Analog Devices Announces Apollo MxFE Advanced Software-Defined Signal Processing Solution for Aerospace & Defense, Instrumentation, and Next-Generation Wireless Communications

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WILMINGTON, Mass. & SAN DIEGO--(BUSINESS WIRE)--Jun. 13, 2023-- Analog Devices, Inc. (Nasdaq: ADI) today announced Apollo MxFE, its most advanced software-defined, direct RF-sampling, wideband mixed signal front end platform. Apollo MxFE enables next-generation applications such as phased array radar, electronic surveillance, test and measurement, and 6G communications in the Aerospace & Defense, Instrumentation, and Wireless Communications industries.

This press release features multimedia. View the full release here: https://www.businesswire.com/news/home/20230613005033/en/



Analog Devices announces Apollo MxFE advanced software-defined signal processing solution for Aerospace & Defense, Instrumentation, and Wireless Communications industries. (Graphic: Business Wire)

The growth of data intensive applications is increasing the need for wider bandwidths and more rapid processing and analysis of data for 5G, 6G, Wi-Fi 7 & 8, radar, signal intelligence, and other applications at the network edge. As a result, customers need a solution that enables higher-speed data conversion and processing capabilities, while reducing electronic testing complexity.

Developed for application versatility and rapid customization, the Apollo MxFE offers instantaneous bandwidths as high as 10GHz while directly sampling and synthesizing frequencies up to 18GHz (Ku Band). This monolithic 16nm CMOS device utilizes state of the art high dynamic range RF Analog-to-Digital Converter (ADC) and RF Digital-to-Analog Converter (DAC) cores with the best spurious free dynamic range and noise spectral density available on the market today. As such, Apollo MxFE helps customers accelerate design cycles and bring new products to market faster and at lower cost, while future-proofing their product designs.

“The flexibility and simplicity designed into the Apollo MxFE platform have the potential to transform future engineering design for Intelligent Edge devices,” said Bryan Goldstein, Vice President, Aerospace and Defense at ADI. “Demand for higher data rates with shorter latencies at lower overall system power is accelerating across industries. Apollo MxFE gives design engineers the flexibility to design for those requirements today, as well as an ability to enhance performance over time using simple, software-defined design changes.”

Apollo MxFE Product Details

Apollo MxFE’s 4T4R product offers four 12-bit RF ADCs with a sample rate up to 20GSPS, four 16-bit RF DACs with a sample rate up to 28GSPS, an RF input bandwidth from DC to 18GHz (Ku Band), and an instantaneous bandwidth up to 10GHz. Apollo MxFE is the industry’s first integrated radio that is capable of directly interfacing to the emerging 6G frequency bands from 7GHz to 15GHz.

The on-chip digital signal processing (DSP) offers a real-time FFT Sniffer, a full-rate programmable FIR filter, a 128-tap complex FIR filter, fast-hopping NCOs, DDCs/DUCs, and a fractional sample rate converter. The DSP is dynamically configurable, allowing for rapid changes between narrowband and wideband profiles without taking down the JESD link. Apollo MxFE supports JESD 204B/C and a very short reach (VSR) interface.

Apollo MxFE’s 8T8R product offers eight RF ADCs with a sample rate up to 8GSPS, eight RF DACs with a sample rate up to 16GSPS, an RF input bandwidth up to 16GHz, and an instantaneous bandwidth up to 3GHz. The on-chip DSP offers similar features and functionality to the 4T4R device with double the number of digital blocks, all dynamically configurable.

Apollo MxFE Ecosystem

Apollo MxFE is at the heart of a larger ecosystem of new ADI hardware and software products, each offering complementary capabilities for optimal performance and ease of use. Apollo MxFE is augmented by high-performance variable gain amplifiers, ultralow noise LDO and Silent Switcher® regulators, clocking, and multichip synchronization, along with embedded digital and software technologies including algorithms and security.

The Apollo MxFE ecosystem is comprised of the following products:

- A PLL/VCO synthesizer with a fundamental frequency output of up to 22GHz, extraordinary noise performance, temperature stability (0.06ps/°C), and <1ps alignment resolution.
- A complete, high-performance power solution including the LTM4702 8A µModule regulator. It features Silent Switcher 3 technology, combining an ultralow noise reference with Silent Switcher architecture to achieve high efficiency, excellent wideband noise performance, and maximum overall Apollo MxFE ecosystem performance.
- A 10-channel precision synchronizer for time alignment of SYSREF signals to within 5ps for simultaneous sampling across

multiple Apollo MxFE on the same card or across different chassis. It also has the ability to support two-dimensional system synchronization (fanout and/or daisy chain architectures) for very large systems.
- Companion TxVGA and RxVGA solutions provide Apollo MxFE with +15dB of gain and the transition from single-ended to differential on Rx as well as differential to single-ended on Tx. This simplifies the connection to the RF front end.

ADI is demonstrating Apollo MxFE at IMS 2023 (June 13-15 in San Diego, California.) Learn more at www.analog.com/IMS. More information about Apollo MxFE can be found at www.analog.com/MxFE.

About Analog Devices, Inc.

Analog Devices, Inc. (NASDAQ: ADI) is a global semiconductor leader that bridges the physical and digital worlds to enable breakthroughs at the Intelligent Edge. ADI combines analog, digital, and software technologies into solutions that help drive advancements in digitized factories, mobility, and digital healthcare, combat climate change, and reliably connect humans and the world. With revenue of more than $12 billion in FY22 and approximately 25,000 people globally working alongside 125,000 global customers, ADI ensures today's innovators stay Ahead of What's Possible. Learn more at www.analog.com and on LinkedIn and Twitter.

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