1. General Description

The RTD1185DD-GR/RTD1185DA-GR/RTD1185MD-GR/RTD1185MA-GR is a highly integrated SoC for Consumer Electronic products requiring High Definition Media Playback, Wireless/Wired Networking, Mass Storage, and DTV capabilities.

Main features of the RTD1185 include HD MPEG1/2/4/H.264 & HD JPEG Decoder, HD AVC/VC-1 Decoder, HD RM/RMVB Decoder, HD AVS Decoder, DTV Recording & Timeshifting, AV Streaming/Transmission via Ethernet & WiFi, TV Encoder with CVBS/ YPbPr/SCART out, I^2S, SPDIF out, HDMI Transmitter and PHY, OTP (One-Time Programmable ROM), dual USB 2.0 Host or one USB 2.0 Host/Device with dual port integrated PHY, NAND/NOR flash controller, SATA, PCI Express, Card reader supporting SD and MMC, Fast Ethernet MAC and PHY, and Gigabit Ethernet MAC.

2. Features

2.1. Hardware Features

- System and Peripherals
  - 500MHz MIPS24Kc processor
  - Video engine with HW acceleration
  - Audio engine with HW acceleration
  - Supports up to 512MB DDR2/DDR3 SDRAM with 32-bit data interface
  - Supports Serial NOR Flash with dual I/O data interface
  - Supports NAND Flash
  - Boot-ROM and OTP (One-Time Programmable ROM) for Secure-Boot and Key storage
  - Integrated SATA 2.0 MAC and PHY
  - Integrated Fast Ethernet MAC and PHY
  - Integrated Gigabit Ethernet MAC
  - Integrated dual USB 2.0 High Speed Host controller, or one Host/Device controller, and Dual PHY
  - Integrated PCI Express interface MAC and PHY
  - Supports SD and MMC Cards
  - Supports UART/IrDA/I^{2}C/GPIO/ EJTAG/VFD/RTC
- Audio Interface and Function
  - Built-in Audio DAC with 24-bit resolution
  - One 2-CH I^{2}S interface for Audio output
  - IEC-60958 (SPDIF) digital audio output
  - 7.1 down-mix
  - MPEG I Layer 1, 2, 3 (2-CH) and MPEG II Layer 1, 2 (Multi-Channel)
  - LPCM, ADPCM, FLAC, AAC, WAV, and OGG Vorbis
  - DTS HD Master Audio, Low Bit Rate (LBR)
  - Dolby® Digital Plus, TrueHD
  - RA1/RA-cook/RA-lossless
  - WMA/WMA Pro, Dolby® Digital AC3 and DTS® (Licensee Only)
- Video Interface
  - Two Parallel/Serial TS inputs for Digital TV systems
  - TV encoder with six 12-bit video D/A converters
  - NTSC and PAL TV systems
  - Composite analog video outputs
  - S-Video (Y/C) analog video outputs
  - Component (YPbPr or RGB) analog video output
  - Simultaneous Composite, S-Video, and YPbPr output
  - Simultaneous SD/HD output
  - VGA/XVGA/SVGA output
  - HDMI version 1.3 transmitter with CEC
  - Supports SCART output
  - 3D De-interlacer
  - Bitmap OSD
- Video and Picture Function
  - Supports 1 HD decoder
  - MPEG1, VCD 1.0/2.0, SVCD
  - Supports HD MPEG2 (up to MP@HL 1080p), ISO/IFO/VOB/TS

- Supports HD MPEG4 SP/ASP (720p/1080i/1080p), Xvid
- H.264 BP@L4.1, HP@L4.1
- WMV9/VC-1 AP@L3
- RealVideo 8/9/10, up to 1080@30P
- DivX3/4/5/6 (Licensee Only)
- AVS HD 1920x1080
- HD JPEG with unlimited resolution (40M-pixel tested)
- Full-pixel JPEG decode with high resolution zoom-in
- De-blocking/De-ringing Filter
- Video upscaling from SD to HD (720p/1080i/1080p)
- Supports 24/30/36-bit deep color

