

SSD210

Smart HMI Controller

Preliminary Product Brief

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FEATURES

■ High Performance Processor Core

- ARM Cortex-A7 Dual Core up to 1 GHz
- 16KB I-Cache/16KB D-Cache/128KB L2-Cache
- Neon and FPU
- Memory Management Unit for Linux support
- DMA Engine

■ Display Subsystem

- Built-in contrast, brightness, sharpness, and saturation, 3D NR, Gamma control
- TTL output up to 1280x800 60fps with RGB565 or RGB666 or RGB888 format
- BT.656 output up to 720p60
- Serial RGB up to 800x600 60fps
- Supports SPI panel, clock frequency up to 54MHz
- Supports FHD graphic layer with Index 4/8, ARGB1555/ARGB4444/ARGB8888, and RGB565 format
- Supports UI/OSD layer with max. resolution 1280x800

■ 2D Graphics Engine

- Line draw
- Rectangle/gradient rectangle fill
- Bitblt/Stretch Bitblt/Italic Bitblt
- Palette mode (1/2/4/8-bit)
- Format transformation
- Color space conversion
- Clipping
- Alpha blending
- Rotation/Mirror
- Dither

■ Audio Processor

- Two stereo DMIC inputs
- I2S TDM 8-channel, RX 2/4/8 channels, TX 2 channels
- One mono DAC for lineout
- I2S supports 8K/16K/32K/48K/96KHz sampling rate audio recording

- ADC Pre-Amp gain supports 0dB, 6dB, 13dB, 23dB, 30dB, and 36dB
- ADC boost gain supports -6dB ~ 15dB or 0dB ~ 21dB with interval 3dB
- ADC digital gain supports -63.5dB ~ 33dB with interval 0.5dB, can be muted to zero
- SNR of DR A-Weighted ADC > 90dB (@gain = 0dB)

■ NOR/NAND Flash Interface

- Supports 1/2/4-bit SPI-NOR / NAND flash with two chip selects

■ 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 USB2.0 configurable host and device
 - Host mode supports EHCI specification
 - Device mode supports 4 end points

■ DRAM Memory

- Supports 16-bit 512Mb DDR2 memory with max. 1333Mbps
- Supports auto-refresh and self-refresh mode

■ Ethernet

- Supports one Ethernet port
- Supports 10/100Mbps half/full-duplex
- Supports one RMI to connect external PHY
- Supports two LEDs for ePHY

■ Security Engines

- Supports AES/DES/3DES/RSA/SHA-1/SHA-256
- Supports secure booting

■ Boot options

- ROM
- SPI NOR
- SPI NAND with ECC
- SD Card and USB

■ Peripherals

- Dedicated GPIOs for system control
- Four PWM outputs
- Three generic UARTs and one fast UART with flow control
- Three generic timers and one watchdog timer
- Two SPI masters
- Two I2C masters

■ Miscellaneous

- Built-in eFuse with 1024-bit to store device ID, AES key, chip configurations, etc.
- Built-in power on reset (POR)
- Built-in SAR ADC with 3-channel analog inputs for different kinds of applications

