



ICs & Robot Gadgets

— Easy Deal Easy Fun —

5-Color LED Music Spectrum Display DIY Kit

1.Introduction:

It is a 5 Color LED Music Spectrum Display DIY Kit with Red/Yellow/Green/Blue/Pink flashing.

Its display effect changes automatically according to the input audio, 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 spectrum modes:Columnar Mode and Dot Mode
- ◆ Four animation display: Heart, ILU, Smile, Hourglass
- ◆ 1 to 2 audio cable which convenient to connect speakers
- ◆ Five LED colors are brightly displayed
- ◆ DIY soldering kits

3.Parameter:

- Product Name:5-Color LED Music Spectrum Display DIY Kit
- Work Voltage:DC 5V
- Display Color:Red&Yellow&Green&Blue&Pink
- Display Mode:Columnar Mode and Dot Mode
- Animation display:Heart & ILU & Smile & Hourglass
- Work Temperature:-40℃~85℃
- Work Humidity:5%~85%RH
- Size(Installed):185*109*20mm

4. Components List:

NO.	Component Name	PCB Marker	Parameter	QTY
1	STC12C5A60S2 Controller	U1	DIP-40	1
2	IC Socket	U1	DIP-40	1
3	Metal Film Resistor	R7-R15	470ohm	9
4	Metal Film Resistor	R17	100Kohm	1
5	Ceramic Capacitor	C1,C2	30pF	2
6	Ceramic Capacitor	C5,C7	47pF	2

7	Ceramic Capacitor	C3	0.1uF 104	1
8	Electrolytic Capacitor	C4	100uF	1
9	Crystal Oscillator	Y1	24MHz	1
10	Button	S1	6*6*12mm	1
11	Red LED	D1-D11,D56-D66	5mm	22
12	Yellow LED	D12-D22,D67-D77	5mm	22
13	Green LED	D23-D33,D78-D88,D111-D121	5mm	33
14	Blue LED	D34-D44,D89-D99,D122-D132	5mm	33
15	Pink LED	D45-D55,D100-D110	5mm	22
16	MINI USB Socket	J1	5Pin	1
17	Audio Connector			1
18	USB Audio Wire		50cm	1
19	Copper Pillar		M3*8mm	4
20	Screw		M3+6mm	8
21	Screw		M2+10mm	8
22	Nut		M2	8
23	Acrylic shell		188*109*2mm	6
24	PCB		175*91*1.6mm	1

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

5.Application:

- 1.Training welding skills
- 2.School Soldering Teaching
- 3.DIY production
- 4.Project Design
- 5.Electronic competition
- 6.Gift giving
- 7.Crafts collection
- 8.Home decoration
- 9.Souvenir collection
- 10.Graduation design

6.Installation Tips:

- 1.User needs to prepare the welding tool at first.
- 2.Please wear anti-static gloves or anti-static wristbands when installing electronic components.
- 3.The soldering iron can't touch the components for a long time(3.0 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 following installation manual before start your assembly.

7. Installation Steps (Please be patient):

- Step 1: Install 1pcs 100Kohm Metal Film Resistor at R17.
- Step 2: Install 9pcs 470ohm Metal Film Resistor at R7-R15.
- Step 3: Install 1pcs 24MHz Crystal Oscillator at Y1.
- Step 4: Install 1pcs 5Pin MINI USB Socket at J1.
- Step 5: Install 2pcs 30pF Ceramic Capacitor at C1,C2.

Step 6: Install 2pcs 47pF Ceramic Capacitor at C5,C7.

Step 7: Install 1pcs DIP-40 IC Socket at U1. There is a mark on one end of the IC Socket 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 Socket.

Step 8: Install 1pcs 0.1uF 104 Ceramic Capacitor at C3.

Step 9: Install 1pcs 100uF Electrolytic Capacitor at C4. Pay attention to distinguish between positive and negative. The Longer pin is positive pole.

Step 10: Install 1pcs 6*6*12mm Button at S1.

Step 11: 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:

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.
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.
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.
- 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 than 0.5second)

Note: It is positive(anode) where the white mark "+" pointing to on PCB.

Step 12: Install 22pcs 5mm Red LED at D1-D11, D56-D66 in the 1st & 6th columns from left as shown. (LED can also be randomly placed, but it is not recommended)

Step 13: Install 22pcs 5mm Yellow LED at D12-D22, D67-D77 in the 2nd & 7th columns from left as shown.

Step 14: Install 33pcs 5mm Green LED at D23-D33,D78-D88,D111-D121 in the 3rd & 8th & 11th columns from left as shown.

Step 15: Install 33pcs 5mm Blue LED at D34-D44,D89-D99,D122-D132 in the 4th & 9th & 12th columns from left as shown.

Step 16: Install 22pcs 5mm Pink LED at D45-D55,D100-D110 in the 5th & 10th columns from left as shown.

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 4pcs M3*8mm Copper Pillar and 4pcs M3+6mm Screw at 4 holes on PCB.

Step 19: Tear off the acrylic surface protective film.

Step 20: Install 1pcs Acrylic board by 4pcs M3+6mm Screw on the back of the PCB.

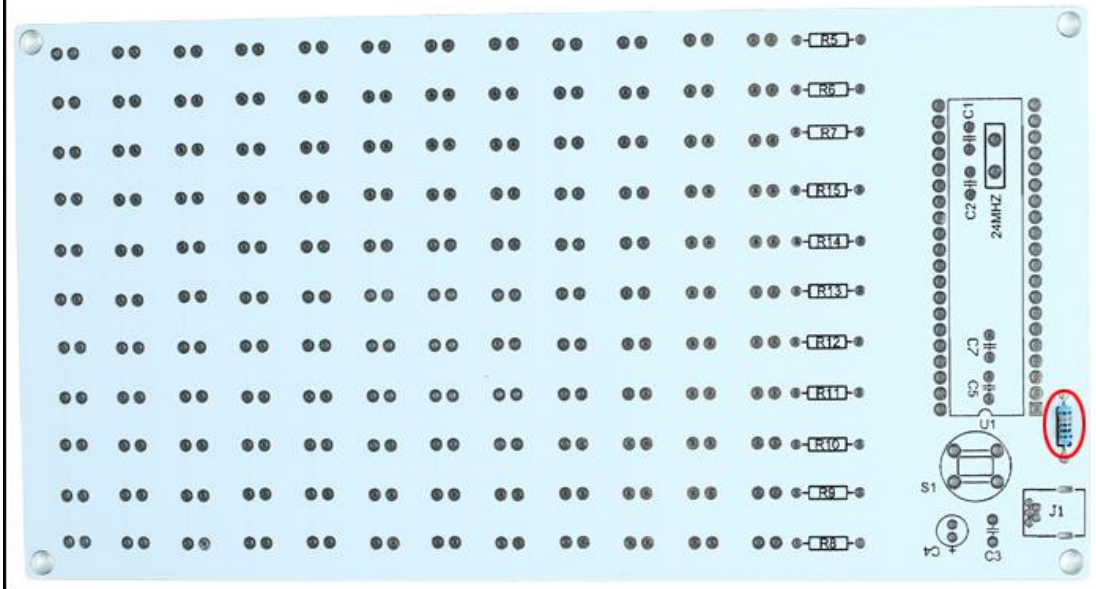
Step 21: Install the 4pcs acrylic panels on the side and fix by 4pcs M2+10mm Screw and 4pcs M2 Nut. Pay attention to the USB interface. Users can use tweezers to clamp the nut and fix the screw when installing M2 screws.

