ISolderStore CD4017

ISolderStore CD4017 Colorful 10-LED Soldering Practice Kit User Manual

Model: CD4017

1. Introduction

This manual provides detailed instructions for assembling, operating, and maintaining your ISolderStore CD4017 Colorful 10-LED Soldering Practice Kit. This electronic DIY kit is designed to enhance soldering skills and understanding of basic electronic components. Upon successful assembly, the kit creates a sound-activated LED light sequence.

Safety Warning: Soldering involves high temperatures and can produce fumes. Always work in a well-ventilated area and use appropriate safety equipment, including eye protection. Keep out of reach of small children.

Image 1: Assembled ISolderStore CD4017 Colorful 10-LED Soldering Practice Kit.

2. Packing List

Before beginning assembly, please verify that all components listed below are present in your kit. If any components are missing, please contact customer support for replacements.

Packing List

Capacitor	Mark	Qty
2M Resistor	R2	1
20K Resistor	R1,R3	2
470R Resistor	R4,R5	2
Microphone	MK1	1
LED	D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12	12
CD4017 Chip	U1	1
S9014	Q2	1
100UF Capacitor	C2	1
1UF Capacitor	C3	1
PCB Board		1
Battery box		1

Image 2: Visual representation of the kit components and packing list.

Table 1: Kit Components

Component	Mark	Quantity
2M Resistor	R2	1
20K Resistor	R1, R3	2
470R Resistor	R4, R5	2
Microphone	MK1	1
LED	D1-D12	12

Component	Mark	Quantity
CD4017 Chip	U1	1
S9014 Transistor	Q2	1
100UF Capacitor	C2	1
1UF Capacitor	C3	1
PCB Board		1
Battery Box		1

3. Setup and Assembly

This kit requires basic electronic theoretical knowledge and soldering skills. Take your time and follow the guide carefully. A detailed installation guide is included in English, or you can scan the QR code on the product for a digital version.

