Heartbeat (THT)

Quantity	Name	Description	Label/Color Code
2	Q1–Q2	BC547 transistor	
1	Q3	BC557 transistor	
1	C1	$100\,\mu$F electrolytic capacitor	
1	C2	$100\,$nF ceramic capacitor red	104
1	D1	LED red $5\,$mm	
1	BT1	CR2032 Battery holder	
2	R1,R6	Resistor $1\,$MΩ	BR BK BK YE BR
1	R2	Resistor $10\,$MΩ	BR BK BK GR BR
4	R3–R5,R7	Resistor $10\,$kΩ	BR BK BK RE BR
1		Battery CR2032 (optional)	
1		Circuit board	

Difficulty: ●●○○○   Build Time: 1–2 hours

Description   v1.1   (cc)(i)(o) CC BY-SA 4.0 Binary Kitchen e.V.

Platine   v1.1   (cc)(i)($)(o) CC BY-NC-SA 4.0 blinkyparts GmbH

Farblegende: SI = silber; GO = gold; BK = schwarz; BR = braun; RE = rot; OR = orange; YE = gelb; GR = grün; BL = blau; VI = violett; GR = grau; WH = weiß

Safety Information

- ATTENTION: Not suitable for children under 3 years, choking hazard due to small parts that may be swallowed.

- We recommend: Supervision of the assembly and soldering process by an adult.

- Keep these operating instructions in a safe place for later use! It contains important information.

- If the battery is empty, replace it only with a new battery with the same values.

- When soldering, the soldering iron, the solder and also the components being soldered become very hot.

- Always wear safety glasses when soldering and assembling the kit.

- Always use a fire proof soldering pad when soldering! This prevents the components from slipping away.

- To keep the soldering iron safe during assembly, always use a suitable soldering stand.

- The kit is designed for battery operation only.

- CAUTION: Never connect the kit to 230 V mains voltage! There is an absolute danger to life!

- Please take the device to appropriately certified disposal companies at the end of its service life. This is good for the environment and ensures correct disposal.

- Subject to changes and errors.

Disposal

This appliance is labelled in accordance with the European Directive 2012/19/EU on waste electrical and electronic equipment (WEEE). The directive provides the legal framework for the take-back and recycling of waste equipment throughout the EU.

- **packaging**: The packaging is made of environmentally friendly materials and is therefore recyclable. Dispose of packaging materials that are no longer needed accordingly.

- **waste equipment**: Old appliances often still contain valuable materials. Therefore, hand in your old appliance to your retailer or a recycling centre for reuse. Please ask your retailer or your local authority for the current disposal routes.
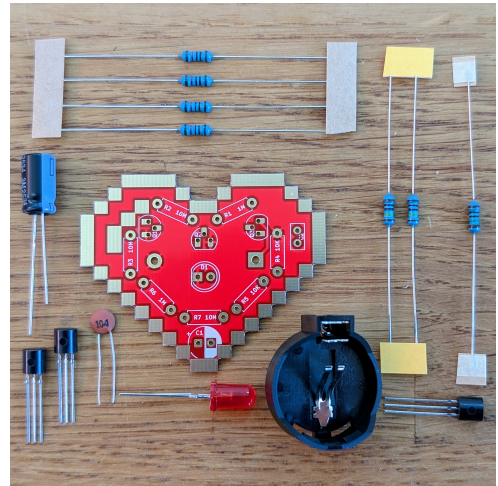
Step 1

a) Check your components.

b) Tip: The resistance value can be determined by color coding.

c) The orientation of resistors does not matter.

d) LEDs have a flat side and a shorter leg. Both indicate the negative side.

Step 2

a) Solder resistors R1 to R7. The resistors have different resistance values, which are marked by colored rings. Make sure you solder the correct resistor in the correct place.
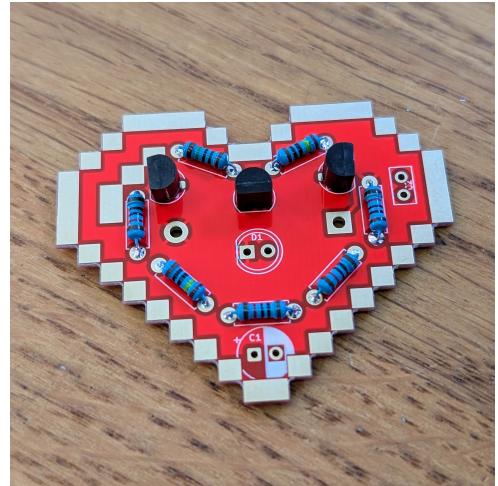
b) Cut off any excess wire.
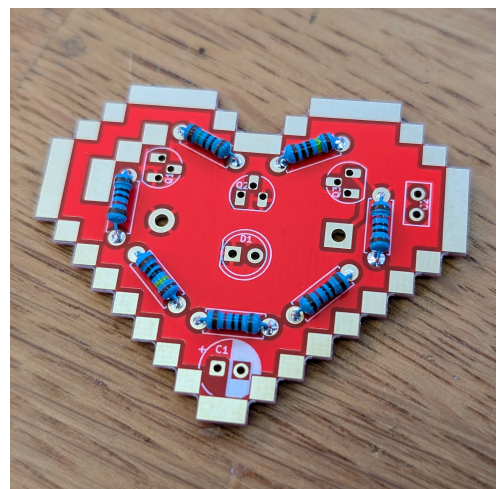
Step 3

a) Attention: Q1-Q2 are BC547 and Q3 are BC557 transistors. The value is printed on the resistor.

b) Solder the BC557 transistor into Q3. Please note that a transistor has a flat side. The flat side should be positioned in the same place as printed on the circuit board.