Step 22: Install 1pcs Acrylic board by 4pcs M3+6mm Screw and 4pcs M2+10mm Screw and 4pcs M2 Nut on the top of the PCB.

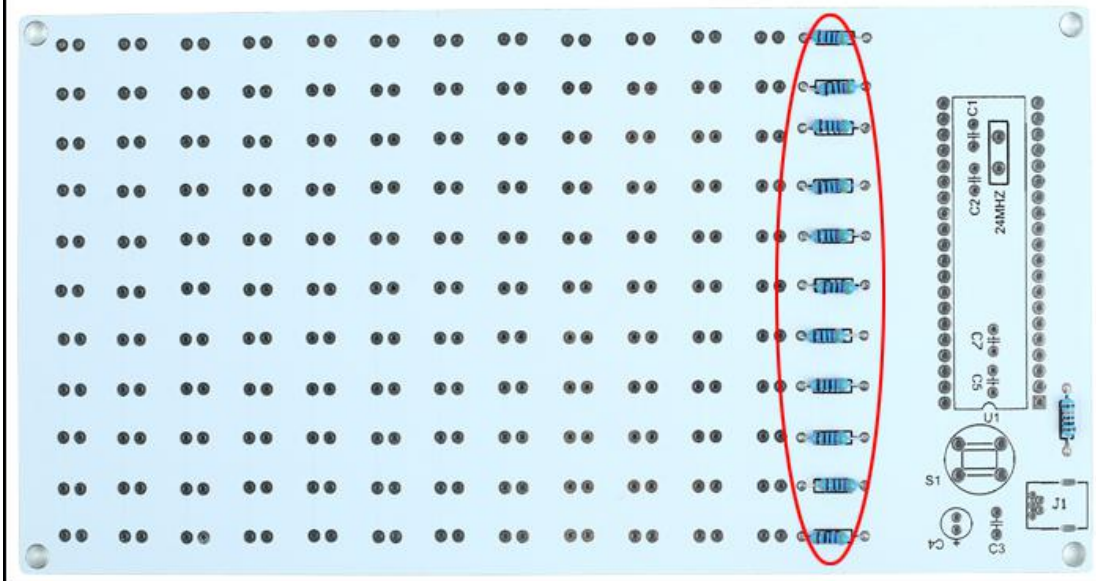
Step 23: Connect to power supply and enjoy the effect.

8. Install shown steps:

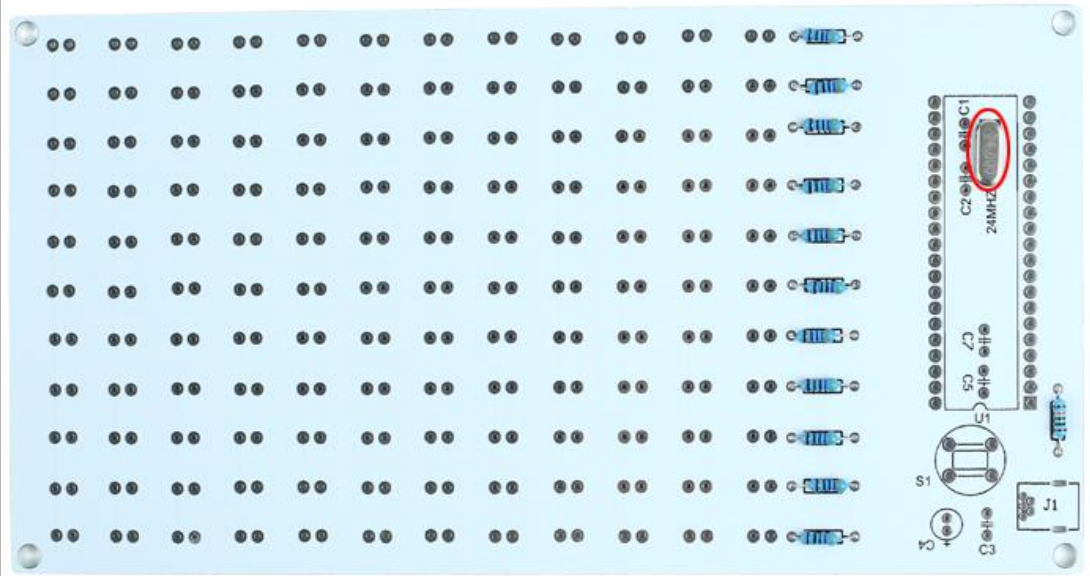
Step 1: Install 1pcs 100Kohm Metal Film Resistor at R17.



