

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

### GENERAL DESCRIPTION

The IIM-42351 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-42351 includes multiple capabilities to enable easy, robust and accurate inertial and inclination measurements in Industrial applications:

- Low noise: 70  $\mu\text{g}/\text{VHz}$
- Low power: 0.3 mA with all 3-axes delivering full performance
- Output data rate up to 8 kHz
- Highly accurate external clock input to increase ODR accuracy, reduce system level sensitivity error, 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:  $-40^{\circ}\text{C}$  to  $105^{\circ}\text{C}$

The host interface can be configured to support I3C<sup>SM</sup> slave, I<sup>2</sup>C slave, or SPI slave modes. The I3C<sup>SM</sup> interface supports speeds up to 12.5 MHz (data rates up to 12.5 Mbps in SDR mode, 25 Mbps in DDR mode), the I<sup>2</sup>C 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-42351†	$-40^{\circ}\text{C}$ to $+105^{\circ}\text{C}$	14-pin LGA

†Denotes RoHS and Green-compliant package

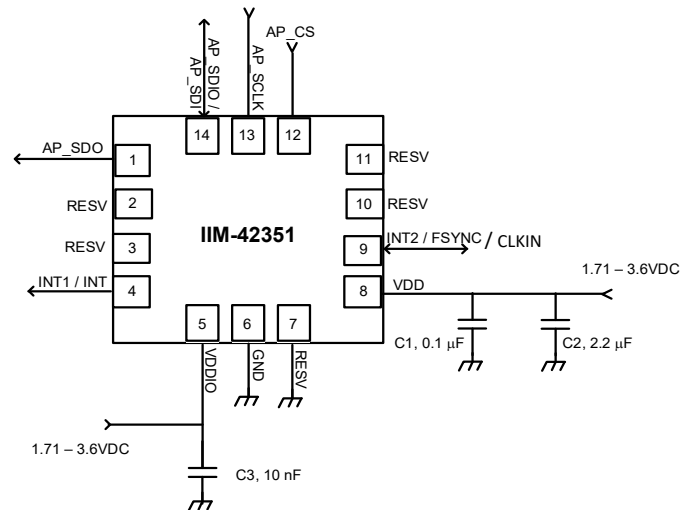
### APPLICATIONS

- 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
- I3C<sup>SM</sup> / I<sup>2</sup>C / 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)