

TI's "Wolverine" Microcontroller Platform Slashes Power by 50 Percent

New, feature-packed MSP430™ microcontroller platform continues to push ultra-low-power limits, bringing consumers one step closer to a battery-free world



Imagine a device worn on your finger that allows intuitive, touch-free interaction with the digital world. Imagine a solar panel the size of a microcontroller that enables environmental intelligence in any building. Imagine integrating carbon monoxide sensing, thermostat control and biometric security capabilities to a smoke detector without increasing its size. This smarter, greener, battery-free world is fast becoming a reality with the world's lowest-power microcontroller platform from Texas Instruments. Codenamed "Wolverine" for its aggressive power-saving technology, this [ultra-low-power MSP430 microcontroller platform](#) [1] offers at least 50 percent less power consumption than any other microcontroller in the industry (360 nA real-time clock mode and less than 100 μ A/MHz active power consumption). The first devices based on this platform will be the MSP430FR58xx microcontroller series with expected availability in June 2012.

"Everyday devices such as glucose meters and smoke detectors are seeing increased levels of performance with 10-20 years of battery longevity, and this trend is trickling into a myriad of other applications," said Kevin Wang, chief analyst, iSuppli China. "The revolutionary 'Wolverine' low-power architecture from TI is setting a new industry standard and will enable a proliferation of ultra-low-power products. From consumer to medical to industrial, the sky is the limit."

"Wolverine:" THE lowest power microcontroller platform. No qualifiers. No excuses.

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The "Wolverine" platform provides the lowest power consumption in any use case when compared to any microcontroller in the industry - lowest active power, standby power, memory power and peripheral power. For example, typical battery powered applications spend as much as 99.9 percent of their time in standby mode, and "Wolverine"-based microcontrollers consume 360 nA in standby mode, more than doubling battery life. TI continues its legacy of pioneering the latest low-power techniques with the ultra-low-power system architecture and revolutionary technology of the "Wolverine" microcontroller platform:

- **Innovation with unique ultra low leakage (ULL) process technology.** TI developed this ULL technology that offers a 10x improvement in leakage and optimized mixed signal capabilities. The improved 130 nm process technology, ultra-low-power MSP430 architecture and more than 30 power-optimized analog and digital components combined are a few of the integrated elements that deliver the dramatic power reduction.
- **Unparalleled performance and reliability with unified FRAM.** Taking advantage of FRAM, the world's lowest power memory, "Wolverine"-based microcontrollers can operate at less than 100 $\mu\text{A}/\text{MHz}$ in active mode and consume 250x less energy per bit compared to Flash- and EEPROM-based microcontrollers. In addition to these power advantages, FRAM is 100 percent non-volatile, which gives developers the low power, speed and flexibility of SRAM while retaining the key no-power storage capability of Flash. Customers are not limited to the specific ratios of program-to-data memory inherent to traditional embedded systems - they can change this ratio at any time in the design cycle.
- **Proven MSP430 ultra-low-power system heritage, peripherals and software for easy development.** TI's MSP430 platform has been the low-power leader for more than a decade. This new ultra-low-power architecture dramatically reduces power consumption with a fast wakeup time of 6.5 μs and high precision peripherals such as internal power management and a 12-bit analog-to-digital converter (ADC) at 75 μA . All of TI's MSP430 microcontrollers are also augmented by the [MSP430Ware \[2\]](#)[™] software and resource package, as well as low-power code optimization software tools. MSP430Ware enables developers to immediately access and easily filter through all [MSP430 microcontroller \[3\]](#) design resources by device, tool or software library to significantly ease design and shorten time to market.

Pricing and availability

MSP430FR58xx microcontrollers based on the "Wolverine" technology platform will be available for sampling in June 2012. Developers looking to get started with ultra-low-power designs can begin development with TI's existing portfolio of nearly 500 MSP430 microcontrollers. Design ease is a fundamental offering of MSP430 microcontrollers, with a wide range of tools, software and support to help customers begin development quickly.

[TI's broad portfolio of MCUs and software \[4\]](#)

From ultra-low-power and Value Line MSP430[™] MCUs, to Stellaris® Cortex[™]-M MCUs to real-time control C2000[™] MCUs, and Hercules[™] safety MCUs, TI offers the broadest range of microcontroller solutions. Designers can accelerate time to

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market by tapping into TI's complete software and hardware tools, extensive third-party offerings and technical support.

For more information, please visit www.ti.com [5].

Posted by Ron M. Seidel, Editorial Intern

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- [2] <http://www.ti.com/wolverine-pr-tf>
- [3] <http://www.ti.com/wolverine-pr-lp2>
- [4] <http://www.ti.com/fr75xx-pr-microcontrollers-lp>
- [5] <http://www.ti.com>