

## ICStation Airplane Flashing LED Circuit DIY Kit

### 1.Introduction:

It is an Airplane Flashing LED Circuit DIY Kit. It can simulate the flickering effect of airplane lights and DIY create a very artistic desktop decoration. It can not only be used as a DIY electronic welding kit that allows you to better understand the circuit and learn how to soldering, but also as a very suitable experimental workbench tool.

### 2.Feature:

- 1>.Simulate aircraft design
- 2>.Built-in CR1220 lithium battery (Watch kids under 6 carefully.)
- 3>.Simple and easy to operate

### 3.Parameter:

- 1>.LED color: Red/Green/Yellow
- 2>.Battery type:CR1220
- 3>.Work Temperature:-20°C~85°C
- 4>.Work Humidity:0%~95%RH
- 5>.Size(Installed):110\*105\*33mm

### 4.Component listing:

- 1>.1pcs DIP-16 CD4017BE decimal counter at U2.
- 2>.1pcs DIP-8 NE555P timer at U1.
- 3>.1pcs DIP-16 IC Socket at U2.
- 4>.1pcs DIP-8 IC Socket at U1.
- 5>.1pcs 1Kohm Metal Film Resistor at R3.
- 6>.1pcs 5.1Kohm Metal Film Resistor at R2.
- 7>.1pcs 10Kohm Metal Film Resistor at R1.
- 8>.3pcs 3mm Red LED at LED1,LED4,LED7.
- 9>.2pcs 3mm Green LED at LED2,LED3.
- 10>.2pcs 3mm Yellow LED at LED5,LED6.
- 11>.1pcs 0.01uF 103 Ceramic Capacitor at C2.
- 12>.1pcs 10uF Electrolytic Capacitor at C1.
- 13>.1pcs Power Switch at SW.
- 14>.1pcs CR1220 lithium battery at BT1,BT2.
- 15>.1pcs CR1220 lithium battery socket at BT1,BT2.
- 16>.2pcs PCB circuit board

### 5.Installation Tips:

- 1>.User needs to prepare the soldering 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>.Install complex components preferentially.
- 8>.Make sure all components are in right direction and right place.
- 9>.Please wear anti-static gloves or anti-static wristbands when installing electronic components.
- 10>.It is strongly recommended to read the installation manual before starting installation!!!

### **Before the installations, here are some basic knowledge to learn how to read a resistor color.**

Resistor values are marked on the resistor by using the color band code. To identify its value, each resistor is marked with four or five colored bands. Each color represents a number value, so by reading the color values it is possible to identify its resistance value. The chart below explains resistor colors. It is good practice to memorize the various colors and their respective values.

COLOUR	1ST NUMBER	2ND NUMBER	3RD NUMBER*	MULTIPLIER	TOLERANCE
BLACK	0	0	0	1	
BROWN	1	1	1	10	1 %
RED	2	2	2	100	2 %
ORANGE	3	3	3	1,000	
YELLOW	4	4	4	10,000	
GREEN	5	5	5	100,000	
BLUE	6	6	6	1,000,000	
VIOLET	7	7	7		
GREY	8	8	8		
WHITE	9	9	9		
GOLD				0.1	5 %
SILVER				0.01	10 %
NONE					20 %

\*IF APPLICABLE

Resistors are manufactured to a tolerance of 1, 2, 5 and 10%. Normally each resistor marked with either 4 or 5 color bands.

If a resistor comes with 4 color bands, the 1st 2 bands represent its values, 3rd band represents the multiplier value and the last band indicates the tolerance. For example, Orange 3, White 9, Yellow 10,000 and Silver 10%, so it will be a 390k  $\Omega$  with 10% tolerance resistor.



If a resistor comes with 5 color bands, the 1st 3 bands represent its values, the 4th band represents the multiplier and the last band represents the tolerance. Eg: Brown 1, Black 0, Black 0, Brown 10 and Brown 1%, so it will be a 1000  $\Omega$  (1Kohms) with 1% tolerance resistor.

