

SSC9341

High-Integrated Web Camera SoC

Preliminary Product Brief

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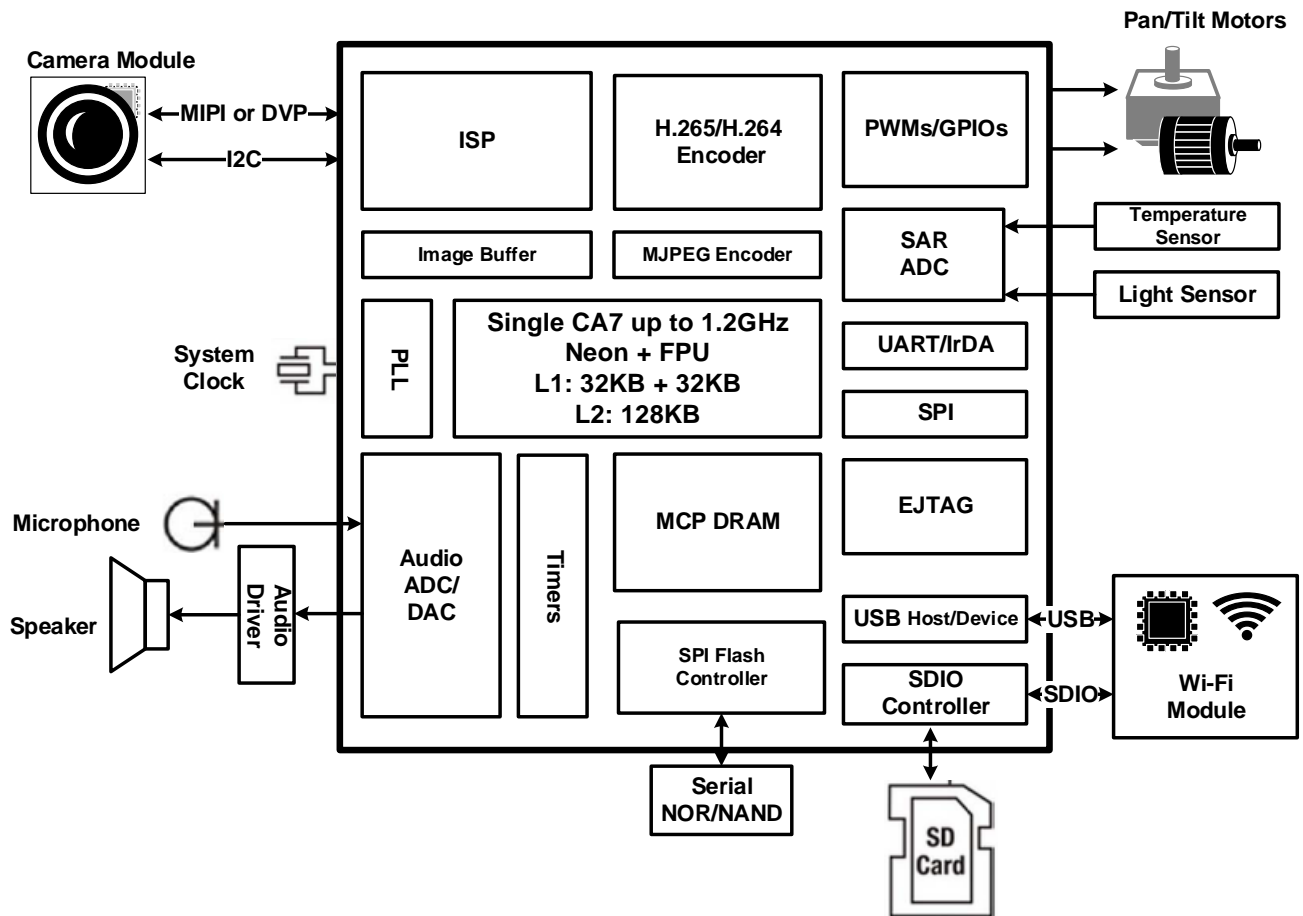
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FEATURES

