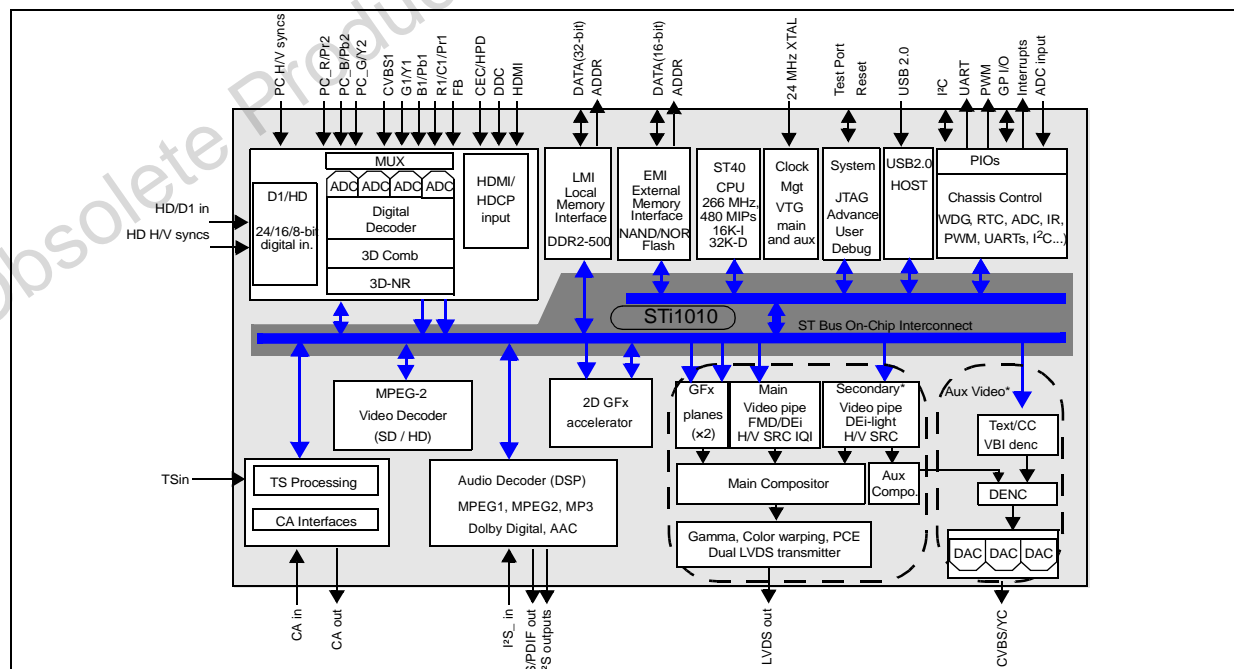


Single-chip worldwide iDTV processor

Data Brief

Features

- 32-Bit RISC ST40 CPU, 266 MHz, 480 MIPs
- DDR2 unified memory interface, 250 MHz clock
- Transport stream demultiplexer with DES, DVB and Multi2 descrambler
- CableCard and DVB-CI interface
- MP@ML and MP@HL MPEG2 video decoder
- 24-bit audio DSP core, MPEG1(layers 1,2,3), MPEG2, MPEG2-AAC, Dolby® Digital, MP3 decoder
- Analog video input: CVBS, SVHS(Y/C), Component (from SD up to HD 720p, 1080i, 1080p)
- PC input, analog RGB up to UXGA/60 Hz (162 MHz sampling frequency)
- 24-bit digital video input, up to 1080p and UXGA/60 Hz
- HDMI/HDCP input, RGB/YCrCb up to 1080p, UXGA/60 Hz support, stereo and 5.1 multi-channel audio. Compliant with HDMI 1.3, DVI 1.0, HDCP v1.3
- USB2.0 high speed interface (480 Mbits/s)
- High definition video processor
- Multi-standard color decoder (PAL/SECAM/NTSC), with 3D comb filtering in NTSC and PAL, Luma and Chroma spatio-temporal (3D) noise reduction
- Double video pipe for Picture In Picture (PIP) display
- 2D graphic accelerator and enhanced True color on screen display. Bitmap OSD generated at panel resolution
- Video and graphic composition for Picture And Text (PAT), Picture And Graphic (PAG), mosaic
- Exhaustive set of peripherals for DTV chassis control
- Dual LVDS output for flat panel display support, up to full HD 1920 x 1080p resolution.
- Package FPBGA 27x27, 700 balls, pitch 0.8 mm



1 Description

The STi1010 is a highly-integrated, high-performance system-on-chip iDTV processor compliant with worldwide digital TV standards such as ATSC (US), DVB (Europe), ARIB (Japan), DMB-TH (China) and PAL/SECAM/NTSC analog TV standards.

