MC13191/92 Developer's Starter Kit

Overview

Freescale Semiconductor's MC13191/92 Developer's Starter Kit is a cost-effective, reusable development kit used to implement wireless network designs compatible with the IEEE® 802.15.4 standard. The kit contains all the hardware, software and documentation necessary to create proprietary and standards-based peer-to-peer and star networks.

The development kit contains two Sensor Application Reference Design (SARD) boards that utilize Freescale's MC13192 2.4 GHz transceiver, MC9S08GT60 microcontroller unit, MMA1260D 1.5g X-Y-axis and MMA6261Q 1.5g Z-axis accelerometers. The boards can either be powered by a nine-volt battery (included) or by an external power supply. Also included in the development kit are Freescale's IEEE 802.15.4 MAC and example Simple MAC (SMAC) software. The SMAC software, which is available as source code and can be targeted to any processor, allows for development of non-standards-based proprietary point-to-point and star networks. The IEEE 802.15.4 MAC software allows for standards-based peer-to-peer and star

network topologies. A preprogrammed wireless accelerometer demonstration based on the SMAC software runs on power-up for a complete "out-of-the-box" experience.

Freescale's ZigBee™ technology-ready family of 2.4 GHz transceivers offers development of cost-effective, low-power and low-data-rate RF connectivity solutions. The MC13191 allows for development of simple proprietary point-to-point and star networks. The MC13192 allows for development of standards-based IEEE 802.15.4 network topologies through sophisticated ZigBee mesh networks. The MC13191 and MC13192 transceivers offer affordable wireless connectivity for battery-powered monitor and control applications, such as home and industrial automation, industrial control and personal health care.
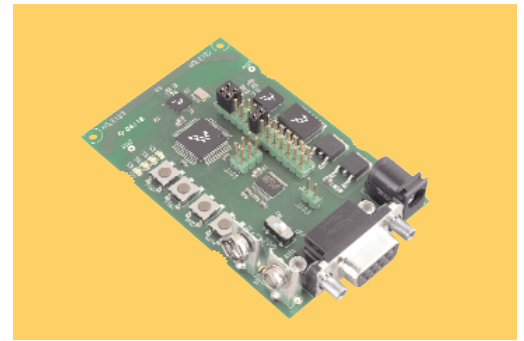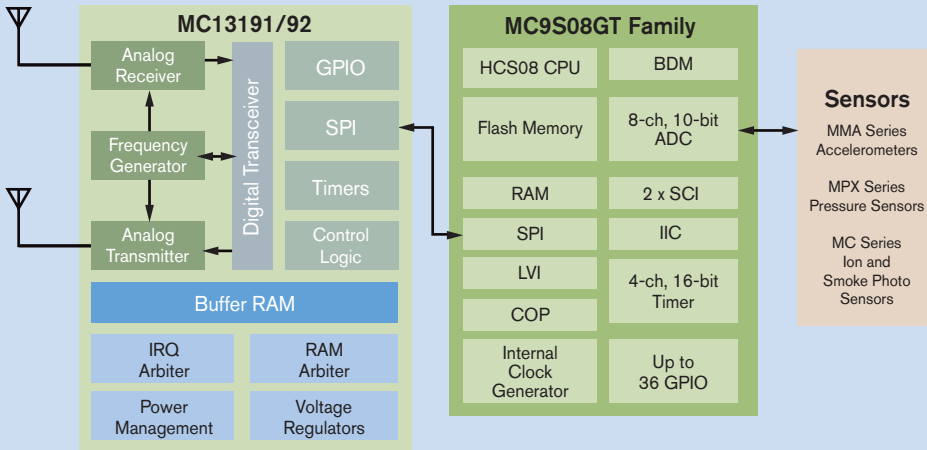
Freescale combines the development board, CodeWarrior™ Development Studio and preprogrammed sample applications to create a comprehensive, scalable solution for easy, fast and efficient wireless network development.

Developer's Starter Kit Features

> Two 2.4 GHz wireless nodes compatible with the IEEE 802.15.4 standard

- MC13192 2.4 GHz RF data modem

- MC9S08GT60 low-voltage, low-power 8-bit MCU for baseband operations

- Integrated MMA1260D 1.5g X-Y-axis and MMA6261Q 1.5g Z-axis accelerometers

- Printed transmit-and-receive antennae

- Onboard expansion capabilities for external application-specific development activities

- Onboard BDM port for MCU Flash reprogramming and in-circuit hardware debugging

- RS-232 port for monitoring and Flash programming

- LEDs and switches for demonstration, monitoring and control

- Connections for nine-volt battery or external power supply

> Hardware supports Freescale's IEEE 802.15.4 MAC and example SMAC software

> Preprogrammed accelerometer demonstration and additional downloadable sample applications

> Metrowerks' CodeWarrior Development Studio for HCS08 MCUs

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FREESCALE'S ZIGBEE™-READY PLATFORM SOLUTION

EXAMPLE BLOCK DIAGRAM FOR A SENSOR APPLICATION

MC13191/92

- Analog Receiver
- Frequency Generator
- Analog Transmitter
- Digital Transceiver
- GPIO
- SPI
- Timers
- Control Logic
- Buffer RAM
- IRQ Arbiter
- RAM Arbiter
- Power Management
- Voltage Regulators

MC9S08GT Family

HCS08 CPU	BDM
Flash Memory	8-ch, 10-bit ADC
RAM	2 x SCI
SPI	IIC
LVI	4-ch, 16-bit Timer
COP	
Internal Clock Generator	Up to 36 GPIO

Sensors

- MMA Series Accelerometers
- MPX Series Pressure Sensors
- MC Series Ion and Smoke Photo Sensors

PRODUCT DOCUMENTATION

MC13191/92 Reference Manuals	Detailed description for the MC13191 and MC13192 architecture and command interface Order Number: MC13191RM/D MC13192RM/D
MC13191/92 Data Sheets	Electrical and timing specifications, package and pin descriptions Order Number: MC13191/D MC13192/D
MC13191/92 Fact Sheets	Product overview Order Number: MC13191FS MC13192FS

ORDERING INFORMATION

MC13191/92 Developer's Starter Kit	13192DSK-A00

Learn More: For more information about Freescale products, please visit **www.motorola.com/ZigBee**.

Benefits

> Self-contained, cost-effective wireless development platform helps reduce prototyping costs

> The MC13191/92 2.4 GHz platform solution can be used worldwide, eliminating the need to redesign and certify a product for various markets or regions

> Reusable hardware—MCU can be reprogrammed and debugged for custom application development

> Header pins offer interface to easily connect application-specific hardware

> Scalable software support for easy development of customer-specific network topologies

> Fully integrated Freescale platform offers a one-stop shop for your silicon needs

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