

BOJACK IRF840

BOJACK IRF840 N-Channel Power MOSFET Transistor Instruction Manual

1. INTRODUCTION

This manual provides essential information for the safe and effective use of the BOJACK IRF840 N-Channel Power MOSFET Transistor. Please read these instructions carefully before installation and operation to ensure proper functionality and to prevent damage to the component or associated circuitry.

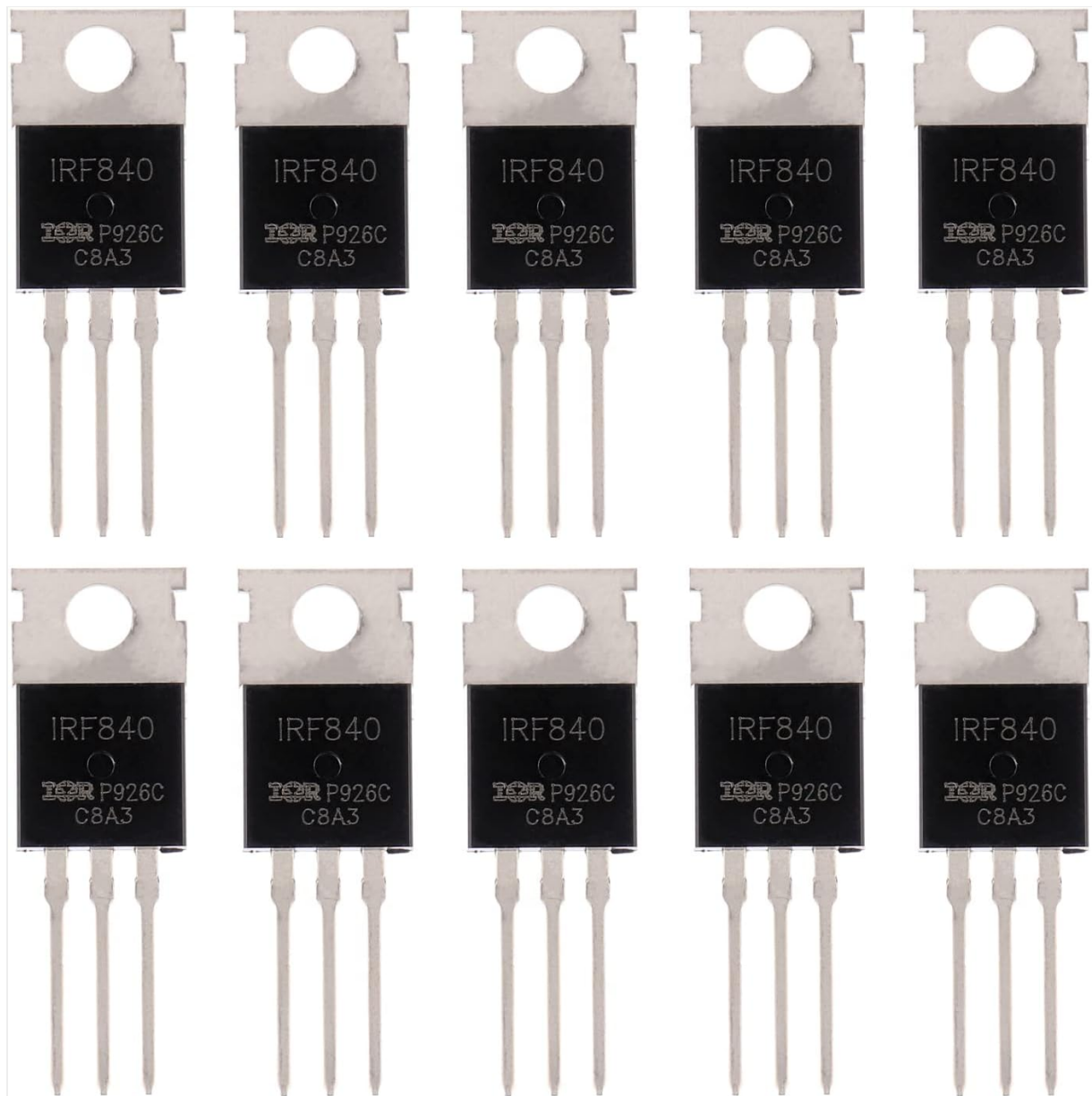


Image 1.1: A pack of ten BOJACK IRF840 N-Channel Power MOSFET Transistors, each clearly labeled IRF840 and housed in a TO-220AB package with three leads.

2. PRODUCT OVERVIEW

The BOJACK IRF840 is an N-Channel Power MOSFET designed for a wide range of applications in both analog and digital circuits. It features a robust TO-220AB package, making it suitable for through-hole mounting. This component is characterized by its ability to handle significant current and voltage, making it ideal for switching applications, power supplies, and motor control.

