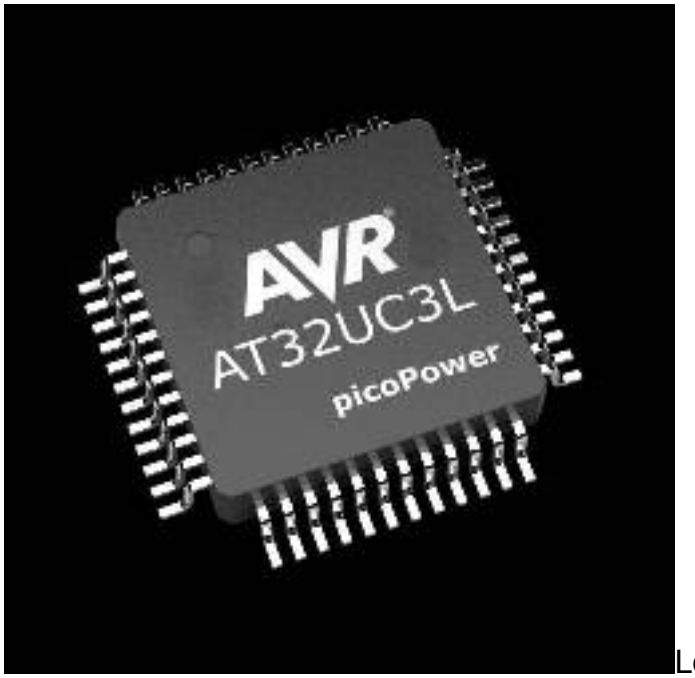
32-bit MCU Lowers Power Consumption by up to 90 Percent



Lowering the static power consumption by 90 percent and active power consumption by 45 percent, Atmel's next-generation 32-bit AVR UC3L microcontroller (MCU) offers picoPower technology and embedded capacitive touch controller peripherals. With 1.5 DMIPS per MHz and DSP (digital signal processing) instructions at your fingertips, embedded system engineers have more performance than ever before. Target applications for these products include audio processing applications such as USB and Bluetooth headsets, game pads and advanced voice or touch-enabled human interface devices. The 32-bit AVR UC3L series includes high-performance, low-power capabilities in an extremely compact physical form factor, at 5.5 x 5.5 mm TLLGA package, to address the size constraints of portable applications.

The new Atmel 32-bit AVR UC3L MCUs cut static power consumption by 90 percent down to 9 nA. This figure is lower than the tantalum capacitor decoupling the board power supply and comparable to leakage currents in even the most advanced battery technologies. Active power consumption is reduced to 165µA/MHz, a 45 percent improvement from previous generations. The performance of the 32-bit UC3L core enables further power savings by running at far lower speed than conventional MCUs when providing the same performance.

The power saving is enabled through the Atmel picoPower low-power technology leadership that addresses all aspects of a microcontroller’s power consumption, including active operation modes as well as all sleep modes. The enabling technology innovations include peripheral SleepWalking, where peripherals can operate in extremely low-power states and make qualified decision during CPU sleep.

“As portable applications designers demand more ease-of-use and increased capabilities, more compute power packed in extremely small spaces, with extended battery life, becomes a must,” said Dr. Oyvind Strom, product marketing director for AVR products at Atmel Corporation. “The next-generation of Atmel 32-bit AVR UC3L MCU addresses these demanding tasks, including voice control, capacitive touch interfaces and other signal processing with a form factor and power consumption previously addressable by ASICs only.”

Additional innovative technologies include an interrupt-eliminating Peripheral Event System, Clock Failure Protection, Spread-Spectrum Clocks with fast startup times, a Frequency Meter, an RTC with Crystal Precision Tuner and calendar mode, and a PWM output on all 36 I/O pins. More information on the Atmel AVR UC3L Series is available at: http://www.atmel.com/UC3 [1].

Availability and Pricing
The AT32UC3L0 series are available in QFP, QFN and TLLGA packages down to 5.5 x 5.5 mm size. Production volumes are available now and are priced at $2.06 USD in 10k quantities.

The AT32UC3L-EK is the evaluation kit supporting the AT32UC3L0 family. The kit facilitates evaluation of power consumption and the Atmel QTouch® peripheral hardware module. It gives easy access to all IO pins and can be used with the ATAVRRZ600 plugin (sold separately) to evaluate wireless applications as for example RF4CE. The kit works with all Atmel AVR debuggers and is supported by the AVR UC3 Software Framework. The kit is available now at distributors and at store.atmel.com with a suggested resale price USD $79.00.

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Links:
[1] http://www.atmel.com/UC3