- Copy Protection
  - DeCSS
  - CGMS-A
  - HDCP
  - Microsoft DRM
  - Secure Boot with OTP and embedded boot-ROM

2.2. Software Features

- Operating System: Linux
- Media Browser and Player
- Supports Subtitles
- Photo slideshow with transition effects
- Network applications
- DTV function

3. System Applications

- HD Media Player
- Digital Media Adaptor/Server
- STB with PVR (Personal Video Recorder)
- Networked Media Module for Embedded CE devices

3.1. Application Diagram

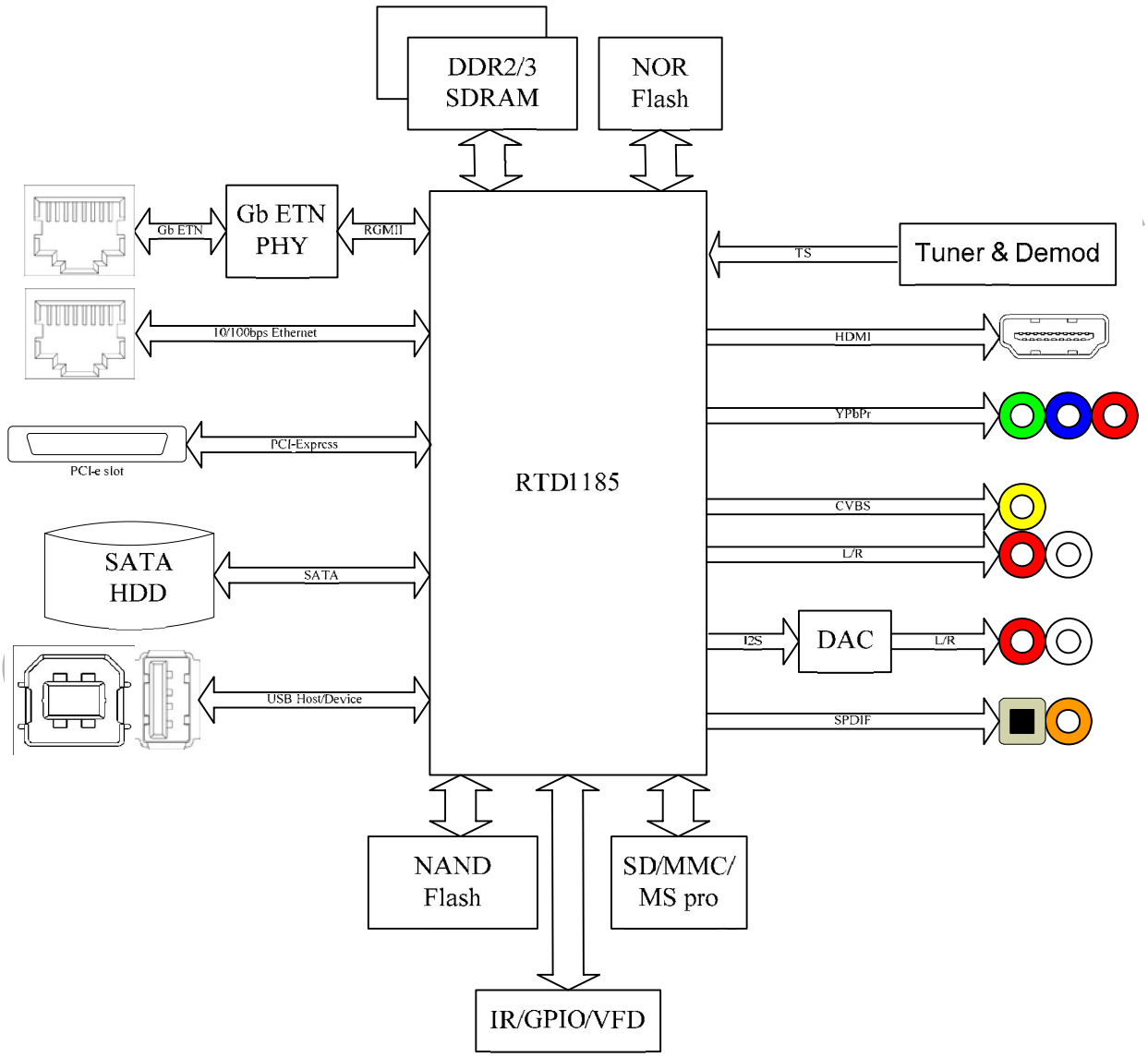

Figure 1. Application Diagram

4. Block Diagram

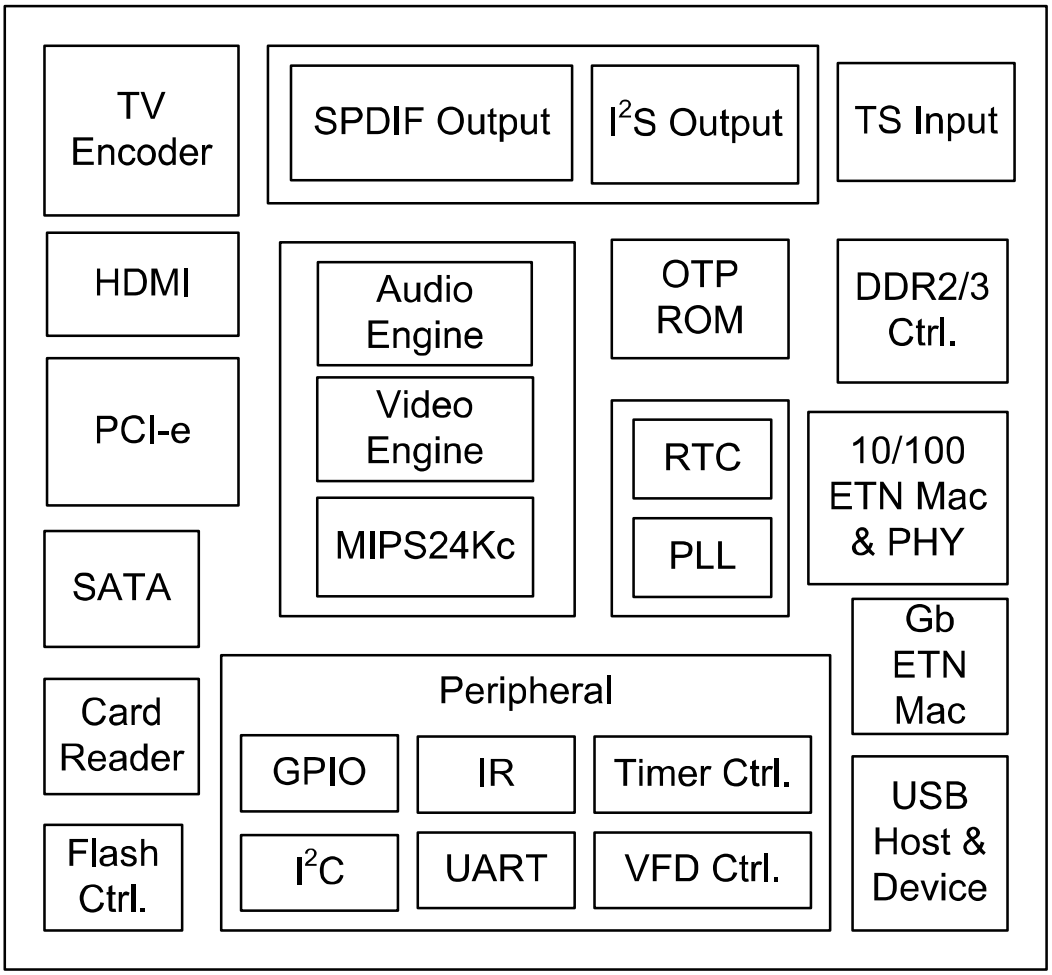

Figure 2. Block Diagram