

MCP33131D/21D/11D-10

1 Msps 16-14-12-bit Single-Channel Differential Input SAR ADC

General Information

The MCP331x1D are fully differential 16-14- and 12-bit, 1 Msps single-channel ADC family devices, featuring full differential input, low power consumption (0.8 μ A typical standby, 1.6 mA typical active), and high performance in a small package, making it ideal for battery-powered systems and high-precision data acquisition applications. The device features a Successive Approximation Register (SAR) architecture and an industry-standard SPI serial interface. It also supports a wide range of input full-scale range from $-V_{REF}$ to $+V_{REF}$.



Features

- 16-14-12-bit resolution with no missing codes
- No latency output
- Wide operating voltage range:
 - Analog Supply Voltage (AVDD): 1.8V
 - Digital I/O Interface Voltage (DVIO): 1.7V–5.5V
 - External Reference (V_{REF}): 2.5V–5.1V
- SPI-compatible serial communication:
 - S \overline{C} LK clock rate: up to 100 MHz
- ADC self-calibration for offset, gain and linearity errors
- Temperature range: -40°C to $+85^{\circ}\text{C}$

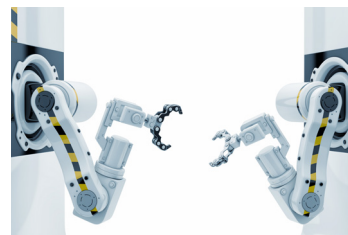
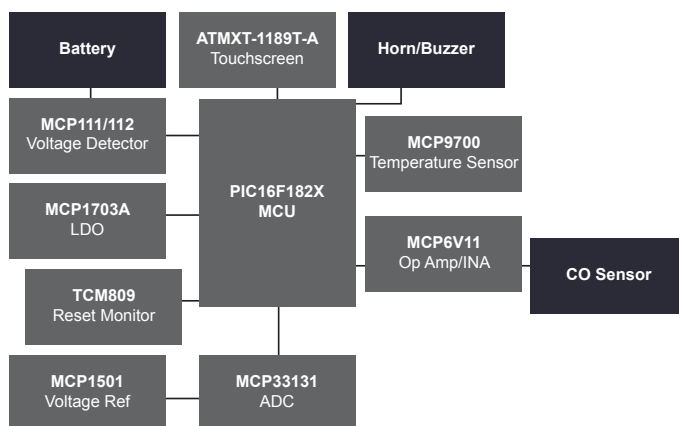
Applications

- High-precision data acquisition
- Medical instruments
- Industrial and consumer data acquisition systems
- Motor control applications
- Switch-mode power supply applications
- Battery-powered equipment

Benefits

- Wide DVIO range (1.7V–5.5V) allows the device to interface with most host devices (Master) in the industry without using external voltage level shifters.
- Automatic or on-demand self-calibration to minimize offset, gain and linearity errors.
- Stable performance across all temperature ranges without any noticeable degradation.

CO Detector



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