



1.Introduction:

4-Color LED Music Spectrum Display DIY Kit with Red/Green/Pink/Blue flashing.
 Its display effect changes automatically according to the input audio or mini microphone which can presenting a very gorgeous effect.
 It is a very interesting DIY electronic product which enables users to understand the circuit more clearly and learn welding skills.

2.Feature:

- ◆ Two audio spectrum input modes:USB Input Mode and MIC Input Mode
- ◆ Adjustable audio sensitivity
- ◆ 1 to 2 audio cable which convenient to connect speakers
- ◆ Four LED colors are brightly displayed
- ◆ DIY soldering kits project

3.Parameter:

Product Name:4-Color LED Music Spectrum Display DIY Kit
 Work Voltage:DC 5V
 Display Color:Red&Green&Pink&Blue
 Audio Input Mode:USB Input Mode and MIC Input Mode
 Work Temperature:-20℃~85℃
 Work Humidity:5%~85%RH
 Size(Installed):205*85*20mm

4. Function:

- 1.Toggle Switch is used to switch audio input channel.
 Turn UP: Selected MIC audio input. The display automatically changes with the sound received by the microphone.

Turn Down: Selected MINI USB audio input. The display automatically changes with the audio input by the USB. Note:Random change when no USB audio input at this mode.

USB socket can not only provide working power, but also input audio signals.

- 2.Adjust potentiometer to adjustable audio sensitivity.

5. Components List:

NO.	Component Name	PCB Marker	Parameter	QTY
1	Metal Film Resistor	R1-R8	1Kohm	8
2	Metal Film Resistor	R9,R11,R12,R14,R15,R17-R20	4.7Kohm	9
3	Metal Film Resistor	R10,R13,R16	47Kohm	3
4	Monolithic Capacitor	C1,C2	20pF	2

5	Electrolytic Capacitor	C3-C8	10uF 50V	6
6	Red LED	01/05/09/13/17/21 Column	5mm	48
7	Green LED	02/06/10/14/18/22 Column	5mm	48
8	Pink LED	03/07/11/15/19/23 Column	5mm	48
9	Blue LED	04/08/12/16/20/24 Column	5mm	48
10	Potentiometer	VR	50Kohm	1
11	Crystal Oscillator	Y1	32.768MHz	1
12	MINI USB Socket	USB	5Pin	1
13	MIC Microphone	MIC	6*5mm	1
14	Toggle Switches	MODE	5Pin	1
15	4Pin Male Pin	J2	2.54mm	1
16	STC12C5A60S2 Controller	MCU	DIP-40	1
17	IC Socket	MCU	DIP-40	1
18	JRC4558D Operational Amplifier	U1	DIP-8	1
19	IC Socket	U1	DIP-8	1
20	USB Audio Wire		50cm	1
21	Dual 3.5mm Audio Wire			1
22	Acrylic Board		Transparent	6
23	PCB Fix Copper Pillar		M2*4mm	4
24	PCB Front Fix Screw		M2*4mm	4
25	PCB Back Fix Screw		M2*5mm	4
26	Acrylic Fix Screw		M2*9mm	11
27	Acrylic Fix Nut		M2	11
28	PCB		192*72*1.6mm	1

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

6.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(3.0 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.

7.Installation Steps (Please be patient):

Step 1: Install 8pcs 1Kohm Metal Film Resistor at R1-R8.

Step 2: Install 9pcs 4.7Kohm Metal Film Resistor at R9,R11,R12,R14,R15,R17-R20.

Step 3: Install 3pcs 47Kohm Metal Film Resistor at R10,R13,R16.

Step 4: Install 1pcs 32.768MHz Crystal Oscillator at Y1.

Step 5: Install 2pcs 20pF Monolithic Capacitor at C1,C2.

Step 6: Install 1pcs 5Pin MINI USB Socket at USB.

Step 7: Install 1pcs DIP-40 IC Socket at MCU. There is a mark(notch) on one end of the IC Socket and there is a mark(curved silk screen printing) on PCB 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 8: Install 1pcs DIP-8 IC Socket at U1. There is a mark(notch) on one end of the IC Socket and there is a mark(curved silk screen printing) on PCB 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 9: 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:

- According to the length of the LED lead to distinguish. The longer pin is positive(anode) lead. The shorter pin is negative(cathode) lead.
- 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.
- Identify by edge of plastic case. The negative(cathode) lead of the LED should be the pin nearest the flat on the plastic case.
- Test by 3V battery or multi-meter. 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 than 0.5second)
- It is positive(anode) where the white mark "+" pointing to on PCB.

Step 10: Install 48pcs 5mm Red LED at 01/05/09/13/17/21 columns. Note: The longer pin connect to '+' pad.

Step 11: Install 48pcs 5mm Green LED at 02/06/10/14/18/22 columns. Note: The longer pin connect to '+' pad.

Step 12: Install 48pcs 5mm Pink LED at 03/07/11/15/19/23 columns. Note: The longer pin connect to '+' pad.

Step 13: Install 48pcs 5mm Blue LED at 04/08/12/16/20/24 columns. Note: The longer pin connect to '+' pad.

Step 14: Install 1pcs 6*5mm MIC Microphone at MIC. Pay attention to distinguish between positive and negative.

Step 15: Install 6pcs 10uF 50V Electrolytic Capacitor at C3-C8. Pay attention to distinguish between positive and negative. The Longer pin is positive pole.

Step 16: Install 1pcs 5Pin Toggle Switches at MODE.

Step 17: Install 1pcs DIP-40 IC STC12C5A60S2 Controller at MCU. There is a mark(notch) on one end of the IC Socket and there is a mark(curved silk screen printing) 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.

Step 18: Install 1pcs DIP-8 IC JRC4558D at U1. There is a mark(notch) on one end of

the IC Socket and there is a mark(curved silk screen printing) 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.

