

## Atmel Broadens AVR MCU Family

Atmel Corporation announced 14 new devices in its AVR microcontroller (MCU) family, providing more options to meet unique design requirements. Used by well over 100,000 engineers worldwide, AVR microcontrollers are regarded for their performance, power efficiency and flexibility across many application areas. Adding more memory, connectivity peripherals and system integration, the newest devices further extend the advantages of the AVR family, while supporting a broader array of application areas including consumer electronics, capacitive touch, utility metering, home automation and medical.

These AVR MCUs meet a common demand across multiple application areas: low power consumption. All devices in the portfolio are designed for the lowest possible power consumption using Atmel picoPower® technology, operating down to 1.62V while maintaining all functionality and short wake-up times. The AVR MCU portfolio also includes devices that support Atmel QTouch® Library for capacitive touch functions.

New AVR devices include:

**Atmel AVR XMEGA® C MCUs:** 8-/16-bit general-purpose MCUs with Full-Speed USB, AVR XMEGA C devices deliver the product line's highest Flash and SRAM memory densities as well as the largest 8-bit MCU on the market with up to 384KB Flash and up to 32KB of SRAM. The eight new devices available are ideal for consumer, industrial and home automation applications.

**Atmel tinyAVR® ATtiny1634 MCUs:** Small-package, ultra-low power devices, the ATtiny 1634 MCUs feature multiple easy-to-use digital interfacing options—including more communication interfaces than existing devices in the product line—and up to 16KB Flash memory. This new device is ideal for interfacing and control in industrial and consumer applications.

**Atmel AVR UC3 L3 MCUs:** The AVR UC3 L3 MCUs feature ultra-low power consumption and more Flash memory, integrated USB controller, I2S support, audio bit-stream digital-to-analog converter (ABDAC) and package options with more pins. With the three new devices available, designers can now implement more advanced algorithms requiring more memory in their low-power applications, such as consumer products.

**Atmel AVR UC3 D4 MCUs:** Low-power, feature-rich, entry-level 32-bit MCUs, the AVR UC3 D4 devices offer enhanced performance and rich features—including a hardware-based QTouch capacitive touch interface and Full-Speed USB. The two new devices available are ideal for high data throughput applications in areas such as USB human interface, biometrics, bridging and industrial control.

“The newest additions to the Atmel AVR MCU family provide design engineers with

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more options than ever to meet their unique performance, power, price and connectivity requirements,” said Ingar Fredriksen, senior director of AVR products at Atmel. “Whether they need a small and powerful chip for a smartphone or a lot of memory for a utility metering system, designers can count on our AVR MCUs to deliver the functions and features required to innovate and differentiate in these markets.”

### AVR XMEGA C MCUs: Largest Memory Density

As with other members of the Atmel AVR XMEGA family, AVR XMEGA C MCUs include functions for real-time control, sensor and control interfaces, mixed signal and USB communication. The devices deliver 384KB of Flash memory and 32KB of SRAM memory with only 700nA of current consumption in sleep mode with real-time clock (RTC) running, full SRAM and register retention and 5uS wake-up time. The new devices offer a unique combination of large memory size combined with low sleep current and short wake-up time. Similar memory size devices in the market today have up to 50X higher maximum sleep current, forcing many design engineers to turn to more expensive multi-chip power management solutions as the memory requirements grow in applications where low sleep current is vital for the battery life time.

Design engineers can now create products offering long battery life while reducing their bill of materials (BOM) costs. AVR XMEGA C MCUs are ideal for products including: thermostats; home and building control systems with RF and ZigBee connectivity and large software stacks; user interfaces for thermostats and home control systems with small, ultra-low power touch-based displays; and mobile phone SIM card expanders with applications for payments, access control and banking.

Other key device features include:

- Full-Speed USB device without external components, resulting in higher data throughput and reduced BOM costs.
- 12-bit, 300ksps analog-to-digital converter (ADC) delivering high analog precision while operating down to 1.6V. Its integrated gain stage eliminates external amplifiers, contributing to lower BOM costs.
- Support for Atmel QTouch Library for easy implementation of capacitive buttons, sliders and wheels functionality.
- The smallest (44-pin, 16KB device) and lowest cost AVR XMEGA device with USB in the product line.

