

# VWS26001 BLUETOOTH BASEBAND PROCESSOR

## Powerful single-chip architecture for Bluetooth-enabled applications

### OVERVIEW

The VWS26001 is a highly-integrated Bluetooth baseband processor designed to form the heart of standalone and embedded Bluetooth wireless communication systems.

Bluetooth is a low-cost cable replacement technology using short-range wireless links to provide “ad hoc” networking between portable devices. Bluetooth provides ubiquitous communication capabilities for a range of consumer electronics devices ranging from cell phones, PDAs and computers to digital cameras and fax machines. The five founding members of the Bluetooth consortium (Ericsson, IBM, Intel, Nokia and Toshiba) have since been joined by over 500 companies, thus setting the standard for worldwide success and rapid market growth.

### Bluetooth technology offers the following benefits:

- Open standard
- Both voice and data support
- Usable worldwide
- “Ad hoc” operation simplifies network setup
- Designed to withstand interference in unlicensed bands
- Can be implemented in very small modules, saving space in end equipment
- Very low power consumption
- Designed to reduce system bill-of-materials costs

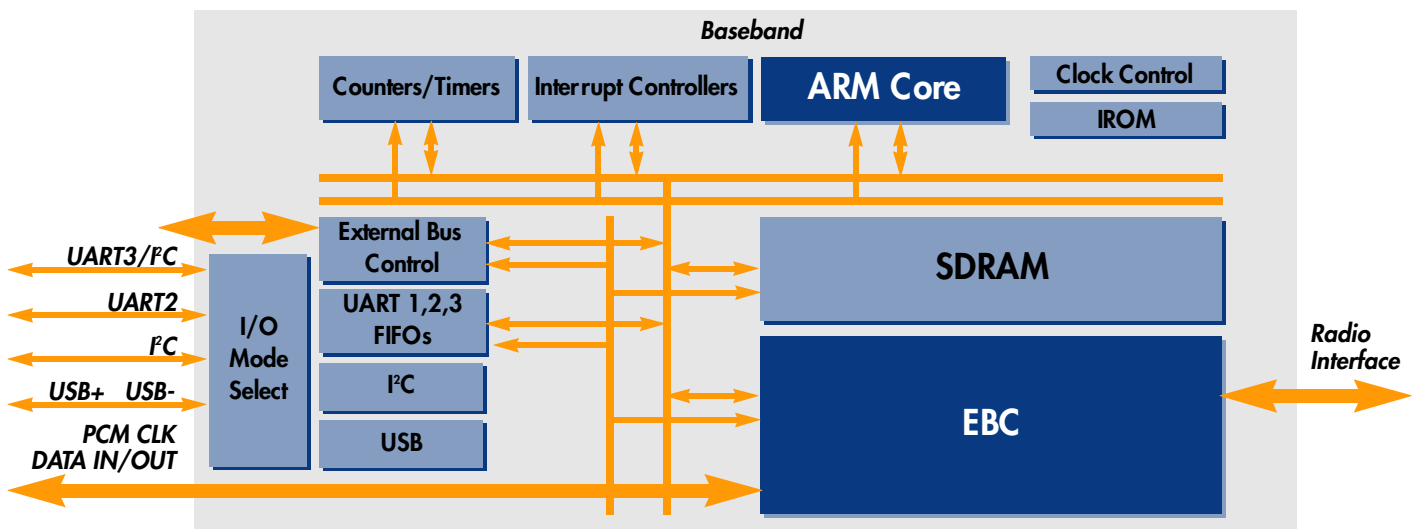
The VWS26001 Bluetooth Processor, first member of the VWS26000 Bluetooth family, was developed by VLSI to an Ericsson specification, thus minimizing risk and ensuring compliance and interoperability with the Bluetooth standard. The integrated enhanced ARM7TDMI microprocessor runs the complete

Bluetooth protocol stack while the on-chip peripherals provide for easy interfacing to a Bluetooth radio module and to a host system.

### FEATURES

- Integrated ARM7TDMI microcontroller
- Bluetooth core encapsulating Ericsson IP (EBC)
- Ericsson Protocol stack executes on-chip
- On-chip UART, as well as USB, PCM and I<sup>2</sup>C™ interfaces
- Implemented in 0.25 um CMOS technology
- Packaged in 96-pin FPBGA package for small footprint
- Utilizes Received Signal Strength Indication (RSSI) for adaptive transmit power control

## VWS26001 Baseband Processor – Block Diagram



- Supports key Bluetooth features such as:
  - Fast frequency hopping
  - CVSD (Continuously Variable Slope Delta-modulation) speech coding
  - Advanced security functions

## LOW RISK

The VWS26001 is directly compatible with the Ericsson-developed Bluetooth radio module, thus reducing development time and risk.

## LOW POWER

The VWS26001 device makes use of VLSI's low-power design expertise and is implemented in VLSI's leading-edge 0.25 um CMOS technology to deliver minimal power consumption with correspondingly longer battery lifetimes. The VWS26001 also allows adaptive radio transmit power control based on

RSSI measurement, providing scope for further dynamic reduction of system power consumption.

## BLUETOOTH MODULE

The first generation of Bluetooth-enabled products will make use of Bluetooth 'modules' which include both radio and baseband functionality. VLSI's VWS26001 processor is at the heart of a number of Bluetooth modules currently under development by OEMs.

### Radio

- Operates in 2.4GHz ISM band (unlicensed)
- Frequency hopping, spread spectrum technology
- Up to 79 "hop" channels
- 1MHz bandwidth per channel
- Peak data rate 1Mb/s
- Standard range <10m (0dBm), <100m option (+20dBm)

### Protocol Stack

- Link Manager (LM)
- Logical Link Control + Adaptation Protocol (L2CAP)
- Host Controller Interface (HCI)

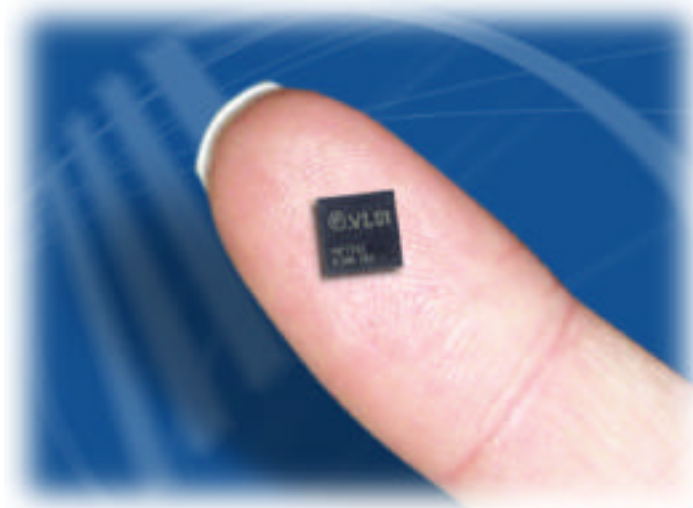
### Baseband

- Frequency "hop" selection
- Transmit/receive timing
- Radio interface
- FEC, CRC, ARQ
- PCM conversion
- Encryption and authentication

## AVAILABILITY

The VWS26001 baseband processor is now sampling and will be available in pre-production quantities in mid-1999.

# VWS26001 Bluetooth Processor



*Implemented in an 8x8mm 96 FPBGA package, the highly integrated Bluetooth Baseband Processor optimizes both size and cost while delivering minimal power consumption.*

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