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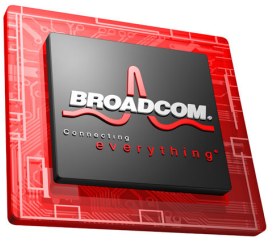
BCM2153 PRODUCT Brief



7.2-MBPS HEDGE 65-nm MULTIMEDIA BASEBAND PROCESSOR

FEATURES

- **General characteristics**
  - Single-chip, single-die, 7.2-Mbps HSDPA/EDGE baseband processor
  - Complete system-on-a-chip, high-end multimedia with advanced audio, high-speed 480-Mbps USB 2.0 OTG, full mixed-signal support for speakers, Hi-Fi stereo audio amplifiers and USB transceivers, full security and DRM, and high performance 312-MHz ARM11™ applications processor
  - Advanced release 6 compliant equalizer and 208-Mhz ARM9™ for communications
  - Utilizes the lowest cost, lowest power 65-nm digital CMOS process
  - Compact 13 mm x 13 mm 517-pin FBGA package for low-cost PCB design
- **Multimedia capabilities**
  - Supports up to 3.2-Mpixel camera
  - 30-fps full-rate H.264, H.263, WMV9, and MPEG4 at high quality QVGA resolution
  - Supports both encode and decode at H.264, for best quality and memory usage
  - Up to 262K colors, dual-panel display support
  - Extensive graphics, video, and imaging hardware acceleration blocks
  - Digital TV out (CCIR6601)
- **Extensive mixed-signal integration and advanced audio**
  - On-chip mixed-signal transceivers for 480-Mbps USB2.0 OTG
  - On-chip 400-mW stereo amplifiers for speaker phone or ringer
  - On-chip Hi-Fi stereo audio DACs and 100-mW amplifiers for MP3/ audio
  - On-chip digital audio mixing and 5-band equalizer
  - Integrated 64-tone polyphonic ringer
  - Integrated MP3, AAC, AAC+, eAAC, WMA and W-AMR codecs
  - Downloadable codec capability with on-chip SRAM
- **Signal and voice quality**
  - Broadcom M-Stream technology delivers up to 3dB better signal quality
  - SAIC support for voice, data, echo cancelling, and noise suppression
  - >95-dB SNR for Hi-Fi stereo audio

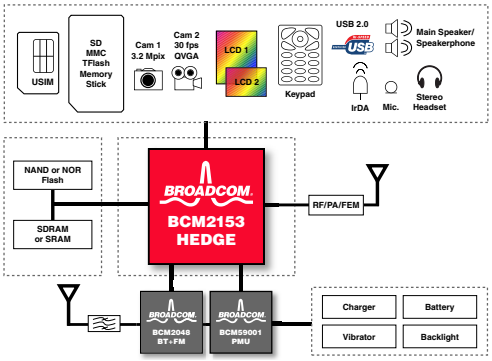
SUMMARY OF BENEFITS

- **Enables the highest performance yet lowest cost HSDPA/EDGE handset design**
- **Extended coverage and fewer dropped calls using M-Stream, SAIC, and unique WCDMA equalizer**
- **Lowest power consumption due to advanced 65-nm process and on-chip hardware acceleration architecture**
- **Fastest video, audio, and data download using 480-Mbps USB 2.0 OTG**
- **Highest quality audio and video capture and playback with H.264 QVGA hardware support**
- **Enables smallest and thinnest design via integrated multimedia, audio, and mixed signal**
- **Extreme flexibility to support optional GPS, Bluetooth®/FM, Wi-Fi®, Mobile TV, or external multimedia processor**
- **High performance 312-MHz ARM11 processor for super fast applications computing speed**
- **Quad-band support for worldwide GSM coverage and roaming ability**
- **Enhanced interfaces**
  - Flexible memory: NOR/NAND/pSRAM/SDRAM at 104 MHz
  - USB 2.0 OTG high-speed (480 Mbps)
  - Two high-speed UARTs at 3.6 Mbps
  - One 8-bit SDIOs at 416 Mbps, one 4-bit at 208 Mbps
  - BSC, I^2S, SPI, and PCM interfaces
  - Hard disk (CE-ATA)/SD/MMC and T-Flash, memory stick PRO™
  - USIM controller
  - ETM and JTAG for software debug
  - Bluetooth/FM, Wi-Fi, and GPS support
  - TV out

