

Features

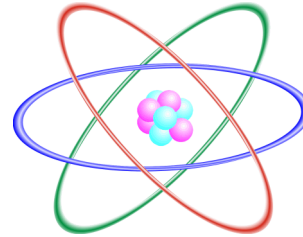
- Implements either 8 point 1D or 8x8 point 2D DCT/IDCT.
- Base configuration compatible with IEEE 1180-1990.
- Input data precision from 4 to 16 bits.
- Output data precision from 4 to 32 bits.
- Up to 37.5 million 1D transforms/sec.
- Up to 2.34 million 2D transforms/sec.
- Synchronous implementation with a single clock domain.
- High-level simulation models are available.
- User-selectable implementation: DCT, IDCT, or combined with mode control.

Benefits

- Supports full duplex, high definition video conferencing.
- Lowest power per computation.
- No instruction set processor overhead.
- Clock rate <10 MHz for 30 fps CIF video application.
- 1D architecture operates well using DMA or programmed I/O.
- 2D architecture has fire and forget (load and go) 8x8 transform.

Applications

- JPEG (lossy and lossless), MPEG, and H.261/H.263 video codecs.
- Low power digital still and video cameras.
- Video conferencing and digital television.
 - Psycho-acoustic analysis for real-time MP3 encoding.
 - Signal detection.
- Cross-correlation.



Athena Radix 8 DCT/IDCT Processor Atomic DSP Family

Description

The Athena radix 8 DCT/IDCT processor supports both 1D (direct) eight point and 2D eight by eight point DCTs and IDCTs. These sizes accommodate most DCT-based image and video compression applications such as JPEG, MPEG, and H.261 and H.263 video codecs. Users define the input and output data precision levels and buffers of this IEEE 1180-1990 compatible processor.

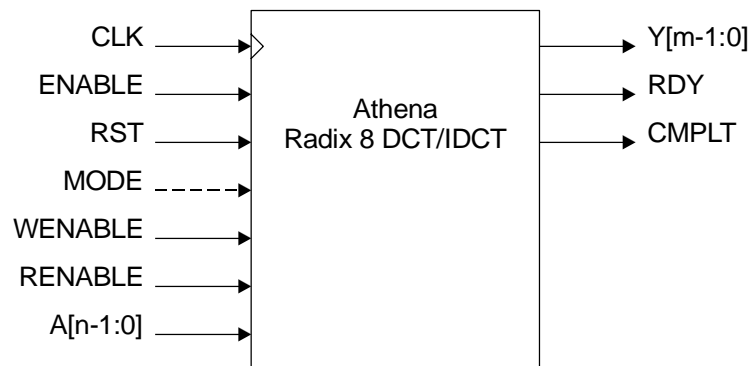


Figure 1: Athena Radix 8 DCT/IDCT Processor Block Diagram

Operation

Figure 1 shows a block diagram of the Athena Radix 8 DCT/IDCT processor.

Atomic DSP Family

Incredibly small and power efficient, the entire family of Athena digital signal processing (DSP) accelerator cores is designed specifically for computationally intensive system-on-a-chip applications. Additional products are in development for the wireless and broadband communications markets. These new processors will join Athena's complete DSP semiconductor IP library designed for power-sensitive applications requiring extraordinary performance.

Delivery

Each Atomic DSP core package is delivered as a firm core optimized to any customer-specified library. The package includes the core, verification suites, timing and simulation models, and documentation.

Athena's IP cores are designed for efficient implementation and rapid delivery. The company's proprietary, wholly automated implementation and verification methodology produces synchronous, testable IP cores of the highest quality. All Athena IP cores achieve a score of 95% or better on the OpenMore scale of IP reusability.

About The Athena Group, Inc.

The Athena Group, Inc. of Gainesville, Florida licenses high-performance DSP technology that delivers breakthrough performance, reduced area, and lower power consumption in a broad range of SoC products. Athena's proprietary technology powers leading edge applications such as secure e-commerce, wireless communications, and video compression. In addition to their high-value application level solutions, Athena also produces a full line of fundamental DSP functions suitable for SoC integration.

Athena was founded in 1986 and is privately held.



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