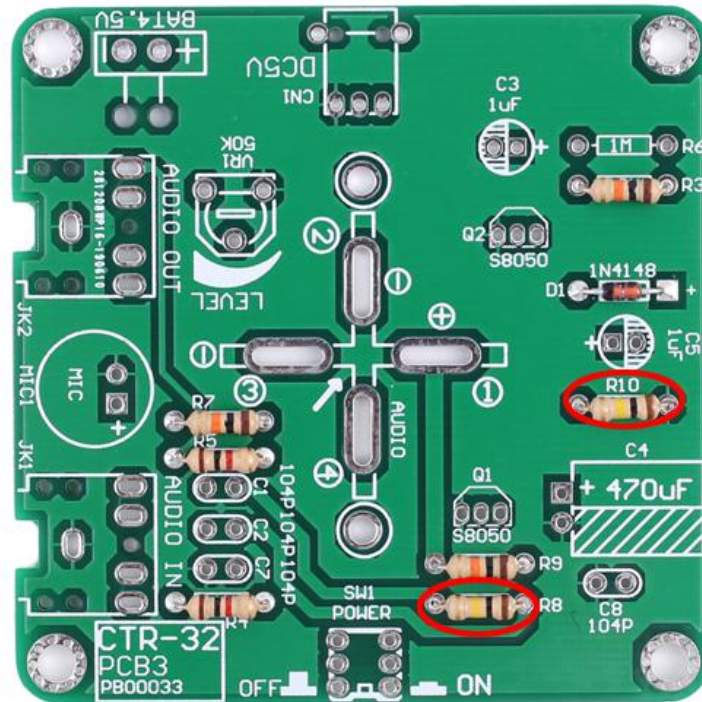


Step 17: Install 3pcs 10Kohm Metal Film Resistor at R3,R7,R9.



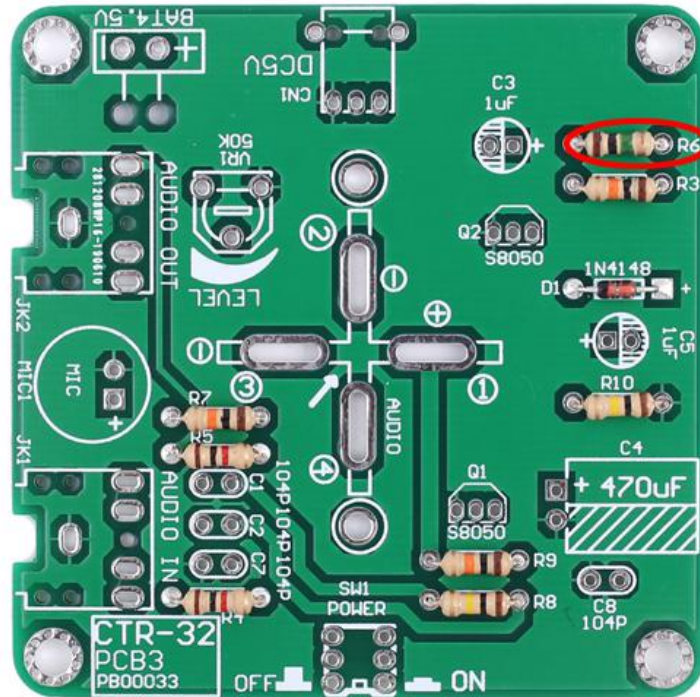


Step 18: Install 2pcs 100Kohm Metal Film Resistor at R8,R10.



