

High-performance 3-Axis SmartIndustrial Accelerometer MEMS Device for Industrial Applications

GENERAL DESCRIPTION

The IIM-42352 is a 3-axis accelerometer packaged in a small 2.5 mm x 3 mm x 0.91 mm (14-pin LGA) package.

The IIM-42352 includes multiple capabilities to enable easy, robust and accurate inertial and vibration measurements in Industrial applications:

- Wide and flat frequency response range: from dc to 4 kHz (± 3 dB point)
- Low noise: 70 $\mu\text{g}/\sqrt{\text{Hz}}$
- Low power: 0.3 mA with all 3-axes delivering full performance
- Output data rate up to 32 kHz
- Highly accurate external clock input to increase ODR accuracy, reduce system level sensitivity error, and improve measurement impacts from device to device variation.
- 2K-byte FIFO that can lower the traffic on the serial bus interface and reduce power consumption by allowing the system processor to burst read sensor data and then go into a low-power mode
- Wake-on-motion interrupt for low power operation of applications processor
- Operating temperature range: -40°C to 105°C

The host interface can be configured to support I3CSM slave, I²C slave, or SPI slave modes. The I3CSM interface supports speeds up to 12.5 MHz (data rates up to 12.5 Mbps in SDR mode, 25 Mbps in DDR mode), the I²C interface supports speeds up to 1 MHz, and the SPI interface supports speeds up to 24 MHz.

The device features an operating voltage range from 3.6V down to 1.71V.

ORDERING INFORMATION

PART NUMBER	TEMPERATURE	PACKAGE
IIM-42352†	-40°C to $+105^{\circ}\text{C}$	14-pin LGA

†Denotes RoHS and Green-compliant package

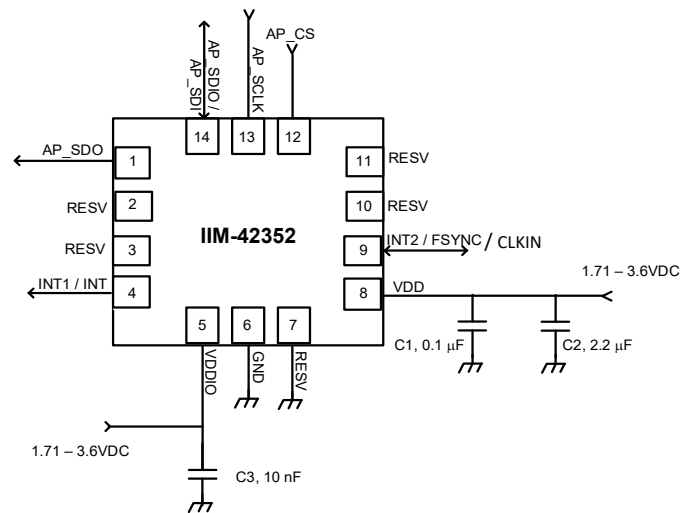
APPLICATIONS

- Vibration measurement
- Predictive maintenance
- Tilt sensing
- Platform stabilization
- Robotics

FEATURES

- Digital-output X-, Y-, and Z-axis accelerometer with programmable full-scale range of $\pm 2g$, $\pm 4g$, $\pm 8g$ and $\pm 16g$
- User-programmable interrupts
- I3CSM / I²C / SPI slave host interface
- Digital-output temperature sensor
- External clock input supports highly accurate clock input from 31 kHz to 50 kHz
- Small and thin package: 2.5 mm x 3 mm x 0.91 mm (14-pin LGA)
- 20,000g shock tolerant
- MEMS structure hermetically sealed and bonded at wafer level
- RoHS and Green compliant

TYPICAL OPERATING CIRCUIT



Application Schematic (SPI Interface to Host)