Hi3798C V200 Brief Data Sheet

Key Specifications

High-Performance CPU

- Quad-core 64-bit high-performance ARM Cortex A53, up to 2.0GHz, 18400 DMIPS
- Integrated multimedia acceleration engine NEON
- Hardware Java acceleration
- Integrated hardware floating-point coprocessor

3D GPU

- High-performance multi-core GPU Mali T720
- OpenGL ES 3.1/3.0/2.0/1.1/1.0 OpenVG 1.1
- OpenCL 1.1/1.2 Full Profile/RenderScipt
- Microsoft DirectX 11 FL9_3
- Adaptive scalable texture compression (ASTC)
- Pixel fill rate greater than 2.7 Gpixel/s

Memory Control Interfaces

- DDR3/3L/4 SDRAM interface, maximum 32-bit data width
- SPI NOR flash interface
- SPI NAND flash interface
- NAND flash interface
  - SLC/MLC flash memory
  - Maximum 64-bit error-correcting code (ECC)
- eMMC flash interface

Video Decoding (HiVXE 2.0 Processing Engine)

- H.265/HEVC Main/Main10 profile@level 5.1 high-tier, maximum 4K x 2K@60 fps and 1x1080p@30 fps simultaneous decoding
- H.264/AVC BP/MP/HP@level 5.0; H.264/AVC MVC, maximum 4K x 2K@30 fps decoding
- VP9, maximum 4K x 2K@60 fps decoding
- VP6/8, maximum 1080p@60 fps decoding
- MPEG1, maximum 1080p@60 fps decoding
- MPEG2 SP@ML, MP@HL, maximum 1080p@60 fps decoding
- MPEG4 SP@level 0−3, ASP@level 0−5, GMC, short header format, maximum 1080p@60 fps decoding
- AVS baseline profile@level 6.0, AVS-P16 (AVS+), maximum 1080p@60 fps decoding
- VC-1 SP@ML, MP@HL, AP@level 0−3, maximum 1080p@60 fps decoding

Image Decoding

- Full HD JPEG hardware decoding, maximum 64 megapixels
- PNG hardware decoding, maximum 64 megapixels

Video and Image Encoding

- H.264 BP/MP/HP@level 4.2 video encoding, maximum 1x1080p@30 fps or 2x720p@30 fps decoding
- Variable bit rate (VBR) or constant bit rate (CBR) mode
- Low-delay encoding
- Encoding of multiple region of interests (ROIs)

Audio Encoding/Decoding

- MPEG L1/L2
- Dolby Digital/Dolby Digital Plus Decoder-Converter
- Dolby True HD decoding
- DTS HD and DTS M6 decoding
- Dolby Digital/DTS transparent transmission
- AAC-LC and HE AAC V1/V2 decoding
- APE, FLAC, Ogg, AMR-NB, and AMR-WB decoding
- G.711 (u/a) audio decoding
- Dolby MS12 decoding and audio effect
- G.711(u/a), AMR-NB, AMR-WB, and AAC-LC audio encoding
- HE-AAC transcoding DD (AC3)

TS Demultiplexing/PVR

- Maximum six TS inputs (optional)
- Two TS outputs (multiplexed with two TS inputs)
- DVB-CSA/AES/DES descrambling
- Recording of scrambled and non-scrambled streams

Security Processing

- Trusted execution environment (TEE)
- Secure video path (SVP)
- Secure boot
- Secure storage
- Secure upgrade
- Protection for JTAG and other debugging port
- One-time programmable (OTP)
- Digital rights management (DRM)
- Downloadable conditional access (CA) (DCAS) and other mainstream advanced CA
- Hardware video and audio watermark
- HDCP 2.2/1.4 protection for HDMI outputs

Graphics and Display Processing (Imprex 2.0 Processing Engine)

- HDR
- Hardware overlaying of multi-channel graphics and video inputs
- Four OSD layers
- Three video layers
- Screen mirroring
- Ultra-low-delay video processing
- Super resolution extension technology (for improving video playback over the network)
- Video rotation
- Letter box and PanScan
- Full format 3D video processing and display
- Multi-tap vertical and horizontal scaling of videos and graphics; free scaling
- Enhanced full-hardware two-dimensional engine (TDE)
- Full-hardware anti-aliasing and anti-flicker
- Color space conversion (CSC) with configurable coefficients
- Image enhancement and denoising
- Deinterlacing

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- Sharpening
- Chrominance, luminance, contrast, and saturation adjustment
- Video Db/Dr processing

Audio/Video Interfaces

- PAL, NTSC, and SECAM standard output, and forcible standard conversion
- Aspect ratio of 4:3 or 16:9, forcible aspect ratio conversion, and free scaling
- 4K x 2Kp60/4K x 2Kp30/1080p60/1080p50/1080p30/1080p24/1080i60/1080i50/720p/576p/576i/480p/480i output
- HD and SD outputs from the same source
- One HDMI 2.0a TX with HDCP 2.2 output, maximum 4K x 2K@60 fps
- Analog video interfaces
  - One CVBS interface
  - One embedded VDAC
  - Rovi
  - VBI
- Audio interfaces
  - Audio-left and audio-right interfaces
  - S/PDIF interface
  - One embedded ADAC
  - One I^2S/PCM digital audio input/output
  - HDMI audio output

