# Hi3798M V100 Brief Data Sheet

## Key Specifications

### CPU

- Quad-core ARM Cortex A7, up to 1.5 GHz dominant frequency
- Integrated multimedia acceleration engine NEON
- Hardware Java acceleration
- Integrated hardware floating-point coprocessor

### 3D GPU

- Quad-core Mali450
- OpenGL ES 2.0/1.1/1.0 OpenVG 1.1, EGL

### Memory Interfaces

- DDR3/DDR3L interface
  - Maximum 2 GB capacity
  - 32-bit memory
  - Maximum 800 MHz frequency (DDR-1600)
- NAND flash interface
  - SLC/MLC flash memory
  - 8-bit data width
  - Maximum 64 GB capacity
  - Maximum 64-bit ECC
- eMMC/tSD/fSD flash memory

### HiVXE Video Decoding

- H.265 Main Profile@L5.0 High-tie
- H.264 BP/MP/HP@L5.1
- Full-HD 3D videos (MVC), blu-ray navigation
- AVS baseline profile @L6.0, AVS-P16 (AVS+)
- MPEG1
- MPEG2 SP@ML, MP@HL
- MPEG4 SP@L0−3, ASP@L0−5, GMC
- MPEG4 short header format (H.263 baseline)
- VC-1 SP@ML, MP@HL, AP@L0−3
- VP6/8
- 4K x 2K@30 fps decoding
- Low delay decoding
- Simultaneous 4-channel HD decoding

### Image Decoding

- Full HD JPEG hardware decoding, maximum 64 megapixels
- MJPEG decoding, maximum 1080p@40 fps
- PNG hardware decoding, maximum 64 megapixels

### Video and Image Encoding

- H.264 BP/MP/HP@L4.2 video encoding, 1080p@30 fps
- JPEG hardware encoding, maximum 1080p@30 fps
- VBR or CBR mode for video encoding
- Low delay encoding

### Audio Encoding and Decoding

- MPEG L1/L2
- Dolby Digital/Dolby Digital Plus Decoder-Converter
- Dolby True HD decoding
- DTS and DTS HD core 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
- Downmixing, resampling, highly dynamic volume control
- High-quality Karaoke, supporting echo cancellation and G.711v (u/a), AMR-NB, AMR-WB, and AAC-LC audio encoding

### Image and Display Processing (Imprex Processing Engine)

- Hardware overlaying of multi-channel graphics and video inputs
- Three OSD layers
- Four video layers
- Screen mirroring
- Ultra-low-delay video processing
- 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 TDE
- Full-hardware anti-aliasing and anti-flicker
- CSC with configurable coefficients
- Image enhancement and denoising
- Deinterlacing
- 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 and forcible aspect ratio conversion
- 4K x 2K/1080p50/1080p30/1080p24/1080i60/1080i50 /720p/576p/576i/480p/480i output
- One SD output and one HD output from the same source or different sources
- One HDMI 1.4a TX with HDCP 1.4 output
- Analog video interfaces
  - One CVBS interface
  - One embedded VDAC
- Audio interfaces
  - Audio-left and audio-right channels
  - SPDIF interface
  - Embedded ADAC output
  - One $I^2S$/PCM digital audio input/output（Optional）
  - HDMI audio output

