



## Sensors

# MPL115A

## Digital barometric pressure sensor

### Overview

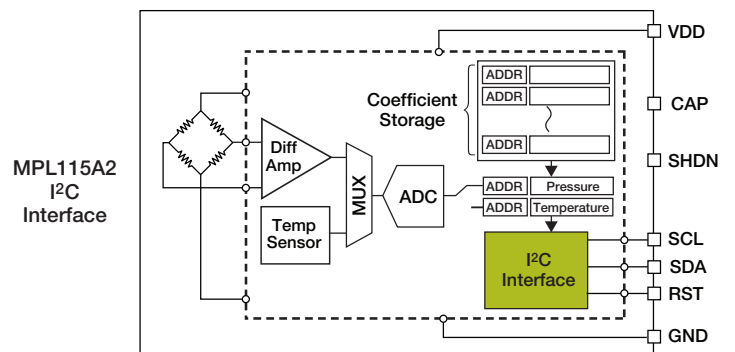
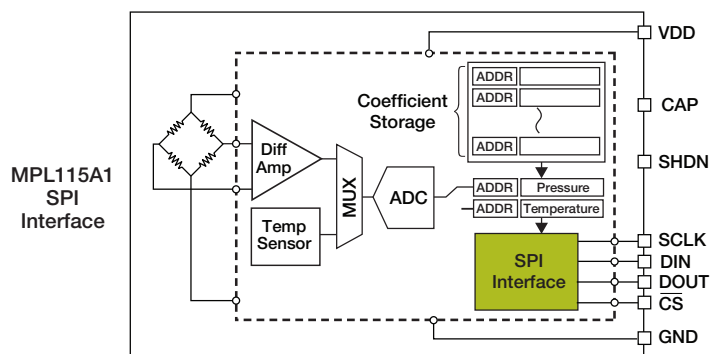
Freescall Semiconductor's MPL115A series is a simple barometer with digital output (I<sup>2</sup>C/SPI) for cost-sensitive applications. A MEMS pressure sensor with a conditioning IC provides accurate pressure measurement. The MPL115A is offered in a 5 x 3 x 1.2 mm LGA package for space constrained applications. This surface mount package is RoHS-compliant. The MPL115A is ideal for battery and solar powered applications with its low current consumption at 1  $\mu$ A in sleep mode and 5  $\mu$ 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 I<sup>2</sup>C applications
- Low-profile 3 x 5 x 1.2 mm LGA package
- Low current consumption
  - Sleep mode: 1  $\mu$ A
  - Active mode: 5  $\mu$ 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<sup>®</sup> technology, microcontrollers, microprocessors, digital signal processors, analog ICs and development tools to offer system solutions to customers.

## Selector Guide

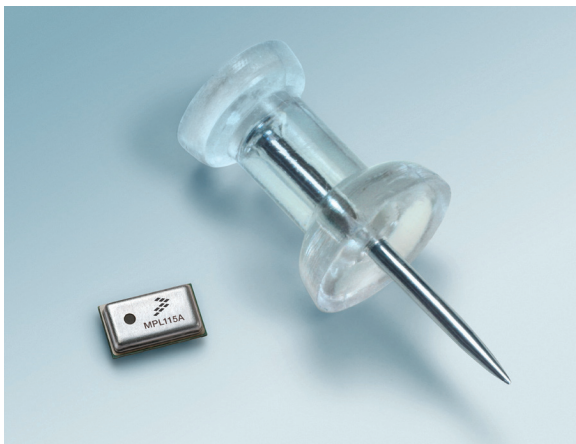
Part Number	Operating Supply Voltage	Supply Current	Pressure Range	Accuracy	Compensated Temperature Range	Digital Interface	Package
MPL115A1T1	2.4–5.5V	5 $\mu$ A	50–115 kPa	$\pm$ 1 kPa	-20°C–+85°C	SPI	8-pin LGA
MPL115A2T1	2.4–5.5V	5 $\mu$ A	50–115 kPa	$\pm$ 1 kPa	-20°C–+85°C	I <sup>2</sup> C	8-pin LGA

## Development Tools

Part Number	Description
KITMPL115A1SPI	Evaluation board that demonstrates the SPI communication protocol
KITMPL115A2I2C	Evaluation board that demonstrates the I <sup>2</sup> 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 <sup>2</sup> C Digital Barometer	Data Sheet
AN3785	Using Digital Barometric Pressure Sensors in Your Design	Application note for I <sup>2</sup> 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



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