Step 19: Install 1pcs 50Kohm Potentiometer at VR. Note: It is mounted on another side of PCB if need to install acrylic case as following. Otherwise it can be installed on the front of the PCB. What we show is mounted on the back of the PCB.

Step 20: Install PCB fix bracket by 4pcs M2*4mm Copper Pillar and 4pcs M2*4mm screw.

Step 21: Tear off the acrylic surface protective film.

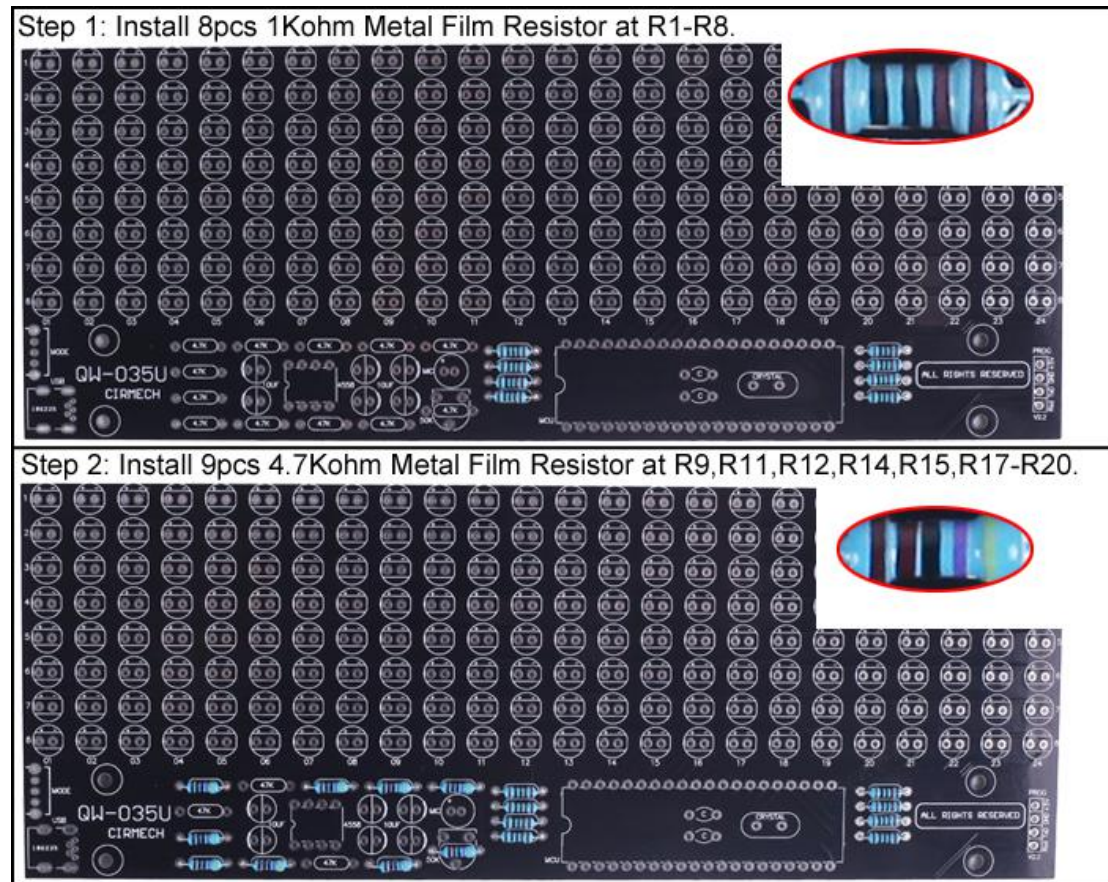
Step 22: Install 1pcs Acrylic bottom plate by 4pcs M2*5mm Screw on the back of the PCB.

Step 23: Install the 4pcs acrylic panels on the side and fix by 7pcs M2*9mm Screw and 7pcs M2 Nut. Pay attention to the USB interface. Users can use tweezers to clamp the nut and fix the screw when installing M2 screws.

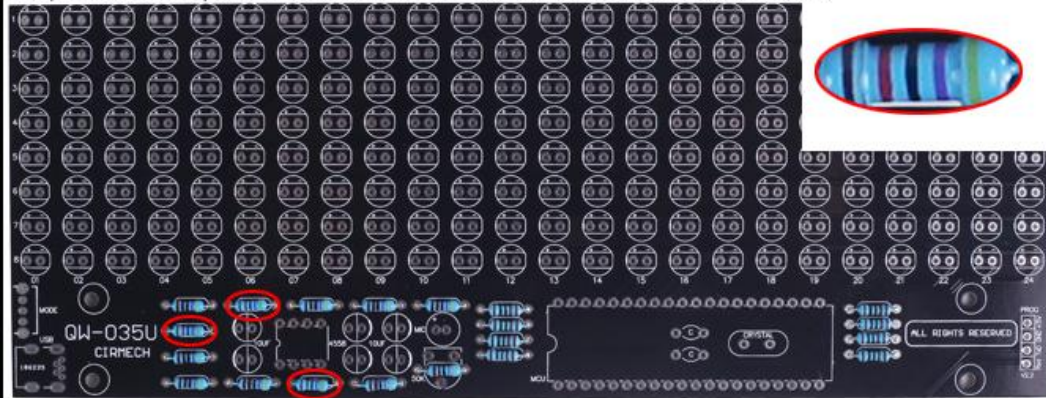
Step 24: Install 1pcs Acrylic top board by 4pcs M2*9mm Screw and 4pcs M2 Nut on the top of the PCB.

Step 25: Connect to power supply and music audio to enjoy the effect.

