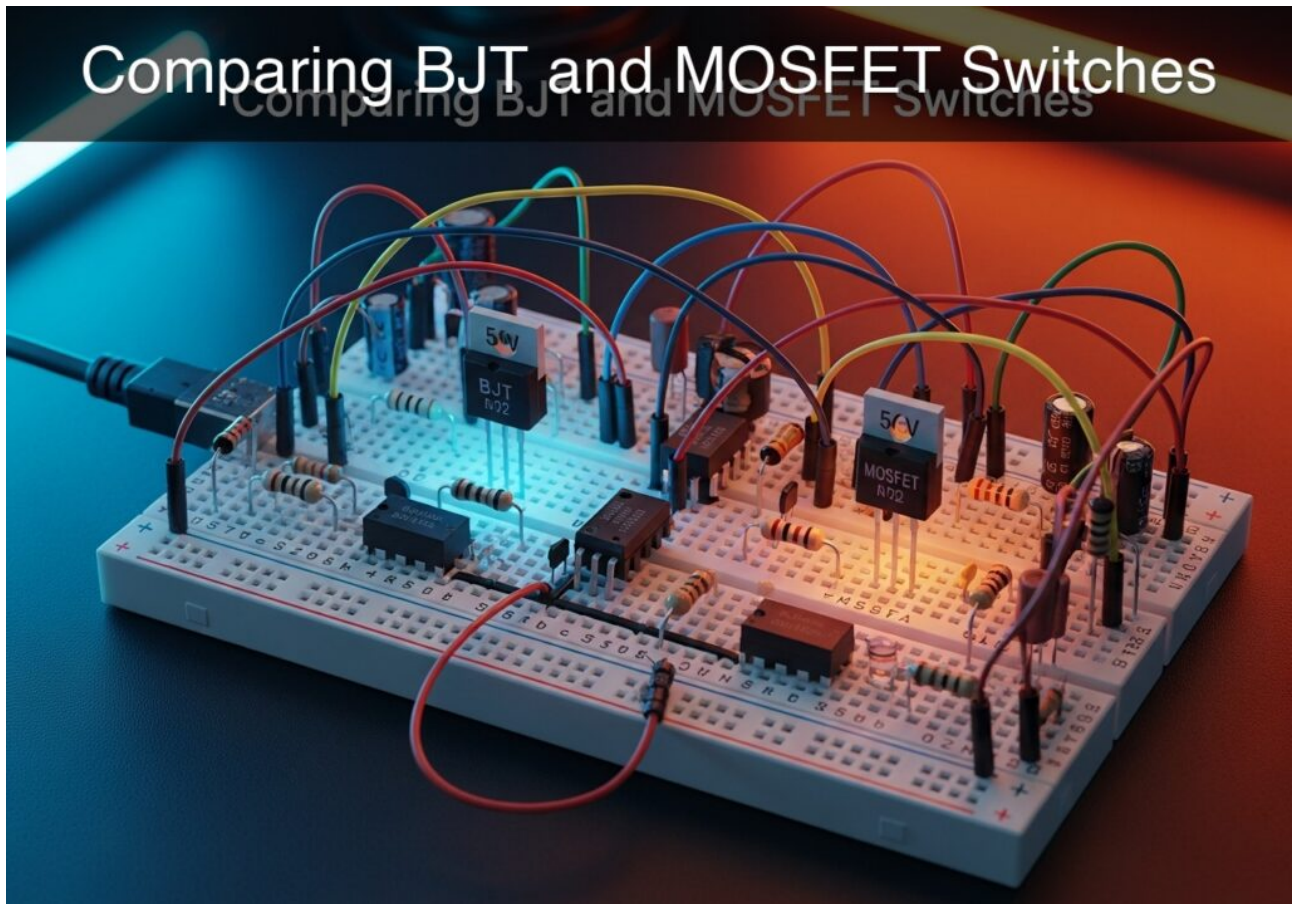


## Practical case: Comparing BJT and MOSFET Switches



Master Analog Electronics by building two Transistor switching circuits. Compare BJT and MOSFET efficiency by measuring real input currents and voltage drops.