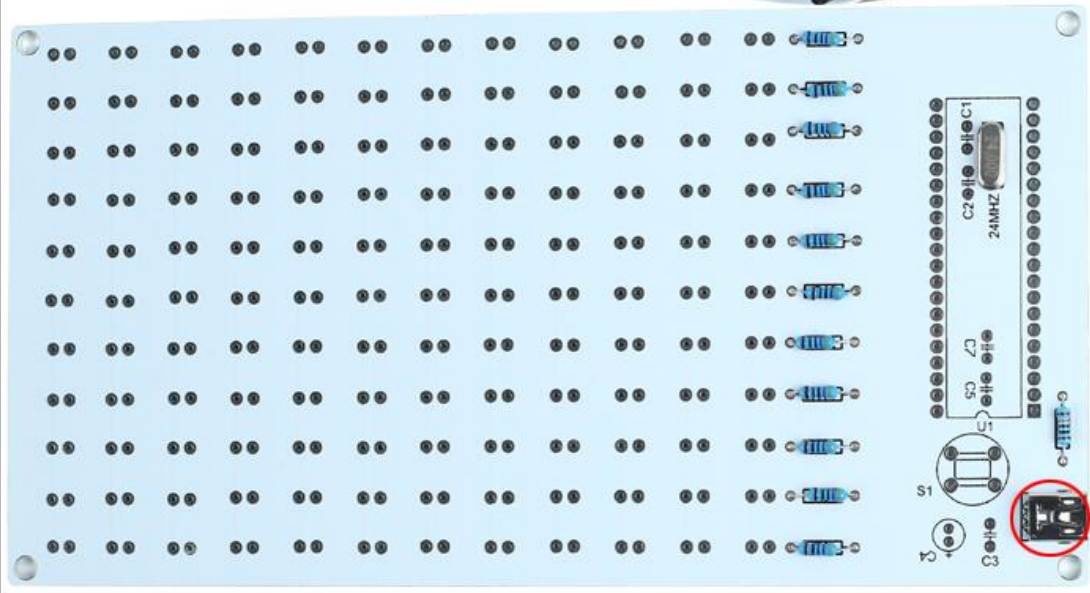
Step 2: Install 9pcs 470ohm Metal Film Resistor at R7-R15.



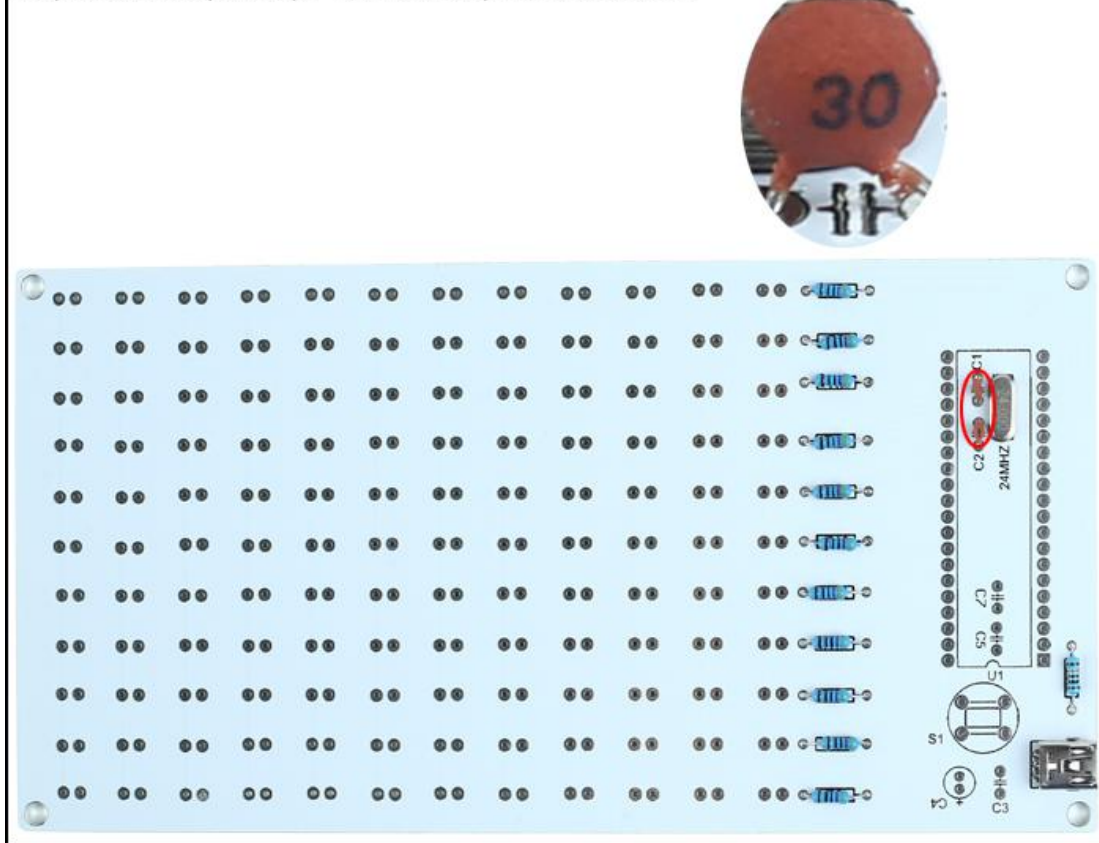
Step 3: Install 1pcs 24MHz Crystal Oscillator at Y1.