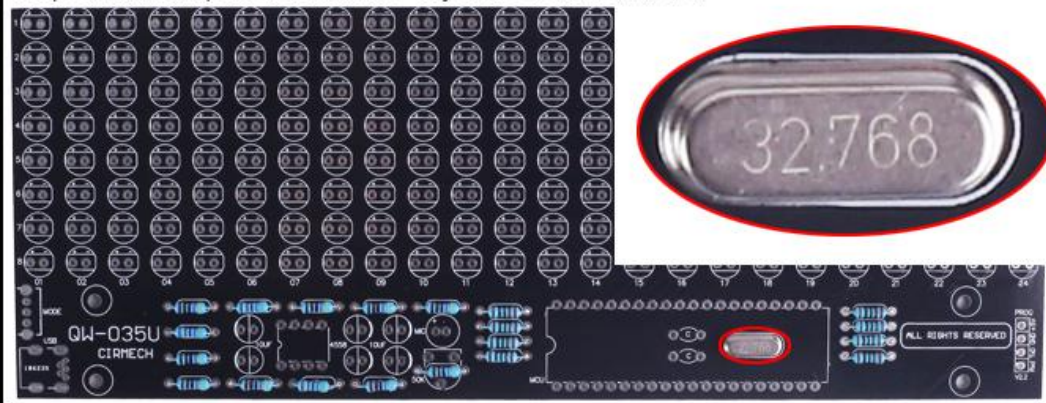
8. Install shown steps:



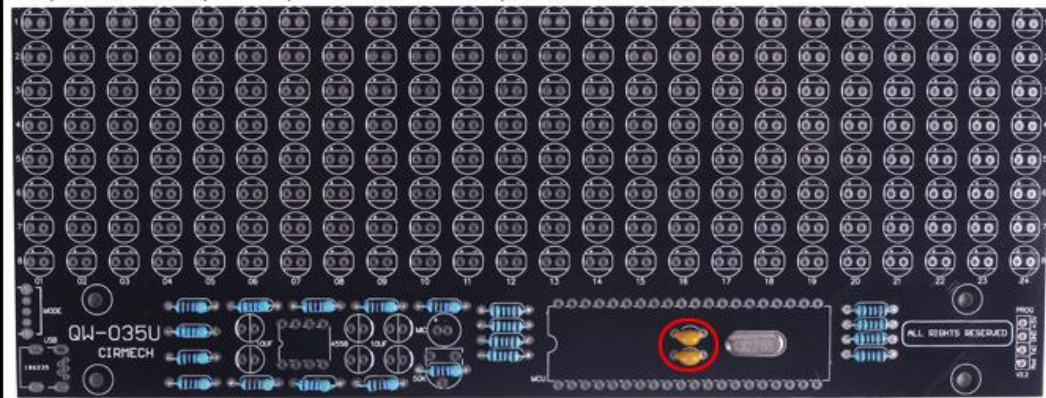
Step 3: Install 3pcs 47Kohm Metal Film Resistor at R10,R13,R16.



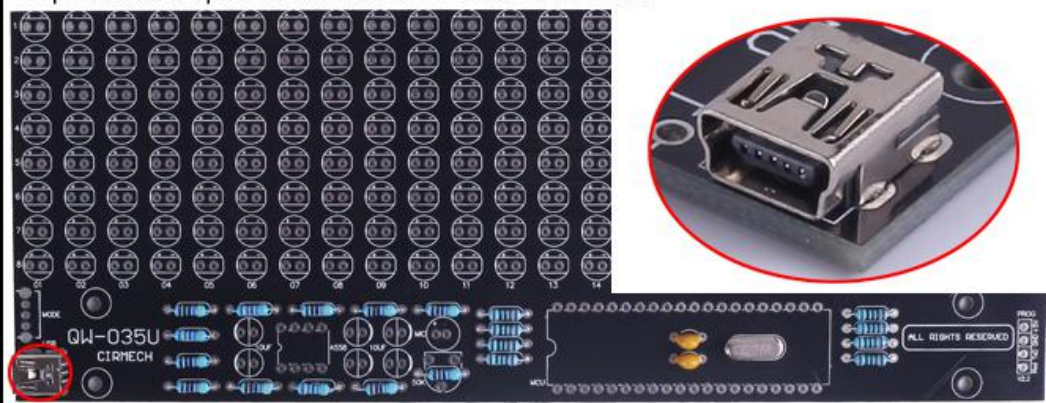
Step 4: Install 1pcs 32.768MHz Crystal Oscillator at Y1.



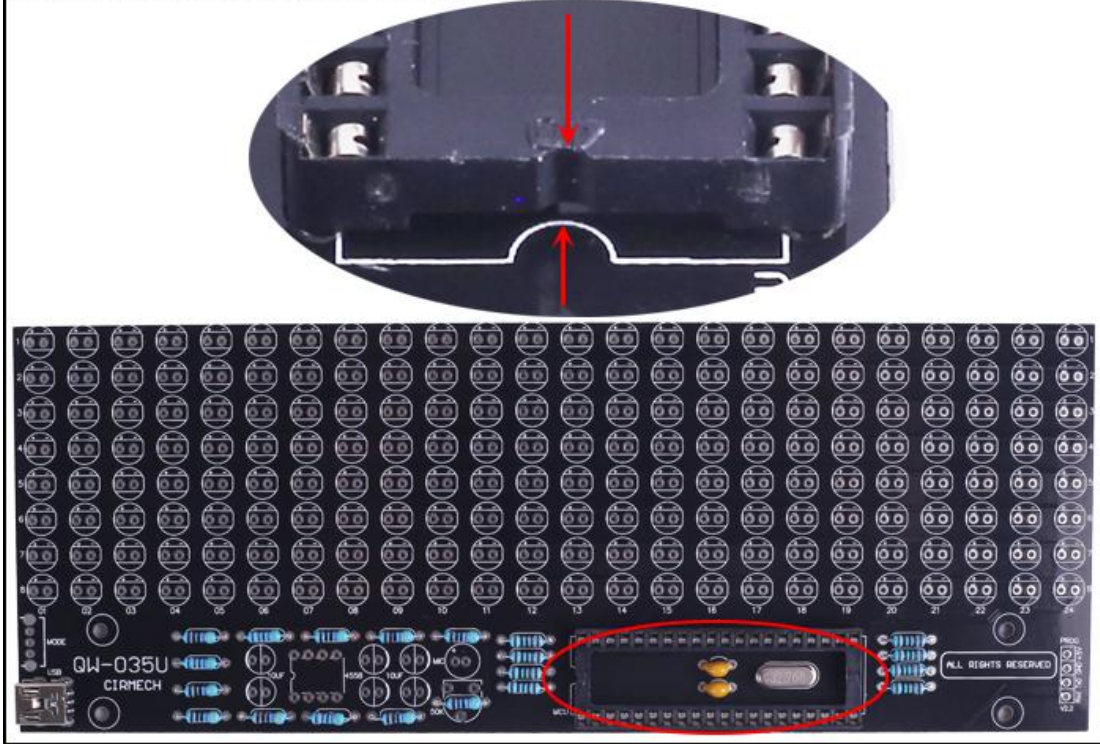
Step 5: Install 2pcs 20pF Monolithic Capacitor at C1,C2.



