



NXP magnetoresistive sensor KMZ60

Low-cost, high-performance angular measurement

This advanced sensor, with its ability to reduce costs by increasing system performance, helps realize the future of high-end customer solutions.

Key features

- ▶ Temperature range up to 150 °C ambient
- ▶ Automotive qualification according AEC-Q100
- ▶ Excellent EMC and ESD performance
- ▶ Selectable temperature coefficient compensation
- ▶ Low current consumption in power-down mode
- ▶ Temperature reference output voltage
- ▶ Reflow capable due to MSL1
- ▶ Dark green package
- ▶ Supply voltage range 2.7 to 5.5 V

Key benefits

- ▶ Ratiometric output voltages
- ▶ Compatible with most microcontrollers
- ▶ Low cost solution

Applications

- ▶ BLDC motor commutation
- ▶ Electronic Power Steering (EPS)
- ▶ Steering angle measurement
- ▶ Window wiper position detection
- ▶ Contactless angle measurement

Like other sensors in the KMZ series, the KMZ60 is an anisotropic magnetoresistive (AMR) sensor that gives designers a cost-effective way to enhance efficiency.

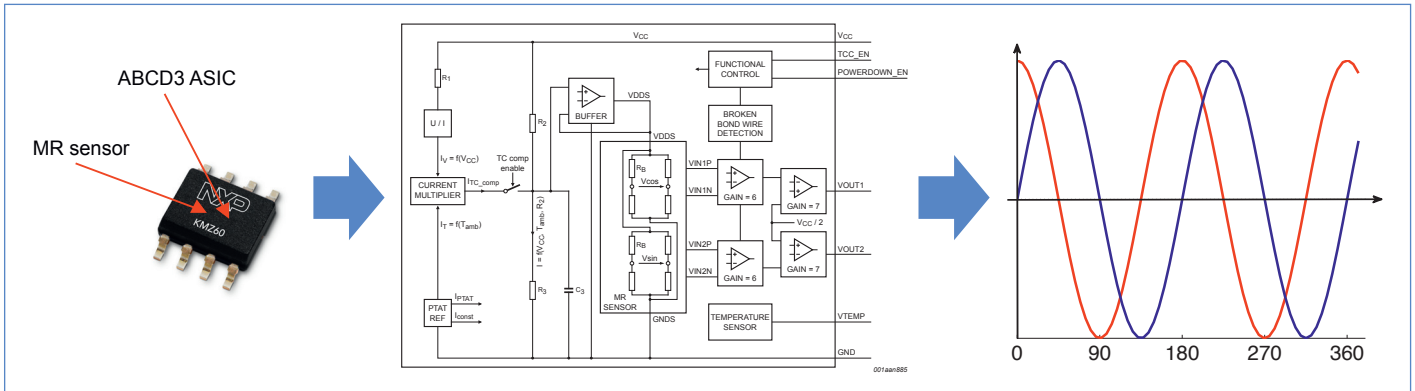
In brushless DC (BLDC) motors, for example, the smooth sinusoidal commutation reduces torque ripple and increases motor efficiency. Less energy is needed to reach the same performance in torque and acceleration, and this in turn helps reduce CO₂ emissions.



The KMZ60 provides amplified analog sinusoidal output signals with improved signal-to-noise behavior for high-resolution ADC inputs. The sensor is designed for use in brushless motors and steering applications. It provides a selectable compensation of its temperature coefficients and a temperature reference output functionality. For safety-critical applications, a broken-bond wire detection is implemented.

The KMZ60 incorporates NXP's latest magnetoresistive sensor chip in six-inch technology and a unique signal conditioning ASIC developed in automotive-compliant process technology. The KMZ60 is specially designed to improve the overall performance and increase robustness in automotive and industrial applications. A power-down mode is available.

KMZ60 block diagram



Compensation of the temperature coefficient leads to a high output voltage over the full temperature range. This in turn leads to a high signal resolution at the microcontroller ADC. The temperature-dependent output voltage at pin VTEMP

allows temperature monitoring in the application without an additional temperature sensor. The sensor can be switched into power-down mode if not used. This reduces current consumption within the application.

KMZ60 operating characteristics

Parameter	Value
Supply voltage	2.7 to 5.5 V
Number of outputs	3x ratiometric and analog (sine, cosine, temperature reference)
Operating temperature	-40 to +150 °C
Maximum supply current	<10 mA (with specified load)
Power-down current	<16 µA
Maximum angular inaccuracy	±0.1° (after calibration)
Minimum magnetic field strength	25 kA/m
Maximum phase error at 25,000 rpm	1.5° (after calibration)

KMZ60 assembly example

