Analog Devices Unveils Industry's Fastest 12-bit, Direct Digital Synthesizers for Frequency-Agile Wireless Applications

Meeting the demand for direct digital synthesis (DDS) technology that meets the needs of wireless applications requiring fast hopping and/or sweeping, Analog Devices, Inc. [1](ADI) today announced that it has more than tripled the clock speed of previously available DDS integrated circuits (ICs). Coupled with an on-chip, high-speed, 12-bit D/A converter, ADI's AD9914 [2] achieves a speed of 3.5 giga samples per second (GSPS), while the AD9915 [3] runs to 2.5 GSPS. Both device cores support advanced digital programmable technology capable of synthesizing frequency-agile, analog output sinusoidal waveforms at up to 1.4 GHz, such as those used in a wide range of communications applications, such as wireless base stations, defense and commercial radar, and secure communications systems.

Demonstrated in Analog Devices' Booth #1725 at IMS2012 being held this week, the new DDS devices feature a 32-bit parallel port enabling extremely fast changes to frequency, phase, and the amplitude of the output signal, and the programmable modulus function which significantly extends the use of DDS ICs into applications that require exact rational relationships such as signal generators and other lab equipment..

• Download the AD9914 and AD9915 datasheets: http://www.analog.com/ad9914 [2] and http://www.analog.com/ad9915 [3]

• View ADI's broad portfolio of ADI's DDS ICs: http://www.analog.com/dds [4]

• View ADI’s broad portfolio of RF ICs: http://www.analog.com/rf [5]

• Get support for DDS design on EngineerZone™, ADI’s online technical support community: http://ez.analog.com/community/dds [6]

“Increasing clock speeds to 3.5 GSPS on high-resolution DDS ICs allows our customers to generate higher output frequencies with improved dynamic performance,” said Peter Real, vice president, linear and RF, Analog Devices. “ADI’s new DDS products represent a significant step forward, providing better spurious free dynamic range across a much broader frequency band when compared to previous generations. By improving SFDR and enabling fast frequency hopping and fine tuning resolution, AD9914 and AD9915 enable designers to change frequencies in one clock period with ultra-precise tuning of that frequency.”

The AD9914 and AD9915 settle in nanoseconds with granularity well below 200 pHz. Other approaches, including FPGAs with embedded DDS functions, have difficulty matching the SFDR (better than -50dBc) of ADI’s DDS ICs on output signals over 1 GHz and require higher operating power and the addition of a discrete D/A converter to synthesize the sine wave.

AD9914 and AD9915 DDS IC Key Features:

• 12-bit D/A converter resolution and 3.5 GSPS (AD9914) and 2.5 GSPS (AD9915) clock rate

• Programmable modulus mode for precise frequency generation and 64-bit resolution

• Exceptional SFDR performance over a 1.5 GHz tuning range

• Dual accumulators for linear sweeping of frequency, phase or amplitude

• 32-bit parallel port permits pin-access to tuning words for fast and fine shift keying and hopping

• Consumes approximately 2.5 Watts at full operating speed

The AD9914 and AD9915 DDS ICs are well suited to drive RF output signals from ADI’s broad portfolio of modulators; high speed clocks including the AD9523-1; PLLs and RF amplifiers.

RF IC Portfolio Covers Entire RF Signal Chain

Using a unique combination of design skills, systems understanding and process technologies, Analog Devices RF ICs and world-leading data converters cover the entire RF signal chain and include industry-leading high-performance discrete RF function blocks as well as highly-integrated multi-functional single-chip RF solutions. These products are also supported by a wide range of free design tools, evaluation boards and other design resources to ease the development of RF systems. For

more information, visit: http://www.analog.com/rf [5].

www.analog.com [1]

Posted by Sara Cohen, Editorial Intern

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Links:
[1] http://www.analog.com/en/index.html
[2] http://www.analog.com/en/rfif-components/direct-digital-synthesis-dds/ad9914/products/product.html
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