

## Gikfun AE1173

# Gikfun DIY SMD/SMT Soldering Practice Board Instruction Manual

Model: AE1173 | Brand: Gikfun

## 1. INTRODUCTION

This instruction manual provides essential information for assembling and utilizing the Gikfun DIY SMD/SMT Components Practice Board. Designed for individuals seeking to develop or refine their surface-mount device (SMD) and surface-mount technology (SMT) soldering skills, this kit offers a practical platform for hands-on training. It is suitable for beginners with basic electronic knowledge and experienced users looking to practice fine-pitch soldering.

## 2. PRODUCT OVERVIEW

The Gikfun SMD/SMT Practice Board (Model AE1173) is a high-quality printed circuit board (PCB) featuring clearly marked areas for various electronic components. The kit includes a selection of SMD components designed to challenge and improve soldering precision.

### 2.1 Kit Contents

- 1 x Gikfun SMD/SMT Practice PCB
- Various SMD components (resistors, capacitors, diodes, ICs, etc.)

### 2.2 Board Layout

The practice board is organized into different sections, each dedicated to a specific type or size of SMD component. This layout allows for systematic practice, progressing from larger, easier-to-handle components to smaller, more challenging ones. The board includes pads for 0805 capacitors, 0603 resistors, SOT-23 triodes, 3216 diodes, and various integrated circuits (ICs) such as PQFP44 packages.