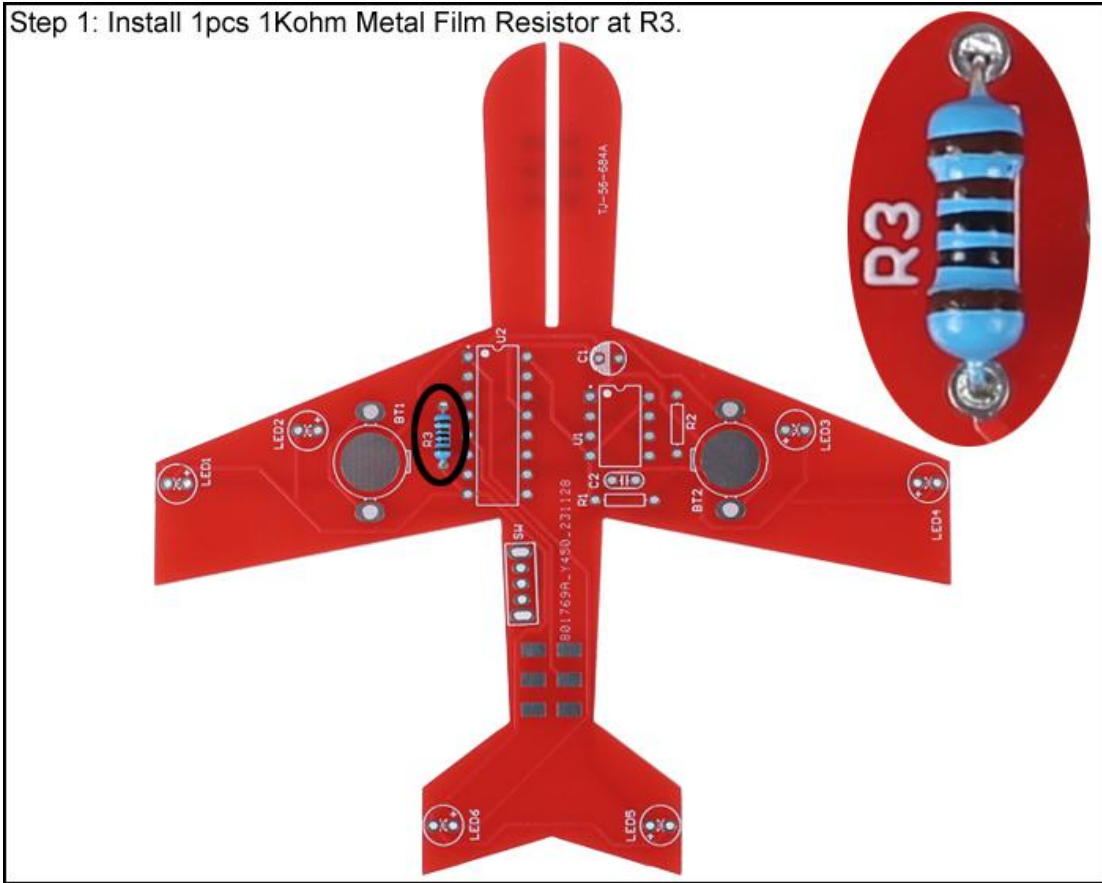


Eg: Green 5, Brown 1, Black 0, Brown 10 and Brown 1%, so it will be a 5100  $\Omega$  (5.1Kohms) with 1% tolerance resistor.