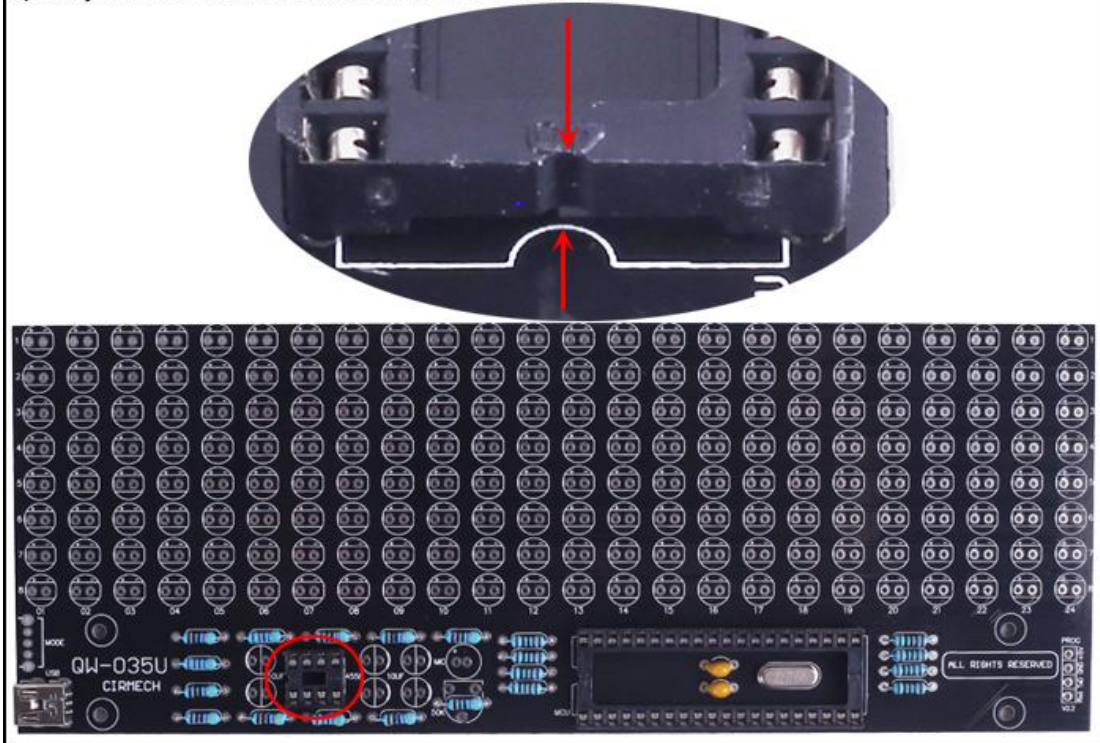
Step 6: Install 1pcs 5Pin MINI USB Socket at USB.



Step 7: Install 1pcs DIP-40 IC Socket at MCU. There is a mark(notch) on one end of the IC Socket and there is a mark(curved silk screen printing) on PCB 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 8: Install 1pcs DIP-8 IC Socket at U1. There is a mark(notch) on one end of the IC Socket and there is a mark(curved silk screen printing) on PCB 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.



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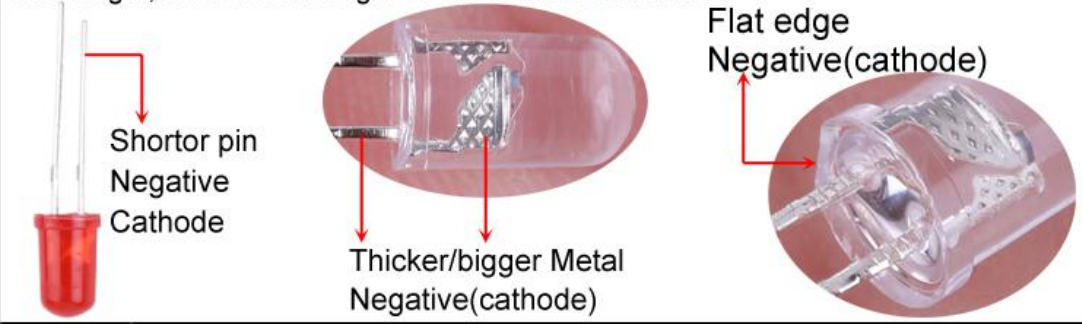
9.1>.According to the length of the LED lead to distinguish. The longer pin is positive(anode) lead. The shorter pin is negative(cathode) lead.

9.2>.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.

