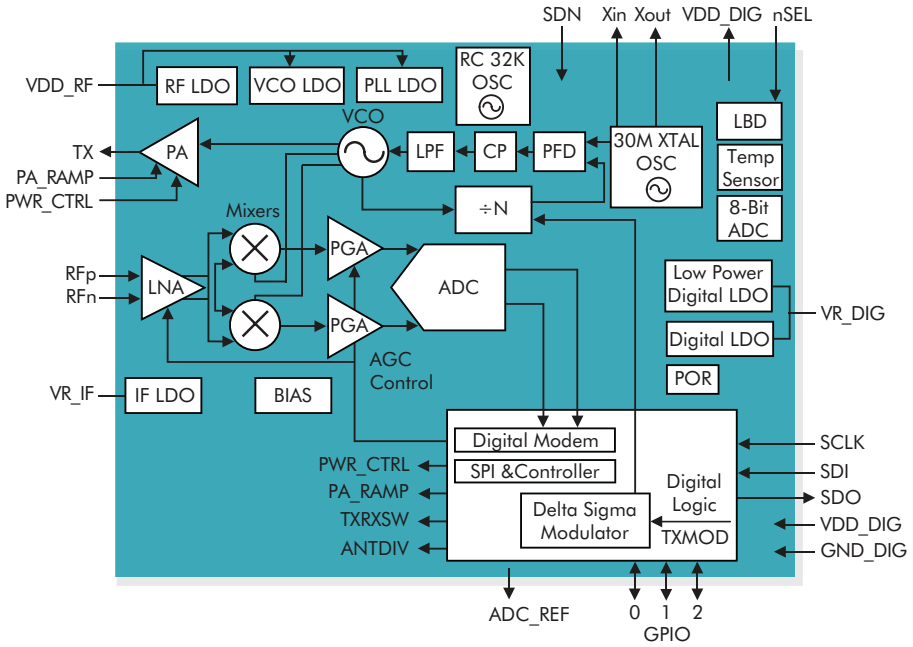
# EZRadio® and EZRadioPRO™ Wireless Solutions

## COMPLETE FAMILY OF TRANSMITTERS, TRANSCEIVERS AND RECEIVERS

## DESCRIPTION

Silicon Labs' family of EZRadio and EZRadioPRO single-chip transceivers, receivers, and transmitters are highly integrated, low power, low cost solutions designed to support a wide range of wireless applications. The EZRadioPRO family features industry leading performance and an extensive set of advanced features to reduce overall system cost and complexity. The EZRadio family offers a complete solution for applications where cost and space are at a premium while still supporting such advanced FSK features as frequency hopping. EZRadio and EZRadioPRO support proprietary and standards-based point-to-point, star, and mesh networks. In addition to our award-winning wireless radio ICs, Silicon Labs provides a variety of easy to-use development tools including EZMac™ networking software, the Wireless Development Suite (WDS) GUI-based control package, development kits, reference designs, and support services.

## Si4432 BLOCK DIAGRAM




## FEATURES

### EZRadioPRO

- 240–960 MHz continuous frequency coverage
- Configurable output power up to +20 dB
- Ultra low power shutdown mode : 10 nA
- GFSK, FSK, OOK modulations
- Automatic PA ramp-up/down to prevent spectral splatter
- Fast frequency-hopping capability
- Configurable data packet handler
- Embedded antenna diversity algorithm
- Integrated low battery detector, temperature sensor, power-on-reset, general purpose ADC, and 32.768 KHz RC or XTAL
- Integrated 64-byte transmitter and receiver FIFOs

### EZRadio

- 315, 434, 868 and 915 MHz band support
- Fully integrated (low BOM, easy design-in)
- Stable and accurate FSK modulation with programmable deviation
- Fast-settling, programmable, high-resolution PLL synthesizer
- Automatic antenna tuning
- Fast frequency-hopping capability
- Direct loop/IFA antenna support
- No alignment required in production
- SPI interface

## APPLICATIONS

- Remote keyless entry (RKE)
- Aftermarket car alarms
- Remote controls, IR replacement/extension
- Satellite set-top boxes
- Wireless weather stations
- Home security and automation
- Garage and gate door openers

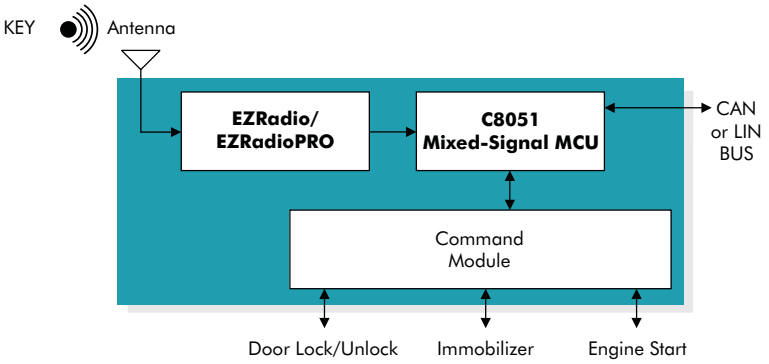
## SOLUTIONS GUIDE

**THE NEW STANDARD IN WIRELESS SOLUTIONS**

SILICON LABS

## Example Solution: Automotive Remote Keyless Entry

Silicon Labs' compact, highly-integrated RF solutions and expertise in high-performance, mixed-signal MCUs enable customers to quickly develop reliable, cost effective RKE and remote control solutions. This combined RF and MCU expertise provides a one-stop solution for all your wireless needs.




