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› BOJACK IRFZ44N MOSFET User Manual

BOJACK IRFZ44N / IRFZ44NPBF

BOJACK IRFZ44N MOSFET User Manual

Model: IRFZ44N, IRFZ44NPBF

1. INTRODUCTION AND OVERVIEW

The BOJACK IRFZ44N MOSFET is a high-performance N-Channel Rectifier Power MOSFET Transistor designed for a wide range of applications in both analog and digital circuits. This component is known for its robust characteristics, making it suitable for power switching applications, motor control, and other electronic designs requiring efficient current handling.

This manual provides essential information regarding the proper handling, setup, operation, and specifications of the IRFZ44N MOSFET to ensure optimal performance and longevity.

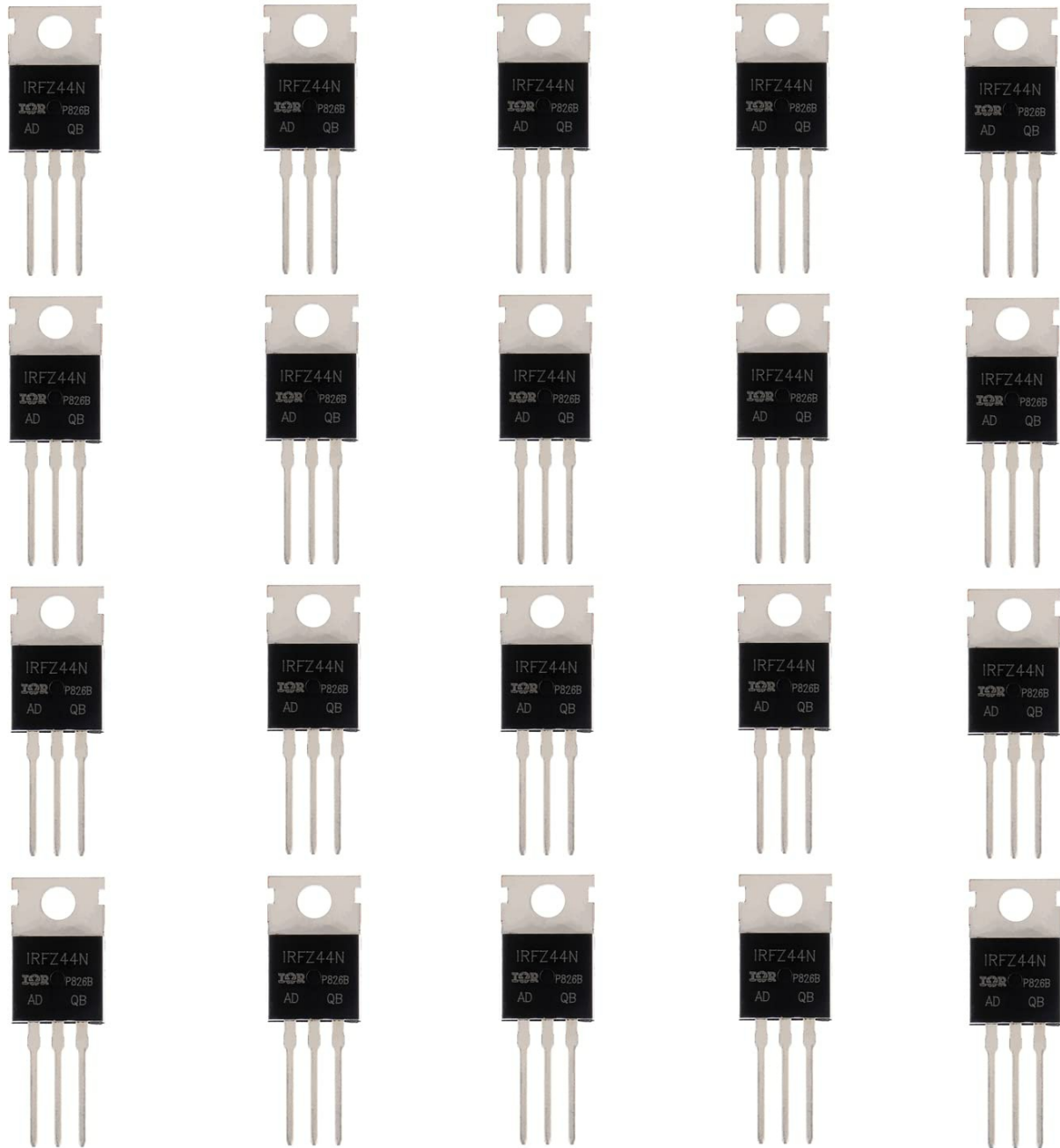


Figure 1: A pack of 20 BOJACK IRFZ44N MOSFETs, showcasing the quantity included in the product package.