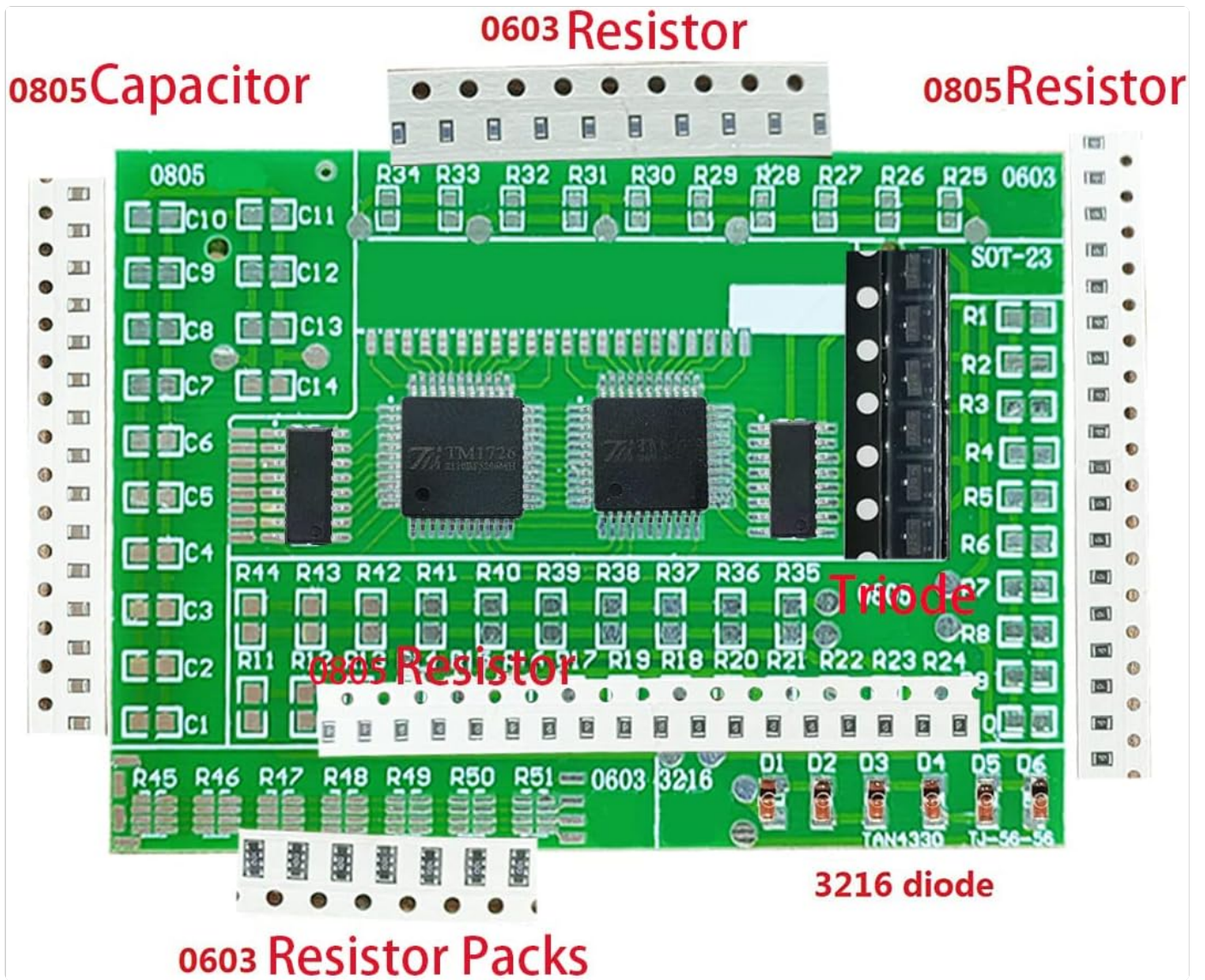


Figure 1: Gikfun SMD/SMT Practice Board with various component areas clearly labeled for soldering practice.

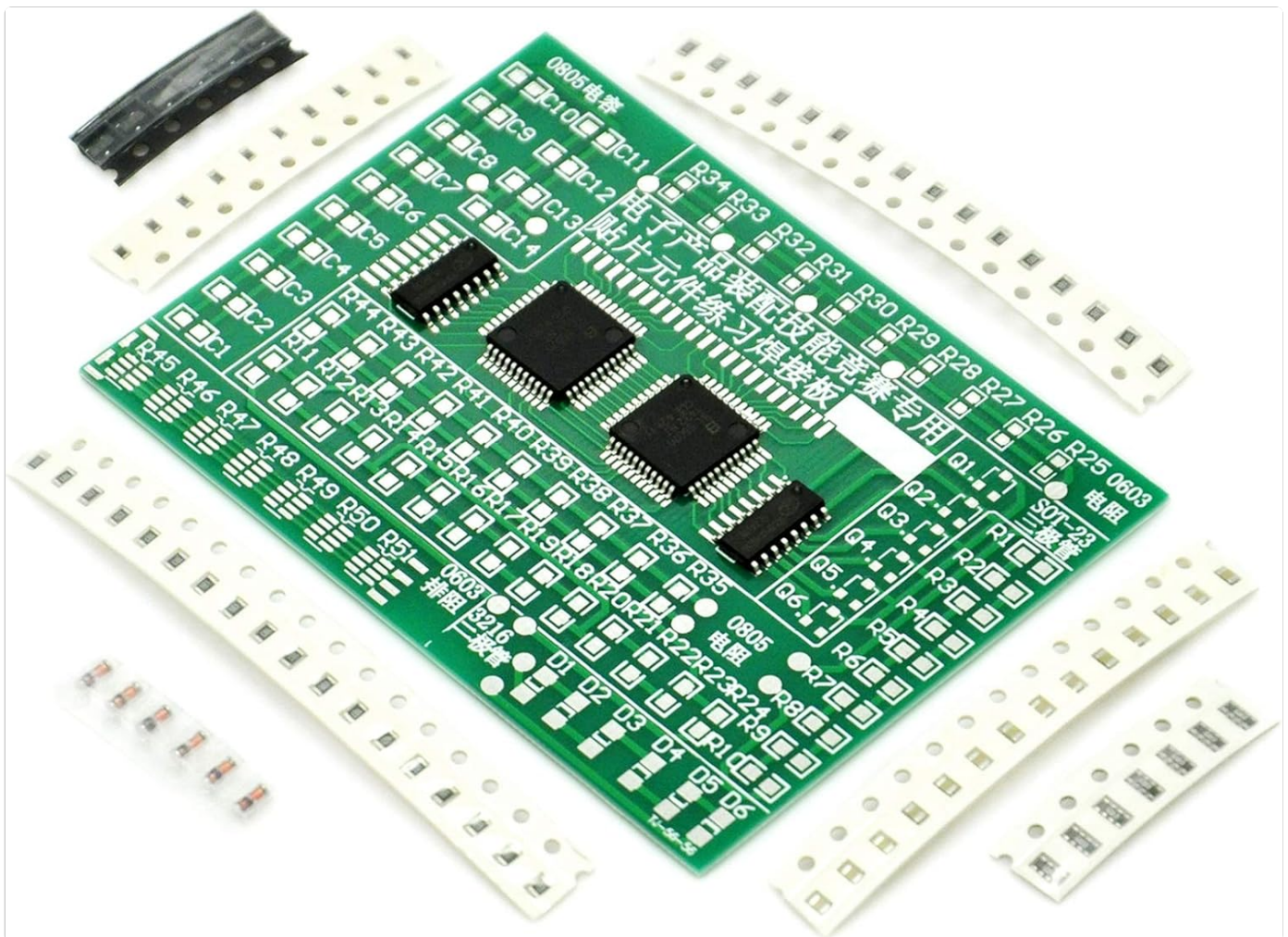


Figure 2: The Gikfun practice board displaying the variety of surface-mount components included in the kit, ready for assembly.

