

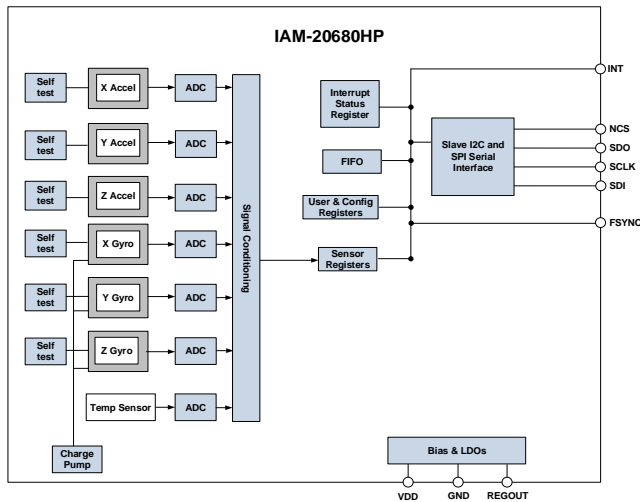
## GENERAL DESCRIPTION

The IAM-20680HP is a 6-axis MotionTracking device for Automotive not-safety 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 4096-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  $\pm 250$  dps,  $\pm 500$  dps,  $\pm 1000$  dps and  $\pm 2000$  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 I<sup>2</sup>C 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

IAM-20680HP addresses a wide range of Automotive applications, including but not limited to:

- 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  $\pm 250$ dps,  $\pm 500$ dps,  $\pm 1000$ dps,  $\pm 2000$ dps and integrated 16-bit ADCs.
- Digital-output X-, Y-, and Z-axis accelerometer with a programmable full-scale range of  $\pm 2g$ ,  $\pm 4g$ ,  $\pm 8g$ ,  $\pm 16g$  and integrated 16-bit ADCs
- User-programmable digital filters for gyroscope, accelerometer, and temperature sensor
- Embedded Self-test
- Wake-on-motion interrupt for low power operation of applications processor
- 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 in production

## TYPICAL OPERATING CIRCUIT

