Hi3536DV100 H.265/H.264 Decoder Processor

Brief Data Sheet

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Key Specifications

Processor Core

- ARM Cortex A7 @850 MHz
  - 32 KB L1 i-cache, 32 KB L1 D-cache
  - 128 KB L2 cache
  - NEON and FPU

Video Encoding/Decoding Protocols

- H.265 Main Profile, Level 4.1 decoding
- H.264 Baseline/Main/High Profile, Level 4.2 decoding
- JPEG Baseline encoding
- MJPEG/JPEG baseline decoding

Video Encoding/Decoding

- H.265/H.264/JPEG encoding and decoding of multiple streams
  - 4x1080p@20 fps H.265/H.264 decoding
  - 4x960p(1280*960)@30 fps H.265/H.264 decoding
  - 4x720p@30 fps JPEG decoding

Video and Graphics Processing

- Sharpen and contrast strengthening
- 1/15x to 16x video scaling
- 1/2x to 2x graphics scaling
- Cover regions
- OSD overlaying

Audio Encoding/Decoding

- Software audio encoding and decoding complying with multiple protocols

Security Engine

- AES, DES, and 3DES algorithms implemented by hardware

Video Interfaces

- VO interfaces
  - One HDMI 1.4b output interface
  - One VGA HD output interface
  - HDMI/VGA outputs from the same source, with the maximum output of 1080p@60 fps
  - One HD video layer and 16-picture output
  - One HD PIP layer
  - One ARGB1555 or ARGB8888 HD graphics layer
  - One hardware cursor layer in ARGB1555 or ARGB8888 format (configurable) with the maximum resolution of 256 x 256

Audio Interfaces

- Two unidirectional I²S/PCM interfaces
  - One input interface, supporting dual-channel input
  - One output interface, supporting dual-channel output
  - 16-bit audio inputs and outputs
- Integrated with Audio DAC
  - 48 kHz, 44.1 kHz, 32 kHz sampling rates
  - Dual-audio channel line-out output

Ethernet Ports

- One fast Ethernet (FE) interface
  - Integrated with FE PHY
  - PHY, RMII, and MII modes
  - 10/100 Mbit/s half-duplex or full-duplex
  - TSO for reducing the CPU usage

Peripheral Interfaces

- One SATA 2.0 interface
  - PM
  - eSATA
- Two USB 2.0 host ports, supporting the hub
- Three UART interfaces, one of which supporting four wires
- One IR interface
- One I^2C interface
- Multiple GPIO interfaces

Memory Interfaces

- One 16-bit DDR3/DDR3L SDRAM interface
  - Maximum frequency of 800 MHz
  - ODT
  - Maximum capacity of 512 MB
  - Automatic power consumption control
- SPI NOR/NAND flash interface
  - 1-/2-/4-wire SPI NOR/NAND flash
  - Two CSs, connected to different types of flash memories
  - Maximum capacity of 64 MB for each CS (for the SPI NOR flash)
  - Maximum capacity of 512 MB for each CS (for the SPI NAND flash)
  - 2 KB/4 KB page size (for the SPI NAND flash)
  - 8-bit/1 KB, 16-bit/1 KB, 24-bit/1 KB, or 28-bit/1 KB ECC (for the SPI NAND flash)
- Embedded 4 KB BOOTROM

RTC with an Independent Power Supply

- Independent battery for supplying power to the RTC

Configurable Boot Modes

- Booting from the BOOTROM
- Booting from the SPI NOR flash
- Booting from the SPI NAND flash

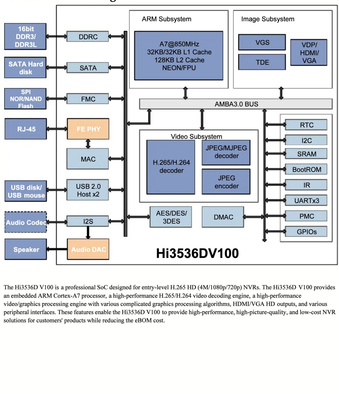
SDK

- Linux 4.9-based SDK
- Audio encoding and decoding libraries complying with various protocols
- High-performance H.265/H.264 PC decoding library

Physical Specifications

- Power consumption
  - Typical power consumption of 1.6 W
  - Multi-level power consumption control
- Operating voltages
  - 1.1 V core voltage
  - 1.26 V CPU voltage
  - 3.3 V I/O voltage
  - 1.5 V DDR3 SDRAM/1.35 V DDR3L SDRAM
- Operating temperature ranging from 0°C (32°F) to 70°C (158°F)
- Package
  - RoHS, TFBGA
  - Lead pitch of 0.65 mm (0.03 in.)
  - Body size of 13 mm x 13 mm (0.51 in. x 0.51 in.)

Functional Block Diagram



The Hi3536D V100 is a professional SoC designed for entry-level H.265 HD (4M/1080p/720p) NVRs. The Hi3536D V100 provides an embedded ARM Cortex-A7 processor, a high-performance H.265/H.264 video decoding engine, a high-performance video/graphics processing engine with various complicated graphics processing algorithms, HDMI/VGA HD outputs, and various peripheral interfaces. These features enable the Hi3536D V100 to provide high-performance, high-picture-quality, and low-cost NVR solutions for customers' products while reducing the eBOM cost.

NVRs (Each with a Hi3536D V100)

8 x 1080p NVR

- 8x IPC streams receiving (primary streams: 1080p@4 Mbit/s; secondary streams: D1@1 Mbit/s)
- 8x IPC main stream forwarding
- 2x 1080p@30 fps or 8x D1@30 fps H.265/H.264 decoding
- HDMI/VGA 1080p@60 fps outputs from the same source