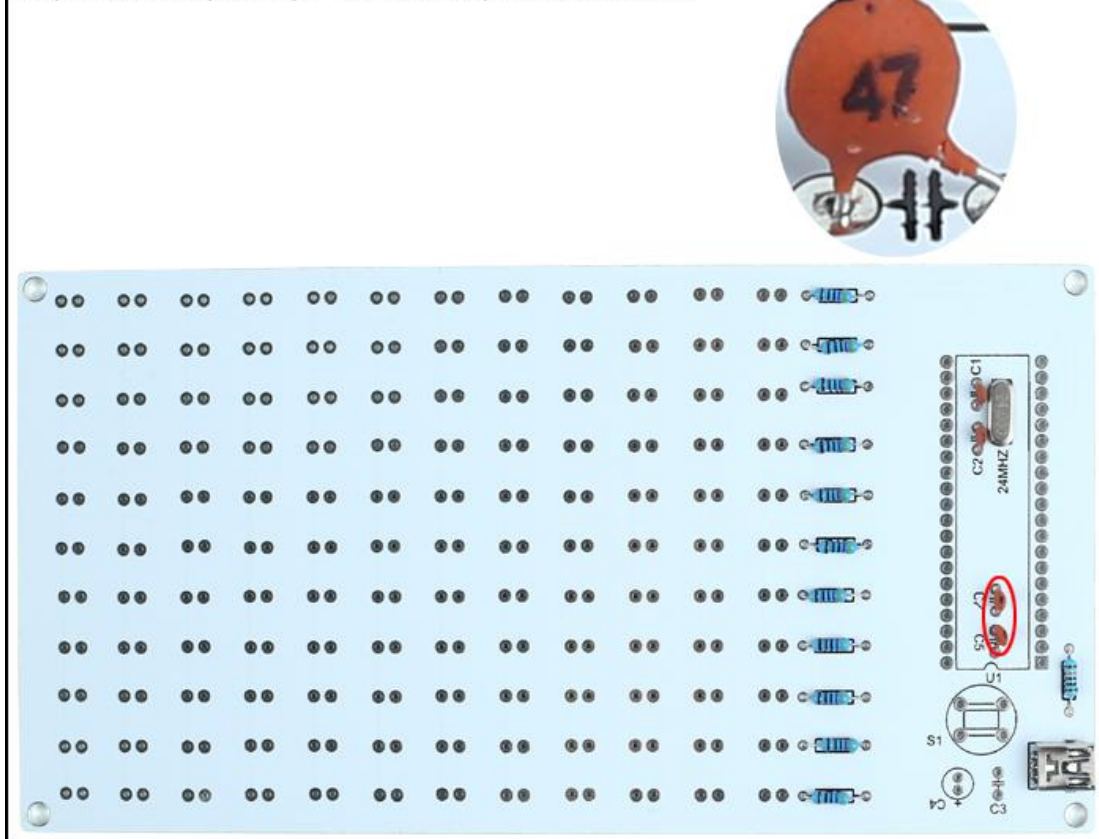
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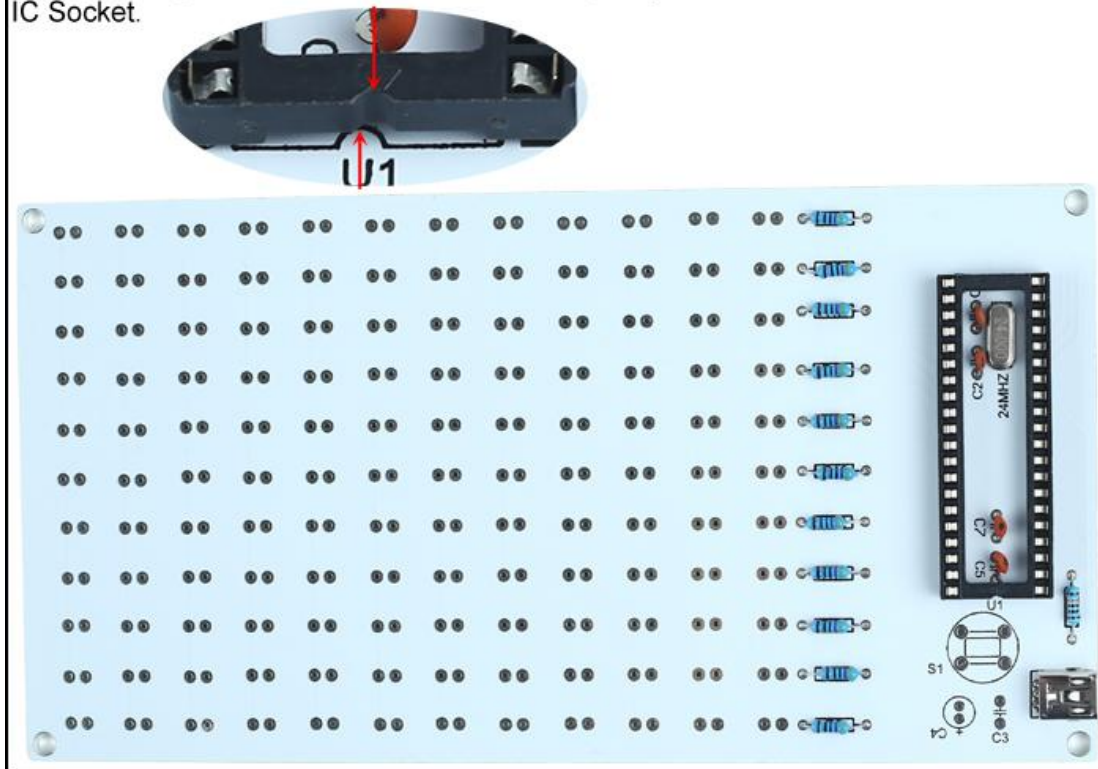
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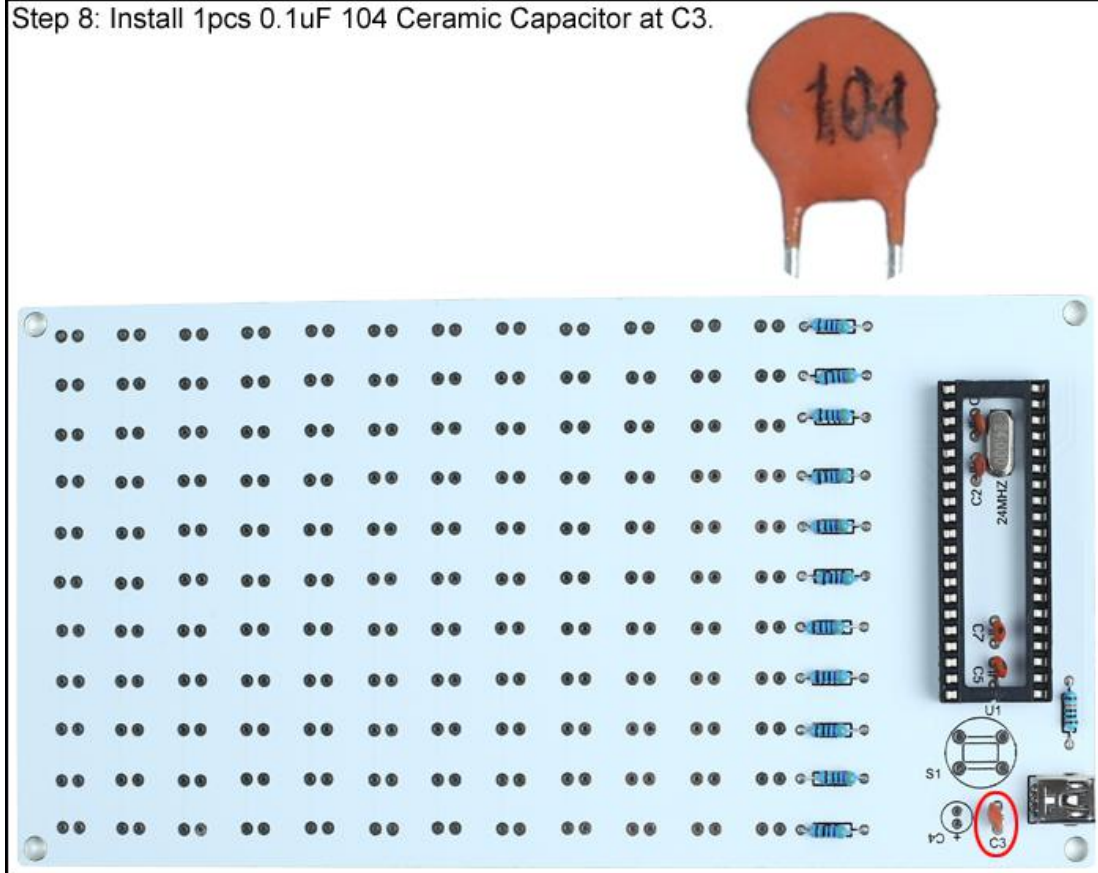
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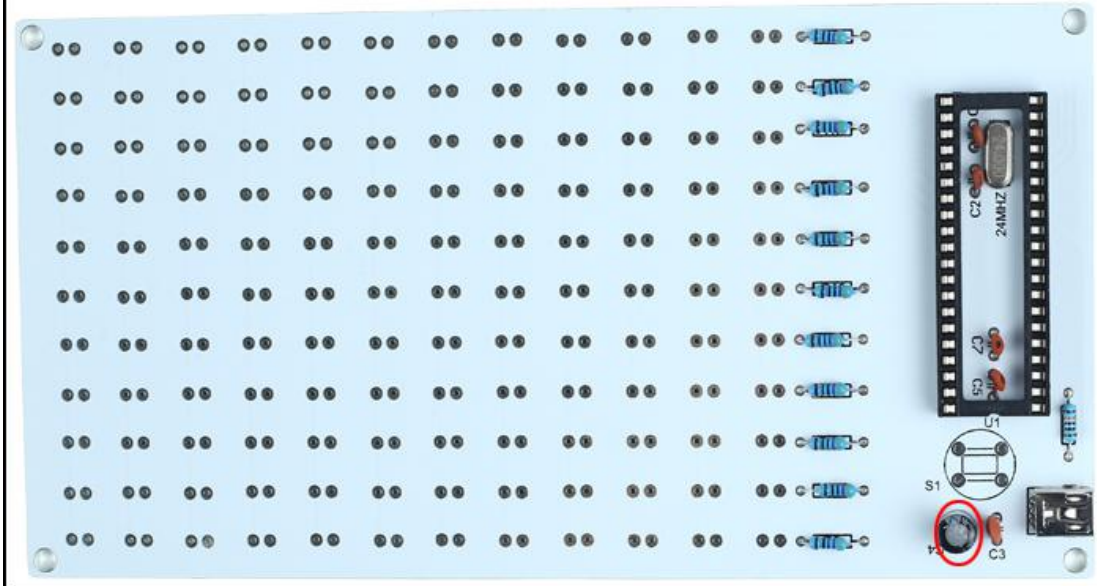
