

# KMX61G Mag-Accel Combo

Industry's First Micro-Amp Magnetic Gyro



## FEATURES

- 6-axis mag-accel with emulated gyro output
- Small footprint (3x3x0.9mm)
- Magnetometer auto-calibration and magnetic interference rejection algorithms
- Embedded temperature sensor
- User-configurable motion wake-up and back-to-sleep functions
- Programmable interrupt engine
- 512-byte FIFO buffer with watermarking capability

## APPLICATIONS

- User Interface
- Power Management
- Active/Inactive Monitoring
- Device Orientation
- Inclination and Tilt Sensing
- Gesture Recognition
- Activity Monitoring

## FOR

- Smartphones and Mobile Devices
- Laptops
- Gaming and Virtual Reality
- Health and Fitness

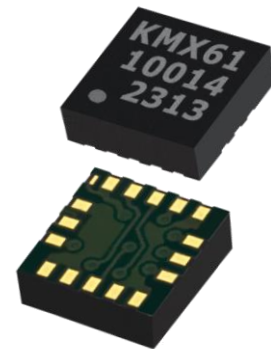
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## PRODUCT OVERVIEW

The KMX61G is a high-performance, low-power, accelerometer-magnetometer device enhanced with integrated sensor fusion software and auto-calibration algorithms to deliver the industry's first highly accurate gyro emulation.

Optimized for mobile applications, the KMX61G requires only 450µA of power – significantly less than any consumer gyro available today.

The KMX61G also offers a wide range of embedded functionality, including user-configurable motion wake-up and back-to-sleep functions, a programmable interrupt engine, and accelerometer self-test function.



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The performance parameters below are programmed and tested at 2.5 volts and T = 25°C. The device can accept supply voltages from 1.8V to 3.6V.

PERFORMANCE SPECIFICATIONS			
PARAMETERS	UNITS	KMX61G	CONDITION
<b>ACCELEROMETER SPECIFICATIONS</b>			
Range	g	±2.0, ±4.0, ±8.0	User-selectable full-scale output range
Sensitivity	counts/g	1024, 512, 256 typical	12-bit
0g Offset vs. Temp	mg/°C	0.25	-40°C to +85°C
Sensitivity vs. Temp	%/°C	0.03	-40°C to +85°C
Mechanical Resonance <sup>1</sup>	Hz	3500 (xy) 1800 (z) typical	-3dB
Non-Linearity	% of FS	1.0 typical	% of full scale output
Cross-axis Sensitivity	%	2.0 typical	
<b>MAGNETOMETER SPECIFICATIONS</b>			
Total Measurable Range	± μT	1200	
Zero Tesla Offset	Counts	0	
Magnetic Sensitivity	± μT/count	0.146	
<b>ELECTRICAL SPECIFICATIONS</b>			
Power Supply	V <sub>DD</sub>	1.8-3.3V	
Current Consumption	μA	450 typical	Operating (mag + accel)
		350 typical	Magnetometer only
		130 typical	Accelerometer only
		1 typical	Standby
I <sup>2</sup> C Communication Rate <sup>2,3</sup>	MHz	3.4 max	
<b>ENVIRONMENTAL SPECIFICATIONS</b>			
PARAMETERS	UNITS	KMX61G	CONDITION
Operating Temperature	°C	-40 to 85	Powered
Storage Temperature	°C	-55 to 150	Un-powered
Mechanical Shock	g	5,000, 0.5 ms 10,000, 0.2 ms	Powered or un-powered, halversine
ESD	V	2,000	Human body model

## NOTES

<sup>1</sup> Resonance as defined by the dampened mechanical sensor.

<sup>2</sup> Assuming max bus capacitance load of 20pF.

<sup>3</sup> The I2C bus supports Standard-Mode, Fast-Mode and High-Speed Mode.