

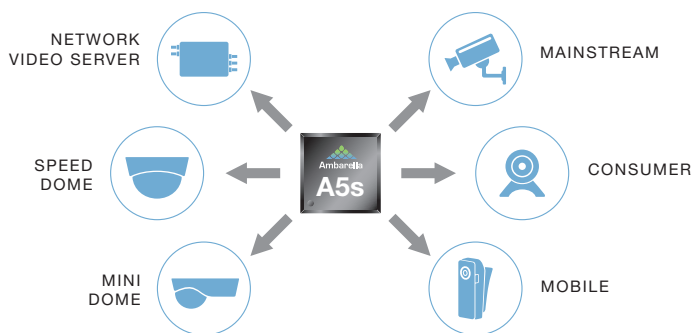


A5s – 1080p30 IP Camera SoC

Overview

The A5s IP Camera SoC integrates powerful image sensor processing, HD 1080p30 H.264 multi-stream encoding, and an ARM11 processor with rich I/O for IP Camera and Network Video Server (NVS) applications. Leveraging Ambarella’s technology leadership in professional broadcasting, A5s offers excellent video quality, 3D noise reduction, digital WDR and four independent H.264/MJPEG streams.

The A5s SDK supports development of fully-featured IP Cameras and multi-channel NVS devices while offering developer differentiation such as analytics, digital PTZ, customizable AWB/AE/AF and a wide range of sensor choices.



A5s enables a wide range of video surveillance applications.

Key Features

Single Platform, Many Uses

- From entry-level SD to high-end multi-megapixel
- Wide range of sensors supported

Promotes Differentiation

- High-performance, software-programmable
- Proven Linux SDK and rich ARM-level APIs

Cost And Power Efficient

- Ultra-compact BOM with a single 16-bit DDR
- Less than 3 Watts for a complete camera design

