KXTJ9 Accelerometer

3x3x0.9mm Low-Power Accelerometer

FEATURES

- Ultra-small Package - 3x3x0.9mm LGA
- User-selectable g-range
- User-selectable Output Data Rate
- Digital I²C
- 8-bit or 12-bit Resolution
- Low Power Consumption
- Internal Voltage Regulator
- Lead-free Solderability
- Excellent Temperature Performance
- High Shock Survivability
- Factory Programmable Offset and Sensitivity
- Self-test Function

APPLICATIONS

- User Interface
- Active/Inactive Monitoring
- Device Orientation
- Pedometer/Activity Monitoring

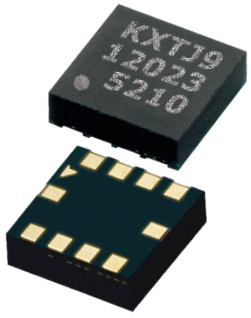
FOR

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

PRODUCT OVERVIEW

Designed for mobile applications, the KXTJ9 tri-axis accelerometer is an entry-level device that offers high-performance and low-power. It offers an internal voltage regulator, I²C digital communication, and up to 14-bit resolution.

The KXTJ9 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. This part is pin compatible with the 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**	**KXTJ9-1007**	**CONDITION**
Range	g	±2.0, ±4.0, ±8.0	User-selectable full-scale output range
Sensitivity[1]	counts/g	64, 32, 16	8-bit
		1024, 512, 256	12-bit
		1024 typical	14-bit[2]
0g Offset vs. Temp	mg/°C	±0.7 (xy) ±0.4 (z) typical	-40°C to +85°C
Sensitivity vs. Temp	%/°C	±0.01 (xy) ±0.03 (z) typical	-40°C to +85°C
Mechanical Resonance[3]	Hz	3500 (xy) 1800 (z) typical	-3dB
Output Data Rate (ODR)[4]	Hz	0.781 min; 50 typical; 1600 max	
Bandwidth (-3dB)[5]	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^2C Communication Rate	MHz	3.4 max	
Power Supply	V	2.6 typical	1.8V – 3.6V
Current Consumption[6]	µA	135 typical	High resolution (RES = 1)
		10 typical	Low resolution (RES = 0)
		2 typical	Standby
ENVIRONMENTAL SPECIFICATIONS			
PARAMETERS	**UNITS**	**KXTJ9-1007**	**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

[1] Resolution and acceleration ranges are user selectable via I2C.
[2] 14-bit Resolution is only available for registers 0x06h – 0x0Bh in the 8g Full Power mode.
[3] Resonance as defined by the dampened mechanical sensor.
[4] User selectable through I2C.
[5] User selectable; dependent on ODR and RES.
[6] Current varies with Output Data Rate (ODR).

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