APPLICATIONS

- **Mobile handsets and smartphones**

System Block Diagram



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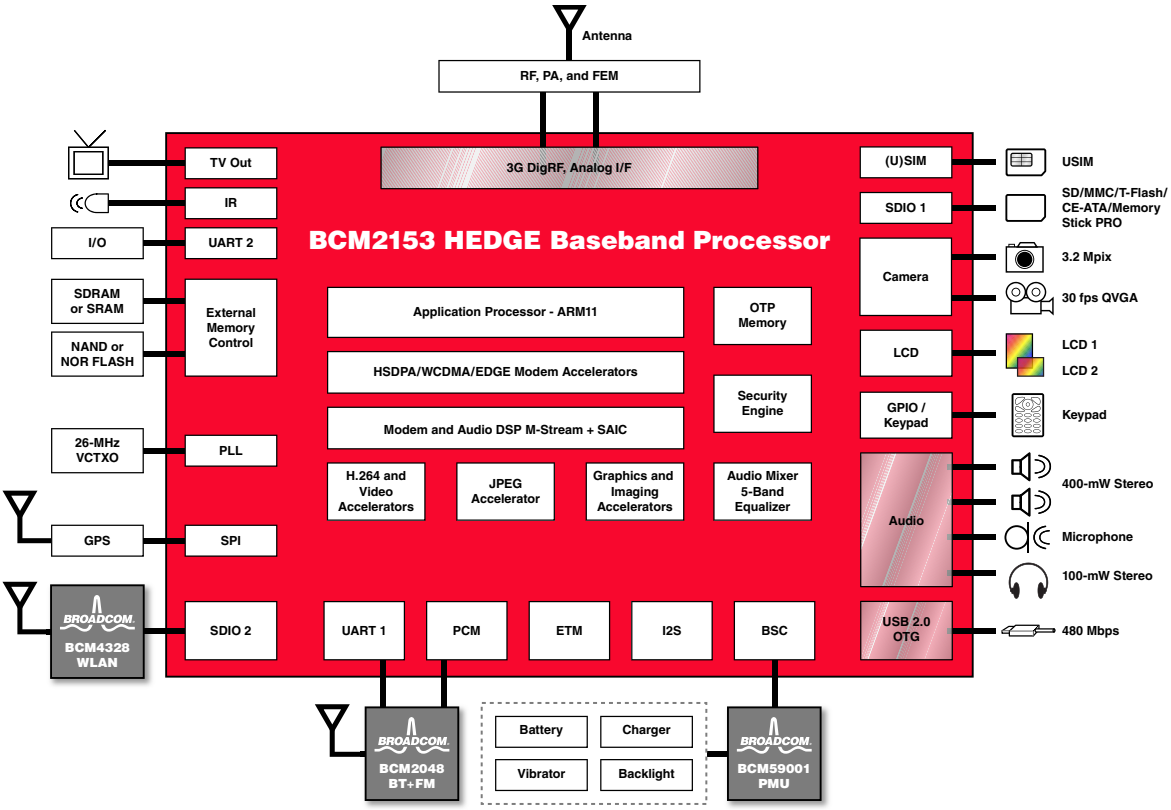
OVERVIEW



Functional Block Diagram

The BCM2153 single chip HEDGE multimedia baseband processor, features WCDMA, 7.2-Mbps HSDPA and EDGE Class 12 capability to provide full support for 2G and 3G voice and high-speed data. Full inter-RAT operation is supported for seamless global roaming on EDGE/GPRS/GSM and HSDPA/WCDMA networks worldwide.

The BCM2153 integrates all multimedia, analog and stereo audio functions on a single, monolithic piece of silicon, which avoids the added cost of die-stacking and provides for lower power operation and lower BOM cost.