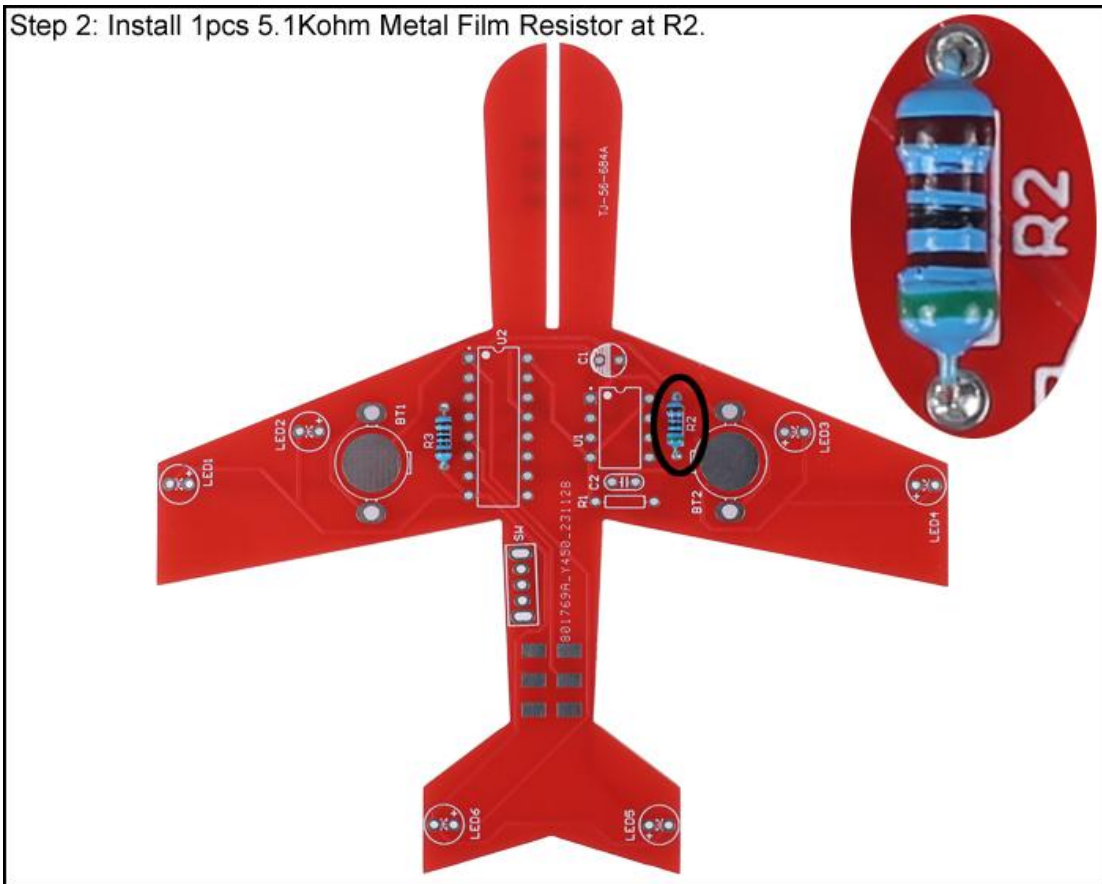


### 7. Installation Steps (Please be patient):

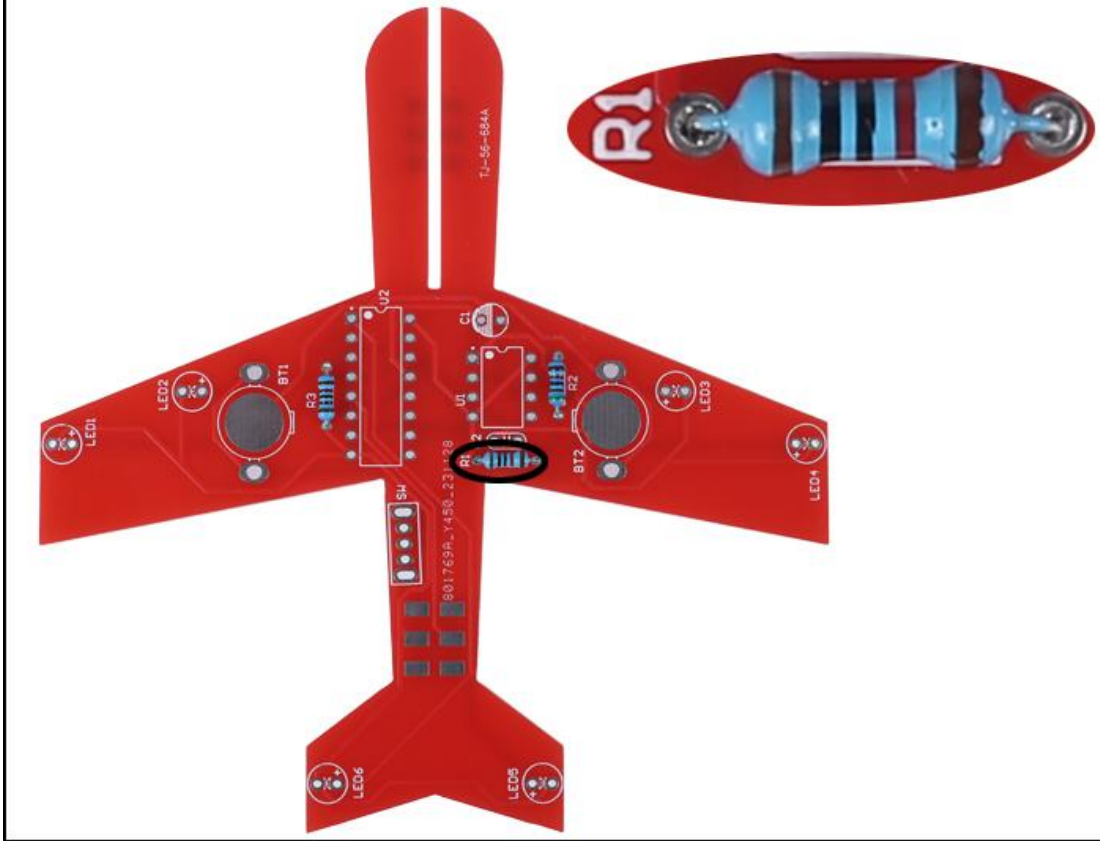
Step 1: Install 1pcs 1Kohm Metal Film Resistor at R3.



