

FULL HD 1080P DIGITAL TV SYSTEM ON CHIP

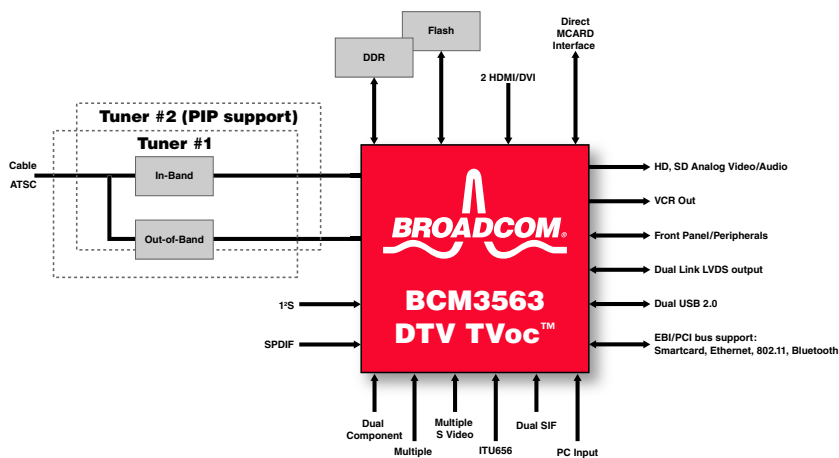
FEATURES

- Full HD 1080p support
- Dual 1080i/p Motion Adaptive Deinterlacing
- Dual NTSC/PAL decoders each with a 3D comb
- Direct PC input support up to 1600x1200 UXGA
- Dual HDMI/DVI 1080p 60 fps inputs
- Six 10 bit A/Ds each with a 8:1 input switch
- Integrated dual link LVDS transmitters
- **Integrated Video Processing**
 - Auto flesh, green boost, black stretch, histogram equalization, blue shift and sharpness capability
 - Full 10-bit video processing
 - 3:2 pull down
 - Dual Analog Noise Reduction
 - Multiframe Per Pixel Motion Adaptive Deinterlacing
- **Extensive audio support**
 - Five band audio equalizer
 - Independent audio output controls for analog and digital outputs
 - Integrated BTSC and A2 Audio Decoder
 - Integrated audio DACs
 - Dolby Digital, TrusurroundXT, MPEG Audio Decoder
- Integrated NTSC demodulator
- Integrated ATSC/QAM receivers
- Dual USB 2.0
- On-chip 330 MHz 32-bit CPU

