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)
- Macrovision[TM] 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

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

- 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 FLASH^{TM}
- Interfacing to, and boot from, serial FLASH^{TM}
- 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.

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.
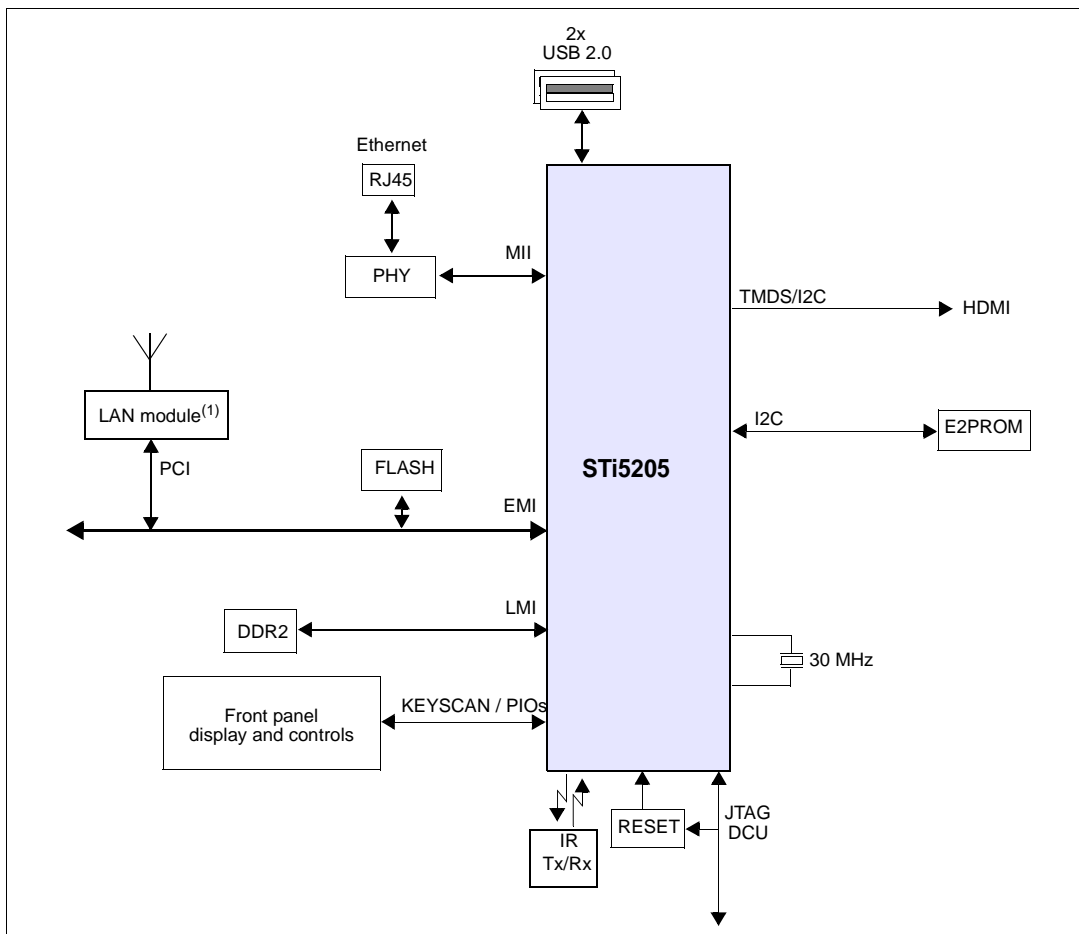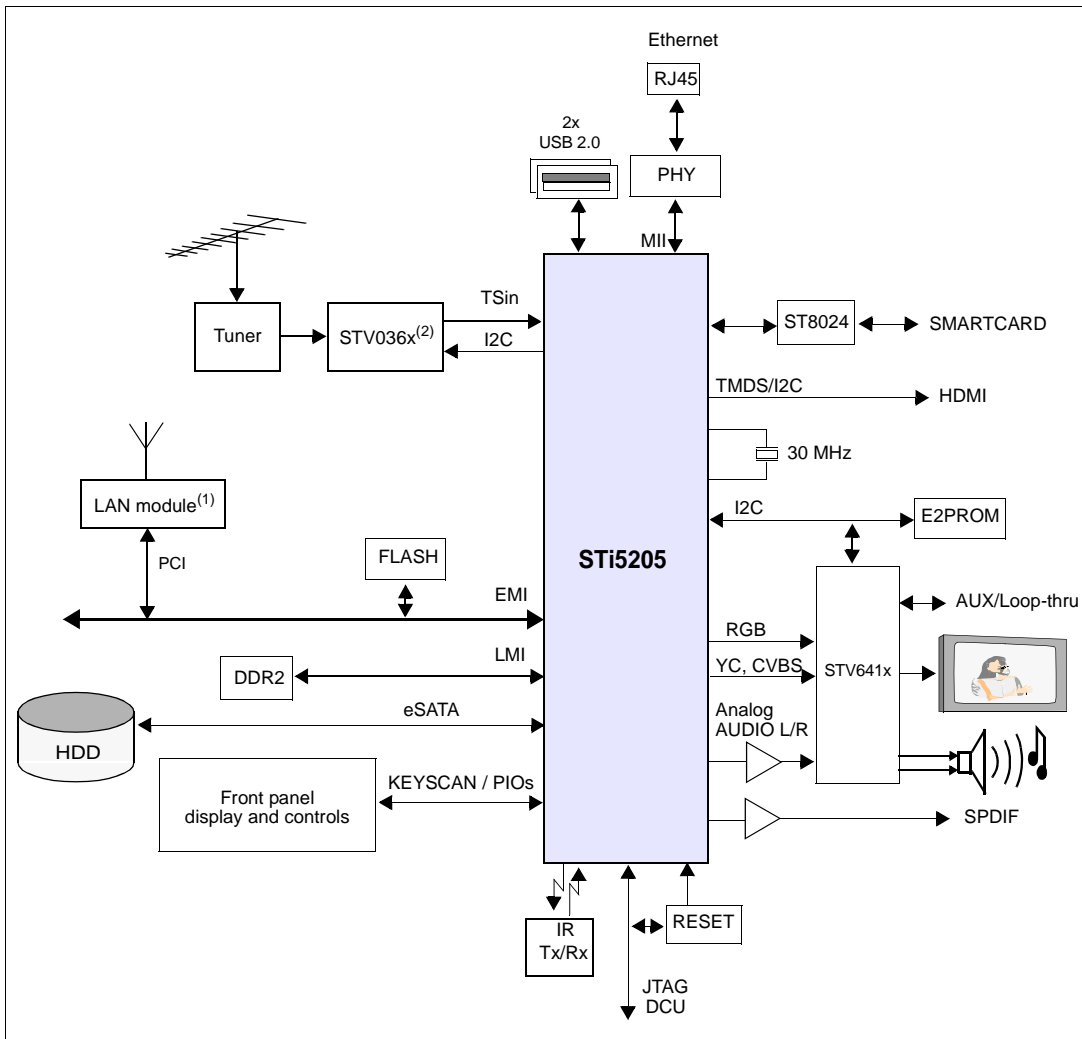
Figure 1. IP client SD STB

Figure 2. Hybrid DTT/Broadband STB with home network

3 Ordering information

Table 1. Ordering information

Order code	Packaging
STi5205ZUB	PBGA 27 x 27 mm, 620 balls, 7R32 x 32, pitch 0.8 mm, ball 0.5 mm

4 Revision history

Table 2. Document revision history

Date	Revision	Changes
10-Nov-2008	1	Initial release

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