Xtrinsic Accelerometers

# FXLS8471Q Xtrinsic SPI Accelerometer

## Low-power, low-noise, pin-compatible SPI Accelerometer

### Target Applications

- Alarm systems
- Asset tracking
- Digital still cameras
- Game controllers
- Gaming
- Home medical
- Hospital equipment
- Inclinometers
- Instrumentation
- Laptops
- Medical
- Remote control cars/helicopters
- Remote controls
- Shipment tracking
- Smartphones
- Sports gear
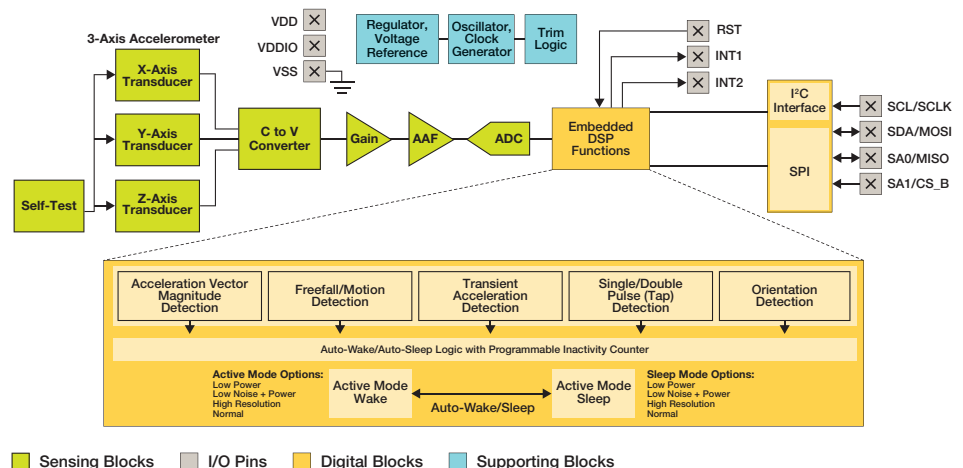- Surveying equipment
- Tablets
- Toys

### Overview

The Xtrinsic FXLS8471Q low-power, low-noise accelerometer has unique performance and compatibility for laptops, game controllers, white goods and mass market applications. This new FXLS8471Q accelerometer has a SPI interface that is pin compatible with Freescale's industry-leading I²C accelerometer portfolio.
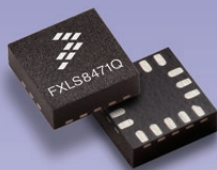
The FXLS8471Q accelerometer is highly versatile for industrial and consumer high-performance low-g applications that offer noise density, board mount offset, temperature performance and sensitivity. Integrated motion detection features include tilt, shake and tap detection with a new vector magnitude output that simplifies implementation and reduces power consumption.

To operate with extremely low power, the FXLS8471Q accelerometer has six user-configurable sample rates that can be set over a wide range from 1.5 to 800 samples per second. The operating current is proportional to the sample rate. The power scheme contains normal mode and low-power operational modes, offering best-in-class savings in supply current and extremely high resolution for very small motion detection. See the Xtrinsic accelerometer family comparison table for more details.

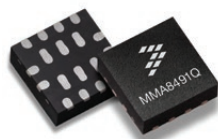### FXLS8471Q Xtrinsic 14-bit Accelerometer Block Diagram



freescale™
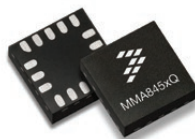Xtrinsic

## FXLS8471Q
### Accelerometer

- Extreme performance
  - .25 mg/count sensitivity
- Extended features
  - FIFO
  - Configurable P/L trip angles
  - High pass filter
  - Transient detect
- SPI output
- Drivers available

## MMA8491Q
### Accelerometer

- Extreme low power
  - 0.35 uA/Hz
- Cost efficient
- 1 mg/count sensitivity
- Industrial package
- Drivers available

## MMA845xQ
### Accelerometers

- Extreme performance
  - .25 mg/count sensitivity
- Extended features
  - FIFO
  - Configurable P/L trip angles
  - High pass filter
  - Transient detect
- I²C output
- Drivers available

## MMA865xFC
### Accelerometers

- High performance
- Well rounded
- Cost competitive
- Low power consumption
- Low-voltage compatibility
- Rich features
  - P/L detection
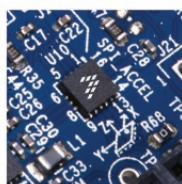  - High pass filter
  - Transient detect
- Drivers available

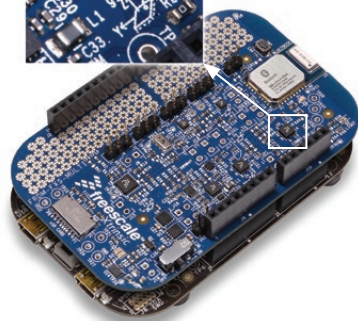## FXOS8700CQ
### 6-Axis Sensor

- Highly integrated
- High performance
- Low power consumption
- Wide dynamic range
- Embedded autonomous hard iron calibration
- Drivers available

## Accelerometer Implementations

- Free fall
- Motion control
- Portrait/landscape
- Shock
- Tilt
- User interface
- Warranty reporting



Freescale Freedom Development Platform featuring the SPI Accelerometer

## Development Tools and Software

| Kit Number | Description |
| --- | --- |
| FRDM-FXS-MULTI | Freescale Freedom Development Platform for Xtrinsic Sensors, including software |
| FRDM-FXS-MULTI-B | Freescale Freedom Development Platform for Xtrinsic Sensors with Bluetooth, including software |
| BRKOUT-FXLS8471Q | Breakout board for evaluating the FXLS8471Q Xtrinsic accelerometer |
| Component for Processor Expert | Supports Kinetis MCUs |

## Documentation

| Document Number | Description |
| --- | --- |
| FXLS8471Q | Product specification data sheet. |
| AN4692 | Using the Xtrinsic FXLS8471Q Accelerometer Vector Magnitude Function Application Note |
| AN4693 | Using the Xtrinsic FXLS8471Q Transient-Acceleration Function Application Note |
| AN4694 | Using the Xtrinsic FXLS8471Q Command Line Interface Software Application Note |
| FXLS8471UG | Freescale Xtrinsic FXLS8471Q Demonstration Software User Guide |

## Freescale: A Leader in Sensing Solutions

Expanding on more than 30 years of sensor innovation, Freescale Xtrinsic sensing solutions are designed with the right combination of high-performance sensing capability, processing capacity and customizable software to help deliver smart, differentiated sensing applications. With Xtrinsic sensing solutions, our vision is to offer a diverse and differentiated product portfolio to meet the expanding needs of the automotive, consumer and industrial segments. Xtrinsic solutions offer ideal blends of functionality and intelligence designed to help our customers differentiate and win in highly competitive markets.

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