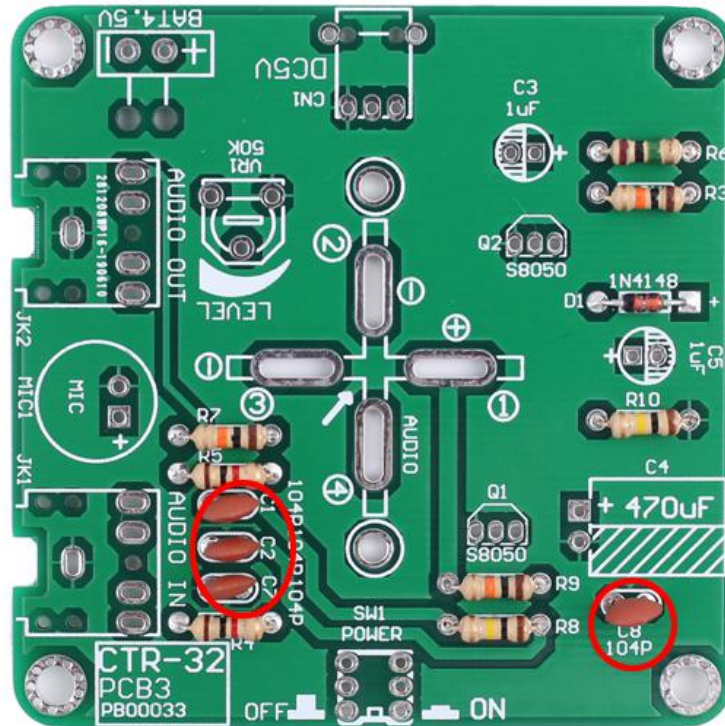


Step 19: Install 1pcs 1Mohm Metal Film Resistor at R6.



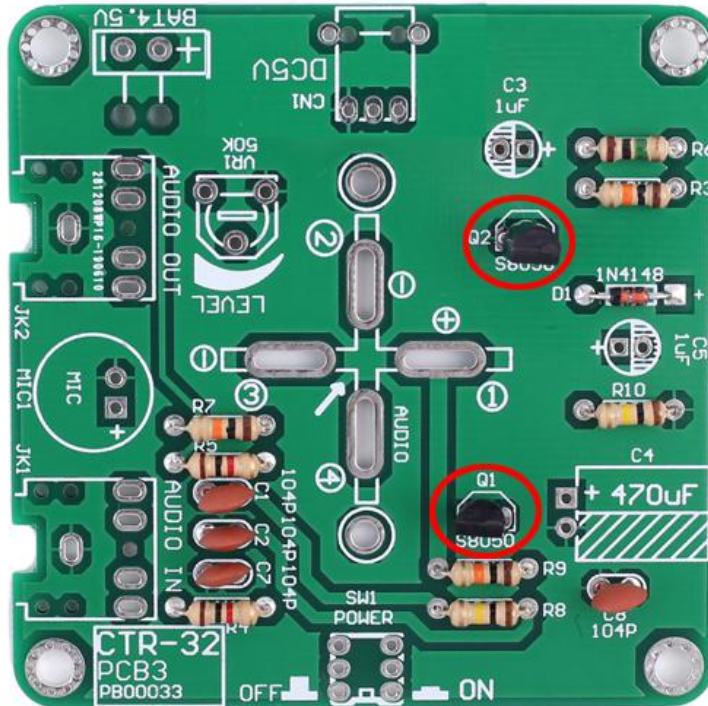


Step 20: Install 4pcs 0.1uF 104 Ceramic Capacitor at C1,C2,C7,C8.



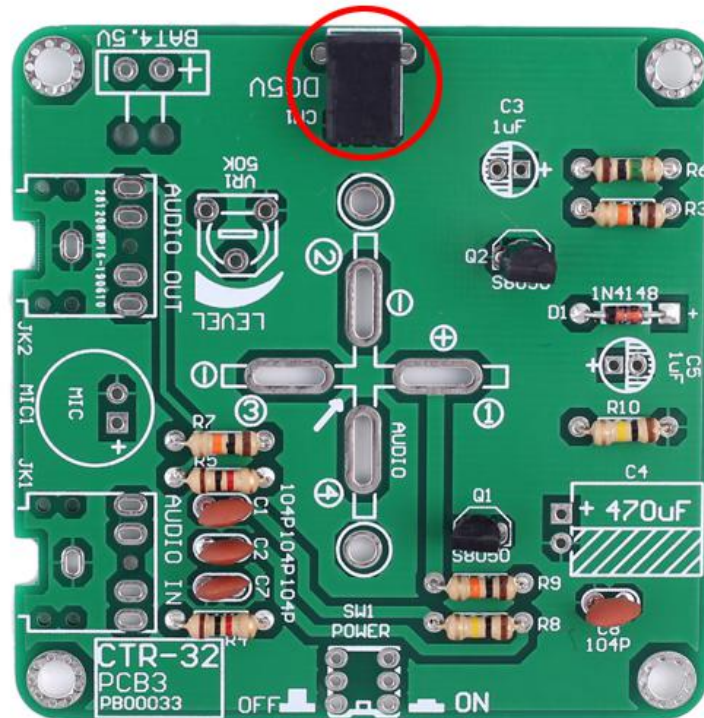


Step 21: Install 2pcs TO-92 S8050 Transistor at Q1,Q2.