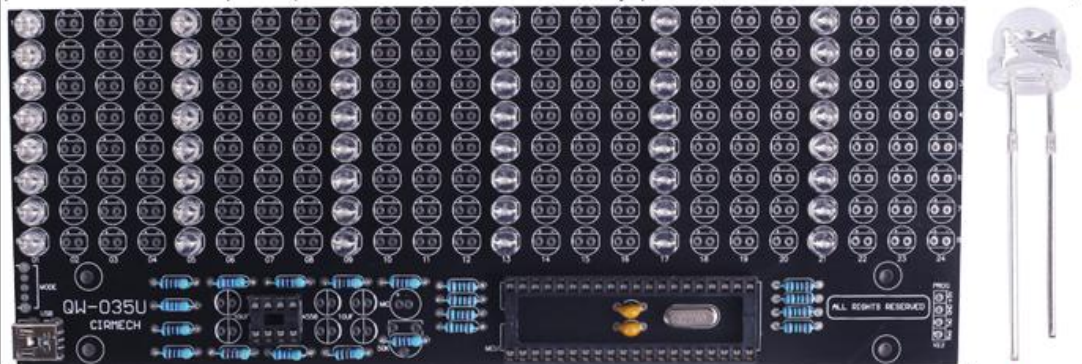
9.3>.Identify by edge of plastic case. The negative(cathode) lead of the LED should be the pin nearest the flat on the plastic case.

9.4>.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)

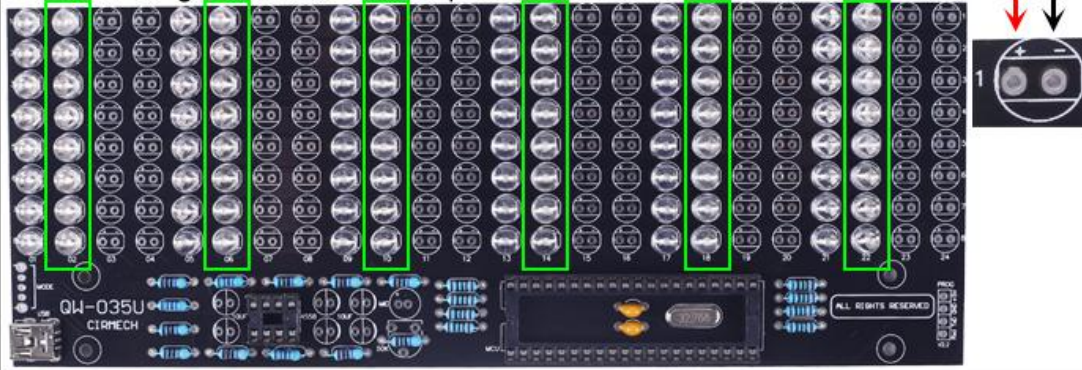
9.5>.Note:If the flat on package disagrees with other indicators(short lead,large cathode lead end), then other indicators take priority. I.e. if the flat disagrees with the lead length,use the lead length as the cathode indicator.



Step 10: Install 48pcs 5mm Red LED at 01/05/09/13/17/21 columns. Note: The longer pin connect to '+' pad. (LED can also be randomly placed, but it is not recommended)

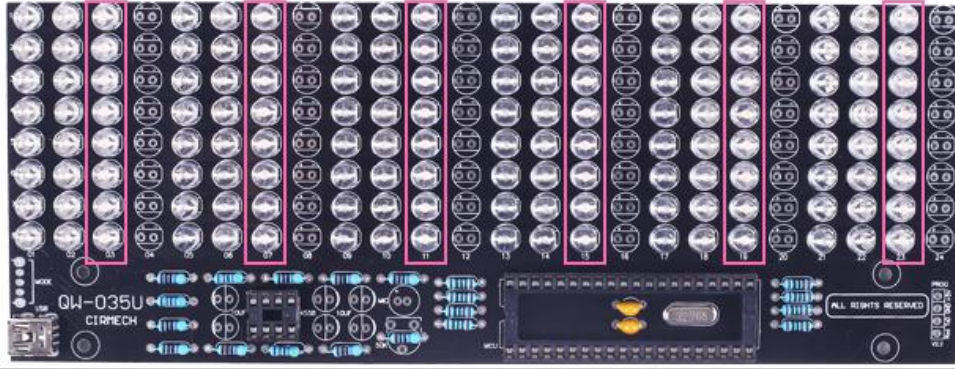


Step 11: Install 48pcs 5mm Green LED at 02/06/10/14/18/22 columns. Note: The longer pin connect to '+' pad.



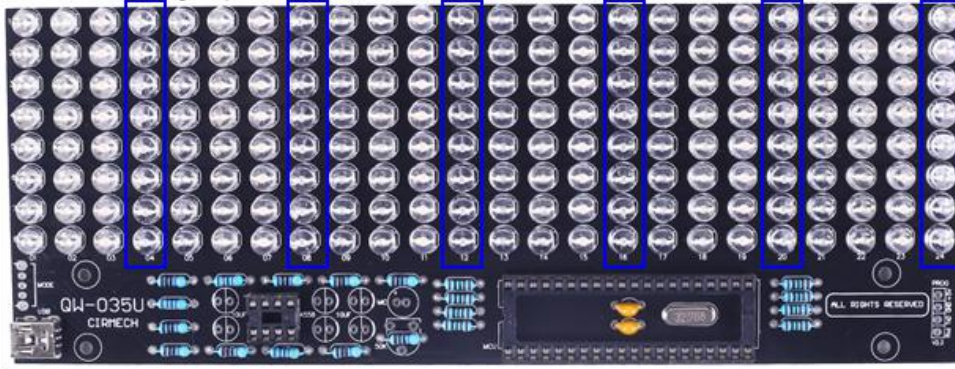
Step 12: Install 48pcs 5mm Pink LED at 03/07/11/15/19/23 columns.

Note: The longer pin connect to '+' pad.



