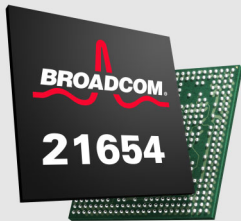


Broadcom BCM21654 Smartphone Baseband Processor

Connecting everything®



ADVANCED LOW-COST HSPA/EDGE MULTIMEDIA BASEBAND PROCESSOR



Highlights

- The lowest cost HSPA Cortex A9 smartphone platform
- Single-chip 3G, 7.2/5.8 Mbps HSPA baseband processor
- Compact and thin package for low-cost PCB designs
- Multimedia subsystem supports 30 fps full-rate video, fast 3D graphics, and a 12 Mpixel (JPEG) camera.
- Interfaces include: USB, UART, SD, LPDDR2, flash, ETM/TPIU, and JTAG.
- Extensive mixed signal and audio integration
- Platform support for GPS, Bluetooth/FM, Wi-Fi, NFC, and DTV.

Overview

The BCM21654 is a low cost, single-chip, 3G HSPA, baseband processor built on an advanced 40 nm lithography process. It incorporates a high-performance applications processor and an advanced multimedia subsystem.

The BCM21654 also supports 3G and 2G cellular communications, incorporating a 3GPP Release 8 modem with support for 5.8 Mbps HSUPA, 7.2 Mbps HSDPA, and Class 32 EDGE.

Development Support

The BCM21654 forms the core of a cellular smartphone platform that includes a BCM59039 Power Management Unit (PMU), a BCM2091 3G/2G transceiver, and a full suite of Broadcom wireless connectivity devices that support Bluetooth, FM, GPS, WLAN, and Near Field Communication (NFC).

Contact your Broadcom representative for platform reference designs and associated hardware and software design documentation.

Benefits

- ARM® Cortex™ A9 yields high Dhrystone MIPS applications processing power.
- High modem throughput
- Dual ARM® core provides separation of applications and communications software.
- High-definition voice quality
- 3G Dual SIM and Dual Standby operation
- Very low cost and low power
- High-speed LP-DDR2 memory access
- Fast 3D OpenGL® 2.0 graphics performance
- Highly scalable platform support for GPS, Bluetooth/FM, Wi-Fi®, NFC, and DTV

Applications

- Mobile handsets and smartphones



	BCM21654
3G HSPA Smartphones	●
2G Handsets	◐
Mobile Multimedia	◐

◐ Supported ● Best Choice

Features

General

- 7.2/5.8 Mbps HSPA baseband processor
- 1 GHz ARM® Cortex™ A9
- Adaptive Multirate Wideband (AMR-WB) speech codec
- 40 nm digital CMOS process
- 11 mm × 11 mm, 344-pin FBGA

High-Performance Interfaces

- Memory: LPDDR2 (400 MHz) and dual e.MMC v4.4 system flash
- USB 2.0 high-speed (480 Mbps) On-the-Go (OTG) transceiver
- Two high-speed UARTs at 4.0 Mbps
- Secure Digital (SD) 3.0 interfaces
- USB-IC SIM support
- 3G Dual SIM interfaces and controllers

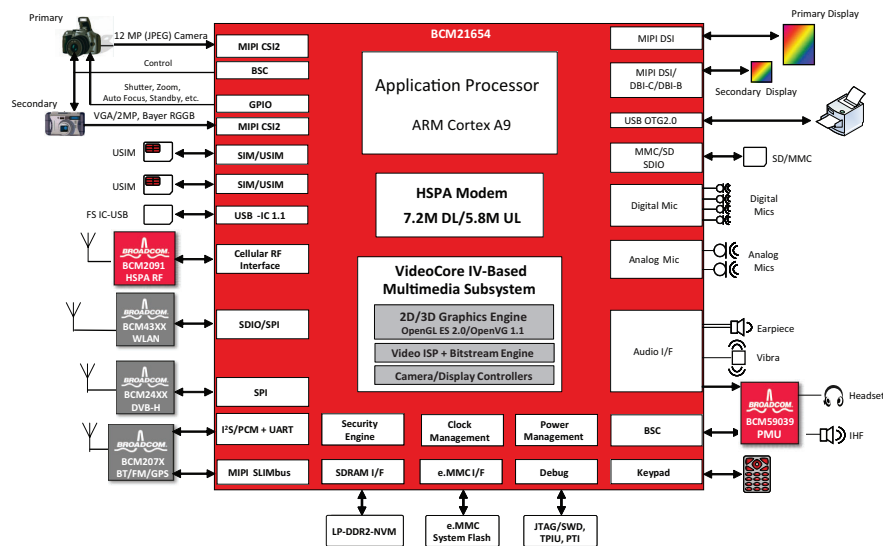
- Multitouch capacitive touchscreen support
- ETM/TPIU and JTAG for software debug
- USB battery charging v1.2 specification support

VideoCore® IV Multimedia Subsystem

- 30 fps full-rate H.264, H.263, WMV9, and MPEG-4 at high-quality VGA resolution
- OpenGL® 2.0 3D graphics engine, enabling up to 20 million triangles per second
- 12 Mpixel (JPEG) camera (15 fps preview)
- 16M colors, WVGA, and dual-display support

Mixed Signal and Audio Integration

- 1 Gbps MIPI CSI-2 camera and DSI display interfaces
- Stereo headset DACs support ultralow power music playback
- Line drivers for loudspeaker/ringer and earpiece
- Class D Vibra driver
- Dual analog microphone inputs
- Four digital microphone inputs
- Integrated 64-tone polyphonic ringer
- Integrated MP3, AAC, AAC+, eAAC, WMA, and W-AMR codecs, including AAC-LC and MP3 encoding
- Downloadable codec capability with on-chip SRAM
- AMR-WB voice for HD-quality voice calls over 3G



BCM21654 Platform Block Diagram

About Broadcom

Broadcom Corporation is a major technology innovator and global leader in semiconductors for wired and wireless communications. Broadcom products enable the delivery of voice, video, data and multimedia to and throughout the home, the office and the mobile environment. We provide the industry's broadest portfolio of state-of-the-art system-on-a-chip and software solutions to manufacturers of computing and networking equipment, digital entertainment and broadband access products, and mobile devices.

These solutions support our core mission: Connecting everything®.

Broadcom, one of the world's largest fabless communications semiconductor companies, with 2009 revenue of \$4.49 billion, holds more than 4,300 U.S. and 1,800 foreign patents, and has more than 7,900 additional pending patent applications, and one of the broadest intellectual property portfolios addressing both wired and wireless transmission of voice, video, data and multimedia.

A FORTUNE 500® company, Broadcom is headquartered in Irvine, Calif., and has offices and research facilities in North America, Asia and Europe. Broadcom may be contacted at +1.949.926.5000 or at www.broadcom.com.