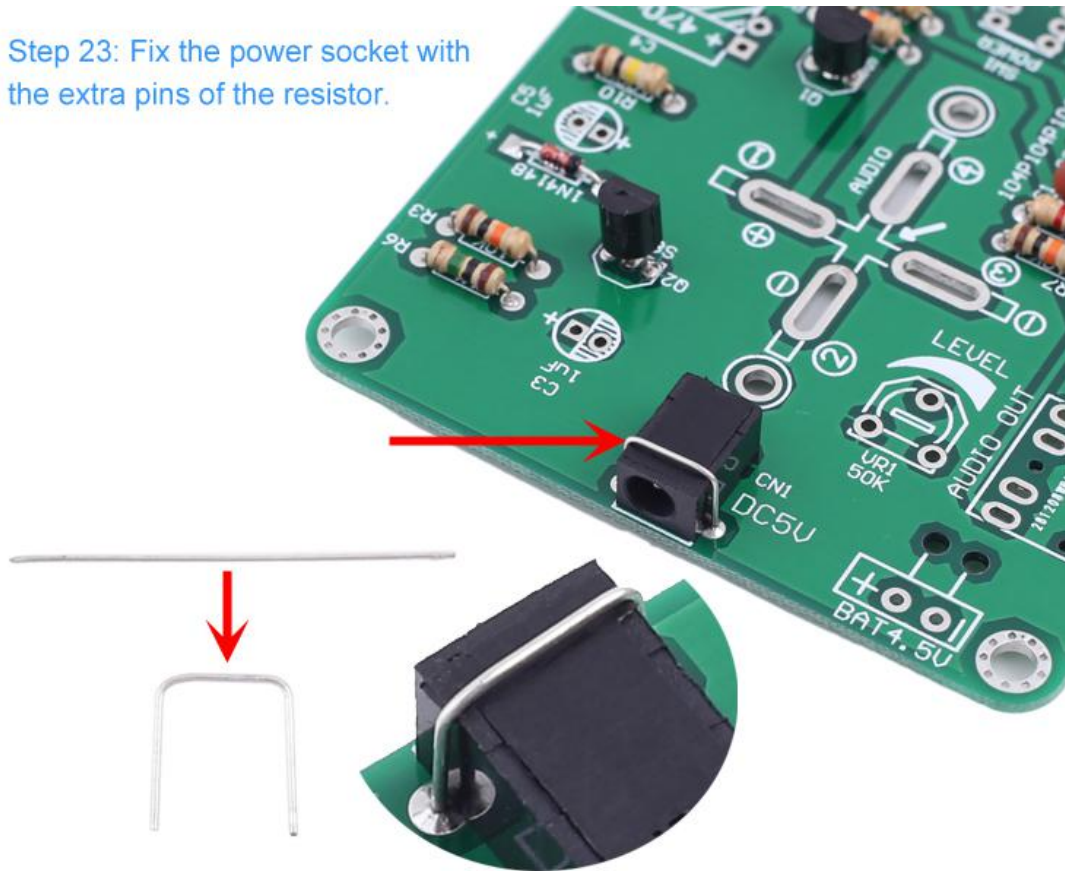


Step 22: Install 1pcs DC3.5*1.3mm Power Supply Socket at CN1.



