



A7L - High Quality 1080p60 DSC SoC

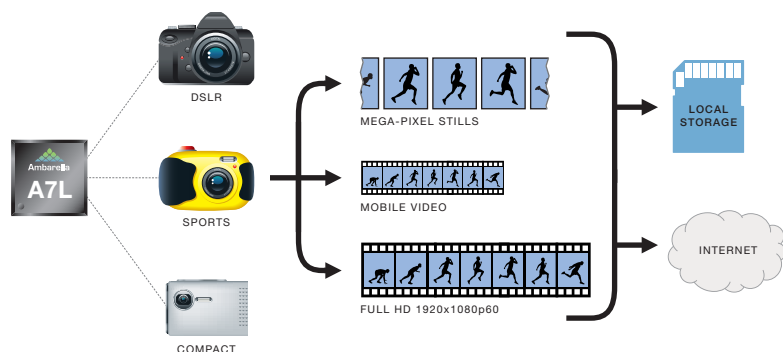
Overview

The A7L DSC SoC delivers full 1080p HD H.264 video at 60 frames per second for fluid motion even during fast moving sports scenes and can capture up to thirty 16-megapixel still images per second.

It's multi-frame, high ISO image capture and High Dynamic Range (HDR) processing ensure exceptional image quality, while the A7L's lens distortion correction enables optimal results from wide angle and small form factor lenses.

Designed for network-connected cameras, the A7L can simultaneously capture full HD video while encoding a second mobile resolution video for uploading to the Internet or streaming over a WiFi network.

The A7L is fabricated in leading edge 32nm process technology, and requires only one single 16-bit DDR3 DRAM for extremely low power consumption and low system cost.



The high speed image capture and processing capabilities of A7L enables high quality and feature rich DSC products.

Key Features

Breakthrough DSC Performance

- 32 Mpixel sensor support
- 480 Mpixels/s capture rate
- 16MP RAW capture at 30 frames/s
- JPEG processing at rates up to 150 Mpixels/s
- Full HD 1080p H.264 capture at 60 frames/s
- Multiple simultaneous capture scenarios:
 - Full HD + mega-pixel stills
 - Full HD + mobile video
 - Local storage + network streaming