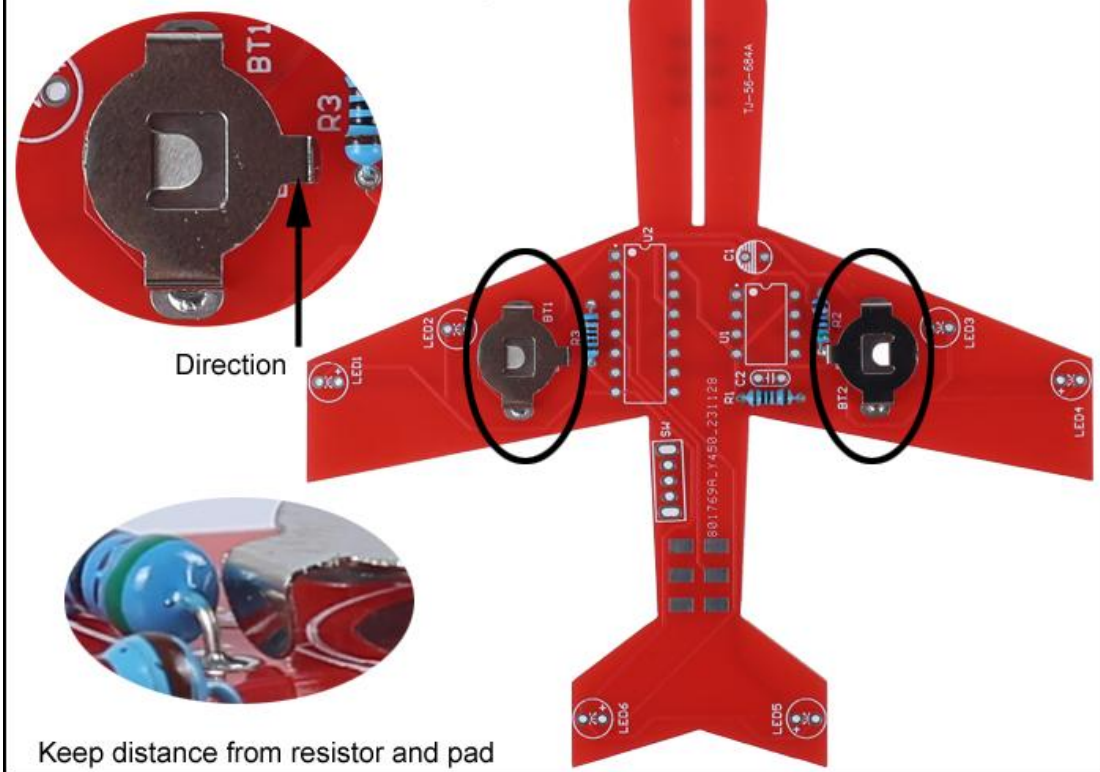
Step 2: Install 1pcs 5.1Kohm Metal Film Resistor at R2.



Step 3: Install 1pcs 10Kohm Metal Film Resistor at R1.



Step 4: Install 2pcs CR1220 Battery Socket at BT1, BT2. Pay attention to the installation direction and Metal sheets should not come into contact with resistor or pad.



Step 5: 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:

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

5.2>.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.

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

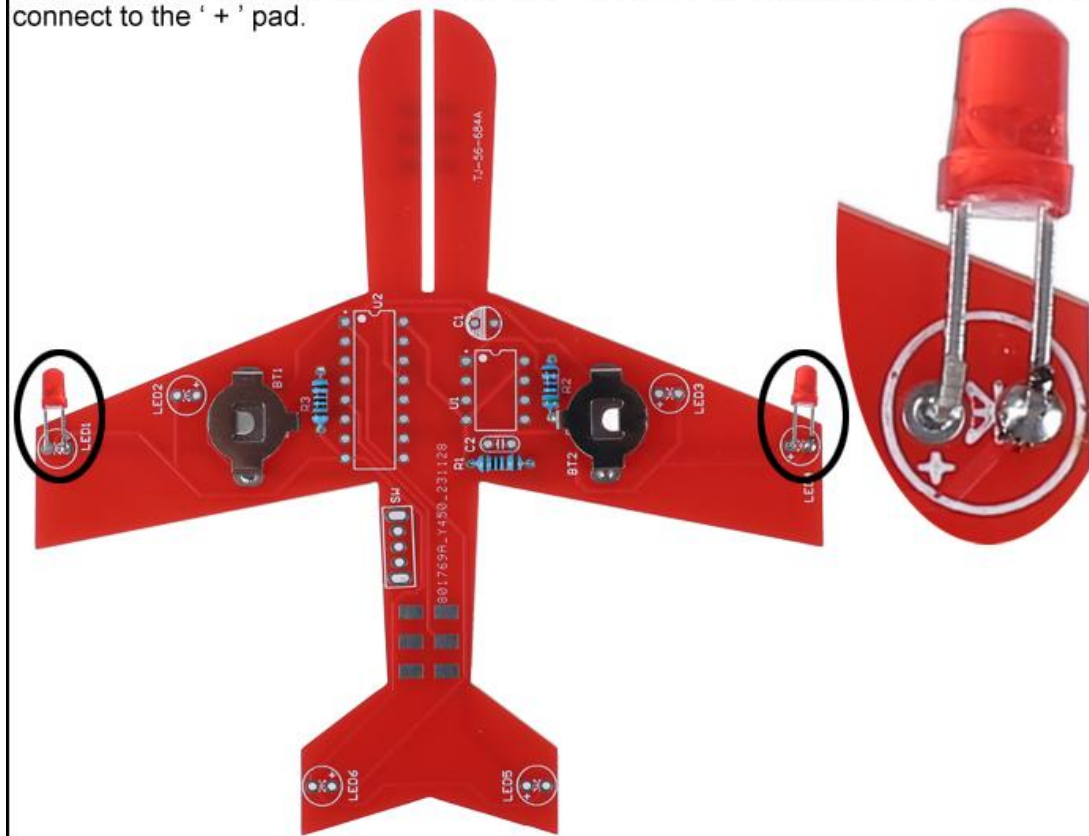
5.4>.Test by 3V battery or multimeter. The pin is positive(anode) lead which has connect to positive of 3V if LED can light up after connect 3V power supply.

