RMI Alchemy™ Au1200™ Processor

PRODUCT BRIEF

Go Mobile. Go Global. Go Now.

Optimized for Personal Media Player (PMP) Applications

Product Overview

The RMI Alchemy™ Au1200™ processor leverages a 5-year commitment to developing high-performance, low-power solutions to provide a purpose-built, versatile processor for Personal Media Player (PMP), Automotive, and Digital Media Adapter (DMA) applications. The Au1200 processor enables users to download media quickly and enjoy DVD-quality video efficiently delivered at full-frame rates, with low power, and with ample product features.

The RMI Alchemy Au1200 processor gives system designers an easy-to-use, simple solution to create full-featured PMPs with greatly reduced design cycle times. System-on-a-Chip (SoC) architecture eliminates the need for additional components.

The processor is available in an extended temperature range option of -40ºC to 100ºC for all speeds.

Highlights

Transcoding Not Required

The RMI Alchemy Au1200 processor supports common digital video media, including MPEG, DivX, and WMV9, and delivers full D1 resolution without the need to transcode content between PC or PVR and the PMP. This reduces the time required to download fresh content and helps enable consumers to take media “on the go” faster and easier.

The Au1200 processor also leverages a unique approach to DDR1 and DDR2 memory to deliver better overall performance than SDRAM components. And the Au1200 processor achieves faster I/O via USB 2.0 to give designers a range of enhanced connectivity options.

No Need for DSPs

The RMI Alchemy Au1200 processor incorporates an integrated Media Acceleration Engine optimized for video to eliminate the need for DSPs and specialized coding. This means less overall power consumption and a simplified design.

Video Codecs ported by RMI = Low Engagement Cost

Since RMI ports all video codecs that are supported by the on-chip Media Acceleration Engine, there is no need to engage expensive 3rd party codec software development vendors. No NRE, so OEMs/ODMs immediately realize a lower solution cost.

The Alchemy family of pin-compatible Media and Navigation SoCs enables designers to support multiple price-performance points and application requirements from a single board design.

Features	Au1250	Au1200	Au1210
Maximum Clock Rate	600MHz	500MHz	400MHz
Video Decode Resolution	Full D1: 720x480	Full D1: 720x480	Wide-CIF: 480x288
Very Low Power	<1/2 Watt at Full D1 (600MHz)	<1/2 Watt at Full D1 (400MHz)	<1/4 Watt at QVGA (333MHz)
NAND Boot	Large Block	Small Block	Large Block
Extended Temp. -40ºC to 100ºC	Up to 500MHz	Up to 333MHz	Up to 400MHz
AES-128 Cryptography Engine	Yes, integrated on-chip	Yes, integrated on-chip	Not available

Primary Features

Customized MIPS32® Core

- 333, 400, and 500MHz
- 32-bit architecture
- 16KB instruct + 16KB data caches
- High-speed multiply-accumulate (MAC) and divide unit
- 1.2V core, 3.3V I/O

Media Acceleration Engine (MAE)

- Support for MPEG1, 2, 4, and WMV9 scaled up to 1024x768
- MPEG2 main profile/main level (720x480, 10Mbps, 30fps)
- MPEG4 advanced simple profile/level 5 (720x480, 4Mbps, 30fps)
- WMV9 main profile/medium level (720x480, 2.5Mbps, 30fps)
- DivX® certified portable

The Way to Go Mobile.

High-Performance, Low-Power Solution Optimized for PMP, Automotive, and DMA Applications

The RMI Alchemy™ Au1200™ processor delivers maximum performance with minimum effort – full-function personal media on milliwatts of power.

- No transcoding required
- No need for DSP
- No SDRAM bottlenecks
- Unified memory architecture
- Media Acceleration Engine (MAE)
- Built-in decryption hardware for digital rights management

LCD controller design optimizes displays

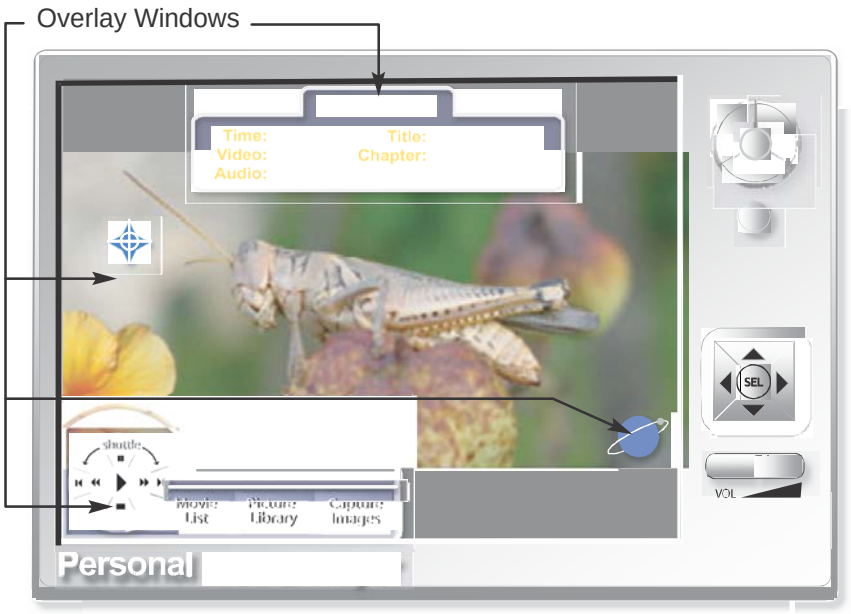
The Au1200 processor features an LCD controller that gives developers full 32-bit RGB capabilities in each of four prioritized overlay windows that require no frame buffer modifications to reposition. The Au1200 also features gamma correction for matching video displays with graphics, a global background color that simplifies processing and produces an aesthetically pleasing display, and a 1KB palette RAM frame buffer that is ideal for displaying information in portable device idle modes.