3.1 Component Identification and Placement

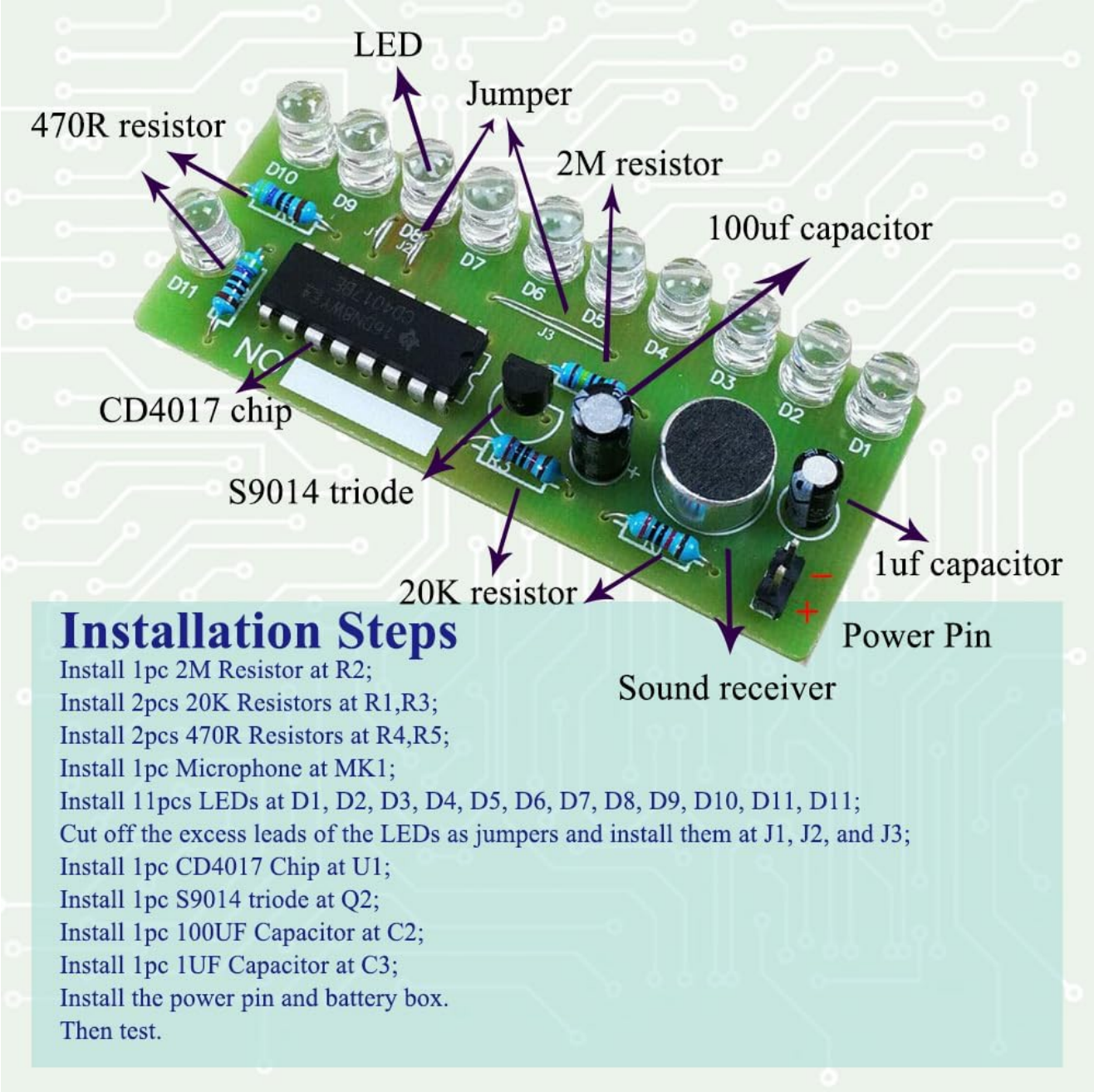


Image 3: PCB layout with component labels and installation steps.

1. Install 1pc 2M Resistor at R2.
2. Install 2pcs 20K Resistors at R1, R3.
3. Install 2pcs 470R Resistors at R4, R5.
4. Install 1pc Microphone at MK1.
5. Install 11pcs LEDs at D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11.*Note: The PCB has locations for 11 LEDs (D1-D11), not 12 as sometimes indicated in older instructions. Ensure correct polarity for LEDs.*
6. Cut off the excess leads of the LEDs and use them as jumpers. Install these jumpers at J1, J2, and J3*Note: Jumpers are not always supplied separately; using clipped LED leads is a common practice.*
7. Install 1pc CD4017 Chip at U1. *Ensure correct orientation, aligning the notch on the chip with the marking on the PCB.*
8. Install 1pc S9014 Transistor at Q2. *Ensure correct orientation.*
9. Install 1pc 100UF Capacitor at C2. *Ensure correct polarity (long lead positive, short lead negative).*
10. Install 1pc 1UF Capacitor at C3. *Ensure correct polarity.*
11. Install the power pin and battery box wires. *The board is marked for a 2-pin header (J1) for battery connection. If a connector is not available, solder the battery wires directly to the designated pads, ensuring correct polarity.*

