

Silicon Labs Launches Wireless Remote Control on a Chip

New Sub-GHz EZRadio(R) RF Transmitter IC Simplifies RKE, Garage Door Opener, Remote Control, Home Automation and Security System Designs

AUSTIN, Texas, Jul 21, 2010 (BUSINESS WIRE) -- [Silicon Laboratories Inc.](#) (NASDAQ: SLAB), a leader in high-performance, analog-intensive, mixed-signal ICs, today introduced an EZRadio(R) wireless IC solution designed to reduce the cost and complexity of one-way wireless links used in a wide range of consumer, industrial and automotive systems. The new Si4010 system-on-chip (SoC) RF transmitter enables developers to optimize remote keyless entry (RKE), garage door opener, remote control, building automation and security device designs for the lowest system cost and highest performance while ensuring one-way link integrity.

The Si4010 RF transmitter is the industry's first single-chip remote control IC requiring only one external bypass capacitor, a printed circuit board, battery and external case with pushbuttons to create a complete wireless remote control. Based on a patented crystal-less architecture, the Si4010 achieves ± 150 ppm carrier frequency accuracy over the commercial temperature range and ± 250 ppm over the industrial temperature range - twice the accuracy of traditional surface acoustical wave (SAW)-based transmitters - without using an external crystal.

"The Si4010 is an optimal sub-GHz transmitter SoC for cost-sensitive wireless one-way link applications," said Rafi Fried, general manager of Silicon Labs' wireless products. "The Si4010's high level of integration significantly reduces the transmitter node's bill of materials, design time and complexity versus competing discrete-intensive solutions that typically contain more than 20 separate components."

The Si4010 transmitter SoC is best paired with Silicon Labs' new Si431x RF receivers to enable a transmitter/receiver solution that substantially reduces the total bill of materials (BOM) and saves valuable board space for one-way link systems operating in the sub-GHz range (from 27 to 960 MHz). The Si431x receivers' state-of-the-art integration requires only two external antenna-matching components, a crystal and a bypass capacitor while eliminating the need for costly RF SAW and IF ceramic filters.

The Si4010 is the first SoC transmitter with automatic antenna tuning, featuring a patented tuning circuit that automatically fine tunes the antenna for optimum transmit efficiency and constant output power. Variations in transmit frequency due to PCB loop antenna manufacturing tolerances and environmental variations can lead to significant antenna inefficiencies and wasted power. The Si4010's antenna tuning circuit continuously maximizes antenna efficiency by adjusting an on-chip variable capacitor to resonate with the antenna's inductance. The Si4010 supports programmable edge rate control for on-off keying (OOK) mode to reduce harmonic emissions and comply with governmental RF regulations. It also outperforms competing discrete solutions, offering +10 dBm output power, exceptional range and robust links.

The Si4010's low power consumption greatly extends battery life for remote controls. Offering a 1.8 to 3.6 V supply range, ultra-low current consumption (<10 nA standby current and <20 mA peak current) and low-power wake-on-touch operation, the Si4010 is ideal for coin-cell battery-powered applications. Most remote controls are activated only a few times per day, which means the remote remains in standby mode most of the time until the end user presses a button. The device's wake-on-touch GPIOs ensure no current is wasted checking for button presses while in standby mode.

The Si4010 contains an embedded 8051-compatible MCU core with 4 kB of RAM, 8 kB of one-time programmable (OTP) non-volatile memory, a 128-bit EEPROM and 12 kB of ROM for library functions. These ROM-based functions enable developers to easily implement complex features such as security encryption into their remote controls by using proven code to reduce risk and development time. The MCU's on-chip digital peripherals include wake-on-touch general-purpose I/Os (GPIOs), a patented 20-bit EEPROM counter providing one million cycles of read/write endurance, an LED driver, sleep timers, a debugger and a high-speed 128-bit Advanced Encryption Standard (AES) accelerator for secure one-way links.

Unparalleled Development Support

To accelerate the development of one-way link products, Silicon Labs offers a rich set of hardware and software tools including the following:

- 4010-DASKF_434 evaluation kit to demonstrate RKE fob functionality

- 4010-DAAKF_434 evaluation kit to demonstrate AES encryption functionality in RKE fobs
- 4010-DKKF_434 development kit providing a comprehensive Si4010 software development environment.

Pricing and Availability

Samples of the Si4010 transmitter and the Si431x receivers are available now. Pricing for the Si4010 transmitter starts at \$1.40 in 10,000-unit quantities, and pricing for the Si431x receivers begins at \$1.45 in 10,000-unit quantities. The Si4012, featuring the same RF and analog circuitry of the Si4010 but without an integrated MCU, is priced at \$1.17 in 10,000-unit quantities. The 4010-DASKF_434 and 4010-DAAKF_434 evaluation kits are available now for \$24.99 and \$49.99, respectively. The 4010-DKKF_434 development kit is priced at \$150. (All pricing is in USD.)

For additional EZRadio product information and to purchase samples and development tools, please visit www.silabs.com/pr/wireless.

Silicon Laboratories Inc.

Silicon Laboratories is an industry leader in the innovation of high-performance, analog-intensive, mixed-signal ICs. Developed by a world-class engineering team with unsurpassed expertise in mixed-signal design, Silicon Labs' diverse portfolio of highly-integrated, easy-to-use products offers customers significant advantages in performance, size and power consumption. These patented solutions serve a broad set of markets and applications including consumer, communications, computing, industrial and automotive.

Headquartered in Austin, TX, Silicon Labs is a global enterprise with operations, sales and design activities worldwide. The company is committed to contributing to our customers' success by recruiting the highest quality talent to create industry-changing innovations. For more information about Silicon Labs, please visit www.silabs.com.

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