2. PRODUCT FEATURES

- **Transistor Type:** MOSFET
- **Transistor Polarity:** N-Channel
- **Drain Current (Id Max):** 49A
- **Voltage Vds Max:** 55V
- **Power (Max):** 83W
- **Package Type:** TO-220AB
- **On-state Resistance, Rds(on):** 0.024 ohm
- **Operating Temperature:** -55 °C to +150 °C
- **Lead-free:** Environmental protection compliant

3. SETUP AND HANDLING PRECAUTIONS

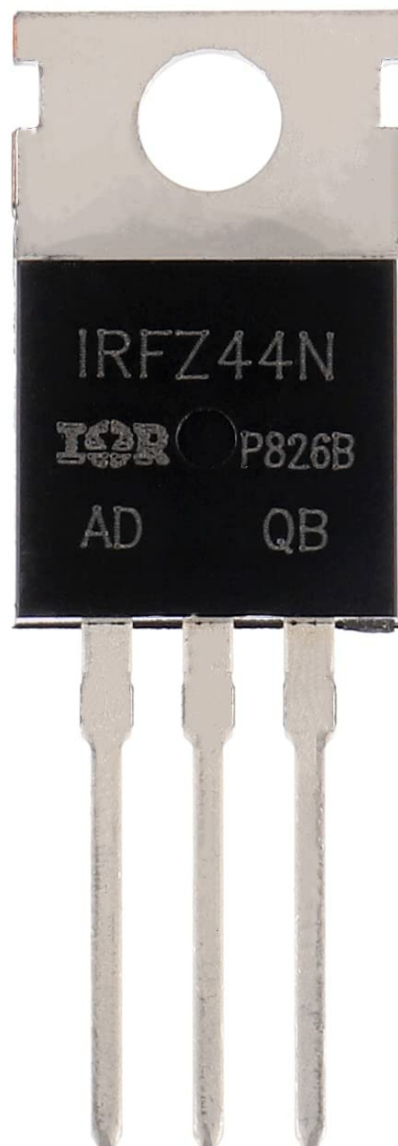
Proper handling of MOSFETs is crucial to prevent damage due to electrostatic discharge (ESD). MOSFETs are highly sensitive to static electricity, which can cause irreversible damage to the internal structure, leading to device failure.

3.1. ESD Protection

- Always use an anti-static wrist strap connected to a grounded surface when handling MOSFETs.
- Work on an anti-static mat.
- Keep MOSFETs in their original anti-static packaging until ready for use.
- Avoid touching the pins directly. Handle the component by its body.

3.2. Mounting

The IRFZ44N comes in a TO-220AB package, designed for through-hole mounting. Ensure proper alignment of pins with the circuit board holes. When soldering, use appropriate soldering techniques to avoid overheating the component. Consider using a heatsink for applications involving high power dissipation to maintain the operating temperature within specified limits.



4. OPERATING PRINCIPLES AND APPLICATIONS

The IRFZ44N is an N-Channel enhancement mode power MOSFET. It operates as a voltage-controlled switch, where a voltage applied to the gate terminal controls the current flow between the drain and source terminals. When a sufficient positive voltage is applied to the gate (relative to the source), the MOSFET turns on, allowing current to flow. When the gate voltage is removed or made sufficiently low, the MOSFET turns off.

4.1. Typical Applications

- **Power Switching:** Ideal for high-speed switching applications due to its low on-state resistance.
- **Motor Control:** Can be used in H-bridge configurations for controlling DC motors.
- **LED Lighting:** Suitable for dimming and switching high-power LED strips.
- **DC-DC Converters:** Used in various power supply designs.
- **Automotive Applications:** Its robust design makes it suitable for certain automotive electronic systems.

Always refer to the device's datasheet for detailed characteristic curves and application notes to ensure proper circuit design and operation within safe operating areas.

5. MAINTENANCE AND STORAGE

MOSFETs are solid-state devices and generally require no active maintenance once installed. However, proper storage and environmental conditions are important for their long-term reliability.

5.1. Storage

- Store unused MOSFETs in their original anti-static packaging or in a dry, static-safe environment.
- Keep away from direct sunlight, extreme temperatures, and high humidity.
- Avoid environments with corrosive gases or excessive dust.

5.2. Environmental Considerations

Ensure that the operating environment for circuits containing the IRFZ44N MOSFET remains within the specified temperature range (-55 °C to +150 °C). Adequate ventilation or heatsinking should be provided to dissipate heat generated during operation, especially in high-power applications.



Figure 3: BOJACK IRFZ44N MOSFETs neatly arranged within their protective clear plastic case, demonstrating proper storage.

6. TROUBLESHOOTING

Most issues with MOSFETs stem from improper handling or incorrect circuit design. Here are common troubleshooting points:

- **Device Failure (No Output/Short Circuit):**
 - *Cause:* Electrostatic Discharge (ESD) damage during handling.
 - *Solution:* Always follow ESD precautions. Replace damaged component.
 - *Cause:* Exceeding maximum voltage or current ratings.
 - *Solution:* Verify circuit design parameters against the MOSFET's specifications.
 - *Cause:* Overheating due to insufficient heat dissipation.
 - *Solution:* Ensure adequate heatsinking and ventilation for the application.
- **Unexpected Behavior (Partial On/Off, High Resistance):**

- *Cause:* Incorrect gate drive voltage.
- *Solution:* Ensure the gate voltage is sufficient to fully turn on the MOSFET (typically 10V for this model) and properly turn it off.
- *Cause:* Noise on the gate signal.
- *Solution:* Implement proper signal integrity practices, such as using gate resistors or bypass capacitors.

