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SagaSave 45081

SagaSave LM317 LM337 Adjustable Dual Power Supply Kit Instruction Manual

Introduction

This manual provides detailed instructions for assembling and operating your SagaSave LM317 LM337 Adjustable Dual Power Supply Kit. This DIY kit allows you to construct a stable, adjustable dual positive and negative power supply module, suitable for various electronic projects. The kit features high-quality FR-4 military-grade PCB material with double-sided wiring and tin-sprayed pads for durability and ease of soldering.

Assembly Instructions

Components Overview

This kit includes all necessary components for building a dual adjustable power supply. Familiarize yourself with the components before starting assembly.

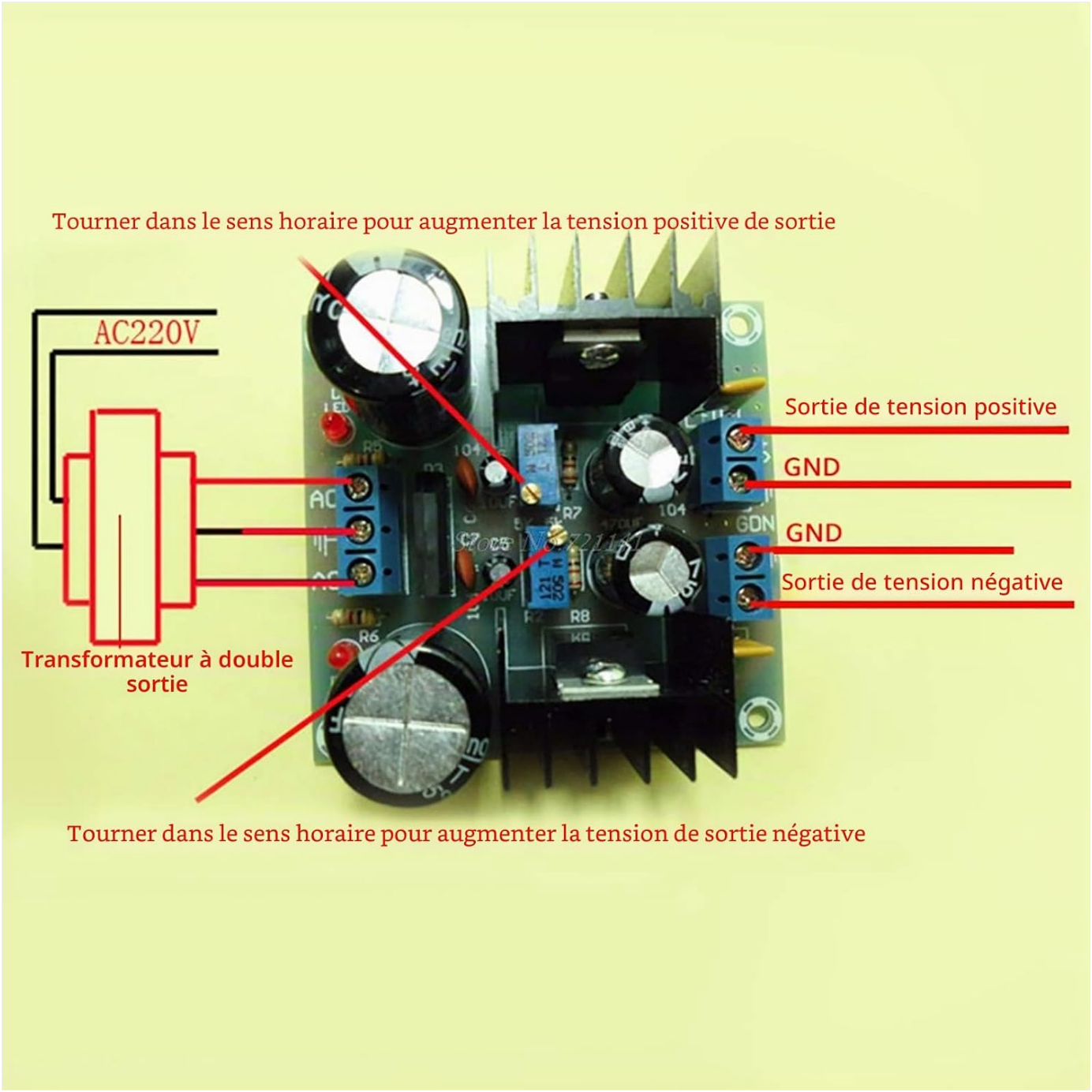


Figure 1: All components of the SagaSave LM317 LM337 Adjustable Dual Power Supply Kit. This includes the PCB, capacitors, resistors, diodes, voltage regulators (LM317, LM337), potentiometers, terminal blocks, and heatsinks.