(LED can not be powered directly from 3V for a short time:less then 0.5second)

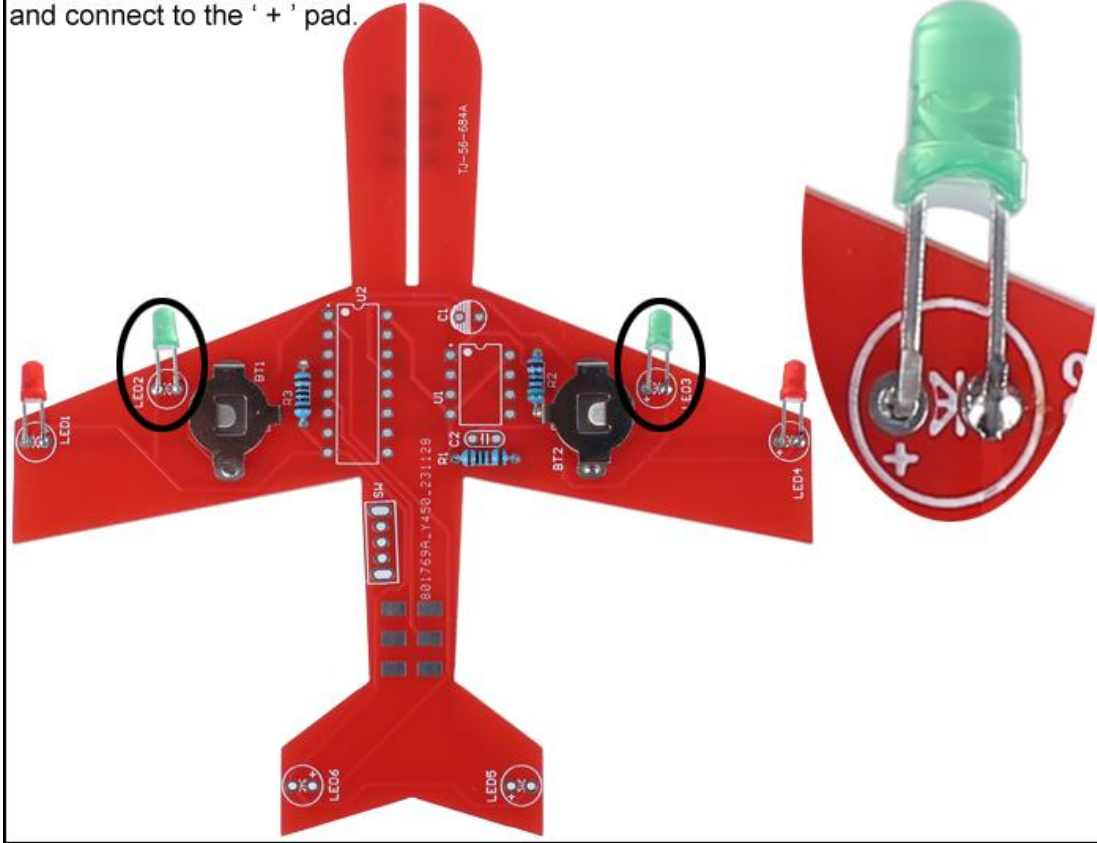
5.5>.Note:If the flat on package disagrees with other indicators(short lead,large cathode lead end), then other indicators take priority. I.e. if the flat disagrees with the lead length,use the lead length as the cathode indicator.



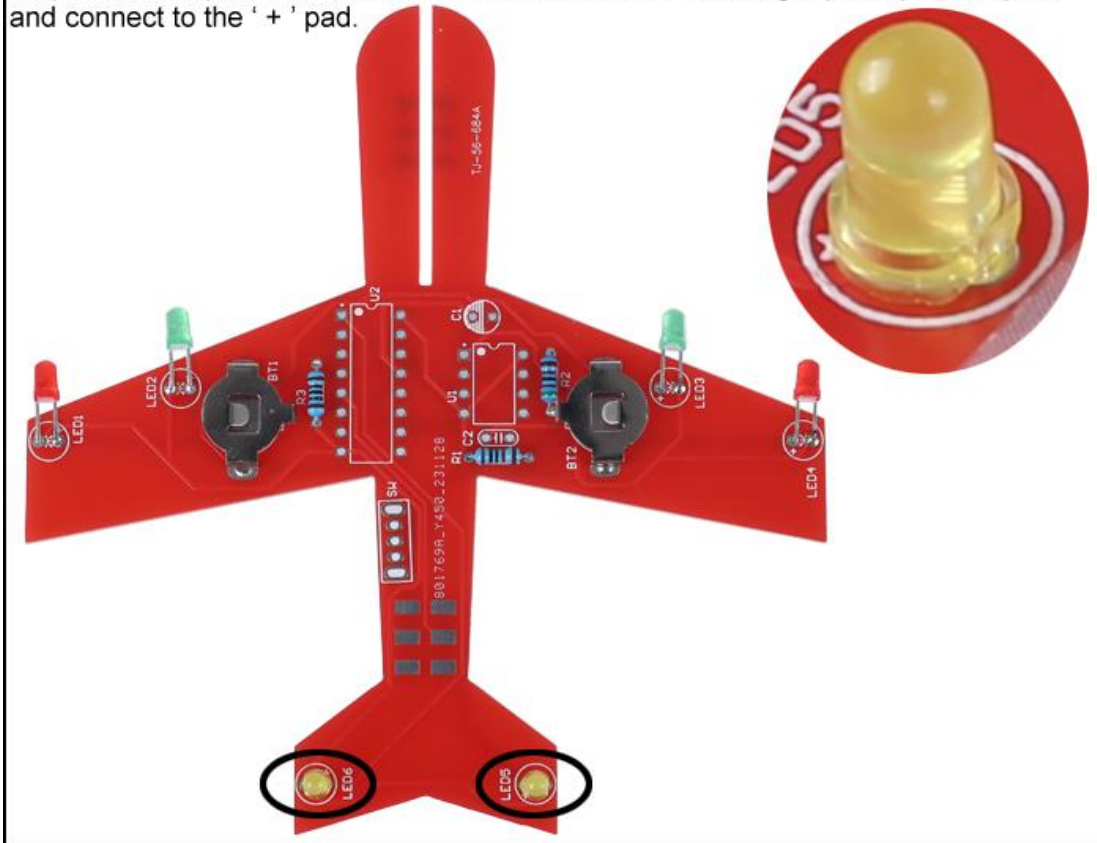
Step 6: Install 2pcs 3mm Red LED at LED1,LED4. The longer pin is positive pole and connect to the ' + ' pad.