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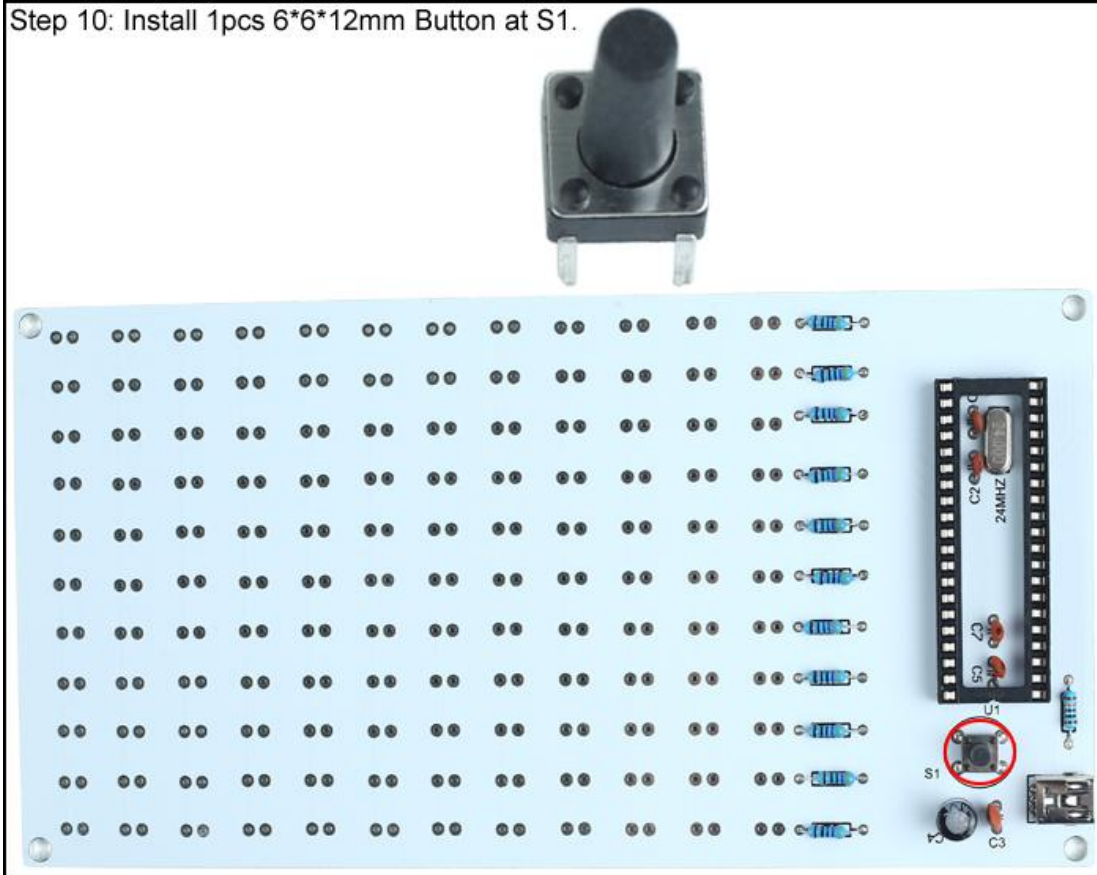
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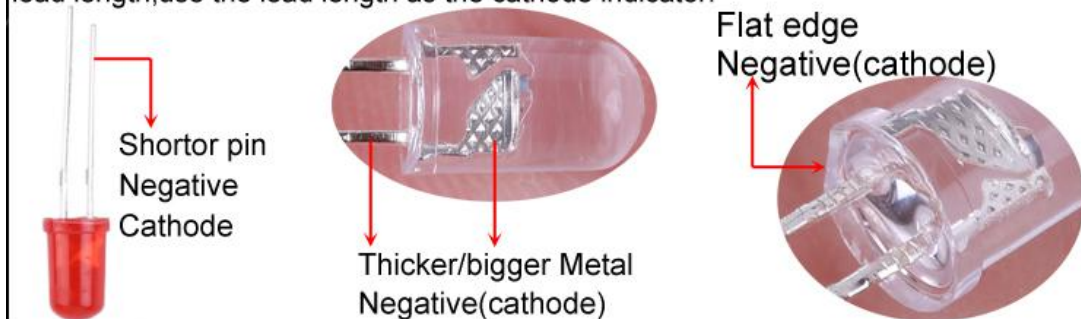
11.1>.According to the length of the LED lead to distinguish. The longer pin is positive(anode) lead. The shorter pin is negative(cathode) lead.