Key Features:

- Transistor type: MOSFET
- Transistor polarity: N-Channel
- Drain current (I_d Max): 8A
- Voltage V_{ds} Max: 500V
- Power (Max): 125W
- Package: TO-220AB



Image 2.1: Ten BOJACK IRF840 MOSFETs are shown organized within a transparent plastic case, indicating careful packaging for protection and storage.

3. INSTALLATION GUIDELINES

Proper installation is crucial for the performance and longevity of the IRF840 MOSFET. Always observe standard electrostatic discharge (ESD) precautions when handling electronic components.

3.1 Safety Precautions

- Ensure power is disconnected from the circuit before handling or installing the MOSFET.
- Wear an anti-static wrist strap and work on an ESD-safe surface.
- Avoid touching the leads directly with bare hands to prevent contamination and ESD damage.

3.2 Mounting Instructions

1. Identify the Gate (G), Drain (D), and Source (S) pins. For the TO-220AB package, these are typically arranged from left to right when viewed from the front (label side). Refer to the datasheet for exact pinout.
2. Insert the leads into the designated holes on the printed circuit board (PCB).
3. Solder the leads securely to the PCB, ensuring good electrical contact and avoiding cold solder joints.
4. If using a heatsink, apply a thin layer of thermal paste between the MOSFET's metal tab and the heatsink for efficient heat dissipation. Secure the MOSFET to the heatsink using appropriate hardware.

4. OPERATING PRINCIPLES

The IRF840 is an N-Channel Enhancement Mode Power MOSFET. It operates as a voltage-controlled switch where a positive voltage applied to the Gate (G) relative to the Source (S) creates a conductive channel between the Drain (D) and Source (S), allowing current to flow. When the Gate-Source voltage (V_{gs}) is below the threshold voltage, the MOSFET is in an off-state, and no current flows between Drain and Source.

Key Operating Parameters:

- **Gate-Source Voltage (V_{gs}):** The voltage applied between the gate and source terminals controls the MOSFET's on/off state and its resistance. The maximum V_{gs} is 20V.
- **Drain-Source Voltage (V_{ds}):** The voltage across the drain and source terminals. The maximum V_{ds} is 500V.
- **Drain Current (I_d):** The current flowing through the drain terminal when the MOSFET is on. Continuous I_d is 8A, with a pulse I_{dm} of 32A.
- **On-State Resistance ($R_{ds(on)}$):** The resistance between the drain and source when the MOSFET is fully turned on. For the IRF840, $R_{ds(on)}$ is 0.85 ohms at $V_{gs}=10V$.

Always operate the MOSFET within its specified maximum ratings to prevent damage and ensure reliable performance.

5. MAINTENANCE AND STORAGE

The BOJACK IRF840 MOSFET is a robust component, but proper handling and storage are essential for its longevity.

5.1 General Maintenance

- Keep the component clean and free from dust and debris.
- Ensure adequate cooling, especially in high-power applications, by using appropriate heatsinks and airflow.
- Regularly inspect solder joints for integrity in installed circuits.

5.2 Storage

- Store MOSFETs in their original anti-static packaging or in ESD-safe containers.
- Keep components in a dry environment, away from direct sunlight and extreme temperatures.

- Recommended storage temperature range: -55 °C to +150 °C.

6. TROUBLESHOOTING COMMON ISSUES

If you encounter issues with your IRF840 MOSFET, consider the following common problems and solutions:

- **MOSFET not switching or remaining ON/OFF:**
 - Verify the Gate-Source voltage (Vgs) is within the specified range and is correctly applied.
 - Check for proper pin connections (Gate, Drain, Source).
 - Ensure the MOSFET is not damaged due to ESD or overvoltage.
- **Excessive heat generation:**
 - Confirm that the load current does not exceed the continuous drain current (Id Max).
 - Ensure a heatsink is properly installed and thermal paste is applied if required by the application.
 - Check for short circuits in the load or incorrect biasing.
- **Component failure:**
 - This can be caused by exceeding maximum voltage or current ratings, or by ESD. Always adhere to the absolute maximum ratings.
 - Replace the component if it shows signs of physical damage or fails electrical tests.

7. TECHNICAL SPECIFICATIONS

Detailed electrical and thermal characteristics of the BOJACK IRF840 N-Channel Power MOSFET.

