

CA1024

Programmable Media Processor



The CA1024 is a fully programmable media co-processor based on the patented ConnexArray™ vector processor architecture. This unique ConnexArray™ core enables the CA1024 to deliver the performance required for the most demanding digital media applications while offering future-proof software upgradeability.

Unlike hardwired ASIC/ASSP alternatives that add dedicated logic (and cost) for each additional codec or display processing feature, the fully programmable CA1024 supports an infinite variety of legacy, emerging and future media codec standards and post-processing algorithms without additional logic. Unlike reconfigurable alternatives based on gate-arrays, the CA1024 ConnexArray™ core is a compact, homogenous vector processor that offers a nearly 10X advantage in price/performance.

The CA1024 is engineered for the most demanding consumer and industrial digital video and signal processing applications. It supports dual MPEG2 transport streams and simultaneous decoding of dual HD H.264, VC-1 and MPEG2 video, while leaving enough processing headroom to support simultaneous advanced signal pre- and post-processing algorithms (e.g., 3D filters, motion-compensated de-interlacing, and human perceptual mapping optimizations). The result is a platform that enables a best-in-class viewing experience throughout the life of the end product, even as algorithms improve over time.

For even more demanding applications the CA1024 enables virtually unlimited linear scalability through support for multi-chip implementations using left and right ConnexArray™ expansion ports.

Evaluation and Rapid Application Development (RAD) is supported through a family of RAD Kits that offer application specific reference designs, board support packages and relevant SDKs.

Consumer Applications

- High Definition Set-top Box (STB)
 - DSL, Cable and Satellite
- High Definition Integrated DTV (iDTV)
 - OTA and Cable Ready DTV
- High Definition Personal Video Recorder*
- High Definition DVD Recorder
- High Definition Digital Media Adapter

(* STB reference design Includes PVR functionality.)

Industrial Applications

- High Definition Head-End Video Encoder/Multiplexer
- Multi-stream Digital Video Recorder (DVR) - Surveillance

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Features

ConnexArray™ Video Processor Core

- High-performance programmable video processor enables support for ANY codec
- PBGA Package
- Supports multi-chip designs through left/right expansion ports
- Supports wide array of pre/post processing, graphics acceleration, font rendering and alpha blending

Two Complete A/V Channels

- Two configurable video and two configurable audio input ports
- Inputs
 - Supports any combination of BT.601/656, 8/16/24 bit RGB/YCrCb or MPEG2 TS input with dedicated PID filter logic
 - 2x I2S audio input
- Outputs
 - Dual 656/709 SD/HD digital video outputs
 - 4x I2S or 1x S/PDIF digital audio output
- Dedicated MPEG2 DVB/ATSC compliant transport processor

Integrated "glueless" DDR DRAM controller

- 64-bit wide x 400 MHz data rate
- Supports up to 25.6 Gbps memory bandwidth

Codec Support:

- Dual HD Stream Video Decode
 - MPEG2 MP@HL
 - H.264 MP@L4.1
 - WMV/VC1 MP@AP@L3
- HD Video Encode/Transcode
 - MPEG2 MP@HL
 - H.264 MP@L4.1
- Dual Stream Audio Decode
 - AC3 (2, 5.1 & 7.1)
 - MPEG Audio Layer 1 & 2
 - DTS+
 - MPEG2 LC-AAC (2.0 & 5.1)
 - MPEG4 HE-AAC (Level 2 & 4)
 - MP3
- Audio Encode
 - AC3 (2, 5.1 & 7.1)

Glueless NOR FLASH

- Optional local boot, or host download

On-chip 32-bit Host CPU

(Optional) High Performance Host Port

- Dual mode for flexible system implementations, PCI V2.2 or Memory mapped
- Selectable bus size of 16 or 32 bits for optimal system bandwidth

CA1024 Block Diagram

