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Connecting
e v e r y t h i n g ®

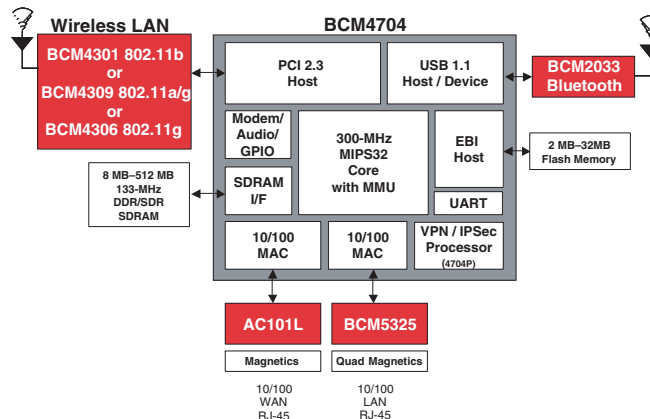## BCM4704/BCM4703
PRODUCT Brief

AirForce™ DUAL-BAND WIRELESS NETWORKING PROCESSOR

FEATURES

- **High-performance wireless networking processor capable of Ethernet routing while hosting IEEE 802.11a, IEEE 802.11b, and IEEE 802.11g interfaces.**

- **Advanced 400-DMIPS/300-MHz MIPS32™ CPU core**
  - 16-KB I-cache and 16-KB D-cache
  - MMU/TLB RTOS support, including Linux®, VxWorks®, and Windows® CE.NET

- **10/100 Ethernet MAC with MII for WAN and LAN connectivity**

- **PCI 2.3 host interface (32-bit/33-MHz)**

- **Integrated 2-port USB hub**

- **12-Mbps USB 1.1 host and device interface**

- **V.92 codec, audio codec, IR, and GPIO interfaces**

- **SDRAM controller**
  - 32-bit/133-MHz SDRAM controller
  - DDR and SDR support
  - From 8 MB to 512 MB capacity

- **16-bit expansion bus**

- **Dual 16550-compatible UART**

- **0.13u low-power 1/2/3.3V design**

- **BCM4703 cost-reduced version available. Excludes USB, V.92 codec, audio codec, and IR interfaces, and with 8-bit expansion bus.**

SUMMARY OF BENEFITS

- **High-performance processor allows wireless access points and routers to run in IEEE 802.11a and IEEE 802.11g modes simultaneously.**

- **Architecture optimized for wire-speed routing.**

- **Ideal platform for enterprise access points.**

- **10/100 Ethernet WAN to 10/100 Ethernet LAN routing with optional expansion to 4/8/16-port Ethernet LAN.**

- **Modem codec interface enables low-cost software modem.**

- **V.92 codec interface is compatible with AC'97 or serial-based hardware to leverage homologated modules.**

- **PCI 2.3 host interface expands platform up to three external PCI devices.**

- **12-Mbps, USB 1.1-compliant host/device interface enables expansion for printer and camera servers, and wireless Webcam and Bluetooth® devices.**

- **Time-to-market significantly reduced through stable Linux® and VxWorks® kernels, BSP, drivers, and toolchains.**

- **Production-quality router code includes residential gateway feature set to differentiate your product.**

- **Flexible expansion bus allows connection of 16-bit PCMCIA slaves, flash memory, and IDE hard drives.**

- **Audio interface (I^{2}S) allows direct connection of popular DACs.**

- **Turnkey software code is compatible with other AirForce routers and APs, enabling seamless migration of proprietary features.**

