

## Tools you need:

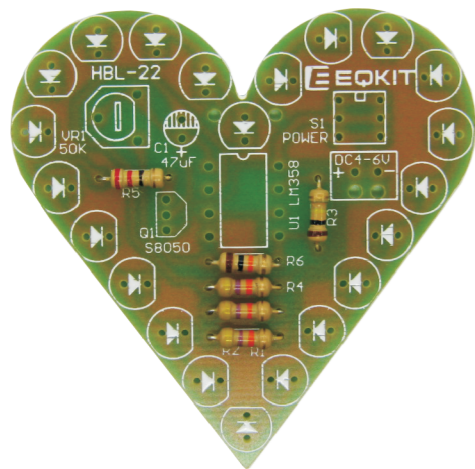
- ①Iron (30W)
- ②Solder wire
- ③Multimeter
- ④Tweezers
- ⑤Wire cutters

## Precautions::

- ①Check part values & quantities against part list
- ②Always meter resistor values before soldering
- ③Understand all part polarities and orientations

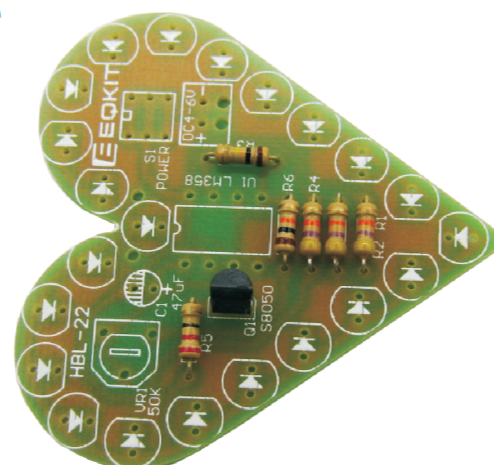
### 1. Install RES:

R1.R2.R4=47K $\Omega$ . R3=100K $\Omega$ . R5=22 $\Omega$   
R6=10K $\Omega$

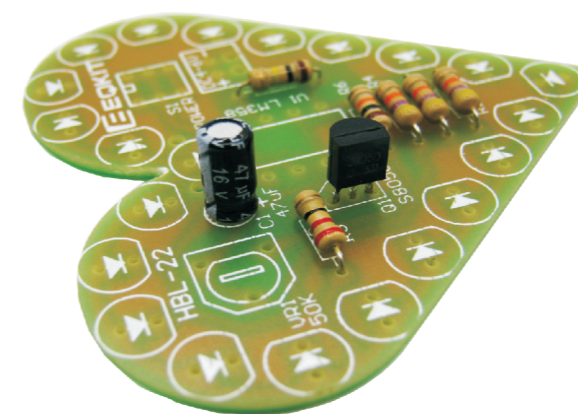


### 2. Install Triode :

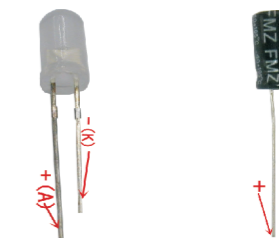
Q1=S8050.Notice the direction of the triode



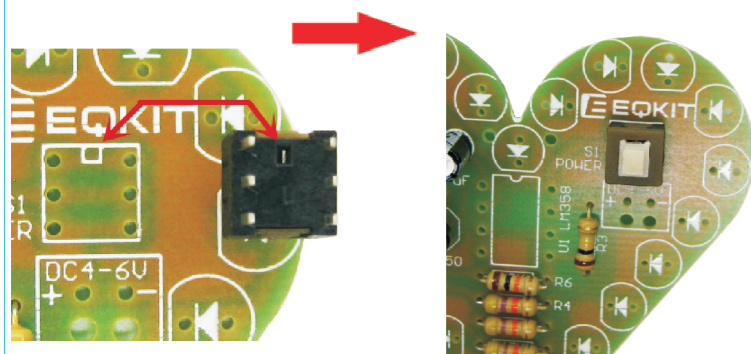
3. Install E-CAP : Notice that the positive electrode of electrolytic capacitor can not be reversed



