

High-performance advanced SD decoder for set-top box

Data Brief

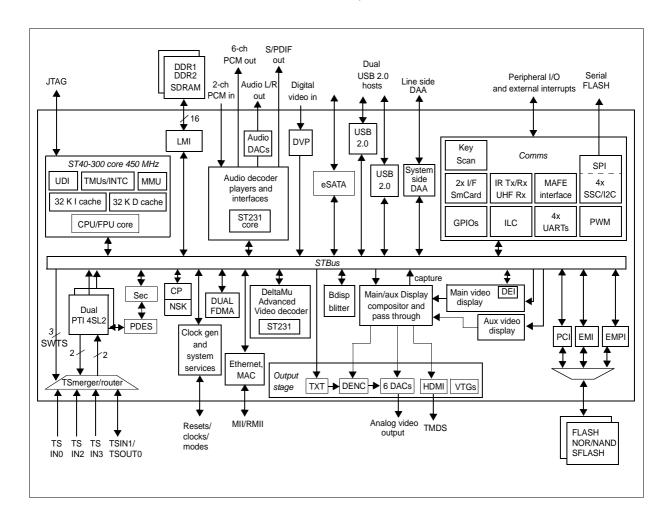
Features

- Advanced standard definition video decoding (H264/VC-1/MPEG2/AVS)
- Linux®, Windows® CE and OS21 compatible ST40 applications CPU (450 MHz)
- Multi-stream, DVR capable transport stream processing
- Advance security and DRM support including SVP, MS-DRM and DTCP-IP.

Description

The STi5205 is a high-performance, fully featured Standard Definition (SD) advanced decoding set-top box SoC (system-on-chip).

It is suitable for STB markets across all networks (cable/satellite/DTT/x-DSL/IP) worldwide. The STi5205 provides a high-performance solution for a wide range of STBs that need just SD decoding and SD display capabilities including low-cost zappers, IP clients, interactive STBs and DVR capable STBs.



November 2008 Rev 1 1/8

Feature list STi5205

1 Feature list

• High-performance CPUs for applications (ST40) and audio/video decoding (2 x ST231)

- ST40-300, dual-issue, applications CPU, 32 K instruction and 32 K data caches: target speed > 450 MHz delivering > 800 DMIPs
- Single 16-bit DDR1/DDR2 Local Memory Interface (LMI), up to 400 MHz
- Latest generation "Delta" video decoder with ST231 programmable CPU core:
 - MPEG2, H264, VC-1/WM9/AVS SD advanced video decoding
 - Provides flexibility to support other codecs (DivX, XviD, H263 encode/decode)
 - SD decoding or dual SD decoding, PIP and mosaic capable
 - Real-time transcoding of MPEG2 SD to H264 SIF
- Advanced de-blocking and de-ringing of decoded MPEG2 SD sources based on ST's DSE (Digital Source Enhancer) technology with 2D analysis window and texture adaptive filter
- ST231 CPU based audio decoder. MPEG1 I/II, MP3, Dolby Digital/DD+, MPEG4 AAC/AAC+ multi-channel audio decoding. Concurrent audio description decoding. DD+ and AAC+ transcoding
- Main and aux video display pipelines:
 - Main: high quality H and V reformatting/resizing with sample rate conversion/filtering. Motion adaptive spatial and temporal de-interlacing for 480p/576p progressive output
 - Aux: high quality H and V reformatting/resizing with sample rate conversion/filtering
- Three independent graphics planes with H and V resize, CLUT and anti-flicker filtering
- Link list based 2D graphics blitter. Up to 200 Mpixels/sec with destination alpha blending. Capable of 3D user interface effects.
- Independent main and aux display compositions (video/graphics mixing)
- Pass-through display for graphics, main video or aux video output concurrently with main and aux compositions
- SD display capture
- HDMI 1.3a^(a) interface with HDCP copy protection. (ED/SD formats up to 480 p/576 p)
- MacrovisionTM and Dwight Cavendish copy protection support
- PAL/NTSC/SECAM digital encoder
- Six 10-bit DACs for component/composite analog video output (ED/SD formats up to 480p/576p)
- SD digital video input port, 8-bit YCbCr
- Integrated stereo audio DAC
- Six-channel audio PCM output interface
- Stereo audio PCM input interface
- Independent SPDIF output
- Quadruple external TS inputs, triple internal TS from memory

57/

a. Full compliance to all features of v1.3a, excluding Deep Color, enhanced colorimetry (xvYCC, gamut metadata), and DST/DSD audio.

