Wireless sensing triple axis reference design (ZSTAR)

The ZSTAR demo board was designed to demonstrate Freescale's latest innovations in sensors, wireless connectivity and embedded flash microcontrollers.

This reference design will enable you to see how Freescale's accelerometers can add additional functionality to applications in various industries. The accelerometer measurements performed can be grouped into 6 sensing functions - Fall, Tilt, Motion, Positioning, Shock and Vibration - for multifunctional applications.

The RD3152MMA7260Q development tool offers robust wireless communication using the powerful, easy-to-use 2.4GHz frequency MC13191 transceiver. Minor changes can be made with pin to pin compatibility allowing implementation of the MC13192 and MC13193 for wireless applications.

The embedded flash microcontroller, the MC9S08QG8 offers a versatile combination of Freescale peripherals and the advanced features of the S08 core which includes extended battery life with a maximum performance to 1.8V. It is an excellent solution for power and size-sensitive applications, such as wireless communications and handheld devices, small appliances, Simple Media Access Controller (SMAC)-based applications and toys. USB 2.0 is implemented based on the MC68HC908JW32.
[1]

Features

Multi-axis sensing using an XYZ-axis low g acceleration sensor, MMA7260QT with selectable g-ranges of 1.5g/2g/4g/6g, is combined with the versatile MC9S08QG8 8-bit microcontroller.

2.4 GHz wireless communication is enabled by the latest RFCMOS technology. The MC13191 is a member of the pin-to-pin compatible series of Freescale's transceivers, including the MC13192 which supports the IEEE 802.15.4 protocol and the MC13193 which supports full ZigBee™ compliant applications.

The USB 2.0 with the 8-bit MC68HC908JW32 full speed chip offers plug and play benefits.

Demonstrates:

- Consumer and industrial wireless sensing applications
- Accelerometer: MMA7260QT

  (MMA7261QT/MMA6270QT/MMA6271QT/MMA6280QT/MMA6281QT)

- Package: Quad Flat No-Lead (QFN) 6 x 6 x 1.45 mm
- Low Voltage 2.2 V to 3.6 V
- Low power consumption: 500 µA (3 µA in standby mode)
- Selective g range:
  - 1.5g, 2g, 4g, 6g (MMA7260QT/MMA6270QT/MMA6280QT)
  - 2.5g, 3.3g, 6.7g, 10g (MMA7261QT/MMA6271QT/MMA6281QT)
- Response time: 1ms

- Microprocessor: MC9S08QG8
  - Versatile 8-bit microcontroller
- Wireless connectivity: ZigBee Transceivers (MC1319x)
- Microprocessor: MC68HC908JW32 (USB 2.0 Full Speed)

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Links:
[1] http://www.freescale.com/webapp/sps/site/prod_summary.jsp?code=RD3152MMA7260Q&fsrch=1&sr=1#