

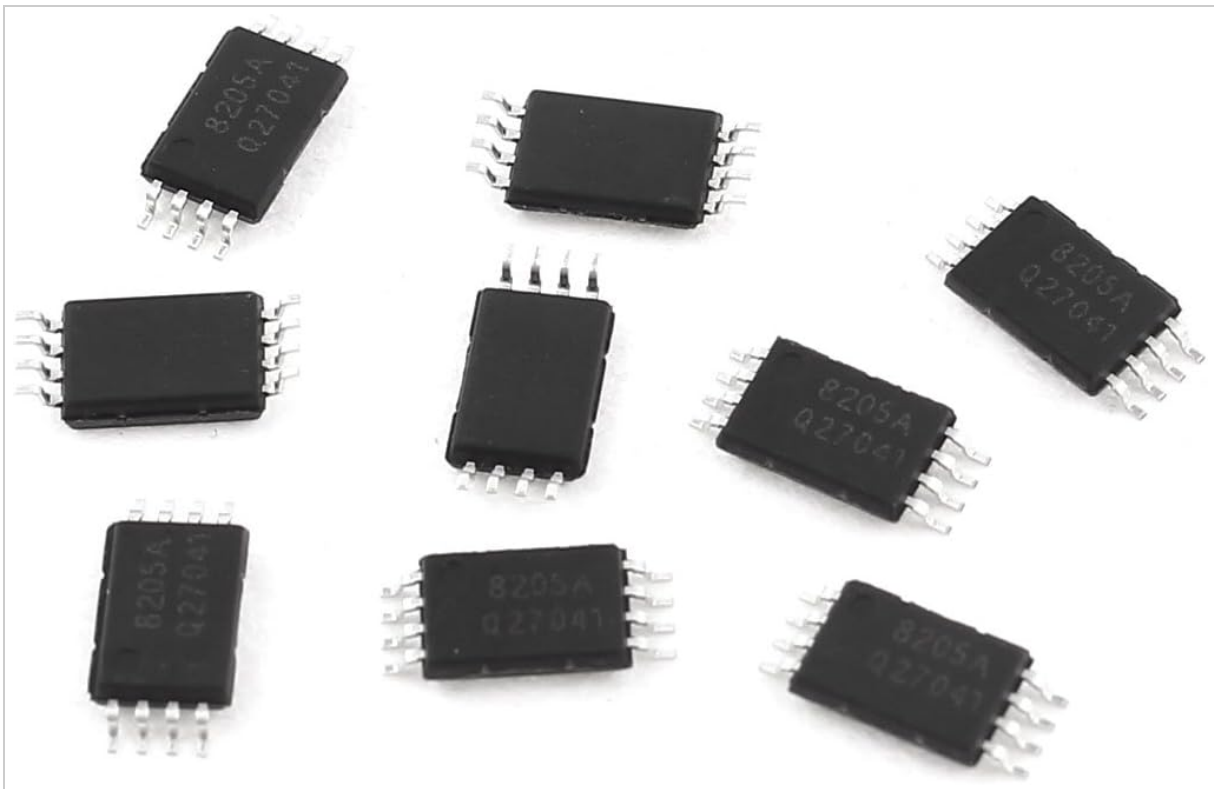
## Aexit FS8205A

# Aexit FS8205A TSSOP-8 MOSFET Lithium Battery Protection IC Instruction Manual

Model: FS8205A

## 1. INTRODUCTION

This manual provides essential information for the proper use and understanding of the Aexit FS8205A TSSOP-8 SMD MOSFET Lithium Battery Protection IC. It covers product specifications, installation guidelines, and operational considerations to ensure safe and effective integration into electronic circuits. The FS8205A is a dual N-channel enhancement mode power MOSFET designed for lithium-ion battery protection circuits. Its low on-resistance and compact TSSOP-8 package make it suitable for portable electronic devices requiring efficient power management and protection.



**Image 1.1:** A collection of Aexit FS8205A TSSOP-8 MOSFET Lithium Battery Protection ICs. Each IC is a small, black, rectangular component

with eight pins on each side, marked with "8205A" and "Q27041". These components are designed for surface-mount applications in battery protection circuits.

## 2. SPECIFICATIONS

The following table details the key technical specifications for the Aexit FS8205A Lithium Battery Protection IC:

Parameter	Value
Product Name	Lithium Battery Protection IC
Model	FS8205A
Package Type	TSSOP-8
Drain-Source Voltage (Vds)	20V
Gate-Source Voltage (Vgs)	±12V
Drain Current (Id)	6A (TA=25°C), 5A (TA=70°C)
Weight (per IC)	Approximately 1g
Quantity	10 pieces per package

## 3. SETUP AND INSTALLATION

The FS8205A is a surface-mount device (SMD) and requires appropriate soldering techniques for installation. It is crucial to handle these components with care to prevent electrostatic discharge (ESD) damage.