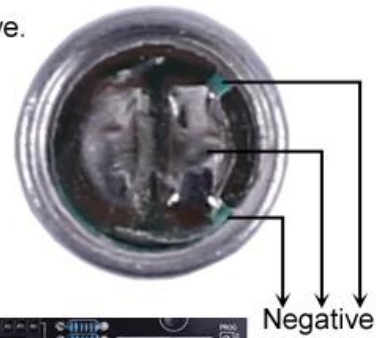
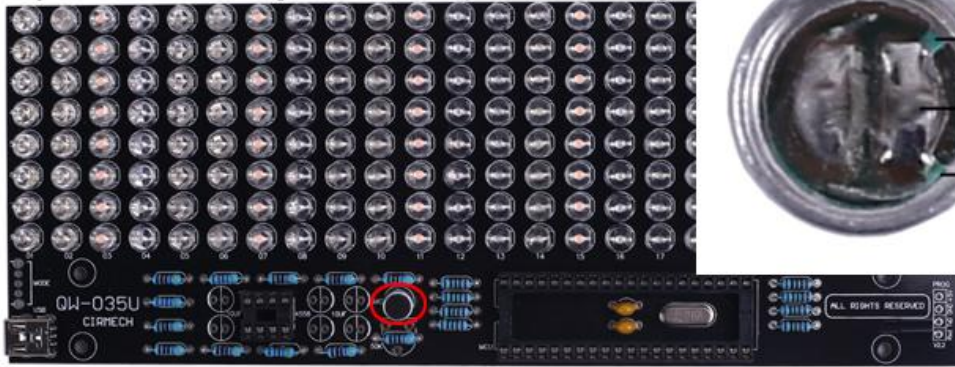
Step 13: Install 48pcs 5mm Blue LED at 04/08/12/16/20/24 columns.

Note: The longer pin connect to '+' pad.

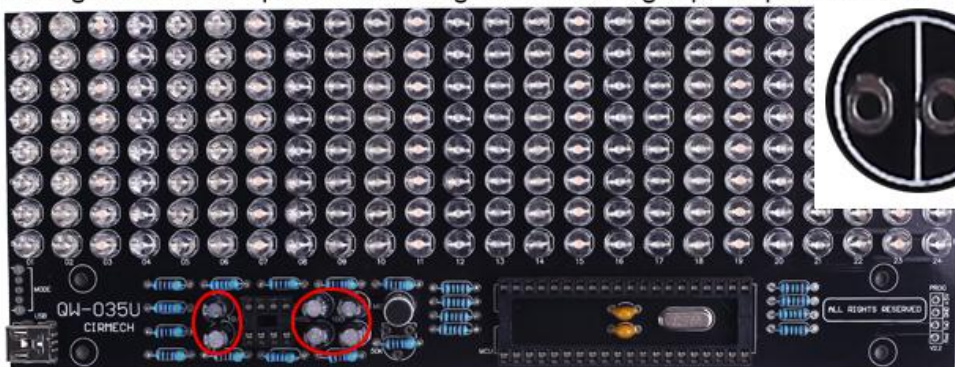


Step 14: Install 1pcs 6*5mm MIC Microphone at MIC.

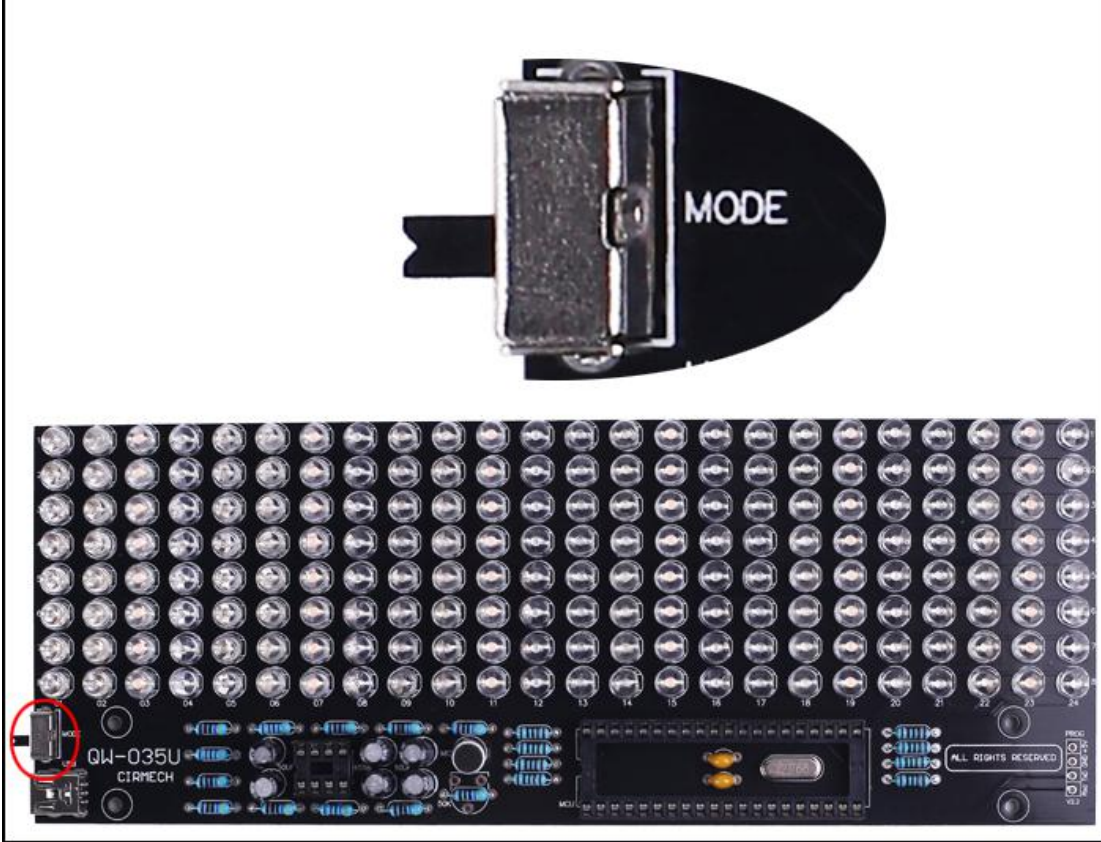
Pay attention to distinguish between positive and negative.



