

# KXCJ9 Accelerometer

3x3x0.9mm Low-Power Accelerometer



## FEATURES

- Small Package - 3x3x0.9mm LGA
- User-selectable g Range and Output Data Rate
- 8-bit, 12-bit, and 14-bit Resolution
- Low Power Consumption
- Internal Voltage Regulator
- User-configurable Wake-up Function
- Digital I<sup>2</sup>C
- Lead-free Solderability
- Excellent Temperature Performance
- High Shock Survivability
- Factory Programmable Offset and Sensitivity
- Self-test Function

## APPLICATIONS

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

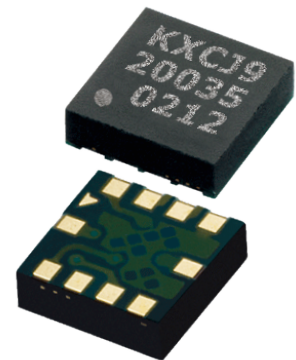
## FOR

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

## PRODUCT OVERVIEW

The KXCJ9 is a high-performance, ultra-low-power, tri-axis accelerometer designed for mobile applications. It offers our best power performance along with an embedded wake-up feature, Fast-mode I<sup>2</sup>C and up to 14-bit resolution. The KXCJ9 is delivered in a 3 x 3 x 0.9 mm, 10-pin, LGA package with an operating temperature range of -40°C to +85°C.

The KXCJ9 sensor offers improved shock, reflow, and temperature performance, and the ASIC has internal voltage regulators that allow operation from 1.8 V to 3.6 V within the specified product performance. Pin compatible with KXTI9 and KXTF9.



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The performance parameters below are programmed and tested at 2.6 volts and T = 25°C. The device can accept supply voltages from 1.8V to 3.6V. Due to internal voltage regulators, there should be minimal change with supply voltage variations.

PERFORMANCE SPECIFICATIONS			
PARAMETERS	UNITS	KXCJ9-1008	CONDITION
Range	g	±2.0, ±4.0, ±8.0	User-selectable full-scale output range
Sensitivity <sup>1</sup>	counts/g	64, 32, 16	8-bit
		1024, 512, 256	12-bit
		1024 typical	14-bit <sup>2</sup>
0g Offset vs. Temp	mg/°C	0.2	-40°C to +85°C
Sensitivity vs. Temp	%/°C	±0.01 (xy) ±0.03 (z) typical	-40°C to +85°C
Mechanical Resonance <sup>3</sup>	Hz	3500 (xy) 1800 (z) typical	-3dB
Output Data Rate (ODR) <sup>4</sup>	Hz	0.781 min; 50 typical; 1600 max	
Bandwidth (-3dB) <sup>5</sup>	Hz	800	RES = 0
		ODR/2	RES = 1
Non-Linearity	% of FS	1.0 typical	% of full scale output
Cross-axis Sensitivity	%	2.0 typical	
I <sup>2</sup> C Communication Rate	MHz	3.4 max	
Power Supply	V	2.6 typical	1.8V – 3.6V
Current Consumption <sup>6</sup>	µA	135 typical	High resolution (RES = 1)
		10 typical	Low resolution (RES = 0)
		2 typical	Standby
ENVIRONMENTAL SPECIFICATIONS			
PARAMETERS	UNITS	KXCJ9-1008	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> Resolution and acceleration ranges are user selectable via I2C.

<sup>2</sup> 14-bit Resolution is only available for registers 0x06h – 0x0Bh in the 8g Full Power mode.

<sup>3</sup> Resonance as defined by the dampened mechanical sensor.

<sup>4</sup> User selectable through I2C.

<sup>5</sup> User selectable; dependent on ODR and RES.

<sup>6</sup> Current varies with Output Data Rate (ODR).