

ATS643LSH

Gear-tooth sensor for automotive transmission applications

The new ATS643LSH from Allegro MicroSystems Europe is a Hall-effect gear-tooth sensor module that is ideal for obtaining speed and duty-cycle information in automotive applications such as transmission speed sensing.

The new device combines a Hall-effect sensor IC and magnet in an optimised configuration to provide a user-friendly solution for true zero-speed digital gear-tooth sensing in two-wire applications. It consists of a single-shot moulded plastic package that includes a samarium cobalt magnet, a pole piece, and the Hall-effect IC optimised to the magnetic circuit.

The integrated circuit incorporates a dual-element Hall-effect sensor and signal-processing circuitry that switches in response to differential magnetic signals created by ferrous targets. The device contains a sophisticated compensating circuit to eliminate magnet and system offsets.

Digital tracking of the analogue signal is used to achieve true zero-speed operation. A/D and D/A convertors are used to adjust the device gain and offset at power-up, resulting in switch points which are independent of the airgap and hence greatly improved output accuracy.

The regulated current output is configured for two-wire operation, and the unit maintains a precise duty cycle over a wide temperature range. Power-up time is less than 2 ms.

Other features include internal automatic gain control and reference adjustment circuitry, a supply voltage range from 4 to 24 V, and undervoltage lockout.

The small package (8 mm diameter × 5.5 mm long) can be easily assembled and used in conjunction with a wide variety of gear shapes and sizes, and is immune to the effects of vibration. Operating temperature range is -40 °C to +150 °C.
