



NXP Single-/Dual-channel Audio/ Video Decoder and Compression Engine, SAA7163/4

Integrated solution for DVR and time shifting in Consumer Electronics applications

The single-/dual-channel audio/video decoder IC, SAA7163/4 enables TV and STB manufacturers to add a hard disk drive for Digital Video Recording (DVR) and time shift.

Key features

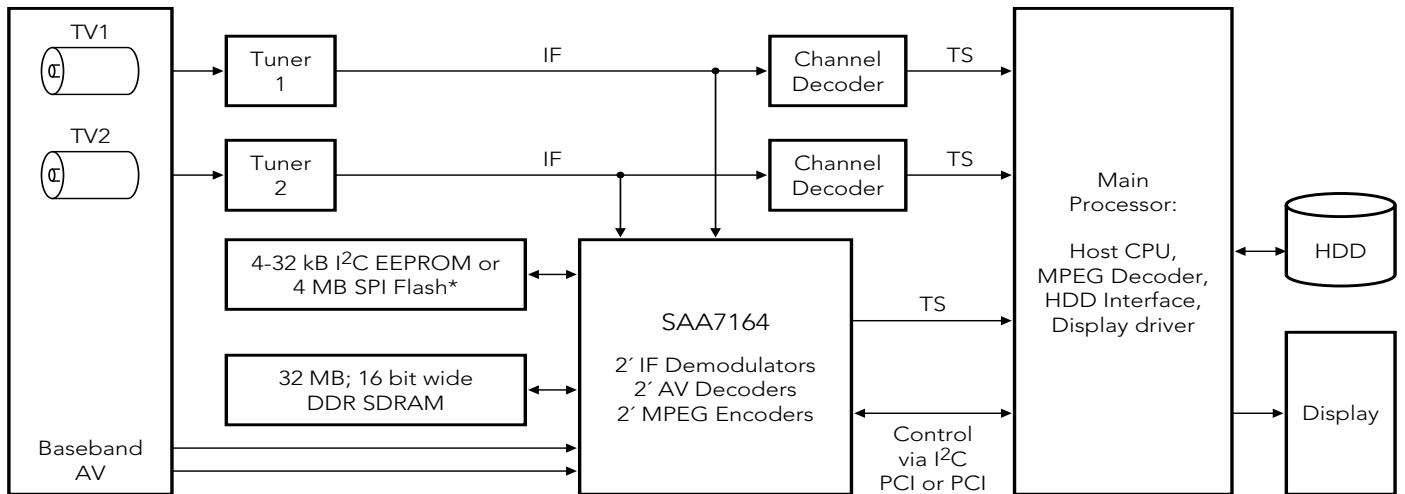
- Dual-channel processing handles two independent TV, video and audio streams
- World-wide standard video decoder(s): NTSC, PAL, SECAM
- World-wide standard TV sound decoder(s): BTSC, A2(Dual-FM), NICAM, EIAJ
- Silicon Tuner support by IF demodulator(s) with Low IF or Direct IF interface
- Flexible AV Input Crossbar
- 3D comb filter
- 2D/3D noise reduction
- VBI Data Slicing
- Macrovision® copy protection detection
- Video compression MPEG-2
- Audio compression MPEG-1 L2
- Possible Control Interfaces:
 - PCI Express Interface (V1.1, single link)
 - PCI Interface (V2.3)
 - I²C Slave Interface, 400kbit/sec
- Parallel transport stream output interface with multiplexed A/V streams

SAA7163 and SAA7164 integrate single/dual channel IF-demodulators and Audio/Video decoders with a state-of-the-art compression engine. The Audio/Video decoders support all world-wide analog TV standards including three-level Macrovision® detection, while the compression engines encode AV streams for DVR or time shifting.

The flexible input interfaces allow connecting both Silicon and can tuners, or standard baseband signals. Exceptional picture quality is achieved by adaptive 3D-comb filters and 3D-noise reduction.

The compressed AV streams are output via the parallel Transport Stream interface, whereas in dual channel applications (with SAA7164) two programs are merged into one Transport Stream. For serial Transport Stream interfacing NXP can provide the necessary parallel to serial conversion logic for a CPLD.

SAA7163 and SAA7164 can be controlled via the I²C bus slave interface, the PCI interface or PCI Express interface. For PCI and PCI Express control NXP delivers Linux Control Interface software, while for control via the I²C bus C-sample code and Visual Basic script code for the control sequences can be provided.



*4 MB SPI Flash needed in case booting via PCI or PCI(e) is not possible

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Specifications

Video/audio capture and decoding

- Worldwide analog TV SIF, IF, low-IF demodulation standards: M/N, B/G/H, D/K, I, L/L'
- Worldwide TV standards:
 - PAL BGDHIN, Combination PAL N, NTSC M, NTSC Japan, NTSC 4.43, SECAM
 - BTSC with optional dbx™ noise reduction, SAP, EIAJ, NICAM, FM A2, and AM
- Worldwide VBI data services
 - Closed Captions, WSS, VPS and PDC slicing
- Baseband Video Inputs:
 - CVBS, SSIF, S-video (Y/C), YPbPr (RGB)
- Macrovision® 1.0 copy protection detection
- Adaptive spatial and temporal 3D comb filter (NTSC/PAL)
- Advanced 3D-noise filter
- BCS adjustment for CVBS, S-video, YPbPr (RGB) components

Video compression

- Video compression MPEG-2
- I-, P- and B-Frame encoding
- Bit rate up to 10Mbit/s
- CBR or VBR
- Scene Change Detection
- Reverse Telecine (3:2 Pulldown)
- Adaptive Quantization
- Flexible Downscaling Option e.g.
 - D1, 2/3D1, 1/2D1, CIF
- Advanced Motion Estimator
- Interlaced Tool Support
- MPEG-2 Transport Stream Output:
 - The transport stream can contain one or two programs

Audio compression

- Audio Compression MPEG 1 L2
- Output Sample Rates
 - 32 / 44.1/ 48 kHz
- Bitrates 128kBit/s up to 384kbit/s
- Audio Format: Stereo

Control options

- Control via PCI or PCIe bus and Linux CTL interface with ComRes Protocol
 - Requires Host with PCI or PCIe interface
 - Linux kernel level: 2.4.20, 32 bit mode, no multiple processor mode (SMP)
- Control via I2C bus and ComRes Protocol
 - Requires host I2C bus master interface with up to 400 kbps
 - Command Response Protocol "ComRes" needs to be implemented on Host side, Visual Basic Scripts and example C-Code is available

Package information

- SAA7163 (Single Stream):
 - LBGA256 / - BGA364
- SAA7164 (Dual Stream):
 - BGA364

Use of this product in any manner that complies with the MPEG-2 Standard is expressly prohibited without a license under applicable patents in the MPEG-2 patent portfolio, which license is available from MPEG LA, L.L.C., 250 Steele Street, Suite 300, Denver, Colorado 80206.

www.nxp.com



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