## C8051 Mixed-Signal MCUs

Silicon Labs' complete portfolio of C8051-based MCUs allows customers to match the ideal MCU and radio for their application. These MCUs feature the industry's highest functional density and advanced analog features.

- Up to 24-bit ADCs
- Up to 1 MSPS ADCs
- World's fastest 8-bit MCU (up to 100 MIPS)
- Smallest mixed-signal MCU footprint
- 3 x 3 mm
- World's lowest-voltage/low-power MCUs

## Wireless Development Suite

The Wireless Development Suite (WDS) provides developers a comprehensive toolset to quickly and easily create and deploy efficient, robust, and low-cost wireless applications. The WDS can be used for demonstrating part capabilities, testing performance, and prototyping application examples, with little or no RF design and measurement experience.

- TX, RX, and TRX development test cards
- Device configuration, save, and restore
- Custom scripting API
- Online device documentation
- Terminal window
- PC interface to evaluation boards

## EZMac Embedded Media Access Control Software

EZMac is a media access control module developed in C code for use with our ISM transceiver products and MCUs to create very low cost mesh networks. EZMac provides designers a simplified interface to the physical radio layer that manages signal delivery and associated packets from the transmitter to the receiver and between nodes.

- Supports ISM band transceivers
- Internal baud rate generator
- 16 byte payload per packet
- Dedicated crystal oscillator for exact timing
- DQD (data quality detector) for FSK fast frequency hopping
- Configurable packet filtering
- Multiple error detection

## EZRadio

| Part Number | Type | Modulation Scheme (max kbps) FSK | OOK | Frequency Bands (MHz) 315 | 434 | 868 | 915 | Output Power Max (dBm) EIRP (868 MHz Band) | (434 MHz Band) | Supply Voltage | Wake-Up Receiver | FIFO | Freq. Step Res. (kHz) | PLL Startup Time | Idle Current | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Si4020 | TX | 256 | 256 | Yes | Yes | Yes | Yes | 1 | 3 | 2.2-5.4 V | — | — | 2.5-7.5 | 250 µs | 1.5 mA | TSSOP16 |
| Si4021 | TX | 115 | 512 | — | Yes | Yes | Yes | 6 | 8 | 2.2-5.4 V | — | 1-bit | 2.5-7.5 | 250 µs | 1.5 mA | TSSOP16 |
| Si4022 | TX | 115 | — | — | — | Yes | Yes | 6 | 8 | 2.2-3.8 V | — | 64-bit | 20 | 500 µs | 0.5 mA | TSSOP16 |
| Si4320 | RX | 256 | 1 | Yes | Yes | Yes | Yes | — | — | 2.2-5.4 V | — | 16-bit | 2.5-7.5 | 250 µs | 3.0 mA | TSSOP16 |
| Si4322 | RX | 256 | — | — | — | Yes | Yes | — | — | 2.2-3.8 V | — | 64-bit | 20 | 500 µs | 0.5 mA | TSSOP16 |
| Si4420 | TRX | 256 | — | Yes | Yes | Yes | Yes | 2 | 3 | 2.2-5.4 V | — | 16-bit | 2.5-7.5 | 250 µs | 3.0 mA | TSSOP16 |
| Si4421 | TRX | 115 | — | — | Yes | Yes | Yes | 7 | 5 | 2.2-3.8 V | — | 16-bit | 2.5-7.5 | 200 µs | 0.6 mA | TSSOP16 |

## EZRadioPRO

| Part Number | Type | Modulation Scheme (Max) FSK/GFSK | OOK | Frequency Range | Output Power Range (dBm) | Sensitivity (2.0 kbps) (FSK) | (4.8 kbps) (OOK) | RX Current | TX Current (dBm) 0 | +11 | +13 | +20 (mA) | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Si4030 | TX | 128 kbps | 40 kbps | 900-960 MHz | -8 to +13 | — | — | — | 13 | — | 25 | — | QFN16 |
| Si4031 | TX | 128 kbps | 40 kbps | 240-930 MHz | -8 to +13 | — | — | — | 13 | — | 25 | — | QFN16 |
| Si4032 | TX | 128 kbps | 40 kbps | 240-930 MHz | +11 to +20 | — | — | — | — | 25 | — | 60 | QFN16 |
| Si4330 | RX | 128 kbps | 40 kbps | 240-930 MHz | — | -118 dBm | -110 dBm | 18.5 mA | — | — | — | — | QFN20 |
| Si4430 | TRX | 128 kbps | 40 kbps | 900-960 MHz | -8 to +13 | -118 dBm | -110 dBm | 18.5 mA | 13 | — | 25 | — | QFN20 |
| Si4431 | TRX | 128 kbps | 40 kbps | 240-930 MHz | -8 to +13 | -118 dBm | -110 dBm | 18.5 mA | 13 | — | 25 | — | QFN20 |
| Si4432 | TRX | 128 kbps | 40 kbps | 240-930 MHz | +11 to +20 | -118 dBm | -110 dBm | 18.5 mA | — | 25 | — | 60 | QFN20 |