

MIC4607

85V, Three-Phase MOSFET Driver with Adaptive Dead-Time, Anti-Shoot-Through, and Overcurrent Protection

APPLICATIONS



BATTERY-POWERED TOOLS



MEDICAL EQUIPMENT



REMOTE CONTROLLED DRONES



THREE-PHASE MOTOR DRIVES



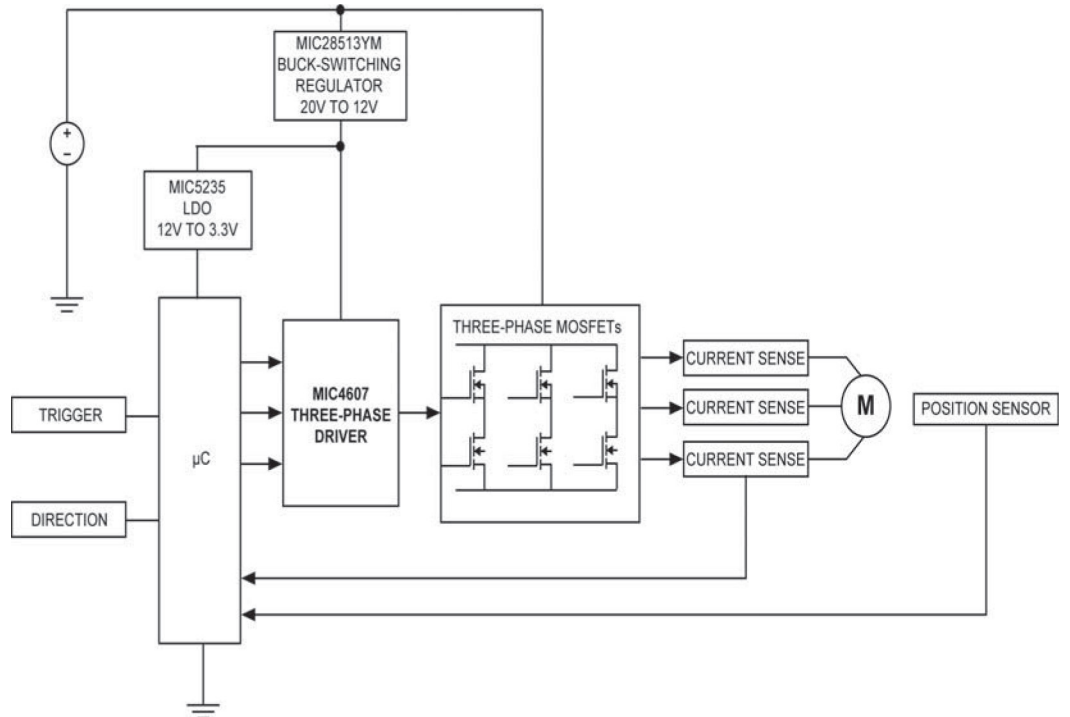
WATER PUMPS

BENEFITS

- » **High Efficiency**
- » **Robust Architecture**
- » **Extended Run Time**
- » **Small Footprint**

FEATURES

- Adaptive dead-time circuitry automatically adjusts the dead time between high- and low-side MOSFET for minimal losses
- 85V operation protects against voltage spikes caused by a motor's back electromagnetic force (EMF)
- Anti-shoot-through protects against cross conduction
- Overcurrent protection
- Wide gate drive range: 5.5V to 16V
- Low 4.9V undervoltage lockout (UVLO) allows longer run time for battery-operated motors
- 28-pin 4mm × 5mm QFN and 28-pin TSSOP package options available
- Integrated bootstrap diodes



MIC4607

DESCRIPTION

The MIC4607 is an 85V, three-phase MOSFET driver. The MIC4607 features adaptive dead-time circuitry which actively monitors key voltages in each of the three phases to minimize the dead-time between the high- and low-side transitions and antishoot-through circuitry, preventing erroneous inputs and noise from simultaneously turning on any of the three phase's high- and low-side MOSFETs.

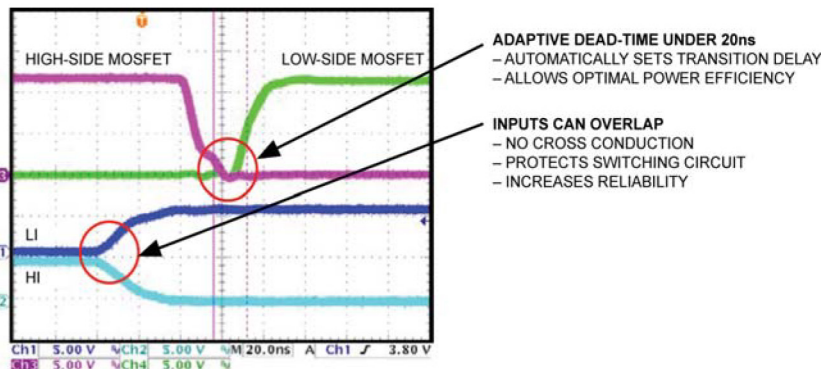
The MIC4607 additionally features fast (35ns) propagation delay time and 20ns driver rise/fall times for a 1nF capacitive load. TTL inputs can be separate high- and low-side signals or a single PWM input with high and low drive generated internally. High- and low-side outputs are guaranteed to not overlap in either mode. The MIC4607 includes overcurrent protection as well as a high-voltage internal diode that charges the high-side gate drive bootstrap capacitor.

A robust, high-speed, and low-power level shifter provides clean level transitions to the high-side output. The robust operation of the MIC4607 ensures that the outputs are not affected by supply glitches, HS ringing below ground, or HS slewing with high-speed voltage transitions. Undervoltage protection is provided on both the low-side and high-side drivers.

The MIC4607 is available in both a 28-pin 4mm x 5mm QFN and 28-pin TSSOP package with an operating junction temperature range of -40°C to +125°C.

Micrel, Inc. is a leading global manufacturer of IC solutions for the worldwide high performance linear and power, LAN and timing and communications markets. The Company's products include advanced mixed-signal, analog and power semiconductors; high performance communication, clock management, Ethernet switch and physical layer transceiver ICs. Company customers include leading manufacturers of enterprise, consumer, industrial, mobile, telecommunications, automotive, and computer products. Corporation headquarters and state-of-the-art wafer fabrication facilities are located in San Jose, CA, with regional sales and support offices and advanced technology design centers situated throughout the Americas, Europe and Asia. In addition, the Company maintains an extensive network of distributors and reps worldwide.

OPERATING PERFORMANCE



ORDERING INFORMATION

Part	Input	Version	Junction Temperature Range	Package
MIC4607-1YML	TTL	Dual Inputs	-40°C to +125°C	28-Pin 4mm x 5mm QFN
MIC4607-2YML	TTL	Single PWM Inputs	-40°C to +125°C	28-Pin 4mm x 5mm QFN
MIC4607-1YTS	TTL	Dual Inputs	-40°C to +125°C	28-Pin TSSOP
MIC4607-2YTS	TTL	Single PWM Inputs	-40°C to +125°C	28-Pin TSSOP



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