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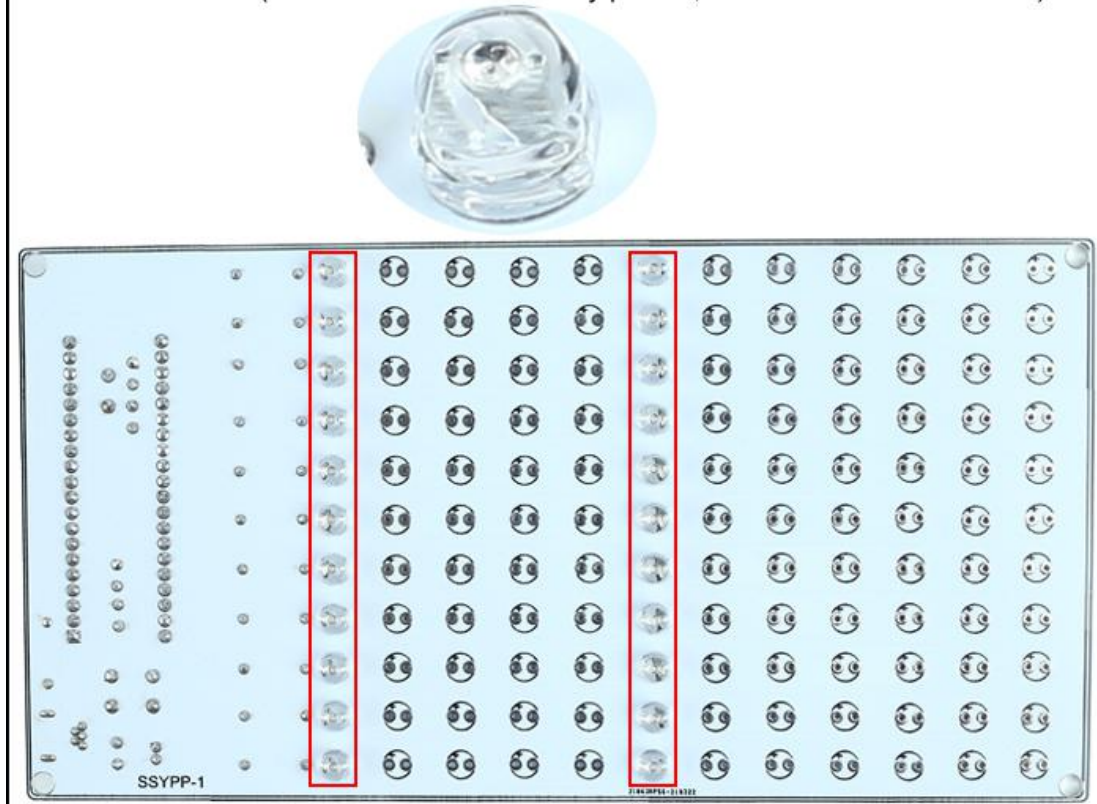
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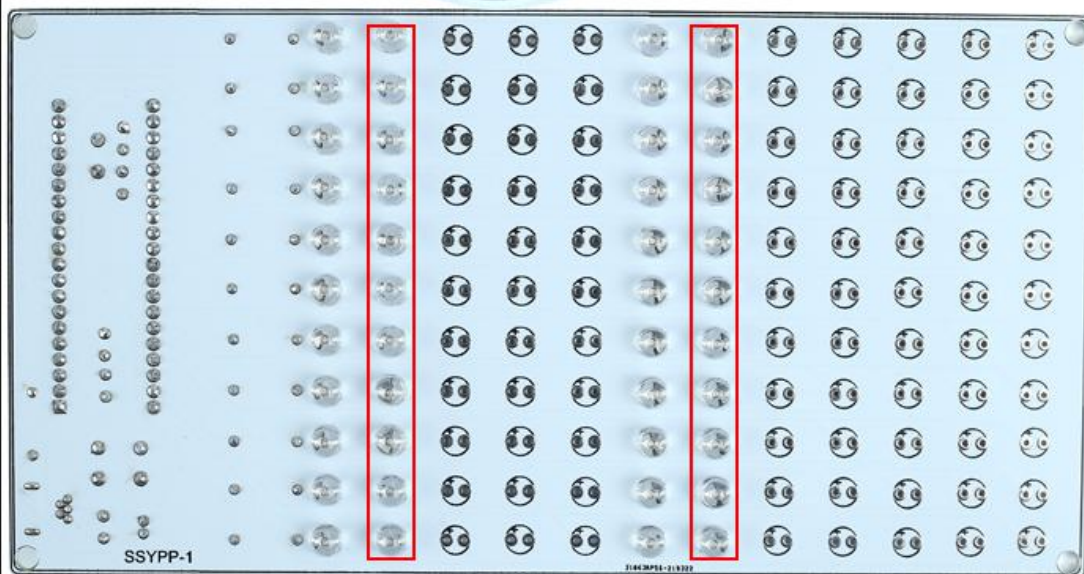
11.5>.Note:If the flat on package disagrees with other indicators(short lead,large cathode lead end), then other indicators take priority. I.e. if the flat disagrees with the lead length,use the lead length as the cathode indicator.