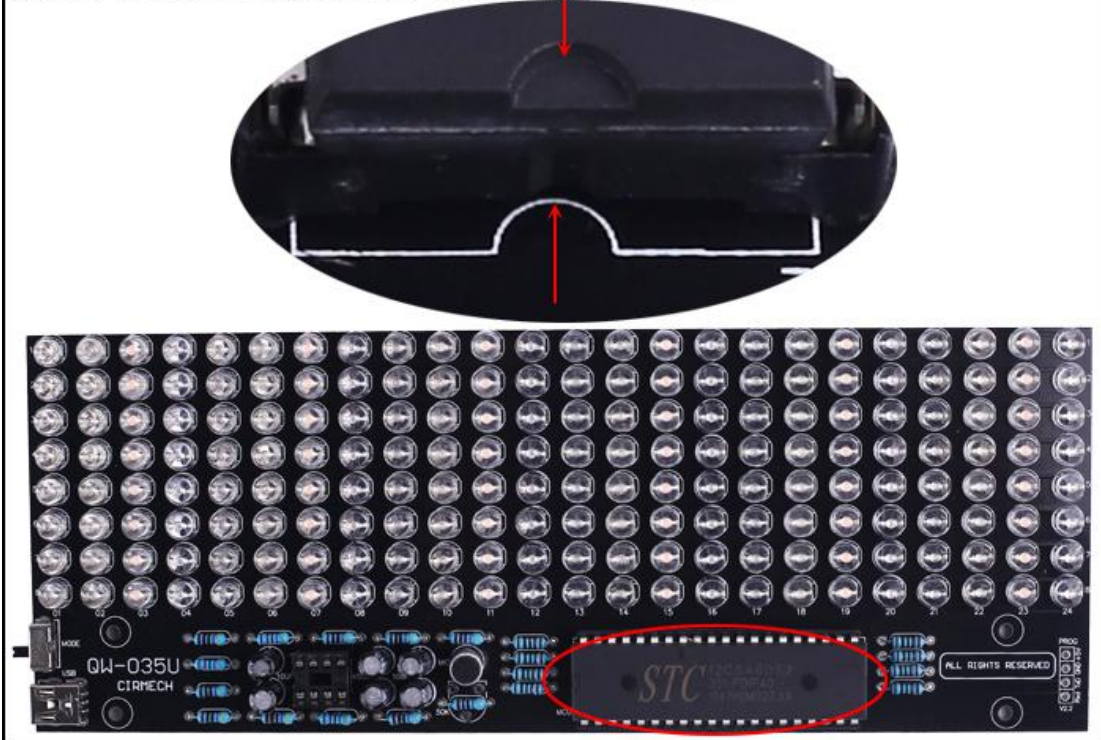
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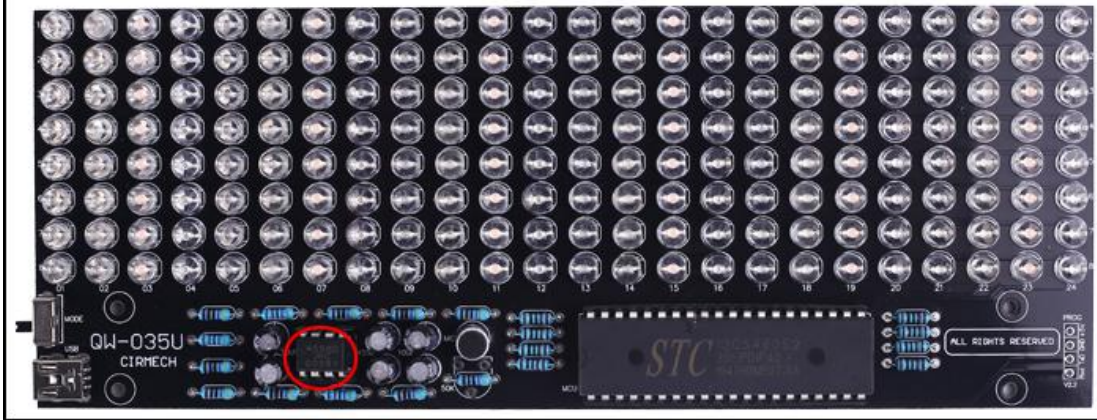
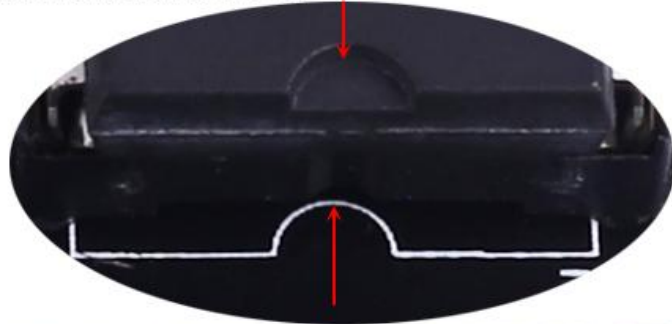
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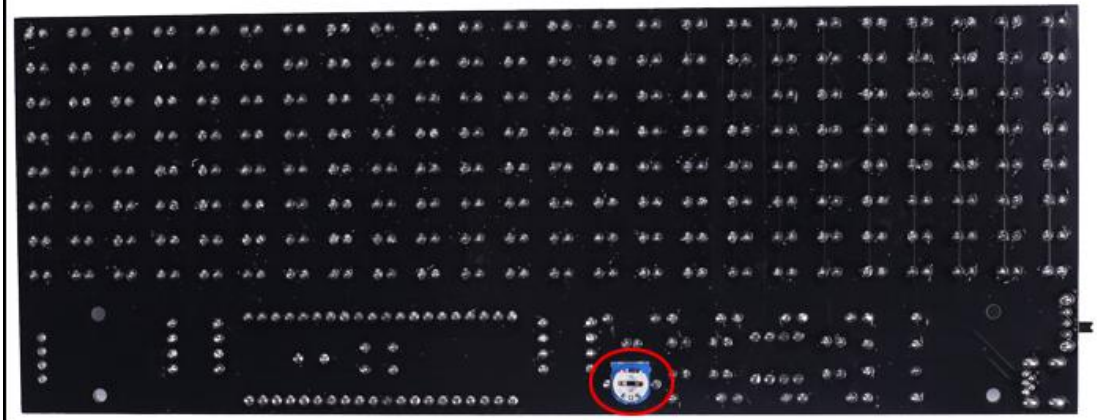
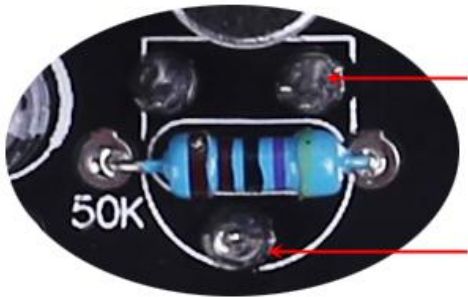
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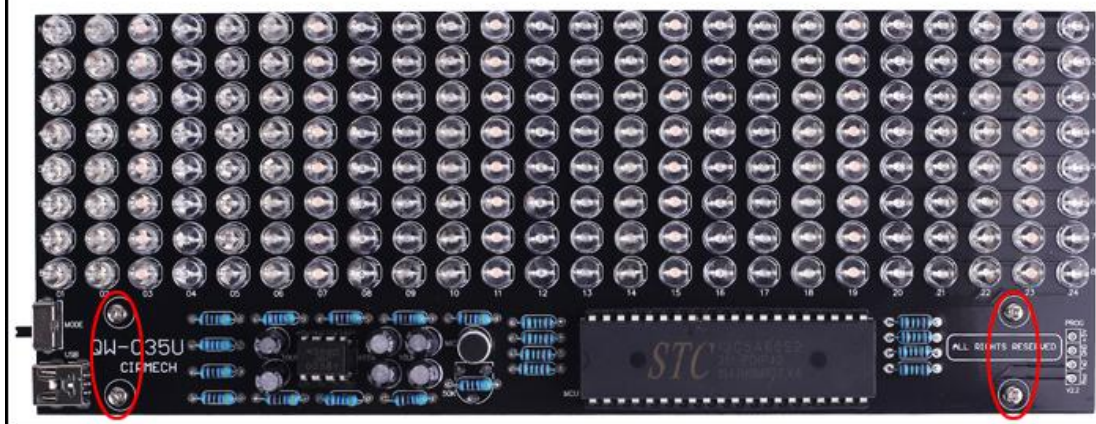
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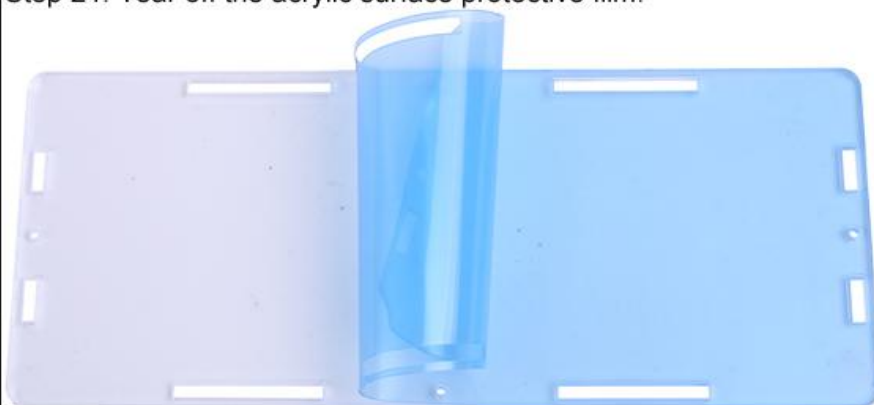
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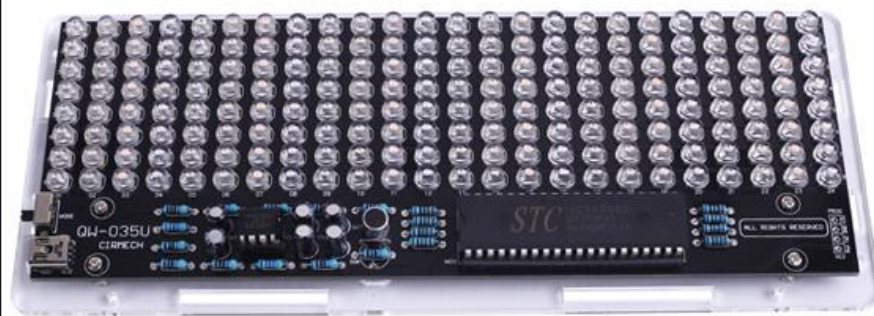
Step 20: Install PCB fix bracket by 4pcs M2*4mm Copper Pillar and 4pcs M2*4mm screw.



Step 21: Tear off the acrylic surface protective film.



Step 22: Install 1pcs Acrylic bottom plate by 4pcs M2*5mm Screw on the back.



Step 23: Install the 4pcs acrylic panels on the side and fix by 7pcs M2*9mm Screw and 7pcs M2 Nut. Pay attention to the USB interface. Users can use tweezers to clamp the nut and fix the screw when installing M2 screws.



Step 24: Install 1pcs Acrylic top board by 4pcs M2*9mm Screw and 4pcs M2 Nut on the top of the PCB.



Step 25: Connect to power supply and music audio to enjoy the effect.