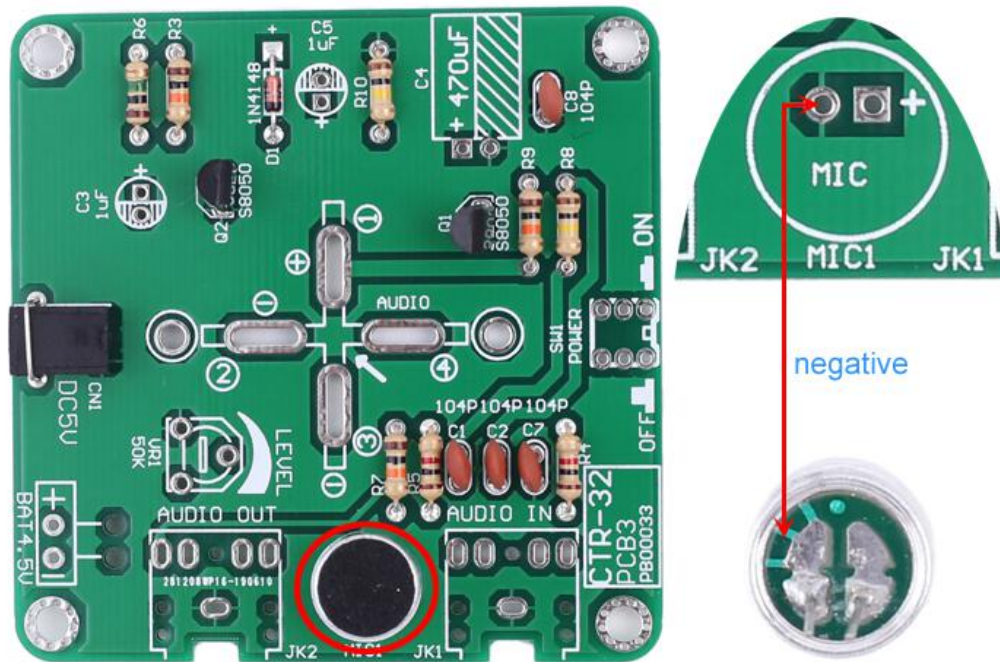


Step 23: Fix the power socket with the extra pins of the resistor.



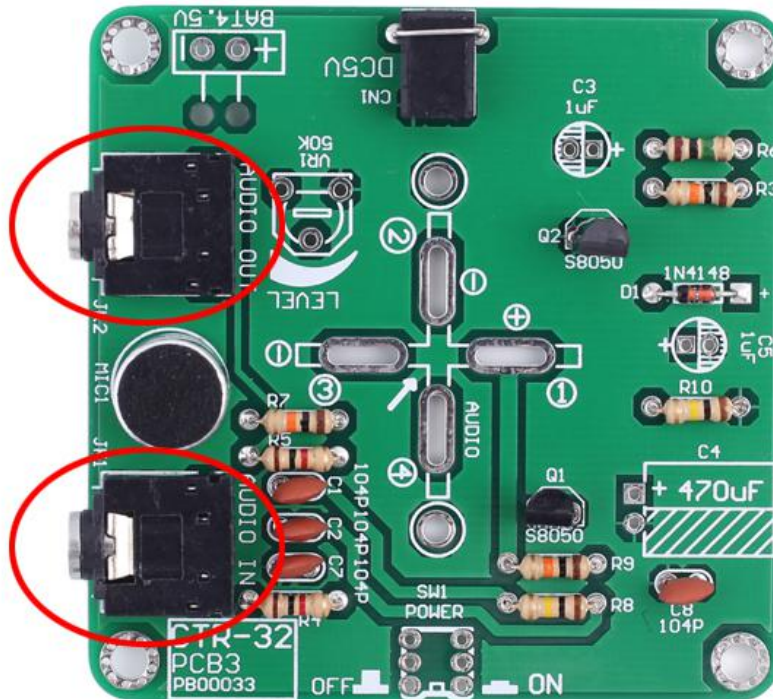


Step 24: Install 1pcs 9*7mm Microphone at MIC1.
The marked pin is negative pole.



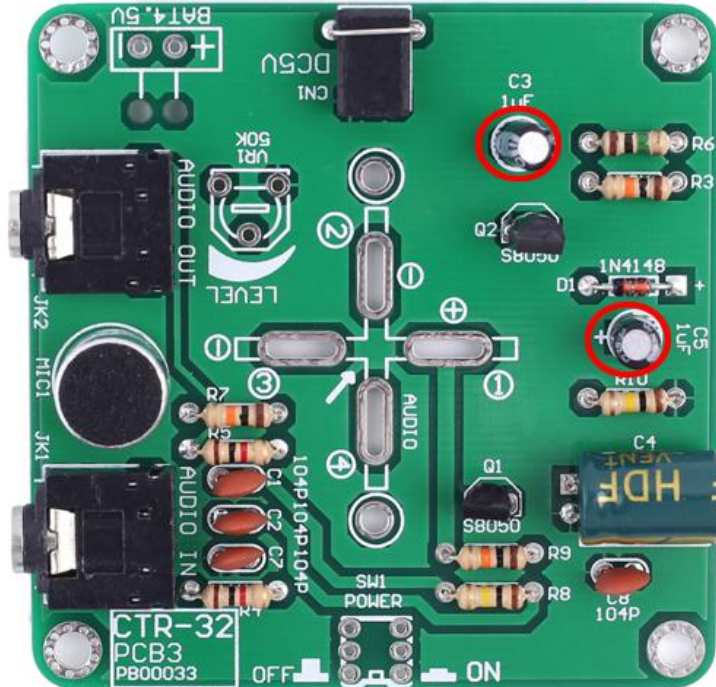


Step 25: Install 2pcs 5Pin 3.5mm Audio Socket at JK1,JK2.



