

Programmable Hall sensor ICs in low-profile surface-mount package

The new A138X family of Hall-effect sensor integrated circuits from Allegro MicroSystems Europe are programmable, analogue-output devices that are offered in a choice of low-profile surface-mount packages.

New applications for linear output Hall-effect sensors, such as displacement, angular position and current measurement, require high accuracy in conjunction with small package size. Although achieving both can be challenging, the Allegro A138x family of programmable linear Hall-effect sensors has been designed specifically to achieve both goals.

Each device in the A138X family is a BiCMOS monolithic circuit which integrates a Hall element, temperature-compensating circuitry to reduce the intrinsic sensitivity drift of the Hall element, a small-signal high-gain amplifier, a clamped low-impedance output stage and proprietary dynamic offset cancellation technique circuitry.

These sensitive, temperature-stable ratiometric sensors provide a voltage output that is proportional to the applied magnetic field. The quiescent output voltage is user adjustable around 50% of the supply voltage and the output sensitivity is amendable around four nominal options: 2.5 mV/G, 3.125 mV/G, 5.0 mV/G and 7.5 mV/G. Programming selections also exist for output polarity and to adjust temperature compensation.

The accuracy of these devices is enhanced via programmability on the output pin for end-of-line optimisation without the added complexity and cost of a fully programmable device.

Absolute maximum ratings include a supply voltage of 8 V, reverse supply voltage of -0.1 V, reverse output voltage of -0.1 V, output source current of 10 mA, and output sink current of 2 mA.

The features of this linear Hall-effect sensor family make them ideal for high-accuracy requirements in automotive and industrial applications. They are guaranteed for operation over an extended temperature range from -40°C to +150°C, and offer precise recoverability after temperature cycling.
