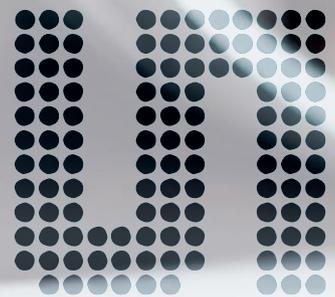


Product Document

Position Sensor ICs boost BLDC motor efficiency

www.ams.com/AS5147U

www.ams.com/AS5247U



AS5x47U – Accurate Motor Position Sensor suitable for all safety-critical applications

- Conforms to the functional safety ISO26262 standard
- Lower system costs and space
- Integrated intelligent digital signal processing unit
- Immune to external magnetic stray fields

**Sensing
is life.**

General Description

The AS5147U/AS5247U is a high-resolution redundant rotary position sensor for fast absolute angle measurement over a full 360-degree range. This position sensor is equipped with a revolutionary integrated dynamic angle error compensation (DAEC™) with almost 0 latency at higher rotational speed. For increased signal quality at lower rotational speed, the dynamic filter system (DFS™) reduces transition noise. The robust design of the device suppresses the influence of any homogenous external stray magnetic field. A standard 4-wire SPI serial interface with a CRC protection allows a host microcontroller to read 14-bit absolute angle position data from the AS5147U/AS5247U and to program

non-volatile settings without a dedicated programmer. Incremental movements are indicated on a set of ABI signals with a maximum resolution of 16989 steps / 4096 pulses per revolution. Brushless DC (BLDC) motors are controlled through a standard UVW commutation interface with a programmable number of pole pairs from 1 to 7. The absolute angle position is also provided as PWM-encoded output signal. The AS5147U/AS5247U supports embedded self-diagnostics for fulfilling up to ASIL D in safety relevant applications. The AS5147U is available in a TSSOP14 package and the AS5247U is using the ams stacked die technology in a TQFP-32 (7x7) package.

Features

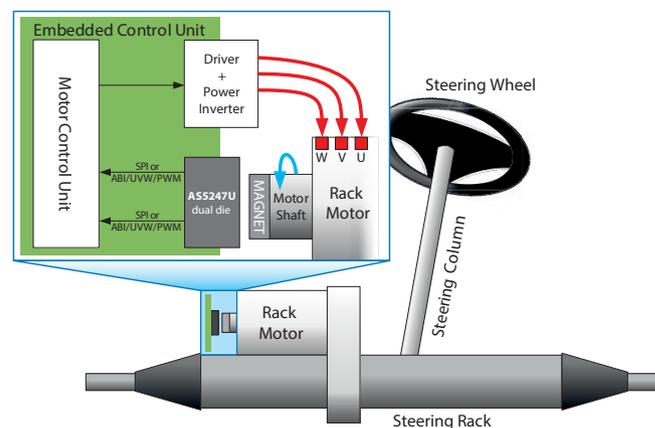
- DAEC™ Dynamic angle error compensation
- DFS™ Dynamic filter system
- Immune to external magnetic stray field
- Developed according to ISO26262, diagnostics, dual redundant chip version ASIL-D capable, Safety Element out of Context (SEoC)
- AEC-Q100 Grade 0 qualified
- Independent output/interfaces: SPI, ABI, UVW, PWM

Benefits

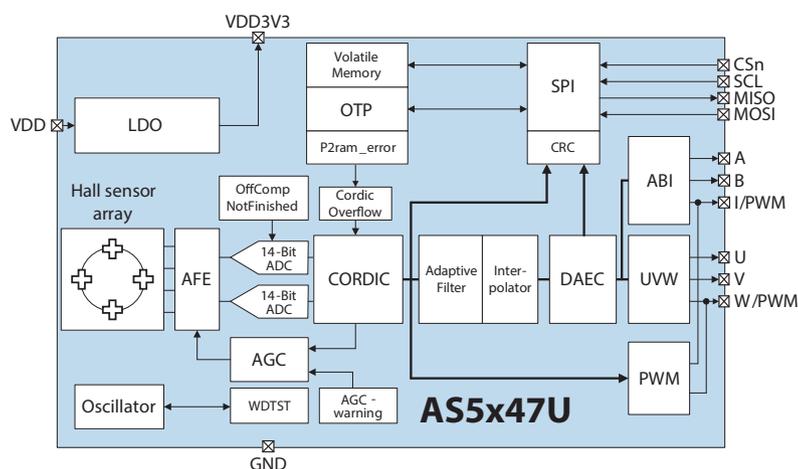
- Easy to use – saving costs on DSP
- Higher durability and lower system costs (no shield needed)
- Enabler for safety critical applications
- Suitable for automotive applications
- Versatile interface choice

Applications

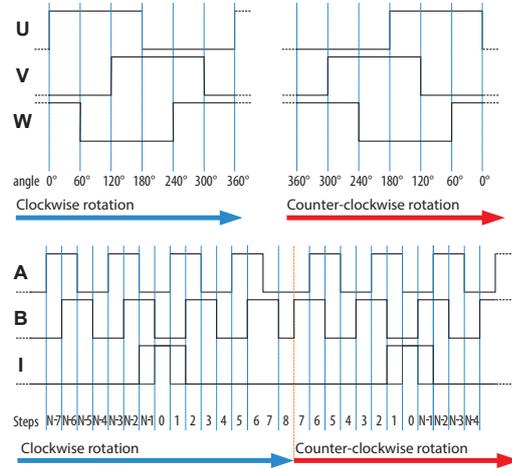
The AS5x47U is designed to support BLDC motor communication for the most challenging and safety-critical automotive applications (AEC-Q100 grade 0 automotive qualified – ISO26262 assessment) such as electric power steering (EPS), transmission (gearbox, actuator), brake (actuator) and starter/alternator.



Block Diagram



Flexible Output Options



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