



Triple-Play Translation HD Interactive STB Solution

Key Specifications

CPU

- High-performance ARM Cortex A9 processor
- Hardware Java acceleration
- Floating-point coprocessor

Memory Control Interfaces

- 128/256 MB embedded 16-bit DDR3
- SPI NOR flash interface
- NAND flash interface
- SPI NAND flash interface

HiVXE Video Decoding Engine

- H.264 MP, HP@L4.1
- AVS baseline@L6.0
- AVS+
- MPEG1
- MPEG2 MP@HL
- MPEG4 SP@L0-3, ASP@L0-5
- VC-1 AP@L3
- VP6 and VP8
- 1080p@30 fps real-time decoding
- Video post-processing such as denoising and deblocking

Image Decoding

- JPEG decoding, maximum 64 megapixels

Audio Decoding

- MPEG L1/L2, MP3 audio decoding
- WAV, AAC, and HE-AAC audio decoding
- Dolby Digital and Dolby Digital Plus decoding, and Dolby Digital Plus transcoding
- Dolby Digital transparent transmission
- Downmixing
- Resampling
- 2-channel audio mixing
- Intelligent volume control

TS Demultiplexing

- One DVB-C IF input and two standard serial TS input; or four two-line serial inputs; or one standard serial input and one standard serial output
- Maximum 96 hardware PID filters
- DVB-CSA2, AES, and DES descrambling algorithms

Channel Decoding

- One embedded QAM, compliant with the ITU J83-A/C standards

Security Processing

- Advanced security CA
- Downloadable CA
- OTP and chip ID
- AES, DES, and 3DES data encryption
- Content protection for USB devices
- Data protection for DDR SDRAMs

Graphics Processing

- Enhanced full-hardware TDE
- Full-hardware anti-aliasing and anti-flicker

Display Processing

- 3-layer OSDs
- 16-bit or 32-bit color depth
- Two video layers
- 1920-pixel width for each layer
- Image enhancement

Audio/Video Interfaces

- PAL and NTSC standard output, and forcible standard conversion
- Aspect ratio of 4:3 or 16:9, forcible aspect ratio conversion, and free scaling
- 1080p50(60)/1080i/720p/576p/576i/480p/480i outputs
- SD and HD signal reception
- HD and SD outputs from the same source
- xvYCC (IEC 61966-2-4) standard for color gamut
- HDMI 1.4b with HDCP 1.2
- Analog video interfaces
 - One CVBS interface
 - One YPrPb interface
 - One S-Video interface
 - Four embedded VDACS
 - Configurable output interfaces
- Audio interfaces
 - Audio-left and audio-right channels: RCA, low-impedance, and unbalanced output interfaces
 - S/PDIF interface
 - One embedded ADAC
 - Embedded audio amplifier

Peripheral Interfaces

- One USB 2.0 host port and one USB 2.0 host/device (integrated with the PHY)
- One 10/100 Mbit/s adaptive Ethernet ports (embedded 100 Mbit/s PHY)
- One UART interface
- Two smart card interfaces, supporting T0, T1, and T14 protocols
- One IR receiver
- One LED and keypad control interface
- Two I²C interfaces
- Five groups of GPIO interfaces

