

New SAR ADC Family Enables High-Speed, High-Resolution Analog-to-Digital Conversion in Harsh Environments

As the industry's only 1 Msps fully AEC-Q100-qualified 16-bit SAR, the 12 new devices are designed to operate in high temperatures and electromagnetic environments

CHANDLER, Ariz., March 06, 2019 (GLOBE NEWSWIRE) -- To address applications that demand higher-speed and higher-resolution analog-to-digital conversion, Microchip Technology Inc. (**Nasdaq: MCHP**) today announced 12 new Successive Approximation Register (SAR) Analog-to-Digital Converters (ADCs) along with a companion differential amplifier designed specifically for the new portfolio of SAR ADCs. Designed to operate in high temperatures and high electromagnetic environments, the [MCP331x1\(D\)-xx family](#) includes the industry's only one million samples per second (Msps) fully AEC-Q100-qualified 16-bit SAR, providing the reliability required for automotive and industrial applications. The [MCP6D11](#) differential amplifier provides a low-distortion, high-accuracy interface to achieve the full performance of the ADC within systems.

The MCP331x1(D)-xx family ranges in resolution from 12-, 14- and 16-bit, with speed options ranging from 500 kilosamples per second (ksps) to 1 Msps, allowing developers to choose the right ADC for their designs. A fixed low analog supply voltage (AV_{DD}) of 1.8V and low-current operation (1.6 mA typical active current for 1 Msps and 1.4 mA for 500 ksps) enables this family of ADCs to have an ultra-low power consumption, while maintaining a wide input full-scale range.

These devices support a wide digital I/O interface voltage (DV_{IO}) range (1.7V - 5.5V) which allows it to interface with most host devices, including Microchip's PIC32, AVR[®] and Arm[®]-based microcontrollers and microprocessors. This eliminates the need for using external voltage level shifters. The MCP331x1(D)-xx family contains both single-ended and differential input voltage measurement options, enabling systems to convert the difference between any two arbitrary waveforms. Ideal for applications such as high-precision data acquisition, electric vehicle battery management, motor control and switch-mode power supplies, the AEC-Q100-qualified family provides reliable performance across harsh environments.

Properly interfacing a small analog signal to a high-speed, high-resolution ADC without introducing additional noise and distortion is a critical challenge. Microchip's MCP6D11 differential amplifier is designed specifically to address this challenge, providing a low-distortion and high-accuracy interface to properly drive the ADC.

"The ADC market and applications are pushing toward higher resolution, higher speed and higher accuracy," said Bryan J. Liddiard, vice president of Microchip's mixed-signal and linear business unit. "In addition, lower power consumption and smaller packaging are also tremendously important, and these products address all these demands."

Development Tools

The MCP331x1D-XX Evaluation Kit is available to demonstrate the performance of the MCP331x1D-XX SAR ADC family devices. The evaluation kit includes the following:

- MCP331x1D Evaluation Board
- PIC32MZ EF MCU Curiosity Board for data collection
- SAR ADC Utility PC Graphical User Interface (GUI)

Pricing and Availability

Pricing for the new SAR ADCS range from the MCP33111 available for \$1.45 each in 10,000-unit quantities to the MCP33131 available for \$4.65 each in 10,000-unit quantities. Each ADC is available in either the 10-MSOP with leads in a 3 mm X 3 mm package or 10-TDFN no leads 3 mm X 3 mm package. The 9 mm² size is the smallest footprint available in the market for a 16-bit, 1 Msps differential ADC. Pricing for the MCP6D11 is \$1.17 in 10,000-unit quantities and is available in the 8-MSOP or 3 mm x 3 mm 16-QFN package. The MCP331x1(D)-xx Evaluation Kit is available for \$175.

For additional information, contact a Microchip sales representative, authorized worldwide distributor or visit Microchip's website. To purchase products mentioned here visit our [purchasing portal](#) or contact a Microchip authorized distributor.

Resources

High-res images available through Flickr or editorial contact (feel free to publish):

- Application image: www.flickr.com/photos/microchiptechnology/46225333084/sizes/l
- Chip image: www.flickr.com/photos/microchiptechnology/40171379033/sizes/l

About Microchip Technology

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Editorial Contact:

Brian Thorsen
480-792-7182
brian.thorsen@microchip.com

Reader Inquiries:

1-888-624-7435



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