

DVB-T SINGLE-CHIP DIGITAL TV TUNER AND DEMODULATOR

FEATURES

- **Multiband**
 - VHF III (170 MHz–240 MHz)
 - UHF IV, V (470 MHz–862 MHz)
- **Standards compliance**
 - ETSI EN 300 744
 - IEC-62002 (MBRAI)
 - Nordig Unified v1.0.3
 - Digitenne
 - D-Book
- **Low power, low carbon footprint**
 - 209 mW in continuous operation with significant margin over MBRAI, Nordig, Digitenne, and D-Book specifications
- **High integration**
 - RF and digital sections on a monolithic 65-nm digital CMOS die
 - On-chip PID filtering and table ID
 - Integrated low-noise amplifiers
 - Fractional-N synthesizer supports 10 MHz–66 MHz crystal
- **Excellent Doppler performance**
 - $F_{D,max} = 80 \text{ Hz}$ in 8K mode, 16QAM $2/3$, GI $1/4$, ESR < 5%
- **High quality OptimRF™ tuner section**
 - High linearity: MBRAI specifications exceeded by wide margin
 - Noise figure of 3 dB in both VHF and UHF bands
 - Ultra-low phase noise: < 0.5° RMS for UHF results when SNR > 35 dB
- **Wide range of interfaces**
 - SPI slave and master
 - SDIO device
 - 8-bit asynchronous parallel port
 - USB 2.0 high-speed (device)
 - MPEG-2 Transport Stream
 - I²C, UART, and JTAG for development
- **Package options**
 - 182-pin FBGA 8 mm x 8 mm, 0.5 mm pitch
 - 182-pin FBGA 16 mm x 16 mm, 1 mm pitch

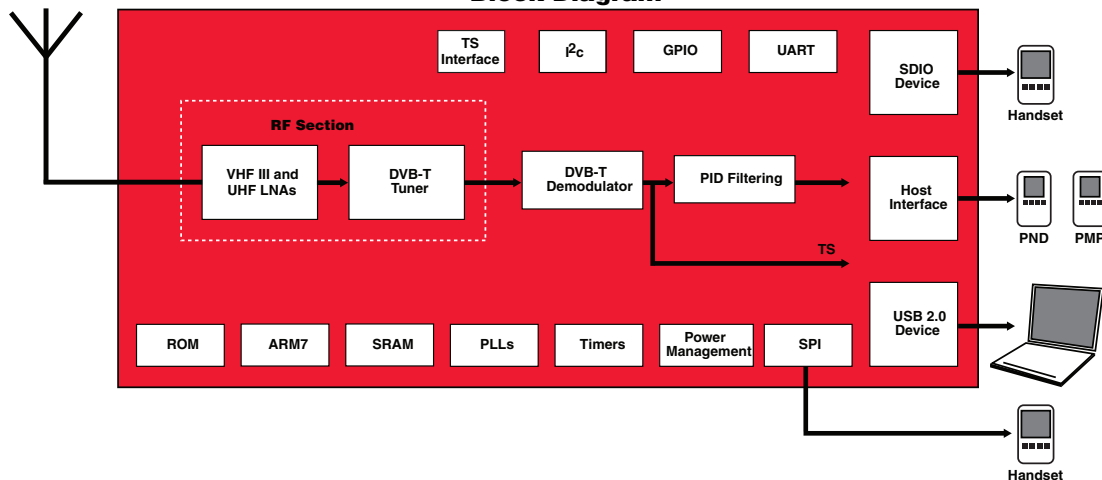
SUMMARY OF BENEFITS

- Ideal for Set-top Box (STB), Digital Television (DTV), Portable Navigation Device (PND), and Portable Media Player (PMP) applications.
- Single chip mobile DVB-T from antenna to transport stream.
- Standard 65-nm CMOS process for low bill-of-materials (BOM) cost.
- Allows DVB-T viewing at up to 100 Km/h in a channel at 600 MHz.
- High performance, low power and on-chip USB 2.0 enables both encrypted and free-to-air DVB-T reception on portable devices.
- Low power consumption provides cost savings, extended battery life, and European Green initiative regulatory requirement support.
- **Low RBOM, minimum external components:**
 - No IF filters or RF tracking filters are required.
 - LNAs for all bands are on-chip.
 - No external SRAM or DRAM is needed.
- Excellent RF performance even with a single input for VHF and UHF that is single-ended (no balun).
- No calibration is needed during production.

