

ARM Launches Its Smallest, Lowest Power, Most Energy Efficient Processor, the Cortex-M0

The Cortex-M0 processor provides 32-bit performance at an 8-bit price point and is compatible with feature-rich processors such as the Cortex-M3 product

CAMBRIDGE, U.K. ARM announced the ARM® Cortex™-M0 processor, the smallest, lowest power and most energy-efficient ARM processor available. The exceptional low power, small gate count and code footprint of the processor enables MCU developers to achieve 32-bit performance at an 8-bit price point. The ultra low gate count also enables it to be deployed in analog and mixed signal devices as well as MCU applications, and promises substantial savings in system cost while retaining tool and binary compatibility with the feature-rich Cortex-M3 processor.

The Cortex-M0 processor, which consumes as little as 85 microwatts/MHz (0.085 milliwatts) in an area of under 12K gates when using the ARM 180ULL cell library, builds on the unrivaled expertise of ARM as a leader in low-power technology and a key enabler for the creation of ultra low-power devices. The new processor extends the company's MCU roadmap into ultra low-power MCU and SoC applications such as medical devices, e-metering, lighting, smart control, gaming accessories, compact power supply, power and motor control, precision analog and IEEE 802.15.4 (ZigBee) and Z-Wave systems. The Cortex-M0 processor is also suitable for the programmable mixed signal market with applications such as intelligent sensors and actuators which have traditionally required separate analog and digital devices.

The low-power operation of the Cortex-M0 processor is enhanced by the ARM Ultra High Density Standard Cell Library for the 180ULL process, the ARM Power Management Kit (PMK), low power memory instances built specially for Cortex-M0, and the Keil™ Microcontroller Development Kit. The ARM low power libraries are optimized to enable low dynamic and static power consumption and minimize chip area. The PMK features dynamic and leakage power management functions and the low power memory instances support external power gating for extreme leakage reduction.

Early licensees of the Cortex-M0 processor include NXP Semiconductors and mixed signal ASIC designer, Triad Semiconductor.

"We are excited about deploying the smallest ever ARM processor in our product development process," said Geoff Lees, vice president and general manager, Microcontroller Division, NXP Semiconductors. "By providing 32-bit performance in a 16-bit footprint, the ARM Cortex-M0 processor, enables us to reduce silicon and energy costs without compromising product enhancements or upward code compatibility, making it an ideal complement to the Cortex-M3 architecture that we use across our products."

"Smart sensors are an ever growing requirement in a wide range of next-generation applications from industrial, to medical and automotive," said Jim Kemerling, VP and CTO of Triad Semiconductor.

"Combining the ARM Cortex-M0 processor with our silicon-proven configurable analog and digital

technology will provide Triad Semiconductor customers with the fastest, safest and most cost-effective way to design, prototype and produce advanced mixed signal ASICs.”

“The boundaries between traditional MCU classifications have begun to blur as advancements in technology see the emergence of smaller, more powerful processor families,” said Tony Massimini, Chief of Technology, Semico. “The ultra low-power ARM Cortex-M0 processor brings this evolution to a whole new level with its 32-bit performance at an 8-bit price point, enabling manufacturers to offer rich and enhanced product features at a significantly lower cost.”

“The Cortex-M0 processor is yet another demonstration of ARM’s low power leadership and its commitment to drive the industry forward towards higher performance with ever lower power consumption,” said Mike Inglis, executive vice president and general manager, Processor Division, ARM. “With its expertise in low-power technology, ARM has worked closely with its Partners and their customers to ensure that our processor architectures enable the cost and energy-efficient creation of tomorrow’s electronic devices and systems.”

Tools

The Cortex-M0 processor is fully supported by the Keil™ MDK-ARM Microcontroller Development Kit, which integrates the ARM RealView® Compilation Tools with the new Keil µVision4 IDE and Debugger.

“The new µVision4 IDE builds on the success of what is widely acknowledged as the world’s most popular development environment for microcontrollers,” said Reinhard Keil, director of MCU Tools, ARM. “By utilizing these tools, ARM Partners can take advantage of a tightly coupled application development environment to rapidly realize the performance and ultra low-power features of the Cortex-M0 processor.”

The processor is also supported by third-party tool and RTOS vendors including CodeSourcery, Code Red, Express Logic, IAR Systems, Mentor Graphics, Micrium and SEGGER.

CMSIS Software Standard

The Cortex-M0 processor is fully compatible with the recently-launched Cortex Microcontroller Software Interface Standard (CMSIS), the vendor-independent hardware abstraction layer for the Cortex-M processor series (Nov 12 - ARM Introduces Software Interface Standard for Cortex Processor-based Microcontrollers). The CMSIS enables consistent and simple software interfaces to the processor for silicon vendors and middleware providers, simplifying software re-use, reducing the learning curve for new microcontroller developers and reducing the time-to-market for new devices.