BCM4704 System Diagram
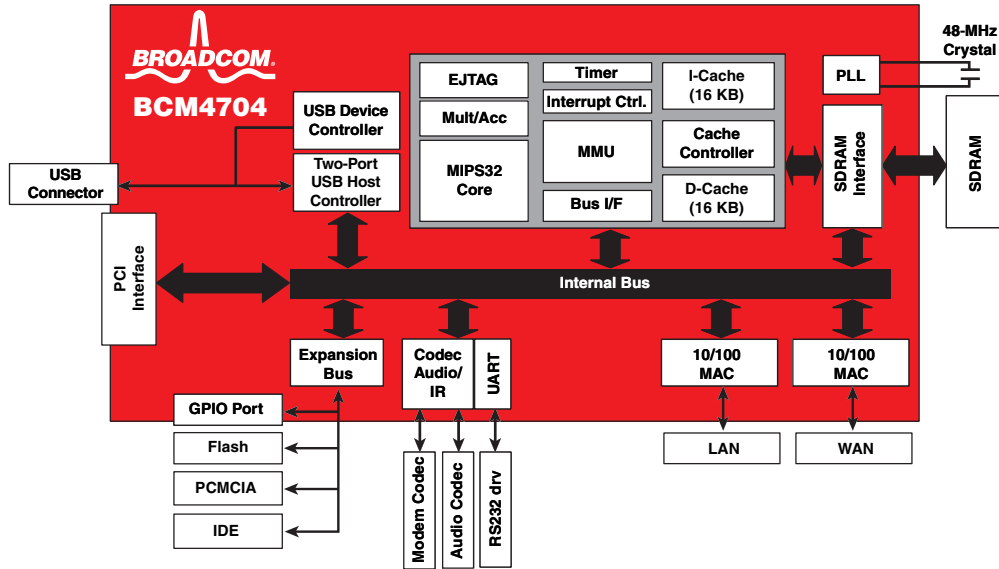
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BCM4704 Block Diagram

The Broadcom® AirForce BCM4704/BCM4703 wireless networking processors are high-performance, low-power System On a Chip (SoC) devices designed to support all IEEE wireless networking standards. These devices offer features such as simultaneous dual-band operation, an expandable platform, and fast time-to-market that differentiate end products. Rich in integrated hardware and software features, the BCM4704/BCM4703's designs are optimized for use in IEEE 802.11a/g access points and routers.

The BCM4704/BCM4703 integrate an advanced custom 400-DMIPS/300-MHz MIPS32 core with the following:

- 2-way, set associative, 16-KB I-cache and 16-KB D-cache
- Two 10/100 Ethernet MACs
- V.92 codec interface

In addition to all MIPSII instructions, the MIPS core includes extra instructions that optimize the DSP algorithms used for communications, audio, and video applications. An integrated MMU, with a 32-entry TLB, provides support of multithreaded operating systems such as the standard distribution Linux. The V.92 data/fax/voice modem interfaces to an external serial modem codec/DAA. It also has two 10/100 Ethernet MACs that are ideal for residential gateways routing information between the WAN port and one or more Ethernet LAN ports.

The BCM4704/BCM4703 provides simultaneous PCI 2.3 host interface, expansion host interface, and USB 1.1 host/device interface operation for adding application-specific peripherals including Broadcom's

BCM4318 IEEE 802.11a/g dual-band, BCM4306 IEEE 802.11g, BCM4321 and BCM4322 802.11n network interface controllers. The PCI 2.3 host interface allows enumeration of three external PCI peripherals (more with external arbiter) for platform expansion. The expansion host interface allows expansion of up to four devices without requiring the decoding of external addresses. The BCM4704 is capable of hosting two USB 1.1-compliant devices (integrated 2-port hub), allowing platform expansion by end users and can implement USB print server functionality. In addition, the USB interface can be configured as a USB device instead of a host to support applications where the BCM4704/BCM4703-based system is added to existing legacy systems.

The BCM4703 wireless networking processor is a cost-optimized version of the BCM4704 processor. The BCM4703 does not include the 2-port USB 1.1 host/device, and audio codec and v92 codec interfaces. Unlike the BCM4704, the BCM4703 only supports an 8-bit expansion bus and a PCI 2.3 host interface that supports two external PCI peripherals.

As the highest performing members of the AirForce BCM47xx family of products, the BCM4704/BCM4703 use the same basic software code as the BCM4702 wireless host processor and the BCM4711 integrated IEEE 802.11b wireless network processor chipsets. This compatibility ensures that the manufacturing software investment scales across Broadcom's complete line of low-cost, high-performance wireless access points and routers.

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