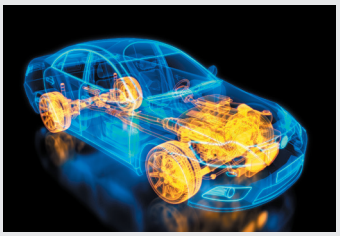
Robust, Low-Cost and Noise-Immune Motion-Sensing Inductive Sensors

Summary

Microchip's sensor interface ICs provide the ideal interface between high-reliability and safety-critical automotive position sensor applications. Our unique magnetic field sensors provide accurate position measurements, are immune to stray magnetic fields and don't require an external magnetic device.

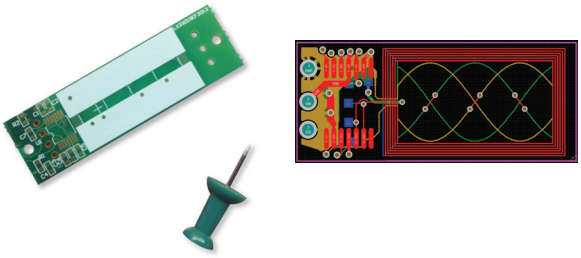


We have been shipping magnetic field sensors since 2010, and have released the LX3301A and LX3302A to meet your high-performance position requirements.

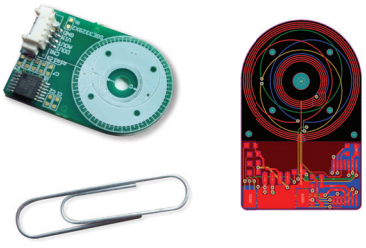
Magnetic field interface ICs are an exciting technology and have significant advantages over existing Hall effect and other magnetic sensors. The LX3301A and LX3302A improve angular measurement accuracy, lower noise sensitivity and reduce system costs. Use a metal object instead of an external magnet as the target device, because they make the biggest improvement in high-temperature and safety-critical applications such as automobile throttle body, transmission gear sensing, electronic power steering and accelerator pedals.

Noise Immune Precision Magnetic Field Position Sensors

- High-temperature air/water valve position
- Electronic power steering position and torque
- Transmission gear position
- Throttle and brake position
- Active suspension



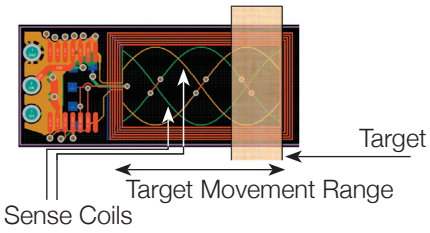
Sensor PCB Example: 10 × 24 mm Linear

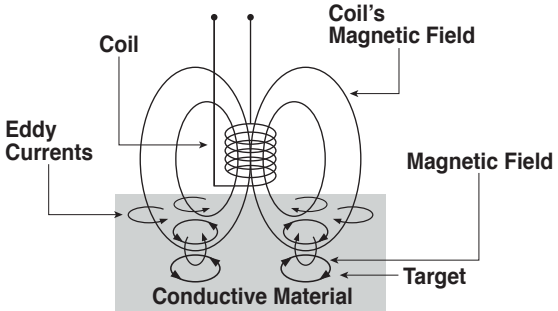


Sensor PCB Example: 20 mm Rotary

Target Changes Magnetic Field

- Target made of metal
- Transmission coil generates magnetic field
- Magnetic field will induce eddy currents in target
- This target will change the magnetic field
- Receive coils will sense this change
- 32-bit MCU calculates position

