

Philips Semiconductors -

one company,

total

Bluetooth solutions



*Let's make things better.*



**PHILIPS**

# One company, total Bluetooth solutions

**Bluetooth is almost certain to be one of the first applications to reach the Holy Grail of the wireless communications industry - a complete RF transceiver and baseband solution on a single piece of low-cost silicon. There is now one company that has all the necessary design expertise, process technology and applications knowledge in house to get there first - Philips Semiconductors.**

Through its acquisition of VLSI Technology, Philips Semiconductors has baseband solutions developed in direct collaboration with Bluetooth founder Ericsson. Through its world leadership in DECT cordless telephony it has RF technologies that transfer seamlessly into the Bluetooth domain. Its advanced sub-micron CMOS and BiCMOS processes will deliver low-voltage low-power Bluetooth chips at the volume and price levels required for high volume consumer markets. And its innovative Silicon System Platform (SSP) design methodology will give you the power to embed Bluetooth functionality into advanced system-on-chip solutions.

Partnering with Philips Semiconductors in your Bluetooth developments means guaranteed success, leading edge solutions and short time-to-market for new products. It also means a clearly defined road-map to higher levels of integration - culminating in ultimate low-cost single-chip Bluetooth solutions.

## Bluetooth ASSPs (Application Specific Standard Products)

Philips Semiconductors' initial Bluetooth chip-set, the first commercially available silicon solution for Bluetooth, comprises a baseband controller (part no. VWS26002) that implements the Ericsson Bluetooth engine and protocol stack, an alignment-free 'Low IF' single-chip transceiver (part no. UAA3558) and a small baseband/transceiver interface ASIC, giving you a fast-track route to early Bluetooth product realization. The Developer's Kit for this chipset, which is already available, provides you with a fully tested Bluetooth solution you can start using for hardware and software development today.

Early 2000, Philips Semiconductors will introduce its enhanced 'Blueberry' baseband controller, giving you a low-cost two-chip solution. To simplify incorporation of this chip-set into highly integrated Bluetooth products, the Blueberry controller features specialized hardware and software to support a wide range of host processor interfaces and protocols.

### Development System

VWS26002

Ericsson  
Radio  
PBA31301/2



### January 2000

VWS26002/X

Interface  
ASIC

Philips  
RF  
UAA3558



### April 2000

Blueberry  
PCD87750

Philips  
RF  
UAA3558



### 'Blueberry' single-chip Baseband Controller

- Bluetooth 1.0 compliant
- 128 Kbytes OTP, 8 Kbytes SRAM
- Single Core ARM platform
- Bluetooth link controller
- SPI, UART, PCM, 15 GPIO, (USB)
- Data and voice support
- Support for antenna diversity
- Supply voltage 2.7V
- Low-profile LFBGA100 and LFBGA108 package

### Single Chip RF Transceiver

- One-chip, fully integrated 'Low IF' transceiver
- Integrated low phase noise VCO
- Dedicated Bluetooth PLL synthesizer
- -90 dBm target sensitivity
- 4 dBm output preamplifier
- 3-line serial interface to baseband controller
- No alignment points, SAW filters or crystal filters
- Lowest cost, smallest footprint Bluetooth RF solution

## Embedded Systems

The Bluetooth link controller at the heart of the Blueberry chip will also be made available as an embedded core for advanced system-on-chip designs. Together with Philips Semiconductors' ARM-based processor cores, embedded SRAM and low-cost embedded OTP memory technology, this will allow you to develop the minimal chip count low-power low-voltage solutions required for compact battery powered Bluetooth applications such as mobile phones and PDAs.

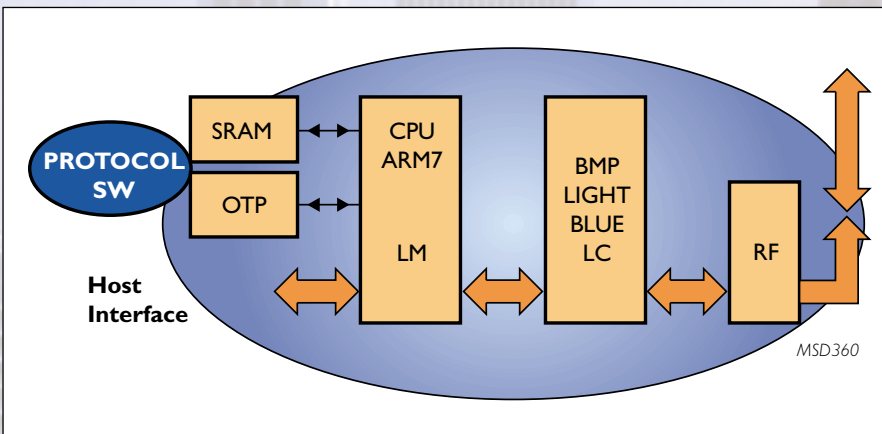
And because total solutions involve software as well as hardware, Philips Semiconductors and its partners provide comprehensive Bluetooth stack software and APIs for functions such as high-speed serial ports, headsets and object exchange. Powerful software development tools allow you to configure and link software modules to exactly match your required Bluetooth profile, eliminating unnecessary software overhead and achieving minimum ROM-code solutions.

## The Ultimate One-chips

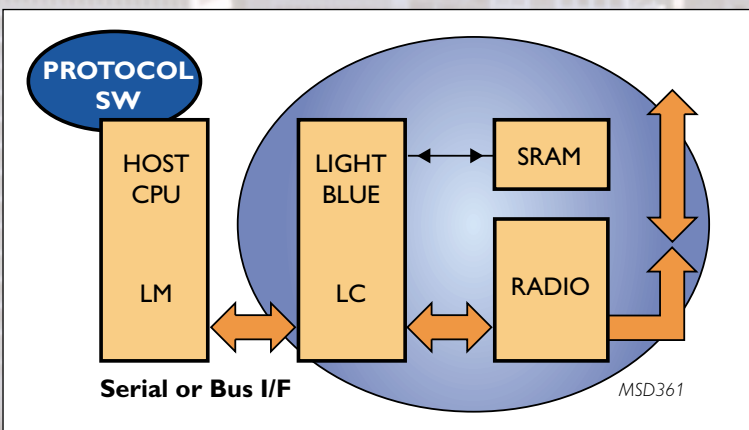
RF CMOS is not that far away at Philips Semiconductors, and such a process will be a perfect fit for single-chip Bluetooth solutions. The RF power level is low yet the processing performance is high. Single-cell battery packs will demand low-voltage, ultra-low power operation.

And many consumer applications for Bluetooth will demand the very high volume production and low piece prices for which CMOS is famous. Backed by the resources of Philips' Natlab - the world's second largest private research organization - Philips Semiconductors is one of the few companies in the world with the ability to put mixed-signal analog/digital and RF circuitry on the same chip.

Yet even before a single-chip Bluetooth solution is realized, Philips Semiconductors will give you all the benefits of ultra-small single-package solutions in the form of multi-chip modules. Philips Semiconductors' product roadmap includes complete single-package RF + baseband solutions to support on-chip or host system protocol handling. Its portfolio also includes peripheral products such as silicon RF power amplifiers making Philips the single, reliable partner that will help you stay ahead in the rapidly expanding Bluetooth arena.



Single-chip solution



RF and Link Controller Combination

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