

The Solution for Next Generation Media Devices

Optimized for Portable Media Applications

Au1300™ Media Processor Series Overview

The RMI Alchemy™ Au1300™ media processor series leverages the commitment and experience gained from the success of the industry leading Au1200[®] series of Media Processors. Building on this success, the Au1300 media processor series will extend the performance, enrich the media experience and deliver even lower overall system power for applications such as multi-function Portable Media Player (mPMP™), Home Media Player™ (HMP), media capable Portable Navigation Device (mPND) and Mobile Internet Device (MID) applications. The Au1300 media processor series will deliver a true next generation step in performance media playback, and low power consumption while preserving software investment from the Au1200 series.

The RMI Alchemy Au1300 series processors provide system designers with an easy-to-use, simple solution to create full-featured multimedia designs with greatly reduced design cycle times and optimized system cost.

A higher frequency 800MHz core increases the performance, processing capability and available MIPS for the Au1300 series processors. In addition, performance is enhanced due to a significant improvement in the system bus bandwidth. As part of this both internal and external bussing has been improved leading to up to 4x system bus utilization improvement. Dual independent DD2 controllers provide ultimate flexibility and improve system performance through more efficient bus utilization, allowing concurrent memory accesses and reducing resource conflicts. The unique system architecture of the Au1300 series processors make it possible to run 2D/3D graphics and video decoding concurrently without impacting system performance.

Key Features

Enhanced Media Acceleration Engine™ (MAE2) with Bit Stream Accelerator (BSA) Speeds Up Video Decode

A new Bit Stream Accelerator (BSA) is included in the second generation Media Acceleration Engine™ to greatly speed up bit stream parsing and entropy decode that were formerly performed by the CPU core. This advancement not only speeds up the video decode process but also frees up MIPS on the CPU core for other processing.

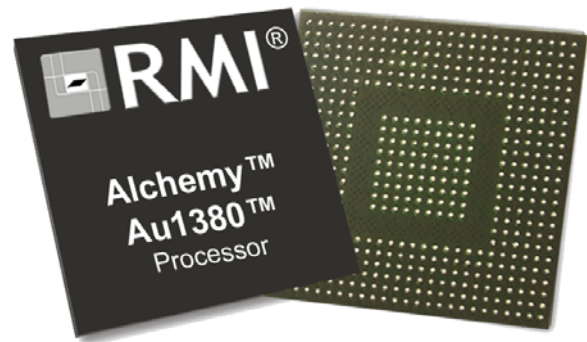
Integrated 2D/3D Graphics Acceleration

The addition of a high performance Graphics Processing Engine (GPE) dramatically improves 3D graphics processing. This makes it possible for designers to develop complex 3D navigation, 3D games and richer user interfaces. The Au1300 series processors supports OpenGL ES 1.1 and 2.0 and OpenVG 1.1 standards.

Low Power and Improved Power Management

Scalable clocking that allows the CPU frequency to vary dynamically to lower power without impacting system performance. The CPU, MAE2 and GPE blocks are clocked by independent PLLs, allowing each block to operate at varying frequencies based on application software. Extensive clock gating included in the processors allows for disabling clocks to unused blocks thus reducing power the overall power consumption.

Further, because of the addition of the a graphics processing unit and internal JPEG acceleration, graphics and videos display faster with lower overall power consumption.



The following table lists the four processors available in the Au1300 series and the primary features.

Features	Au1380™	Au1370™	Au1350™	Au1340™
Max CPU Clock	800MHz	800MHz	667MHz	667MHz
Video Decode Resolution	Up to 720p (1280x700)	Up to 720p (1280x720)	D1 (720x480)	D1 (720x480)
Graphics	2D/3D Acceleration	2D	2D/3D Acceleration	2D
AES	Yes	No	Yes	No

Software Support from RMI

- Core BSPs and Media SDKs (including 2D/3D GPE) for
 - Windows CE 6.0
 - Linux 2.6

Primary Features

High Speed MIPS32[®] CPU Core

- Up to 800MHz in performance
- Nominal core voltage: 1.0V
- 1.8V DDR2 SDRAM I/O voltage, 3.3V I/O voltage
- Scalar 5-stage pipeline
 - Zero penalty branch
- 32-bit architecture

The Way to Go Mobile.

