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# Silicon Labs Launches Breakthrough Heart Rate Monitoring Sensor Solution

*Si1144 Optical Sensing Module with Advanced Algorithm Reduces Cost and Complexity of Wrist-Based Heart Rate Measurement*

AUSTIN, Texas--(BUSINESS WIRE)-- Silicon Labs (NASDAQ: SLAB) has introduced an optical heart rate sensing solution designed to reduce the cost and complexity of wrist-based heart rate monitoring (HRM) applications. The new Si1144 HRM solution includes a low-power optical sensor module paired with an energy-friendly EFM32™ Gecko microcontroller (MCU) running Silicon Labs' advanced HRM algorithm. The small-footprint Si1144 sensor module integrates an optical sensor, green light-emitting diode (LED), LED drivers supporting up to two external LEDs, analog-to-digital converter (ADC), control logic and an $I^2C$ digital interface.

According to Silicon Labs' market estimates, 100 million units of HRM-enabled devices will be sold per year by 2018, with the majority of those units being wrist-based wearables. Silicon Labs' Si1144 HRM solution addresses this large and growing market across a wide range of wearables including activity-tracking fitness bands, pedometers and smart watches, in addition to providing HRM capabilities for gym fitness equipment, bathroom scales and geriatric monitoring devices.

*Get all the details about Silicon Labs' new Si1144 HRM solution including pricing and availability, development tools and data sheets at www.silabs.com/HRM.*

Heart rate monitoring is one of the most sought-after biometric sensing technologies available today for people of all fitness levels, from serious athletes looking to improve athletic performance to people simply seeking a healthier, more active lifestyle. Accurate HRM enables precise calculation of expended calories, making it easier to maintain dieting regimens.

Traditionally, heart rate measurement has been limited to the use of chest straps linked to an external device, such as a specialized fitness watch or a smartphone. These HRM solutions pose unique problems: chest straps are often inconvenient and uncomfortable to wear while smartphones can be difficult to monitor when running or cycling.

Wrist-based HRM technology changes the biometric monitoring game by providing a more convenient, comfortable way to measure heart rate rivaling the accuracy of chest-strap-based designs. The measured results vary widely, and many of these HRM solutions are costly as well as power hungry, reducing battery life. Complex motion artifacts also combine to make wrist-based HRM a complicated design challenge.

"Silicon Labs' Si1144 HRM solution addresses the challenges of wrist-based heart rate measurement by providing an accurate, easy-to-implement and cost-efficient solution priced well below competitive offerings," said Daniel Cooley, vice president of marketing for IoT products at Silicon Labs. "Additional benefits of Silicon Labs' HRM solution include industry-leading power consumption and a very small footprint, making the Si1144 module a very good fit for power-sensitive, space-constrained wearables."

**Si1144-AAGX HRM Module Key Features**

- Accurate sensing of weak blood flow signals on the wrist with exceptional performance rivaling chest strap HRM designs
- Choice of two algorithms to support static HRM and optional dynamic (motion-compensated) HRM using data from an external accelerometer
- HRM solution pairs optical module with a Pearl Gecko MCU containing a DSP-enabled ARM Cortex-M4 core for low-power, high-performance designs or with a Cortex M3-based Jade Gecko MCU for simpler, cost-sensitive designs
- Fully integrated HRM IC with green LED lens, high-sensitivity photodiode, low-noise ADC, LED drivers, optical blocking and host communications/interrupts
- Two LED drivers to support up to two external LEDs

- Ultra-low power consumption for long battery life in wearables: < 500 nA standby current with 1.71 V to 3.6 V supply voltage
- $I^2C$ serial communications with up to 3.4 Mbps data rate
- 10-lead 4.9 x 2.85 x 1.2 mm LGA module package

**Pricing and Availability**

Samples and production quantities of the Si1144-AAGX HRM module are available today. The Si1144 module along with Silicon Labs' HRM algorithm is priced at $2.82 (USD) in 10,000-unit quantities. The HRM44-GGG-PS development board, priced at $57.60 (USD MSRP), enables developers to jumpstart evaluation and development of wrist-based HRM applications. For Jade and Pearl Gecko MCU pricing and to order MCU samples, visit www.silabs.com/EFM32. To order Si1144 module samples and starter kits, visit www.silabs.com/HRM.

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