

High-performance 6-Axis SmartIndustrial™ Motion Tracking MEMS Device for Industrial Applications

GENERAL DESCRIPTION

The IIM-42652 is a 6-axis SmartIndustrial™ MotionTracking device that supports an extended operating temperature range.

The IIM-42652 combines a 3-axis gyroscope, and a 3-axis accelerometer in a small

2.5 mm x 3 mm x 0.91 mm (14-pin LGA) package. It also features a 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.

IIM-42652 supports highly accurate external clock input to reduce system level sensitivity error, improve orientation measurement from gyroscope data and to reduce ODR sensitivity to temperature and device to device variation.

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-42652†	-40°C to +105°C	14-pin LGA

†Denotes RoHS and Green-compliant package

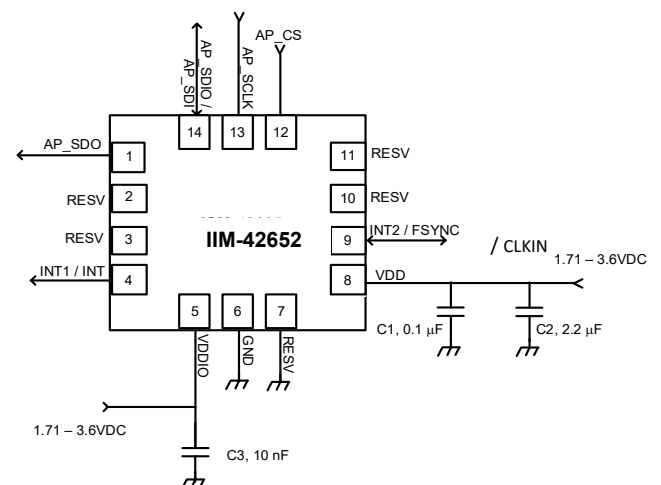
APPLICATIONS

- Navigation
- Orientation measurement
- Tilt sensing
- Platform stabilization
- Robotics

FEATURES

- Digital-output X-, Y-, and Z-axis angular rate sensors (gyroscopes) with programmable full-scale range of ± 15.625 , ± 31.25 , ± 62.5 , ± 125 , ± 250 , ± 500 , ± 1000 , and ± 2000 degrees/sec
- 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
- Small and thin package: 2.5 mm x 3 mm x 0.91 mm (14-pin LGA)
- 20,000 g shock tolerant
- MEMS structure hermetically sealed and bonded at wafer level
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- RoHS and Green compliant

TYPICAL OPERATING CIRCUIT



Application Schematic (SPI Interface to Host)