- Multiply-Accumulate (MAC) and Divide Unit
 - Operates in parallel to CPU pipeline
 - 32 x 16-bit MAC hardware
- Caches
 - 16KB non-blocking data cache
 - 16KB instruction cache
- MMU
 - 32 dual-entry fully-associative TLB

Enhanced Media Acceleration Engine (MAE2)

- Accelerates video decode (MPEG1, 2, 4, DivX, H.264, VC-1) in hardware
- Up to 720p (1280x720) video decode resolution
- Up to WUXGA (1920x1200) LCD resolution
- JPEG hardware acceleration
- Hardware color-space conversion and scaling for any video standard

Graphics Processing Engine

- Open GL ES 1.1 and 2.0 and OpenVG 1.1 standards support.
- Vertex and Fragment shaders.
- 10M polygons per second.
- 4x full-screen anti-aliasing with no impact on performance.
- Up to 25x FSAA supported.
- Alpha blending and texture caching.

Highly-Integrated System Peripherals

- 75 total GPIOs
- Two USB 2.0 device and host controllers with OTG support
- Four programmable serial controllers (PSC), each supporting four serial protocols:
 - Audio Codec-97 Controller (AC97)
 - Inter-IC Sound (I²S)
 - Serial Peripheral Interface (SPI)
 - System Management Bus (SMBus)
- Three Secure Digital/SDHC/SDIO/MMC controllers
 - One with 8-bit eMMC 4.3 support
- Enhanced camera interface module supporting 8 to 10-bit image sensors
- LCD controller with 32-bit alpha-RGB color resolution support
- AES-128 encryption/decryption in hardware
- Four UARTs

Low SoC Power

- 1/2 Watt Typical Power at 800MHz (Au1370 and Au1380 720p capable)
- Power Saving Modes
 - Idle
 - Sleep
 - Hibernate

Memory Buses

- High-bandwidth dual DDR2 SDRAM memory controller (supports up to DDR2-667)
- Support for up to 8 banks
- SRAM controller with IDE and NOR/NAND Flash support
 - large/small block, SLC/MLC NAND
- Compact Flash support
- External 10/100 Ethernet controller support

UltraDMA (UDMA)

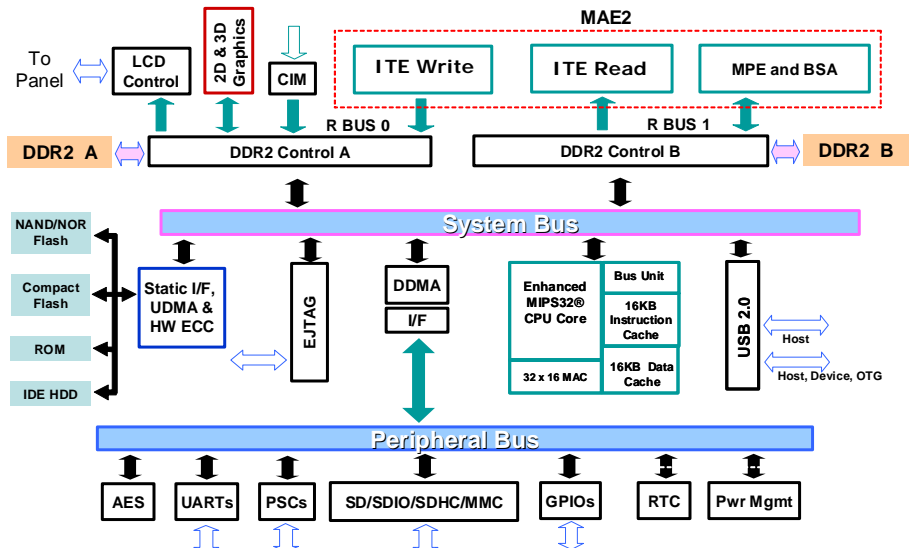
- High performance transfer to IDE hard drives
- ATA-6/UDMA mode 5 compliant

Packaging Options

- Available in 0.65mm and 0.8mm ball pitch BGA packages

Other Flexibility Options

- Extended temperature range options for applications with hostile thermal environments
- The Alchemy family of pin-compatible Au1300 series processors SoCs enables designers to support multiple price-performance points and application requirements from a single board design.



About RMI

RMI Corporation (RMI®) is a fabless semiconductor company providing High-Performance Super System-on-a-Chip (SuperSoC™) Processor solutions for the Infrastructure, Enterprise, and Consumer Media markets. Applications include Wireless, Networking Security, Thin Clients, and Connected Multi-Media. RMI offers a broad platform of advanced MIPS-compatible processor solutions with both 32/64-bit architectures supporting frequencies from 300MHz to 1.3GHz. RMI is headquartered in Cupertino, CA with branch and subsidiary operations in Texas, United Kingdom, France, India, Korea, Japan, Taiwan and China. More information about RMI can be found on the company's website at www.RMICorp.com