MIC5019 — Ultra-Small High-Side N-Channel MOSFET Driver with Integrated Charge Pump

Designed to Switch an N-Channel Enhancement Type MOSFET in High- or Low-Side Applications

- 2.7V to 9V supply voltage range
- 16V gate drive at $V_{DD} = 9V$
- 9.2V gate drive at $V_{DD} = 3.3V$
- 8V gate drive at $V_{DD} = 2.7V$
- Operates in low or high side configurations
- 150µA (typ.) supply current at $V_{DD} = 5V$
- Less than 1µA shutdown supply current
- TTL and CMOS compatible input signal threshold
- -40˚C to +125˚C operating temperature range
- Tiny 4-pin 1.2mm x 1.2mm Thin QFN package

Ideal for use in:
- Load switch
- Solenoid/Relay drivers
- Motor drivers
- Lamp drivers

For more information, contact your local Micrel sales representative, or visit Micrel at: www.micrel.com/index.php/en/products/power-management-ics/

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MIC5019 — Ultra-Small High-Side N-Channel MOSFET Driver with Integrated Charge Pump

Designed to Deliver a Highly Compact, Thermally Efficient MOSFET Driver

The MIC5019 is a high-side MOSFET driver with integrated charge pump designed to switch an N-Channel enhancement type MOSFET control signal in high-side or low-side applications. The MIC5019 operates within a 2.7V to 9V supply voltage and generates gate voltages of 9.2V from a 3V supply and 16V from a 9V supply. The device consumes only 77µA of supply current and less than 1µA of supply current in shutdown mode.

In high-side configurations, the source voltage of the MOSFET approaches the supply voltage when switched on. To keep the MOSFET turned on, the output of the MIC5019 drives the MOSFET’s gate voltage higher than the supply voltage. The MIC5019 is available in an ultra-small 4-pin 1.2mm x 1.2mm Thin QFN package and is rated for a -40°C to +125°C junction temperature range.

Key Features
- Ultra-small 4-pin 1.2mm x 1.2mm x 0.55mm Thin QFN Package
- Internal Charge Pump
- Internal 16V Gate Drive Protection
- Minimum amount of external parts and small package size

Benefits
- Extremely compact, low profile solution without compromising thermal performance
- Low voltage input capability for driving MOSFETs
- Simplifies external MOSFET gate protection
- Low total BOM cost and tiny board area

Typical Application

The MIC5019 is a high-side MOSFET driver with integrated charge pump designed to switch an N-Channel enhancement type MOSFET control signal in high-side or low-side applications. The MIC5019 operates within a 2.7V to 9V supply voltage and generates gate voltages of 9.2V from a 3V supply and 16V from a 9V supply. The device consumes only 77µA of supply current and less than 1µA of supply current in shutdown mode.

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Typical Application

Low-Voltage High-Side Power Switch

Low-Side Power Switch