The STi1010 provides a cost-optimized solution for iDTV (basic TV platform DTV150), with a minimum number of external components, 32-bit unified DDR2 memory interface for CPU, OSD, video.

The STi1011 version permits low-cost iDTV implementation with a single 16-bit DDR2 memory interface.

The STi1010 is able to receive TV signals from either analog or digital terrestrial transmission, cable tuner, satellite tuner, external audio/video sources such as DVD players, STB, PVR, PC, and so on. The STi1010 allows low-cost implementation of matrixed display integrated Digital TV, including HDTV display: LCD display, Plasma Display Panel (PDP), Rear Projection TV (RPTV) and Digital Light Processing (DLP) RPTV up to 1920 × 1080p resolution.

The STi1010 provides Dual LVDS output, which can drive 18-bit, 24-bit or 30-bit flat panels, up to Full HD definition. Video output has programmable Line and Pixel output formats (1366 × 768 and 1920 × 1080 resolution included). The STi1010 also provides CVBS and YC output from a digital PAL/SECAM/NTSC encoder.

The STi1010 supports the decoding and processing of Standard Definition (SD) and High Definition (HD), analog and digital video sources, and the decoding and processing of digital audio from stereo up to 5.1 audio channels.

The STi1010 provides high performance video processing as follows:

- 3D Comb filter for NTSC and PAL standards
- 3D Noise reduction
- Automatic film mode detection: static picture, movie, video, 3:2, 2:2 pull-down detection and recovery.
- Automatic letter box detection, interlaced/progressive modes and scene change detection.
- 3D motion adaptive pixel-based advanced deinterlacing with diagonal compensation: ST 3D contour sensitive Deinterlacer™ (CSDi)
- Flexible H and V scaling
- Image quality improvement: 10-bit resolution (up to 12-bit processing), automatic contrast enhancement, automatic color enhancement, 2D LTI, CTI, H and V peaking
- Picture In Picture (PIP) display

The STi1010 supports high quality bitmap graphic display, Multi-plane On-Screen Display (OSD) generated at display panel resolution.

The STi1010 product permits the development of Integrated Digital TV (iDTV) applications with services such as US Closed Caption, US Vchip, Teletext, DVB-subtitles, EPG, and middleware such as MHEG-5 and MHP. It supports conditional access for US (open cable CableCARD), Europe (DVB-CI) and Japan (ARIB Conditional access).

