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BCM4716/BCM4717/BCM4718

PRODUCT Brief



INTENSI-FI® XLR 2 × 2 IEEE 802.11N 2.4-GHZ + 5-GHZ ROUTER SOC

FEATURES

- **High-performance low-cost Draft-802.11n compliant System-on-a-Chip (SoC) CPU/MAC/baseband/radio wireless router solution**
- **Optimized Intensi-fi® XLR platform with Accelerange™ Technology—a unique set of hardware and software enhancements that ensure more robust wireless coverage in the far corners of a home.**
- **Designed to work with various external switch arrangements (10/100/1000, 10/100, and single-port PHY)**
- **Integrated 533-MHz MIPS32® 74K™ core**
  - 32-KB I-cache, 32-KB D-cache
  - 64-entry translation lookaside buffer (TLB)
- **Enhanced 10/100/1000 Ethernet MAC controller**
- **Integrated dual-band radio transceiver**
- **Embedded hardware acceleration**
- **State-of-the-art security (IEEE 802.1X/WPA™/WPA2™)**
- **USB 2.0 EHCI host ports**
- **Up to 2-Gbit DDR SDRAM and up to 32-MB Flash memory**

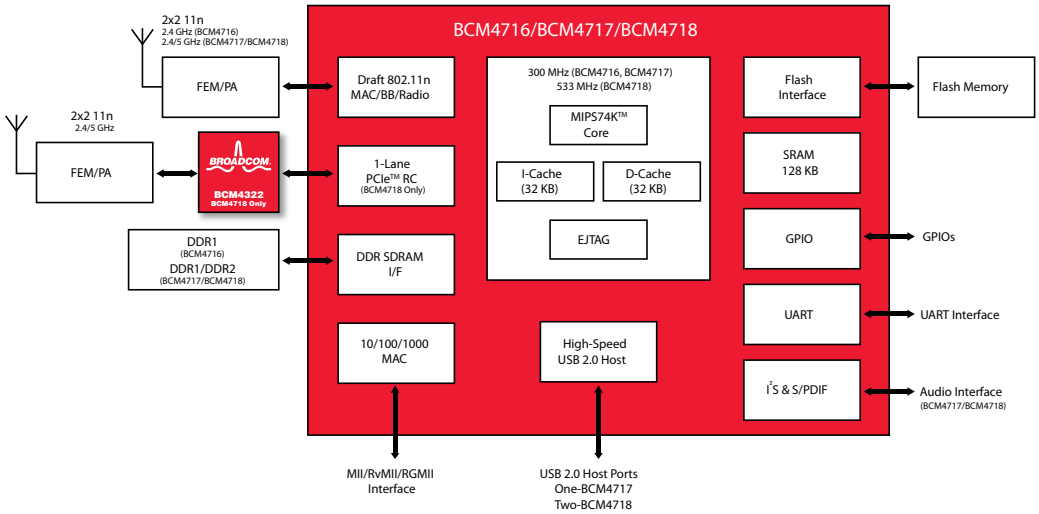
SUMMARY OF BENEFITS

- **Single-chip Draft-802.11n with reduced power consumption enables compact form factors with low cost and high-performance.**
- **Optimized reduced bill of materials (RBOM) and PCB to enable smallest cost delta over IEEE 802.11g designs.**
- **Reduced host CPU utilization.**
- **Enhanced system performance.**
- **Two-stream spatial multiplexing with data rates up to 300 Mbps.**
- **Multiple memory (DDR/Flash) configurations supported to enable low-end to high-end performance options.**

APPLICATIONS

- **Single- and dual-band Draft IEEE 802.11n wireless home routers/access points (AP)**
- **Gigabit and 10/100 Ethernet routers and access points/WET**
- **Simultaneous dual-band routers with additional MAC/PHY/Radio (BCM4322, for example)**

Functional Block Diagram



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OVERVIEW

The Broadcom BCM4716/BCM4717/BCM4718 processor is the highest performance System-on-a-Chip in the Intensi-fi® XLR processor family. It is a Draft IEEE 802.11n-compliant CPU/MAC/baseband/radio router solution designed to work with various external switch arrangements, including 10/100/1000, 10/100, or a single-port PHY. Integrated on-chip is a powerful 533 MHz MIPS32 74K core with four-way set associative 32-KB instruction cache, a 32-KB two-way set associative data cache, and a 64-entry translation lookaside buffer. Enhanced CPU memory subsystem architecture provides increased system performance.

Using multiple in/multiple out (MIMO) signaling with Draft IEEE 802.11n protocol, information is sent and received over two or more antennas simultaneously using the same frequency band, thus providing greater range and increasing throughput while maintaining compatibility with legacy IEEE 802.11a/b/g devices (BCM4716 supports legacy IEEE 802.11b/g devices only). This improved functionality is accomplished through a combination of enhanced MAC and PHY implementations, including spatial multiplexing modes in the transmitter and receiver and advanced digital signal processing techniques to improve receive sensitivity.

With its fully integrated dual-band radio transceiver, the chip architecture supports two streams with two antennas for TCP throughput of over 200 Mbps. Switched antenna diversity operation is also supported for three antennas.

State-of-the-art security is provided by industry-standardized system support for WPA, WPA2 (IEEE 802.11i), and hardware accelerated AES encryption/decryption coupled with TKIP and IEEE 802.1X support.

Embedded hardware acceleration enables increased system performance and significantly reduces host CPU utilization in both client and access point configurations. The BCM4716/BCM4717/BCM4718 supports WPS and also Broadcom's widely accepted and deployed SecureEasySetup® application for ease-of-use wireless secured networks.

The BCM4717 integrates one USB 2.0 EHCI host port, and the BCM4718 integrates two USB 2.0 EHCI host ports. The BCM4718 includes an 8/16-bit parallel external bus interface (EBI) for Flash memory as well as other generic parallel devices. There are 16 dedicated GPIOs.

Device Options and Features

Feature	***Device***		
	BCM4716	***BCM4717***	***BCM4718***
Package ball count	339 pins	368 pins	570 pins
CPU	300 MHz	300 MHz	300 MHz–533 MHz
SDRAM	16-bit DDR1 at DDR400	16-bit DDR2 up to DDR2-533	32-bit DDR2 up to DDR2-533
Flash	Serial Flash	Serial Flash	8-bit parallel Flash
Ethernet (External PHY + MII/ RGMII)	Yes	Yes	Yes
PCIe™	No	No	Yes
USB 2.0 ports	No	1 Host	2 Hosts
I^2S	No	Yes	Multiplexed onto 6 parallel Flash pins
GPIO	8	16	16
Band	2.4 GHz	2.4 GHz/5 GHz	2.4 GHz/5 GHz
Up to 3 antennas support	Yes	Yes	Yes
External LNA support	No	Yes, multiplexed onto 8 GPIOs	Yes, multiplexed onto 8 GPIOs
Reference design	BCM94716NR2	BCM94717NR	BCM94718NR

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