The gesture guide

Ultra precision for wearables & hearables – BMI570

The BMI570 delivers precise, reliable motion tracking with ultra-low noise and exceptional vibration robustness, capturing every subtle change in orientation or position.

With twice the full-scale range (FSR) of the previous generation, it handles daily gestures as well as the most dynamic sports movements with ease and fully saturation-less, even in the upper measurement range. Designed for wearables and hearables, it enables accurate activity tracking, intelligent context recognition, and precise head orientation for immersive spatial audio experiences.

Target applications

Wearables

Hearables

Benefits

Enhanced user experience

Advanced wearable/hearable optimized features like gesture recognition, in-ear step counting and triple tap. Precise activity tracking, wrist-wear wake-up or low-power data-fusion for 3D audio.

Track sports with precision, without saturation

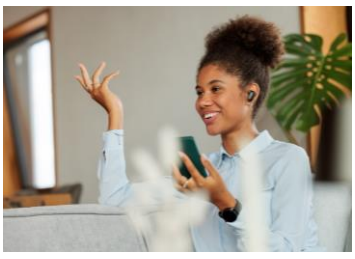
2x higher full-scale range (±4k dps & ±32 g)
compared to previous generation.

Reliable data acquisition

Exceptional vibration robustness (from 0 to 40 kHz up to MHz range) and stability against thermo-mechanical stress ensures precise data acquisition even in high-impact, noisy or vibrating environments.

Activity tracking

Context recognition



Head orientation & spatial audio

Doc.-Number: BST-BMI570-FL000-00

Technical features

BMI570 technical data (preliminary, typical values)

Package dimensions	2.5 x 3.0 x 0.75 mm³ LGA
Digital resolution	Accelerometer (A): 16 & 24-bit Gyroscope (G): 16 & 24-bit
Measurement ranges	(A): ±2, ±4, ±8, ±16, ±32 g (G): ±125, ±250, ±500, ±1000, ±2000, ±4000 °/s
Output data rates (selectable)	(A): 1.56 Hz ... 6.4 kHz (G): 12.5 Hz ... 12.8 kHz
Offset (soldered on PCB)	(A): ± 10 mg (G): ± 0.5 °/s
Offset drift vs. temperature (TCO)	(A): ± 0.07 mg/K (G): ± 0.003 °/s/K
Sensitivity error (soldered on PCB)	(A): 0.1% (G): 0.3%
Noise density (typ.)	(A): < 50 µg/√Hz (≤8g) < 60 µg/√Hz (16g) (G): < 0.003 °/s /√Hz
Current consumption (A+G combo @ max. ODR)	650 µA for typ. operation
Current consumption (A+G combo @ 100 Hz ODR)	250 µA for low-power operation
Current consumption (A+G combo @ suspend mode)	3 µA for suspend operation
Interface	primary MIPI I³C®, I²C, SPI 2 Interrupt Pins (I²C, I³C) 1 Interrupt Pin (3-wire SPI) secondary AUX I²C controller
Power modes	High performance-, normal-, several low power-, standby- and suspend mode
FIFO	8 KB on-chip FIFO data buffer
Temperature range	-40 ... +85 °C
Supply voltage	VDD range 1.71 ... 3.6 V VDDIO range 1.08 ... 3.6 V

Integrated interrupt engine and legacy features

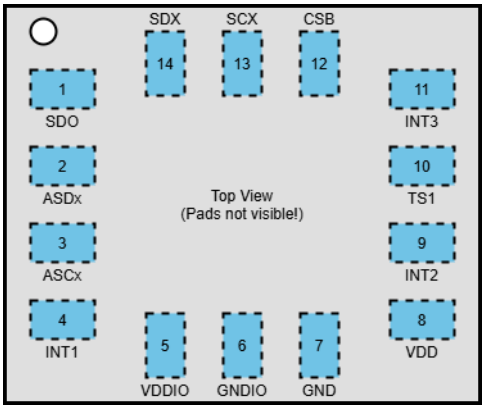
Configurable Generic Interrupts, e.g. for Any/No-Motion, Low-g/High-g, Significant-Motion, Wearable- or Hearable optimized Step Detection and In-Ear Step Counter, Tap, Double-Tap, Triple-Tap Detection, Tilt Detection, Orientation Detection, Gesture and Context Recognition: Wrist-Wear Wake-Up, in-Vehicle, Biking, Running, Walking, Still

Scan me for more product details!

Integrated edge-AI-classification engine and special features

On-demand Re-Trim, ongoing Compensation, Axis Remapping, Time-Sync, multiple programmable AI Classification Engines incl. Gyro Support, Activity Recognition and Classification for Wearables or Hearables, Finite State Machine e.g. for Auto Operation Mode Change, Low Power 6DoF Data Fusion e.g. for Head Tracking or Spatial Audio, Voice Activity Detection, Data Injection to verify AI Models and Algorithms, supports AI frameworks like TensorFlow, Scikit-learn, PyTorch

Pin configuration (P2P compatible to predecessors and industry standard)



Pin	Name	Description
1	SDO	I2C address in I2C mode Serial data output in SPI 4W
2	ASDx	Auxiliary
3	ASCx	Auxiliary
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	TS1	Time Sync / Time Stamp Input
11	INT3	INT3
12	CSB	Chip select for SPI mode
13	SCx	SCL for I2C/I3C serial clock SCK for SPI serial clock
14	SDx	SDA serial data I/O in I2C/I3C SDI serial data input in SPI 4W SDIO serial data I/O in SPI 3W

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