12-bit Resolution and 3.6-GSPS Sampling Rate Enables New Applications for Wideband Software-Defined Radios

National Semiconductor Corp. introduces the industry's fastest 12-bit analog-to-digital converter (ADC). At 3.6 Giga-samples per second (GSPS), the ADC12D1800 is 3.6 times faster than any other available 12-bit device. The ADC's dynamic performance of -147 dBm/Hz noise floor, 52 dB noise power ratio (NPR) and -61 dBFS intermodulation distortion (IMD) enables a new generation of software-defined radio (SDR) architectures and applications. In addition to the ADC12D1800, National introduced two other members of its ultra high-speed ADC family: the ADC12D1600 with sampling speed up to 3.2 GSPS and the ADC12D1000 with performance up to 2.0 GSPS. All three PowerWise® ADCs target wideband SDRs including radar, communications, multi-channel set-top box (STB), signal intelligence, and light detecting and ranging (LIDAR) applications. Entirely new SDR architectures can be realized with National's ADC12D1x00 family due to its ability to accurately receive modulated, band-limited signals within a large bandwidth. For example, in military radar systems, a single ADC12D1X00 combined with a digital down-converter can replace multiple mixers, filters, amplifiers and local oscillator stages used in traditional heterodyne double- or triple-conversion radio implementations. In next-generation multi-channel STB applications, one ADC12D1X00 can replace all of the STB's tuners. Shifting such architectures to an SDR implementation dramatically reduces board area, power consumption, and cost, while significantly improving system flexibility.

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