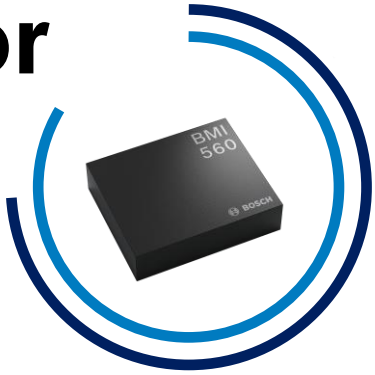
Invented for life

The immersive innovator



Ultra precision for XR headsets and advanced OIS – BMI560

The BMI560 redefines motion sensing with ultra-low noise and unmatched precision, capturing even the slightest changes in orientation. It enables seamless sensor fusion, minimal motion-to-photon latency and frame prediction through precise time synchronization, enhancing immersive AR/VR experiences.

Real-time responsiveness delivers immediate data for XR headsets and glasses. Due to its robustness against thermo-mechanical stress effects, it is an ideal solution for high demanding and leading-edge mobile applications. Key use cases include immersive XR vision, motion cues, intuitive 3D gesture control, and ultra-stable imaging in action cams and flagship smartphones.

Target applications

XR headsets and glasses

Flagship Smartphones

Action cams

AR/VR/MR vision

3D interaction / gesture control

High-end OIS/EIS

Benefits

Capture every nuance of motion

The new benchmark for low drifts and low noise: below 50 µg/√Hz and below 3 mdps/√Hz. Precisely tracks the most delicate changes in orientation or position.

Synchronized reality

Precise time sync (ca. 0.6 µs time increment with 1 ns resolution) ensures seamless sensor data fusion, minimal motion-to-photon latency and frame prediction for cutting-edge XR vision systems.

Immediate data for responsive systems

Minimal latency (below 0.5 ms) for real-time tracking and ultra-fast, motion-based reactions for high-quality image stabilisation in flagship smartphones and action cams.

Doc.-Number: BST-BMI560-FL000-00

Technical features

BMI560 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 secondary OIS MIPI I³C®, I²C, SPI
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

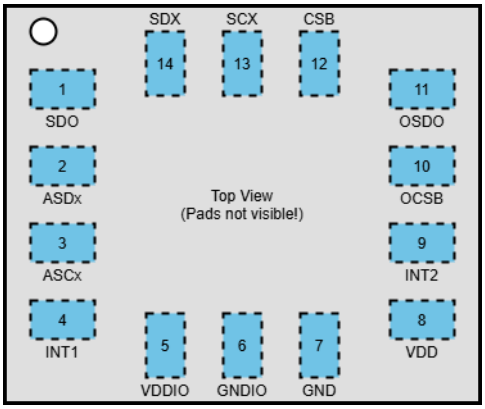
Configurable Generic Interrupts, e.g. for Any/No-Motion, Low-g/High-g, Flat/Upside/Down, Significant-Motion Detection, Step Detection and plug'n'play Step Counter, Tap, Double-Tap and Triple-Tap Detection, Tilt Detection and Orientation Detection e.g. for Portrait/Landscape

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 XR-Headsets, Smart-Phones or Action-Cams, Finite State Machine e.g. for Auto Operation Mode Change, Low Power and Noise optimized 6DoF Data Fusion e.g. for high-precision Game Rotation Vector, 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 or OIS Serial Data I/O
3	ASCx	Auxiliary or OIS Serial Clock
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	OCSB	OIS Chip Select
11	OSDO	OIS Serial Data Out or 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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