Full stereo music capability is integrated, including hi-performance stereo DACs for both headset and stereo speakers, with integrated 5 Band graphic equalizer and digital mixing, thus eliminating the need for an external audio device. On chip stereo output is provided for up to 400 mW into 8Ω.

The BCM2153 also integrates the analog PHY required for USB2.0, providing full USB2.0 480 Mbps, with no external components and supports USB charging and audio functions.

Advanced video acceleration for QVGA 30 fps H.264 and MPEG for both camera and video playback allows for high quality video support and low power, low MIPS.

Broadcom's proprietary M-Stream high-performance modem technology and SAIC advanced signal processing technologies improve cellular handset reception and voice quality while increasing network capacity, without sacrificing call quality.

The BCM2153 utilizes an advanced release 6 compliant DMI (Direct Matrix Inversion) equalizer for highest HSDPA data throughput in the most challenging radio conditions, so offering high performance, without the need for costly receiver diversity.

Separate parallel LCD, camera, and ARM memory busses allow the user interface to be updated without impacting the real-time radio operations.

Security

Enhanced security is provided with OTP and dedicated HW blocks, to provide secure boot, memory, and DRM functions. The embedded one-time programmable (OTP) bits allow the software to boot securely and check IMEI security prior to network activation. OTP bits can also be used by high-level applications to verify the integrity of the Digital Rights Management (DRM) function.

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射 频 和 天 线 设 计 培 训 课 程 推 荐

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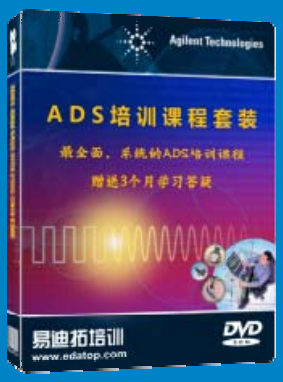
易迪拓培训课程列表：http://www.edatop.com/peixun/rfe/129.html

射频工程师养成培训课程套装

该套装精选了射频专业基础培训课程、射频仿真设计培训课程和射频电路测量培训课程三个类别共 30 门视频培训课程和 3 本图书教材；旨在引领学员全面学习一个射频工程师需要熟悉、理解和掌握的专业知识和研发设计能力。通过套装的学习，能够让学员完全达到和胜任一个合格的射频工程师的要求…

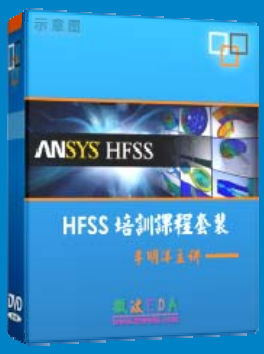
课程网址：http://www.edatop.com/peixun/rfe/110.html

ADS 学习培训课程套装



该套装是迄今国内最全面、最权威的 ADS 培训教程，共包含 10 门 ADS 学习培训课程。课程是由具有多年 ADS 使用经验的微波射频与通信系统设计领域资深专家讲解，并多结合设计实例，由浅入深、详细而又全面地讲解了 ADS 在微波射频电路设计、通信系统设计和电磁仿真设计方面的内容。能让您在最短的时间内学会使用 ADS，迅速提升个人技术能力，把 ADS 真正应用到实际研发工作中去，成为 ADS 设计专家...

课程网址： http://www.edatop.com/peixun/ads/13.html



HFSS 学习培训课程套装

该套课程套装包含了本站全部 HFSS 培训课程，是迄今国内最全面、最专业的 HFSS 培训教程套装，可以帮助您从零开始，全面深入学习 HFSS 的各项功能和在多个方面的工程应用。购买套装，更可超值赠送 3 个月免费学习答疑，随时解答您学习过程中遇到的棘手问题，让您的 HFSS 学习更加轻松顺畅…

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课程网址：http://www.edatop.com/peixun/hfss/122.html

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详情浏览：http://www.edatop.com/peixun/antenna/116.html

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※ 经验丰富的一线资深工程师讲授，结合实际工程案例，直观、实用、易学

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