Step 7: Install 2pcs 3mm Green LED at LED2,LED2. The longer pin is positive pole and connect to the ' + ' pad.



Step 8: Install 2pcs 3mm Yellow LED at LED5,LED6. The longer pin is positive pole and connect to the ' + ' pad.



Step 9: Install 1pcs 0.01uF 103 Ceramic Capacitor at C2.



Step 10: Install 1pcs Power Switch at SW.



Step 11: Install 1pcs DIP-16 IC Socket at U2. There is a gap mark on one end of the IC Socket and there is a gap mark on PCB silk screen 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.

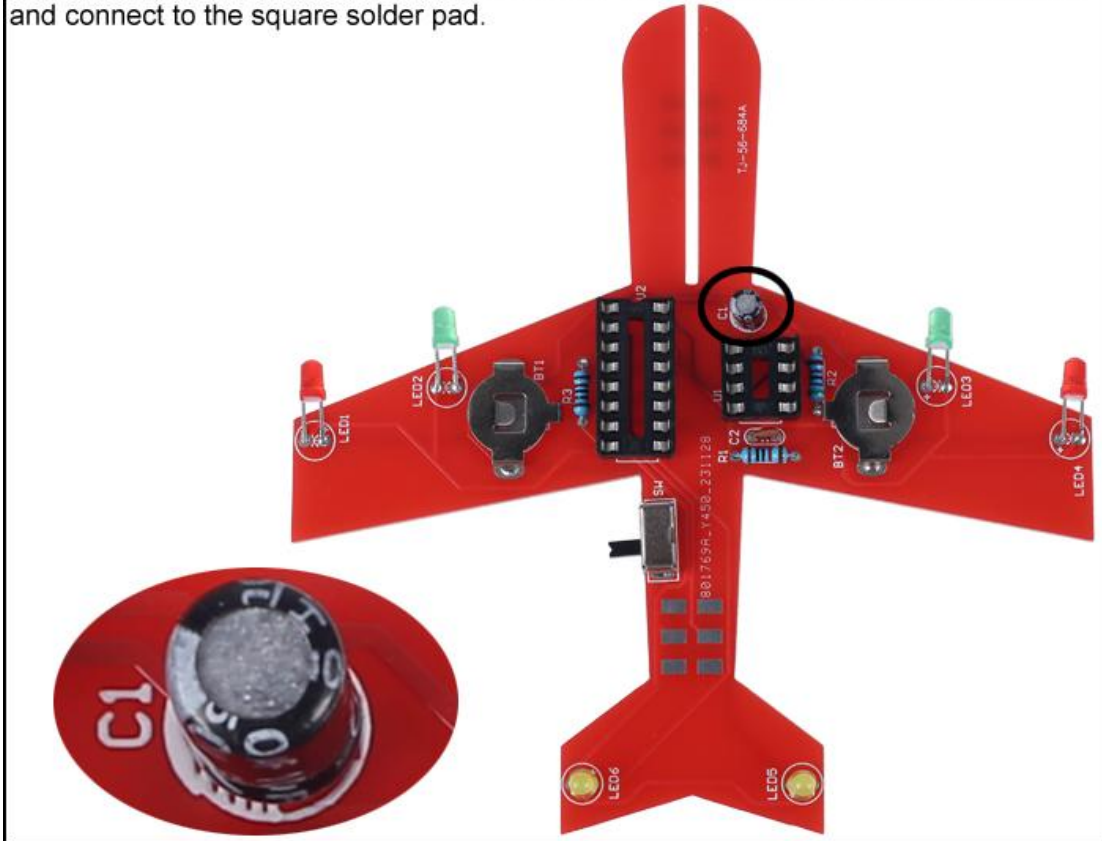


Step 12: Install 1pcs DIP-8 IC Socket at U1 by the same methods.

