Bluetooth SiP Module from Silicon Labs Offers World's Smallest Footprint for IoT End Nodes

November 8, 2016 1:00 PM EST

6.5 mm x 6.5 mm BGM12x Module with Built-in Antenna Shrinks Board Area, Miniaturizes Bluetooth®-Enabled Designs without Sacrificing Performance

MUNICH--(BUSINESS WIRE)-- Silicon Labs (NASDAQ: SLAB) has introduced the industry's smallest Bluetooth® low energy system-in-package (SiP) module with a built-in chip antenna, offering a complete, cost-effective connectivity solution with no compromises in performance. Available in a tiny 6.5 mm x 6.5 mm package, the BGM12x Blue Gecko SiP module enables developers to miniaturize IoT designs by minimizing the PCB footprint including the antenna clearance area to 51 mm^2. Applications for this ultra-small, high-performance Bluetooth module include sports and fitness wearables, smartwatches, personal medical devices, wireless sensor nodes and other space-constrained connected devices.

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The Silicon Labs BGM12x SiP module enables the industry's smallest Bluetooth module footprint. (Graphic: Business Wire)

For details about Silicon Labs' BGM12x Blue Gecko SiP module including pricing and availability, the Bluetooth 4.2 stack, development tools and data sheets, visitwww.silabs.com/bgm12x. Silicon Labs is unveiling the new BGM12x SiP module today with an innovative heart-rate monitoring wearable demonstration at Booth A4.212 at electronica.

Based on Silicon Labs' Blue Gecko wireless SoC, the BGM12x module provides an all-in-one Bluetooth connectivity solution featuring an ARM® Cortex®-M4 processor, high-output Bluetooth power amplifier, high-efficiency onboard antenna, external antenna options, oscillators and passives, along with a reliable, secure Bluetooth 4.2 stack and best-in-class development tools. The BGM12x module's high level of SiP integration frees developers from the complexities of RF system engineering, protocol decisions and antenna design so that they can focus on their end applications. The module's exceptionally small size makes it easy to use in space-sensitive, battery-powered applications including low-cost, two-layer PCB designs.

"Small size is as critical to IoT end node design as ultra-low power, low system cost and high levels of integration," said Daniel Cooley, Senior Vice President and General Manager of IoT Products at Silicon Labs. "Great things really do come in small packages, and there's nothing quite like the BGM12x module in the Bluetooth low energy market. The BGM12x SiP module enables developers to design compact Bluetooth designs quickly and easily by integrating all required hardware and software components including a Bluetooth 4.2 compliant stack."

Like all Blue Gecko modules from Silicon Labs, the BGM12x module provides developers the flexibility to begin with a module-based design and then transition to a Blue Gecko SoC with minimal system redesign and full software reuse. To help developers further miniaturize wearable designs and other Bluetooth-enabled IoT products, Blue Gecko SoCs will be available in an ultra-small (3.3 mm x 3.14 mm x 0.52 mm) wafer-level chip-scale package (WLCSP).

The BGM12x module is pre-certified for use in many key global markets, minimizing development costs and RF regulatory compliance effort for developers. All application code can be executed on the BGM12x module, eliminating the need for an external MCU, which helps reduce system cost and board space and speeds time to market. Bluetooth low energy application profiles and examples are also available to streamline development.

The BGM12x Blue Gecko module and WLCSP SoC product are supported by the same software framework developed for Silicon Labs' popular BGM11x modules and EFR32BG SoCs in QFN packages. Silicon Labs' wireless software development kit (SDK) gives developers the flexibility to use either a host or fully standalone operation through the easy-to-use BGScript™ scripting language or with the ANSI C programming language. Silicon Labs' Bluetooth SDK has been upgraded to support new Bluetooth 4.2 features such as LE Secure Connections for more secure Bluetooth bonding, LE Packet Extensions for improved throughput, and LE dual-topology for multiple simultaneous central and peripheral functionality.

BGM12x modules are available with different transmit output power options, from 3 dBm (BGM123) to 8 dBm (BGM121), to support connected device applications with varying range requirements.

BGM12x Blue Gecko Module Key Features

- Best-in-class SiP module size: 6.5 mm x 6.5 mm x 1.5 mm
- Integrated chip antenna with exceptional RF performance (70% antenna efficiency) and an RF pad option for connecting to an external antenna
- Output power: +3 dBm to +8 dBm supporting ranges from 10 meters to 200 meters
- Based on Silicon Labs' Blue Gecko SoC combining a 2.4 GHz transceiver with a 40 MHz ARM Cortex-M4 processor core and 256 kB flash and 32 kB RAM
- Energy-efficient Bluetooth solution consuming 9.0 mA (peak receive mode) and 8.2 mA @ 0 dBm (peak transmit mode)
- Hardware cryptography accelerator supporting advanced AES, ECC and SHA algorithms
- Industry-proven Silicon Labs Bluetooth 4.2 stack with frequent feature enhancements
- Rapid time to market with global RF certifications

- Easy-to-use development tools: Simplicity Studio, Energy Profiler, BGScript
- Worldwide application engineering support

Pricing and Availability

Samples and production quantities of the BGM12x Blue Gecko modules are available now. BGM12x module pricing begins at $4.17 (USD) in 10,000-unit quantities. WLCSP versions of the Blue Gecko SoCs are planned to be available later this month. The SLWSTK6101C Blue Gecko wireless starter kit, priced at $99 (USD MSRP), and free wireless SDK are available now. To order BGM12x module samples and starter kits, please visit www.silabs.com/bgm12x.

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