### 3.1. ESD Precautions

- Always use an ESD-safe workstation, including an ESD mat and wrist strap.
- Ensure all tools and equipment are properly grounded.
- Handle ICs by their body, avoiding contact with the pins.

### 3.2. Soldering Guidelines

- Use a fine-tip soldering iron with temperature control.
- Recommended soldering temperature: 240-260°C for lead-free solder.
- Limit soldering time per pin to 3-5 seconds to prevent overheating.
- Ensure proper alignment of the IC on the PCB pads before soldering.
- Inspect solder joints for bridges or cold joints after installation.

### 3.3. Circuit Integration

Refer to the specific application circuit diagram for the lithium battery protection module you are designing or repairing. The FS8205A typically functions as the switching element in conjunction with a battery protection IC (e.g., a charge/discharge controller) to manage current flow and prevent overcharge, over-discharge, and overcurrent conditions.

## 4. OPERATING PRINCIPLES

The FS8205A is a dual N-channel MOSFET. In a typical lithium battery protection circuit, these MOSFETs are used to control the charge and discharge paths of the battery. When the battery protection IC detects an abnormal condition (e.g., overvoltage, undervoltage, overcurrent), it sends a signal to the gates of the FS8205A MOSFETs, turning them off and disconnecting the battery from the load or charger.

#### 4.1. Normal Operation

Under normal operating conditions, the battery protection IC keeps the gates of the FS8205A MOSFETs high (or low, depending on the specific circuit design), allowing current to flow through the MOSFETs with minimal resistance (low  $R_{DS(on)}$ ). This enables efficient charging and discharging of the battery.

#### 4.2. Protection Activation

When a fault condition is detected:

- **Overcharge Protection:** The charge MOSFET is turned off, preventing further charging.
- **Over-discharge Protection:** The discharge MOSFET is turned off, preventing further discharge.
- **Overcurrent Protection:** Both MOSFETs may be turned off, or the discharge MOSFET is turned off, to interrupt excessive current flow.

The low on-resistance of the FS8205A minimizes power loss and heat generation during normal operation, contributing to the overall efficiency of the battery management system.

### 5. MAINTENANCE

The Aexit FS8205A ICs are passive components within a larger circuit and generally require no routine maintenance themselves. However, proper maintenance of the overall battery protection circuit and the device it powers is essential.

- **Environmental Conditions:** Ensure the operating environment remains within the specified temperature and humidity ranges for the entire electronic assembly.
- **Physical Inspection:** Periodically inspect the PCB for any signs of physical damage, corrosion, or loose connections, especially around soldered components.
- **Cleaning:** If cleaning is necessary, use appropriate electronic-grade cleaning solutions and soft brushes. Avoid harsh chemicals or excessive moisture.

### 6. TROUBLESHOOTING

Troubleshooting issues related to the FS8205A typically involves diagnosing problems within the broader battery protection circuit. Since the FS8205A acts as a switch controlled by a protection IC, issues often stem from the control signals or external factors.

Symptom	Possible Cause	Action
Battery not charging/discharging	FS8205A MOSFETs are off due to protection activation (overcharge, over-discharge, overcurrent).	<ul style="list-style-type: none"><li>◦ Check battery voltage.</li><li>◦ Verify charger output.</li><li>◦ Inspect for short circuits or excessive load current.</li><li>◦ Test the control signals from the main protection IC.</li></ul>

Symptom	Possible Cause	Action
Excessive heat from FS8205A	High current flow, insufficient heat dissipation, or damaged MOSFET.	<ul style="list-style-type: none"> <li>◦ Measure current draw.</li> <li>◦ Ensure proper PCB layout for thermal management.</li> <li>◦ Check for short circuits in the load.</li> <li>◦ Replace the FS8205A if it is confirmed to be faulty.</li> </ul>
Intermittent operation	Poor solder joints, ESD damage, or faulty control signals.	<ul style="list-style-type: none"> <li>◦ Re-inspect solder joints.</li> <li>◦ Verify stability of control signals.</li> <li>◦ Consider replacing the component if other causes are ruled out.</li> </ul>

*Note:* Always consult the datasheet of the specific battery protection IC used in conjunction with the FS8205A for detailed circuit operation and troubleshooting guides.

## 7. WARRANTY INFORMATION

Aexit products are typically covered by a standard manufacturer's warranty against defects in materials and workmanship. For specific warranty terms and conditions, please refer to the documentation provided with your purchase or contact Aexit customer support directly. Keep your proof of purchase for warranty claims.

*Note:* Damage resulting from improper installation, misuse, or operation outside of specified parameters is generally not covered under warranty.

## 8. SUPPORT AND CONTACT

For technical assistance, product inquiries, or support regarding the Aexit FS8205A, please contact Aexit customer service through their official website or the retailer from whom the product was purchased.

When contacting support, please be prepared to provide the following information:

- Product Model: FS8205A
- ASIN: B07DDBH47R
- Date of Purchase
- A detailed description of the issue or question.