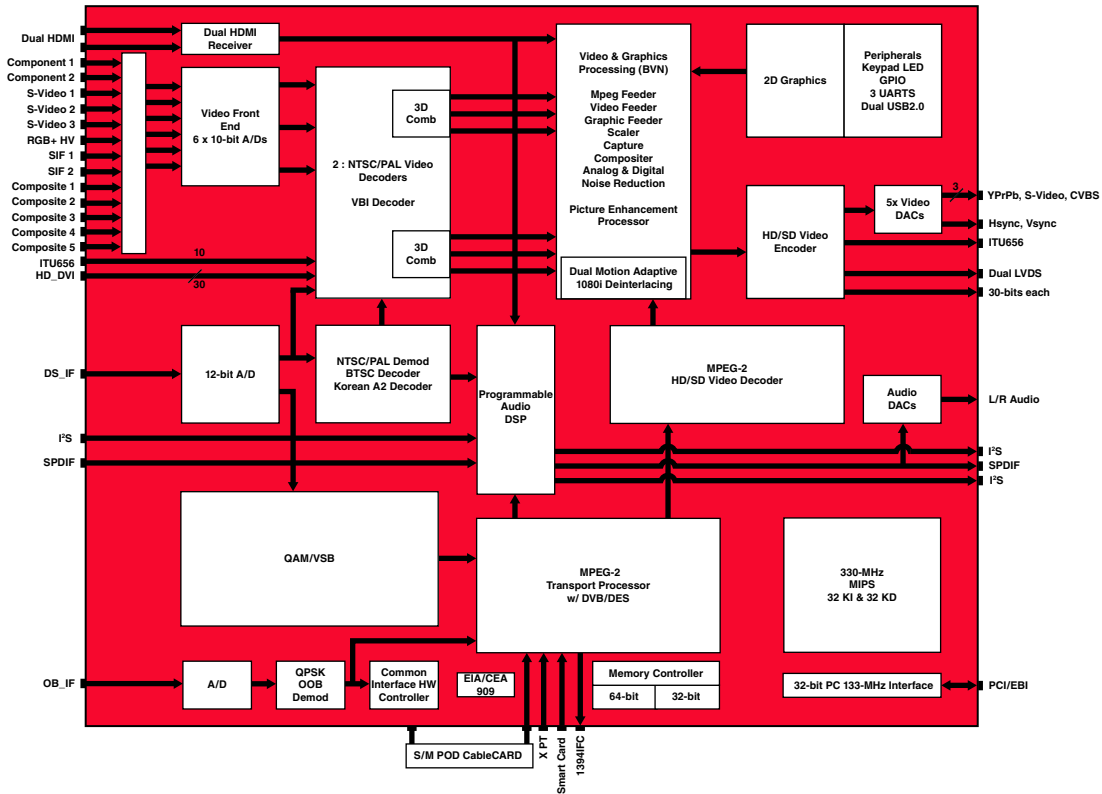
SUMMARY OF BENEFITS

- Full HD 1080p support on a single chip
- Dual 1080p 60 fps HDMI receivers provides connectivity to highest quality consumer electronic products
- Integrated dual link LVDS transmitters provides direct connection with Full HD 1080p panels
- PEP advanced video signal processing provides an elevated viewing experience through edge and color enhancements.
- Dual motion adaptive per pixel deinterlacing produces equally superior side by side displays of interlaced video
- Direct PC input support with auto phase and mode detection reduces system design cost and complexity
- Dual 3D comb filters with per pixel adaptive motion detection delivers excellent Y/C separation.
- On chip high-quality video scaling provides extensive Picture-in-Picture support and non-linear conversion of 4:3 images for display on 16:9 televisions.
- Full 10-bit video support preserves signal integrity and image quality.
- Superior ATSC signal reception and demodulation under both static and dynamic multipath conditions.
- Comprehensive integration of A/Ds and DACs supports direct audio/video inputs/outputs simplifying system design and cost.

BCM3563 Application Diagram



OVERVIEW



BCM3563 Block Diagram

The BCM3563 combines a cable/terrestrial 4/1024-QAM and 8/16-VSB receiver, an out-of-band QPSK receiver, NTSC demodulator, two DVI/HDMI receivers, a transport processor, a digital audio processor, a high-definition (HD) MPEG video decoder, 2D graphics processing, digital processing of analog video and audio, analog video digitizer and DAC functions, stereo high-fidelity audio DACs, a 330-MHz MIPS processor, and a peripheral control unit providing a variety of television control functions.

The cable/terrestrial receiver directly samples a tuner output with an A/D converter. It digitally resamples and demodulates the signal with recovered clock and carrier timing, filters and equalizes the data, and passes soft decisions to an ATSC A/53 and ITU-T J.83 Annex A/B/C compatible decoder. A CEA/EIA-909 smart antenna interface is included on chip.

The out-of-band receiver digitizes a SAW centered IF. It demodulates the signal with recovered clock and carrier timing, filters and equalizes the data and incorporates a DigiCipher® II/DAVIC-compatible FEC decoder. The common hardware interface provides a direct interface to a MCard/CableCard device.

The BCM3563 has an MPEG-2 DVB compliant transport processor with advanced section filtering capability, DVB descrambler, MPEG-2 (MP@HL profile) video decoder. Audio support includes both a BTSC/Korean A2 audio

decoder and a Dolby AC3/MPEG-2 Layer 1, 2, audio decoder with Trusurround XT support.

The BCM3563 provides analog and digital audio/video outputs. Dual link LVDS transmitters provide direct digital connection to panel displays. A NTSC/PAL video encoder analog output with Macrovision (optional) provides analog video for VCR out support. A SPDIF output and a pair of analog outputs (L-R) are provided via the integrated audio DACs.

Dual NTSC analog video decoders are each supported by its own motion adaptive deinterlacing and 3D comb filtering including 1080i deinterlacing. Direct PC input up to UXGA 1600 x 1200 is supported with auto phase and mode detection. Two independent HDMI receivers each support 1080p 60 fps inputs.

The BCM3563 includes Broadcom's advanced 2D graphics processing. Two transport stream inputs, one ISO7816 smart card interface, and a high-speed interface supporting IEEE 1394 is included. The BCM3563 incorporates a complete MIPS32™-based microprocessor subsystem including caches with bridging to memory and a local bus, where external peripherals can be attached. Integrated peripherals include two USB 2.0, three UARTs, counter/timers, GPIO, keypad, LED, IR Tx/Rx, IR Keyboard, BSC, and SPI controllers.

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BROADCOM CORPORATION
16215 Alton Parkway, P.O. Box 57013
Irvine, California 92619-7013

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3563-PB00-R 11/22/06

Phone: 949-450-8700
Fax: 949-450-8710
E-mail: info@broadcom.com
Web: www.broadcom.com