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## Practical case: Low-Side Transistor Relay Switch

# Low-Side Transistor Relay Switch

5V DC

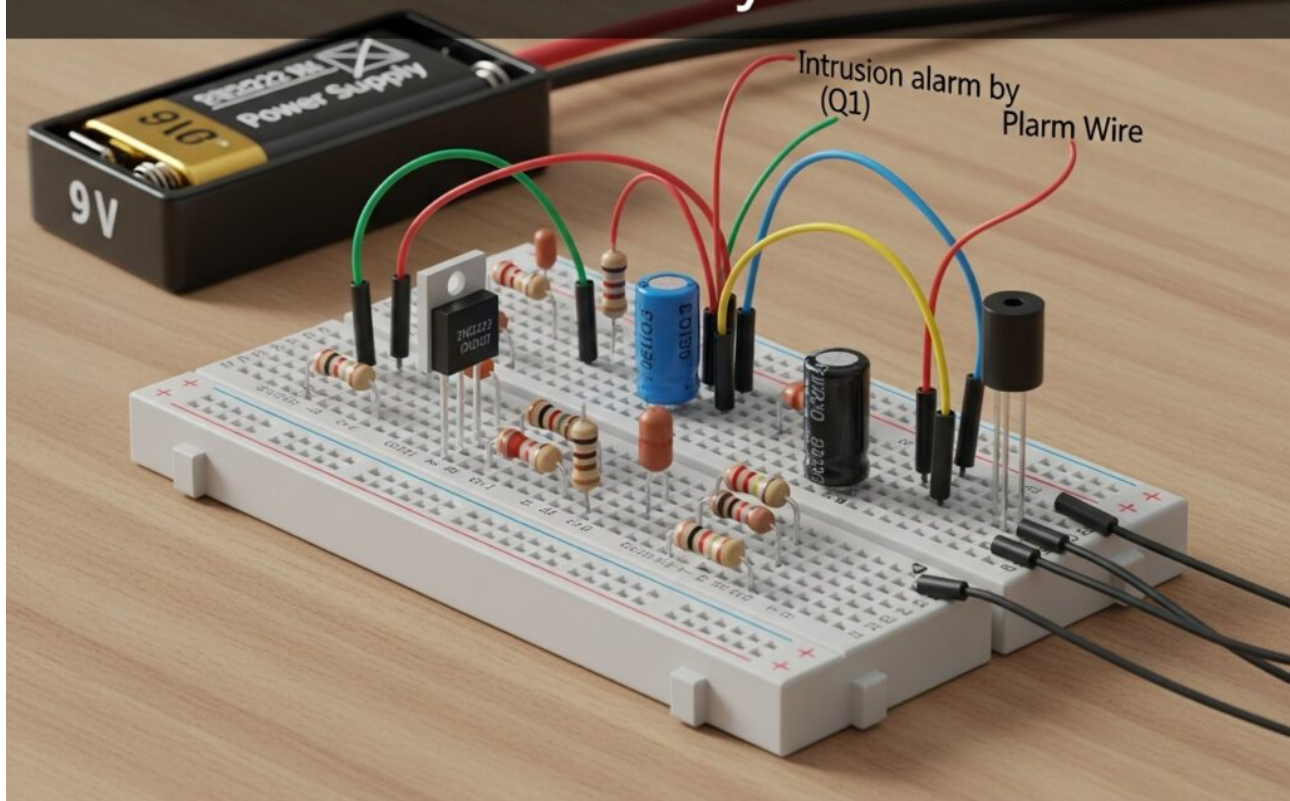
The image shows a breadboard circuit for a Low-Side Transistor Relay Switch. The circuit components and their connections are as follows:

- 5V DC Source:** A red wire connects the positive terminal to the VCC pin of the transistor and one terminal of the relay.
- Transistor (TGS2):** An NPN transistor with a metal tab. Its emitter is connected to ground (GND) via a black wire. Its base is connected to the 5V source through a 10kΩ resistor (orange-brown-black-gold) and to ground through a 1kΩ resistor (brown-black-red-gold).
- Relay:** A blue 5VDC 1A relay. Its coil is connected between the 5V source and ground. Its common terminal is connected to the 5V source. One of its normally open (NO) terminals is connected to ground through a 10kΩ resistor. Another NO terminal is connected to ground through a 1kΩ resistor.
- Grounding:** Multiple black wires connect various components to the GND rail of the breadboard.

Master Analog Electronics by building a relay driver circuit. Use an NPN Transistor to safely switch high-voltage loads and protect logic chips from spikes.

## Practical case: Intrusion alarm by wire break

# Intrusion alarm by wire break

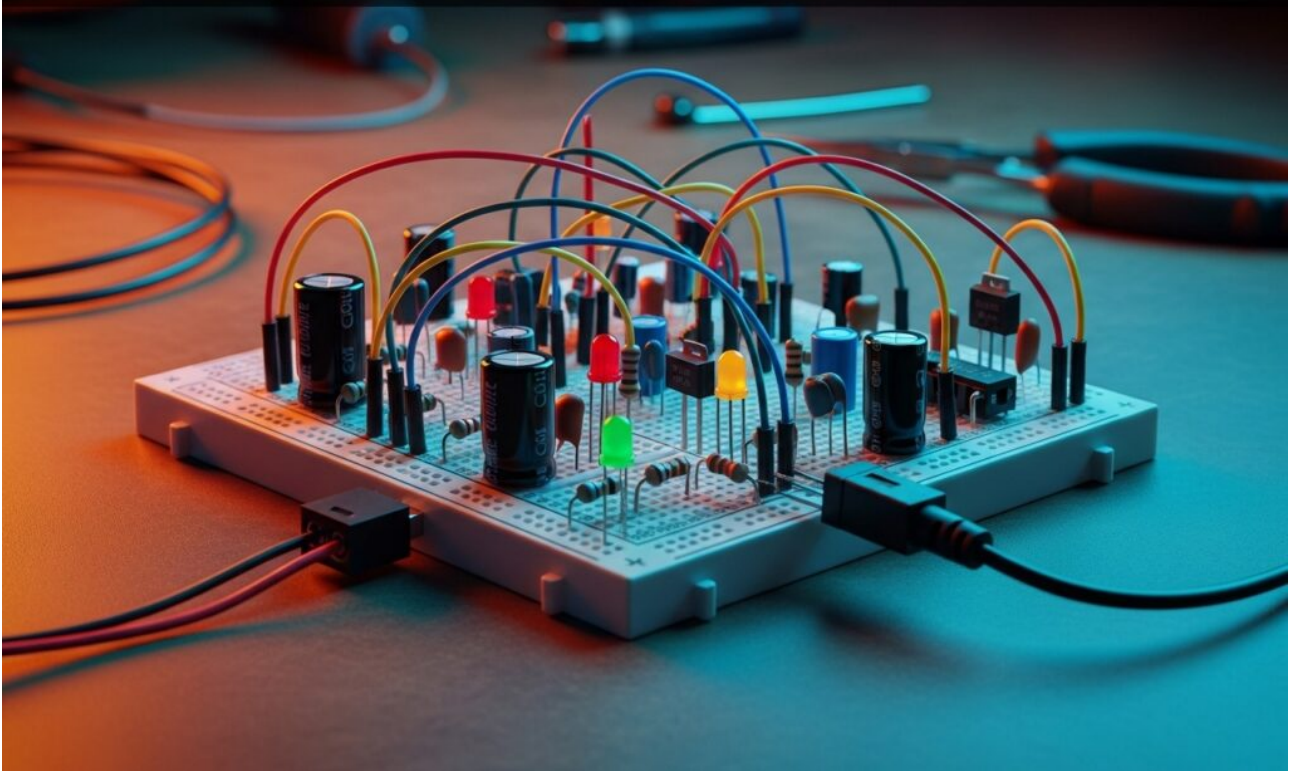


Master Analog Electronics by building a wire-cut alarm. Learn how a Transistor switch triggers an LED instantly when a security loop is broken.