c) You will need to bend the middle leg back slightly to get all three legs into the holes. Make sure that no solder bridges are created.
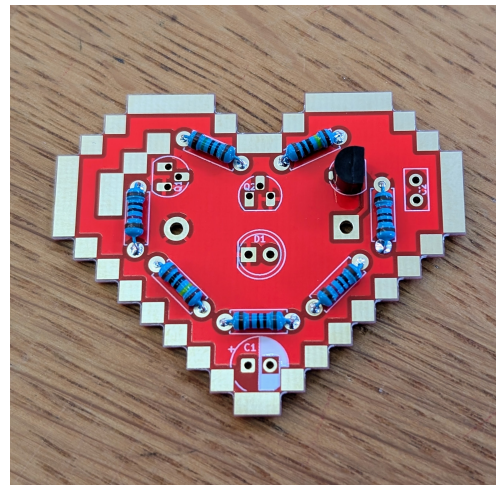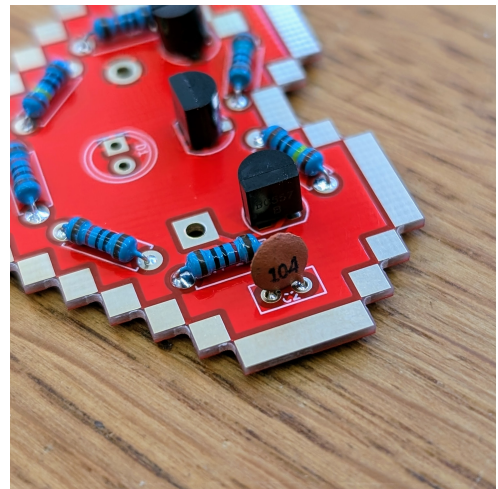
Step 4

a) Solder the BC547 transistors Q1–Q2. Again, make sure they are facing the right direction.

Step 5

a) The direction of the red ceramic capacitor does not matter. Now solder on the capacitors C1 (100nF, 104). Cut off any excess wires.


Step 6

a) LEDs have a direction. The long leg is the anode (+). On the circuit board, the anode is marked by a round solder pad.

b) Insert the LED from the front into the holes marked with a circle. Caution: The long leg belongs in the hole with the round pad!
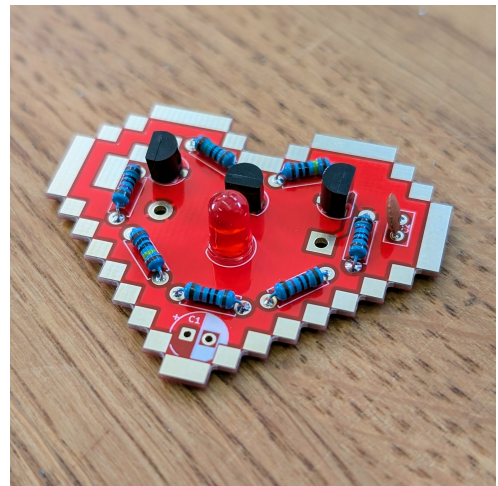
Step 7

a) Turn the circuit board over!

b) Caution: Electrolytic capacitors (larger black cylinders) have a direction! The long leg is the anode (+). The anode is marked with a plus symbol (+) on the circuit board.

c) Insert the electrolytic capacitor FROM THE BACK into the two holes at the bottom corner of the heart. The long leg must go through the rectangular pad.

d) Make sure that there is about 10 mm of wire between the black cylinder and the circuit board. We will need to bend the electrolytic capacitor later. Solder the capacitor in place.
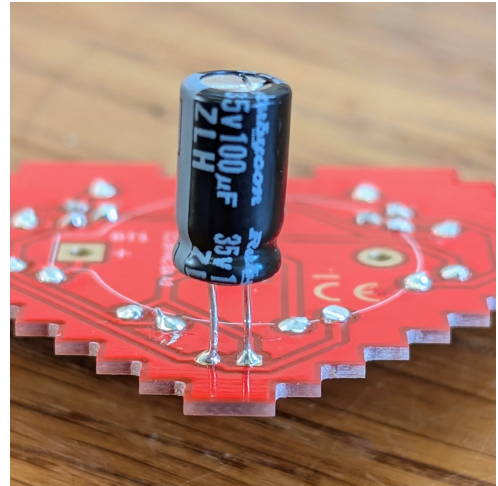
Step 8

a) Finally, solder on the battery holder.

b) This also has a specific orientation. The outline is printed on the circuit board. Make sure that the outline matches the battery holder.

c) Tip: First solder only one leg in place. This allows you to correct the position as usual.
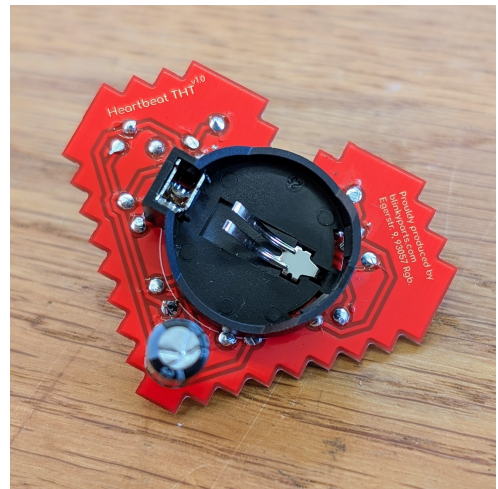
Step 9

a) Bend the electrolytic capacitor to the side so that it lies flat on the circuit board next to the battery holder. Caution: The two legs must not touch each other!

b) Then insert a CR2032 battery.

c) You're done! The heart will now pulse for several weeks. If you want to turn it off, simply remove the battery.