• **Physical Damage (Cracks, Discoloration):**

- *Cause:* Mechanical stress during mounting or excessive heat.
- *Solution:* Handle with care during installation. Ensure proper soldering temperatures and avoid bending pins excessively.

7. SPECIFICATIONS

Detailed electrical and thermal characteristics of the BOJACK IRFZ44N MOSFET:

Parameter	Value
Transistor Type	MOSFET
Transistor Polarity	N-Channel
Drain Current (Id Max)	49A
Voltage Vds Max	55V
Power (Max)	83W
On-state Resistance, Rds(on)	0.024 ohm (at Vgs=10V)
Voltage Vgs highest	21V
Operating Temperature	-55 °C to +150 °C
Package Type	TO-220AB
Number of Pins	3
Mounting Type	Through Hole Mounting

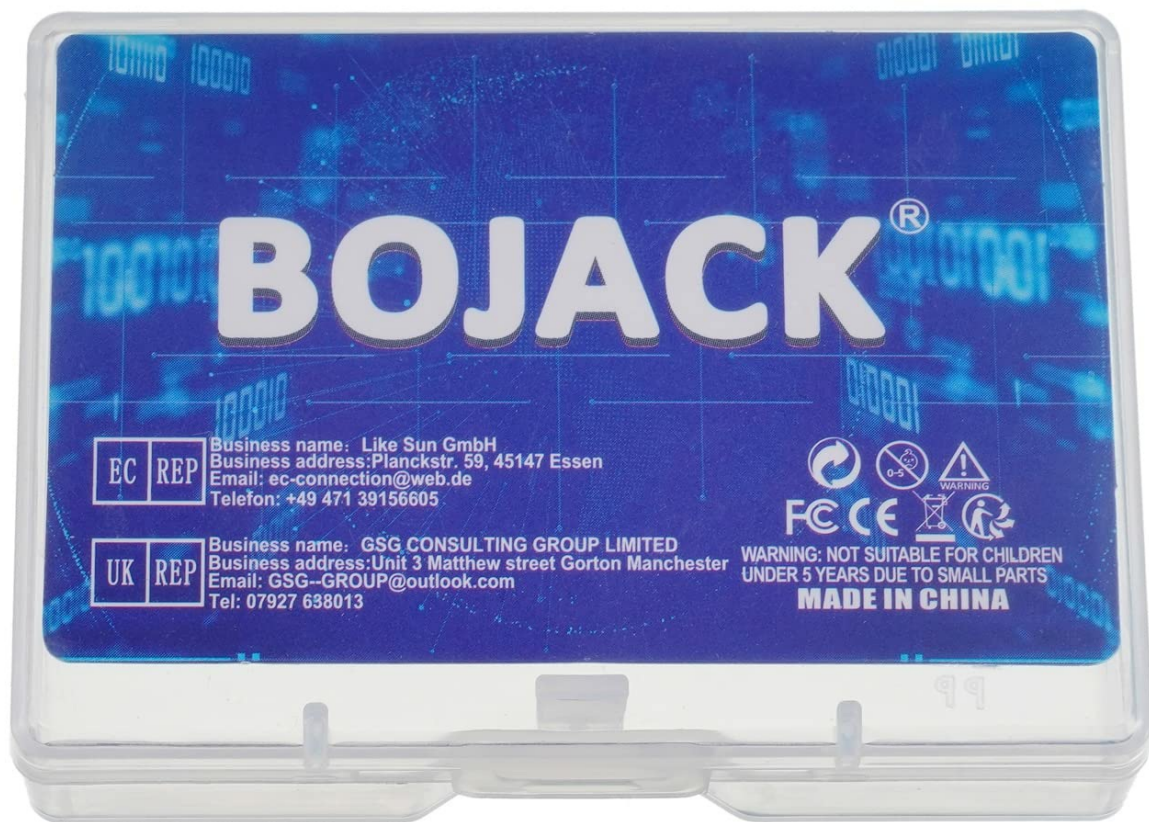


Figure 4: The BOJACK brand logo and product information displayed on the packaging, indicating manufacturer details.

8. WARRANTY AND SUPPORT

As an electronic component, the BOJACK IRFZ44N MOSFET typically comes with 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 BOJACK directly.

For technical support, detailed datasheets, or inquiries regarding the BOJACK IRFZ44N MOSFET, please visit the official BOJACK website or contact their customer service department. When seeking support, please provide the model number (IRFZ44N or IRFZ44NPBF) and any relevant purchase information.

Note: The manufacturer's contact information may be found on the product packaging or their official website. Always ensure you are using official channels for support.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question