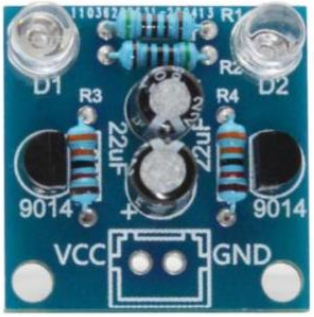
MHT11-Simple flashing kit

Features:

After the power is turned on, the left and right two red LEDs (you can replace the LEDs of other colors) flash alternately. This cycle is repeated. The higher the power supply voltage, the brighter the LEDs. Changing the capacitance of the electrolytic capacitor can change the alternate flashing speed The larger the value, the slower the flashing speed, and the smaller the capacitance value, the faster the flashing speed. The circuit is simple and easy to understand, and the soldering pad has been treated with tin spraying process, which makes soldering easier and the solder joints more beautiful! Especially suitable for friends and students who are new to electronics.

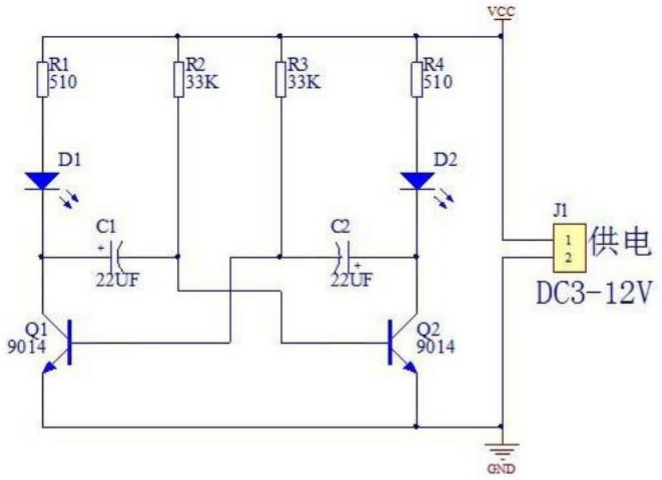


Chinese English

Circuit principle:

When the power is turned on, the two triodes will compete to be turned on first, but due to differences in components, only one tube is turned on first. If Q1 turns on first, then the collector voltage of Q1 drops, D1 is lit, and the left end of the capacitor C1 is close to zero voltage. Since the voltage across the capacitor cannot change suddenly, the base of Q2 is also pulled to approximately zero voltage, making Q2 cut off. D2 does not light up. As the power supply charges C1 through the resistor R2, the base voltage of the transistor Q2 gradually rises. When it exceeds 0.6 volts, Q2 changes from the off state to the on state, the collector voltage drops, and D2 is lit. At the same time, the decrease of the collector voltage of the transistor Q2 causes the base voltage of the transistor Q1 to jump down through the action of the capacitor C2, Q1 changes from on to off, and D1 goes out. In this cycle, the two triodes in the circuit are turned on and off in turn, and the two light-emitting diodes continuously emit light. Changing the capacity of the capacitor can change the speed of the LED cycle.

Schematic diagram:



BOM:

MHT11-Simple flashing kit—BOM						
	Device	Model	Package		QTY	Silk screen
1	1/4w resistor	510Ω	AXIAL-0.3	4 rings: green brown brown gold 5 rings: green brown black black brown	3	R1/R2+1
2	1/4w resistor	33K	AXIAL-0.3	4 Rings: Orange Orange Orange Gold 5 rings: orange orange black red brown	3	R3/R4+1
3	5mm plug-in LED	F5	F5	White hair red	2	D1/D2
4	Electrolytic capacitor	22uF/25V	5x11mm		2	C1/C2
5	Plug-in transistor	9014	TO-92		2	Q1/Q2
6	Male to female Dupont line	10cm			2	
7	PCB				1	

common problem:

1. Take care to avoid wrong welding of the positive and negative poles of the LED, and the long legs are positive.

2. Pay attention to avoid soldering wrong resistance value. The green color ring is 510 ohm, and the orange color ring is 33K or 30K.

3. Take care to avoid wrong welding of the positive and negative electrodes of the electrolytic capacitor, and the long leg is the positive electrode.

4. Take care to avoid the wrong direction of the triode, plug it in according to the shape of the board.

5. Take care to avoid reverse connection of the power supply. The correct connection method is to connect VCC to the positive pole, GND to the negative pole, and the power supply DC voltage is 3-12V.

6. Pay attention to check the welding for short circuit and false welding.

Appendix: Specific identification method of four-ring and five-ring color ring resistance