

Full-bridge motor driver IC integrates Hall element and motor control circuitry

The new A1441 from Allegro MicroSystems Europe is a full-bridge motor driver integrated circuit designed to drive single-phase, low-voltage bipolar brushless DC motors.

Commutation of the motor is achieved by the use of a single Hall-effect sensing element which detects the position of an alternating pole ring magnet. Allegro's advanced IC semiconductor process allows the integration of the Hall element on the same IC as the motor control circuitry, providing a single-chip solution for high reliability.

The A1441 is optimised for use with the vibration motors – including the thinner coin-type motor designs – that are typically used in portable electronic devices such as mobile phones, pagers, and hand-held video game controllers. It is also suited to use in gaming machines, where brushless motors are increasingly being used for higher reliability, as well as for driving low-end fan motors that do not require currents above 150 mA.

All necessary circuitry is integrated and no external devices are required – although a bypass capacitor is recommended to lower switching transients and therefore reduced radiated emissions.

The switchpoints of the device are chopper-stabilised for precision over a range of operating temperatures and voltages, providing highly accurate and repeatable commutation. The device will operate at voltages down to 2.0 V, and the full H-bridge output provides higher torque at start-up.

An active braking function and 'sleep' mode can be enabled by an external signal. The active braking function allows for a quick stop in order to improve stop/start cycles in applications such as gaming machines. The micropower sleep mode reduces current consumption to near zero current for battery management in portable applications.

The device is available in a low-profile 2 × 2 × 0.5 mm MLP package with 100% tin plating (EL package).
