

# 105°C can't touch this performance

## Robust IMU for versatile use – BMI330

Reliable in heat, efficient in power – the ultimate IMU. This sensing solution combines a high-precision accelerometer with a self-calibrating gyroscope, making it ideal for navigation, robotics, and industrial or agricultural applications. It operates in temperatures up to 105°C while offering low power consumption and configurable power modes for continuous use.



### Target applications



Navigation systems



Robotics



Industrial & agriculture



Navigation

### Benefits



#### Outstanding robustness

Extended temperature range up to 105°C ensures reliable operation even in demanding environments.



#### Easy implementation

Integrated feature set enables easy implementation across various applications.

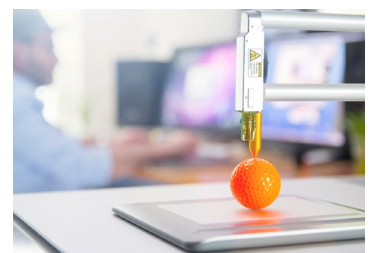


#### Seamless upgrades

Pin-to-pin compatibility with existing devices allows seamless upgrades without redesign efforts.



Motion detection



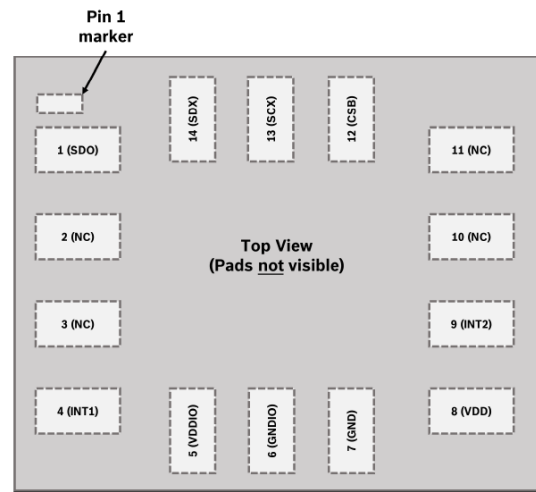
Tilt detection

# Technical features

## BMI330 technical data

Package dimensions (typ.)	2.5 x 3.0 x 0.83 mm <sup>3</sup>
Digital resolution	Accelerometer (A): 16-bit Gyroscope (G): 16-bit
Measurement ranges	A: $\pm 2$ , $\pm 4$ , $\pm 8$ , $\pm 16$ g G: $\pm 125^\circ/\text{s}$ , $\pm 250^\circ/\text{s}$ , $\pm 500^\circ/\text{s}$ , $\pm 1000^\circ/\text{s}$ , $\pm 2000^\circ/\text{s}$
Output data rates (selectable)	12.5 Hz ... 6.4 kHz
Offset soldered, over life	(A): $\pm 50$ mg (G): $\pm 1$ $^\circ/\text{s}$
TCO	(A): $\pm 0.3$ mg/K (G): $\pm 0.01$ $^\circ/\text{s/K}$ (-10°C to +85°C) $\pm 0.02$ $^\circ/\text{s/K}$ (-40°C to <-10°C and from >85°C to 105°C)
Sensitivity Error	(A): 0.5% (G): 0.7% (with CRT)
Noise density (typ.)	(A): 180 $\mu\text{g}/\sqrt{\text{Hz}}$ (G): 0.007 $^\circ/\text{s}/\sqrt{\text{Hz}}$
Current consumption (high performance mode, A+G)	790 $\mu\text{A}$
Current consumption (low power mode, A+G)	390 $\mu\text{A}$
Current consumption (suspend mode, A+G)	15 $\mu\text{A}$
Interface	I <sup>2</sup> C, I <sup>2</sup> C and SPI 2 Interrupt Pins (I <sup>2</sup> C, I <sup>2</sup> C) 1 Interrupt Pin (3-wire SPI)
Power modes	High perf. mode, normal mode, low power mode (LPM), suspend mode
FIFO	2 KB on-chip FIFO data buffer
Temperature range	-40 ... +105 °C
Supply voltage	1.71 ... 3.63 V (VDD) 1.08 ... 3.63 V (VDDIO)
Interrupts	motion detection step detector plug 'n' play step counter orientation and flat detection single/double/triple tap detection generic interrupts

## Pin configuration



Pin-out top view

Pin	Name	Description
1	SDO	Serial data output in SPI 4W I2C address in I2C mode
2	NC	Do not connect
3	NC	Do not connect
4	INT1	Interrupt pin 1
5	VDDIO	Digital I/O supply voltage
6	GNDIO	Ground for I/O
7	GND	Ground for digital & analog
8	VDD	Power supply analog & digital
9	INT2	Interrupt pin 2
10	NC	Do not connect
11	NC	Do not connect
12	CSB	Chip select for SPI mode
13	SCx	SCK for SPI serial clock SCL for I2C/I3C serial clock
14	SDx	SDA serial data I/O in I2C/I3C SDI serial data input in SPI 4W SDA serial data I/O in SPI 3W



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