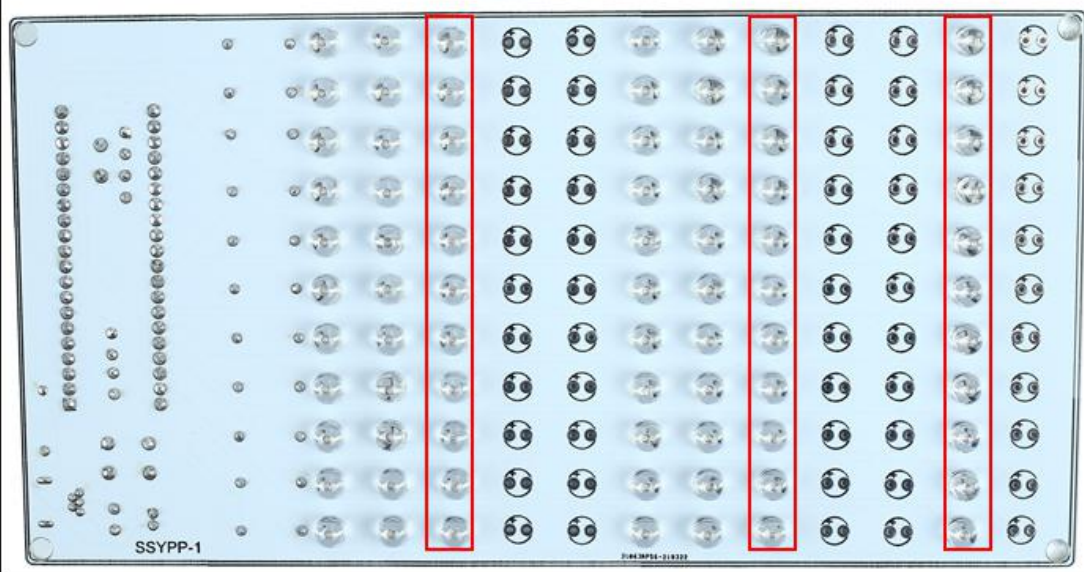
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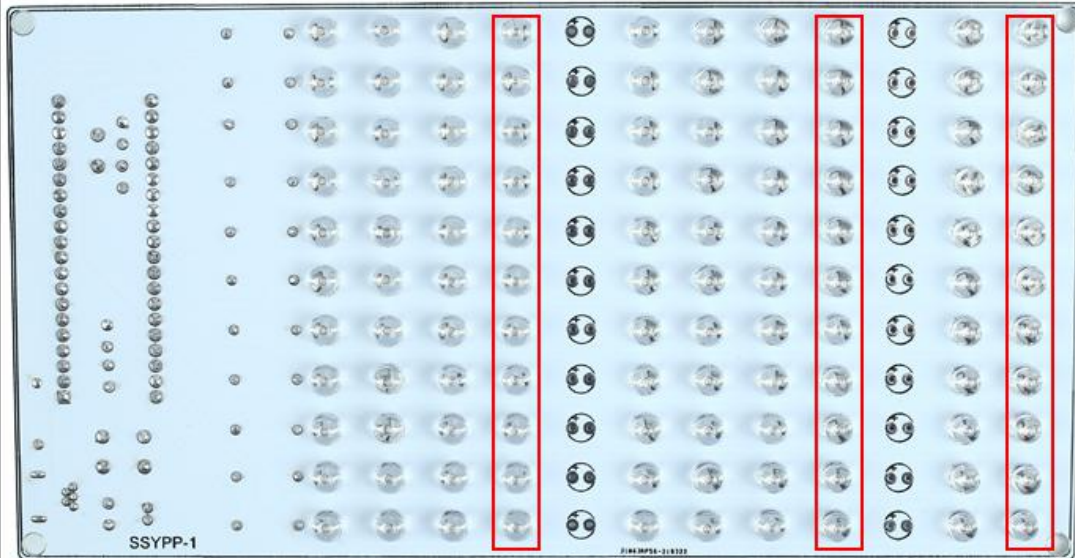
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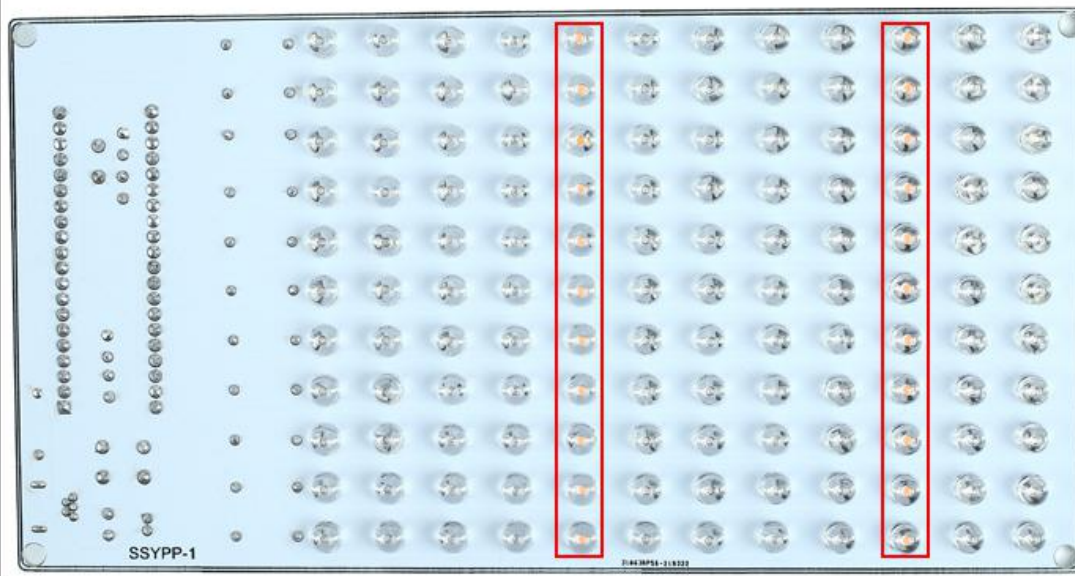
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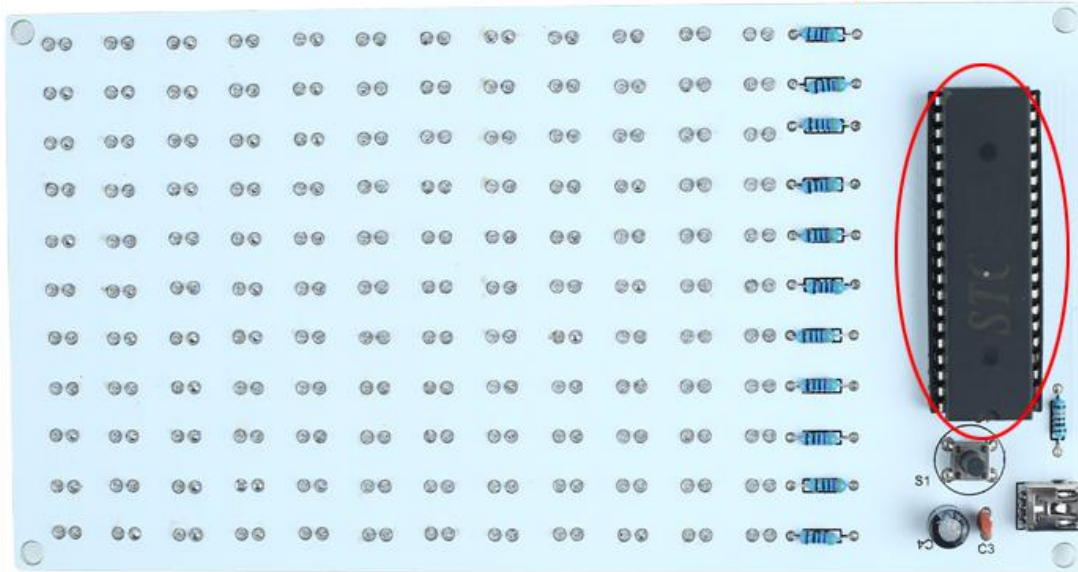
