Atmel Unveils Fifth-Generation ARM Cortex-M4 based Flash Microcontroller Family

Atmel, a leader in microcontroller and touch technology solutions, is sampling the Atmel SAM4S16 [1], the first device in the Cortex-M4 processor-based family, to lead customers. With a continued commitment to its ARM-processor-based microcontroller [1] (MCU) offerings, Atmel is also unveiling its fifth generation Cortex-M4 based Flash MCUs. Throughout 2012, the Atmel SAM3 and SAM4 families will quadruple the Atmel Cortex-M product portfolio to nearly 200 ARM-based microcontrollers and will include devices with on-chip memory densities of up to 2MB Flash, 192KB of SRAM and extensive peripherals including high-speed USB. Several devices in the new Atmel ARM Cortex-M4 Flash family will also include a floating point unit (FPU) expanding the Atmel ARM processor-based device offering into the Digital Signal Controller (DSC) market.

The SAM4S16 device operates at a maximum speed of 120MHz with 1024KB Flash and 128KB SRAM with a full peripheral set featuring full-speed USB, high-speed SDIO/SD/MMC, UARTs, TWIs, SPI, I2S, 12-bit ADC and DAC and an external bus interface supporting PSRAM, LCD modules, NOR Flash, and NAND Flash. The device offers the world’s best hardware code protection and supports Atmel QTouch [2]technology for touch button, slider and wheel functionality targeting the industrial markets.

Entrance into the ARM technology-based DSC Market

Atmel’s ARM Cortex-M4 processor-based family [1] confirms the company’s commitment to the rapidly growing, hybrid digital signal control (DSC) market following the introduction of the Atmel AVR-UC3C MCU series in 2010 [3]. The DSC market requires the combination of high-efficiency digital signal processing and industry-leading microcontroller technology, which replaces a two-chip MCU and DSP implementation and reduces the overall system cost.

Selected members of the Atmel SAM4 family include the Cortex-M4 processor and a floating point unit (FPU). Running ARM DSP library, the Atmel Cortex-M4 based SAM4 family boosts execution speed by 2X for fixed-point and 10X for floating-point DSP algorithms over the Cortex-M3 SAM3 family.

Atmel ARM Cortex-M4 processor-based Flash microcontrollers, planned for market introduction in 2012, will offer up to 2MB Flash, 192KB of SRAM, extensive peripherals that include high-speed USB OTG with on-chip transceiver, Ethernet and CAN and an external bus interface supporting PSRAM, LCD modules, NOR Flash, and NAND Flash. All devices integrate the industry’s most advanced security feature to protect on-chip program memories with customer intellectual property using innovative hardware code lock security technology. The SAM4 family offers touch

support with Atmel QTouch technology [4] for touch button, slider and wheel functionality.

Atmel ARM technology-based SAM4 devices are tailored for applications in the medical, power management, motor control, smart metering, industrial automation and embedded audio segments, and offer a scalable solution that enables designers to select the right price-to-performance combination for their specific needs.

Strong Commitment to ARM technology-based Microcontrollers

As one of the first suppliers to license ARM processors in 1995, Atmel is committed to addressing customers' requirements for next-generation ARM processor-based designs. Since 1998, Atmel has introduced four generations of innovative, upward-compatible ARM processor-based Flash MCUs including the SAM3, SAM9XE, SAM7 and FR40162 families [5].

"As one of the early ARM licensees, we are excited that Atmel continues to expand their product offering with the Cortex-M4, the latest processor in the Cortex-M family, to target the high-performance microcontroller and DSC markets," said Lance Howarth, executive vice president of marketing, ARM. "Using the new SAM4 microcontroller products, designers will benefit from the solid product family roadmap that offers scalability for optimized price and performance across consumer, computing and industrial applications."

"Designers using ARM processor-based microcontrollers continue to push the performance limit for their applications," said Jacko Wilbrink, senior marketing director of ARM products, Atmel Corporation. "The fifth-generation SAM4S family and previous-generation families offer the right combination of features and capabilities to ensure they have the optimal product for their applications. We are committed to offering the right product mix to ensure our designers have the right combination and price-points to develop innovative, differentiated products."

All Atmel ARM processor-based microcontrollers come with a comprehensive integrated development tool and software package. In addition, these products support the Atmel QTouch library that enables button, slider and wheel capability, third party eco-system [6], customer support and In-System Programming (ISP). The new SAM4 devices are upward, pin-to-pin compatible with the Atmel ARM Cortex-M3 based SAM3 [7] Flash MCU products available today.

For more information, visit: www.atmel.com/sam_cortex [1].

Availability

The Atmel SAM4S16 is sampling to early customers now. Other devices in the SAM4 family will be introduced throughout 2012. Production quantities of the SAM4S devices will be available in early Q2 2012.

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