



Three-wire true-zero-speed gear-tooth sensor IC combines accuracy and design flexibility

The new ATS667LSG from Allegro MicroSystems Europe is a 3-wire true-zero-speed gear-tooth sensor IC designed to provide a flexible high-accuracy solution for digital gear-tooth sensing in automotive transmission applications.

The ATS667LSG consists of a single overmoulded module containing a Hall-effect sensor IC and a magnet to provide an optimised magnetic configuration in a compact package that offers a high degree of design flexibility. The small package can be easily incorporated into different designs and used in conjunction with gears of various shapes and sizes.

The device incorporates a dual-element Hall IC that switches in response to differential magnetic signals created by a ferrous target. The IC contains a sophisticated compensating circuit designed to eliminate the detrimental effects of magnet and system offsets.

Features such as small-signal lockout, running-mode gain adjustment and automatic offset adjustment provide a high level of vibration and offset immunity. The device also contains Scan/IDDQ circuitry to enhance the testability and overall quality level of the sensor.

Digital processing of the analogue signal provides zero-speed performance that is independent of the air gap, as well as offering dynamic adaptation of device performance to the typical operating conditions found in automotive applications: in particular, reduced sensitivity to vibration effects.

High-resolution peak detecting digital-analogue convertors and a bounded tracking algorithm are used to set the adaptive switching thresholds of the device. The adaptive hysteresis in the thresholds reduces the negative effects of any anomalies in the magnetic signal associated with the targets used in many automotive applications. The advanced signal processing makes the device ideal for transmission applications, where it can provide vibration immunity in combination with large operating air-gap capability.

The ATS667LSG is offered in the 'SG' magnetically integrated single-step overmoulded package, which includes of a samarium-cobalt magnet along with the Hall-Effect IC. It is lead (Pb) free, with 100% matt tin leadframe plating.

ATS667LSG

- A 3-wire true-zero-speed gear-tooth sensor IC designed to provide a flexible high-accuracy solution
- Containing a Hall-effect sensor IC and a magnet to provide an optimised magnetic configuration in a compact package that offers a high degree of design flexibility