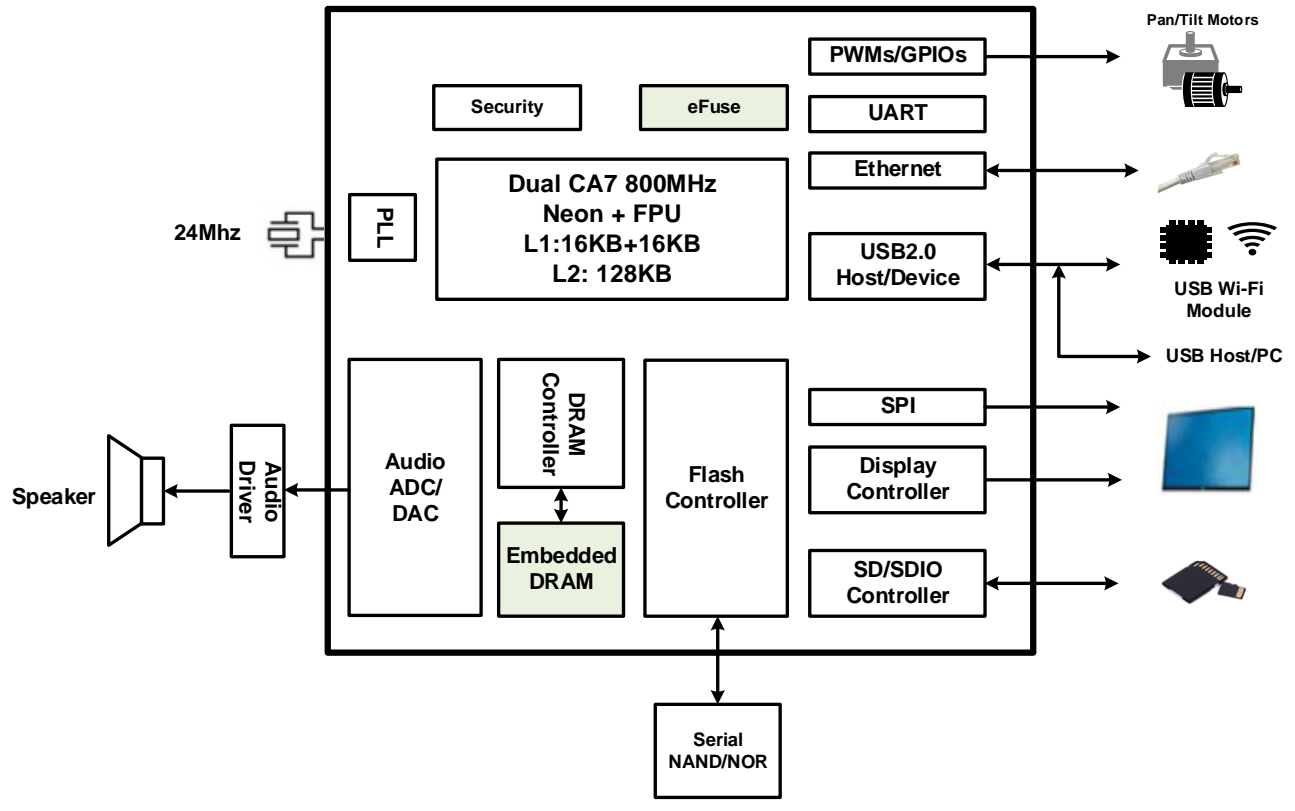
■ Operating Voltage Range

- Core: 0.9V
- I/O: 1.8V ~ 3.3V
- DRAM: 1.8V (DDR2)
- Power Consumption: TBD.
- Operation temperature -20°C ~ 85°C

■ Package

- 68-pin QFN, 7mm x 7mm

BLOCK DIAGRAM



GENERAL DESCRIPTION

The SSD210 is a highly integrated SOC product for HMI and smart display applications.

Based on ARM Cortex-A7 dual-core, the SSD210 integrates 2D graphics engine, TTL/serial RGB display with adjustable picture quality engine and other useful peripherals.

A typical utilization of the SSD210 application processor is demonstrated in the block diagram. The completed system includes NOR/NAND flash, DRAM, SD card, and USB port, and diversified audio connection. Before output to the panel, the images can be enhanced with respect to brightness/contrast/saturation/sharpness to give the best picture quality.

The NOR or NAND flash is usually reserved for operating system and application software. Moreover, other peripherals like SAR ADC, Audio ADC/DAC, UARTs, PWMs, GPIOs and SPI are supported to realize applications with maximal flexibility.

The SSD210 supports secure booting and personalization authentication mechanism for securing system. The AES/DES/3DES cipher engines could also help encrypt the compressed video/audio streams for privacy protection.

The SSD210, powered by SigmaStar Technology, comes with a complete hardware platform and software SDK, allowing customers to speed up "Time-to-Market."