3.2 Circuit Principle

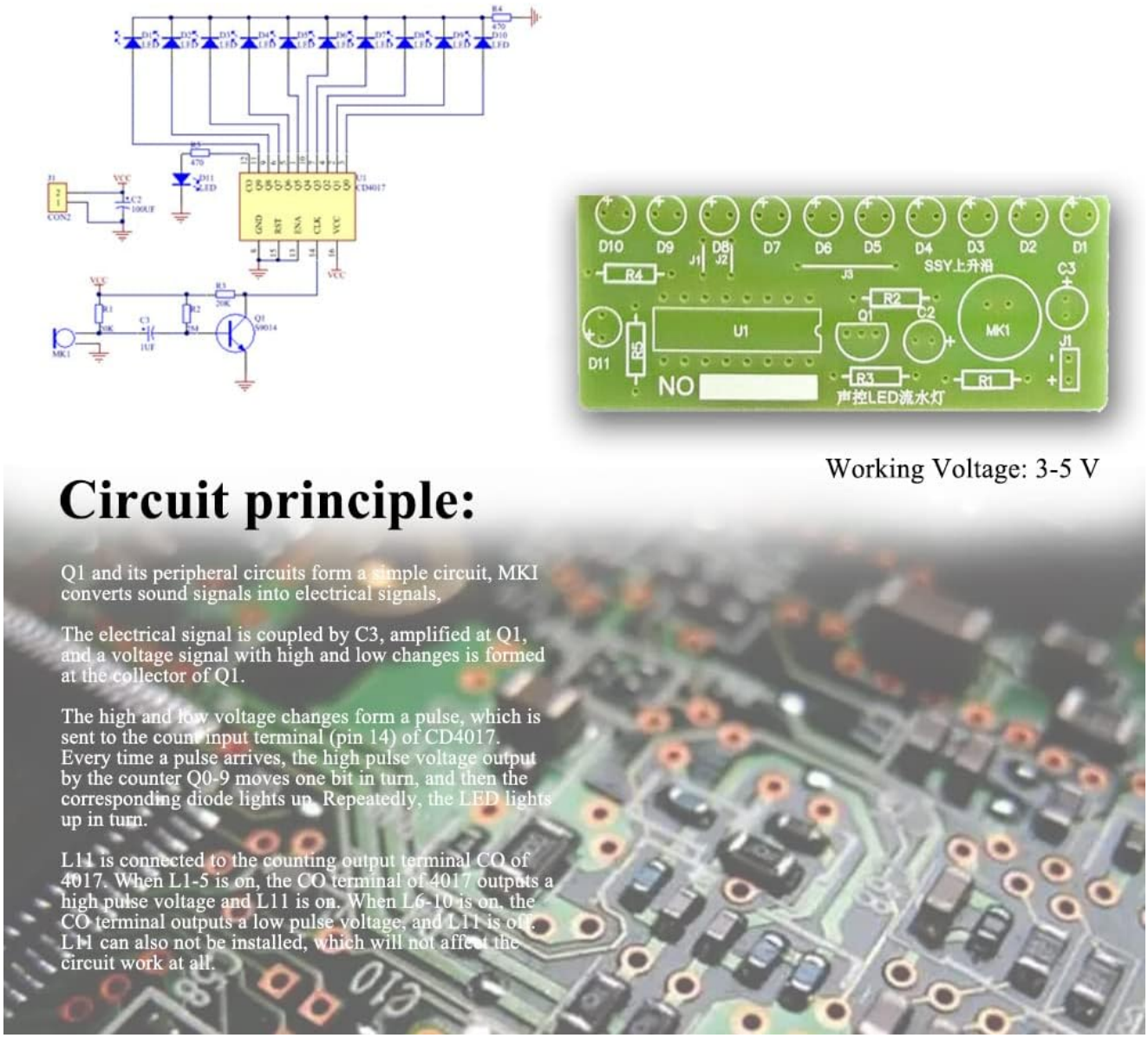
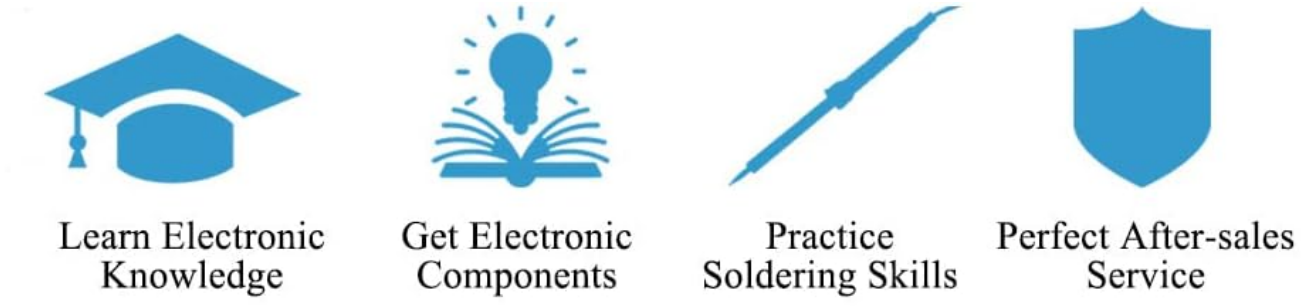


Image 4: Circuit diagram and PCB layout for understanding component connections.

