

Features

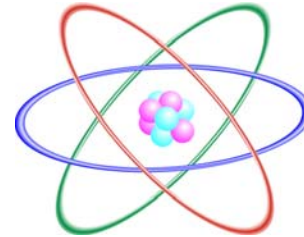
- FFTs and IFFTs up to 512-points
- Extensive parallel processing for minimal latency, maximal throughput
- User defined input and output precision
- User defined scaling
- User parallel data input and output paths

Benefits

- Extreme computational rates with reasonable clock frequency
- Rapid delivery via verified firm macro
- Synthesized to your target library and performance requirements
- Fully verified functionality and timing
- Compiled RTL simulation model included
- High density, low power

Applications

- OFDM modems (*e.g.*, ultra wideband)
- Instrumentation
- Real-time signal analysis



Atomic Fusion FFT Family **Ultra High-Performance FFT/IFFT**

The Athena Group delivers the same ultra high-performance fast Fourier transform (FFT) cores used in our application level solutions, ready to use for your SoC application. When your advanced communications or signal processing SoC requires extreme FFT performance, turn to Athena's Atomic Fusion FFT blocks. Complementing Athena's Atomic FFT family, Atomic Fusion FFTs use extensive parallel processing to achieve minimal transform latency and maximal throughput. Athena's family of Atomic Fusion FFT blocks enable your application to benefit from decades of experience in delivering extreme FFT performance.

All Atomic Fusion FFT cores can perform both forward and inverse transforms and have flexible scaling. User defined parallel data input and output paths enable your application to match data I/O rates with the needs of your application, and avoid high-clock frequency processor operation. Data precision, I/O parallelism (L factor), transform size, and performance are customer defined at time-of-order. Athena's Atomic Fusion FFT family is summarized in Table 1.

Table 1: Atomic Fusion FFT Product Family

Model	Length	Minimum Latency (cycles)	Transform/s (L=4, fclk=133 MHz)
UFFT-16	16	16/L+5	26.7M
UFFT-32	32	32/L+6	16.7M
UFFT-64	64	64/L+7	8.3M
UFFT-128	128	128/L+8	4.2M
UFFT-256	256	256/L+9	2.1M
UFFT-512	512	512/L+10	1.0M

Product Description

Athena's Atomic Fusion FFT functions use a flow through architecture with dedicated unidirectional write and read ports, see Figure 1. Atomic Fusion FFT functions may be easily integrated with other processor blocks to form a system-level solution, or may be added to your microprocessor-based design as a function specific accelerator.

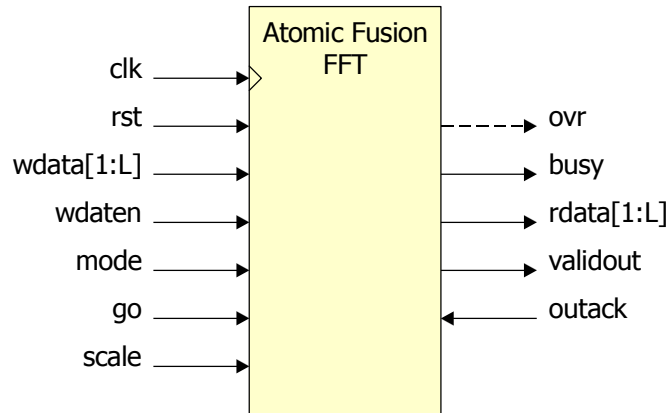


Figure 1: Atomic Fusion FFT Block Interface

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.

Based in Gainesville, Florida, Athena innovates breakthrough technologies that achieve the optimum balance of power, performance, and silicon area in a wide range of applications such as wireless, satellite, and secure communications. Athena provides patented semiconductor intellectual property (IP) solutions, with products ranging from the market-leading TeraFire® security cores, to Atomic DSP™ cores, and Atomic SDR™ software defined radio cores.

Athena was founded in 1986 and is privately held.



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