### 3. SETUP AND PREPARATION

Before beginning the soldering process, ensure you have the necessary tools and a suitable workspace.

#### 3.1 Required Tools

- Soldering iron with a fine tip
- Solder wire (preferably thin, lead-free or leaded as per preference)
- Flux (optional, but recommended for SMD)
- Fine-tipped tweezers (essential for handling small components)
- Magnifying lamp or microscope (highly recommended for small components)
- Multimeter (for testing continuity and resistance after soldering)
- Solder wick or desoldering pump (for correcting mistakes)
- Safety glasses

#### 3.2 Workspace Preparation

- Ensure your workspace is well-lit and ventilated.
- Organize your components and tools to prevent loss of small parts.
- Use a heat-resistant mat to protect your work surface.
- Consider using a 'third hand' tool with clamps to hold the PCB steady during soldering.

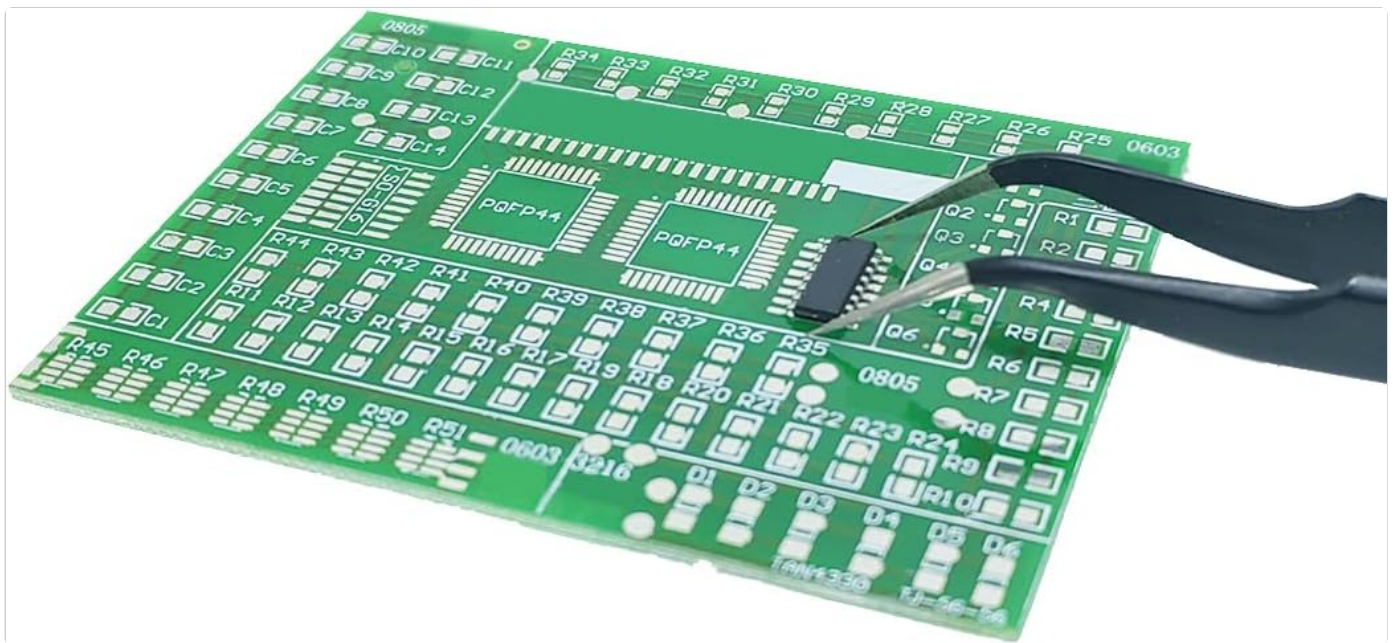


Figure 3: Using fine-tipped tweezers to precisely place a small SMD component onto the designated pads on the practice board.

