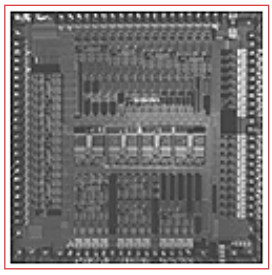
BCM2039

PRODUCT Brief



BCM2039 HCI-COMPLIANT BLUETOOTH™ BASEBAND

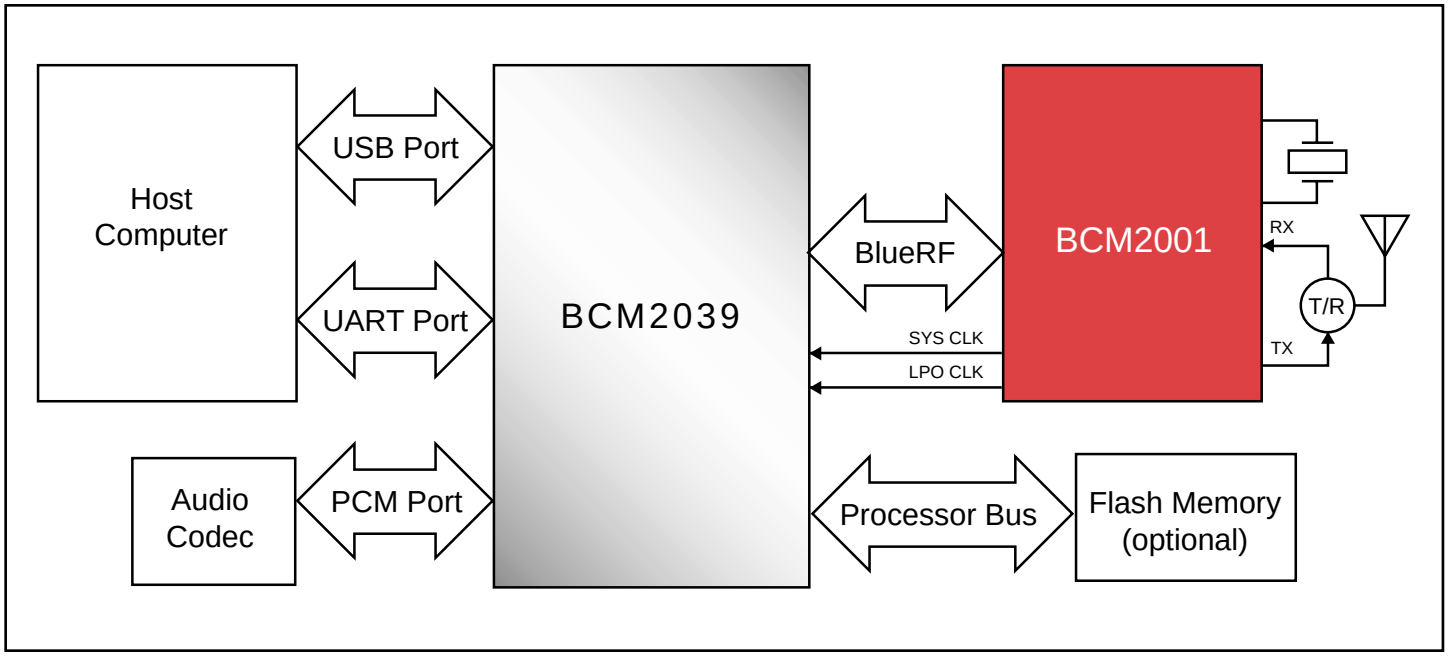
BCM2039 FEATURES

- **Bluetooth 1.1 qualified baseband processor**
- **Provides standard USB and UART Bluetooth host controller interfaces (HCI)**
- **Serial PCM digital audio interface**
- **Supports all Bluetooth ACL/SCO data packet types**
- **On-chip enhanced 8051 processor core with on-board RAM and ROM**
- **Internal baseband core operates at 1.8V with 3.3V-compatible host system interfaces**
- **Low power consumption with integrated power management unit**
  - Park/hold/sniff
- **Support for BlueRF unidirectional, RXMODE2 radio interface**
- **Uses commercially available 8051 software development tools**
- **9 mm x 9 mm, 100–pin fine pitch ball grid array (FPBGA) package**

