Marvell 88MC200

SoC Solution for Home Automation and More

PRODUCT OVERVIEW

The Marvell® 88MC200 microcontroller is a highly integrated system-on-chip (SoC) and integral component of Marvell's Smart Energy Platform. It is designed to provide a highly cost-effective, flexible and easy-to-use hardware/software solution to enable smart connectivity for a variety of devices and appliances, ranging from refrigerators to thermostats. Using advanced 55-nanometer process technology and industry-leading integration, the Marvell 88MC200 has a CPU clock up to 200Mhz, 512KB memory and rich set of I/O interfaces to offer high performance, lower power consumption and significantly reduced total bill of materials for a host of smart devices.

The Marvell 88MC200 further enables innovative, energy-efficient applications, including mobile applications and Cloud-based services for the mass market. At a maximum MCU speed of 200 MHz, it offers the fastest MCU to date, based on a 32-bit ARM Cortex-M3 core. The SOC also has eight Megabits (Mb) of on-chip serial flash memory, 512KB SRAM, two second-order sigma-delta ADCs with up to 16 bits resolution and one 10 bit DAC with two channels. In addition, the Marvell 88MC200 provides an extensive set of peripheral interfaces, including up to 63 GPIOs, four UARTs, three I2Cs, two SSP/SPI/I2S and USB.

The Marvell 88MC200 integrates the following features:

- 32-bit ARM Cortex-M3 core
- 8 Mb serial flash memory
- 512KB SRAM with 192KB retentative SRAM
- 4KB retention SRAM in AON domain
- On-chip DC-DC Converter that directly take input range from 1.8 volt to 3.6 volt
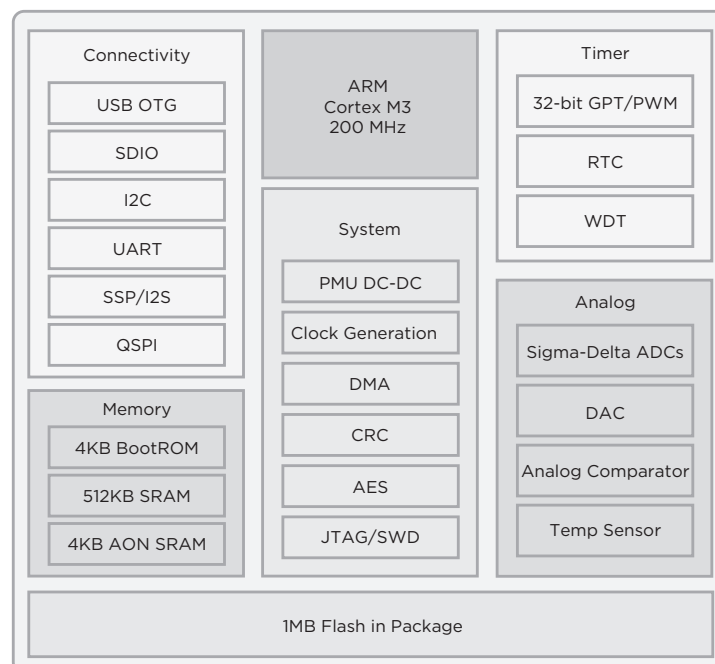- Four low-power modes

BLOCK DIAGRAM

Fig 1. Marvell 88MC200 Block Diagram

KEY FEATURES

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• 32-bit ARM Cortex-M3 core, running up to 200MHz	

• Memory
  – 8 Mbit serial flash memory
  - 4KB Boot ROM
	– 512 KB configurable code/data RAM, including 192KB retentative SRAM
	- 4KB retention SRAM in AON domain

• System peripherals
  – On-chip DC-DC converter supports 1.8~3.6 volt battery input, which can be up to 50 percent more energy efficient compared to LDO-based power supply solutions
  - Five power modes supported by intelligent power management to minimize standby power and wake up time
	– Flexible clock gating for all the peripheral modules
	- DMA engine with eight configurable channels
	- Hardware 16/32-bit CRC and 128/192/256-bit AES engine

• Serial peripherals
  – USB 2.0 full-speed device/host/OTG controller with on-chip PHY
  - SDIO Host Controller
  - 4x UARTs support IrDA function
	– 3x I2Cs
	- 3x SSPs support SPI and I2S function
	- QSPI interface

• Analog peripherals
  – 2x 16-bit sigma-delta ADCs with up to 250Ksps and conversion range up to 3.6V; up to 12 external single channels or 6 external differential channels
  - 10-bit, 500Ksps DAC with two single channels or one differential channel
	– 2x Analog Comparators with 8 programmable level and sleep mode support
	- On-chip temperature sensor

• Timers – Four general purpose 32-bit timers, each supporting 6 PWM channels	- RTC and WDT
• Supports 68/88-pin QFN package	
• Supports two temperature options: 0 - 85°C and -40 - 85°C	

THIRD-PARTY DEVELOPMENT TOOLS

• IDEs
  – IAR IAR Embedded Workbench for ARM (EWARM)
  – ARM Keil MDK

• JTAG debuggers
  – Debuggers supporting Cortex-M3 such as J-link, U-link2

TARGET APPLICATIONS

The Marvell 88MC200 features advanced flexibility for a multitude of applications:

• Smart Appliances
• Lighting control
• Smart metering

• Home/building automation
• Remote control
• Health care

THE MARVELL ADVANTAGE: Marvell chipsets come with complete reference designs which include board layout designs, software, manufacturing diagnostic tools, documentation and other items to assist customers with product evaluation and production. Marvell's worldwide field application engineers collaborate closely with end customers to develop and deliver new leading-edge products for quick time-to-market. Marvell utilizes world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low-cost total solutions.

ABOUT MARVELL: Marvell (NASDAQ: MRVL) is a global leader in providing complete silicon solutions enabling the digital connected lifestyle. From mobile communications to storage, cloud infrastructure, digital entertainment and in-home content delivery, Marvell's diverse product portfolio aligns complete platform designs with industry-leading performance, security, reliability and efficiency. At the core of the world's most powerful consumer, network and enterprise systems, Marvell empowers partners and their customers to always stand at the forefront of innovation, performance and mass appeal. By providing people around the world with mobility and ease of access to services adding value to their social, private and work lives, Marvell is committed to enhancing the human experience. As used in this release, the term "Marvell" refers to Marvell Technology Group Ltd. and its subsidiaries. For more information, please visit www.Marvell.com.

MARVELL®

Marvell Semiconductor, Inc.

5488 Marvell Lane
Santa Clara, CA 95054

Phone 408.222.2500
www.marvell.com