### tinyAVR ATtiny1634 MCUs: Ideal for Interfacing and Control Applications

As the newest member of the tinyAVR MCU family, the ATtiny1634 device is designed for space- and power-constrained interfacing and control applications. The MCU features multiple digital interfacing options, including two full-duplex universal synchronous/asynchronous receiver/transmitters (USARTs), I2C slave interface, serial peripheral interface (SPI) port and a Universal Serial Interface (USI) that works as I2C or a three-wire interface. The device is well suited for advanced portable electronic devices such as smartphones, tablets, and handheld games, and related accessories. Household appliance control and man-machine interface (MMI)

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systems, as well as smart sensors and co-processors in industrial and communications applications, will also benefit from the ATtiny1634 MCU.

Other key device features include:

- High-speed 8MHz internal oscillator for accurate (+/- 2%) timing and reliable serial communication in varying environmental conditions
- QTouch Library support
- 32kHz ultra-low power oscillator and sampled brown-out detector (BOD), which reduce power-down current consumption below 1uA with watchdog timer running and BOD active
- Small packages: a 4mm x 4mm 20-pad very thin quad flat non-leaded package (VQFN) and ultra-small wafer-level chip scale package (WLCSP)
- AVR UC3L MCUs: New Standard for Low Power

Part of the industry's lowest power 32-bit MCU family, the new AVR UC3 L3 devices set a new standard for low power. With picoPower technology, the devices deliver true 1.62V to 3.6V operation. The newest devices increase pin count—by adding 64-pin options to the UC3L family for higher connectivity while SleepWalking peripherals reduce power consumption.

AVR UC3 L3 devices are ideal for sensors, capacitive touch remote controls and game pads, portable and battery-operated equipment, human interface devices, board controllers, industrial control systems, communication protocol translators and backlight LED units.

Other key device features include:

- Full-Speed USB device for increased connectivity and reduced BOM costs
- Integrated QTouch hardware peripheral supporting up to 25 touch channels
- FlashVault code protection
- Peripheral Event System, which eliminates interrupt processing
- Enhanced reliability and reduced cost via innovations including pulse width modulation (PWM) on all GPIO pins, high-precision clock system with digital frequency locked loop and crystal oscillator precision tuner and 9-channel 12-bit ADC

AVR UC3D MCUs: Designed for Low-Power Capacitive Touch Applications

The AVR UC3 D4 MCUs, the newest members of the entry-level AVR UC3 D 32-bit Series, are ideal for low-power capacitive touch applications as well as industrial and consumer designs, such as board controllers, PC peripherals, audio systems and toys. Pin-compatible with the AVR UC3 B Series, the devices feature up to 128KB Flash, up to 16kB SRAM and several communication interfaces, including Full-Speed USB, four universal asynchronous receiver/transmitters (UARTs), four SPI ports, two two-wire interfaces (TWI) and I2S.

Other key device features include:

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- Integrated QTouch hardware peripheral supporting up to 17 touch channels
- Glue logic controller with programmable logic and lookup tables that can be connected to general-purpose I/O (GPIO) pins, which reduces the amount of external components
- Embedded SleepWalking technology, which allows a peripheral to wake the device from sleep mode

### Optimized MCU Design Environment

All Atmel AVR MCUs are supported by the company's new Atmel Studio 6 integrated development environment, which now also supports Atmel ARM® Cortex™-M processor-based MCUs. Atmel Studio 6 delivers the industry's most optimized MCU design environment for more than 300 AVR and ARM processor-based microcontrollers. With more than 1,000 project examples with source code, design engineers can eliminate most of the low-level coding in their designs, achieving faster time to market.

### Availability

In the AVR XMEGA line, the ATxmega384C3, ATxmega256C3, ATxmega192C3 and ATxmega384D3 are sampling now and other devices will begin sampling in Q2 and Q3 2012, with volume shipments to follow. All AVR UC3 L3 and AVR UC3 D4 devices are available for orders. All AVR ATtiny1634 devices are available now, with the exception of the ATTiny1634-UUR, which will be available in Q2 2012.

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