## 4. OPERATING INSTRUCTIONS (SOLDERING PROCESS)

The following steps outline a general approach to soldering SMD components onto the practice board. Always prioritize safety and proper technique.

### 4.1 General Soldering Steps

1. **Prepare the Pad:** Apply a small amount of solder to one of the pads where the component will be placed. This is often called 'tinning' the pad.
2. **Place the Component:** Using tweezers, carefully pick up the SMD component. Align it precisely over the tinned pad and the corresponding un-tinned pad.
3. **Solder One Side:** While holding the component in place with tweezers, heat the tinned pad with your soldering iron. The solder will melt, securing one side of the component. Remove the iron and allow the solder to cool.
4. **Solder the Second Side:** Apply a small amount of fresh solder to the tip of your iron. Heat the un-tinned pad and the component lead simultaneously, then feed a small amount of solder to create a strong joint. Ensure the solder flows smoothly and creates a shiny, concave fillet.
5. **Inspect the Joint:** Visually inspect the solder joint for proper formation. It should be shiny, smooth, and connect the component lead to the pad without bridging to adjacent pads.
6. **Repeat:** Continue this process for all components on the board, working systematically.

### 4.2 Component-Specific Considerations

- **Resistors and Capacitors (0805, 0603):** These are generally non-polarized. Focus on clean, consistent joints.
- **Diodes (3216):** Diodes are polarized. Ensure the marked band on the diode aligns with the polarity indicator on the PCB (usually a line or arrow).
- **Integrated Circuits (ICs):** For multi-pin ICs like PQFP44, start by tacking down one corner pin, then an opposite corner pin to align the chip. Then, proceed to solder all remaining pins. Be careful to avoid solder bridges between closely spaced pins.

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Video 1: Official Gikfun demonstration of the SMD soldering process on the practice board, showing component placement and soldering techniques.

## 5. MAINTENANCE

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Proper maintenance of your soldering tools and practice board ensures longevity and continued performance.

- **Clean Soldering Iron Tip:** Regularly clean your soldering iron tip with a damp sponge or brass wool to remove oxidation and old solder. A clean tip ensures efficient heat transfer.
- **Store Components Properly:** Keep unused SMD components in their original packaging or in organized storage containers to prevent loss and damage.
- **Clean the Board:** After soldering, you may use isopropyl alcohol and a soft brush to clean any flux residue from the PCB. This improves appearance and helps prevent potential short circuits.
- **Inspect for Damage:** Periodically check the practice board for any physical damage or excessive wear.

## 6. TROUBLESHOOTING

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Encountering issues during soldering practice is common. Here are some tips for identifying and resolving problems:

- **Cold Solder Joints:** If a joint appears dull, lumpy, or cracked, it may be a cold solder joint. Reheat the joint, apply a small amount of fresh solder, and allow it to cool properly.
- **Solder Bridges:** If solder connects two adjacent pads or pins, it's a solder bridge. Use solder wick or a desoldering pump to remove the excess solder. A fine-tipped iron can also help melt and pull away small bridges.
- **Missing Components:** Due to their small size, components can easily be lost. Work in a tidy area and use tweezers for handling.
- **Component Polarity:** Ensure polarized components like diodes are installed in the correct orientation. Incorrect polarity can prevent circuits from functioning.
- **Testing Continuity:** After soldering a section of components, use a multimeter in continuity mode to check for unintended short circuits or open connections between pads. For example, on the right side of the board, resistors R1-R10 are connected in series. You can use test points near R7 and R8 to check continuity across these resistors.

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Video 2: The official Gikfun video also demonstrates how to test the soldered components using a multimeter to check for proper connections and identify potential issues.

## 7. SPECIFICATIONS

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Feature	Detail
Brand	Gikfun
Model Number	AE1173 (Internal: 6431119)
Item Weight	0.48 ounces
Package Dimensions	5.83 x 3.94 x 0.47 inches
Manufacturer	Esooho
First Available	June 29, 2016

## 8. WARRANTY AND SUPPORT

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This Gikfun product is designed for educational and practice purposes. While specific warranty details are not provided, Gikfun is committed to customer satisfaction.

## **8.1 Technical Support**

For technical assistance or if you require a PDF version of this manual, please contact Gikfun customer support. Additional resources and user guides may be available on the official Gikfun store page or product listing.