Superior Image Quality

- Advanced image sensor pipeline
- 3D noise reduction

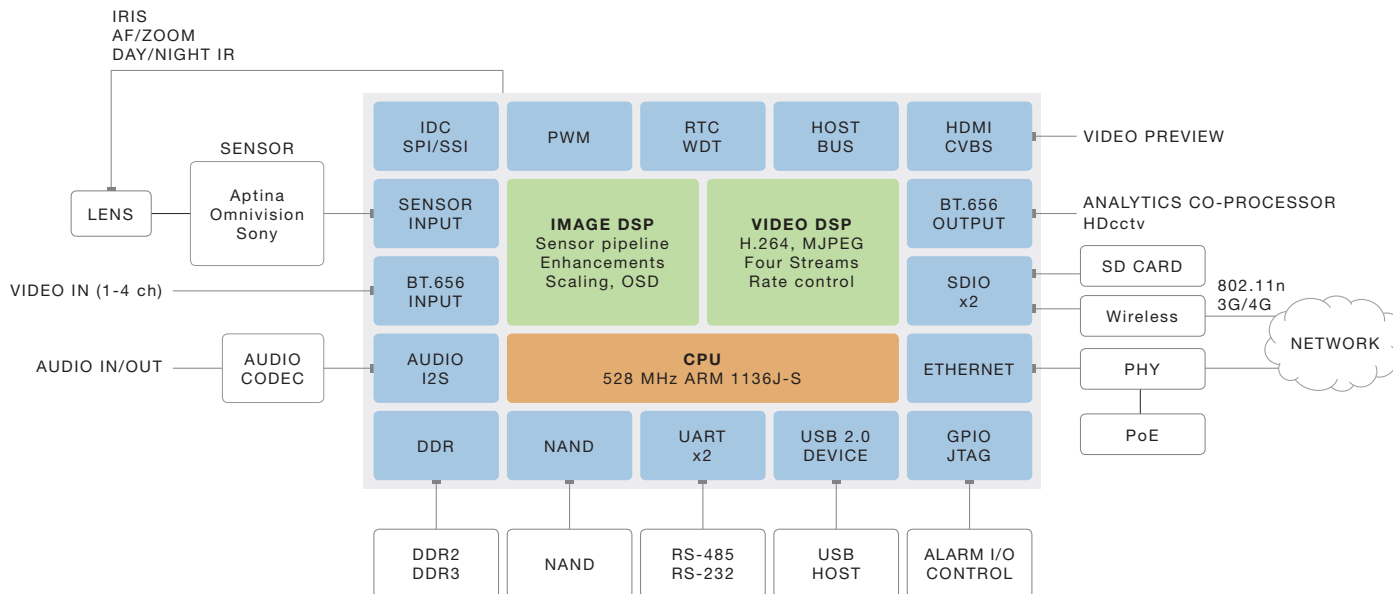
Enhanced Video Processing

- Digital WDR
- AE/AWB/AF, digital PTZ, face tracking, more

State-Of-The-Art H.264 Compression Engine

- High compression ratio, also in high motion scenes
- Full HD 1080p30 + D1

Block Diagram





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General Specifications

Sensor and Video I/O

- 8-lane SLVDS, HiSPI™, MIPI CSI-2, and parallel
- Up to 14 Mpixel resolution and 240 MHz pixel rate
- BT.656/1120 108 MHz 1-4 ch video input/output
- HDMI 1.3 out

Front End Sensor Processing

- Lens correction
- Black level correction
- Defect pixel cluster correction
- CFA crosstalk noise filtering
- RGB Bayer demosaicing
- 3D color transformation with gamma

Image Processing

- 3D noise reduction filtering
- Digital WDR contrast enhancement
- AE/AWB/AF libraries supplied
- Day/Night and DC/Stepper iris control
- Flicker suppression
- Alpha-blending OSD; text, overlays, privacy mask
- Digital WDR contrast enhancement
- Crop, mirror, flip, scale, digital PTZ
- Saturation, brightness, contrast
- Motion and face detection

Low Power

- 650 mW power consumption for 1080p30 encode

Video Encoder

- H.264 BP/MP/HP Level 5.0
- MJPEG
- Up to 4 simultaneous streams
- Up to 14MP resolution
- Full HD 1920x1080@30fps + D1
- 3MP@20fps, 5MP@12fps, or 10MP@3fps
- CBR/VBR/ConstantQP rate control

CPU

- 528 MHz ARM1136J-S
- AES/DES/3DES cryptographic acceleration

Memory

- 1x 16-bit DDR2/DDR3/Mobile DDR/Mobile DDR2

Peripherals

- SDIOx2 for SD Card and 3G/WiFi
- Ethernet MII
- USB 2.0 Device
- I2S audio in/out
- NAND Flash, 16-bit Host i/f
- SSI/SPI, IDC, PWM, GPIO, RS-232C/485
- Real-time clock, watchdog timer, JTAG

Physical

- 15x15 mm, 404 pin TFBGA package
- Operating temperature: -20°C to +85°C

A5s IP Camera Development Platform

The A5s IP Camera Development Platform contains the necessary tools, software, hardware and documentation to develop a professional IP camera design.

Evaluation Kit Hardware Platform (EVK)

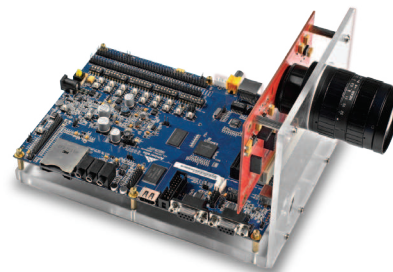
- Main board with A5s SoC and sensor board with C/CS mount lens
- Sensor : Aptina, OmniVision, Samsung, Sony — many choices available

Software Development Kit (SDK)

- Royalty-free IP camera application with source
- Image tuning and manufacturing tools
- Linux 2.6.32 (or later) with drivers, kernel patches and toolchain

Documentation

- Programmer's guide, application notes, API documents
- Data sheet, BOM, schematics and layout files



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