Camera interface module supports today's popular features

The Au1200 processor also features a Camera Interface Module (CIM) that provides an 8- or 10-bit data bus for input from CCD/CMOS sensors or other CCIR656 data. The CIM supports pixel clock rates up to 33MHz, and adds popular capabilities including image capture and analog TV display.

CIM image data is autonomously planarized in RGB or YCbCr format, relieving the core from additional work, and is routed to three separate FIFOs. Output is then moved to memory using DDMA. Planarized data can take advantage of the scaling, filtering, and color space conversion capabilities of the MAE.

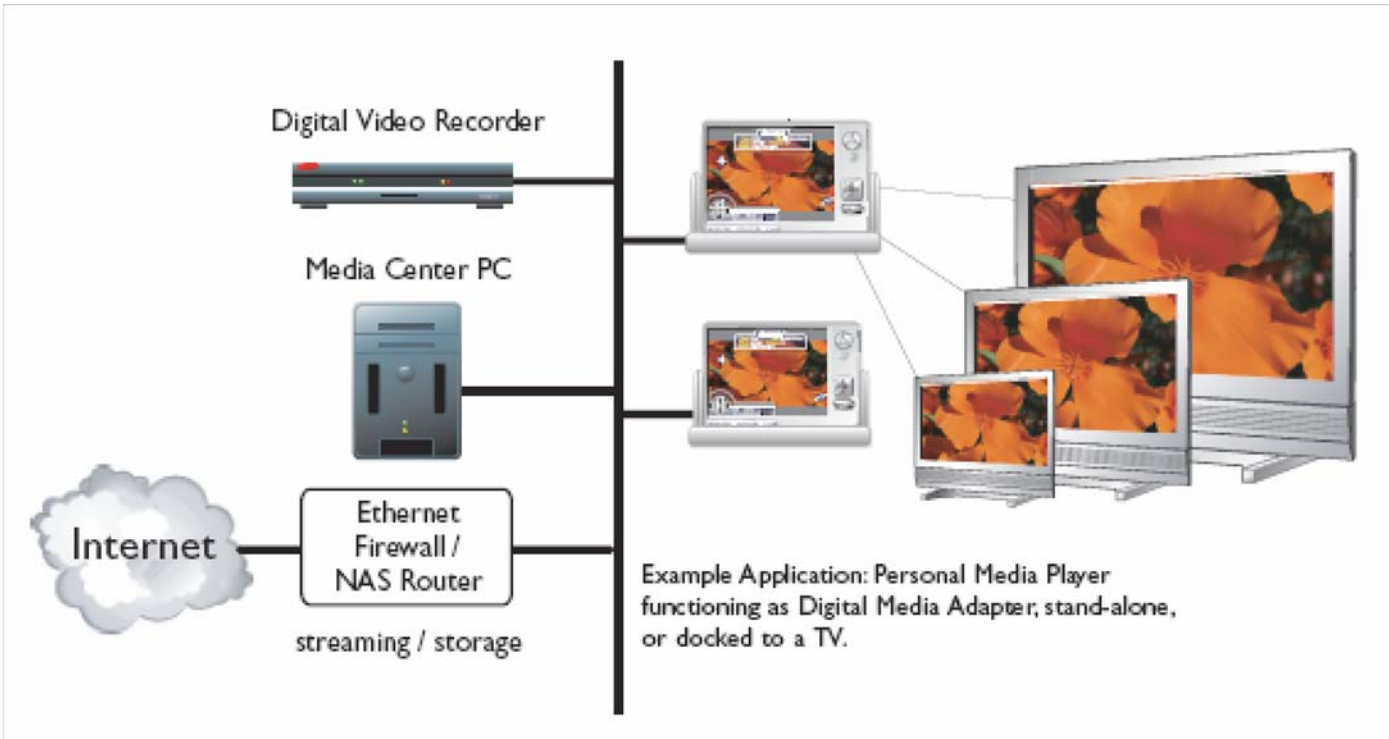
Example of Personal Media Player Playing MPEG 2 Video in 16:9 Format



A ready-to-go solution for designers

The RMI Alchemy™ Au1200™ processor gives designers an easy-to-use and fast tool for developing innovative and feature-rich products that can be produced and marketed quickly, shortening the design-to-market cycle for OEMs.