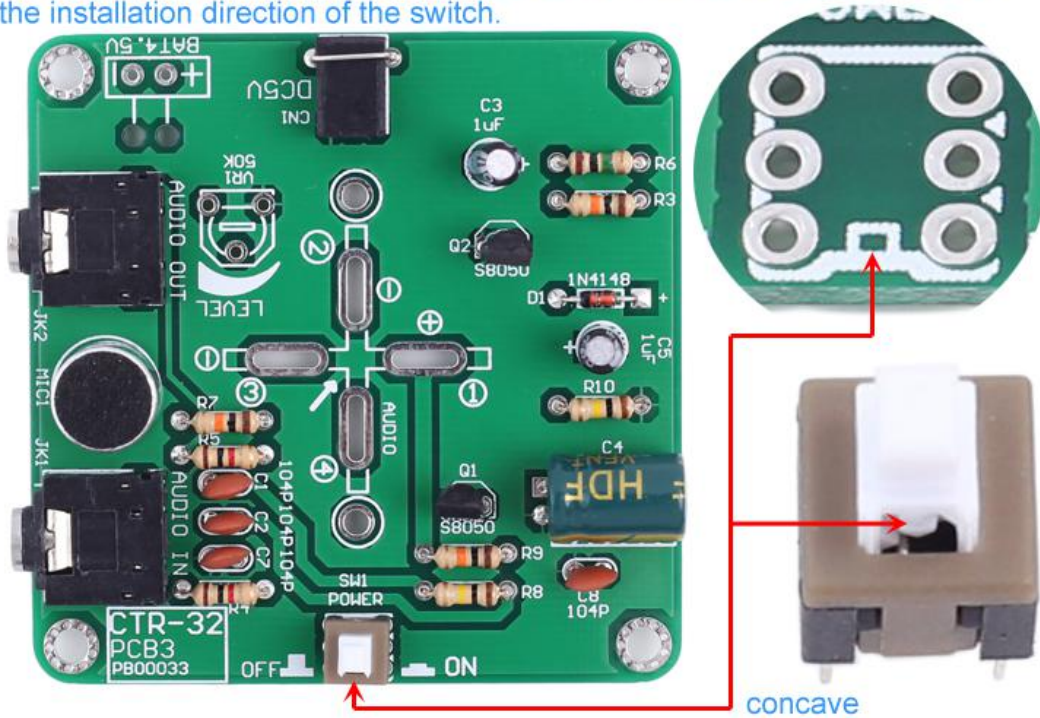


Step 27: Install 2pcs 1uF Electrolytic Capacitor at C3,C5.
Pay attention to distinguish between positive and negative.
The Longer pin is positive pole.
The longer pin is inserted into the rectangular pad.



