Hi3532 H264 Encoding Processor

Key Specifications

**Processor**
- ARM926EJ
  - Up to 620 MHz
  - 32 KB L1 I-cache, 32 KB L1 D-cache

**Video Encoding**
- H.264 baseline profile L5.0
- H.264 main profile L5.0
- H.264 high profile L5.0
- MJPEG/JPEG baseline

**Video Encoding Performance**
- H.264/JPEG encoding performance
  - 16D1@30 fps + 16CIF@30 fps encoding + JPEG snapshot D1@16 fps
  - 4x1080p@30 fps + 4x(960x540)@15 fps encoding + JPEG snapshot 1080p@4 fps
  - 8x720p@30 fps + 8x(QVGA@30 fps encoding + JPEG snapshot 720p@8 fps
  - CBR, VBR, and ABR, ranging from 16 kbit/s to 40 Mbit/s
  - Encoding frame rate, ranging from 1/16 fps to 60 fps
  - ROI
  - Color-to-gray

**Intelligent Video Analysis**
- Integrated intelligent analysis acceleration engine, supporting motion detection, boundary security, and video diagnosis

**Video and Graphic Processing**
- Video pre-processing, including de-interlacing, image enhancement, edge enhancement, and 3D denoise
- Anti-flicker
- 1/16x to 8x video scaling
- 1/2x to 2x graphic scaling
- OSD overlap of eight regions
- Alpha blending of the video layer and graphics layers

**Audio Codec**
- ADPCM, G.711, and G.726 encoding
- Other audio codec with software

**Security Engine**
- AES, DES, and 3DES encryption and decryption engine
- Digital watermark

**Video Interface**
- Video input
  - 4xBT656@108 MHz/144 MHz for 16D1@960, 8xBT656@54 MHz/72 MHz for 16D1@960, or 8xBT656@27 MHz/36 MHz for 8D1@960
  - 5xBT1120@148.5 MHz, four interfaces for 1080p@30 fps or 720p@30 fps/60 fps, and the other one for transferring video data between cascaded Hi3531 and Hi3532
- 8x multiplexed BT656@148.5 MHz for 8-channel 720p@30 fps
- Video output
  - 1xBT1120@148.5 MHz for transferring video data between cascaded Hi3531 and Hi3532
  - 1-layer OSD, RGB1555 or RGB8888, with the maximum resolution of 1920x1080
  - 1-layer independent video PIP layer

**Audio Interfaces**
- I2SX5
  - Four for input
  - One for input and output
  - Maximum of 16-channel 16-bit audio inputs for each interface

**Ethernet Ports**
- MACx1
  - MIIMode
  - 10/100 Mbit/s full-duplex or half-duplex mode

**Peripheral**
- PCIe 1.1x1
  - 1-lane mode
  - EP
  - RC

**External Memory Interfaces**
- 32-bit DDR2 or DDR3 SDRAMx2
  - Up to 620 MHz
  - OD
  - Maximum 1 GB capacity for each interface
  - Automatic power control
  - SPI and NOR flash interfaces
  - 1-, 2-, or 4-bit SPI and NOR flash interfaces
  - Maximum 32 MB capacity

**Boot Modes**
- SPI NOR flash
- PCIe

**SDK**
- SDK based on Linux 2.6.38
- High-performance H.264 PC decoding library

**Physical Specifications**
- Power consumption
  - About 2.5 W
  - Multi-level power control
- Operating voltage
  - 1.0 V core voltage
  - 3.3 V I/O and 5 V tolerance voltage
  - 1.5 V or 1.8 V DDR2/DDR3 SDRAM interface voltage
  - Operating temperature ranging from -20°C (-4°F) to +70°C (+158°F)
- Package
  - RoHS, 509-pin EHS FC-BGA
  - 0.65 mm ball pitch
  - 18 mm x 18 mm body size
The Hi3532 is a professional high-performance SoC designed for multi-channel D1 and HD DVR. With the embedded cost-effective ARM926 processor and the engine supporting a maximum of 4.5-channel 1080p real-time codec complying with multiple protocols, the Hi3532 meets the rising demand for HD encoding applications. The Hi3532 also provides outstanding video pre-processing features and various encoding algorithms, and works with the Hi3531 by using the dedicated video cascade channels. These features guarantee users a high-quality image experience. In addition, the Hi3532 supports multiple integrated peripheral interfaces to meet customer requirements for functionality, features, and image quality, while reducing the cost.

Typical DVRs with the Hi3531 and Hi3532

16D1 Simultaneous Encoding and Decoding DVR
- 16D1 + 16 CIF real-time encoding of dual streams + 16 fps D1 JPEG snapshot + 16D1 real-time decoding

8-Channel 720p Simultaneous Encoding and Decoding DVR
- 8x720p + 8xQVGA real-time encoding of dual streams + 8 fps 720p JPEG snapshot + 8x720p real-time decoding

4-Channel 1080p Simultaneous Encoding and Decoding DVR
- 4x1080p real-time + 4x(960x540)@15 fps encoding of dual streams + 4 fps 1080p JPEG snapshot + 4x1080p real-time decoding