

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**
 - Three mono ADCs or one mono + one stereo ADC for microphone input
 - Two stereo DMIC inputs
 - I2S TDM 8-channel, RX 2/4/8 channels, TX 2 channels
 - One stereo DAC for lineout
 - One HP Driver headphone set
 - 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**
 - Embedded 16-bit 64MB DDR2 memory with max. 1333Mbps
 - Supports auto-refresh and self-refresh mode
- **Ethernet**
 - Supports one Ethernet ports
 - Supports 10/100Mbps half/full-duplex
 - One built-in 10/100M Ethernet PHY
 - Supports one RMII to connect external PHY
 - Supports two LEDs for ePHY
- **Security Engines**
 - Supports AES/DES/3DES/RSA/SHA-I/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
- Keypad supports up to 7x7, single mode

■ 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 2-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

- 128-pin QFN, 12.3mm x 12.3mm
- Moisture Sensitivity Level: 3

BLOCK DIAGRAM

