BROADCOM®

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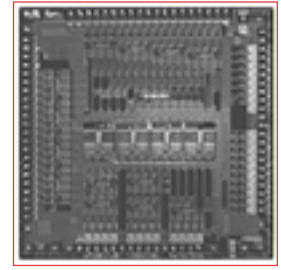
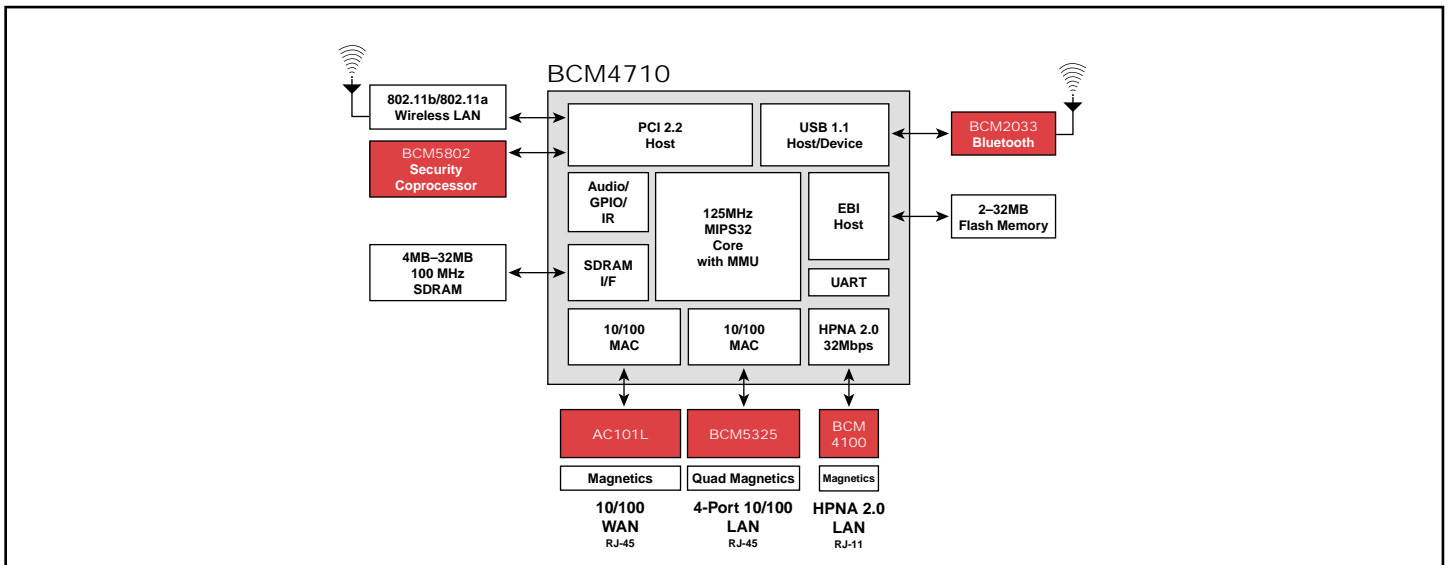# BCM4710 INTEGRATED RESIDENTIAL GATEWAY

BCM4710 FEATURES

The Broadcom BCM4710 is the most highly integrated platform for residential gateways and wireless access points. The BCM4710 integrates:
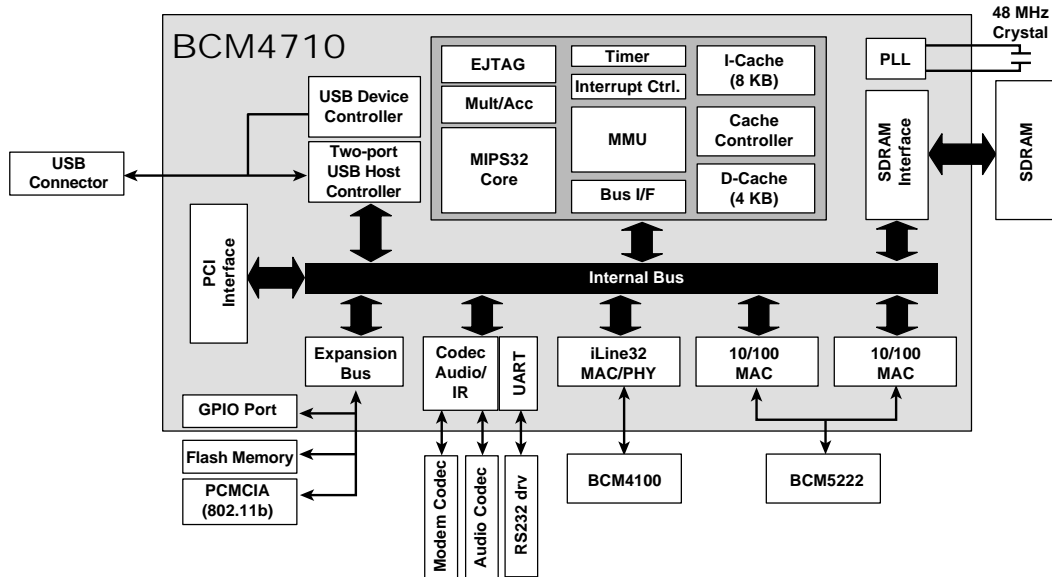
- **An advanced custom 125-MHz R3000 MIPS32™ CPU core**
  - 8KB I-cache and 4KB D-cache
  - 32×32 bit single-cycle Multiply/Accumulate for signal processing application acceleration
  - MMU for high-level RTOS support including standard release Linux™ (kernel 2.4.5 and greater) or VxWorks® operating systems
- **10/100 Ethernet MAC with MII for WAN connectivity**
- **10/100 Ethernet MAC with MII for LAN connectivity**
- **PCI 2.2 host interface**
- **12-Mbps USB 1.1 host and device interface**
- **Flexible 16-bit expansion host interface with PCMCIA**
- **HPNA 2.0 phone line networking iLine32™ MAC and PHY**
- **Modem codec, audio codec, IR, and GPIO interfaces**
- **32-Bit, 125-MHz SDRAM controller (PC133)**
- **16550 compatible UART**
- **0.18 μm low-power design**
- **1.8/3.3V, 324-pin PBGA package**