STi5205 Feature list

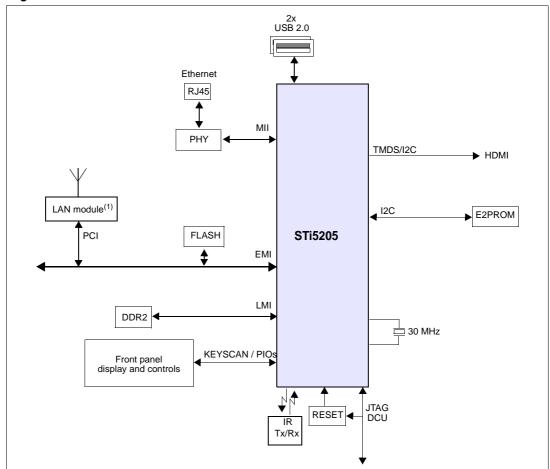
- Dual DVB-CI+ (SD profile) modules supported
- Multi-stream transport stream de-multiplexing, 400 Mbits/sec, quadruple tuner DVR capable
- DVB/DES/AES/Multi-2/ICAM descrambling
- Dual USB 2.0 host interfaces both with PHY
- eSATA interface
- Integrated 10/100 Ethernet MAC/MII/RMII, Wake-on-LAN, 75 MHz (300 Mbits/sec) capable
- 16-bit External Memory and Peripheral Interface (EMI) up to five banks
- Interfacing to, and boot from, NOR or NAND FLASHTM
- Interfacing to, and boot from, serial FLASHTM
- 32-bit, 66 MHz, PCI interface, shared on EMI with access interleaving possible
- MPX Interface/protocol for high speed, glue-less, communications with STv0498 DOCSIS Cable FE
- DVR supported, with HDD attachment through eSATA, EIDE (PIO mode) or USB
- Soft modem support: integrated MAFE: integrated system side DAA (Si-Labs)
- Dual multi-channel Flexible DMA controllers
- STB peripherals
 - Two smartcard interfaces, four UARTs, four SSC/I²C, GPIO banks with alternate functions, IR Tx/Rx, UHF Rx/SCD, PWM, ILC, HDMI CEC, 4 x 4 key matrix scanner
- Advanced security, secure control words, code authentication, JTAG locking, network/DVR copy protection, SVP, VGS, DTCP-IP, MS-DRM, MSTV
- Package: PBGA 27 x 27mm, 620 balls, 7R32 x 32, pitch 0.8 mm, ball 0.5 mm.

Applications STi5205

2 Applications

The STi5205 includes in a single IC, multi-stream transport de-multiplexing and descrambling, an ST40 applications CPU, advanced audio/video decoding, video processing, graphics and display composition, advanced security, STB peripherals, audio/video DACs, HDMI, two Host USB ports, eSATA HDD port and Ethernet MAC MII/RMII.

Figure 1. IP client SD STB



STi5205 Applications

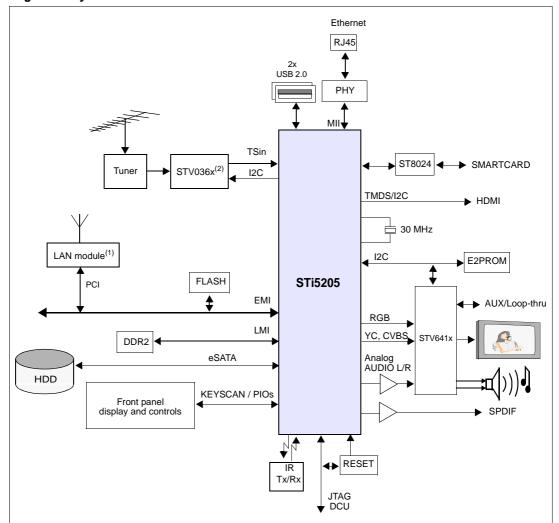


Figure 2. Hybrid DTT/Broadband STB with home network

5/

Ordering information STi5205

3 Ordering information

Table 1. Ordering information

Order code	Packaging
LS U52U52 UB	PBGA 27 x 27 mm, 620 balls, 7R32 x 32, pitch 0.8 mm, ball 0.5 mm

STi5205 Revision history

4 Revision history

Table 2. Document revision history

Date	Revision	Changes
10-Nov-2008	1	Initial release

577

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2008 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com

577

8/8