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SiW171X™ Radio Modem

Product Summary
Advance Information

INTRODUCTION

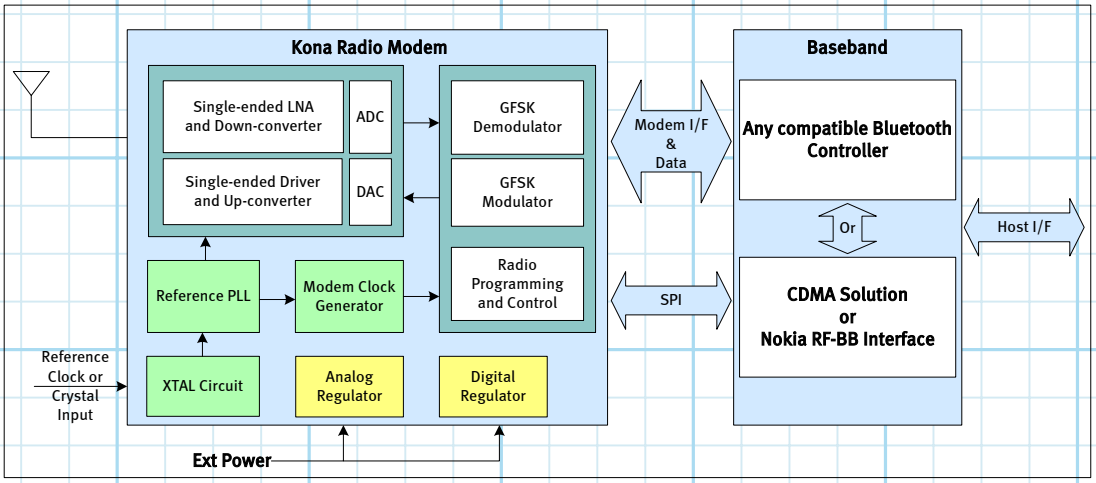
The SiW171X-series Radio Modem is Silicon Wave's third-generation radio modem for Bluetooth™ wireless communications and is based on 0.18 µm CMOS technology. This highly integrated transceiver was specifically designed to meet the rigorous RF performance required for integrating Bluetooth in both CDMA and GSM/GPRS mobile phone applications.

The SiW171X-series Radio Modem uses direct conversion (zero-IF) architecture where one mixer stage converts the desired signal to and from the baseband without an IF stage. This allows filtering with on-chip components in place of costly SAW filters and the gain stage to consume less power than when implemented in IF architectures.

The SiW171X-series Radio Modem combines the 2.4 GHz radio transceiver and Gaussian Frequency Shift Keying (GFSK) modem with digital control functions. The IC also incorporates analog and digital voltage regulators, a reference Phase Lock Loop (PLL) to accept multiple input frequencies, and a power-on-reset (POR) circuit. The all digital interface is highly configurable and allows the SiW171X-series Radio Modem to be used with Bluetooth basebands from Silicon Wave as well as other baseband OEM's.

FEATURES

- 1.8 Volt supply.
- Low power consumption in active and standby modes.
- Radio and modem on a single IC.
- Fully compliant with Bluetooth specification 1.1.
- Class 1 with external power amplifier (+20 dBm) and output power control.
- Class 2 transmit output power (+4 dBm) with output power control.
- Class 3 transmit output power (0 dBm) with output power control.
- Single-ended RF I/O reduces system BOM.
- Direct-conversion architecture with no external channel filter or VCO resonator components.
- On-chip voltage regulation simplifies voltage input requirement. Direct input from battery supply is possible. No external voltage regulator is necessary.
- Programmable digital interface with selectable output data sampling rate.
- Supports multiple host reference clock inputs or crystal references with external crystal calibration.
- Exceptional adjacent channel rejection and blocking performance.



Bluetooth Subsystem Using the SiW171X-series Radio Modem

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APPLICATIONS

Although optimized for mobile phones, the SiW171X-series Radio Modem can be applied to a wide range of applications that require Bluetooth wireless communications.

- **Mobile phones:** Handset integration and accessories.
- **Computing:** Notebook and desktop PCs, printers, accessories, wireless keyboards, and mice.
- **Mobile data:** PDAs, palmtops, and personal organizer communications.
- **Consumer electronics:** MP3 players, digital cameras, game consoles, and controls.
- **Automotive and industrial:** Hands-free car phone kits, barcode scanners, POS terminals, and telematics.

RADIO SPECIFICATIONS

Parameter	Min	Typ	Max	Units
Supply voltage to on-chip regulator	2.3	—	3.6	V
Operating temperature (industrial grade)	-40	—	+85	°C
Receiver sensitivity	—	-87	-80	dBm
Output power, maximum	0	—	+4	dBm
Maximum usable signal	—	0	—	dBm
Frequency operating range	2402	—	2480	MHz
C/I co-channel (0.1% BER)	—	+7.5	+9	dB
C/I 1 MHz (0.1% BER)	—	-3.8	-3	dB
C/I 2 MHz (0.1% BER)	—	-42	-35	dB
C/I ≥ 3 MHz (0.1% BER)	—	-49	-43	dB

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