Figure 1. US basic FPD iDTV

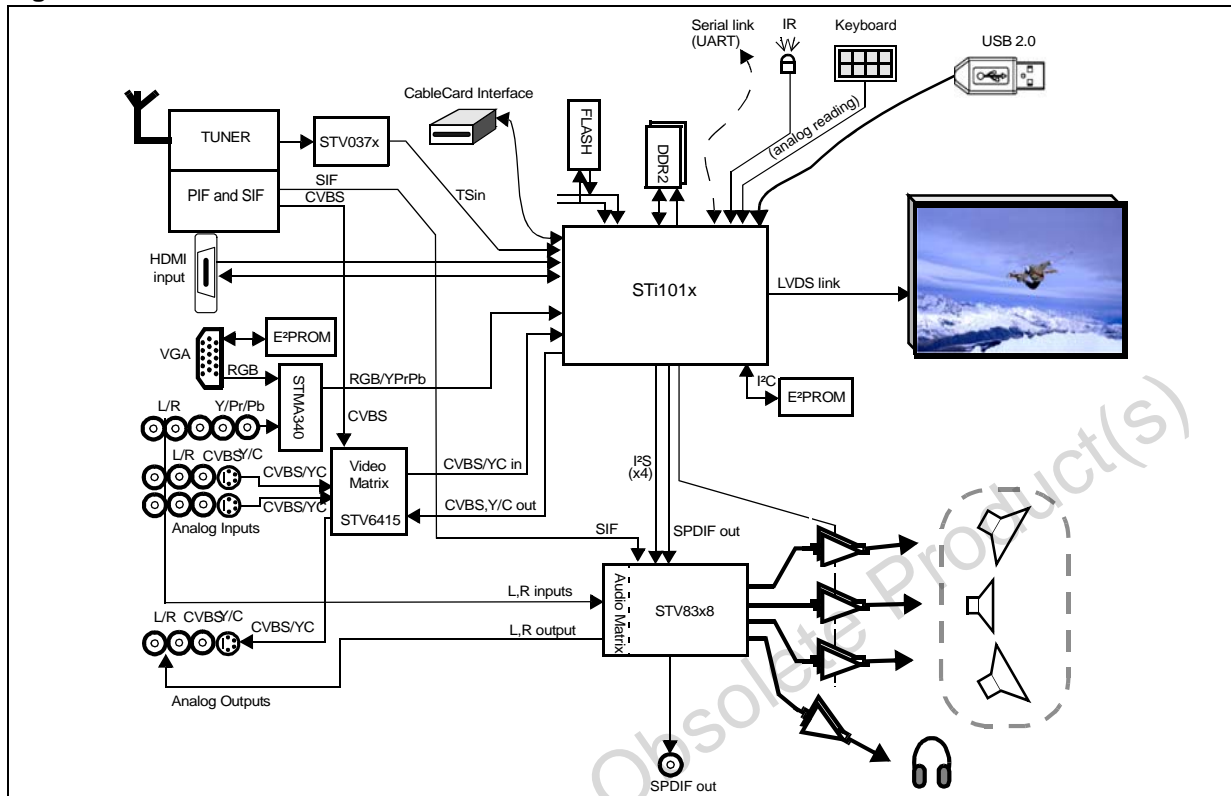
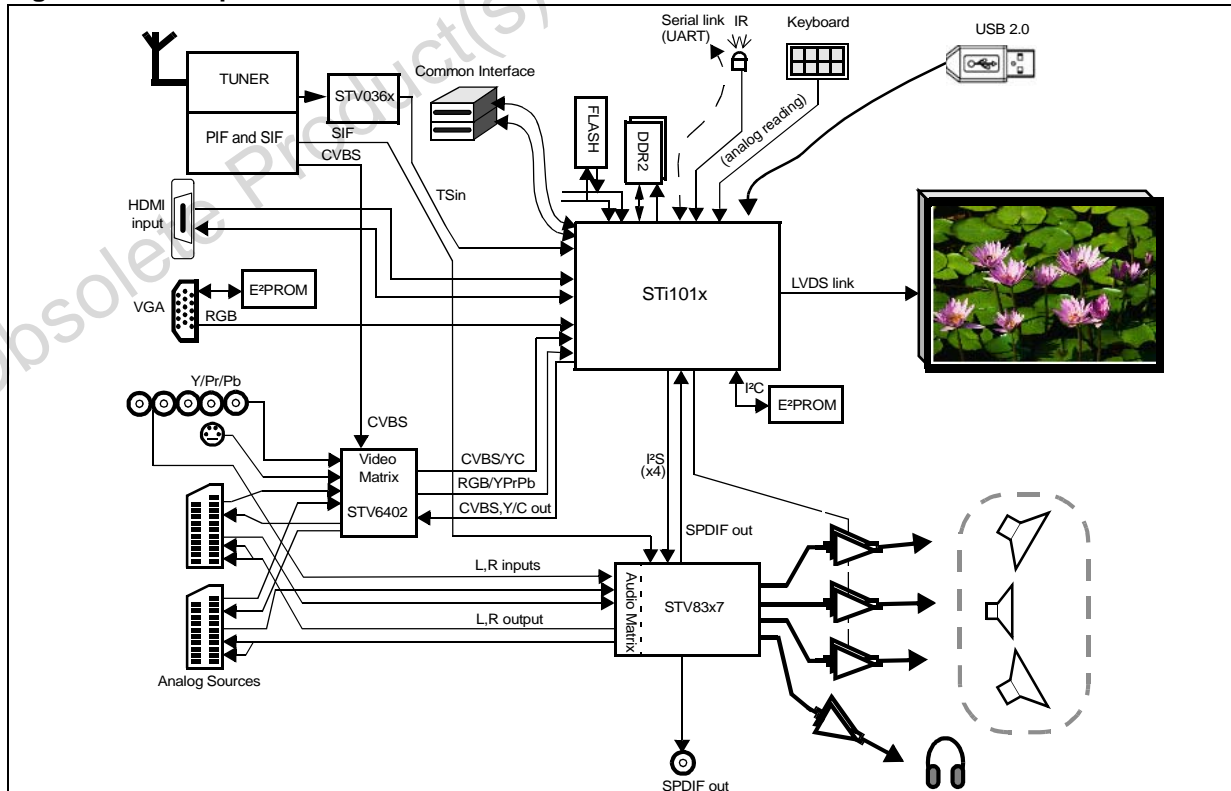


Figure 2. European basic FPD iDTV



Package: The STi1010 uses a FPBGA 27 × 27, 700 balls, 4L package.

Table 1. Package information

Package Type	FPBGA	Unit
body size	27 × 27	mm
ball pitch	0.8	mm
ball count	700	balls
ball matrix	32 × 32	balls
substrate	4	layers

2 Revision history

Table 2. Document revision history

Date	Revision	Changes
18-Dec-2007	1	Initial release.

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