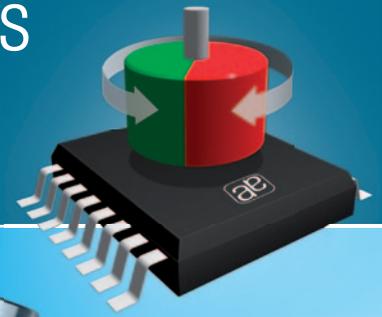


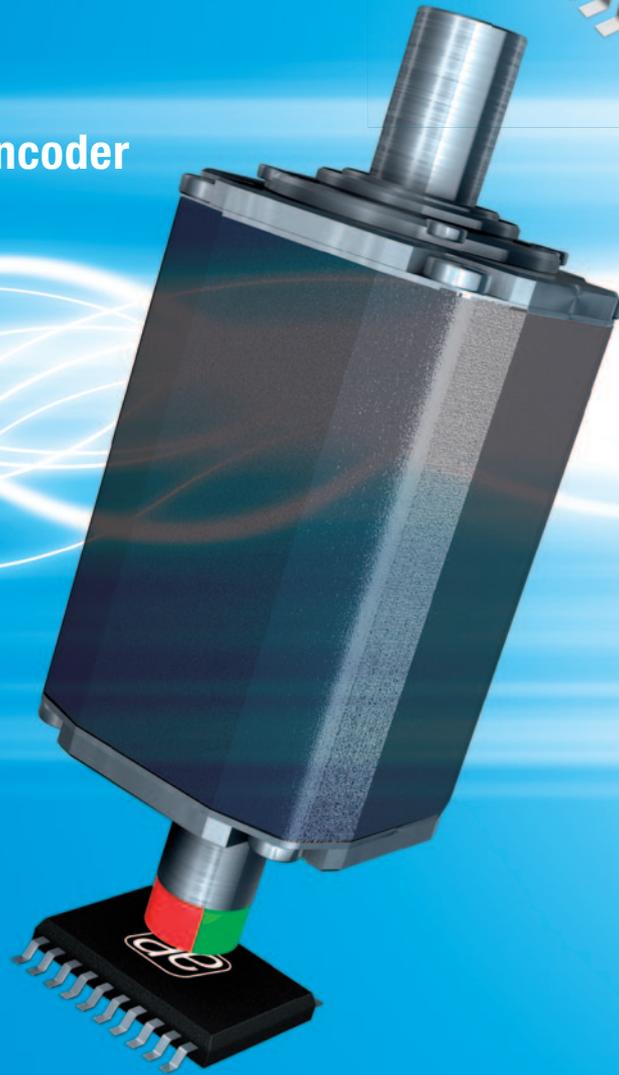
Free the power of brushless motors
with high precision and simplicity



AS5134

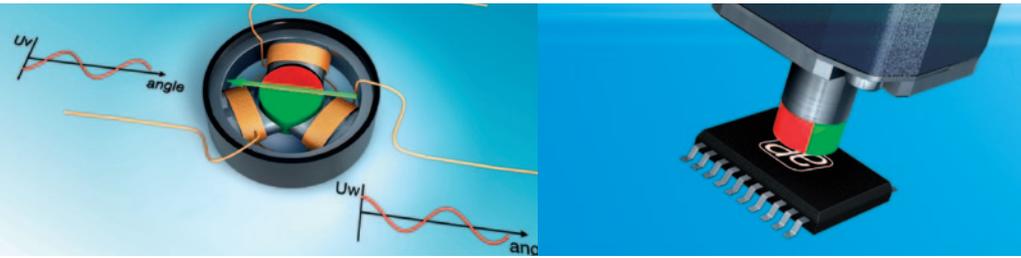
High Speed Magnetic Rotary Encoder

- ▶ 360° angular measurement
- ▶ Incremental outputs: ABI and UVW
- ▶ Absolute outputs: SSI and PWM
- ▶ Optimized encoder for BLDC motors
- ▶ 1° resolution
- ▶ Up to 82,000 rpm max speed
- ▶ Fully automotive AEC-Q100 qualified



 **austriamicrosystems**

a leap ahead in analog



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General Description

The AS5134 is a contactless magnetic rotary encoder for accurate angular measurement over a full turn of 360°.

It is a system-on-chip, combining integrated Hall elements, analog front end and digital signal processing in a single device.

To measure the angle, only a simple two-pole magnet, rotating over the center of the chip is required. The absolute angle measurement provides instant indication of the magnet's angular position with a resolution of 8.5 bit = 360 positions per revolution. This digital data is available as a serial bit stream and as a PWM signal.

In addition to the angle information, the strength of the magnetic field is also available as a 6-bit code. Data transmission can be configured for 1-wire (PWM), 2-wires (DCLK, DIO) or 3-wires (DCLK, DIO, CS). A software programmable (OTP) zero position simplifies assembly as the zero position of the magnet does not need to be mechanically aligned. A Power Down Mode together with fast startup- and measurement cycles allows for very low average power consumption.

Key Features

- 360° contactless angular position encoding
- Two digital 360 step (8.5 bit) absolute outputs:
 - Serial interface and
 - Pulse width modulated (PWM) output
- User programmable zero position, sensitivity
- High speed: up to 82,000 rpm
- Direct measurement of magnetic field strength allows exact determination of vertical magnet distance
- Incremental Outputs ABI Quadrature: 90 ppr, step direction: 180ppr, fixed pulse width 360ppr
- BLDC Outputs UVW, selectable for 1,2,3,4,5,6 pole pairs
- Daisy-Chain mode for cascading of multiple sensors
- 9-bit multiturn counter
- Low power mode with fast startup
- Wide magnetic field input range: 20 – 80 mT
- Wide temperature range: - 40°C to + 140°C
- Small Pb-free package: SSOP 20
- Fully automotive AEC-Q100, grade 1 qualified

Benefits

- Complete system-on-chip, no angle calibration required
- Flexible system solution provides absolute serial, ABI, UVW and PWM outputs
- Ideal for applications in harsh environments due to magnetic sensing principle
- High reliability due to non-contact sensing
- Robust system, tolerant to horizontal misalignment, airgap variations, temperature variations and external magnetic fields

Applications

- Contactless rotary position sensing
- Rotary switches (human machine interface)
- AC/DC motor position control
- Brushless DC motor position control

