

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.

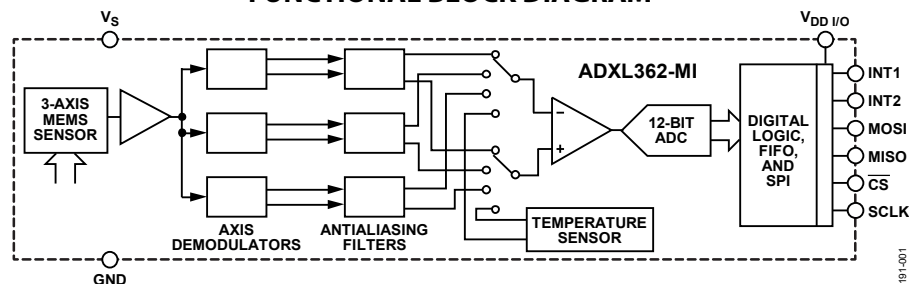
FUNCTIONAL BLOCK DIAGRAM


Figure 1.

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

Rev. SpC

Document Feedback

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