High-performance set-top box decoder

DATA BRIEF

DESCRIPTION

The new STi5300 MPEG-2 decoder from ST provides a step-change in performance for pay TV set-top boxes and digital video recorders.

Delivering 1.33 GOPS of processing power through an ST230 VLIW CPU running at 333 MHz, ST has ensured that manufacturers' investment in new products is protected as the STi5300 can easily accommodate today's interactive software, and provides a platform that can support the even more demanding applications of the future. Both Linux and OS21 operating systems are supported, and an MMU provides support for virtual memory management.

The STi5300's power comes from the VLIW architecture of the ST230 CPU. This allows four instructions to be executed at each CPU cycle, dramatically increasing performance. By maintaining pin compatibility with the STi5100, manufacturers can make use of the STi5300 with minimal hardware redesign.

Package (27 x 27 PBGA 336 package)

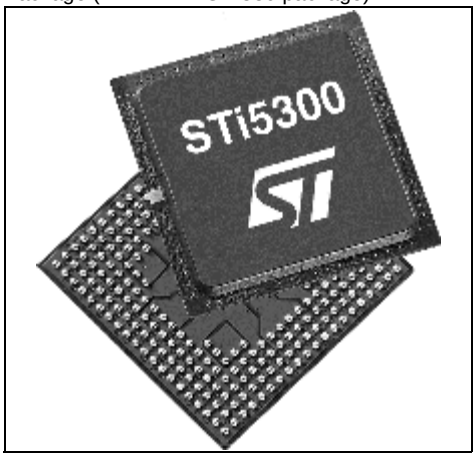
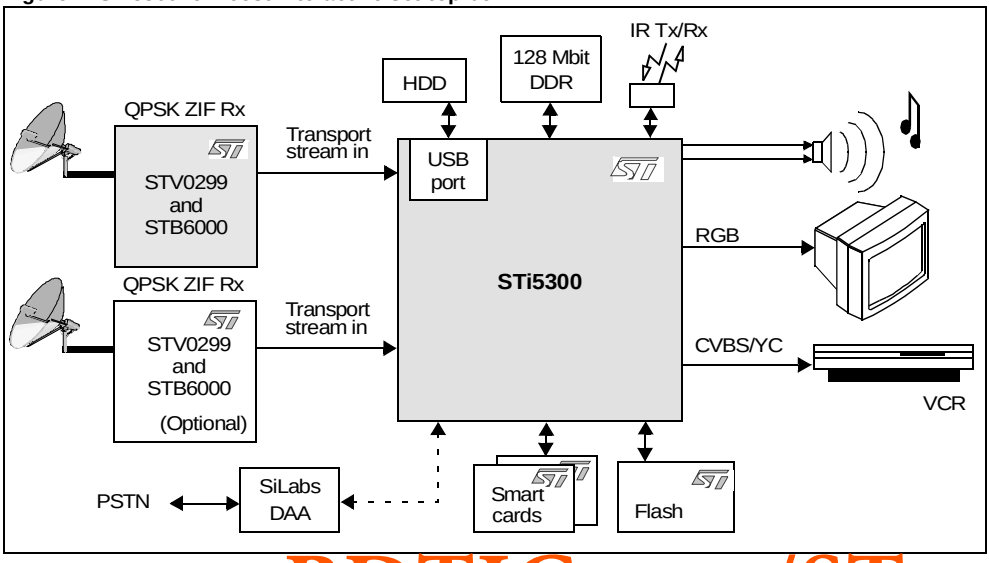


Figure 1. STi5300 low-cost interactive set-top box



FEATURES

- **ST231 VLIW host CPU**
  - 333 MHz, 32 Kbyte ICache, 32 Kbyte DCache
  - up to 1.333 GOPs at 333 MHz
  - dynamic memory management through MMU
- **Unified memory interface**
- **Package 27 mm x 27 mm PBGA336**
  - footprint optimized for 2 layer PCBs
- **Dual transport stream merger**
  - supports DVB and DIRECTV®
  - integrated DES-ECB, DVB and ICAM descramblers
  - NDS RASP compliant
  - low-cost DVB-CI and Cable Card support
- **MPEG-2 MP@ML video decoder**
  - trick modes including smooth fast forward and rewind
- **Graphics/display**
  - 4 display planes
  - 2, 4 and 8 bpp CLUT graphics, 256 x 30 bits (AYCBCr) CLUT entries
  - 16 bpp true color graphics,
  - alpha blending, antialiasing, antiflutter, antiflicker filters
- **PAL/NTSC/SECAM encoder**
  - RGB, CVBS, Y/C and YUV outputs with 10-bit DACs
  - encoding of CGMS, Teletext, WSS, VPS, close caption
- **Audio subsystem**
  - MPEG-1 layers I/II, MP3
  - Dolby® Digital decoding
  - Dolby Pro Logic® compatible output
  - PCM input, mixing and sample rate conversion
  - SRS/TruSurroundXT® virtual surround sound
  - simultaneous MPEG audio decode and output of Dolby streams
- **On-chip peripherals**
  - 4 ASCs (UARTs) with Tx and Rx FIFOs
  - 6 parallel 8-bit I/O banks
  - 2 smartcard interfaces and clock generators
  - 3 SSCs for I^2C/SPI master/slave interfaces
  - SiLabs line side (DAA) interface
  - USB 1.1/2.0 host, OHCI/EHCI compliant
  - DiSEqC 2.0™ interface
- **Enhanced security**

PART NUMBERING

Table 1. Order codes

Part Number	Description
STi5300ZUA	Development version
STi5300AUA	Basic DVB
STi5300-Mboard	Development platform
STi5300-DVB	Software reference tree

REVISION HISTORY

Table 2. Revision history

Date	Revision	Description of changes
September-2005	1	First issue