The Q1 transistor and its peripheral circuits form a simple amplifier. The microphone (MK1) converts sound signals into electrical signals. These signals are amplified by Q1 and then fed into C3, generating a voltage signal with high and low changes. This signal is sent to the counting input terminal (pin 14) of the CD4017 IC. Each time a pulse arrives, the CD4017 counter advances, causing the LEDs to light up in sequence, creating a chasing light effect. The speed of the chasing lights is dependent on the frequency and intensity of the sound input.



Go to Dingdong store to find more soldering projects.

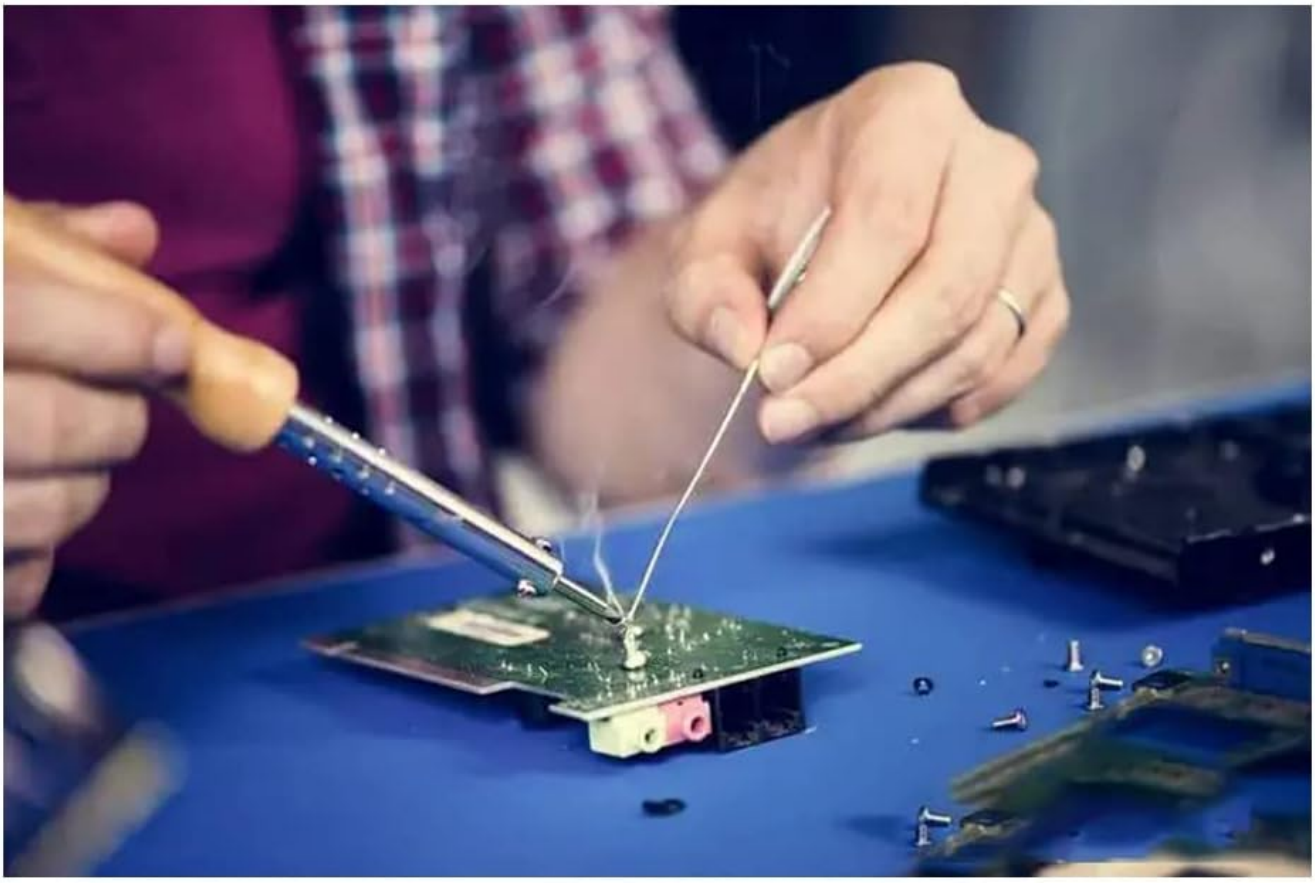


Image 5: Example of soldering in progress.

4. Operating Instructions

Once assembly is complete, connect the battery box to the power pins on the PCB. The kit operates on a 3-5V power supply, typically provided by a USB power bank or a computer's USB port (via the battery box wires). The circuit is sound-activated; the LEDs will light up in a chasing sequence in response to sound detected by the onboard microphone. The intensity and speed of the LED sequence will vary with the sound input.

Image 6: The assembled kit demonstrating the sound-activated LED sequence.

4.1 Official Product Video

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Video 1: This video demonstrates the CD4017 LED light kit in operation, showing the sound-activated chasing light effect.

5. Maintenance

To ensure the longevity and proper functioning of your soldering practice kit, follow these maintenance guidelines:

- **Cleaning:** Keep the PCB clean and free from dust and debris. Use a soft, dry brush or compressed air to remove any accumulation. Avoid using liquids directly on the circuit board.

- **Storage:** Store the kit in a dry, cool environment away from direct sunlight and extreme temperatures. Protect it from physical impact.
- **Handling:** Handle the assembled board by its edges to avoid touching components or solder joints unnecessarily, which could cause damage or introduce contaminants.

6. Troubleshooting

If your kit does not function as expected after assembly, consider the following troubleshooting steps:

