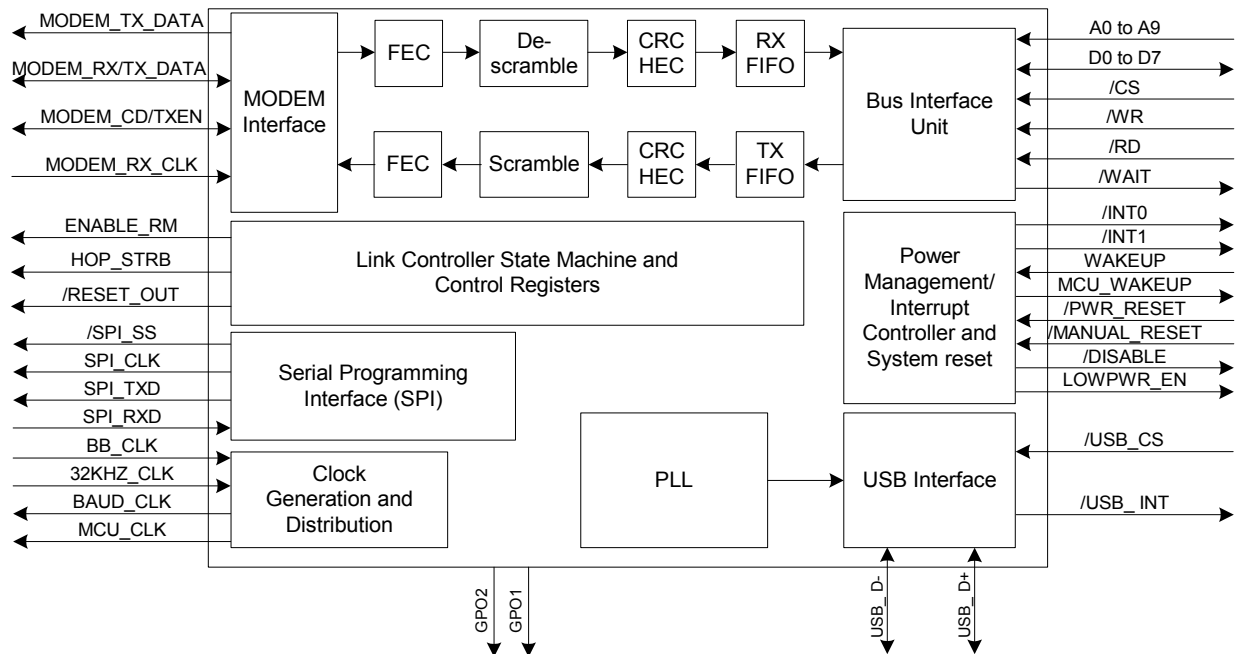


# SiW1602 Link Controller IC

## INTRODUCTION

The Odyssey™ SiW1602 Link Controller IC is part of Silicon Wave's solutions for Bluetooth™ wireless communications. The SiW1602 IC provides the Bluetooth link management and control functions in a digital ASIC. In combination with the SiW1502 Radio Modem IC, it provides a complete and cost effective hardware solution to integrate into products.



*SiW1602 Link Controller Functional Block Diagram*

## FEATURES

- Direct interface to SiW1502 Radio Modem IC.
- USB (compliant to specification 1.1) interface to host computer system.
- Link control function implemented in hardware compliant to Bluetooth Specification 1.1.
  - ACL and SCO connections at 1 Mbit/second.
  - Piconet and inter-piconet functions, including master/slave switch capabilities.
  - Authentication and encryption as defined in the specification.
- Dual on-chip 384 byte transmit and receive FIFOs ensure packet data is never lost due to interrupt latency.
- Programmable interrupt controller.
- Time-critical packet processing.
- Low-power modes such as page, page scan, inquiry and inquiry scan.
- Supports for transmit power control and receiver RSSI functions.
- 108-pin CBGA package.

## APPLICATIONS

The SiW1602 IC is suitable for all applications requiring packet processing and link management for Bluetooth communications. When combined with the SiW1502 Radio Modem IC, a low power and cost effective solution can be implemented.

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

## DESCRIPTION

The link controller hardware in the SiW1602 IC implements all the real-time lower layer protocol processing. This hardware performs the logical protocol processing within the unit that enables the host to communicate over a Bluetooth link. Real-time functions such as frequency-hopping, burst timing, synthesizer programming, and clock synchronization are implemented in the hardware. Also incorporated within the SiW1602 IC logic is power management and clock distribution.

In addition to the radio control functions described above, the SiW1602 also performs processing on Bluetooth transmit and receive data:

- **FEC:** Forward Error Correction.
- **Whiten/De-whiten:** Scramble/Unscramble.
- **Encrypt/Decrypt:** Apply/Remove encryption
- **CRC:** Cyclic Redundancy Check.
- **HEC:** Header Error Correction.
- **Tx/Rx Buffers:** Storage for received packets and packets to be transmitted.

## SYSTEM SPECIFICATIONS

**NOTE:** Normal range for Vcc is 2.7 V to 3.3 V.

Parameter	Name	Min	Max	Units
Supply voltage	V <sub>CC</sub>	2.7	3.6	V
Operating temperature	T <sub>OP</sub>	-20	85	°C
Storage temperature	T <sub>ST</sub>	-55	125	°C
Digital input voltages	V <sub>d</sub>	V <sub>CC</sub>		V
Power dissipation	P <sub>d</sub>	TBD	TBD	mW

### System Specifications

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