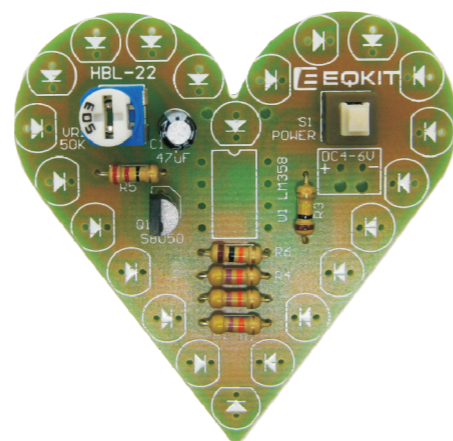
Warning  
Light-emitting diode and electrolytic capacitor the longer pin is the anode it should be installed on the rectangle pad of PCB



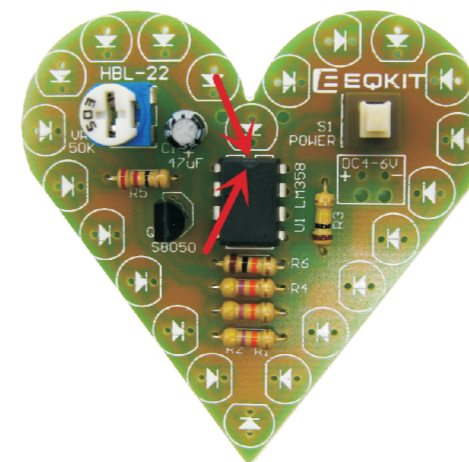
4. Install Power switch:Pay attention to the installation direction of the switch



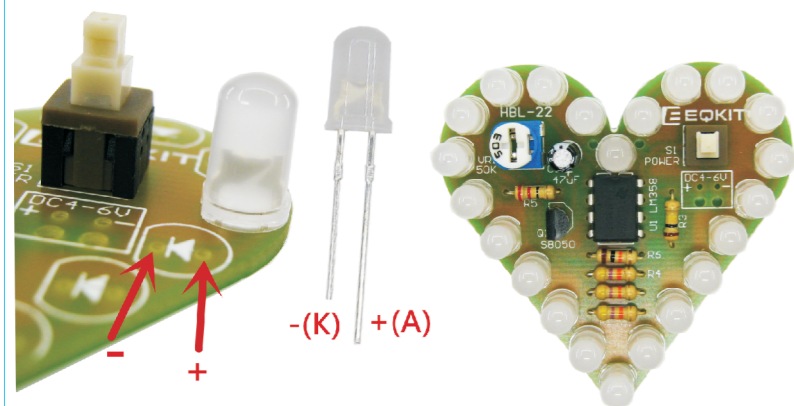
5. 安Install ADJ.RES:  
VR1=B50K $\Omega$



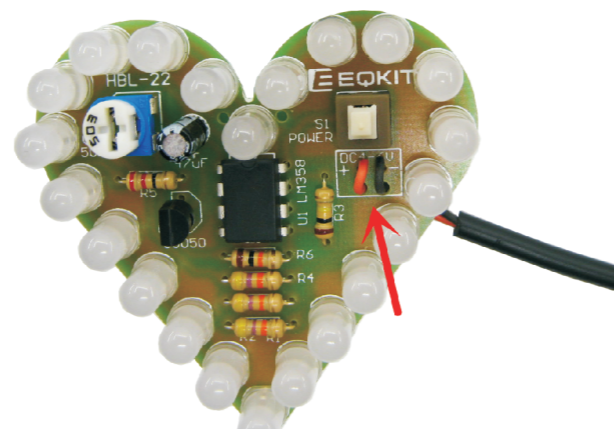
6. Install IC:Pay attention to the installation direction of IC



7. Install LED:Pay attention to the direction of LED  
The long foot is the positive pole.



8. Install USB power cable or Battery box cable  
Red line is positive. The black line is negative



9. Check before power on:  
Fully check the components of the circuit board.Not null welding.  
Not short-circuit.Cannot install reverse  
The circuit board supplies 4-6 Volts  
You can use the USB power supply.  
Dry batteries can also be used  
by aa1.5V\*3.Red LED powered 4V.  
Other colors powered 4-6V

HBL-22 heart-shaped breathing LED component list

NO.	Name	Mode	QTY
R5	RES	22R	1
R6	RES	10K	1
R1. R2. R4	RES	47K	3
R3	RES	100K	1
C1	E-CAP	47UF	1
VR1	ADJ-RES	50K	1
U1	IC	LM358	1
S1	Power switch	6P	1
Q1	Triode	S8050	1
LED1-LED22	LED	5mm	22+2
—	PCB	HBL-22	1
Choose purchase	USB-Power cable	0.8M	1
Choose purchase	Battery box	3*AA	1

# The circuit principle diagram:

