

BOOST™ Core

The BOOST™ Core is a Bluetooth® baseband processor core for integration into Bluetooth standard ASICs and FPGAs. Complemented with BOOST™ Software and BOOST™ RF to implement a complete Bluetooth solution.

Supported Bluetooth Features

- Compliant with Bluetooth specifications 1.2, 2.0+EDR and 2.1+EDR
- Adaptive Frequency Hopping (AFH) in piconet and scatternet operation for improved coexistence with devices WLAN
- Hardware encryption
- Support of Bluetooth low power modes (sniff, hold and park)
- WLAN and WiMAX coexistence interfaces
- Supports all packet types
- Sniff Sub-rating for optimized power consumption
- Secured Simple pairing for improved user experience
- Extended Inquiry Response for faster connection
- Encryption Pause and Resume

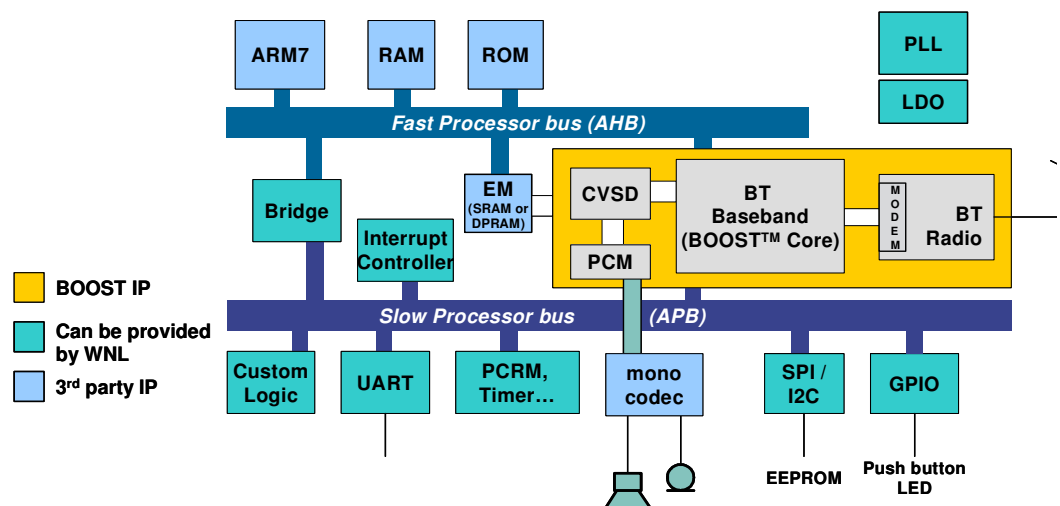
- Low gate count
- Optimized for use with BOOST RF. Other RF can be supported on request
- Direct voice bus from CVSD codec, with support of up to 3 voice channels
- Optimized interface to BOOST Software
- Designed for easy integration into an ASIC
- Reusable block to be plugged on AMBA2 AHB/APB bus
- Support any processor (ARM, ARC, LEON, etc.)
- DFT ready, accepted by major ATPG tools
- Supplied with compilation, simulation and synthesis scripts
- Supplied with test bench suite permitting re-verification of the core after user edits
- Comprehensive documentation and training
- Turnkey IC design service available on request

Key Product Features

- Designed in synthesizable VHDL for easy technology migration
- Designed for minimal power consumption
- Support of 32000 Hz and 32768 Hz low power clock (can be used for hold, park and sniff)
- Low operating frequency dynamically selectable between 13, 16, 18, 22 and 26 MHz. Other frequencies can be supported on request
- Bluetooth clock and multiple offsets management for scatternet operation in master and slave devices

Integration into a Bluetooth ASIC

The BOOST Core has been designed for integration into an ASIC, as shown below. A RAM and a ROM that could also be EPROM, EE-PROM, OTP or Flash memory are necessary to host the BOOST Software. The CVSD codec and PCM interface are necessary to support voice applications, like mono headset. The HCI interface can be UART, USB, SDIO, SPI or other proprietary interface.



Interfacing to the BOOST Core

The BOOST Core interfaces to a fast processor bus (AHB). This bus ensures that data can be moved quickly between the processor and the Exchange Memory connected to the core. The bus interface has been optimized for the ARM™ processor, but other processors (eg. ARC, Tensilica or LEON) can also be supported.

A proprietary interface is provided to link the BOOST Core to the CVSD codec for voice applications, in order to be able to process a continuous voice stream without the need of processor intervention. In addition PCM format is supported.

In addition to the Wipro-NewLogic BOOST radio, several radios from various manufacturers can be attached to the BOOST Core via a configurable radio interface block. The radio interface settings can be programmed by software to work with the chosen radio component. The core interface is fully digital.

Some radios may not contain the ADC/DAC nor the modem. Wipro-NewLogic can optionally provide these components.

Exchange Memory

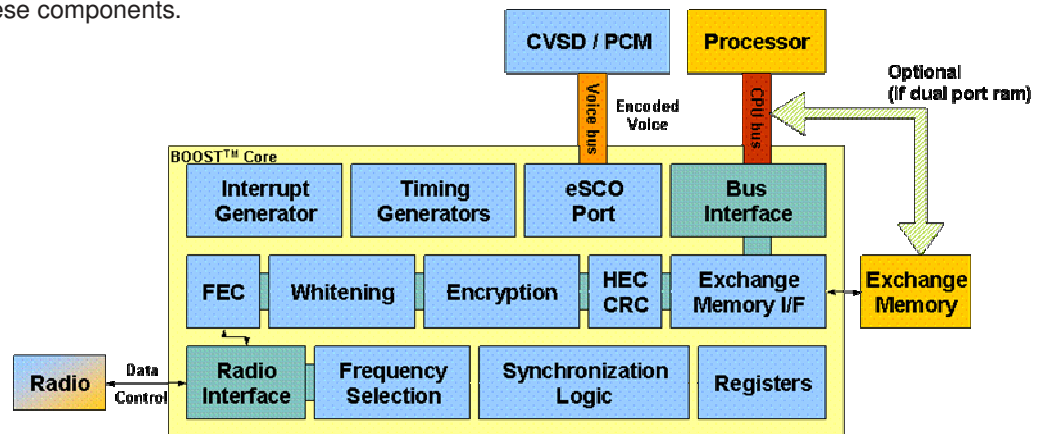
The Exchange Memory is a static RAM connected to the BOOST Core containing control structures and data buffers. Its size can be tailored to the application requirements. Both the processor and the BOOST Core can access the Exchange Memory: a synchronization and prioritization mechanism is implemented to ensure a clean handshaking between the hardware and the software, avoiding any real-time issues.

Link with BOOST™ Software

The BOOST Software has been developed with the BOOST Core in order to optimize the hardware/software interface and fully exploit the performance of the block. Interrupts are generated to synchronize the software processing with the BOOST Core. A single line interrupt is sent to the processor.

Validation

The BOOST Core and BOOST Software have been validated on the BOOST development board. This board is available for ASIC prototyping and software development.



For more details about our products and services, email us at semi.ip@wipro.com or visit us at www.wipro-newlogic.com.