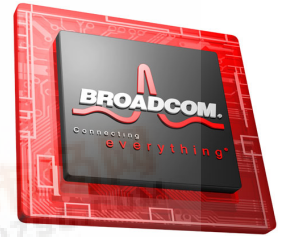# BCM4325
PRODUCT Brief

SINGLE CHIP IEEE 802.11a/b/g MAC/BASEBAND/RADIO WITH INTEGRATED BLUETOOTH® 2.1 + EDR AND FM RECEIVER FOR LOW-POWER MOBILE HANDSET AND HANDHELD APPLICATIONS
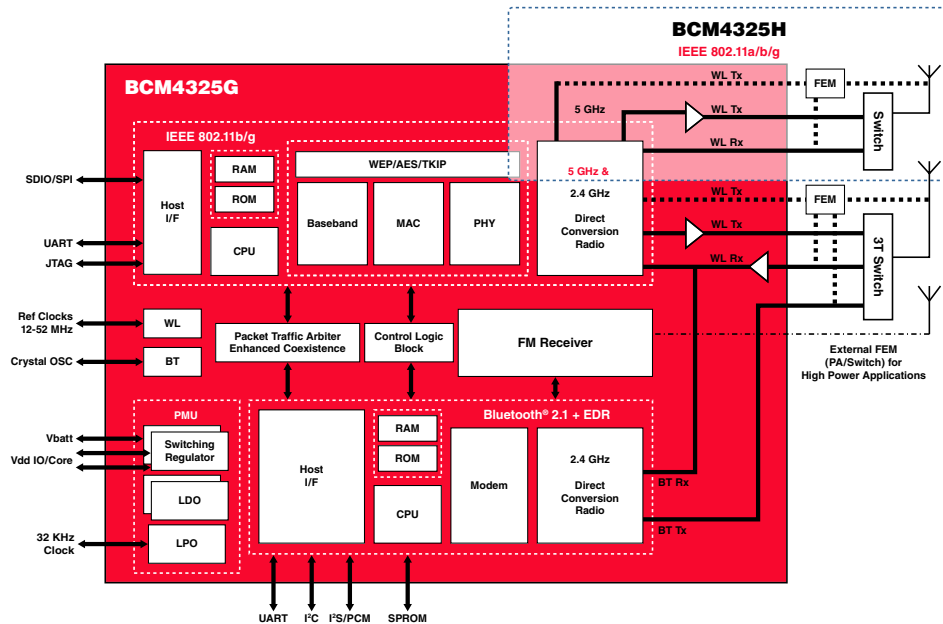
FEATURES

- **WLAN Key Features**
  - Single-band 2.4-GHz 802.11b/g or dual-band 2.4-GHz and 5-GHz 802.11a/b/g with Bluetooth 2.1 + EDR and FM receiver
  - Industry leading low-active transmit and receive power consumption and ultra-low power in stand-by and idle modes
  - Supports IEEE 802.11d/e (WMM, QoS, WMM-PS), h, i, j (upgrades available for k, r, w)
  - Supports IEEE 802.15.2 external three wire coexistence scheme to support additional wireless technologies such as GPS, WiMax, or UWB
  - Supports standard interfaces, SDIO v1.2 (1 bit and 4 bit), SPI, and high speed UART, for easy migration from the Broadcom 2 chip solution (BCM4328 + BCM2048)
  - Integrated CPU with on-chip memory for a complete WLAN subsystem minimizing the need to wake up the applications processor
  - Fractional nPLL allows support for a wide range of reference clock frequencies
  - Security:
    - WPA- and WPA2 (personal) for powerful encryption and authentication
    - AES and TKIP in hardware for faster data encryption and 802.11i compatibility
    - Supports Cisco® Compatible Extensions (CCX - CCX4.0)
    - SecureEasySetup™ for simple Wi-Fi setup and WPA2/WPA security configuration
  - Worldwide regulatory support—Global products supported with worldwide homologated design

FEATURES

- **Bluetooth Key Features**
  - Bluetooth Specification version 2.1 + EDR (up to 3 Mbps) compliant, with provisions for supporting future specifications
  - Supports extended synchronous connections (eSCO) for enhanced voice quality by allowing for retransmission of dropped packets
  - Adaptive frequency hopping (AFH), for reducing radio frequency interference.
  - Interfaces support—Host controller interface (HCI) using a high-speed UART interface and PCM for audio data
  - The FM unit supports BSC (Broadcom Serial Control) for communications, stereo analog output, as well as I²S and PCM interfaces.
  - Integrates the InConcert™ collaborative WLAN coexistence, including the 802.15.2 three-wire coexistence support
  - Low-power consumption improves battery life of handheld devices
  - 76-MHz to 108-MHz FM bands and supports European Radio Data Systems (RDS) and North American Radio Broadcast Data Systems (RBDS) modulations
  - Supports dual-A2DP for stereo sound
  - Automatic frequency detection for standard crystal and TCXO values

- **General Features**
  - One driver software architecture for easy migration from existing embedded WLAN and Bluetooth devices as well as future devices
  - Support battery voltage range from 2.3V to 5.5V supplies with the internal switching regulator

BROADCOM®

BCM4325 Block Diagram

The Broadcom BCM4325 family of single-chip devices provides for the highest level of integration for a mobile or handheld wireless system, with integrated IEEE 802.11a/b/g (MAC/Baseband/Radio), Bluetooth 2.1 + enhanced data rate (EDR), and FM receiver. Thus providing a compact small form factor solution with minimal external components to drive the costs for mass volumes and allows for flexibility in size, form, and function of handheld devices. The BCM4325 is designed to address the needs of highly mobile devices that require minimal power consumption and reliable operation.

The BCM4325 utilizes advanced design techniques and process technology to deliver the lowest active and idle power, extending the system battery life while maintaining consistent connectivity, and still provides a rich set of features.

The BCM4325 implements the highly sophisticated InConcert radio coexistence algorithms and hardware mechanisms allowing for an extremely collaborative coexistence scheme along with coexistence support for external radios (such as GPS, WiMax, or Ultra Wide-Band radio technologies, as well as cellular radios) and a single shared Antenna. As a result, it enhances the overall quality for simultaneous voice, video, and data transmission on a handheld system while minimizing the footprint.

The BCM4325 further integrates a power management unit simplifying the power topology on a system and allowing for operation directly from the handheld battery. It also integrates a CMOS power amplifier to meet the requirements of most handheld systems while permitting an external power amplifier for high-power applications.

BCM4325 Specifications

Host Interface	SDIO (4 wire, 1 wire, SPI), UART
Standard	IEEE 802.11a, IEEE 802.11g
Data Rate	802.11a/g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps; 802.11b: 11, 5.5, 2, 1 Mbps
Modulation	OFDM, CCK, DQPSK, DBPSK
Network Architectures	Infrastructure and ad hoc
Operating Frequencies	2.4 GHz–2.497 GHz, 4.9 GHz–5.85 GHz
Operating Channels	11 for North America; 13 for Europe; 14 for Japan
Security	802.1x; WEP, WEP2, WPA, WPA2 (Personal); TKIP and AES hardware acceleration, 802.11i

Ordering Information

- BCM4325GKFBG: IEEE802.11b/g 196-pin FBGA 7.5 mm x 7.5 mm package
- BCM4325HKFBG: IEEE802.11a/b/g 196-pin FBGA 7.5 mm x 7.5 mm package
- BCM4325GKWLG: IEEE802.11b/g wlCSP package
- BCM4325HKWLG: IEEE802.11a/b/g wlCSP package

Connecting
e v e r y t h i n g ®

BROADCOM®