



AI444 und AI445

- Low-voltage full-bridge brushless DC motor driver ICs
- With integrated Hall commutation and internal PWM (pulse-width-modulation) speed control
- Designed for applications that require rotor speed control and fast rotor start/stop cycles

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New from Allegro MicroSystems Europe, the AI444 and AI445 are low-voltage full-bridge brushless DC motor driver ICs with integrated Hall commutation and internal PWM (pulse-width-modulation) speed control.

Designed for applications that require rotor speed control and fast rotor start/stop cycles, the new devices are based on a high-density CMOS semiconductor process that allows the integration of a Hall element, an H-bridge output driver and PWM speed control logic into a monolithic IC.

This fully integrated single-chip solution also provides enhanced reliability by including reverse battery protection and output short-circuit protection within the device.

Commutation of the motor is achieved by the use of a single integrated Hall element sensor to detect the rotational position of an alternating-pole ring magnet. Low-voltage design techniques have been employed to achieve full device functionality down to a forward supply voltage of 1.8V. The voltage applied to the PDC (PWM duty cycle) pin is used to externally control the maximum speed of the motor by adjusting the internal PWM duty cycle of the output driver.

The AI444 and AI445 employ a soft-switching algorithm to reduce audible switching noise and EMI interference. Each device has different, selectable internal PWM duty-cycle options to accommodate a wide range of motor designs by externally controlling the state of the PDC input pin. The externally controlled speed regulation and braking functions can be used to create motor designs with faster acceleration and stopping times.

Each device has a braking function enable pin that also includes a micro-power 'sleep' mode for battery management in portable electronic devices. This feature allows for the removal of an FET transistor for switching the device on and off.

The devices are optimised for vibration motor applications that require fast start-stop cycles, as in cellular phones, pagers, and hand-held video game controllers. These devices can also be used for low power fan motors rated at 5V.

Targeted at the communication and consumer markets, the A1444 and A1445 motor drivers are available in a lead (Pb) free (nickel palladium plated leadframe) 6-pin MLP micro-leadframe package for surface-mount assembly. The underside of the package features an exposed pad for enhanced thermal dissipation.

The small package outline and industry leading low profile make this device ideally suited for use in communications and consumer applications where printed-circuit-board area and component headroom are at a premium.