

JZ4780 High Efficiency Engine for Mobile Device



Powerful and Efficiency

Powered by the innovative, extremely low power CPU core technology – Xburst, and integrated rich and powerful engines, Ingenic produces the high performance application processor – JZ4780, the best solution for the mobile device. JZ4780 makes the device achieve more powerful performance and very long life time, increasing the user experience anytime, anywhere.

Highlights

- ◆ Dual-core, 1.2GHz, the industry's most power-effective CPU core
- ◆ Mature PowerVR SGX540 graphic engine, support HD 1080p display
- ◆ Full-format video decoder, support 1080p resolution of main formats
- ◆ Rich memory interface supports variety of memory type, allows flexible design requirement
- ◆ High integration, the most BOM cost-effective solution
- ◆ Complete Android system, upgrade to latest version quickly
- ◆ Turn-key solution for mobile devices of tablet, smart phone

Ingenic Xburst technology

Based on MIPS, the pure, fast, efficient, and elegant RISC Architecture, the Xburst CPU core adopts an innovative high-performance and ultra-low-power pipelining architecture, which consumes only 1/3 power of industry licensable CPU core. It consumes less than 210mW when dual-core running at 1.2GHz (with L1 cache) under full load. Powered by Xburst, Ingenic produces series SOC chips which spread out in variety market, such as mobile internet, education, eReader, biometric, portable media player & game, and so on.

Ingenic video processing engine

The Video engine is powered by another Xburst processor with the SMID instruction set, together with the on chip video accelerating engine and post processing unit, delivers high video performance. The maximum resolution of 1080p in the formats of H.264, VC-1, MPEG-2, MPEG-4, RealVideo and VP8 are supported in decoding, 720p H.264 are supported in encoding.

Key benefits of JZ4780

High-performance core engines

The performance of application processor influence the user experience of the mobile device seriously, JZ4780 is one of the up-to-date SOC chip to meet the requirement. JZ4780 powered by dual Xburst CPU core running on 1.2GHz and an optimized 1080p video processing engine, make the device incorporate rich multimedia and high-performance

applications/functionality. In addition, the JZ4780 SOC integrates the mature and efficient 3D engine – PowerVR 540 from Imagination Technologies, which supports OpenGL ES2.0/1.1 and Open VG.

Power-effective

JZ4780 SOC chip features Ingenic innovative low power design technology including the CPU and video processing. It only has half power consumption when keeping the same performance, and supports multiple modes of power management, allowing best-in-class power consumption.

Cost-effective

JZ4780 has the industry-leading integration, including numerous analog/application blocks and rich interconnect interface, such as audio codec, SAR-ADC, GPS, HDMI, LVDS, NAND Flash, USB Host/OTG 2.0, MMC/SD. So optimize both the footprint of PCB and the BOM cost of JZ4780 solution, and has the most competitive cost in market.

Complete Android system

Ingenic release serious Android based mobile devices to the market. In 2011, after one month of Google release the Android 4.0 ICS, Ingenic and MIPS announce the “World's First Android Ice Cream Sandwich' Tablet” with the support of Google.

