

Ubicom IP8500 Multimedia Processor Family

Multithreaded Processors Optimized for Networked Media

IP8500 Processor Overview

The Ubicom IP8500 processor family enables a broad range of high-performance, low-cost media applications for the demanding requirements of next-generation consumer electronics devices. Utilizing an advanced, multi-threaded architecture optimized for the multiprocessing environment of media applications and operating systems, the IP8500 provides a complete multimedia processing and networking platform. An advanced interface architecture allows the IP8500 processor family to seamlessly interface to a wide variety of peripheral devices including a variety of high resolution panels, wireless and wired networking chipsets, mass storage drives, and others.

Key Features

Flexible Interfaces

The IP8500 family of processors supports a multitude of peripheral devices through a software-controlled, flexible interface architecture. This allows the IP8500 to control and to seamlessly interface to panels, audio chips, storage devices, and any other standard-interface device without the need for intervening glue logic. Coupled with a variety of standard peripheral interfaces such as USB 3.0 (SuperSpeed), PCI Express (PCIe), and USB 2.0 (Hi-Speed, OTG) the IP8500 is able to provide total connectivity to all system devices with a minimum of cost and design complexity.

Multimedia Processing Platform

IP8500 provides full capability for multimedia processing on an open-source Linux or Android platform. An integrated DSP extension and floating point unit enable full-fidelity audio decode, while configurable audio hardware and on-board clock generation enable the full range of audio interface types (I²S, S/PDIF, PCM) and speeds. A programmable display controller enables the IP8500 to interface to any type of LCD panel up to a maximum resolution of 1280×1024. Hardware extensions within the display controller enable high-speed display manipulation such as alpha blending, scaling, and color space conversions. Paired with the high-speed, 32-bit DDR2 or DDR3 memory interface, these enable the IP8500 to execute processor-demanding multimedia functions at the lowest cost.



Android Platform

The UBICOM32™ CPU architecture is an ideal platform for Android connected media applications. The IP8500, together with the Ubicom Android SDK, enables customers and developers to quickly and efficiently create targeted networked media applications. Android is an open source, fully customizable service delivery platform that offers a full stack: operating system, middleware, and key applications. Ubicom's Android SDK includes a commercial quality Linux port and drivers for peripherals including LCD touch panel displays, IR sensors, 802.11n and audio DACs. Additionally, the Ubicom Android SDK adds enhancements to Android including support for Ethernet, USB mass storage, DLNA DMR/DMP and audio processing algorithms for rich connected media applications.

Integrated DRM Engine

The IP8500 family of processors include an integrated security engine, capable of performing internet security and DRM functions at over 100 Mbps. This hardware block significantly off-loads the processing overhead associated with decrypting secure media streams and other forms of content.

Category	Sample Applications
Services Platform	Android based, service-provider media gateways (Media hubs)
Media Platform	HD Audio Home controller



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Features

Ubicom32™ 32-bit Processor Core

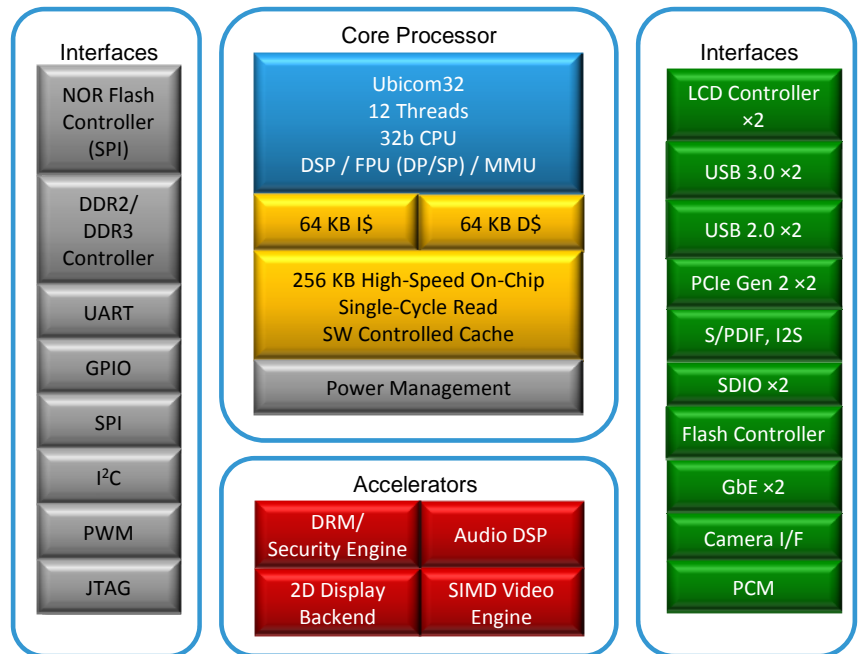
- ▶ Up to 800 MHz
- ▶ 12 multithreaded tCPUs (hardware threads)
- ▶ 64KB instruction cache, 64KB data cache
- ▶ Instruction set optimizations for Dalvik Java virtual machine
- ▶ 256KB on-chip memory for high performance accesses
- ▶ Single- and double-precision floating point
- ▶ 16-bit/32-bit DDR2 or DDR3 DRAM up to 1066 MTs (533 MHz)
 - 1 GByte maximum memory capacity
- ▶ 1.0V core voltage

High Performance, Flexible I/O

- ▶ 2× LCD Display controllers
- ▶ Multichannel I2S up to 192 kHz, 24-bit
- ▶ S/PDIF
- ▶ 2×PCI Express (PCIe) Gen. 2
- ▶ 2×USB 2.0 (Hi-Speed) with PHY
 - 1×USB 2.0 OTG
- ▶ 2×USB 3.0 (SuperSpeed) with PHY
- ▶ 2×SDIO
- ▶ 2×RGMII / TMII / MII with Gigabit Ethernet MACs
- ▶ Flash controller
- ▶ Serial and TDM interfaces (SPI, UART, GPSI, I2C)
- ▶ Camera interface
- ▶ PWM
- ▶ GPIO

Programmable Media Acceleration

- ▶ Up to 8 × I²S / SPDIF for 5.1, 7.1 audio and more
- ▶ Hardware acceleration for video playback
 - MJPEG, MPEG 1/2/4, H.263, ...
- ▶ LCD controllers provide 16-bit color, up to 1280 x 1024
 - Dedicated hardware for gamma correction, color space conversion, alpha blending, scaling



Integrated Security Engine

- ▶ DES, 3DES, and AES up to 256-bit, MD5, SHA1, SHA2 up to 512-bit for internet security encryption and decryption, and DRM

Packaging

- ▶ 289 ball PBGA
 - 14×14 mm package
 - 0.8 mm ball pitch
- ▶ Available in commercial (0°–70° C) temperature range

Other

- ▶ Application reference designs available

About Ubicom

Ubicom develops networking and media processor solutions that address the unique demands of real-time interactive applications and multimedia content delivery in the digital home. The company provides optimized, system-level solutions to OEMs and ODMs for a wide range of products including streaming and networked media devices, wireless routers, access points, and other networked devices.

