

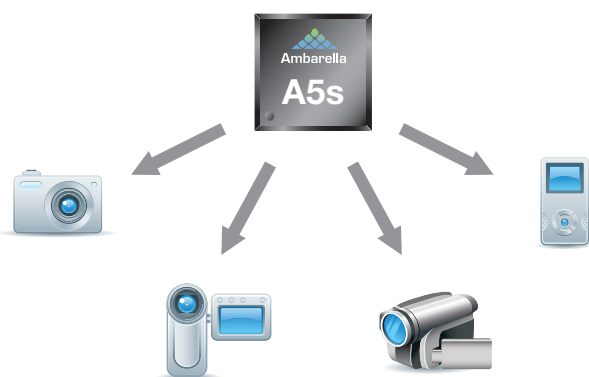


A5s – Hybrid DV Camera SoC

Overview

The A5s is a single chip H.264 Codec solution for high-definition hybrid DV cameras. Leveraging Ambarella's leadership in professional encoding and low-power DSP technology, the A5s provides a unique combination of high-quality digital still image processing combined with full HD video processing. For the first time, hybrid DV camera manufacturers can offer a true no-compromise combination of digital still camera and HD camcorder in a single product.

The A5s H.264 Codec SoC integrates an image sensor pipeline capable of processing 240MPixels/s, a 1080p30 HD H.264 video Codec and a 528MHz ARM11 processor. Supported with a hardware reference design, software developer's kit and full DV camera software application, the A5s is the industry's first choice for hybrid DV cameras.



A wide variety of appealing end-product form factors is possible.

Key Features

Advanced Still Image Processing

- High ISO : 1600, 3200, 6400
- High speed capture
- Local exposure adjustment
- Excellent low-light performance
- High speed face detection

Advanced H.264 Video Processing

- Full HD : 1080p30 or 720p60
- Second, simultaneous stream for easy Internet upload
- 3D noise reduction (motion compensated)
- DIS and EIS with advanced rolling shutter compensation
- Up to 120x digital zoom

Advanced Display Capability

- Simultaneous LCD and HDMI out with separate OSD and video on each output
- Touch screen support

High Performance ARM CPU

- 528MHz ARM 1136J-S
- Performance to support on-chip editing, advanced graphics and wireless connectivity