Printed Circuit Board (PCB)

The PCB is designed for easy assembly with clear component markings. Ensure you identify each component's correct placement before soldering.

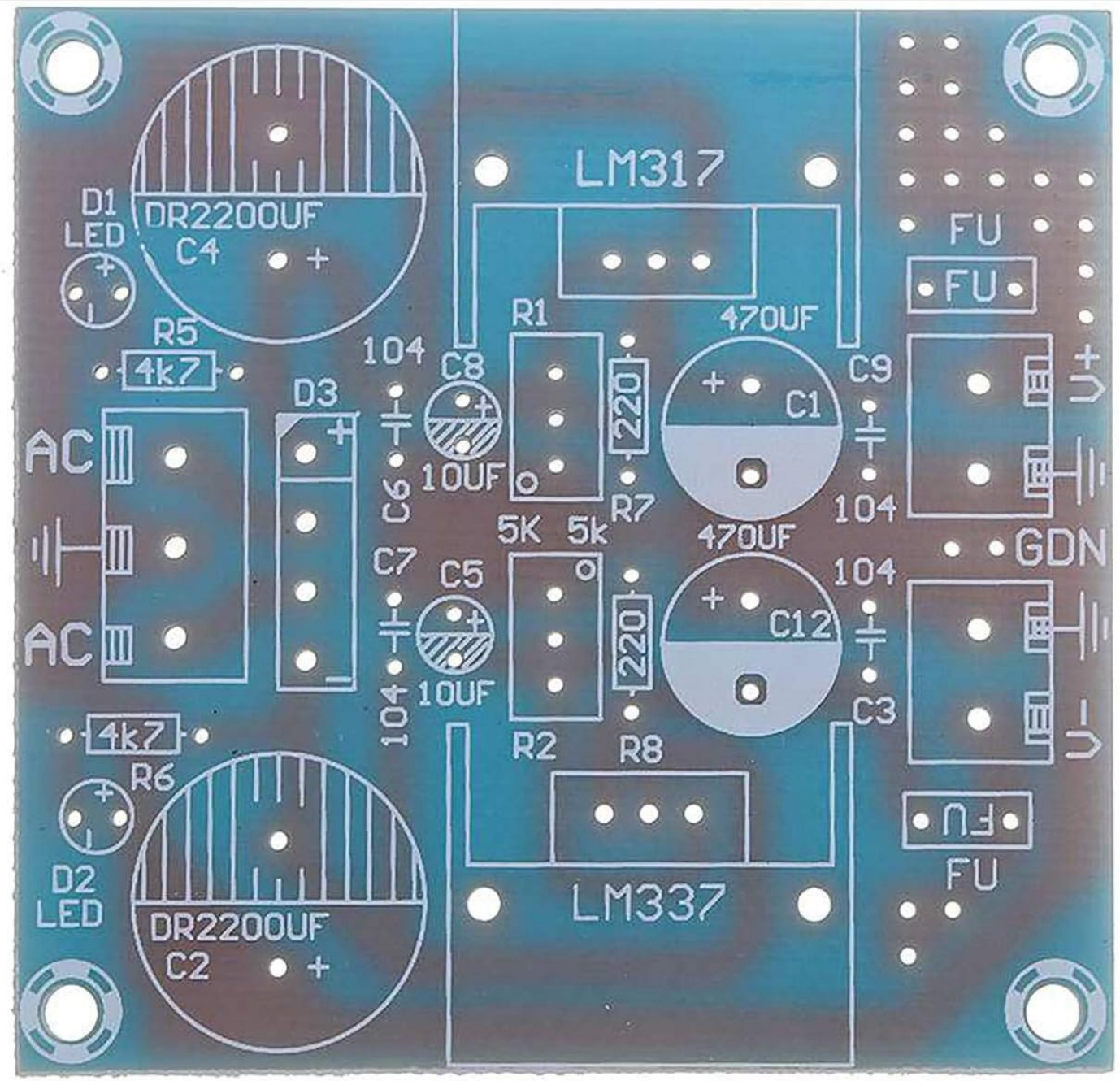


Figure 2: The Printed Circuit Board (PCB) for the LM317 LM337 power supply. Note the clearly marked component outlines and values for easy assembly.

