

## Analogue self-calibrating speed sensor features integrated tracking capacitor

The new ATS616LSG from Allegro MicroSystems Europe is an analogue self-calibrating speed sensor designed for non-TPOS (true power on state) automotive camshaft applications.

The new sensor features improved immunity to electromagnetic interference and electrostatic discharge effects and does not require an external switching capacitor. The ATS616LSG is housed in Allegro's compact integrated GTS package, while maintaining the key specifications of the ATS612LSB, like airgap range and high timing accuracy.

Allegro's newest addition is a peak-detecting device that uses automatic gain control and an integrated capacitor to provide extremely accurate gear-edge detection down to low operating speeds. Each sensor subassembly consists of a high-temperature plastic shell that holds together a samarium-cobalt magnet, a pole piece, and a differential open-collector Hall IC that has been optimised to the magnetic circuit. The small package can be easily assembled and used in conjunction with a wide variety of gear shapes and sizes.

The gear-sensing technology used for this sensor subassembly is Hall-effect-based. The sensor incorporates a dual-element Hall IC that switches in response to differential magnetic signals created by ferrous targets. The sophisticated processing circuitry contains an A/D converter that self-calibrates (normalises) the internal gain of the device to minimise the effect of airgap variations. The patented peak-detecting filter circuit eliminates magnet and system offsets, and has the ability to discriminate relatively fast changes such as those caused by tilt, gear wobble, and eccentricities, yet provides stable operation to extremely low RPM.

This sensor system is ideal for use in gathering speed, position and timing information using gear-tooth-based configurations. The ATS616LSG is particularly suited to those applications that require extremely accurate edge detection such as in automotive camshaft applications.

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