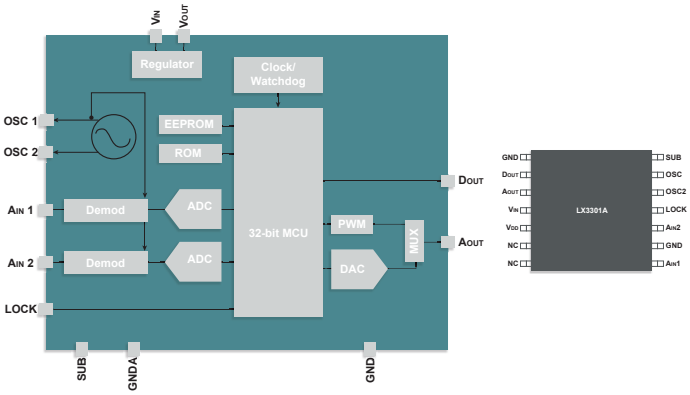




MICROCHIP

LX3301A

The LX3301A is an Automotive Grade 1, 125ºC device with analog and PWM outputs that features an analog front-end with signal processing and control for six calibration segments to shape the output response.

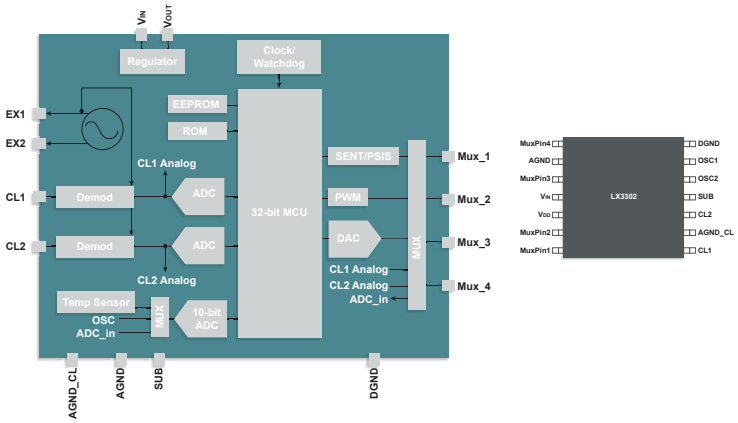


Features

- Six calibration segments
- Analog and PWM output
- 12-bit output resolution
- Sensor offset correction
- 12-bit origin offset adjust
- Automatic Gain (AGC) oscillator/demodulator
- Redundant sensor IC support

LX3302A

The LX3302A Automotive Grade 0, 150ºC device with SENT, PSI5, analog and PWM outputs features eight calibration segments for simple sensor accuracy improvements along with an options for sine/cosine outputs, and both power line and GPIO programmability options for embedded applications.



Features

- Eight calibration segments
- SENT and PSI5 digital outputs
- Analog and PWM output
- 12-bit output resolution
- Sine/cosine output for resolver function
- Programable with GPIO or power pins
- 10-bit ADC for external sensor
- On-board temperature sensor
- Redundant sensor IC support

Product Specifications

Specification	LX3301A	LX3302A
Calibration Segments	6	8
Sensor Offset Adjust	Yes	Yes
Orgin Adjust (bits)	12	12
Output Interface	Analog, PWM	Analog, PWM, SENT, PS15, Sin/Cos
Output Resolution (bits)	12	12
Redundant IC Support	Yes	Yes
Number of ADCs	2	3
ADC Sampling Rate (samples/sec)	2000	2000
ADC for External Sensor	No	Yes
Temperature Sensor	No	Yes
MCU	32-bit, 8 MHz	32-bit, 8 MHz
Temperature	–40°C to 125°C	–40°C to 150°C
AEC-Q100	Grade 1	Grade 0
ISO26262 Support	ASIL B	ASIL B
Redundant IC Support	Yes	Yes
Package	14-pin TSSOP	14-pin TSSOP

Ordering Information

Part Number	Ordering	Description
LXK3301AR001	LX3301A Rotary Evaluation Kit	18 mm Diameter, 120˚ Rotary Position Sensor With Programmer
LXK3301AL003	LX3301A Linear Evaluation Kit	100 mm Measurement Range, Linear Position Sensor With Programmer
LXK3302AR001	LX3302A Rotary Evaluation Kit	18 mm Diameter, 120˚ Rotary Position Sensor With Programmer
LXK3302AL002	LX3302A Linear Evaluation Kit	100 mm Measurement Range, Linear Position Sensor With Programmer

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