Automotive motor drivers bring single chip solution to BLDC motors and actuators

ECN Europe

Melexis [1] has launched its next generation IC family for sensor-less and sensor based BLDC motor control in automotive applications.

The new IC family consists of 4 base members; the MLX81205, MLX81207, MLX81210 and MLX81215. Each is available with a variety of memory configurations and in different package options. They all follow the very successful MLX81200 core integration concept – combining a voltage regulator, LIN transceiver, microcontroller unit (MCU), EEPROM, Flash, RAM, power FET pre-driver and several dedicated circuit blocks for highly efficient BLDC motor control from a single chip.

[2]The IC family is 45 V load dump protected and will be qualified according AEC-Q100 grade 0 for high temperature automotive application support. As with the MLX81200, the drivers use Melexis' patented TruSense sensor-less driving algorithms in hardware and software for starting and driving BLDC motors using different construction schemes in a reliable way under unknown load conditions. Different current wave form profiles (block, trapezoidal and sinusoidal) can be applied for optimal and energy efficient motor performance. This family also employs an innovative solution for slope control on power transistor switching, allowing customers to optimize in software the EMC behaviour, as well as thermal dissipation of the power transistors during the

switching process.

Thomas Freitag, Product Line Manager of Melexis, says: “The slope control function addresses several problems of electronic and mechatronic designers who only have a very limited PCB space available to solve heat and EMC problems.”

The new IC family targets permanent running BLDC motors typically found in various automotive applications. Examples include fuel pumps, water pumps, oil pumps, engine cooling fans, HVAC blowers and battery cooling fans where high energy efficiency and low system cost are in focus. The IC family concept allows platform designs, so that a high reuse in software and discrete hardware is achievable.

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