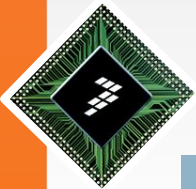




# MMA8450 Overview

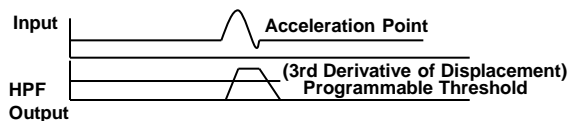




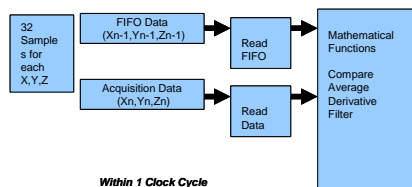
# MMA8450 Overview



## High Pass Filter enables Rapid Gesture Detection and Enhanced Tap Detection



## Embedded 32 data point FIFO reduces processor cycles, reduces system power, and reduces I2C bus contention.



## Features

- 1.71V to 1.89V supply voltage
- $\pm 2g/\pm 4g/\pm 8g$  dynamically selectable full-scale
- Output data rate (ODR) from 400Hz to 1.563Hz
- $400\mu g/\sqrt{\text{Hz}}$  noise at normal mode ODR=400Hz
- 12 bit digital output
- I<sup>2</sup>C digital output interface (operates up to 400KHz Fast Mode)
- Programmable 2 interrupt pins for 8 interrupt sources
- Embedded 4 channels of motion detection
  - Free fall or motion detection: 2 channels
  - Pulse detection: 1 channel
  - Transient detection : 1 channel
- Embedded orientation (Portrait/Landscape) detection with hysteresis
- Embedded automatic ODR change for auto-wake-up and return-to-sleep
- Embedded 32 sample FIFO simplifies position tracking analysis
- Embedded self test
- 10000g high shock survivability



## Package

- 3mm x 3mm DFN, 1.00mm max height
- -40° C to +85° C Operating Temp
- RoHS compliant

# MMA8450 Target Markets and Applications



Phones



Controllers

- Orientation detection,
- Tilt to Control,
- Tap to Select/Button replacement,

- Ge

- Pe

SF



- Tap to Control
- Pedometer/ Position Detection



Medical

- Orientation detection,
- Tilt to Control,
- Tap to Select/Button replacement,
- Gesture Detection

Pointing devices



- Tilt to Control,
- Tap to Select/Button replacement,
- Gesture De

Industrial



1

- Tilt to Control,
- Tap to Select/Button replacement,

Personal

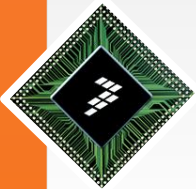


IDs)

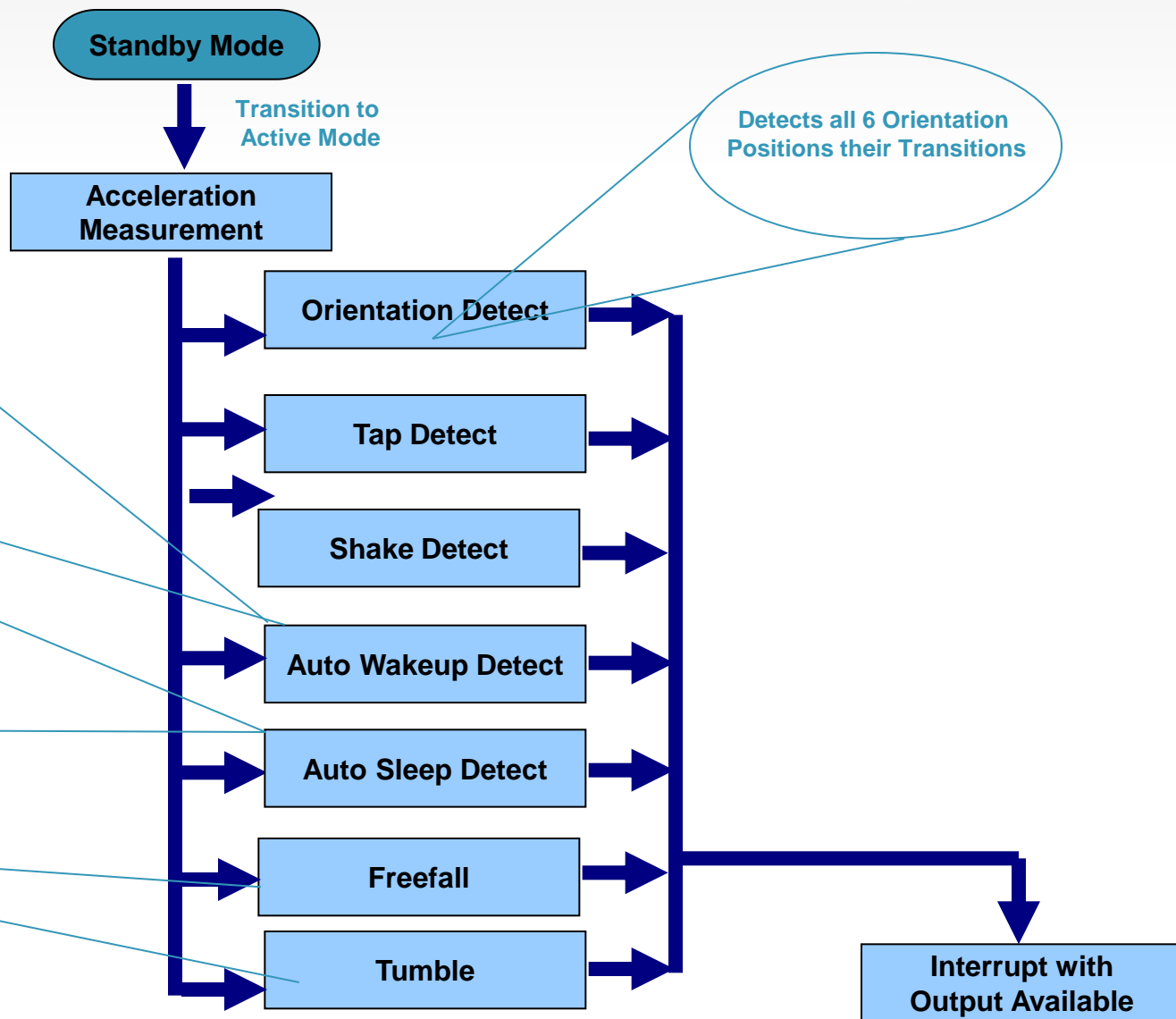
- Tilt to Control,
- Tap to Select/Button replacement,
- Gesture Detection
- Pedometer/ Position Detection