Assembly Steps

1. **Component Identification:** Before soldering, identify all components. The PCB has direct printing of circuit parameters, which aids in placement.
2. **Solder Smaller Components First:** Begin by soldering smaller components such as resistors and diodes. Pay attention to the polarity of diodes.
3. **Capacitors:** Solder the capacitors, ensuring correct polarity for electrolytic capacitors (the longer lead is positive, marked on the PCB).
4. **Voltage Regulators (LM317, LM337):** Mount the LM317 and LM337 voltage regulators. Attach the provided heatsinks to these components to ensure proper heat dissipation during operation.
5. **Potentiometers:** Solder the adjustable potentiometers (trimmers) for voltage adjustment.
6. **Terminal Blocks:** Solder the input and output terminal blocks.
7. **Inspect Solder Joints:** After soldering all components, carefully inspect all solder joints for bridges, cold joints, or missing connections.

Operating Instructions

Power Connection

The module requires a dual AC input voltage. Connect your AC transformer output to the AC input terminals on the board.

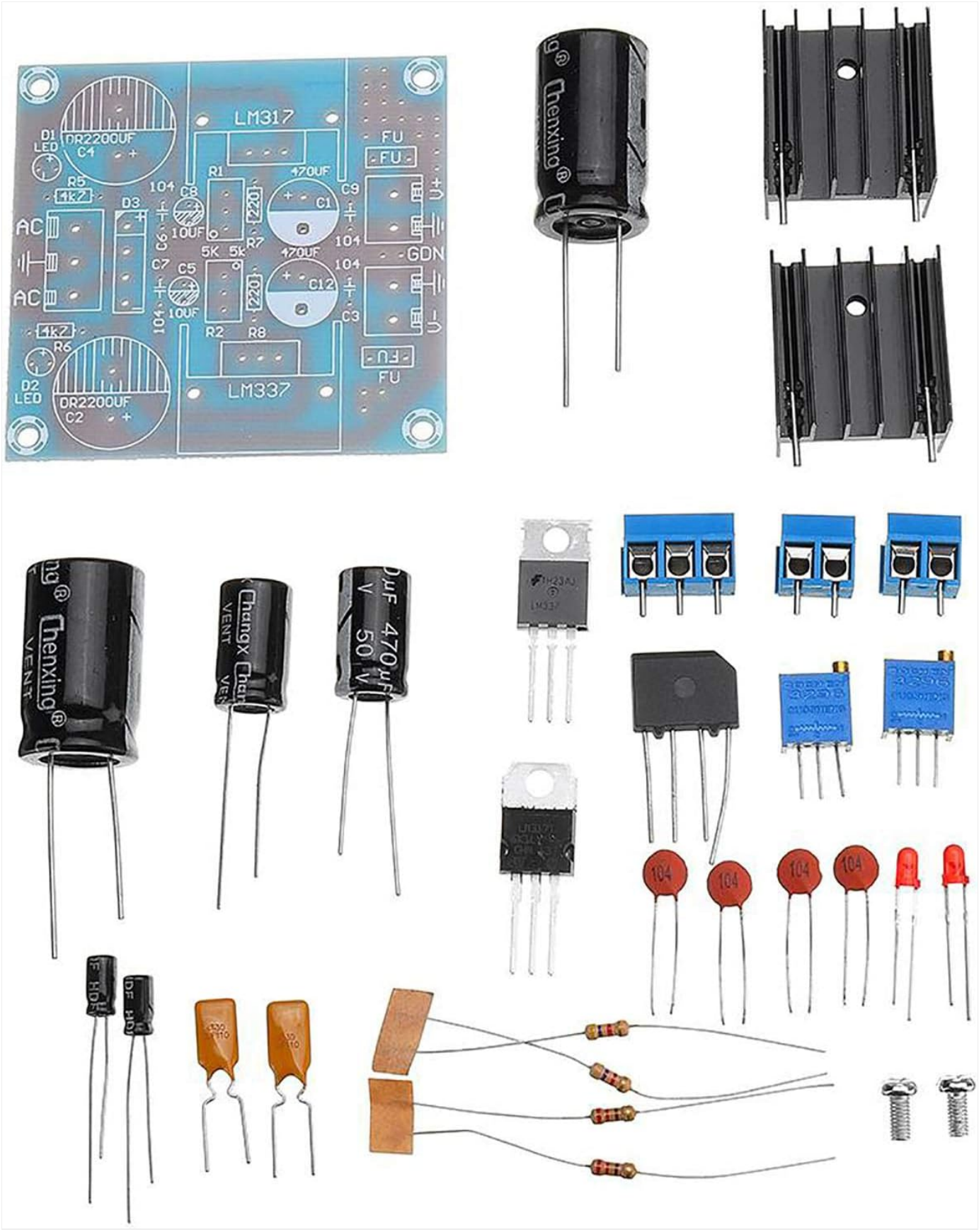


Figure 3: Assembled power supply board with input and output connections. The diagram shows AC input from a dual-output transformer,

positive output, negative output, and ground (GND) terminals. It also indicates the adjustment points for positive and negative output voltages.

- **Input Voltage:** Connect a dual AC voltage source (e.g., AC 5V to dual AC 20V) to the designated AC input terminals. Ensure the input is a dual AC input only.
- **Voltage Requirement:** The rectified and filtered input voltage should be at least 3V higher than your desired output voltage. For example, if your AC input is 12V, after rectification and filtering, it becomes approximately 16.968V (12V * 1.414). The maximum output voltage in this case would be around 13.968V (16.968V - 3V). Avoid excessively high input voltage, as this increases power consumption and chip heat for the LM317/LM337 regulators, potentially reducing the maximum output current.

Output Voltage Adjustment

The module provides adjustable dual DC output voltages.

- **Output Range:** The DC output voltage is adjustable from 1.3V to 25V.
- **Adjustment:** Use a small screwdriver to turn the potentiometers on the board.
- Turn clockwise to increase the positive output voltage.
- Turn clockwise to increase the negative output voltage (making it less negative, closer to zero).
- **Monitoring:** Always use a multimeter to measure the output voltage while adjusting to ensure it meets your requirements and stays within safe limits for your connected circuit.

Output Current

The maximum output current is 1A.

