

MIC4605

85V Half-Bridge MOSFET Driver with Adaptive Dead Time and Shoot-Through Protection



Benefits

Efficiency

Robust

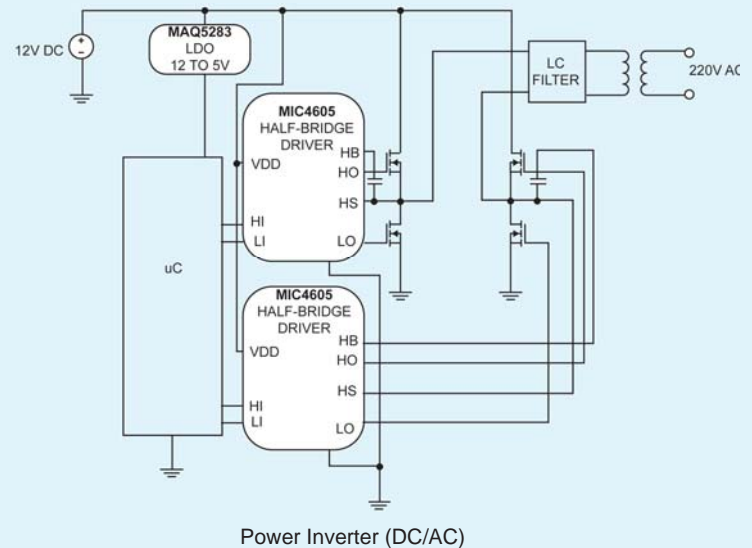
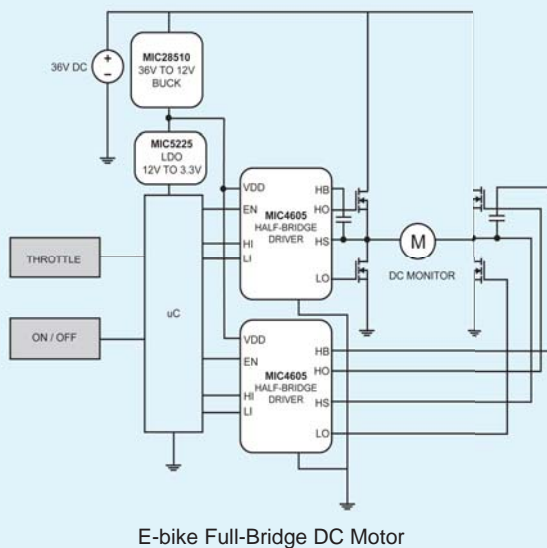
Longer Run Time

Small Form Factor

Features

- Adaptive dead time circuitry automatically adjusts the dead time between high- and low-side MOSFETs.
- Dead-time under 20ns; best in the industry.
- 85V operation protects against voltage spikes caused by the motor's back electromagnetic force (EMF).
- Anti-shoot-through protects against cross conduction.
- Wide gate drive range: 5.5V to 16V.
- Low 4.9V undervoltage lockout allows longer run time.
- 2.5mm x 2.5mm TDFN package option.
- 8-pin SOIC is also available in an industry standard pinout.

Typical Application Circuits



Applications

- Battery operated power tools
- Power inverters
- Full- and half-bridge motor drives
- E-bikes
- Ceiling fans

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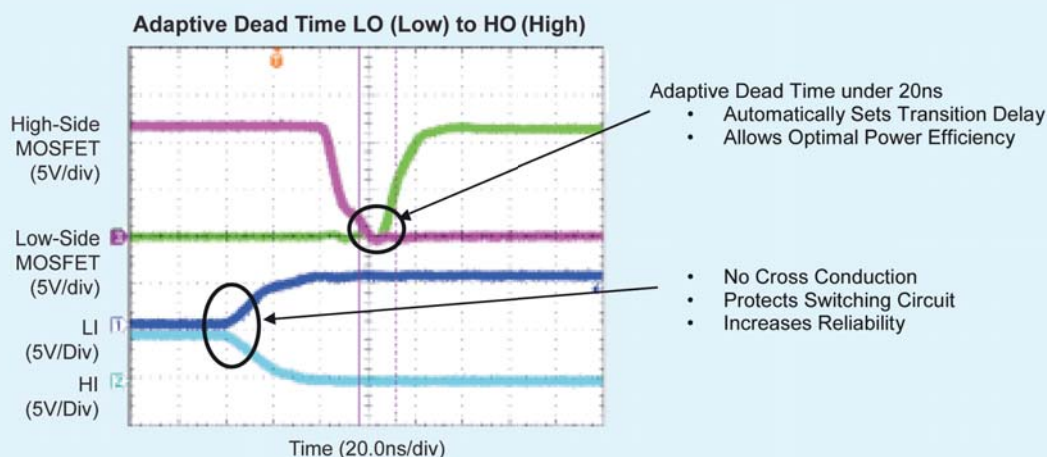
Description

The MIC4605 is an 85V half-bridge MOSFET driver that features adaptive-dead-time and shoot-through protection. The adaptive-dead-time circuitry actively monitors the half-bridge outputs to minimize the time between high-side and low-side MOSFET transitions, which maximizes power efficiency. Anti-shoot-through circuitry prevents erroneous inputs and noise from turning both MOSFETs on at the same time.

The MIC4605 also offers a wide 5.5V to 16V operating supply range to maximize system efficiency. The low 5.5V operating voltage allows longer run times in battery-powered applications. Additionally, the MIC4605's adjustable gate drive sets the gate drive voltage to VDD for optimal MOSFET $R_{DS(ON)}$, which minimizes power loss due to the MOSFET's $R_{DS(ON)}$.

The MIC4605 is available in an 8-pin SOIC package and a tiny 10-pin 2.5mm × 2.5mm TDFN package. Both packages have an operating junction temperature range of -40°C to +125°C.

Operating Performance



About Micrel

Micrel, Inc. is a leading global manufacturer of High Performance Linear and Power, Timing and Communications, and LAN Solutions. 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.

For more information, contact your local Micrel sales representative, or visit Micrel at www.micrel.com

Ordering Information

| Part Number | Part Marking | Input | Junction Temperature Range | Package |
|--------------|--------------|----------------|----------------------------|---------------------------|
| MIC4605-1YMT | 165 | Dual TTL | -40° to +125°C | 10-Pin 2.5mm × 2.5mm TDFN |
| MIC4605-2YMT | 265 | Single PWM TTL | -40° to +125°C | 10-Pin 2.5mm × 2.5mm TDFN |
| MIC4605-1YM | 4605-1YM | Dual TTL | -40° to +125°C | 8-Pin SOIC |
| MIC4605-2YM | 4605-2YM | Single PWM TTL | -40° to +125°C | 8-Pin SOIC |



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