- Tilt to Control,
- Tap to Select/Button
- Gesture Detection



# Multiple Detection Algorithms

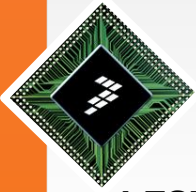


Sends interrupt to main processor to Wakeup on predetermined motion detection

Interrupts main processor to go into Sleep Mode when no motion detected for predetermined time period.

Interrupts during 0g detection And interrupts during a tumbling event

Detects all 6 Orientation Positions their Transitions

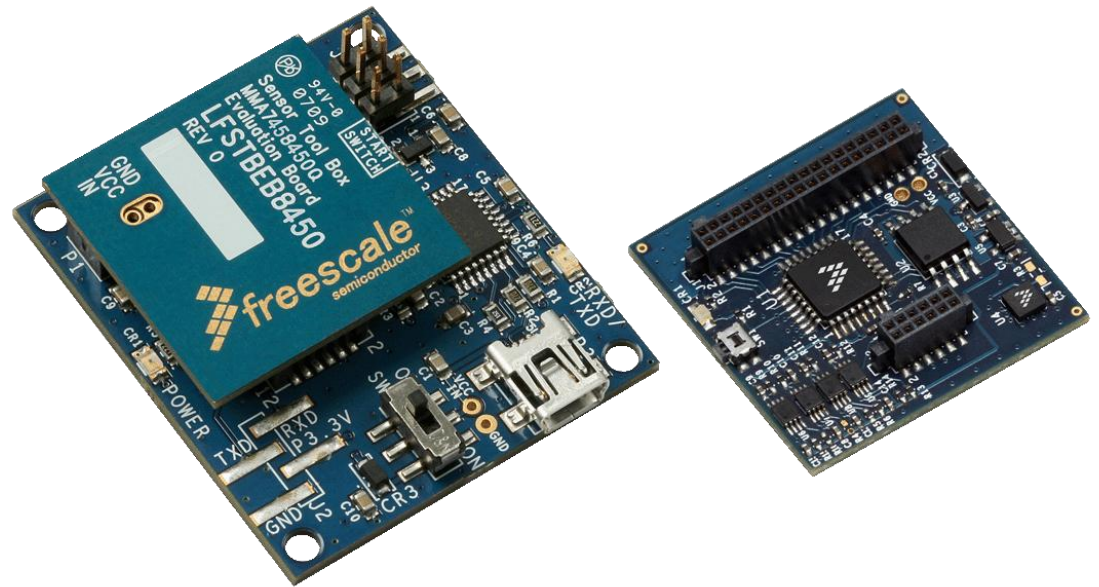


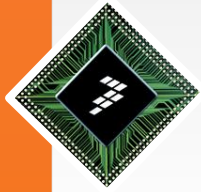
## LFSTBEB8450 Kit Contents:

- MMA8450 Development Board
- USB Cable
- Quick Start Guide

## RD3924MMA8450Q Kit Contents:

- MMA8450 Development Board
- LFSTBUSB Communications Board
- USB Cable
- Quick Start Guide





## Application Notes

Orientation Detection using the MMA8450Q (AN3915)

Offset Calibration using the MMA8450Q (AN3916)

Motion and Freefall using the MMA8450Q (AN3917)

High Pass Filter and Transient Detection in the MMA8450Q (AN3918)

Tap Detection (Single, Double and Directional) in the MMA8450Q (AN3919)

Using the Embedded FIFO in the MMA8450Q (AN3920)

Low Power Modes using the MMA8450Q (AN3921)

Design Checklist and Board Mounting Guidelines for the MMA8450Q (AN3922)

Using the Sensor Toolbox for the MMA8450Q (AN3924)

Using the MMA845xQ Evaluation System (AN39xx)

Using the MMA845xQ Audit2 Sensor Toolbox

