Silicon Labs Simplifies IoT Connectivity with New 32-bit sub-GHz Wireless MCUs

EZR32 Family Provides Industry-Leading Power Efficiency, RF Performance, Integration and Multi-Protocol Support in a Single-Chip Solution

Silicon Labs, a leading provider of wireless connectivity solutions for the Internet of Things (IoT), introduces a new family of 32-bit wireless microcontrollers (MCUs) designed to simplify a wide range of IoT connectivity applications. The new EZR32 wireless MCUs deliver best-in-class power efficiency and sub-GHz RF performance and enable any application requiring longer battery life, increased wireless range, small form factor, and the flexibility to support proprietary and industry-standard wireless protocols with a single-chip device. Target applications for the EZR32 family include smart metering, wireless sensor networks, home and building automation, security systems, remote monitoring, and asset tracking.

Combining an EFM32™ MCU core with EZRadio/EZRadioPRO sub-GHz transceivers, EZR32 wireless MCUs offer developers significant advantages over conventional system designs that pair discrete MCUs with RF devices. Seamless “MCU+RF” integration frees developers from the challenge of making complex interconnections between the MCU and the radio, resulting in an easier design process and simpler board designs with less susceptibility to interference. Developers can begin their wireless designs secure in the knowledge that they are getting a fully tested, field-proven, single-chip wireless MCU solution that helps reduce component count and board size for space-constrained applications.

The EZR32 family leads the industry in ultra-low-power, high-performance sub-GHz connectivity. The wireless MCUs provide RF coverage over a wide frequency band for all geographic regions, +20 dBm Tx power output for longer range, and industry leading receive sensitivity, selectivity and...
blocking. The low standby, transmit and receive power consumption of the EZRadio and EZRadioPRO transceivers, combined with the ultra-low-power operating modes and fast wake-up times of the EFM32 MCUs, results in an ideal solution for battery-powered wireless applications – without any compromises in RF performance. The multi-protocol EZR32 devices support wireless applications based on IEEE 802.15.4/4g, Wireless M-Bus, Wi-SUN, and a broad range of proprietary radio protocols.

The EZR32 family provides developers with the ultimate flexibility and scalability across applications with little to no redesign. The family includes two pin-compatible product lines: EZR32LG devices based on an ARM Cortex-M3 core and EZR32WG devices based on an ARM Cortex-M4 core with floating point and digital signal processing capabilities. Flash memory options scale from 64 to 256 kB. Both product lines support 32 kB of RAM and a rich peripheral set including timers and counters, multiple communication interfaces, ADC and DAC, the low-energy sensor interface (LESENSE), USB, and a 128-bit AES accelerator for advanced security and data protection. The EZR32LG and EZR32WG devices are available with a choice of EZRadio and EZRadioPRO transceivers to accommodate an array of RF performance requirements. The EZRadio versions meet the needs of most simple and cost-sensitive “buttonpress” wireless designs such as remote controls, garage door openers and other point-to-point network configurations. The EZRadioPRO versions target applications requiring cutting-edge radio features and higher RF performance to support ultralong-range narrowband connectivity and complex packet formats and network protocols. The powerful EZRadioPRO transceiver architecture supports advanced packet processing and modem functionality such as automatic frequency compensation (AFC), preamble detection and automatic gain control (AGC) as well as frequency hopping.

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Silicon Labs Acquires Bluegiga, a Leader in Bluetooth and Wi-Fi Connectivity Solutions
Silicon Labs, a leading provider of microcontroller, wireless connectivity, analog and sensor solutions for the Internet of Things (IoT), announced the acquisition of Bluegiga Technologies Oy. A privately held company based in Espoo, Finland, Bluegiga is one of the fastest growing independent providers of short-range wireless connectivity solutions and software for the IoT.

Bluegiga’s wireless portfolio includes ultra-low-power Bluetooth® Smart, Bluetooth Classic, and Wi-Fi® modules, as well as software stacks, development tools and software development kits (SDKs) for a multitude of applications in the industrial automation, consumer electronics, audio, automotive, retail, residential, and health and fitness markets.

This strategic acquisition significantly expands Silicon Labs’ wireless hardware and software solutions for the IoT. Bluegiga’s market-proven Bluetooth and Wi-Fi modules, software stacks and development tools complement Silicon Labs’ 802.15.4 ZigBee® and Thread mesh networking software, ultra-low-power sub-GHz solutions, and wireless MCU and transceiver product offerings. The combined wireless connectivity portfolio and development ecosystem will enable Silicon Labs to address a broader range of market opportunities and customer needs. Together, Silicon Labs and Bluegiga offer customers a “one-stop-shop” source of standards-based wireless connectivity solutions including high-performance, long-range and ultra-low-power options.