Maintenance

- **Cleaning:** Keep the board clean and free from dust and debris. Use a soft brush or compressed air for cleaning.
- **Inspection:** Periodically inspect solder joints and components for any signs of damage or wear. The double-sided wiring and tin-sprayed pads are designed to withstand repeated soldering, making them robust.
- **Heat Management:** Ensure adequate airflow around the heatsinks, especially during prolonged operation at higher currents or voltages, to prevent overheating of the LM317/LM337 regulators.
- **Storage:** Store the module in a dry, non-condensing environment when not in use. The FR-4 military-grade material is resistant to bending and environmental changes.

Troubleshooting

- **No Output Voltage:**
  - Check AC input connections and ensure the transformer is supplying power.
  - Verify all components are correctly oriented, especially diodes and electrolytic capacitors.
  - Inspect all solder joints for completeness and quality.
  - Ensure the LM317/LM337 regulators are correctly installed and not damaged.
- **Incorrect Output Voltage:**
  - Adjust the potentiometers carefully while monitoring with a multimeter.
  - Confirm the input AC voltage is within the specified range (AC 5V – dual AC 20V) and sufficiently higher than the desired output.

- Check resistor values and capacitor values against the PCB markings.

- **Excessive Heat:**
  - Ensure heatsinks are properly attached to the LM317/LM337 regulators.
  - Reduce the difference between input and output voltage if possible, as a larger difference increases heat dissipation.
  - Verify the load current does not exceed 1A.

- **Unstable Output:**
  - Check for loose connections or cold solder joints.
  - Ensure all capacitors are correctly installed and functioning.
  - Verify the input AC voltage is stable.

Specifications

Parameter	Value
Board Dimensions	Approx. 62 mm (Length) x 59 mm (Width) x 30 mm (Height)
Input Voltage	AC 5V – Dual AC 20V (Dual AC input only)
Output DC Voltage	Adjustable 1.3V - 25V
Output Current	Max 1A
Regulation Mode	Linear Buck Regulator
PCB Material	FR-4 Military Grade
Manufacturer Model Number	45081

Warranty and Support

This product is a DIY kit, and its proper functioning depends on correct assembly. While specific warranty details are not provided, SagaSave is committed to customer satisfaction.

Should you encounter any questions or issues during assembly or operation, please do not hesitate to contact SagaSave customer support. We aim to provide a satisfactory solution within 24 hours.

For support, please refer to the contact information provided at your point of purchase or on the SagaSave official website.

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