



Ambarella Full HD 3D Camera Solution

Overview

The Ambarella full HD 3D camera solution enables full HD 1080p 3D video recording and high-resolution 3D photography with exceptional image quality. It supports the display of 3D video and still images on the camera's 3D LCD display.

The solution is comprised of the Ambarella S3D video pre-processor device and either the Ambarella A5s or Ambarella A7 camera SoC.

When combined with Ambarella's A7 HD camera SoC, the S3D enables development of cameras up to 1080p60 resolution, while combining it with Ambarella's A5s HD camera SoC enables resolutions of 1080p30, 1080i60 or 720p60.



The Ambarella S3D paired with an Ambarella 3D SoC device enables a high quality, full HD, 3D hybrid camera solution.

Key Features

Camera Solution Features

- Complete full HD 2D/3D camera application with full source code
- All existing features of the standard A5s / A7 SDK are present, including:
 - Dual stream H.264 encoding
 - Enhanced image stabilization with rolling shutter correction
 - Excellent low-light imaging
 - Wireless connectivity options
 - Extremely low power consumption

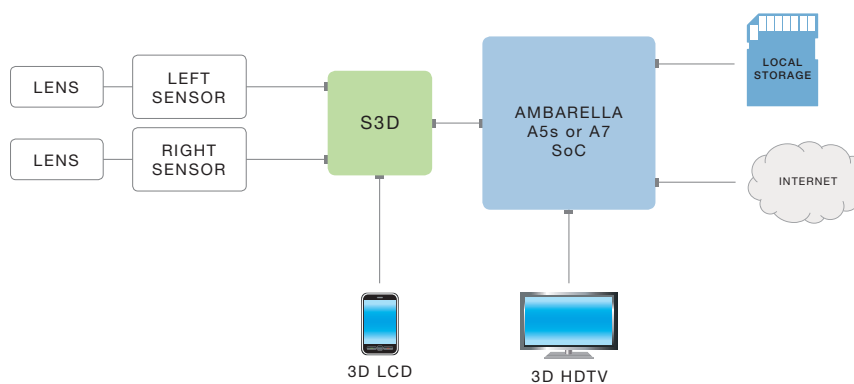
3D Camera Specific Features

- Full support of standard side-by-side 3D video output via HDMI
- S3D/A7 pairing provides full support of MVC 3D up to 1080p30/720p60
- Full support of side-by-side JPEG display and MPO (Multi-Picture Object/Format) file format
- HDMI 1.4 features including the capability to intelligently trigger 3D mode on an HDMI 1.4 connected HDTV display

3D Camera Specific Tools Included

- Automatic generation of 3D OSD bitmaps from existing 2D bitmaps
- Support for 3D system tuning and calibration
- Tools to support alignment of dual sensor array video input

Ambarella Full HD 3D Camera Solution System Diagram





S3D – Full HD 3D Video Pre-Processor

Ambarella S3D Overview

The S3D enables a high quality, full HD, 3D video capture solution by bridging two standard sensor devices and an Ambarella SoC.

The S3D is a companion chip that accepts two standard sensor inputs and outputs a multiplexed, processed stream that may be passed to the standard parallel interface of an Ambarella SoC. The S3D also contains video output logic to perform the processing needed to drive 3D capable LCD panels.



The Ambarella S3D is the ideal companion chip to enable high-quality, full HD, 3D video camera solutions

Key Features

Video Input

- Onboard PHY for MIPI/LVDS inputs
- Data rates up to dual 1920x1080p60
- Sensor input formats supported:
 - Dual 4-lane MIPI CSI2 serial
 - Dual 4/8-lane serial LVDS
 - Dual 8/16-bit BT.601/656 LVCMOS

Video Output

- Line interleaving/concatenation for stereo to single stream conversion

3D LCD Processing

- Column interleaving feature for 3D LCD

Programmed via Standard Serial Interface

- Sensor control unit enables synchronized sensor programming
- Video input, internal logic, LCD output module programmed via standard IDC

Physical

- Operating temperature: 0°C to +70°C
- 8 x 8mm, 68-pin QFN package

S3D Full HD 3D Camera Development Platform

The S3D full HD 3D camera development platform contains the necessary tools, software, hardware and documentation to develop a state-of-the-art full HD 3D hybrid DV/DSC camera solution.

Hardware Platform

- S3D daughter card engages standard sensor connector of main EVK board
- Sensor daughter card engages S3D daughter card and houses pair of sensors and lenses
- Multiple popular sensor devices are available with the EVK

Software Development Kit (SDK)

- Extensive suite of source code, libraries, and ucode binaries
- eSol ultron OS and development tools
- Complete 2D/3D camera application in full source code included
- Fully documented middleware API library suite

Documentation

- Programmers' guides, application notes, API documents
- Ambarella SoC and Ambarella S3D data sheets
- PCB schematics and layout files
- BOM information available

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