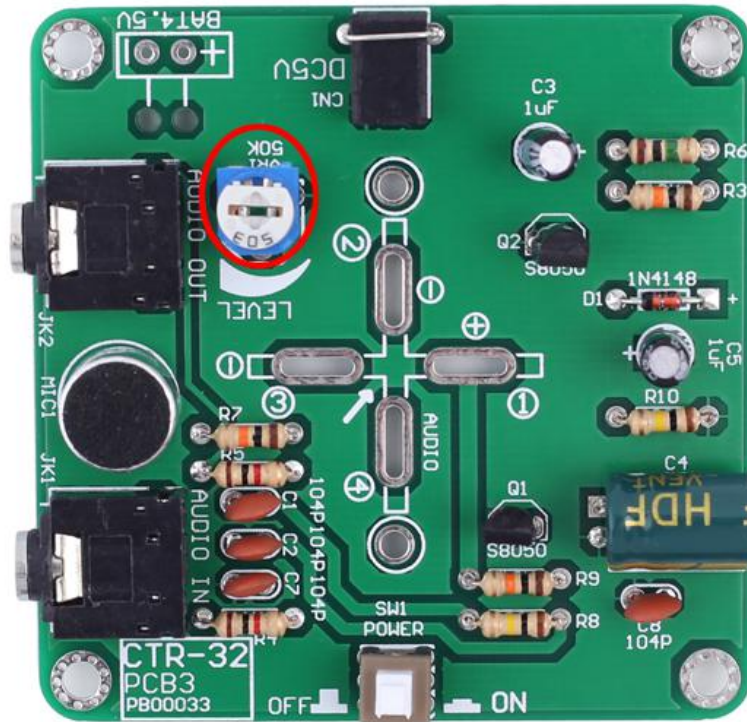


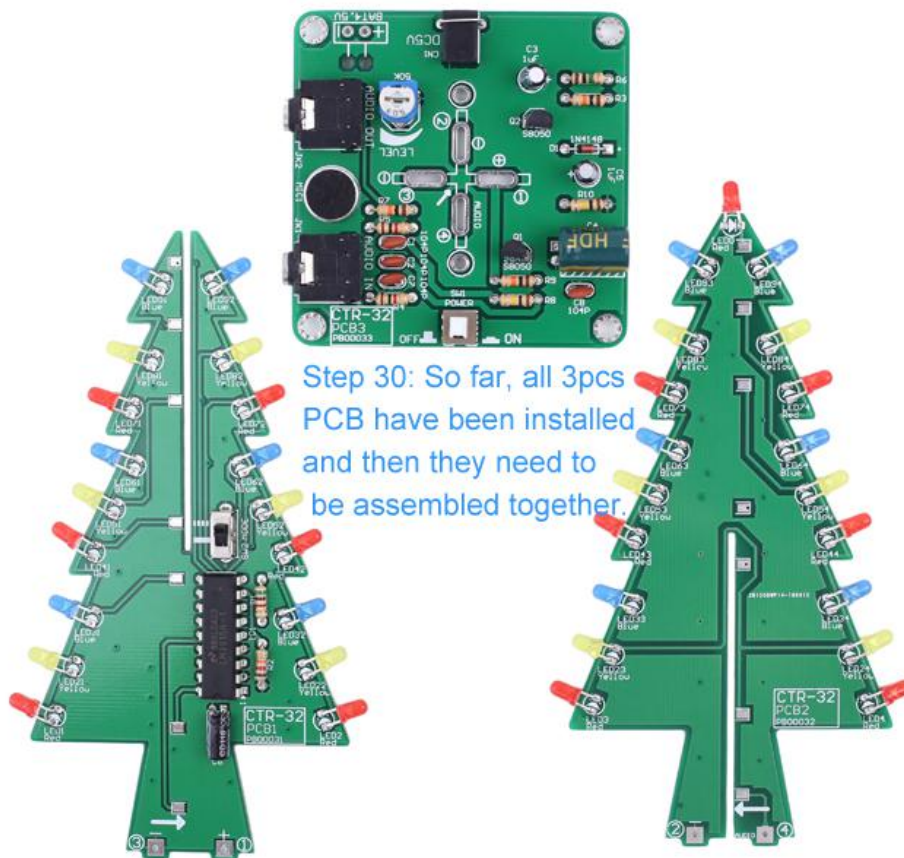
Step 28: Install 1pcs 5.8*5.8mm Self-locking Switch at SW1. There is a concave on switch and there is a white mark on PCB where the switch can place on. These two marks are corresponding to each other and are used to specify the installation direction of the switch.

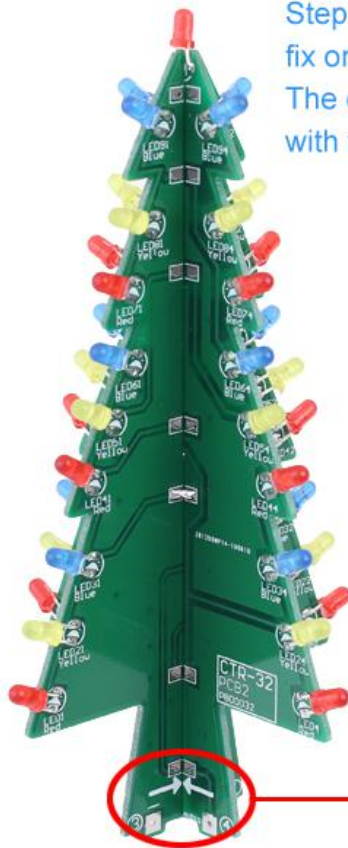




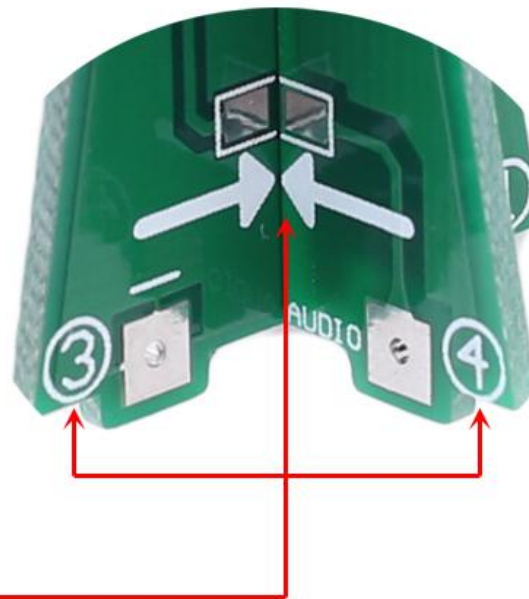
Step 29: Install 1pcs 50Kohm Potentiometer at VR1.