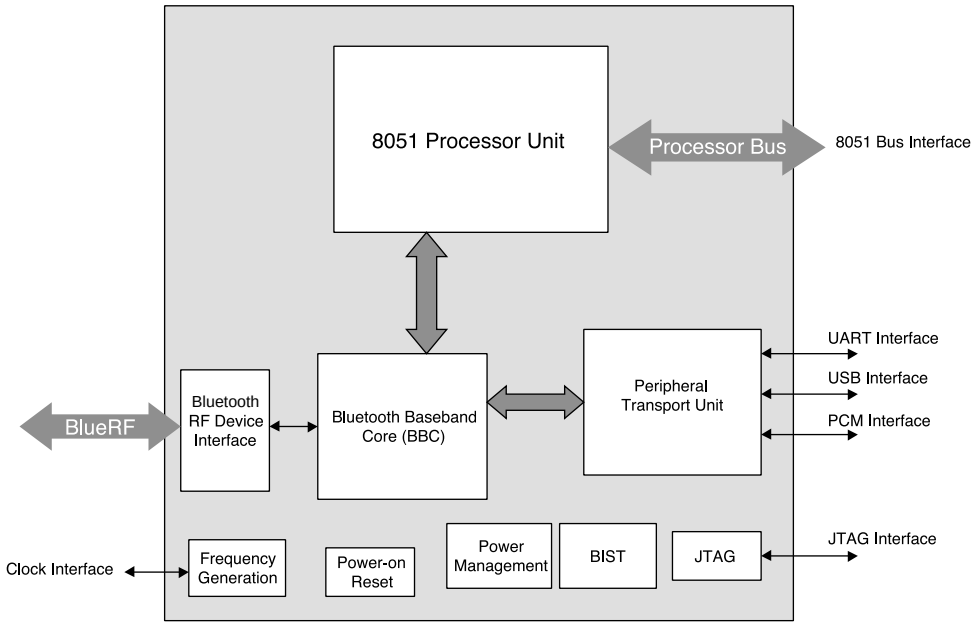
SUMMARY OF BENEFITS

- **The combination of BCM2039 and BCM2001 provides a complete Bluetooth HCI solution.**
- **Standard HCI USB and UART implementations enable interoperability with any Bluetooth-compliant, upper-level protocol stacks.**
- **Integrated 8051 processor and baseband processing offloads all processor-intensive tasks from the host computer.**
- **Flexible baseband architecture makes the BCM2039 ideal for applications such as PCs, printers, laptops, mobile phones and PDAs.**
- **BlueRF radio interface simplifies integration with Broadcom BCM2001 Bluetooth radios.**
- **Enables low overall system cost.**
  - External flash chip not required
  - On-chip RAM enables firmware download

Bluetooth™ Application



BCM2039 OVERVIEW



The **BCM2039** architecture includes an enhanced 8051 processor core, on-chip boot ROM and SRAM, an intelligent software-hardware integrated baseband core, and standard input/output peripheral interfaces that include USB, UART, and PCM Audio Codec Serial Interface. The glueless connection to the BCM2001 Bluetooth Transceiver provides a complete, highly integrated Bluetooth solution.

The **BCM2039** provides the functionality for a Bluetooth chipset from the physical layer radio interface to the Bluetooth host controller interface (HCI) layer. This implementation conforms to the standard defined in the Bluetooth specification. For non-processor intensive applications, functionality up to the L2CAP and application layer can be implemented in the 8051 processor. This enables the **BCM2039** to be used in a true stand-alone architecture with minimal host processor overhead. The highly time-critical sections of the Link Controller (LC) protocol are implemented using dedicated hardware under the control of software, enabling the use of the low-power 8051 processor for link management processing.

The on-chip power management unit (PMU), which can be enabled by software or physical layer packet handling between the baseband core and the Bluetooth Transceiver, provides efficient power management control. The **BCM2039** also includes diagnostic bypass and loopback paths.

The **BCM2039** supports third-party Bluetooth upper layer protocol stacks.

The **BCM2039** supports the following interfaces:

- **UART**
  Supports RXD, TXD, RTS and CTS signals. The UART is 16C550-compatible.
- **PCM Audio Codec Serial Interface**
  The audio transcoder interface supports 13–16 bit linear PCM, 8-bit μ-law, 8-bit A-law and CVSD audio and data formats. The serial audio interface supports standard audio CODECs.
- **USB**
  On-chip USB interface conforms to the full-speed (12 Mbps) requirements of USB specification version 1.1 with on-chip USB transceiver.
- **8051 Bus Interface**
  Accesses 64-KB to 256-KB address space for code and data with 8 GPIO signals.

For more information please contact us at:
Phone: 949-450-8700, FAX: 949-450-8710
Email: info@broadcom.com

BROADCOM®

Visit our web site at: www.broadcom.com

2039-PB02-R-4.20.01

BROADCOM CORPORATION
16215 Alton Parkway, P.O. Box 57013
Irvine, California 92619-7013