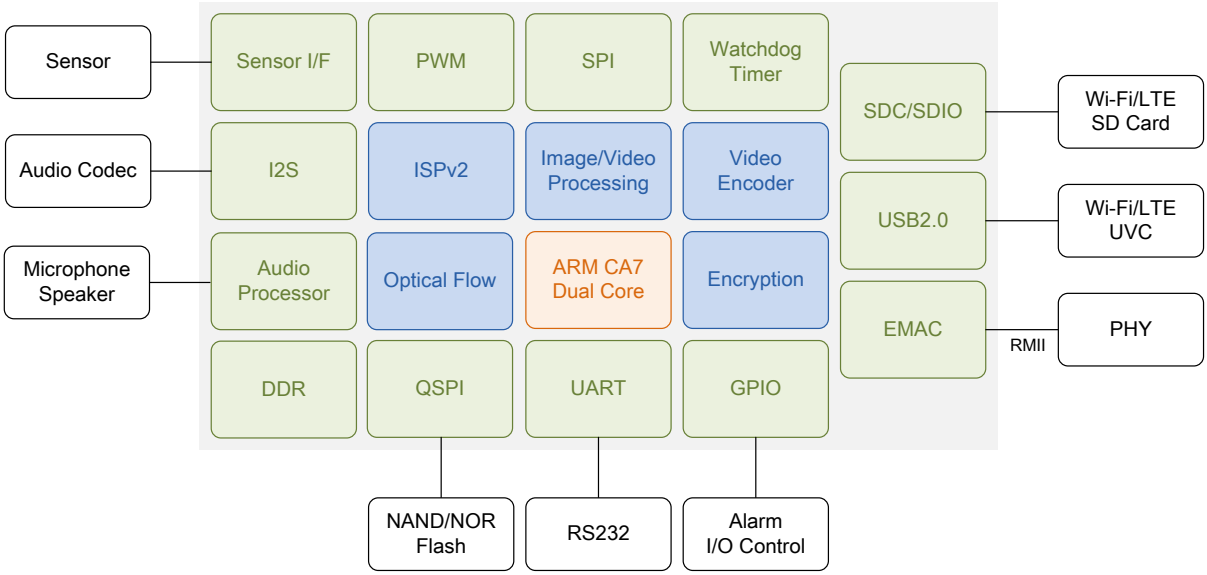
HC1725 Multimedia SoC

Application Block Diagram



Overview

The Augentix HC1725 is a cost-effective Multimedia SoC solution. It supports all types of image sensor for up to 5 Mpixel resolution. It integrates high quality Image Signal Processing V2 (ISPv2), smart image/video processing engine, high performance video encoder, hardware audio codec, hardware bit-stream encryption engine, ARM® Cortex A7 AMP dual core and complete peripherals. It provides excellent image quality, rich smart video analysis, and high performance video coding. The BOM cost is highly reduced by customer-oriented design including small package size, low ball counts, and supporting serial NAND/NOR flash.

Key Features

Excellent Image Quality

- Up to 5 Mpixel resolution
- Optical-Flow Noise Reduction
- General 2D graphics overlay with arbitrary layers and shapes
- True wide dynamic range (WDR)
- High quality polyphase up/down scaler

Smart Video Analysis

- Optical-flow
- Foreground object detection and tracking
- Accurate scene detection and segmentation

High Performance Video Coding

- Up to 4M @ 30 fps or 5M @ 24fps H.264/H.265 encoding
- Up to 5 Mpixel image/video resolution
- Realtime bandwidth adaptive rate control with variable GOP, frame size, ROI

System Design Friendly

- 10×10 mm^2 QFN with 100 pins
- SiP with DDR3L up to 1 Gb
- Support serial NAND/NOR flash
- Support RMII

Support linux fastboot

General Specifications

Sensor I/F

- Dual 12 bit CMOS sensor or One Digital Video Port (DVP) interface
- 2-lane LVDS/HiSPi™/MIPI™
- 2-channel LVDS/HiSPi ™/MIPI™

Sensor Processing

- 5 MPixels maximum resolution
- Up to 120M pixel/s input data-rate
- Device color calibration/Digital black-level calibration/Fixed pattern noise reduction
- Gamma correction
- Automatic defect pixel detection/correction
- Automatic crosstalk detection/correction

Image Processing

- Optical-Flow Noise Reduction
- 2D graphics for general OSD overlay with arbitrary layers and shapes
- Contrast, brightness, saturation adjustment
- Poly-phase scaler
- Digital PTZ and virtual cameras
- Flip, mirror, crop, 90°/270° rotate
- Lens shading correction
- Lens distortion correction
- WDR local tone-mapping
- Two-frame HDR
- 2D sharpness engine for edge/detail enhancement
- 2D/3D noise reduction Ver2
- Hardware fisheye de-warping

Smart Video Processing

- Advance object motion analysis
- Flexible 3A (AE, AWB, AF)
- Abnormal event detection
- Electronic fence
- Human detection acceleration
- Scene detection and segmentation

Video Encoding

- Up to 4M @ 30 fps or 5M @ 24fps encoding performance
- Up to 5 MPixel maximum resolution
- H.265 main profile
- H.264 MP/HP Level 5.1 and MJPEG
- Up to 4 simultaneous encoding stream
- Bandwidth adaptive encoding
- Real-time rate-control with dynamic ROI, resolution, frame-rate, GOP
- Support VBR, CBR, smart CBR
- Embedded AES128/256 encryption engine

System

- ARM® Cortex A7 AMP dual core 900MHz with multiple DMA
- 32 KB/32 KB for I-cache/D-cache, 128 KB for L2 cache
- NEON and FPU
- Built-in DDR3L up to 1 Gb
- AES128/256 hardware acceleration
- 10/100 Ethernet MAC with RMII
- Serial NAND/NOR flash with 400 Mbps
- Audio ADC/DAC and hardware G.711/G.726 codec
- BT656/1120 video output interface
- USB 2.0 dual role with PHY
- Dual SDIO/SDC
- Multiple I2S, SPI, UART, PWM, ADC, DAC, Watchdog, multiple general purpose timer, JTAG

Physical

- Typical power consumption is TBD
- 0.9V core voltage, 1.8/3.3V I/O voltage
- Operating temperature $-20°C$ to $+60°C$
- QFN with 100 pins, 10×10 mm^2, 0.35 mm pitch

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