

16 LED Christmas Tree Flashing Light DIY Kit

1. Introduction:

It is a Christmas Tree Flashing Light DIY Kit, it is composed of 16 LEDs (light emitting diodes), and the 16 LED lights are divided into 4 groups, each group has a different flashing frequency. When 4 groups of LED lights shine together, it is like a shining Christmas tree.

It is simple and practical, low power consumption, simple line easy to understand, and the external connection line in the kit (such as: power cord, speaker line) has a removable plug, easy to replace accessories at any time and facilitate circuit testing.

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

2. Parameter:

- 1>Product Name: 16 LED Christmas Tree Flashing Light DIY Kit
- 2>Work Voltage: DC 9-12V
- 3>Power Supply Mode: 12V DC/ 9V Battery Powered (battery not included)
- 4>Circuit Board Material: 1.6mm FR-4 Material
- 5>The Color of Flashing LED Light : Colorful
- 6>The Color of LED Light : White
- 7>Size: about 70mm*110mm (PCB board)

1. Application:

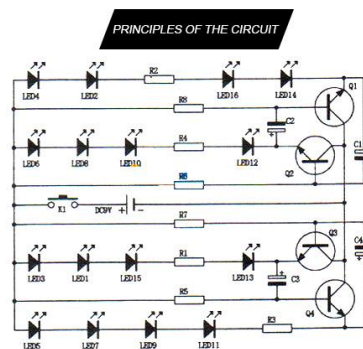
- 1> Training welding skills
- 2> Student school
- 3> DIY production
- 4> Project Design
- 5> Electronic competition
- 6> Gift giving
- 7> Crafts collection
- 8> Home decoration
- 9> Souvenir collection
- 10> Graduation design

11>.Holiday gifts

4.Component Listing:

NO.	The Name of the Component	Parameter	Polarity	PCB Identification	QTY
1	Resistance	1K	Non-polarity	R1,R2,R3,R4	4
2		75K	Non-polarity	R5,R6	2
3		100K	Non-polarity	R7,R8	2
4	Light-emitting Diodes	5mm/ Seven colors	Polarity	LED1-LED16	16
5	CAP	10UF	Polarity	C1C2C3C4	4
6	Transistor	S8050	Polarity	Q1Q2Q3Q4	4
7	Terminal Blocks	2 bits	Directional	J1	1
8	Key Switches	Power Switch	Directional	K1	1
9	DC Block	Power Outlet	Directional		1
10	Circuit Boards	70MM*105MM		PCB	1

5.Principles of the Circuit:



This circuit is an oscillating circuit generated in a cyclic form.

1. After the first charging, capacitors C1 and C4 are fully charged.
2. Capacitors C2 and C3 will continue to charge.
3. When the transistors Q1 and Q4 conduct, capacitors C1 and C4 discharge.
4. After capacitors C2 and C3 are fully charged, the transistors Q1 and Q4 will cut off the current, while capacitors C1 and C4 will be charged again.
5. Transistor Q2 and Q3 conduct while capacitors C2 and C3 discharge. Similarly, the speed of the flashing light is determined by the oscillation frequency, and the frequency value is determined by the resistance R and capacitance C.

6.Installation Tips:

- 1> Before welding, a multimeter can be used to measure the resistance value. Capacitors and diodes should be distinguished in polarity before welding.
- 2> Once welding is wrong, be careful to heat it with a soldering iron and remove it for re welding. The pulling action should be light. If the installation hole is blocked, heat it up and use a needle to lift it open.
- 3> The reading direction of the resistance should be consistent. If the color ring is unclear, a multimeter should be used to measure the resistance value before installation.
- 4> When installing screws and nuts, the force should be appropriate and not too much force should be applied.

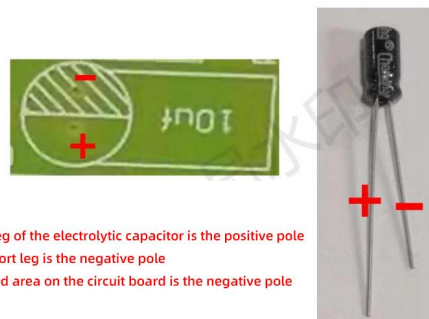
7. Installation Step(please be patient install !!!)

- 1> Solder the resistor and try to stick it tightly to the circuit board.



The transistor, as shown in the picture, faces the front side of the circuit board

- 2> Weld the electrolytic capacitor and transistor again, pay attention to the direction of the electrolytic capacitor and transistor (the short pin is the negative pole, corresponding to the shaded line end on the PCB).



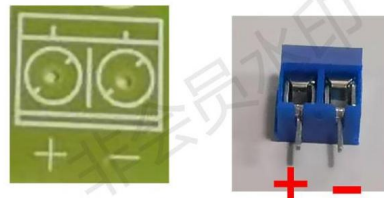
The long leg of the electrolytic capacitor is the positive pole and the short leg is the negative pole
The shaded area on the circuit board is the negative pole



LED lights have positive long legs and negative short legs
Corresponding circuit board+silk screen printing

3>. Weld the DC terminals, switches, and wiring bases

3. Finally, weld the DC terminals, switches and wiring bases



The positive and negative poles of the corresponding circuit board at the wiring point



Power on rendering



Single group partition

Note:not include Power supply, power source line, battery box

4>.Circuit testing:

Static testing (no power test): installed correctly, components are not inserted incorrectly or reversed, there is no false soldering, and there is no copper skin peeling or welding.

Power on test: The input voltage must meet the circuit requirements within the range. Do not use a power supply voltage that is too high, as it may cause the product to burn out! Connect to the normal working voltage, and then test all functions according to the product's functions to ensure they are normal. If they are

normal, it indicates that the production has been successful. If they are not normal, please refer to the schematic diagram and refer to the tutorial to check welding related issues.