



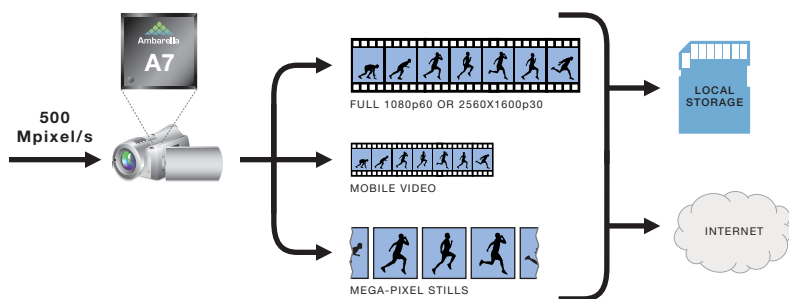
A7 - Hybrid DV/DSC 1080p60 Camera SoC

Overview

The A7 delivers full HD 1080p60 or 4Mp30 H.264 video recording, the highest resolution available for consumer level cameras. Its fast high-speed sensor interface and capture capability of 500 MPixels/s enables numerous new features including smooth slow-motion replay for sports action, high dynamic range (HDR) processing, and best-picture from a series of shots.

Outstanding still image quality is achieved even in low-light conditions through the combination of high-ISO speed, 3D motion-compensated noise reduction (MCTF) and multiple exposures.

A second stream which may be encoded simultaneous to the Full HD video may be streamed to a network over WiFi or 3G/4G using a network enabled application running on the high performance 528MHz ARM 11.



A High Speed Capture Coupled With a Powerful CPU Enable Full HD Video Capture, MegaPixel Still Capture, and Mobile Sharing Applications.

Key Features

High Speed Capture Rate

- 500 Mpixels/s capture rate
- Full HD 1920x1080p60 H.264 video capture
- 4Mp30 (2560x1600) H.264 video capture
- 8MP x 60fps RAW capture burst mode
- Multiple simultaneous capture scenarios:
 - Full HD + mobile video
 - Full HD + mega-pixel stills
- Over-sampling of sensor data enables patented "Clean Digital Zoom"

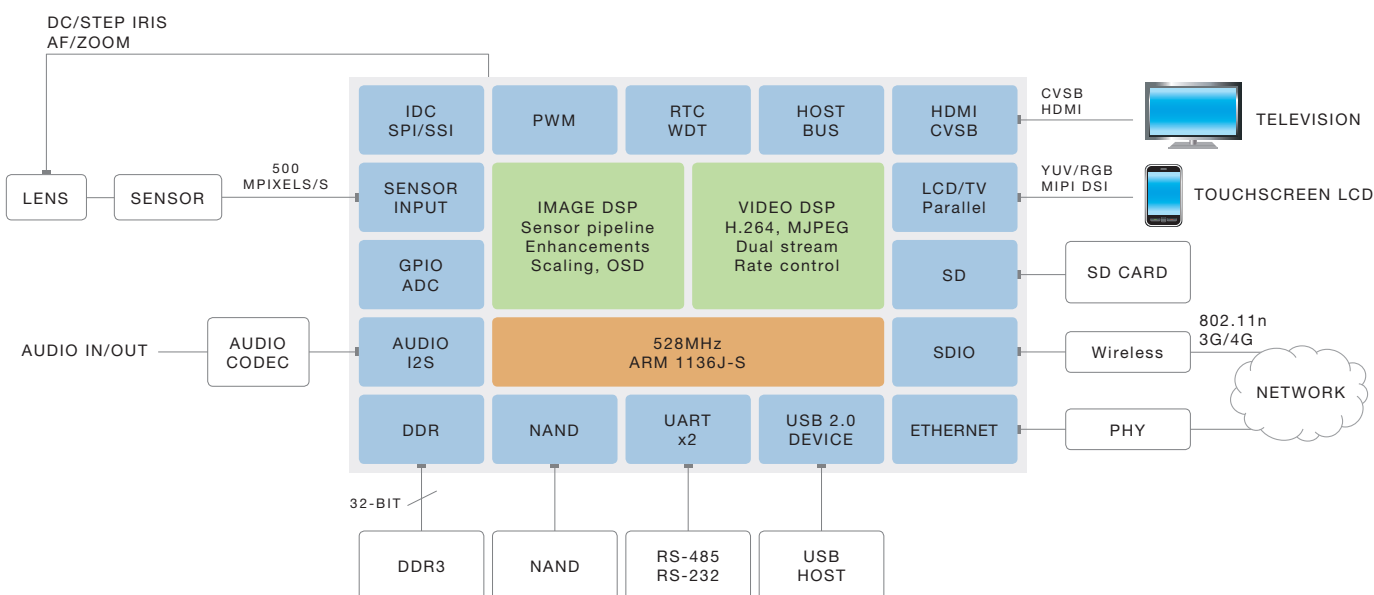
Quality Video and Still Image Processing

- Fully compliant H.264 decode
- High ISO processing for excellent low light imaging
- Advanced chroma noise reduction
- 3D MCTF noise reduction for clean video with minimal motion blur
- Dewarping supports fisheye and zoom lenses
- Ultra-stable video using advanced DIS and EIS with rolling shutter compensation

Advanced Hardware and SoC Features

- Extremely low power architecture
- High performance 528MHz ARM 11
- Advanced GUI performance
- Simultaneous LCD/HDMI with separate OSD
- Touch screen LCD support
- High-speed face detection and tracking
- Rich peripheral support
 - Ideal for WiFi/3G/4G integration for networked applications

Block Diagram





A7 - Hybrid DV/DSC 1080p60 Camera SoC

General Specifications

Image Sensor Interface

- 500 MPixels/s processing, equivalent to 8MP@60fps
- LVDS, SLVS/MLVS, LVCMOS, HiSPi™, Parallel

Advanced Image Processing

- High-speed capture 500 Mpixels/s
- Advanced MCTF 3D noise reduction
- High ISO : 1600, 3200, 6400 (one picture/second)
- Many enhanced noise filters for optimal low light
- 3D color transform with arbitrary correction
- Local exposure adjustment
- Real time 1080p60 Geometric Distortion (Warp) Filter
 - Better image quality for zoom lens systems
 - Better correction of warping effects of wide angle lens systems
- DIS and EIS
 - Integrated gyroscope reading (to ISP)
 - Advanced rolling shutter compensation
- High-speed face detection and tracking
 - 30 faces at 1080p60

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
- Fully compliant H.264 decode
- Crop, mirror, flip, scale functions and LCD rotation
- Alpha-blending OSD; text, overlays
- Multiple video output ports

Powerful CPU for Rich GUI Experience

- 528MHz ARM1136J-S

Peripheral Support

- 32-bit DDR3 interface up to 336MHz
 - 16-bit bus interface also supported
- AES/DES/SHA1 and MD5 cryptographic acceleration
- SDIOx2 for SD Card and 3G/4G/WiFi
- USB 2.0 device
- BT.656/1120 YUV 108MHz video in/out
- Touch screen LCD input; HDMI 1.3 output (with PHY)
- 16-bit host interface
- SSI/SPI, IDC, I2S, PWM, GPIO, UART, NAND, JTAG
- Real-time clock and watchdog timer

Physical

- 45nm LP CMOS technology
- Operating temperature: 0°C to +70°C
- 528-pin FBGA package, 15 x 15mm

A7 Hybrid DV/DSC Camera Development Platform

The A7 Hybrid DV/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 A7 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



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