The complete processor solution includes ODM design and hardware components, third-party GUI and content management software, and RMI media player software with no licensing fee. Overall, the solution features fewer parts for easier design and simpler integration. Flexible architecture provides a robust capability for numerous portable media applications.



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Primary Features (continued)

DDR SDRAM Controller

- Supports 2.5 or 1.8V DDR1/DDR2 and mobile DDR memory with speeds up to DDR500
- 16/32-bit data, 14-bit address
- Up to 512MB (four 1-Gbit devices)
- 1:1, 2:1, 3:1 system bus clock to memory clock options
- Unified memory architecture with dedicated video subsystem

Static Bus Controller

- 16-bit data bus interface
- IDE interface with support for PIO mode and multiword simple DMA data transfers
- Support for both NOR and NAND Flash devices
  - — Boot from NAND or NOR Flash
  - — Supports 30 bits of addressable memory using 15 pins and address latch protocol
- Compact Flash/PCMCIA
- Support for external 10/100 Ethernet controller

AES Hardware Encrypt/Decrypt Engine

- AES 128
- ECB, CBC, CFB, OFB modes supported
- 100/50/25/12MHz clock option for power/performance considerations

LCD Controller

- Up to 1024x768 resolution screens
- 32-bits per pixel aRGB color resolution support
- Four prioritizable overlay windows
- Alpha override and per-pixel alpha blending
- Four-color hardware cursor
- Configurable on-chip memory area for palette RAM, gamma correction, or 1KB frame buffer

Integrated Peripherals

- Two Programmable Serial Controllers (PSCs) – each independently capable of being programmed for AC97, I^2S, SPI, and SMBus (system management bus) serial protocols
- Two Secure Digital/SDIO/MMC Controllers
- USB 2.0 Host and Device Controller with HS, FS, and LS support (for both)
  - — Configurable Host, Device, OTG (On-the-Go) support
- Two UARTs
- GPIO (48)

Camera Interface Module

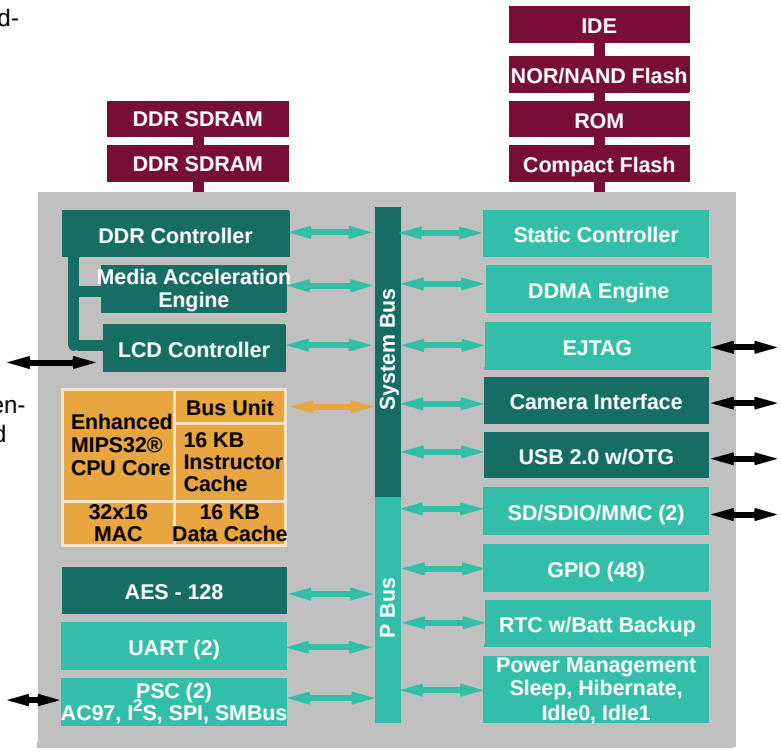
- 8-10 bit parallel data bus
- Planar modes support CMOS/CCD sensors
- CCIR 656 data input
- CIM image data is autonomously planarized in RGB or YCbCr format, relieving the core from the actual work
- A Raw Data Mode supports moving CIM input data unchanged to memory

Power Management Modes

- Sleep
- Hibernate
- Idle0/Idle1

Other

- Low power
- Package: Pin count 372 Plastic BGA



About RMI

Raza Microelectronics, Inc. (RMI®) is a fabless semiconductor company providing highly-integrated feature-rich products ranging from power-optimized System-on-a-Chip (SoC) solutions to High-Performance Processors for the Digital Consumer, Wireless, Networking and Security markets. RMI offers the most advanced and most complete MIPS-Based™ processing solutions with both 32/64-bit architectures supporting frequencies from 300MHz to 1.2GHz. The company is headquartered in Cupertino, CA with offices in Texas, India, Korea, Japan and China. More information about RMI can be found on the company's website at www.RazaMicro.com

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