

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.

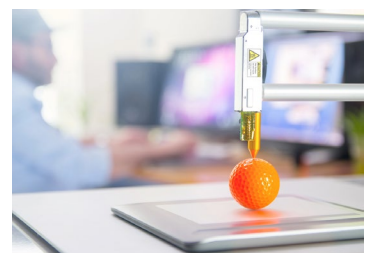


Seamless upgrades

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



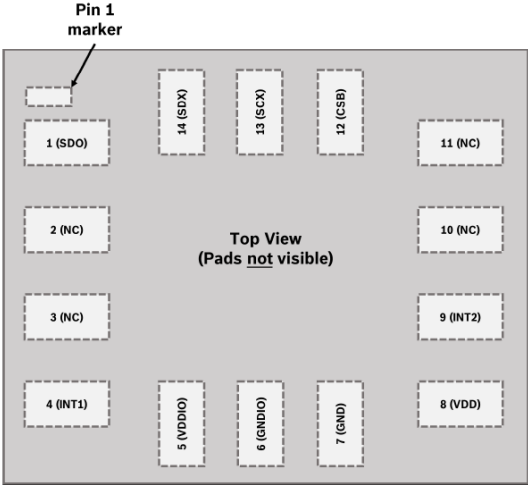
Motion detection



Tilt detection

Technical features

BMI330 technical data	
Package dimensions (typ.)	2.5 x 3.0 x 0.83 mm ³
Digital resolution	Accelerometer (A): 16-bit Gyroscope (G): 16-bit
Measurement ranges	A: ±2, ±4, ±8, ±16 g G: ±125°/s, ±250°/s, ±500°/s, ±1000°/s, ±2000°/s
Output data rates (selectable)	12.5 Hz ... 6.4 kHz
Offset soldered, over life	(A): ± 50 mg (G): ± 1 °/s
TCO	(A): ± 0.3 mg/K (G): ± 0.01 °/s/K (-10°C to +85°C) ± 0.02 °/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 µg/√Hz (G): 0.007 °/s/√Hz
Current consumption (high performance mode, A+G)	790 µA
Current consumption (low power mode, A+G)	390 µA
Current consumption (suspend mode, A+G)	15 µA
Interface	I ² C, I ² C and SPI 2 Interrupt Pins (I ² C, I ² 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 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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