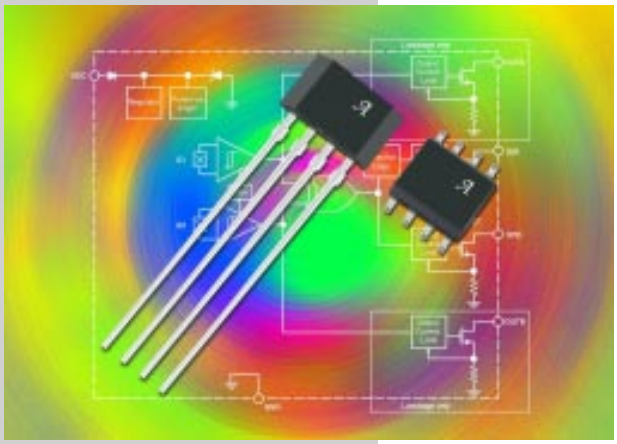

Dual-channel Hall-effect direction detection sensor with built-in fault protection

A3423

- Is a dual-channel Hall-effect sensor designed for use in speed and direction sensing applications incorporating encoder ring-magnet targets
- Is highly sensitive and temperature stable
- Integrated protection against electromagnetic interference and electrostatic discharge

The new A3423 from Allegro MicroSystems Europe is a dual-channel Hall-effect sensor designed for use in speed and direction sensing applications incorporating encoder ring-magnet targets.

The new device is highly sensitive and temperature stable, making it ideal for use in harsh automotive and industrial environments. Integrated protection against electromagnetic interference and electrostatic discharge, along with output short-circuit protection, means that the device is highly robust and requires few external components for protection against faults and transients.

The A3423 incorporates two matched Hall elements to provide output signals that indicate the speed and direction of the target. The Hall elements are photolithographically aligned to within 1 µm. Maintaining accurate mechanical location between the two active Hall elements eliminates the major manufacturing hurdle encountered in fine-pitch detection applications.

The elements are spaced 1.63 mm apart, which is the optimal spacing to provide speed and direction information from small-geometry targets: typically ring magnets with a 3 mm pole width. Extremely low-drift amplifiers guarantee symmetry between the switches to maintain signal quadrature. An on-chip regulator allows use over a wide operating voltage range from 3.8 V to 24 V.

End-of-line trimming of the Hall-element switchpoints provides for tighter threshold tolerance and close matching between the elements. This results in a more precise duty cycle over the operating temperature range and air gap. The continuous-time method of offset cancellation delivers fast start-up and signal recognition as well as very low noise on the output.

Target applications are the sensing of motor speed and direction in automotive window-lift, sunroof, seat-position, power sliding door, windscreen wiper, transmission and differential systems, as well as industrial motors and drives.

The A3423 is initially available in a 4-lead SIP (suffix ‚K') package, with a plastic 8-pin SOIC surface-mount version scheduled for Autumn 2007.

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