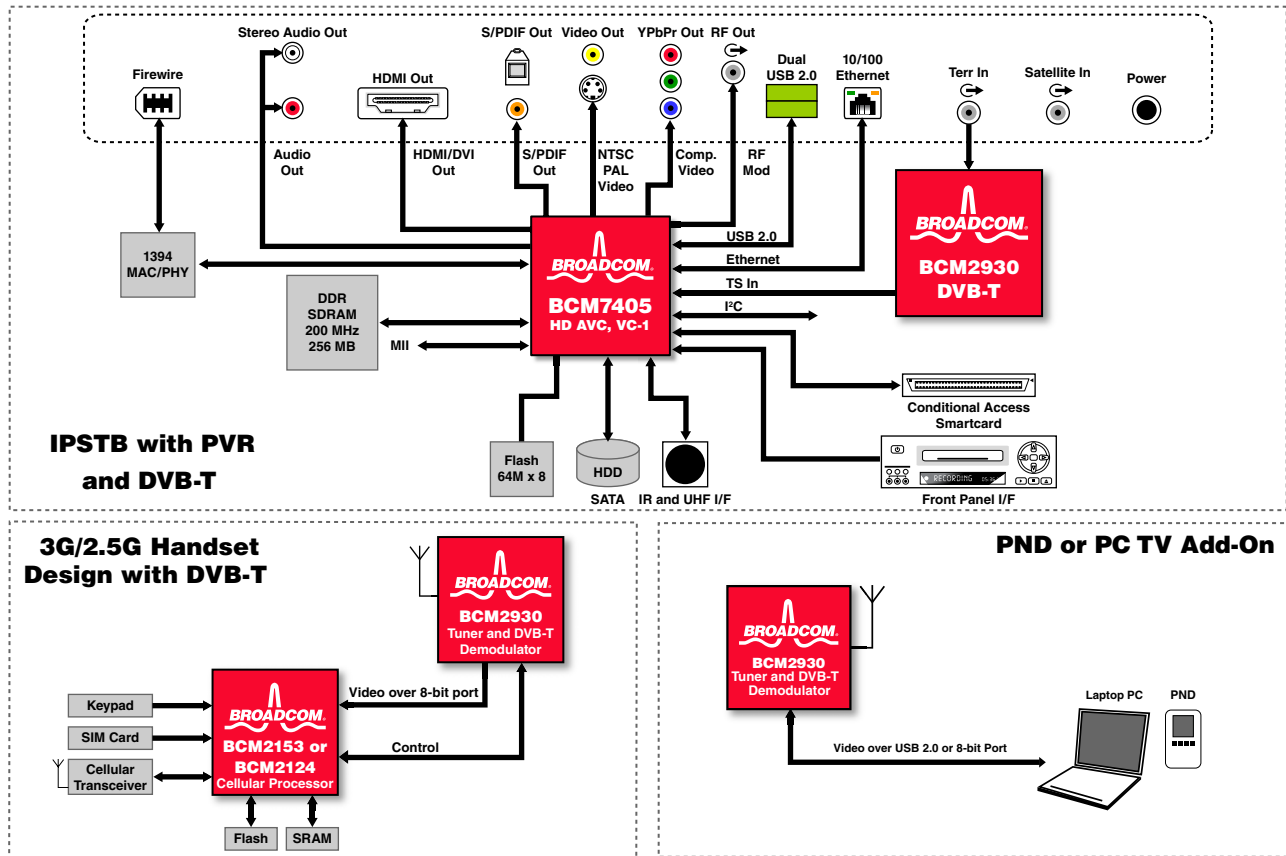
APPLICATIONS

- Cable and IP STBs, and DTVs
- Portable Navigation Devices
- Portable Media Players
- DVB-T enabled mobile handsets
- DVB-T on laptop PCs

Block Diagram



OVERVIEW



Cable and IP STBs, DTV, PND, PMP, and PC Application Diagrams

The Broadcom BCM2930 is a monolithic 65-nm single-chip mobile digital TV receiver for the DVB-T standard. Combining our high-quality OptimRF tuner with a complete DVB-T digital baseband on a single monolithic CMOS IC, the BCM2930 sets new standards for integration and mobile performance. Supporting the VHF III, UHF IV and UHF V bands, it is suitable for digital TV reception on Cable and IP STBS, DTVs, Personal Navigation Devices, Portable Media Players, Handsets and PCs.

Broadcom's OptimRF technology is based on the optimal combination of state-of-the-art CMOS RF design and proprietary architectural and algorithmic innovations. OptimRF technology compensates for process and performance deviations, keeping device operation within target specifications. OptimRF improves manufacturing yield by avoiding costly trimming and optimizing power consumption.

Designed for integration with digital logic, the direct conversion tuner architecture does not require any external IF components, image-reject filters, or tuner components. With on-chip demodulation, PID filtering and SI/PSI table assembly, the BCM2930 has everything required to receive an

RF signal and to output Digital TV. Video and audio are sent either as PID-filtered program streams or as a complete MPEG-2 transport stream and can be handled over a variety of physical interfaces including SPI, SDIO, and USB 2.0.

Digital TV is becoming ubiquitous and is increasingly appearing on handheld devices. Cable and IP STBs and DTV are gaining traction in the market, featuring low power consumption according to the European Green initiative and supporting the ubiquitous DVB-T standard with its free-to-air transmissions. Handsets, PNDs, and PMPs are starting to emerge with screens large enough for standard definition TV but still small enough to fit in the pocket. Laptop PCs are also becoming available with high-resolution screens able to display terrestrial digital TV broadcasts.

With its low power consumption, small size, excellent performance, and high level of integration, the BCM2930 is the ideal choice for broadcast digital TV applications. When used together with Broadcom's multimedia processors and wireless communications chipsets, it forms a complete platform solution for Cable and IP STB, DTV, and portable applications.

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BROADCOM CORPORATION

5300 California Avenue
Irvine, California 92617

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Phone: 949-926-5000
Fax: 949-926-5203
E-mail: info@broadcom.com
Web: www.broadcom.com