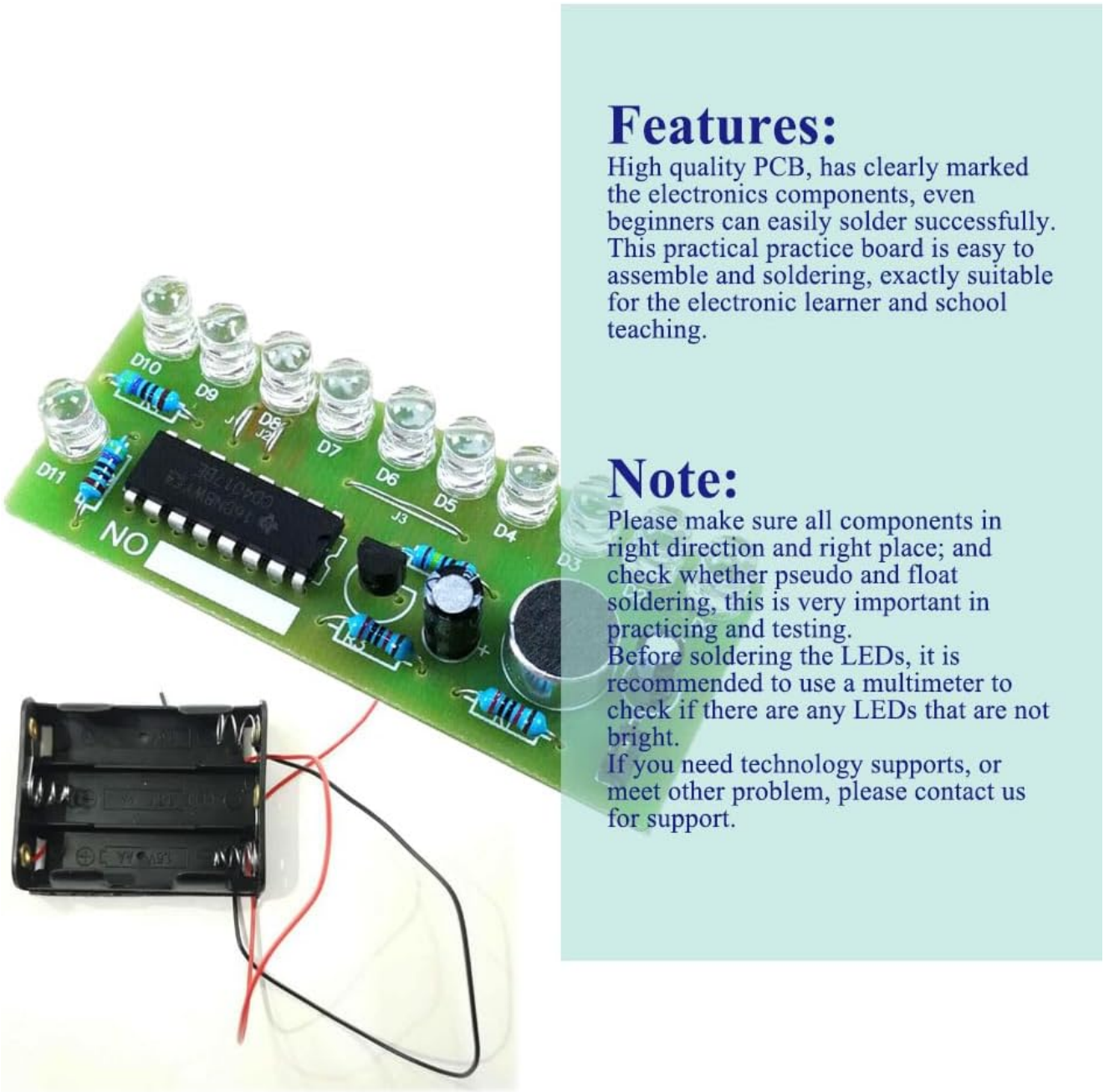

Image 7: Assembled kit highlighting features and important notes for troubleshooting.

- **No Power/LEDs Not Lighting:**
  - Check battery connections and ensure correct polarity.
  - Verify that the power source (3-5V) is providing adequate voltage.

- Inspect all solder joints for cold joints, bridges, or incomplete connections. Re-solder as necessary.
- Ensure all components, especially the CD4017 chip and S9014 transistor, are inserted with the correct orientation.
- Before soldering, it is recommended to use a multimeter to check if any LEDs are not bright or are faulty.

- **LEDs Not Responding to Sound:**
  - Check the microphone (MK1) for proper soldering and orientation.
  - Verify the connections around the Q1 transistor and capacitors C2, C3.
- **Incorrect LED Sequence:**
  - Double-check the installation of the CD4017 chip (U1) for correct orientation and secure connection.
  - Ensure all jumpers (J1, J2, J3) are correctly installed.
- **Component Value Discrepancies:** Some kits may have a 2M-Ohm resistor that measures closer to 1M-Ohm. While the circuit may still function, this indicates a potential manufacturing variation. If you have a multimeter, you can verify component values before soldering.

If you encounter persistent issues that cannot be resolved with these steps, please contact customer support for further assistance.

7. Specifications

- **Model Number:** CD4017
- **Product Dimensions:** 3 x 1 x 0.5 inches
- **Item Weight:** 1.13 ounces
- **Manufacturer:** ISolderStore
- **Recommended Age:** 12 years and up
- **Working Voltage:** 3-5 V
- **PCB Material:** Glass fiber, 1.6mm thickness

8. Warranty and Support

ISolderStore is committed to providing quality products and support. If any components are missing from your kit upon arrival, please contact us immediately for replacements. Should you encounter any difficulties during assembly or if the kit does not function correctly after soldering, our support team is available to assist you. Please refer to the contact information provided with your purchase or on the ISolderStore website for assistance.