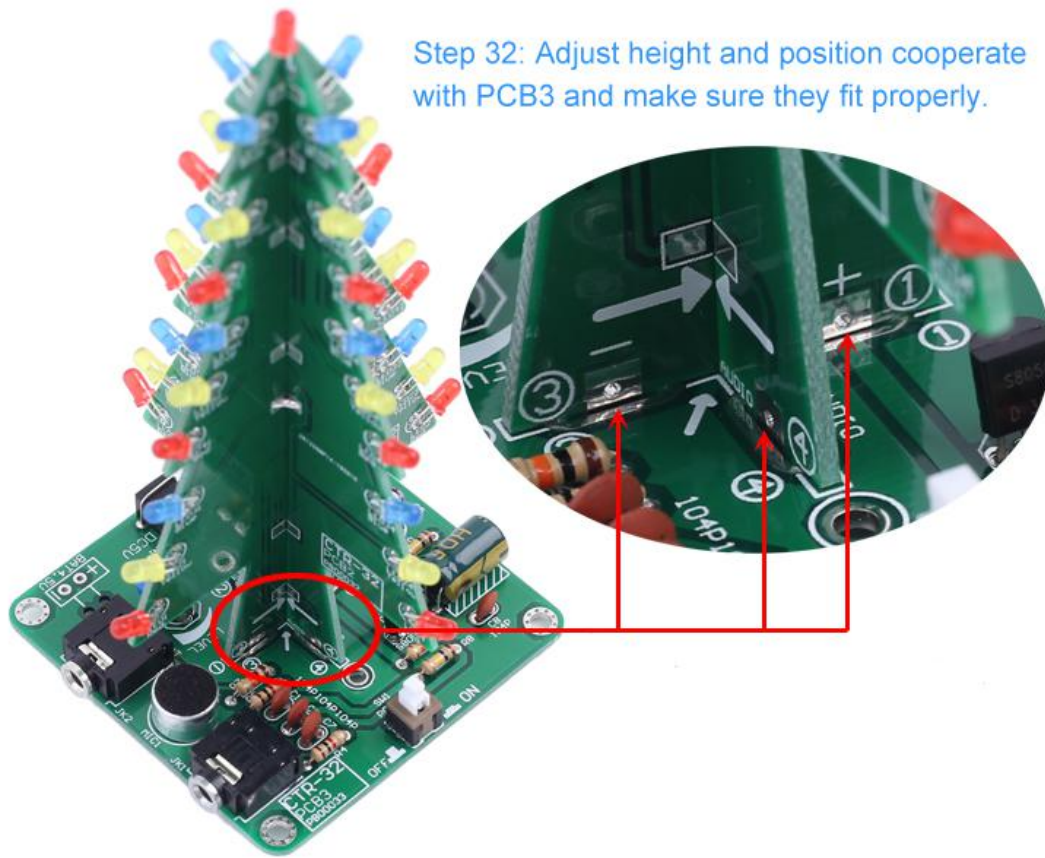






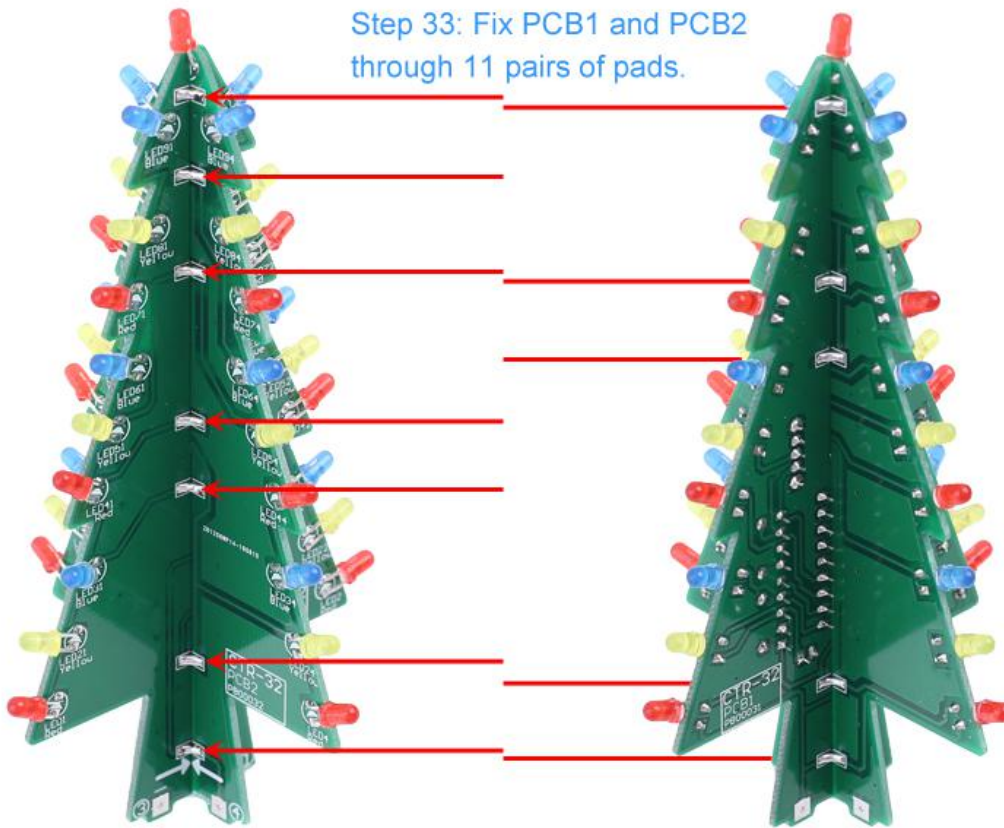
Step 31: Assemble PCB1 and PCB2. At the same time, fix only a pair of pads for adjusting the position. The direction of assembly must be in accordance with the arrow on PCB.





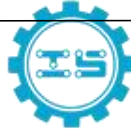


Step 33: Fix PCB1 and PCB2
through 11 pairs of pads.



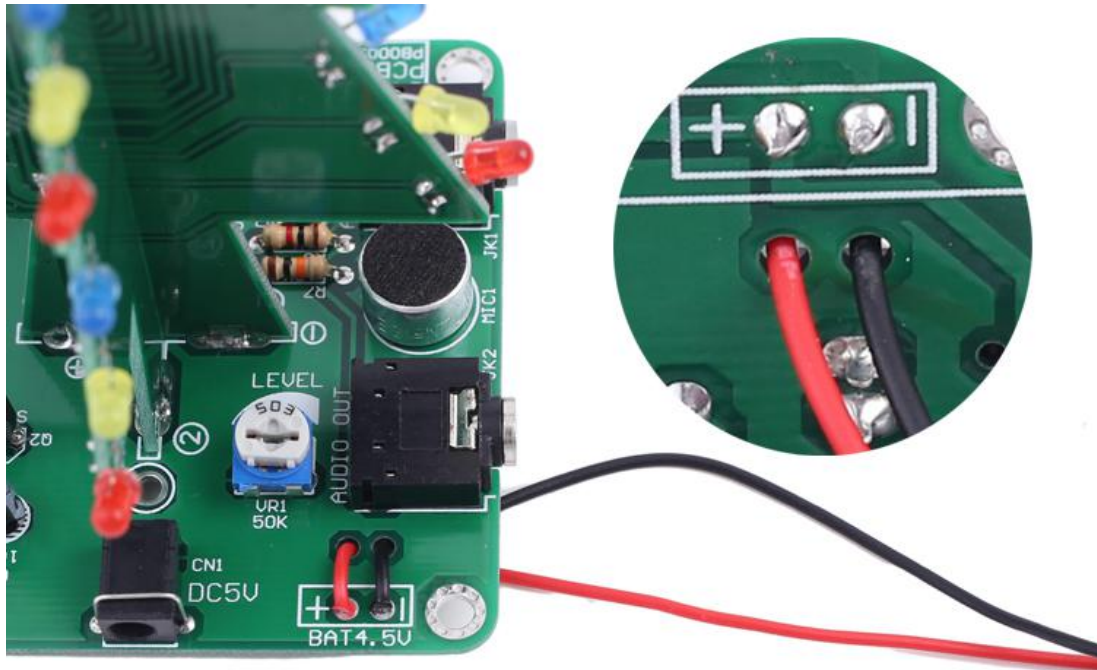


Step 34: Fix PCB1 and PCB2 on PCB through 8 pairs of pads. The direction of assembly must be in accordance with the arrow on PCB.



Step 35: Keep the wire of the battery box about 15cm.





Step 36: Install 1pcs AA*3 Battery Box at BAT4.5V.
Red wire connect to '+' and black wire connect to '-'.



Step 37: Fix the battery box on PCB3 and fix by 2pcs M2*5mm Screw and 2pcs M2 Nut.





Step 38: Connect to power supply and enjoy the effect.