"With Silicon Labs’ wireless, microcontroller and sensor portfolios gaining considerable traction in the IoT markets, the timing of this acquisition couldn’t be better," said Tyson Tuttle, CEO of Silicon Labs. "Bluegiga’s wireless modules and software stacks round out our wireless portfolio and complement our IoT solutions. The addition of Bluegiga wireless modules gives us new ways to deliver simplicity to our customers, enabling developers to easily add wireless connectivity to their designs." Following the acquisition, Silicon Labs will continue to operate in Espoo, Finland, as a center of excellence for wireless hardware and software technology development. The company will continue to develop, market and support a complete portfolio of Bluetooth and Wi-Fi module products and software stacks for customers worldwide.

"The Bluegiga team is excited to join forces with Silicon Labs," said Riku Mettälä, vice president of product creation at Bluegiga. "We truly share a common vision of enabling versatile, cost-effective and streamlined wireless connectivity solutions for a wide range of applications, from the connected..."
home to industrial IoT to consumer and health and fitness devices. Together, our wireless
development teams will drive innovation in the IoT market, and our unified solutions will give
customers a rich choice of wireless platforms for connected devices.”

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Silicon Labs Launches Blue Gecko Bluetooth Smart Solutions

Blue Gecko Modules, SoCs, Development Kit and Software Stack Provide Easy On-Ramp to Ultra-Low-Power Wireless Connectivity

Silicon Labs, a leading provider of wireless connectivity solutions for the Internet of Things (IoT), unveils a complete Bluetooth® Smart solutions portfolio designed to help developers minimize the energy consumption, cost and complexity of wireless IoT designs. Silicon Labs’ recent acquisition of Bluegiga, a leading supplier of wireless modules and software, accelerates the company’s ability to deliver comprehensive Bluetooth Smart solutions. Silicon Labs’ new Blue Gecko solutions include ultra-low-power wireless system-on-chip (SoC) devices, embedded modules, and Bluegiga’s software development kit (SDK) and Bluetooth Smart software stack. Blue Gecko wireless SoCs and modules help developers simplify design and speed time to market for a wide range of applications for the connected home, health and fitness, wearables, automotive, consumer electronics, audio and industrial automation markets.

The Blue Gecko portfolio addresses the largest, fastest-growing low-power wireless connectivity opportunity in the IoT market. According to IHS Technology, Bluetooth Smart will represent 42 percent of the total low-power wireless module and chipset market by unit volume in 2018. A significant number of Bluetooth Smart chipsets are currently used in wireless modules to meet the needs of low-volume IoT applications, greatly simplifying RF design. By the end of the decade, the use of cost-effective Bluetooth Smart chipsets and wireless SoCs is expected to outpace modules as many IoT applications reach higher volumes. Silicon Labs’ Blue Gecko portfolio provides developers with the flexibility to begin development with modules and transition to SoCs when needed with little to no system redesign.
**Blue Gecko Wireless SoCs**

The first in a family of wireless SoCs optimized for IoT applications, Blue Gecko SoCs combine Silicon Labs’ energy-friendly EFM32® Gecko MCU technology with an ultra-low-power Bluetooth Smart transceiver. This innovative, single-die solution provides industry-leading energy efficiency, the fastest wake-up times, superior RF sensitivity and no-compromise MCU features combined with the Bluegiga Bluetooth Smart software stack to help developers reduce system power, cost and time to market. Unlike other Bluetooth Smart IC alternatives, a Blue Gecko SoC can transmit +10 dBm or higher output power with its fully integrated power amplifier and balun, further reducing design complexity. Blue Gecko SoCs are based on the ARM® Cortex®-M3 and M4 cores and offer 128 to 256 kB flash sizes and 16 to 32 kB RAM sizes. The SoCs integrate an array of low-energy peripherals as well as Silicon Labs’ Peripheral Reflex System (PRS) for autonomous peripheral operation. The Blue Gecko SoC family also offers a roadmap of enhanced flash and RAM memory sizes and additional package options to meet future application needs.

