Hall switches and angle sensors enable more energy efficient, compact DC motor drives

Infineon Technologies AG introduced a new generation of Hall switches (TLE496x) and angle sensors (TLE5009 and TLE5012B) that enable more energy-efficient and compact design of brushless DC (BLDC) motor drives. BLDC motors, in comparison to conventional motors with brushes, provide greater efficiency, longer life cycles, more compact design, less noise and improved reliability. The new Infineon devices are precise and fast magnetic position sensors with high resolution. They accurately sense the rotor position thus providing ideal solutions for current commutation in BLDC drives in a broad range of industrial and automotive applications; for example in clutch actuators, window lifters, e-bikes, washing machines, industrial fans, pumps or automatic positioning systems.

Many drives require conventional block commutation. These benefit from the TLE496x family of Hall switches on energy savings and precise, compact system designs. With current consumption of just 1.6mA, TLE496x devices can cut energy needs by up to 50 percent compared to similar products on the market. In the space saving SOT (Small Outline Transistor)-23 package they require less than 22 percent of the PCB area compared to the usual SC (SemiConductor)-59 package. The TLE496x family's small magnetic hysteresis enables precise switching points in systems. Integrated circuits compensate magnetic drifts and enable stable performance over temperature and lifetime. Active chopping techniques compensate offsets in the signal path and the influence of mechanical stress on the Hall element.

Directly measuring the rotor angle can raise efficiency levels even further and eliminates vibrations, which in turn cuts noise levels and ensures smoother integration. Based on innovative iGMR (integrated Giant Magnetic Resistive) technology, the new TLE5009 and TLE5012B angle sensor products pave the way for more comfortable and energy-saving motor control concepts. The angle sensors

in the TLE5009 and TLE5012B series are characterized by extremely rapid updating in combination with extremely short delay times of 9 µs for the TLE5009 and 42 µs for theTLE5012B. Thus, high efficiency is achieved, even with fast rotating speeds and load changes. In addition, integrated signal processing in the TLE5012B reduces the load of the microcontroller by carrying out precise angle calculations and calibration algorithms: The angle value provided from TLE5012B can be directly used in the motor control loop.

Infineon Technologies
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