

FEATURES

Ultralow power

Power can be derived from coin cell battery

1.8 μA at 100 Hz ODR, 2.0 V supply

3.0 μA at 400 Hz ODR, 2.0 V supply

270 nA, motion activated, wake-up mode

10 nA standby supply current, 2.0 V supply

High resolution, sensitivity at X_{OUT} , Y_{OUT} , Z_{OUT} : 1 mg/LSB

Built in features for system level power savings

Adjustable threshold sleep/wake modes for motion activation

Autonomous interrupt processing, without need for microcontroller intervention, to allow the rest of the system to be turned off completely

Deep embedded FIFO minimizes host processor load

Awake state output enables implementation of standalone, motion activated switch

Low noise down to 175 $\mu\text{g}/\sqrt{\text{Hz}}$

Wide operating voltage range: 1.6 V to 3.5 V

Operates off 1.8 V to 3.3 V batteries

Special, high reliability manufacturing flow

Acceleration sample synchronization via external trigger

On-chip temperature sensor

SPI digital interface

Measurement ranges selectable via SPI command

Small and thin 3 mm \times 3.25 mm \times 1.06 mm package

APPLICATIONS

Medical implantable

Clinical and home healthcare devices

Hearing aids

Motion enabled power save switches and metering devices

Wireless sensors

GENERAL DESCRIPTION

The ADXL362-MI is an ultralow power, 3-axis MEMS accelerometer that consumes less than 2 μA at a 100 Hz output data rate (ODR) and 270 nA when in motion triggered wake-up mode.

Unlike accelerometers that use power duty cycling to achieve low power consumption, the ADXL362-MI does not alias input signals by undersampling; it samples the full bandwidth of the sensor at all data rates.

The ADXL362-MI always provides 12-bit output resolution; 8-bit formatted data is also provided for more efficient single-byte transfers when a lower resolution is sufficient. Measurement ranges of $\pm 2\text{ g}$, $\pm 4\text{ g}$, and $\pm 8\text{ g}$ are available, with a resolution of 1 mg/LSB on the $\pm 2\text{ g}$ range. For applications where a noise level lower than the normal 550 $\mu\text{g}/\sqrt{\text{Hz}}$ of the ADXL362-MI is desired, either of two lower noise modes (down to 175 $\mu\text{g}/\sqrt{\text{Hz}}$ typical) can be selected at minimal increase in supply current.

In addition to its ultralow power consumption, the ADXL362-MI has many features to enable true system level power reduction. It includes a deep multimode output, first in, first out (FIFO), a built in micropower temperature sensor, and several activity detection modes including adjustable threshold sleep and wake-up operation that can run as low as 270 nA at a 6 Hz (approximate) measurement rate. A pin output is provided to directly control an external switch when activity is detected, if desired. In addition, the ADXL362-MI has provisions for external control of sampling time and/or an external clock.

The ADXL362-MI operates on a wide 1.6 V to 3.5 V supply range, and can interface, if necessary, to a host operating on a separate, lower supply voltage. The ADXL362-MI is processed through a special, high reliability manufacturing flow involving additional process, test, and quality controls to meet a higher quality and reliability standard that gives more robustness to Class II medical devices and Class III medical devices. Further details are available with Analog Devices, Inc., consultation. The ADXL362-MI is available in a 3 mm \times 3.25 mm \times 1.06 mm LGA package.

FUNCTIONAL BLOCK DIAGRAM

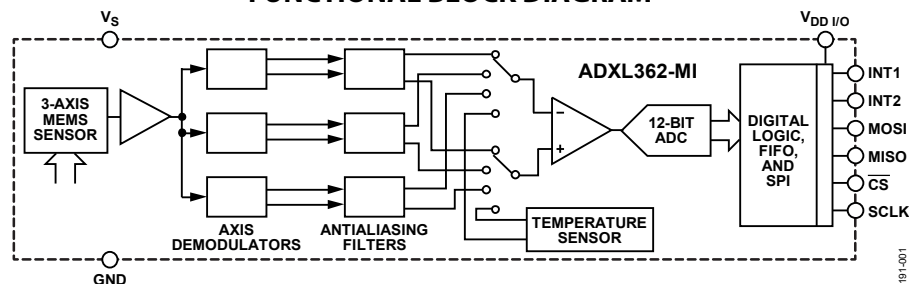


Figure 1.

For more information on the ADXL362-MI, contact Analog Devices, Inc., at healthcare-support@analog.com.

Rev. SpC

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