Low-power Consumption

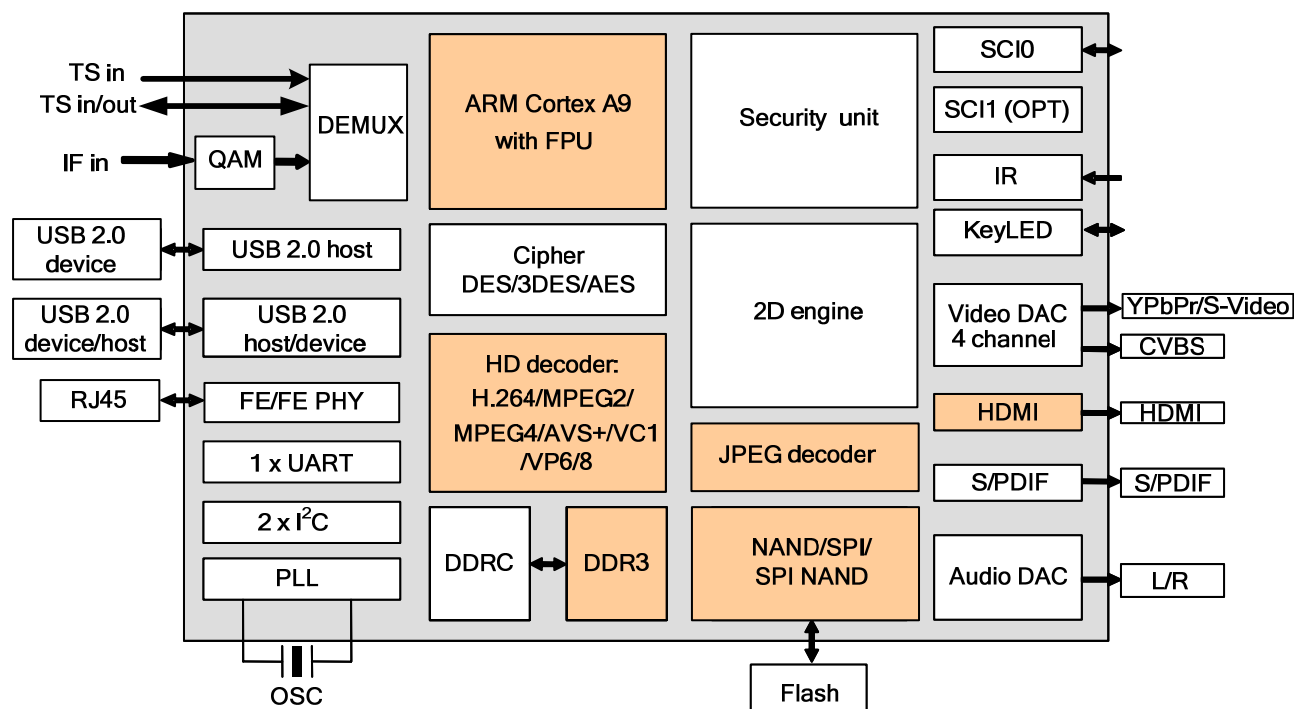
- passive standby, less than 0.8 W standby power consumption of the STB
- Less than 5 W typical working power consumption of the STB

Others

- Fast startup
- Boot program download and execution over a serial port
- QFP package
- 2-layer PCB

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Functional Block Diagram



NOTE

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Acronyms and Abbreviations

| | |
|------------------|---|
| ADAC | audio digital-to-analog converter |
| AES | advanced encryption standard |
| AVS | audio video standard |
| BOM | bill of material |
| CA | conditional access |
| CVBS | composite video broadcast signal |
| DES | data encryption standard |
| DHCP | Dynamic Host Configuration Protocol |
| EPG | electronic program guide |
| GPIO | general-purpose input/output |
| GPU | graphics processing unit |
| HDMI | high-definition multimedia interface |
| I ² C | inter-integrated circuit |
| IR | infrared |
| I ² S | inter-IC sound |
| JPEG | Joint Photographic Experts Group |
| MJPEG | Motion Joint Photographic Experts Group |
| MPEG | Moving Picture Experts Group |
| NTSC | National Television System Committee |
| PBGA | plastic ball grid array |
| PCB | printed circuit board |



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| | |
|--------|---|
| PID | packet identifier |
| QFP | quad flat package |
| SCI | smart card interface |
| S/PDIF | Sony/Philips digital interface |
| SPI | serial peripheral interface |
| STB | set-top box |
| TDE | two-dimensional engine |
| UART | universal asynchronous receiver transmitter |
| VBI | vertical blanking interval |
| VDAC | video digital-to-analog converter |