

Product Brief

TC90413XBG Single-chip SoC for ATSC LCD TV

Highlights

- Highly integrated System-on-Chip (SoC) for ATSC LCD TV applications
- Chip integrates VSB/QAM demodulator, MPEG-2 HD processor, Dolby® digital decoder, dual HDMI 1.3 ports, 64-bit MIPS CPU, analog video receiver including 3D YC separator and ADCs, LVDS drivers for both WXGA and 1080p TVs.
- Extensive video enhancement functions include motion adaptive 3D interlace to progressive conversion, edge enhancement, color management, dynamic contrast, tone correction, and transient improvement
- High level of integration reduces the number of components on the TV board, reduces cost and improves reliability
- Turnkey solution for ATSC LCD TV available
- Uses only a single DDR-2 800 DRAM chip to support a 1080p panel
- Package: 456-pin PBGA

Description

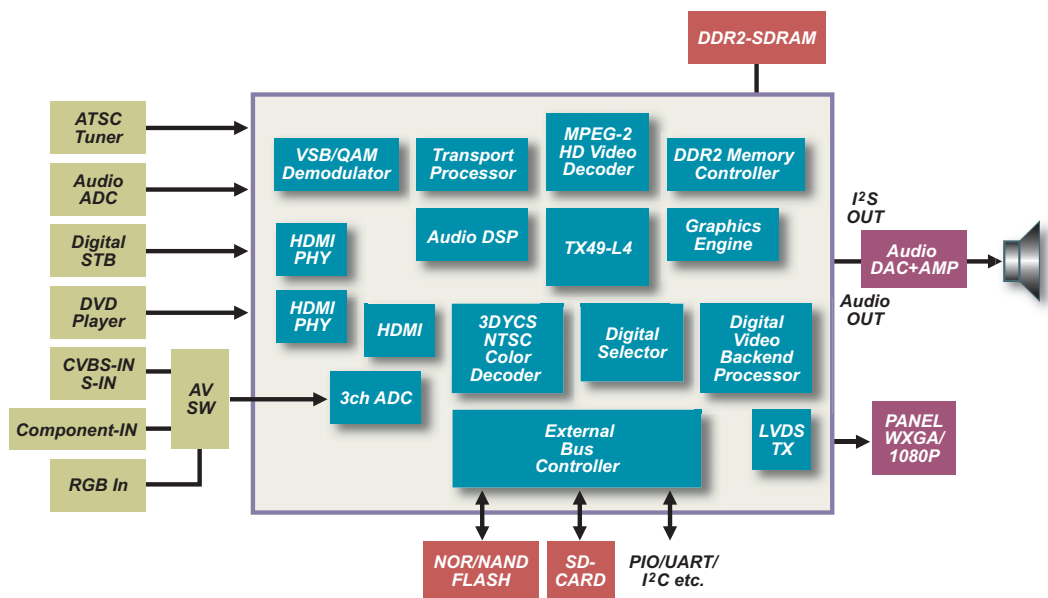
The TC90413XBG is targeted for ATSC LCD TV applications and integrates the entire signal path from the tuner output to the LCD panel interface. Compared to previous Toshiba chips, it integrates more functional blocks on chip reducing system cost. In addition it supports an extensive set of algorithms for improved video quality. It supports a unified memory architecture requiring only a single 16-bit DDR-2 interface. The device has multiple internal processors to offload the main MIPS CPU for value-add applications.

Features

- 333 MHz TX49/L4 MIPS RISC core
 - 8 KB each I & D cache
 - DDR-2 DRAM controller (16-bit 400 MHz)

- VSB/QAM demodulator
 - Compliant to ATSC 8-VSB and 64 and 256 QAM
- Transport stream processor
 - Compliant with ATSC and cable standards
- Video decoder
 - MPEG-2 MP@HL decoder
 - Processes all ATSC and cable formats
- Audio processor
 - Dolby digital decoder
 - I²S inputs and outputs
 - SPDIF output
- HDMI inputs
 - Dual port
 - HDMI 1.3 compliant
 - Deep color support
 - High Definition Content Protection (HDCP)

TC90413XBG Block Diagram



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- Analog video interface
 - Composite and S-video input (3D comb filter)
 - Component video/RGB interface
- LVDS output
 - Supports LCD/PDP panels up to 1920 x 1080p
- Video processing
 - 3D motion adaptive de-interlacer
 - MPEG-2 noise reduction
 - Color management
 - Tone correction
 - Edge enhancement
 - Dynamic contrast
- Interface and peripherals
 - SD card interface
 - Nand flash memory controller
 - 8/16-bit local bus to attach other peripherals with DMA
 - UART/SIO
 - I²C bus
 - General purpose I/O pins
- Package
 - PBGA 456 pin 27 x 27 mm and 1 mm pitch

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