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Continuous-time linear Hall-effect sensors in SOT23 package

High-performance devices combine 2.5 mV/Gs sensitivity with operation to +150°C

The new A1301 and A1302 from Allegro MicroSystems Europe are the world's first family of continuous-time linear Hall-effect sensor ICs in the SOT23 surface-mount package rated for operation at up to +150°C.

The new devices are true ratiometric linear sensors, providing an analogue output signal that is proportional to the magnetic flux density and the supply voltage. The A1301 is the most sensitive device with a target sensitivity of 2.5 mV/Gs, while the A1302 has a target sensitivity of 1.3 mV/Gs. The devices are designed for operation at voltages from 4.5 to 6 V, and offer a quiescent output voltage that is 50% of the supply voltage. The response time is less than 5 µs at power-up, and the devices will operate at up to 20 kHz.

Each device includes a Hall sensing element, linear amplifier and a CMOS Class A output structure. Having the Hall element and amplifier on a single chip minimises many problems normally associated with low-level analogue signals. Factory programming after packaging enables the linear sensors to outperform competitors by providing tighter quiescent output voltage and sensitivity distributions at room temperature.

These sensors are ideally suited to use in linear and rotary position sensing systems over extended temperature ranges in automotive and related applications. The devices combine low-noise operation and low switch-point drift, while the ratiometric rail-to-rail output means that they can be used directly with analogue/digital convertors in microprocessor-controlled systems.

In addition to the 3-pin surface-mount SOT23-style package (LH suffix), the A1301 and A1302 is available in a 3-pin ultra-miniature single inline (UA suffix).