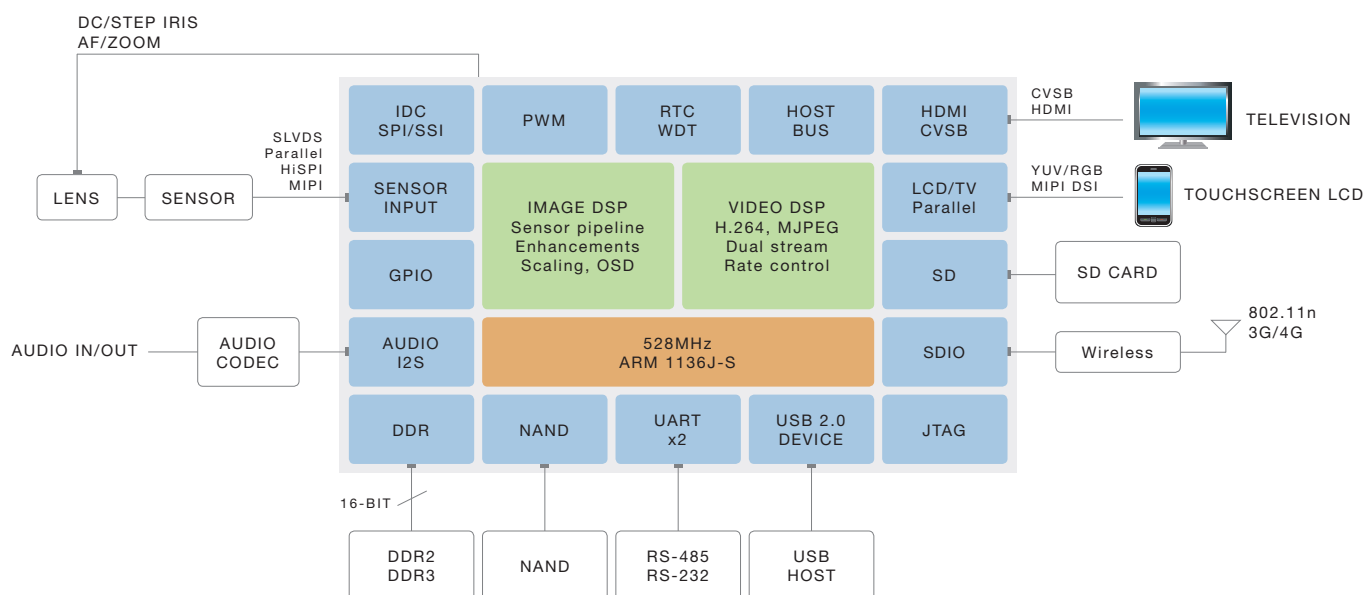
Cost and Power Efficient

- Ultra-compact BOM with a single 16-bit DDR
- Less than 500mW for A5s, including DDR

Complete Software and Hardware Design

- Complete schematics, SDK and DV camera application

Block Diagram





A5s – Hybrid DV Camera SoC

General Specifications

Image Sensor Interface

- SLVDS, HiSPI™, MIPI CSI-2, and parallel interfaces
- 240MPixels/s processing, equivalent to 8MP@30fps

Advanced Image Processing

- High ISO : 1600, 3200, 6400 (one picture/second)
- 3D color transform with arbitrary correction
- Geometric distortion correction
- Local exposure adjustment
- MCTF 3D noise reduction
- Saturation, Brightness, Contrast
- DIS and EIS with integrated Gyro reading and rolling shutter compensation
- High-speed capture
- High-speed face detection and tracking

Advanced Video and Display Processing

- BP/MP/HP H.264 Level 5.0 and MJPEG
- Up to 1920x1080p30 resolution with simultaneous second mobile stream
- Crop, Mirror, Flip, Scale functions
- Alpha-blending OSD; text, overlays
- LCD rotation

CPU

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

Memory

- 16-bit SDRAM interface
- DDR2/DDR3/Mobile DDR/Mobile DDR2

Peripherals

- SDIOx2 for SD Card and 3G/WiFi
- USB 2.0 Device
- BT.656/1120 YUV 108MHz video in/out
- HDMI 1.3 out (PHY on-chip)
- I2S audio in/out
- NAND Flash
- 16-bit Host i/f
- SSI/SPI, IDC, PWM, GPIO, RS-232C/485, JTAG
- Real-time clock
- Watchdog timer

Physical

- 45nm LP CMOS technology
- Operating temperature: 0°C to +70°C
- 404 pin TFBGA, 15x15mm

A5s Hybrid DV/DSC Camera Development Platform

The A5s Hybrid DV/DSC Camera Development Platform contains the necessary tools, software, hardware and documentation to develop a Hybrid DV/DSC Camera design.

Hardware Platform

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

Software Development Kit (SDK)

- eSol ultron OS and development tools
- Demonstration DV/DSC camera application with full source code
- Extensive and fully documented middleware API library suite

Documentation

- Programmer's guide, application notes, API documents
- SoC datasheet, BOM, schematics and layout



Contact

US Office

Ambarella Corp.
2975 San Ysidro Way
Santa Clara, CA 95051

Website : www.ambarella.com
General Inquiries : inquiries@ambarella.com
Telephone : 408 734 8888

Copyright Ambarella, Inc.. All rights reserved. Ambarella, and the Ambarella logo are trademarks of Ambarella, Inc.. All other brands, product names and company names are trademarks of their respective owners. The information in this document is believed to be reliable, but may project preliminary functionality not yet available. Ambarella, Inc. makes no guarantee or warranty concerning the accuracy and availability of said information and shall not be responsible for any loss or damage whatever nature resulting from the use of, or reliance upon it. Ambarella, Inc. does not guarantee that the use of any information contained herein will not infringe upon patent, trademark, copyright, or other rights of third parties. Ambarella, Inc. reserves the right to make changes in the product and /or its specifications presented in this publication at any time without notice.