Xtrinsic Magnetic Sensors

Xtrinsic MAG3110 Magnetometer

Highest resolution, lowest noise and ultra-small size

Overview

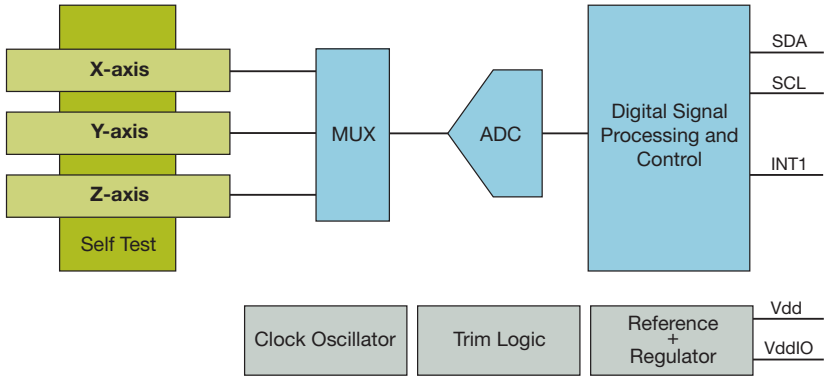
The MAG3110 3-axis magnetometer is the latest addition to Freescale's extensive family of accelerometers, pressure and touch sensors.

Freescale's MAG3110 measures the magnetic field in all three axes with ranges up to 1000 uT, at data rates up to 80 Hz, with resolution down to 0.1 uT and with noise as low as 0.05 uT.

The combination of the magnetometer with the accelerometer provides a full tilt-compensated electronic compass capability. With a GPS-enabled device, direction-dependent location-based services can be achieved.

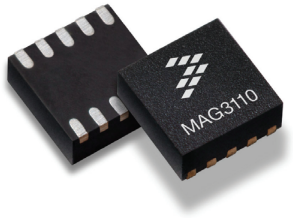
The MAG3110 is ideally suited for smartphones, tablets and any portable devices requiring an electronic compass capability.

MAG3110 Block Diagram



Key Features

- 2 x 2 mm package
- Power as low as 24 uA
- 1.95 to 3.6V operation
- Operating temperature range: -40° C to +85° C



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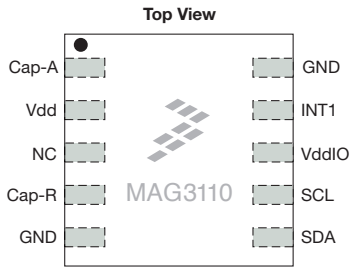
Typical Applications

- Mobile phones
  - Next-generation user interface
  - Electronic compass (eCompass)
  - Map orientation
  - Location-based services
  - GPS backup with dead-reckoning
  - Location tracking in mobile applications
- Gaming
  - 3-D motion control and heading
- Remote controls/3-D pointers
  - 3-D motion control and heading
- Navigation
  - Electronic compass (eCompass)
  - Map orientation
  - GPS backup with dead reckoning
  - Location tracking in mobile applications
- Smartbooks/eReaders/netbooks/ laptops
  - Location tracking in mobile applications
  - User interface



10 pin DFN
2 mm x 2 mm x 0.85 mm

The Freescale MAG3110 magnetometer is our first magnetic sensor offering. Building on our heritage of sensor innovation, Freescale is proud to announce Xtrinsic sensing solutions, offering the right combination of intelligent integration, logic and customizable software to deliver smarter, more differentiated applications. Freescale magnetometers complement our broad portfolio of inertial, pressure and touch sensors.

Freescale MAG3110 Magnetometer Features and Benefits

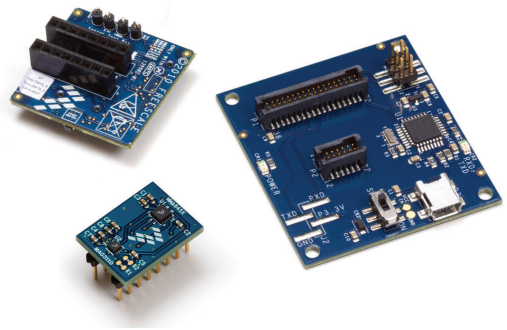
Features	Specifications	Benefiits
Wide dynamic range	+/- 1,000 uT	Allows operation in PCBs with high extraneous magnetic fields
Low noise (at 80 Hz ODR)	Down to 0.05 uT rms	Enables high-resolution applications with low averaging requirements for decreased latency
Power consumption	Normal mode: 24 µA at 1.25 Hz	Lower power for significant battery savings
Digital output	I^2C interface at 400 kHz	Works well with other sensors, MCUs and devices
Sample rate	80 Hz maximum	Increased bandwidth to provide higher data rates
Supply voltage	1.95 to 3.6V	Wide operating voltage to cover many applications
Operating temperature	-40°C to +85°C	Wide temperature range to cover many applications
High resolution in full dynamic range	0.1 µT	Allows for the full specification resolution in all ranges
Small package	2 x 2 x 0.8 mm 10-pin uDFN	Excellent fit for ultra-compact mobile devices
Drivers available	Examples include Android™, WinCE, Windows® 7, Linux®	Operating system flexibility

Documentation

Document Number	Description
MAG3110	Product specifications data sheet
AN4247	Layout recommendations for PCBs using a magnetometer sensor
AN4248	Implementing a tilt-compensated eCompass using accelerometer and magnetometer sensors

Development Tools

Kit Number	Description
LFSTBEB3110	The LFSTBEB3110 contains two PCBs: MAG3110 magnetometer and MMA8451 accelerometer daughter card, and the sensor interface board. Customers can purchase the LFSTBUSB communication board separately.
RD4247MAG3110	The RD4247MAG3110 is a complete kit containing three PCBs: MAG3110 magnetometer and MMA8451 accelerometer daughter card, sensor interface board and LFSTBUSB communication board for running Freescale's Sensor Toolbox PC software.



Learn More: For current information about Freescale products and documentation, please visit **freescale.com/magnetic**.

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