



Sensors

MPL115A

Digital barometric pressure sensor

Overview

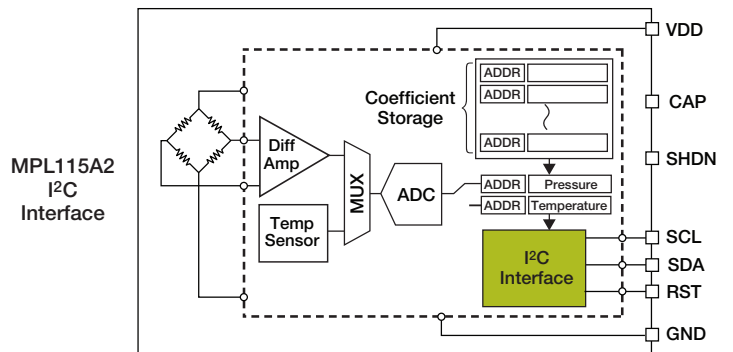
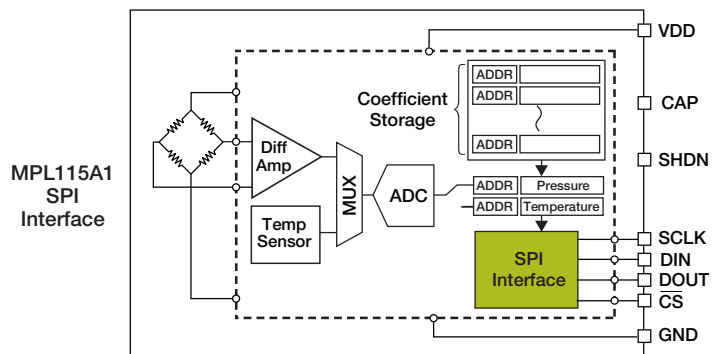
Freescale Semiconductor's MPL115A series is a simple barometer with digital output (I²C/SPI) for cost-sensitive applications. A MEMS pressure sensor with a conditioning IC provides accurate pressure measurement. The MPL115A is offered in a 5 x 3 x 1.2 mm LGA package for space constrained applications. This surface mount package is RoHS-compliant. The MPL115A is ideal for battery and solar powered applications with its low current consumption at 1 μ A in sleep mode and 5 μ A in active mode.

The MPL115A enables altitude detection, weather changes and will increase data capacity in hard disk drives as well as providing absolute pressure measurement for industrial equipment.

Target Applications

- Barometry (portable and desk-top)
- Altimeter
- Weather stations
- Hard disk drives (HDD)
- Health monitoring
- Cooling fan control
- Dead reckoning assistance
- GPS navigation assistance
- Wound management
- Security and safety
- Ambient pressure switch
- Leak detection
- Vacuum equipment

MPL115A Block Diagrams



Features

- Digital output options
 - MPL115A1 for SPI applications
 - MPL115A2 for I²C applications
- Low-profile 3 x 5 x 1.2 mm LGA package
- Low current consumption
 - Sleep mode: 1 μ A
 - Active mode: 5 μ A at one measurement per second
- Temperature and pressure coefficients available for temperature compensation
- Convenient pressure conversion in units of kilopascals (kPa)
- 50 to 115 kPa absolute pressure measurement range
- 1 kPa accuracy
- Operating temperature range from -40°C to +105°C
- 2.4 to 5.5 Volt power supply

Benefits

- Digital output simplifies system design with direct interface to microcontroller
- Small package enables design on space constrained PCB
- Low power consumption for battery and solar powered applications

Freescale is a leading provider of pressure, inertial and touch sensors and has offered MEMS-based sensors for over 30 years. The sensor ICs complement Freescale's broad portfolio of ZigBee[®] technology, microcontrollers, microprocessors, digital signal processors, analog ICs and development tools to offer system solutions to customers.

Selector Guide

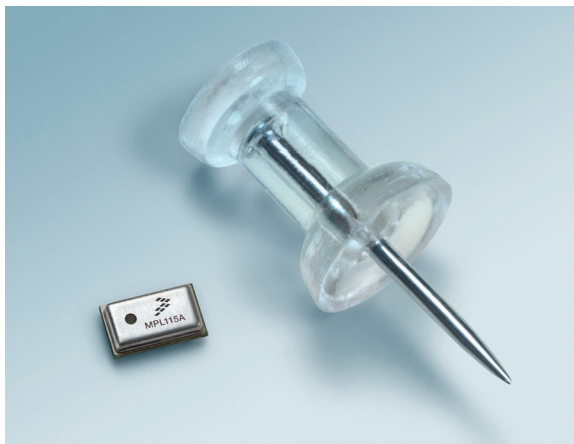
Part Number	Operating Supply Voltage	Supply Current	Pressure Range	Accuracy	Compensated Temperature Range	Digital Interface	Package
MPL115A1T1	2.4–5.5V	5 μ A	50–115 kPa	\pm 1 kPa	-20°C–+85°C	SPI	8-pin LGA
MPL115A2T1	2.4–5.5V	5 μ A	50–115 kPa	\pm 1 kPa	-20°C–+85°C	I ² C	8-pin LGA

Development Tools

Part Number	Description
KITMPL115A1SPI	Evaluation board that demonstrates the SPI communication protocol
KITMPL115A2I2C	Evaluation board that demonstrates the I ² C communication protocol
DEMOAPEXSENSOR	The APEX (Altitude Pressure EXperimental) board showcases how pressure sensors can be used to detect altitude at high resolution

Documentation

Document Number	Title	Description
MPL115A1	SPI Digital Barometer	Data Sheet
MPL115A2	I ² C Digital Barometer	Data Sheet
AN3785	Using Digital Barometric Pressure Sensors in Your Design	Application note for I ² C and SPI interface board implementation
AN3914	Modern Altimeter and Barometer System Using the MPL115A	Application note that describes a modern altimeter and barometer system



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