Data Converters

Analog Devices extended its portfolio of 3 V data converters with the introduction of two low-power analog-to-digital converters (ADCs). The AD9218 is a 3 V 10-bit dual ADC, offering a sample rate of 105 mega samples per second (MSPS). The AD9235 is a 3 V, 12-bit 65 MSPS ADC, and is 30 percent faster than other 12-bit converters in its class. These devices meet the growing demand for dynamic performance, low power, and compact packaging required by today's portable instrumentation, communications, and broadband applications. In addition, the AD9235 enables IF sampling up to 100 MHz in small or portable applications, such as pico-cell cellular base stations.

The AD9218 is a compact, dual 10-bit monolithic sampling analog-to-digital converter that is optimized for applications requiring low power and printed circuit board space savings. It operates at conversion rates of 40/65/80/105 MSPS, and provides high dynamic performance, with a signal to noise ratio (SNR) of 56 dBc at 105 MSPS and an input frequency of 41 MHz. The AD9218 is ideal for low-cost oscilloscopes, portable instruments, In-phase and Quadrature (I&Q) communications, and broadband (wired and wireless) applications. This low-power solution needs only a 3 V (2.7 V to 3.6 V) power supply and a differential clock to operate. It reduces power supply demands by consuming only 265 mW per channel during full operation at 105 MSPS. The AD9218 has digital outputs that are TTL and LVCMOS compatible, and support interfacing with 3.3 V or 2.5 V logic. The device provides user-selectable options that support a combination of power-down modes, digital data formats, and digital timing schemes. In addition, its dual ADC channels can be operated independently of each other. The AD9218 also provides designers with a cost-effective solution for migrating from 8-bit to 10-bit performance, while saving space and power, by offering pin-compatibility with Analog Devices' AD9288, an 8-bit 40/80/100 MSPS dual ADC.

The AD9235 is a monolithic, single 3 V 12-bit, 20/40/65 MSPS analog-to-digital converter that combines low power and supports IF sampling up to 100 MHz input frequencies. It achieves an SNR of 70.4 dBc and a spurious-free dynamic range (SFDR) of 84 dBc and is ideal for a number of applications, including cellular base stations, portable instrumentation, high-end imaging and transportable ultrasound equipment. The design has been optimized for each speed grade resulting in power dissipation of 90 mW, 165 mW and 300 mW, respectively. The AD9235 includes a patented input sampling network, voltage reference, and multistage differential pipelined architecture with output error correction logic for 12-bit accuracy at 65 MSPS data rates, with no missing codes. It also offers a clock duty-cycle stabilizer to maintain performance over a wide range of clock pulsewidths, which is important to portable applications where the clock source may be less than ideal.

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