

KX023 Accelerometer

3x3x0.9mm Accelerometer with FIFO/FILO Buffer



FEATURES

- 3x3x0.9mm LGA package
- Full-featured algorithm engine including:
 - Tap detection, orientation detection, activity monitoring, and embedded motion wake-up algorithms
- Low current consumption in all modes:
 - 0.9 μ A in standby,
 - 10 μ A at normal resolution, and
 - 145 μ A at high resolution
- Two interrupt registers
- User-configurable, embedded wake-up function to conserve battery power
- Internal voltage regulator to maintain constant internal operating voltages throughout the 1.8 - 3.6V input supply range

APPLICATIONS

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

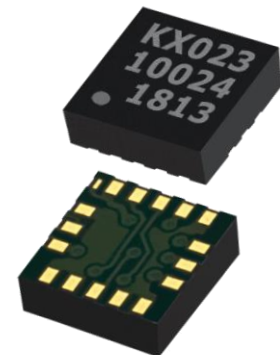
FOR

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

PRODUCT OVERVIEW

The KX023 accelerometer delivers unparalleled flexibility, enabling you to optimize power and noise performance to meet your product design needs. By simply selecting the output data rate (ODR) and amount of oversampling for data averaging you can tune power and noise performance to meet the needs of your specific application.

In addition, the 3-axis KX023 offers I2C/SPI output and an integrated FIFO/FILO buffer that features a wide range of embedded functionality, including tap detection, orientation, activity, and wake-up algorithms. Kionix's XAC sensor provides outstanding stability with a market-leading combination of improved shock, reflow, and thermal performance.



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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 | KX023-1025 | CONDITION |
|-------------------------------------|----------|---------------------------------|---|
| Range | g | ±2.0, ±4.0, ±8.0 | User-selectable full-scale output range |
| Sensitivity ¹ | counts/g | 16384, 8192, 4096 | 16-bit |
| | | 64, 32, 16 | 8-bit |
| 0g Offset vs. Temp | mg/°C | 0.2 | -40°C to +85°C |
| Sensitivity vs. Temp | %/°C | 0.01 | -40°C to +85°C |
| Mechanical Resonance ² | Hz | 3500 (xy) 1800 (z) typical | -3dB |
| Output Data Rate (ODR) ³ | Hz | 0.781 min; 50 typical; 1600 max | |
| Non-Linearity | % of FS | 0.6 typical | % of full scale output |
| Cross-axis Sensitivity | % | 2.0 typical | |
| Noise ⁴ | mg | 0.75 typical | |
| I ² C Communication Rate | MHz | 3.4 max | |
| SPI Communication Rate | MHz | 10 max | |
| Power Supply | V | 1.8V – 3.6V typical | |
| Current Consumption ⁵ | µA | 145 typical | High resolution (RES = 1) |
| | | 10 typical | Low resolution (RES = 0) |
| | | 0.9 typical | Standby |

ENVIRONMENTAL SPECIFICATIONS

| PARAMETERS | UNITS | KX023-1025 | 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 or SPI.
- ² Resonance as defined by the dampened mechanical sensor.
- ³ User selectable through I²C or SPI.
- ⁴ RMS at 50Hz with low-pass filter = ODR/9
- ⁵ Current varies with Output Data Rate (ODR).

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

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 [Kionix Inc. Information](#)

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