### Peripheral Interfaces

- One USB 3.0 host port（Optional）

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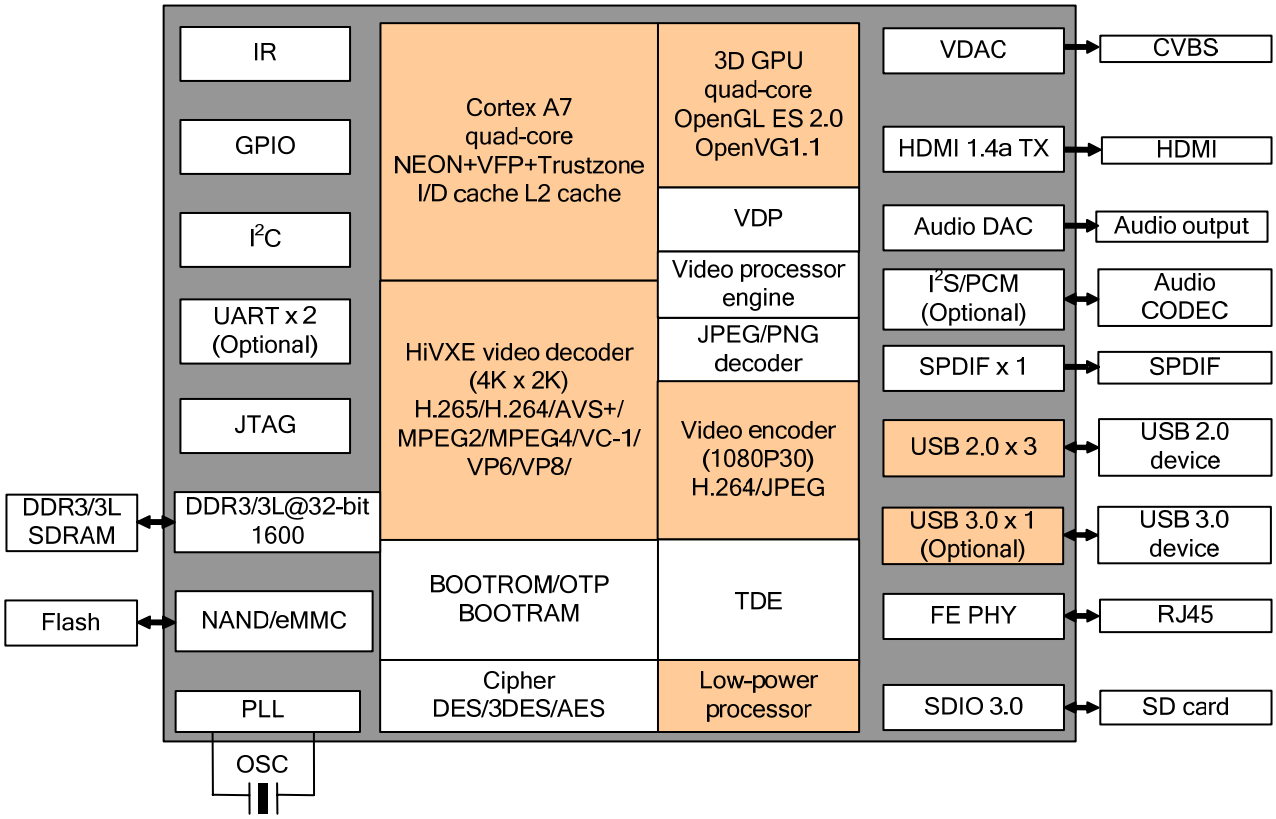
- Three USB 2.0 host ports
- Boot and debugging over the USB port
- One SDIO 3.0 interface
- One 10 Mbit/s or 100 Mbit/s adaptive Ethernet port with the integrated FE PHY
- One IR receiver with one input interface
- Multiple $I^2C$ interfaces
- Multiple UART interfaces（Optional）
- Multiple GPIO interfaces
- Integrated POR module

### Other Specifications

- Embedded secure boot module, supporting anti-ROM-flashing
- Secure video path
- 2-layer PCB design
- Various boot modes
- USB bootstrap when the flash memory is empty
- Integrated standby processor, supporting various standby modes and less than 30 mW standby power consumption
- Low-power design such as AVS and DVFS

## Functional Block Diagram




Hi3798M V100 is a cost-effective chip solution targeted at the over-the-top (OTT) STB market. It brings the best user experience in the industry in terms of stream compatibility, smoothness and picture quality of live video playback, and STB performance. With an integrated high-performance quad-core processor and embedded NEON, Hi3798M V100 meets differentiated service requirements. It also supports Dolby and DTS audio processing. To meet the growing requirements on multimedia playback, video communication, and multi-screen transcoding, Hi3798M V100 supports HD video decoding in various formats (including H.265, H.264, AVS+, MVC, MPEG2, MPEG4, VC-1, VP6, and VP8) and high-performance H.264 encoding. Hi3798M V100 provides a smooth man-machine interface and rich gaming experience with a high-performance multi-core 2D/3D acceleration engine. It also enables flexible connection schemes with one Ethernet port, three USB 2.0 ports, one USB 3.0 port(Optional), and more peripheral interfaces.

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# Acronyms and Abbreviations

| | |
|---|---|
| ADAC | audio digital-to-analog converter |
| ADB | Android debug bridge |
| AVS | adaptive voltage scaling |
| BGA | ball grid array |
| CBR | constant bit rate |
| CSC | color space conversion |
| CVBS | composite video broadcast signal |
| DSP | digital signal processor |
| DVFS | dynamic voltage frequency scaling |
| ECC | error correcting code |
| eMMC | embedded multimedia card |
| FE | fast Ethernet |
| GMC | global motion compensation |
| GPIO | general-purpose input/output |
| GPU | graphics processing unit |
| HDMI | high-definition multimedia interface |
| HEVC | high efficiency video coding |
| $I^2C$ | inter-integrated circuit |
| IR | infrared |
| $I^2S$ | inter-IC sound |
| JPEG | Joint Photographic Experts Group |
| MJPEG | Motion Joint Photographic Experts Group |
| MLC | multi-level cell |
| MPEG | Moving Picture Experts Group |
| MVC | multiview video coding |
| NTSC | National Television System Committee |
| OTT | over-the-top |
| PCB | printed circuit board |
| PCM | pulse-code modulation |
| POR | power-on reset |
| ROI | region of interest |
| SDIO | secure digital input/output |
| SLC | single-level cell |
| SPDIF | Sony/Philips digital interface |
| SPI | serial peripheral interface |
| SSVP | super secure video path |
| STB | set-top box |
| TDE | two-dimensional engine |
| UART | universal asynchronous receiver transmitter |
| VBI | vertical blanking interval |
| VBR | variable bit rate |
| VDAC | video digital-to-analog converter |