freescale ™
Sensors

Sensors

Sensing Solutions

A new era of sensing experience

Overview

For over thirty-five years, Freescale's sensor products have helped make the world a safer and more interactive place with continuous sensor innovation. Globally, we have delivered more than 2 billion micro-electromechanical systems (MEMS)-based and CMOS state machine-based touch-sensing components and touch-sensing software on thousands of microcontrollers (MCUs).

Building on our heritage of sensor innovation, Freescale is proud to offer sensor products that go beyond translating a signal.

Inccreasing Levels of Intelligence

Freescale's sensing solutions offer increased levels of modular integration combined with multiple sensor inputs, logic and other building blocks to bring greater value and decision making to the overall sensing solution. Multiple sensor inputs are leveraged within the platform to perform multiple application functions. With Freescale's sensors, customers can choose among a wider range of scalable products at varying levels of integration, performance and price points.

Sensor Timeline

1980	**1982**	**1985**	**Late 1980s**	**1991**	**1992—present**	**1996**	**Late 1990s**	**2002**
We manufacture our first uncompensated pressure sensor	Pressure sensors are supplied for manifold absolute pressure (MAP), enabling a major reduction in emissions and fuel consumption	A temperature-compensated pressure sensor is unveiled	Began developing the first surface micromachined inertial sensors for the auto airbag market	Bipolar integrated pressure sensor production begins	Dedicated supplier to the critical care medical market shipping over 90 million units for the invasive blood pressure market	Inertial sensors start volume production	A new wingback/PDIP package is developed for the Z-axis inertial sensor	Began providing pressure sensors for respiratory medical equipment

Early 2000s	**2003**	**2003**	**May 2005**	**July 2006**	**2008**	**February 2008**	**November 2008**	**December 2008**
Inertial sensor portfolio expands with X-, XY- and Z-axis low-g products	Tire pressure monitoring system developed, utilizing capacitive technology to save power	Smarter, faster airbag deployment enabled by satellite accelerometer introduction	Freescale introduces its first 3-axis MMA7260Q low-g inertial sensor	First HARMEMS technology MMA62xxEG products shipped for airbags with robust accuracy	TPMS highly integrated, single-package, low-power solution introduced with pressure sensor, 8-bit MCU, RF transmitter, 2-axis X- and Z-axis accelerometer	Motion-sensing accelerometer enables interactivity of Guitar Hero® and other popular video games	Synerject announces its ongoing use of Freescale pressure sensors for robust, cost-effective ECUs for two- and four-stroke engine management	3-axis accelerometers offer reliable, cost-effective freefall detection to help protect data stored on laptop hard disks

April 2009	**June 2009**	**June 2009**	**June 2009**	**June 2009**	**January 2010**	**February 2010**	**June 2010**	**January 2011**
MMA7660, an intelligent 3-axis digital accelerometer and Freescale Energy-Efficient Solution, is introduced for advanced mobile phone interfaces	MPL115A released, the first digital barometric pressure sensor with easy-to-use digital interface and low power	Sensor Toolbox introduced	Reached 1 billion units shipped milestone	Tower System introduced	Freescale Sensors Group marks thirty years of industry innovation and leadership	MMA845xQ unveiled, a very low-power 12-bit digital (I²C) resolution accelerometer with embedded functions to enable next-generation intelligent motion features	Freescale launches Xtrinsic sensing solutions, the first smart sensors in the market	Freescale introduces the first magnetometer in its Xtrinsic sensor portfolio

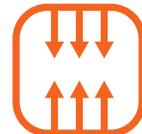|								
February 2012	**June 2012**	**June 2012**	**June 2012**	**April 2013**	**June 2013**	**August 2013**	**October 2013**	**November 2013**	**May 2014**
Award-winning Xtrinsic eCompass software introduced	Joint announcement with Kinetis introducing the MMA8491Q	Accelerometers for smart meter physical tamper detection debut	12-axis Xtrinsic Sensor Reference Platform for Windows® 8 certified by Microsoft® for sensor fusion requirements	Pressure sensor collects biosignal information in BAM Labs® Touch-free Life Care™ (TLC) System	Xtrinsic intelligent sensing framework releases	Xtrinsic MMA9550L motion-sensing platform detects falls and an Xtrinsic MAG3110 3-axis magnetometer works in conjunction for accurate compass-based location information in Numera's Personal Emergency Response System	FXAS2100 Xtrinsic gyroscope released	Freedom Platform for Xtrinsic sensors is Arduino™ footprint compatible with support for sensor expansion boards	Reached 2 billion sensors shipped milestone

Freescale sensors feature customizable software that extends sensor use cases through algorithms and analysis to reduce complexity and provide processing assistance. Design time can be accelerated through use of common software platform and common tools, including the Sensor Toolbox, Freedom Development Platform Sensor Boards, Intelligent Sensing Framework (ISF) and CodeWarrior. Program and innovate with software for sensor platforms that allow you to design exactly what you want and need the application to be.

Increasing levels of integration

- Multiple sensor types

- Connectivity

- Power management

- Logic

- Actuation

Creating new technologies that can sense and interact with the systems around them are becoming essential. With designers facing new challenges to create smarter products, Freescale's sensing solutions are ideal to meet the needs of a constantly evolving and expanding world of technology. Our core competency is new product development using current processes to shorten the development cycle time. Our goal is to design products that ensure customer satisfaction and provide value the first time, every time. Freescale sensing solutions are able to go beyond single-die products and leverage complementary technologies from the corporation. Our broad portfolio of ZigBee® technology, MCUs, microprocessors, digital signal processors, analog and power ICs and development tools can enable even more complete system solutions for our customers. No one can match our history of success or our vision for the future. Contact Freescale today to get more information on our sensing solutions.

Sensor Icons

Pressure Sensors

Accelerometers

Touch Sensors

eCompass Compensation

Gyro

Radar

Magnetometers

Temperature Sensors

Tilt

Touch Sensing

Lighting

Battery Sensor

Dimensions of Intelligent Contextual Sensing

Building on a Strong Portfolio of Diverse Sensor Types

- Inertial, magnetic, pressure and touch sensors

- Provide a multiplicity of sensor inputs for greater value to the overall solution

- Extract the maximum context from the environment

Intelligent Integration

- The right combination of leading sensor types, logic and other building blocks to solve use case needs efficiently

- Advanced, modular integration that can include multiple sensor types, connectivity and low power

- Enables sensor fusion of applications and high re-use of sensor data

Amplifying Sensing

- Adds contextual analysis to sensor performance by including algorithms for decision making

- Sensors can be a final or sub-level decision maker that feeds into a central point

- Providing interpreted sensing information and control over a number of sensing decisions allows developers to focus on higher levels of innovation

Ingenuity of Design

- Novel ways for how the solution is designed and delivered that leverage Freescale's remarkable sensor portfolio, IP, expertise and innovation
  - System partitioning
  - Packaging
  - Power management
  - Connectivity

For current information about products and documentation, please visit freescale.com/Sensors

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