Easy-of-use turn-key solution

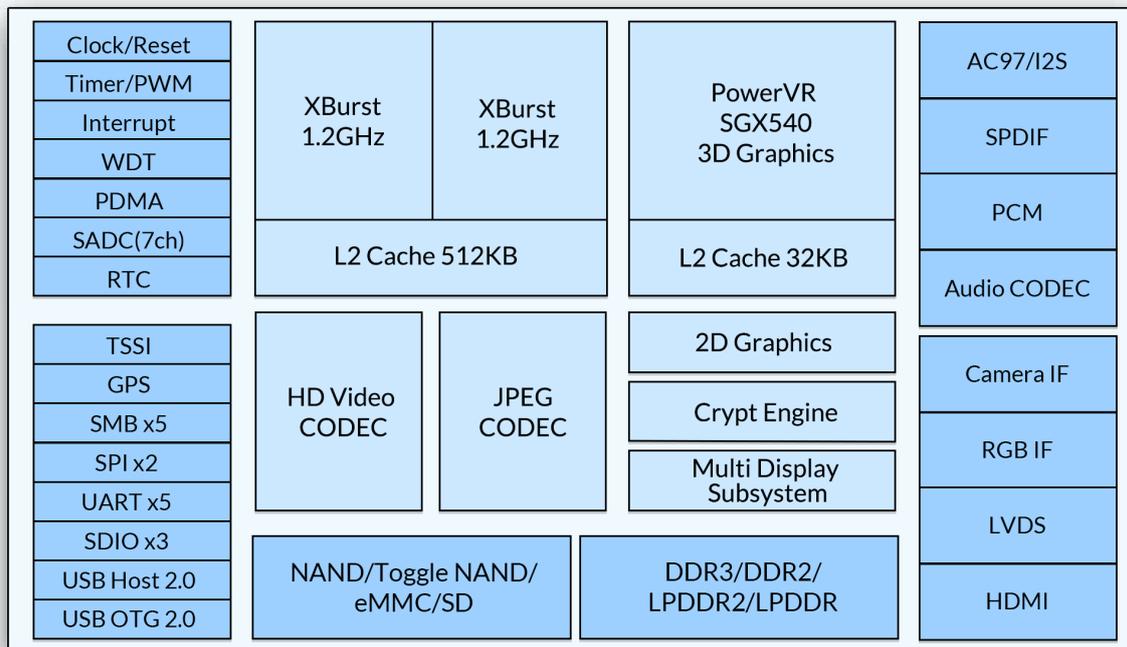
Under the cooperation with industry partner, Ingenic develops the turn-key solution for tablet and smart phone. That help customer reduce the risk of product development and the time to market.

Comprehensive software and easy-to-design platform

Ingenic develops comprehensive software based on Linux, including the kernel, integral device drivers, key middle-ware components, and rich applications from third-party. Coordinate with the JZ4780, Ingenic release the hardware reference design platform with detailed guide, and the development suite. All of these help customer build their own product quickly.



JZ4780 Block Diagram



Product Features

CPU Core

- ◆ XBurst RISC instruction set, XBurst SIMD instruction set
- ◆ XBurst FPU instruction set, IEEE754 compatible
- ◆ Dual XBurst core, 9-stage pipeline, stable on 1.2GHz
- ◆ Full MMU support
- ◆ L1 cache: 32KB instruction cache and 32KB data cache
- ◆ 512KB L2 cache

VPU Core

- ◆ Powered by XBurst RISC + SIMD instruction set, full format support
- ◆ Hardware acceleration engine for decoder/encoder, up to 1080p resolution
- ◆ JPEG acceleration engine

GPU Core

- ◆ PowerVR SGX540 from Imagination, up to 2K x 2K resolution

Memory Sub-systems

- ◆ Support DDR2, DDR3, LPDDR, LPDDR2, up to 800Mbps
- ◆ Support x16 and x32 external DDR data width
- ◆ 6 chip selection static memory interface
- ◆ 64-bit ECC NAND flash support, 512B/2KB/4KB/8KB/16KB page size
- ◆ 3 channels high performance PDMA, and 12 channels general purpose DMA

System Devices

- ◆ Clock generation and power management with 4 PLLs
- ◆ Interrupt controller, total 64 sources
- ◆ OS timer, general timer and counter unit, watchdog timer

Audio/Display/UI Interfaces

- ◆ Dual LCD controller, 1920x1080@60Hz when dual panel
- ◆ 24-bit parallel/serial TFT interface, HDMI 1.4a interface, LVDS interface
- ◆ Image enhancement engine and Image post processor
- ◆ Camera interface up to 4K x 4K pixels with dedicated DMA
- ◆ Internal audio codec, 24-bit ADC/DAC, line-in/line-out and headphone interface
- ◆ AC97/I2S/SPDIF interface for external audio codec
- ◆ Two PCM interface
- ◆ 7 channels SAR A/D controller

On-chip Peripherals

- ◆ GPS base band
- ◆ USB 2.0 Host, and USB 2.0 OTG interface
- ◆ 3 MMC/SD/SDIO controllers, support MMC version 4.2, SD 3.0
- ◆ 5 full-duplex UART ports
- ◆ 2 synchronous serial interface controllers
- ◆ 5 two-wire serial interface controllers
- ◆ Transport stream slave interface

Security

- ◆ Total 8K bits OTP memory
- ◆ Support the highest level 2 security boot

Process Technology and Package

- ◆ 40nm CMOS low power
- ◆ BGA390 17mm x 17mm x 1.1mm, 0.8mm pitch