

High Performance Automotive 6-Axis MotionTracking Device

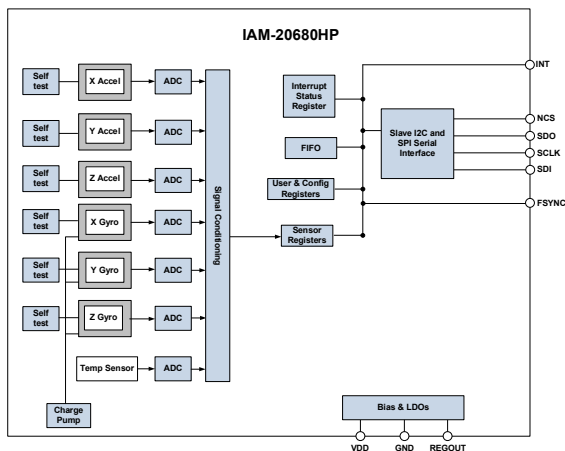
GENERAL DESCRIPTION

The IAM-20680HP is a 6-axis MotionTracking device for Automotive applications that combines a 3-axis gyroscope and a 3-axis accelerometer in a small 3x3x0.75mm (16-pin LGA) package. It also features a 512-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. IAM-20680HP, with its 6-axis integration, enables manufacturers to eliminate the costly and complex selection, qualification, and system level integration of discrete devices, guaranteeing optimal motion performance.

The gyroscope has a programmable full-scale range of ± 250 dps, ± 500 dps, ± 1000 dps and ± 2000 dps. The accelerometer has a user-programmable accelerometer full-scale range of $\pm 2g$, $\pm 4g$, $\pm 8g$, and $\pm 16g$. Factory-calibrated initial sensitivity of both sensors reduces production-line calibration requirements.

Other industry-leading features include on-chip 16-bit ADCs, programmable digital filters, an embedded temperature sensor, and programmable interrupts. The device features I²C and SPI serial interfaces, a VDD operating range of 1.71V to 3.6V, and a separate digital IO supply, VDDIO from 1.71V to 3.6V.

BLOCK DIAGRAM



APPLICATIONS

- Navigation Systems Aids for Dead Reckoning
- Lift Gate Motion Detection
- Accurate Location for Vehicle to Vehicle and Infrastructure
- 360° View Camera Stabilization
- Car Alarm
- Telematics
- Insurance Vehicle Tracking

ORDERING INFORMATION

PART	AXES	TEMP RANGE	PACKAGE	MSL*
IAM-20680HP [†]	X,Y,Z	-40°C to +105°C	16-Pin LGA	3

[†]Denotes RoHS and Green-compliant package

* Moisture sensitivity level of the package

FEATURES

- Digital-output X-, Y-, and Z-axis angular rate sensors (gyroscopes) with a user-programmable full-scale range of ± 250 dps, ± 500 dps, ± 1000 dps, and ± 2000 dps and integrated 16-bit ADCs
- Digital-output X-, Y-, and Z-axis accelerometer with a programmable full-scale range of $\pm 2g$, $\pm 4g$, $\pm 8g$, and $\pm 16g$ and integrated 16-bit ADCs
- User-programmable digital filters for gyroscope, accelerometer, and temperature sensor
- Self-test
- Reliability testing performed according to AEC-Q100: PPAP and qualification data available upon request
- Final test at -40°C, 25°C, and 105°C
- Burn-in: 100% burn-in in production

TYPICAL OPERATING CIRCUIT