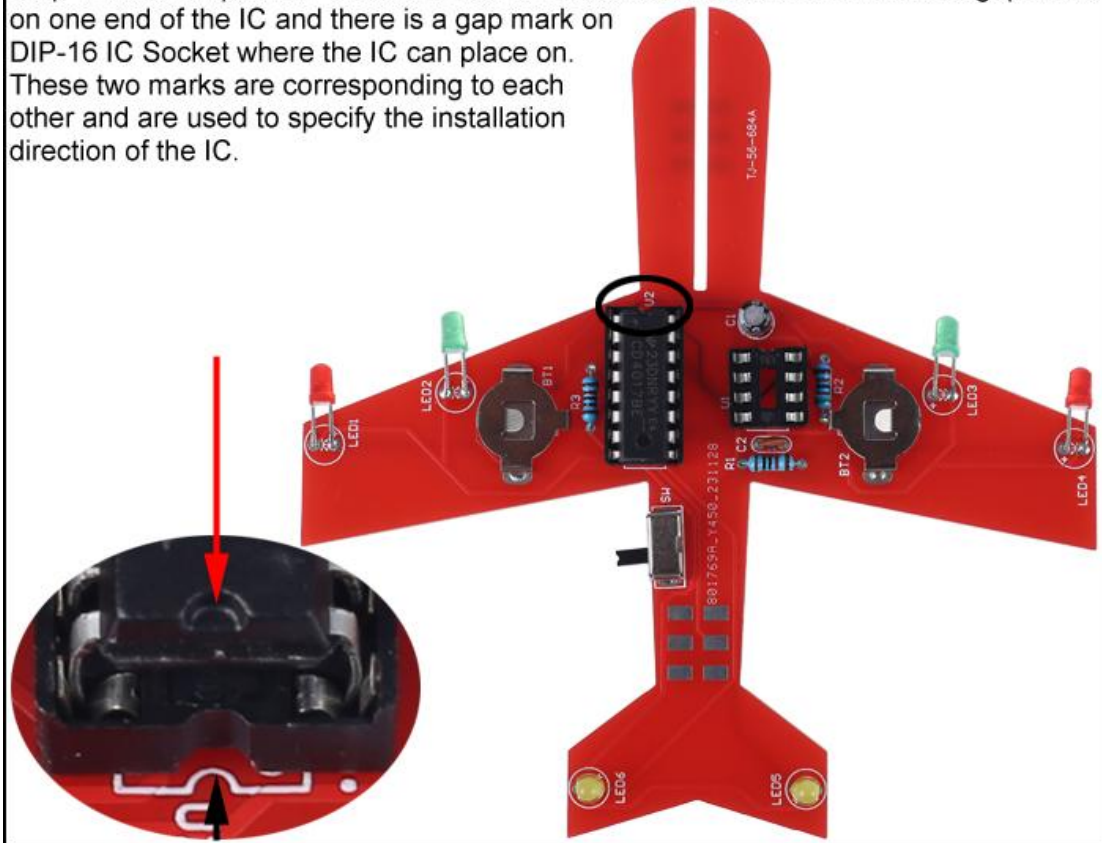




Step 13: Install 1pcs 10uF Electrolytic Capacitor at C1. The longer pin is positive pole and connect to the square solder pad.