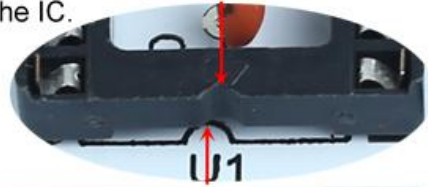
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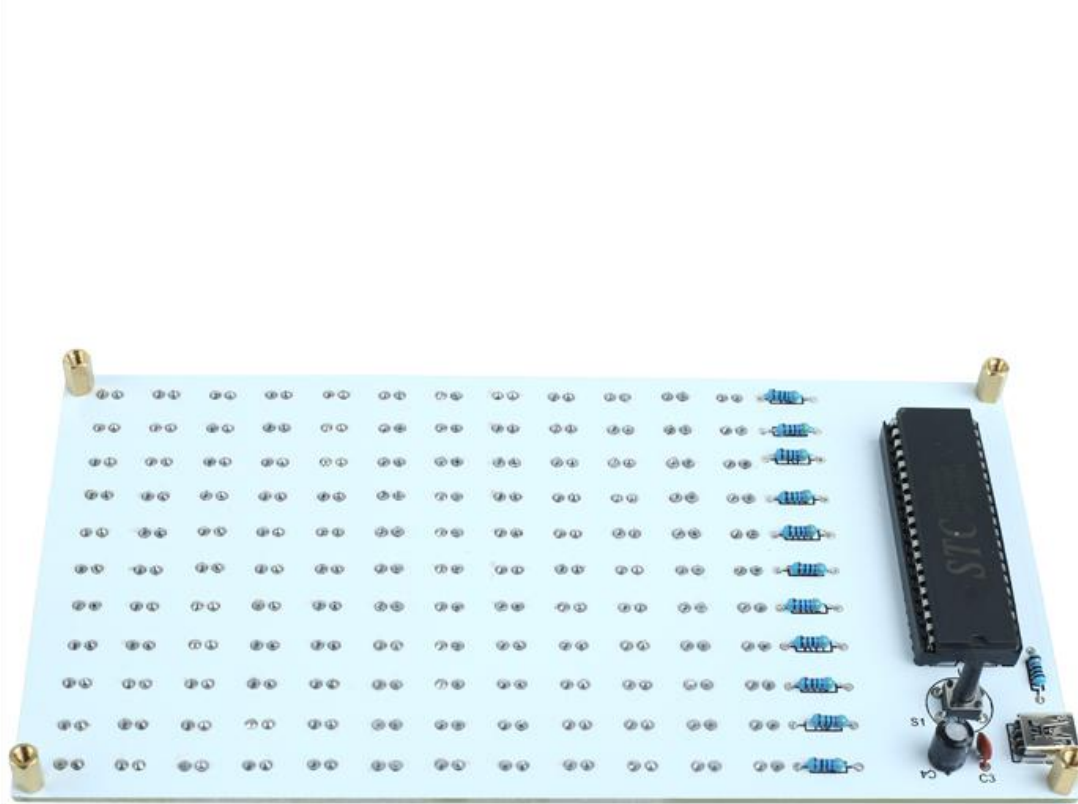
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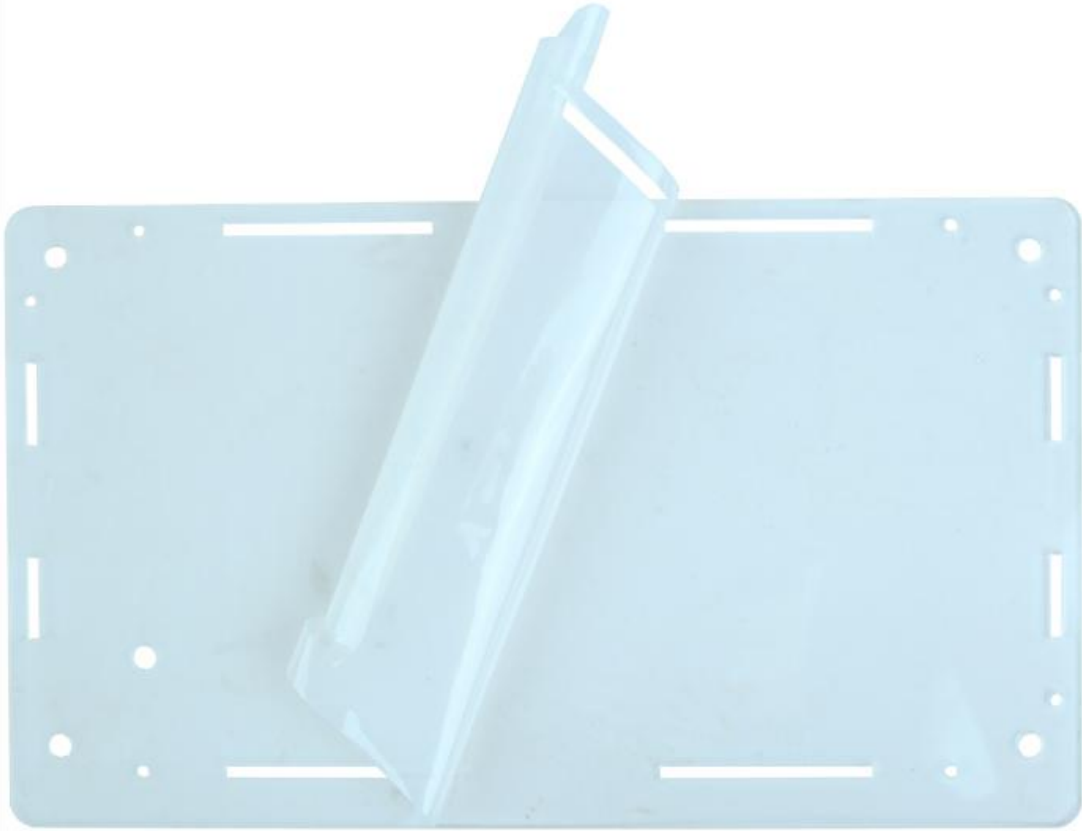
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