

1S 3A 3.7V 4.2V 18650 Lithium Ion Li-ion Battery Protection Board (PCM/BMS)

Instruction Manual

Introduction

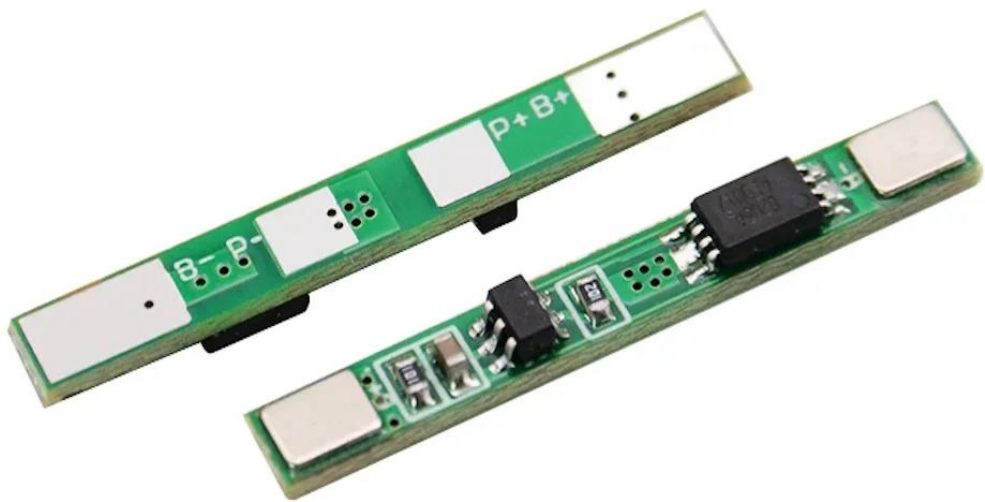
This manual provides essential information for the safe and effective use of the VAOHM 1S 3A 3.7V 4.2V Lithium Ion Battery Protection Board (PCM/BMS). This board is designed to protect single-cell Li-ion batteries (such as 18650 cells) from common issues like overcharge, overdischarge, and overcurrent, ensuring the longevity and safety of your battery applications. It is intended for use with Li-ion batteries that do not require a balancing function.

VAOHM 1S 3A 3.7V 4.2V Lithium Ion Battery Protection Board

Specifications

Parameter	Value
Overcharge Detection Voltage	4.25 ± 0.05V
Overcharge Release Voltage	4.23 ± 0.05V
Overdischarge Voltage	2.54 ± 0.1V
Maximal Continuous Charging Current	2A
Maximal Continuous Discharging Current	2A
Overcurrent Protection	3A
Supply Voltage	4.2V
Dissipation Power	Max
Operating Temperature	0-70°C
Type	Module

Parameter	Value
Package	DIP
Size (L*W*T)	40 * 4 * 3 mm (approx.)



Visual representation of technical parameters.



Approximate dimensions: 3cm length, 0.4cm width.

Product Features

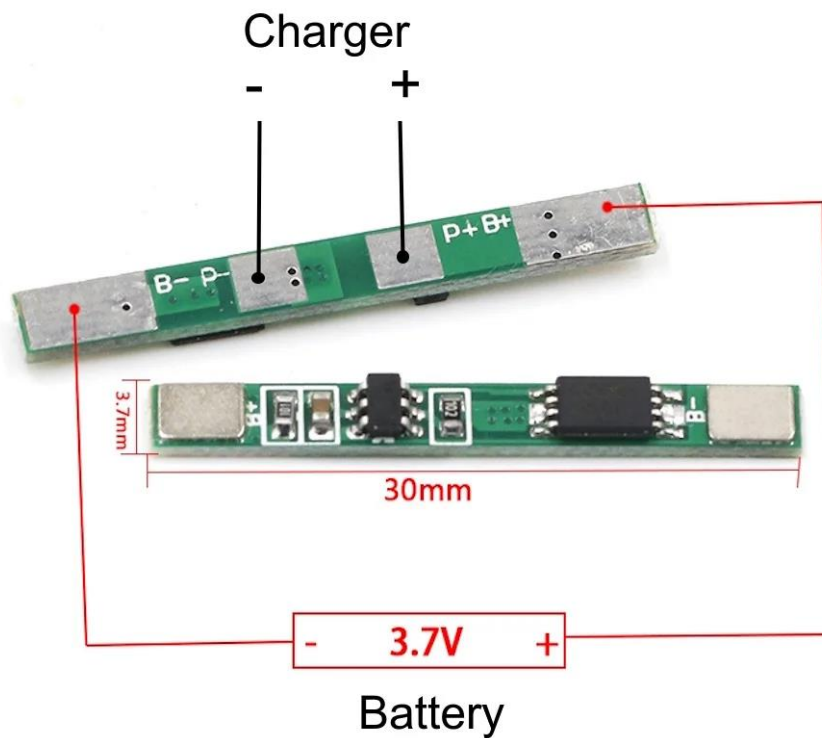
- **High-accuracy Voltage Detection:** Incorporates a precise voltage detection circuit to monitor battery status.
- **High Voltage Charger Terminal:** The charger terminal is designed to handle high voltage, enhancing safety and compatibility.
- **Three-stage Over-current Detection:** Features a built-in three-stage over-current detection circuit, including over-current 1, over-current 2, and load short circuit protection.
- **MOS Transistor Control:** Utilizes a MOS transistor to effectively control both the charging and discharging processes of the battery.

