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ASICs

picoBOOST™ Core

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Baseband and processor cores for adding Bluetooth™ functionality to system ASICs. Complemented with BOOST Software™ to implement a Bluetooth protocol stack.

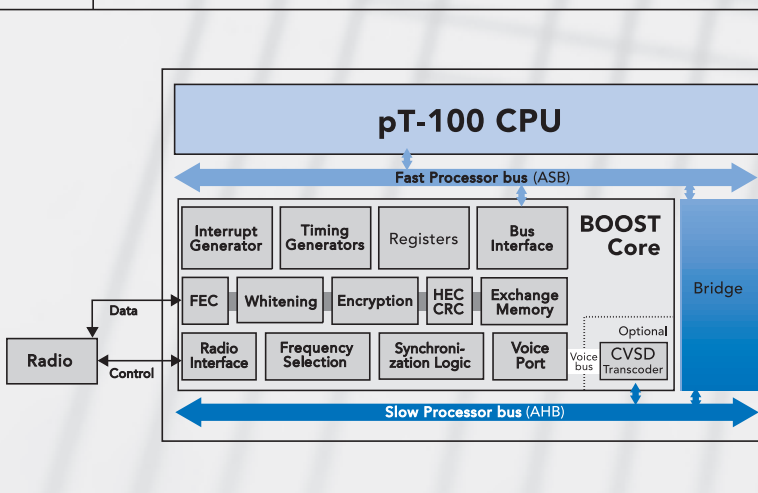
Product Features

- Bluetooth qualified baseband processor IP (v1.0B qualification)
- Compliant to Bluetooth specification v1.1
- Integrated BOOST Core™ from NewLogic
- Integrated pT-100™ microprocessor core from picoTurbo
- Includes processor bus bridges
- Low power consumption
- Low operating frequency selectable between 12 and 16 MHz
- Low gate-count
- Optimized interface to BOOST Software™
- Designed for easy integration into an ASIC
- Supports various Bluetooth radio chips via a selectable interface
- Supports 0 dBm and 20 dBm radio modules
- Optional CVSD transcoder included (for voice applications only, 20k gates)
- DFT ready, BIST included
- Hardware encryption
- Bluetooth clock and multiple offsets management for scatternet operation in master and slave devices
- TDMA/TDD frames formatting and synchronization
- Supports Bluetooth low power modes (sniff, hold and park)
- Supports Bluetooth optional and mandatory paging modes
- Supports all packet types:
 - Control packets
 - Voice packets
 - Mixed voice-data packets
 - Single-slot data packets
 - Multi-slot data packets
- Comprehensive documentation
- Turnkey IC design service available on request



Integration into a Bluetooth ASIC

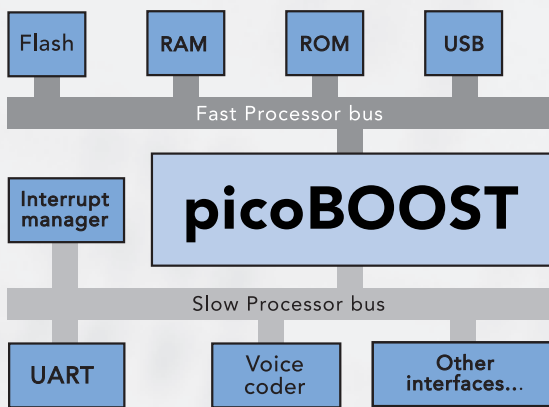
The picoBOOST™ Core has been designed for integration into an ASIC, as shown in the typical system on the left side. A RAM and a ROM (could also be EPROM, EEPROM, OTP or Flash memory) are necessary to host the BOOST Software™. The optional CVSD transcoder and a voice coder are necessary to support voice operation. For data applications, it is possible to input a data stream from a UART, proprietary interfaces or a USB interface. However, the complete application can be integrated on-chip and generate a data stream to be transferred via Bluetooth wireless technology.



NewLogic

Intellectual Property for Bluetooth Wireless Technology

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Interfacing to the picoBOOST™ core

The picoBOOST™ core exhibits fast and slow processor busses. These busses can be used to plug RAM, ROM, Flash or various peripherals. The included bus interface has been optimized for the integrated pT-100™ processor supplied by picoTurbo.

A direct link from an external codec to the picoBOOST™ core's CVSD transcoder allows to process a continuous voice stream without the need of processor intervention. In addition PCM format is supported.

Several radio chips, from various manufacturers, can be used in conjunction with the picoBOOST™ core. A dedicated radio interface is available for each supported radio. The core interface is fully digital. Some additional A-to-D or D-to-A converters may be required to interface to certain analog RF modules.

Embedded Exchange Memory

The Exchange Memory is a static RAM embedded inside the picoBOOST™ core containing control structures and data buffers. Its size can be tailored to the application and is typically somewhere between 1 and 8 KBytes.

The embedded pT-100™ processor and the BOOST baseband processor core both 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 and tuned for the picoBOOST™ core in order to optimize the hardware-software interface and fully exploit the performance of the block.

The software processing is synchronized by interrupts for full software control and optimized flexibility. A single line of interrupt is sent to the processor.

Validation and System Development

The picoBOOST™ core and BOOST Software™ have been validated on a custom Bluetooth system development board. This board is available for system debugging and software development.

Qualification

The picoBOOST™ core is based on the Bluetooth qualified BOOST™ Core guaranteeing interoperability with all v1.0B and v1.1 compliant Bluetooth devices and systems.

About NewLogic

NewLogic is an independently owned and operated company based in Lustenau, Austria. Founded in 1997, NewLogic provides System-On-Chip (SoC) design services and silicon IP development for leading semiconductor and systems companies. NewLogic's com-

prehensive IP portfolio includes embedded non-volatile memory, DSP, mixed signal and RF cores for the communications, information and automotive electronics markets.