SUMMARY OF BENEFITS

- **Single-chip residential gateway platform offers best cost and feature integration**
- **Fully-tested Linux® and VxWorks® kernel, BSP, drivers, and toolchains available**
- **Fully-tested router code with residential gateway feature set enables quick time-to-market**
- **10/100 Ethernet WAN to 10/100 Ethernet LAN routing with optional expansion to 4/8/16 port Ethernet LAN**
- **PCI 2.2 host support for two PCI slots**
  - 802.11b and 802.11a wireless adapters
  - BCM5802 IPsec security accelerator, DSL, fixed wireless, and BCM7021 video expansion cards
- **Full 12-Mbps USB 1.1 compliant host/device interface enabling platform expansion**
- **Flexible expansion bus allows connection of 16-bit PCMCIA slaves, flash memory, and IDE hard drives**
- **iLine32™ HPNA 2.0 MAC/PHY provides up to 32 Mbps over phone lines (ideal for data/voice/audio /video distribution throughout the home)**
- **Modem codec for low-cost software modem**
- **Audio interface (I²S) allows direct connection of popular DACs for streaming audio appliances**

BCM4710 System Diagram

The Broadcom **BCM4710** integrates a 125-MHz MIPS32™ core along with HomePNA 2.0 with 32 Mbps phone line (iLine32™) operation, two 10/100 Ethernet MACs, and a modem codec interface. In addition, the **BCM4710** provides simultaneous PCI 2.2 host interface, expansion host interface, and USB 1.1 host/device interface operation for adding application specific peripherals. The **BCM4710** represents the most comprehensive and flexible, low-cost, single-chip residential gateway platform with built-in home networking.

MIPS™ core: The **BCM4710** integrates an advanced custom 125 MHz MIPS32™ core with two-way set associative 8KB I-cache and 4KB D-cache and includes a 32×32-bit single-cycle multiply/accumulate function. In addition to all MIPSII instructions the MIPS core includes extra instructions for optimization of DSP algorithms for communications, audio, and video applications. A translation lookaside buffer MMU block is included, allowing support of all common real-time operating systems such as standard release Linux® (kernel 2.4.5 and greater) or VxWorks®.

Home networking function: The HomePNA 2.0 function integrated in **BCM4710** provides 32Mbps maximum wire rate interface to home phone lines. Broadcom's iLine32™ implementation provides a robust implementation that interoperates with HPNA 1.0 devices and is dynamically rate-adaptive between 32 Mbps and 1 Mbps.

10/100 Ethernet: The **BCM4710** integrates two 10/100 Ethernet MACs, which is ideal for residential gateways that route and secure information between an Ethernet WAN port and one or more Ethernet LAN ports.

PCI 2.2 host interface: The PCI host interface allows enumeration of two external PCI peripherals (more with external arbiter) for platform expansion. PCI adapters such as 802.11a, 802.11b and IPsec accelerators can easily be added to the system PCI.

USB 1.1 host/device: The **BCM4710** is capable of hosting two USB 1.1 compliant devices (two-port hub is integrated), 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 direct connection to a PC USB port.

Expansion bus: The expansion bus allows expansion of up to three devices without external address decode. The expansion bus can support a 16-bit PCMCIA host to third-party solutions for 802.11b, flash/compact flash, IDE, and generic 16-bit slave.

Modem Function: The **BCM4710** controller includes a data/fax/voice modem interface to an external serial modem codec/DAA.

Ordering information
Part number: BCM4710KPB

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