- **High Performance Processor Core**
 - ARM Cortex-A7 Single Core
 - Neon and FPU
 - Memory Management Unit for Linux support
 - DMA Engine
- **Image/Video Processor**
 - Supports 10-bit parallel interface for raw data input
 - Supports MIPI interface with two data lanes and one clock lane
 - Supports 8/10-bit CCIR656 interface
 - Supports 4M (2688x1520 or 2316x1746) pixels video recording and image snapshot
 - Bad pixel compensation
 - Noise Reduction (NR)
 - Optical black correction
 - Lens shading compensation
 - Auto White Balance (AWB) / Auto Exposure (AE) / Auto Focus (AF)
 - CFA color interpolation
 - Color correction
 - Gamma correction
 - Wide Dynamic Range (WDR)
 - Rotation with 90 or 270 degrees
 - Fully programmable multi-function scaling engines
- **H.265/HEVC Encoder**
 - Supports H.265/HEVC main profile encoding
 - Supports MVs 32x32, 16x16, and 8x8
 - Supports up to quarter-pixel
 - Supports frame level and MB level rate control
 - Supports ROI (Intra map or ZMV map)
 - Supports max. 4Mp/25fps encoding
- **H.264 Encoder**
 - Supports H.264 baseline and main profile encoding
 - Supports MVs 16x16, 16x8, 8x16, 8x8, 8x4, 4x8, and 4x4
 - Supports up to quarter-pixel
 - Supports frame level and MB level rate control
 - Supports ROI (Intra map or ZMV map)
 - Supports max. 4Mp/25fps encoding
- **JPEG Encoder**
 - Supports JPEG baseline encoding
 - Supports YUV422 or YUV420 format
 - Supports max. 4Mp/25fps encoding
 - Supports real-time mode and frame encode mode
- **Video Encoding Performance**
 - Supports 4Mp25 + D1p25 + CIFp25 H.265/HEVC or H.264 encoding
 - Supports MJPEG up to 4Mp25 encoding
- **Audio Processor**
 - One stereo ADC for microphone inputs
 - One DAC for lineout
 - Supports 8K/16K/32KHz sampling rate audio recording
 - Digital and analog gain adjustment
- **SPI NOR/NAND Flash Interface**
 - Compliant with standard, dual and quad SPI flash memory components
- **SD Card Interface**
 - Compatible with SD spec. 2.0, data bus 1/4-bit mode
 - Compatible with SDIO spec. 2.0, data bus 1/4-bit mode
- **SDIO 2.0 Interface**
 - Compatible with SDIO spec. 2.0, data bus 1/4-bit mode
 - Compatible with SD spec. 2.0, data bus 1/4-bit mode

- **USB 2.0 Interface**
 - One USB 2.0 configurable host or device
 - Host mode supports EHCI specifications
 - Device mode supports 3 endpoints
- **DRAM Memory**
 - Embedded 512Mb DDR2
- **Connectivity**
 - One USB 2.0 Host Controller could be used for USB Wi-Fi dongle or module
 - One SDIO 2.0 Host Controller could be used for SDIO Wi-Fi module
- **Security Engines**
 - Supports AES128/AES192/AES256/DES/3DES/RSA/SHA-I/SHA-256
 - Supports secure booting
- **Boot Options**
 - SPI NOR
 - SPI NAND
 - SD Card
- **Peripherals**
 - Dedicated GPIOs for system control
 - Supports 11 PWM outputs (shared with GPIOs)
 - Two generic UARTs and one fast UART with flow control
 - Three generic timers and one watchdog timer
 - Two SPI masters
 - Two I2C Masters
 - Built-in 10-bit SAR ADC with 4-channel analog inputs for different kinds of application
 - Supports internal temperature sensor
 - Supports ISP sensor clock 12MHz, 24MHz, 37.125MHz
- **Operating Voltage Range**
 - Core: 0.9V
 - I/O: 1.8 ~ 3.3V
 - DRAM: 1.8V
 - Power Consumption: TBD
- **Package**
 - 88-pin QFN, 9mm x 9mm
 - Moisture Sensitivity Level: 3

BLOCK DIAGRAM



GENERAL DESCRIPTIONS

The SSC9341 is a highly integrated SoC. Based on ARM Cortex-A7, the application processor integrates Image Signal Processor (ISP), Video (H.264/H.265/MJPEG) Encoders and other useful peripherals for IP camera applications.

A typical utilization of the SSC9341 application processor is demonstrated in the following block diagram. The complete system includes a camera module (CMOS sensor), a connectivity module (Wi-Fi), and a non-volatile storage (SPI NOR/NAND flash or SD card). The ISP handles images captured from the camera sensor, and the video stream is composed of a large amount of images. There are pre- and post- video processing stages. The pre-video processing reduces noises, enhances signals and translates color domains. The post-video processing adjusts color quality, and generates multiple video streams with different resolutions. Multimedia Encoders can compress those video streams with different compressing standards at the same time. The well compressed video/audio streams could be streamed or stored in the cloud server through Wi-Fi or stored in a local SD card. The SPI NOR/NAND flash is usually reserved for operating system and application software. Moreover, other peripherals such as SAR ADC, Audio ADC/DAC, UARTs, PWMs, GPIOs and SPI are supported to realize applications with maximal flexibility.

The SSC9341 supports secure booting and personalization authentication mechanism for system security. The AES/DES/3DES cipher engines could further help encrypt the compressed video/audio streams to enhance privacy.