**Blue Gecko Wireless Modules**

Bluegiga modules based on Blue Gecko SoCs are designed to help developers accelerate time to market and reduces development costs and compliance risks by providing a pre-certified, plug-and-play RF design. Bluegiga Bluetooth Smart modules incorporate all features of Blue Gecko SoCs and are certified for use in all key markets including North America, Europe, Japan and South Korea. Bluegiga modules include the Bluegiga Bluetooth Smart software stack and profile toolkit and come with 256 kB flash and 32 kB RAM, providing ample available memory for onboard applications. Flexible hardware interfaces enable easy connection to a variety of peripherals and sensors, and an integrated antenna makes RF operation consistent and straightforward for the design engineer. Bluegiga Bluetooth Smart modules provide very low power operation, enabling wireless system designs to be powered from a standard 3 V coin cell battery or two AAA batteries.'
New Energy-Friendly EFM8 MCU Family Delivers Unmatched Simplicity, Peripheral Integration and Performance for Cost- and Space-Sensitive Designs

Silicon Labs, a leading provider of energy-friendly microcontroller solutions for the Internet of Things (IoT), introduces the company’s next-generation 8-bit MCU portfolio designed for today’s ultra-low-power, small-footprint IoT applications. Silicon Labs’ new EFM8 MCU family includes three lines of highly integrated, peripheral-rich MCUs optimized for exceptional price/performance value, ultra-low-power capacitive touch control and streamlined USB connectivity. The EFM8 MCUs bring industry-leading simplicity, power efficiency, performance and cost-saving integration to every 8-bit application that embedded developers can imagine including home and building automation, wearables, consumer electronics, toys, motor control and industrial IoT.

“Leading MCU vendors continue to advance the power efficiency and integration features of 8-bit solutions to keep this MCU market thriving for the foreseeable future,” said Tom Hackenberg, principal MCU analyst for IHS Technology. According to IHS, the 8-bit market will approach $7 billion (USD) in 2015 and grow to $7.8 billion in 2018 as it continues to sustain more than a third of the annual MCU market revenues. This steady growth is underpinned by market demand for sub-$0.50 MCU prices, tiny footprints, ultra-low power, low software overhead and design simplicity, all prerequisites for IoT devices. Silicon Labs designed the new EFM8 family to deliver best-in-class features and functionality in each of these application-critical areas.

The EFM8 MCU family meets IoT developer needs with an unparalleled combination of features and capabilities including a high-speed pipelined 8051 core, ultra-low power, precision analog and enhanced communication peripherals, integrated oscillators, small-footprint packages, and an advanced crossbar architecture that enables flexible digital and analog multiplexing to simplify printed circuit board (PCB) design and I/O pin routing.

The new EFM8 Bee family includes three MCU lines optimized for specific developer needs and applications. (The Bee family name underscores the scalable performance, energy efficiency and high productivity of the EFM8 platform.)

EFM8 Busy Bee: EFM8BB Busy Bee MCUs provide an optimal balance of no-compromise performance, power efficiency and value for cost-sensitive applications. With core speeds scaling up
to 50 MHz and 2-16 kB flash sizes, the MCUs offer an array of high-performance peripherals including a 12-bit analog-to-digital converter (ADC). The MCUs are ideal for motor control applications (toys, fans and tools), power supplies, battery chargers, sensor controllers, consumer electronics and communication bridges.

EFM8 Sleepy Bee: EFM8SB Sleepy Bee MCUs are Silicon Labs’ most energy-friendly 8-bit devices offering industry-leading sleep mode power (50 nA with full memory retention and brown-out detection) and ultra-fast 2 µs wake-up time. Core speeds scale up to 25 MHz, and flash sizes range from 2-64 kB. The MCUs integrate a best-in-class capacitive sense controller offering an ultra-low-power < 1 µA wake-on-touch capability, eliminating the need for on/off switches in some products. These power-saving MCUs are ideal for touch-based, battery-powered IoT and industrial applications that require long battery lifetimes and energy-efficient human interfaces.

EFM8 Universal Bee: EFM8UB Universal Bee MCUs are the industry’s foremost 8-bit USB connectivity solution, with speeds of up to 48 MHz and 8-64 kB flash sizes. The MCUs combine a high-precision internal oscillator, clock recovery circuit and an integrated full-speed USB transceiver. Low-energy USB MCU versions can reduce USB power consumption by up to 90 percent. An on-chip battery charger detection module reduces bill-of-materials (BOM) count and system cost. The MCUs’ exceptional peripheral integration and small package sizes dramatically reduce the cost and complexity of adding USB connectivity to personal medical devices, wearables, communication bridges, toys, remote controls and thermostats.

“The EFM8 family embodies the future of Silicon Labs’ 8-bit MCU solutions for the IoT, delivering an unmatched combination of value, performance, energy efficiency, peripheral integration and flexibility,” said Daniel Cooley, vice president and general manager of Silicon Labs’ MCU and wireless products. “Our MCU customers embrace our proven, pipelined 8051 core, exceptional mixed-signal integration and superior peripheral mix, enabling them to work wonders in 8-bit applications with very tight power and cost budgets and ultra-small footprints. Developers also appreciate how quickly and easily they can get their 8-bit designs up and running with our Simplicity Studio development environment.”

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