Peripheral Interfaces

- One USB 2.0 host port
- Two USB 3.0 host ports, compatible with USB 2.0 (optional)
- One SATA 3.0 interfaces (optional)
- One PCIe 2.0 interfaces (optional)
- Two 10/100/1000 Mbit/s Ethernet ports
- Two 4-bit SDIO 3.0 interfaces (optional)
- Two UART interfaces
- One smart card interface, supporting T0, T1, and T14 protocols
- One IR receiver
- One LED and keypad control interface
- Multiple I^2C interfaces
- Multiple general-purpose input/output (GPIO) interfaces

Others

- Various boot modes
- Boot program download and execution over a serial port or USB port
- Integrated standby processor, supporting various low-power modes and less than 30 mW standby power consumption
- Low-power design such as adaptive voltage scaling (AVS) and dynamic voltage and frequency scaling (DVFS)
- Ultra low-power design
- Plastic ball grid array package (PBGA)

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Functional Block Diagram
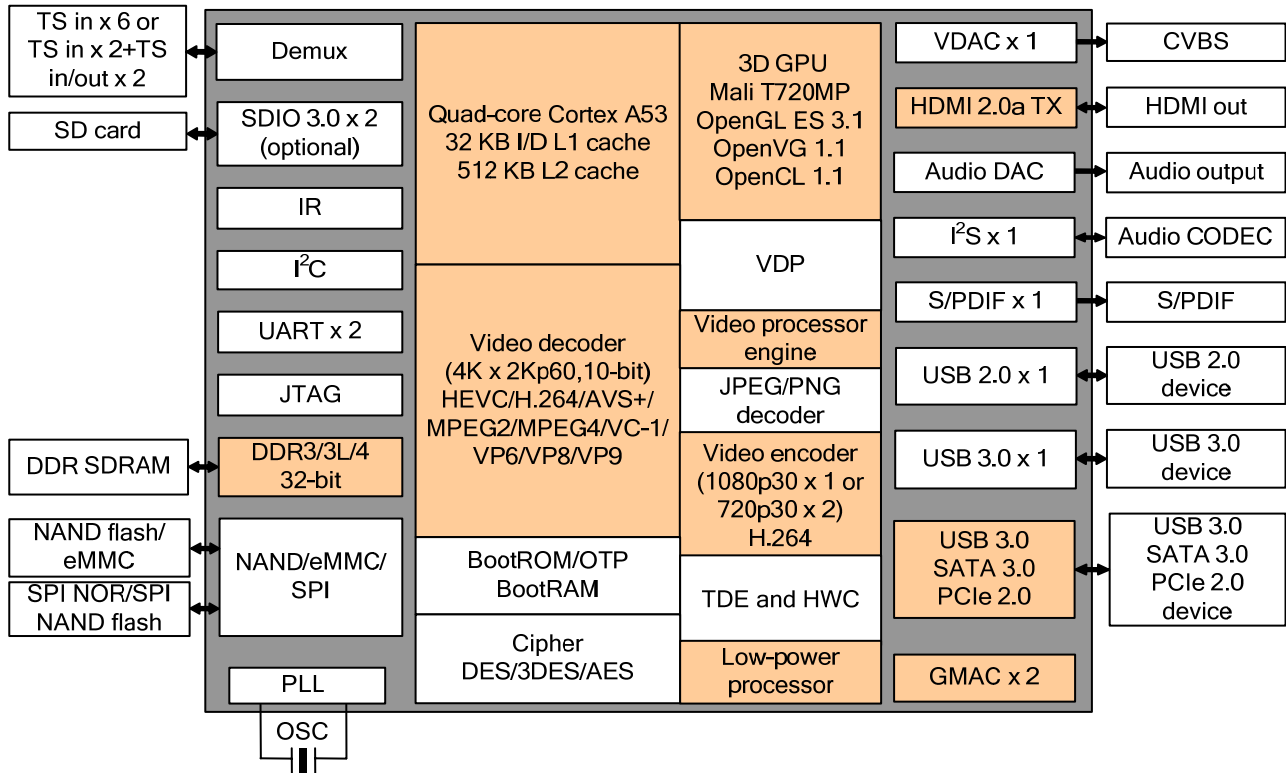
Hi3798C V200 is an unltra-HD high performance SoC supporting 4Kp60 fps decoding for the DVB and IPTV STB markets. With an integrated quad-core 64-bit high-performance Cortex A53 processor and embedded NEON, Hi3798C V200 provides powerful CPU processing capabilities that meet differentiated service requirements. It creates the industry's best user experience in stream compatibility, smoothness and picture quality of live video playback, and STB performance. To meet the growing requirements on multimedia playback, video communication, and multi-screen transcoding, Hi3798C V200 supports 4K x 2Kp60@10-bit ultra-HD video decoding in various formats (including H.265/HEVC, H.264/AVC, AVS+, MVC, MPEG2, MPEG4, VC-1, VP6, VP8, and VP9) and high-performance H.264 encoding. It also supports Dolby and DTS audio processing. Hi3798C V200 provides a smooth man-machine interface and rich gaming experience with a high-performance multi-core 2D/3D acceleration engine. The chip also enables flexible connection schemes with multiple Ethernet ports, USB 2.0 ports, USB 3.0 ports, SATA/eSATA ports, PCIe 2.0 ports, and more peripheral interfaces.

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