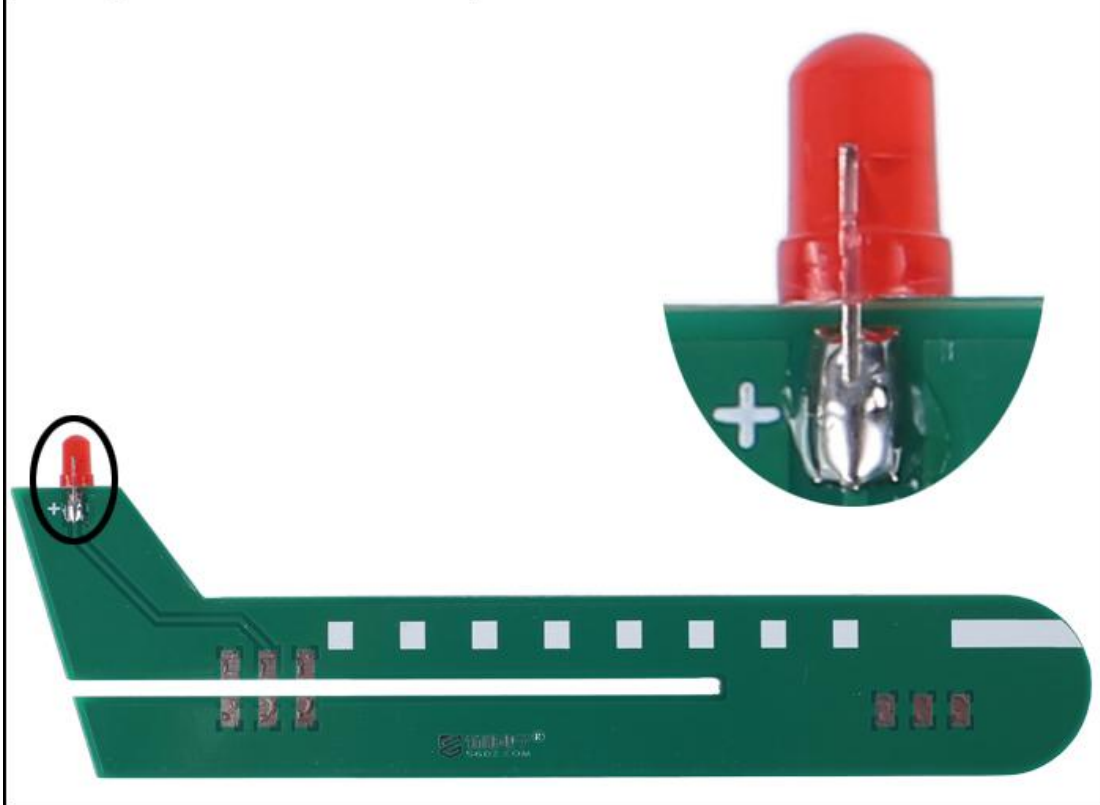
Step 14: Install 1pcs DIP-16 IC CD4017BE decimal counter at U2. There is a gap mark on one end of the IC and there is a gap mark on DIP-16 IC Socket where the IC can place on. These two marks are corresponding to each other and are used to specify the installation direction of the IC.



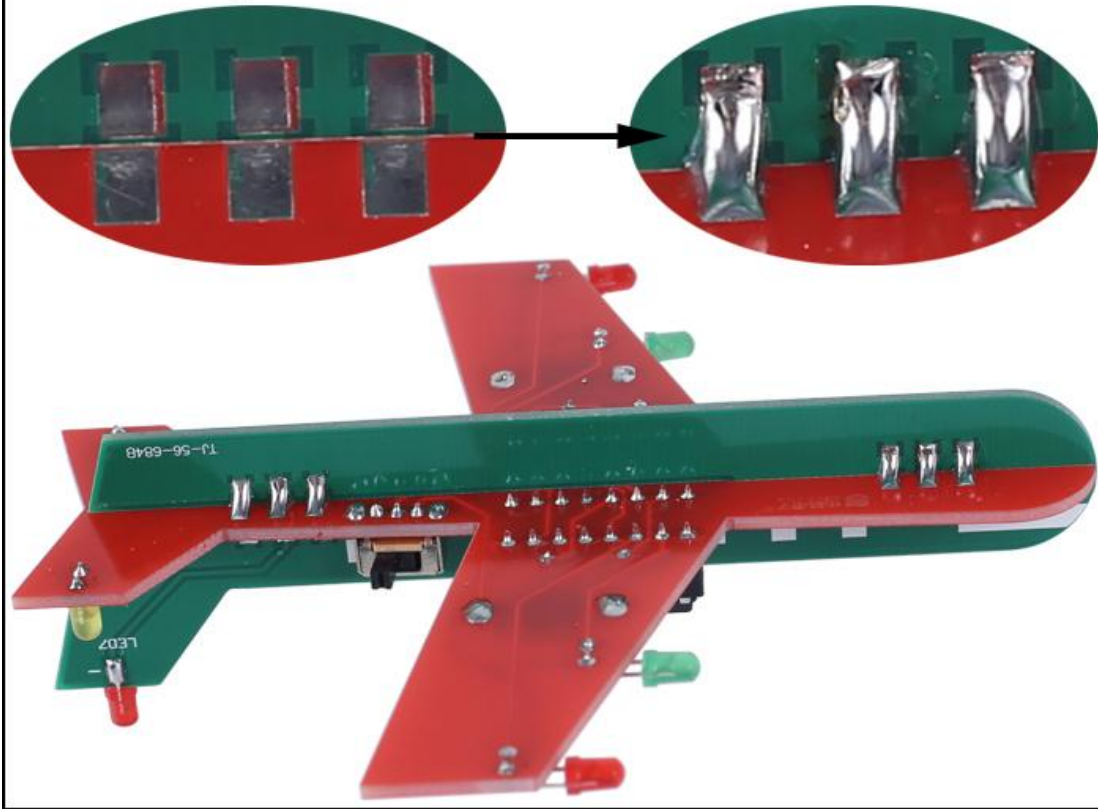
Step 15: Install 1pcs DIP-8 NE555P timer at U1 by the same methods.



Step 16: Install 1pcs 3mm Red LED at LED7 on another PCB. The longer pin is positive pole and connect to the '+' pad.



Step 17: Splicing 2 PCB and fix them by connect pads. Please fix all connection points to maintain stability.



Step 18: Install 2pcs CR1220 batteries as shown. Note: The positive electrode of the battery contacts the metal spring of the battery holder.