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## Practical case: Slow turn-off timer

# Slow turn-off timer

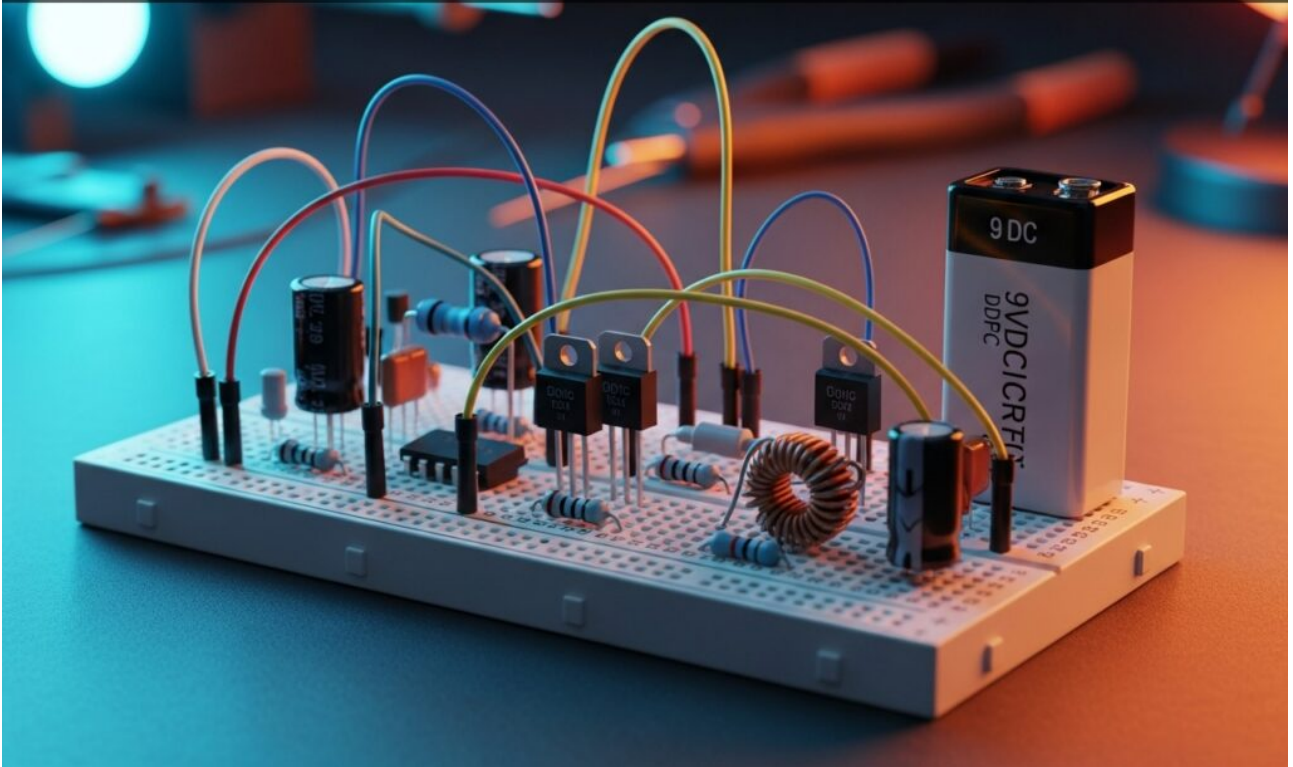


Master Analog Electronics by building a fade-out LED circuit. Use a Transistor and capacitor to create a 5-second delay timer that mimics car interior lighting.

