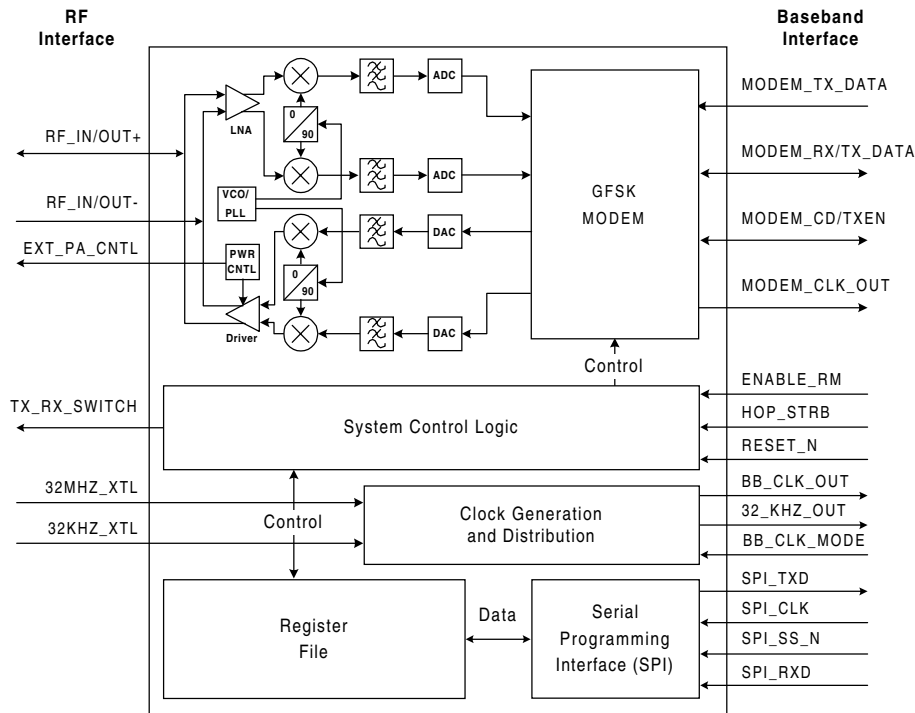


SiW1502 Radio Modem IC

INTRODUCTION

The SiW1502 Radio Modem IC is part of Silicon Wave's Odyssey™ solutions for Bluetooth™ wireless communications. It combines a 2.4-GHz radio transceiver and GFSK modem with digital control functions that meet Bluetooth specifications. Designed to work with the Silicon Wave SiW1601 Link Controller IC or other compatible ICs, the SiW1502 IC enables the production of Bluetooth wireless communication products.



SiW1502 IC Block Diagram

FEATURES

- Radio and modem with combined RF analog and digital CMOS circuits on a single integrated silicon chip.
- Fully compliant with Bluetooth Specification 1.0 B.
- Pin-to-pin compatibility with the SiW1501.
- Direct-conversion radio architecture with integrated VCO and frequency synthesizer requiring minimal external components.
- Integrated analog-digital conversion circuits transform I/O signals between the radio and GFSK modem.
- Integrated GFSK modem with digital modulation, channel filtering, AFC, symbol timing recovery, and bit slicer.
- Integrated 0 dBm transmit driver with eight output power levels.
- Direct interface to Bluetooth controller ICs through a low pin-count, digital interface.
- Optimized design for low power consumption, low cost, and small size.

APPLICATIONS

The SiW1502 Radio Modem IC is suitable for all applications requiring a Bluetooth-compliant radio link in a low power consumption and cost-effective implementation.

- **Cellular Use:** mobile phone handset integration and accessories.
- **Office:** office PCs, notebook PCs, and laser printer interconnection.
- **Personal Data:** PDA, palmtop, and personal organizer communications.
- **Consumer:** digital cameras, handheld game units.
- **Automotive:** hands-free car kit.

DESCRIPTION

During the receive process, the radio signal is taken from a pair of balanced RF I/Q pins that feed into the low noise amplifier (LNA). Direct I/O down conversion and on-chip filtering send the processed I/Q data to the analog-to-digital converter before processing by the GFSK demodulator. Within the demodulator, data detection and timing recovery circuits convert the data for transfer to an external device. The transmit process operates in similar fashion in reverse order. Digital control functions and other programming interfaces maintain radio modem operation and provide an easy interface to external link controller ICs for Bluetooth wireless applications.

For efficient power management, each section of the radio may be powered down when not in use. The active circuitry required for the master clock reference and low-power clock used to supply clock signals to external devices is located on the SiW1502.

The transmitted signal is GFSK modulated data that is amplified on the chip to yield a radiated output of 0 dBm. A power control signal for an external amplifier is provided.

SYSTEM SPECIFICATIONS ⁽¹⁾

Parameter	Symbol	Min	Max	Units
Operating Temperature	T _{OP}	-20	+85	°C
Analog supply voltage	VCC	2.7	3.3	V
Digital supply voltage	VDD	2.7 ⁽²⁾	3.3 ⁽²⁾	V
Internal voltage regulator supply voltage (on VCC_BATT pin)	VBATT	2.7	4.8	V

System Specifications

- NOTES:**
1. Normal range for VCC is 2.7 V to 3.3 V.
 2. VDD supply voltage must not be greater than VCC voltage for proper device operation.

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Silicon Wave, Inc.
6165 Greenwich Drive
Suite 200
San Diego CA 92122

www.siliconwave.com
+1.858.453.9100 *tel*
+1.858.453.3332 *fax*
+1.888.293.6650 *toll free*