Parameter	Value
Transistor Type	MOSFET
Transistor Polarity	N-Channel
Drain Current (Id Max)	8A
Voltage Vds Max	500V
Power (Max)	125W
On-state resistance, Rds(on)	0.85ohm (at Vgs=10V)
Voltage Vgs highest	20V
Current Idm pulse	32A
Operating Temperature	-55 °C to +150 °C
Package Type	TO-220AB
Mounting Type	Through Hole
Manufacturer Part Number	BJ-MOS-840

8. WARRANTY AND SUPPORT INFORMATION

BOJACK products are manufactured to high-quality standards. For specific warranty details, please refer to the terms and conditions provided at the point of purchase or contact your supplier. In case of technical inquiries or support needs, please reach out to the manufacturer or your local distributor.

Manufacturer Information:

BOJACK

For European inquiries (EC REP):

Business name: Like Sun GmbH

Business address: Planckstr. 59, 45147 Essen

Email: ec-connection@web.de

Telefon: +49 471 39156605

For UK inquiries (UK REP):

Business name: GSG CONSULTING GROUP LIMITED

Business address: Unit 3 Matthew street Gorton Manchester

Email: GSG-GROUP@outlook.com

Tel: 07927 688013

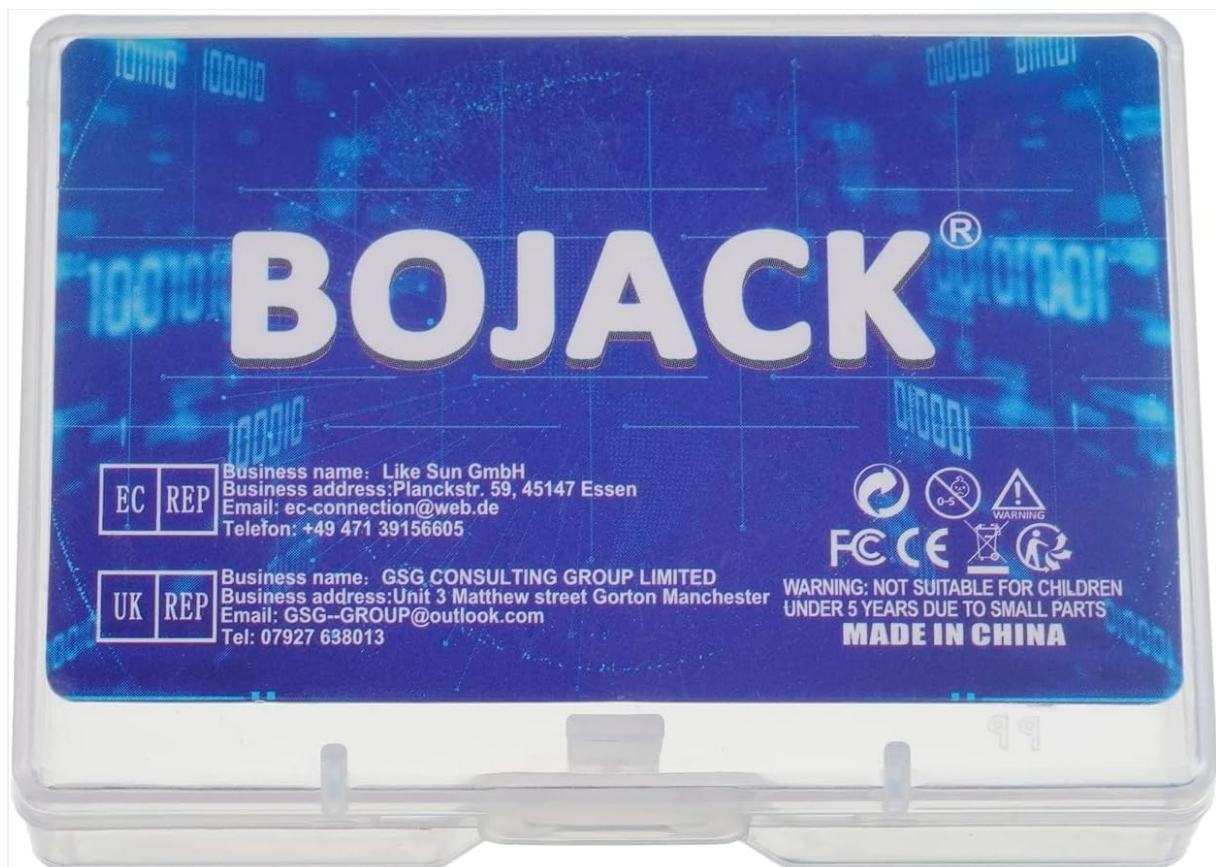


Image 8.1: The lid of the product's clear plastic case, featuring the BOJACK brand logo, contact information for EC and UK representatives, and various regulatory compliance marks such as FC, CE, and RoHS.