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 µg/√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.

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 ±2g, ±4g, ±8g and ±16g
- User-programmable interrupts
- I3C™ / 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

The application schematic shows the SPI interface to the host device. The circuit includes a 2K-byte FIFO, which can lower the traffic on the serial bus interface and reduce power consumption. The device features an operating voltage range from 3.6V down to 1.71V.

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>TEMPERATURE</th>
<th>PACKAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIM-42352†</td>
<td>-40°C to +105°C</td>
<td>14-pin LGA</td>
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</tbody>
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†Denotes RoHS and Green-compliant package