Setup and Installation

Proper wiring is crucial for the correct function and safety of the battery protection board. Refer to the diagram below for connection instructions.

1. **Connect B- to Battery Negative:** Solder the 'B-' pad on the protection board to the negative terminal of your 3.7V Li-ion battery.
2. **Connect B+ to Battery Positive:** Solder the 'B+' pad on the protection board to the positive terminal of your 3.7V Li-ion battery.
3. **Connect P- to Load/Charger Negative:** Solder the 'P-' pad on the protection board to the negative terminal of your load (device) and the negative terminal of your charger.
4. **Connect P+ to Load/Charger Positive:** Solder the 'P+' pad on the protection board to the positive terminal of your load (device) and the positive terminal of your charger.

Important: Ensure all connections are secure and correctly polarized to prevent damage to the board, battery, or connected devices.



Wiring diagram for connecting the protection board to a 3.7V battery and charger/load.

Operation

Once correctly installed, the protection board operates automatically to safeguard your Li-ion battery:

- **Overcharge Protection:** The board will cut off the charging current if the battery voltage exceeds the overcharge detection voltage (4.25V), preventing damage from overcharging. Charging will resume when the voltage drops to the overcharge release voltage (4.23V).
- **Overdischarge Protection:** If the battery voltage drops below the overdischarge voltage (2.54V) during discharge, the board will cut off the discharge current to prevent deep discharge, which can permanently damage Li-ion cells.
- **Overcurrent Protection:** The board monitors the current flowing through the battery. If the current exceeds the overcurrent protection limit (3A), it will temporarily interrupt the circuit to prevent damage to the battery and the board itself.
- **Short Circuit Protection:** In the event of a short circuit on the load side, the board will immediately cut off the current to prevent dangerous conditions.

The MOS transistor integrated into the board manages these cut-off and resume functions for both charging and discharging cycles.

Maintenance

The VAOHM battery protection board is a low-maintenance electronic component. To ensure its optimal performance and longevity:

- **Keep Dry:** Avoid exposure to moisture or liquids, as this can cause short circuits and damage the board.
- **Cleanliness:** Keep the board free from dust and debris. Use a soft, dry brush or compressed air for cleaning if necessary.
- **Temperature:** Operate the board within its specified operating temperature range of 0-70°C. Avoid extreme heat or cold.
- **Physical Protection:** Protect the board from physical impact or excessive bending, which could damage its components or solder joints.

Troubleshooting

If you encounter issues with your battery protection board, consider the following:

- **No Charge/Discharge:** Check all wiring connections (B-, B+, P-, P+) for continuity and correct polarity. Ensure the battery voltage is within the operational range (above overdischarge voltage and below overcharge voltage).
- **Intermittent Operation:** Inspect solder joints for cold joints or poor connections. Ensure the load current does not exceed the 3A overcurrent protection limit.
- **Overheating:** If the board becomes excessively hot, it may indicate an overload or a short circuit. Disconnect power immediately and re-check your circuit design and connections.
- **Battery Not Charging to Full:** Verify that your charger's output voltage is appropriate for a 1S Li-ion battery (typically 4.2V). The board will cut off charging at 4.25V.

If problems persist after checking these points, consult a qualified electronics technician.

Safety Information

Always exercise caution when working with batteries and electronic components.

- **Battery Handling:** Li-ion batteries can be dangerous if mishandled. Do not puncture, crush, or expose batteries to fire or extreme temperatures.
- **Polarity:** Always double-check battery and circuit polarity before making connections. Incorrect polarity can cause severe damage or fire.
- **Soldering:** Use appropriate soldering techniques and safety equipment. Avoid prolonged heat exposure to the board components.
- **Insulation:** Ensure all exposed wires and solder joints are properly insulated to prevent accidental short circuits.
- **Ventilation:** Work in a well-ventilated area.
- **Children and Pets:** Keep electronic components and batteries out of reach of children and pets.

Warranty and Support

For any questions, technical assistance, or warranty inquiries regarding your VAOHM 1S 3A Battery Protection Board, please contact the seller or manufacturer directly through your purchase platform. Provide your order details and a clear description of the issue for efficient support.