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## Practical case: Simple audio amplifier

# Simple audio amplifier

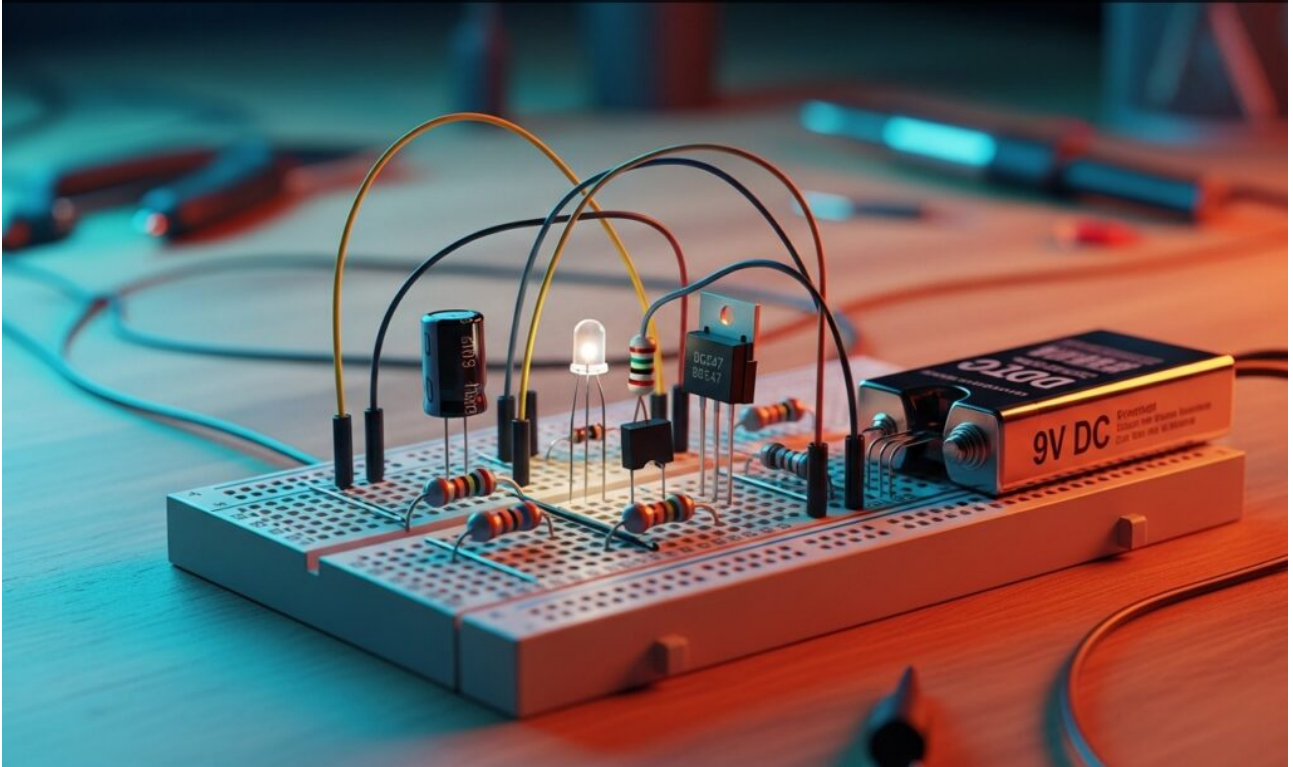


Master Analog Electronics by building a Class A amplifier. Use an NPN Transistor to boost weak audio signals and observe voltage gain with phase inversion.

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## Practical case: The transistor as a light switch

# The transistor as a light switch



Master Analog Electronics by building a Transistor switch circuit. Learn to control high-current loads like LEDs and measure saturation voltage drops.