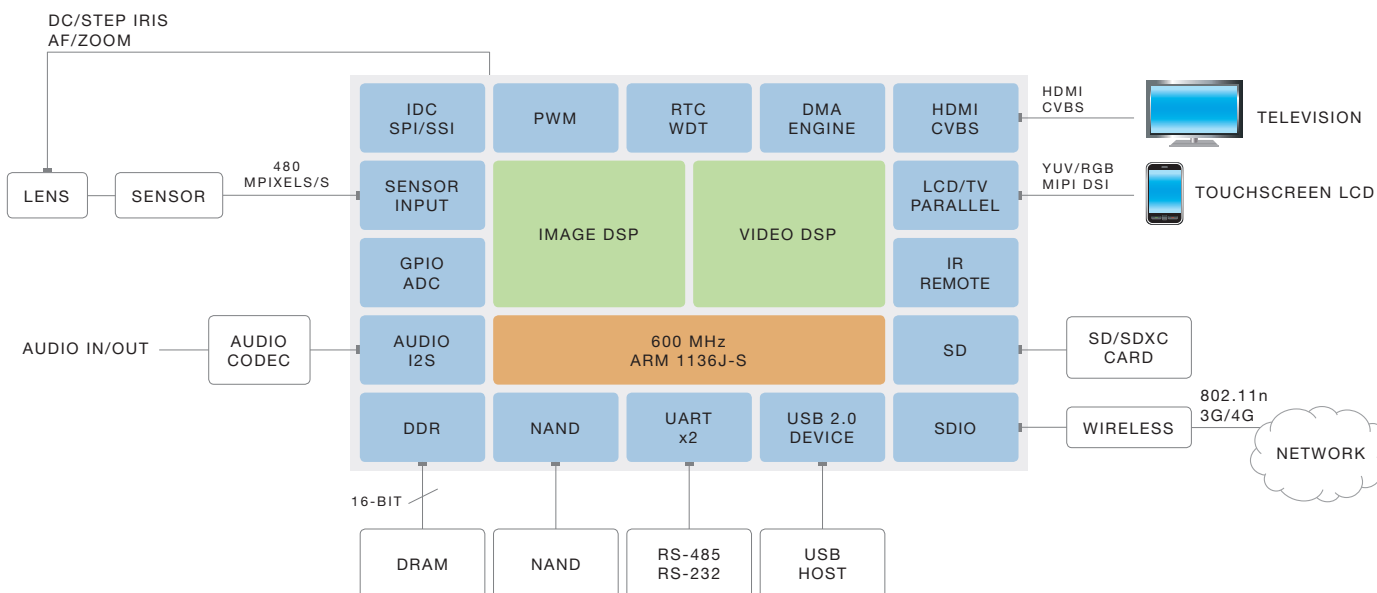
Feature Rich Image Processing

- 3D MCTF noise reduction for clean stills and video with minimal motion blur
- Ultra-stable stills and video using advanced image stabilization
- Many advanced spatial noise reduction filters
- Multi-frame high ISO and High Dynamic Range (HDR) capture and processing
- Real-time hardware support for panorama sweep functionality
- Dewarping support for small form factor and zoom lenses

Advanced Hardware and SoC Features

- Extremely low power 32nm architecture
- High performance 600 MHz ARM 11
- Advanced GUI performance
- Simultaneous LCD/HDMI with separate OSD
- Touch screen LCD support

Block Diagram





A7L - High Quality 1080p60 DSC SoC

General Specifications

Image Sensor Interface

- 480 MPixels/s processing
- LVDS, sub-LVDS, SLVS/MLVS
- LVCMOS, Parallel, MIPI

Advanced Still Picture and Video Processing

- High-speed RAW capture of 16MP at 30 fps
- Multi-frame high ISO and HDR support
- 3D color transform with arbitrary correction
- Flash light support for multi-frame night photography
- Hardware support for panorama sweep photography
- Still picture and video effects such as watercolor painting, drawing, miniature, pop color, and soft focus
- Real time 1080p60 geometric distortion (warp) filter
 - Better image quality for zoom lens systems
 - Better correction of warping effects of wide angle lens systems or small form factor lenses
- Electronic and Digital Image Stabilization (EIS & DIS)
 - Advanced rolling shutter compensation
- BSI sensor black level correction support
- Stereoscopic 3D still picture & video support
 - With Ambarella S3D companion chip

Powerful CPU for Rich GUI Experience

- 600 MHz ARM1136J-S

Hardware Audio Processing

- AAC/AC3 stereo encode/decode
- AC3 5.1 channel encode
- MP3 decode support

Advanced Video and Display Processing

- BP/MP/HP H.264 Level 5.0 and MJPEG encode
- Crop, mirror, flip, scale functions and LCD rotation
- Alpha-blending OSD; text, overlays
- Multiple video output ports

Low Power and Low Cost DDR Interface

- 16-bit DDR3, DDR3L, DDR2, LPDDR2 up to 400 MHz

Peripheral Support

- Two SDIO for SD Card and 3G/4G/WiFi networking
- USB 2.0 device
- BT.656/1120 YUV 108MHz video in/out
- Touch screen LCD input
- HDMI 1.4 with CEC support
- SSI/SPI, IDC, I2S, PWM, GPIO, UART, NAND, JTAG
- Real-time clock and watchdog timer

Physical

- 32nm LP CMOS technology
- Operating temperature: 0°C to +70°C
- 328-pin FBGA package, 14mm x 14mm

A7L High Quality 1080p60 DSC Camera Development Platform

The A7L High Quality 1080p60 DSC Camera Development Platform contains the necessary tools, software, hardware and documentation to develop a state-of-the-art 1080p60, hybrid DV/DSC, network-enabled camera design.

Hardware Platform

- Main board with A7L and sensor board with C/CS mount lens
- Sensor : Aptina, OmniVision, Samsung, Sony — many choices available

Software Development Kit (SDK)

- eSol ultron OS and development tools
- Full support of dual OS simultaneous operation (Linux+ultron)
- 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 data sheet, BOM, schematics and layout files



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.