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 XOUT, YOUT, ZOUT: 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 µg/√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 × 3.25 mm × 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 ±2 g, ±4 g, and ±8 g are available, with a resolution of 1 mg/LSB on the ±2 g range. For applications where a noise level lower than the normal 550 µg/√Hz of the ADXL362-MI is desired, either of two lower noise modes (down to 175 µg/√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 × 3.25 mm × 1.06 mm LGA package.