

## MCP3561/2/4

One-Two-Four-Channel, 153.6 ksps, Low-Noise 24-bit Delta-Sigma ADCs

### General Information

The MCP3561/2/4 are 1/2/4-channel, 24-bit, Delta-Sigma Analog-to-Digital Converters (ADCs) with programmable data rate of up to 153.6 ksps. They offer integrated features such as internal oscillator, temperature sensor and burnout sensor detection. The MCP3561/2/4 ADCs are fully configurable with Oversampling Ratio (OSR) from 32 to 98304 and gain from 1/3x to 64x. These devices include an internal sequencer (SCAN mode) with multiple monitor channels and a 24-bit timer to be able to automatically create conversion loop sequences without needing MCU communications. The MCP3561/2/4 devices are available in a leaded 20-lead TSSOP package, as well as in an ultra-small, 3 mm x 3 mm 20-lead UQFN package and are specified over an extended temperature range from  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ .



### Features

- 24-bit resolution
- Programmable data rate: up to 153.6 ksps
- Programmable gain: 0.33x to 64x
- 106.7 dB SINAD, -116 dBc THD, 120 dBc SFDR
- (Gain = 1x, 4800 SPS)
- Low-temperature drift:
  - Offset error drift: 4/Gain nV/ $^{\circ}\text{C}$  (AZ\_MUX = 1)
  - Gain error drift: 0.5 ppm/ $^{\circ}\text{C}$  (Gain = 1x)
- Low noise: 90 nVRMS (Gain = 16x, 12.5 SPS)
- RMS ENOB: up to 23.3 bits
- Wide input voltage range: 0V to AVDD
- Differential voltage reference inputs
- Internal oscillator or external clock selection

- Ultra-low full shutdown current consumption ( $< 5 \mu\text{A}$ )
- Internal temperature sensor
- Burnout current sources for sensor open/short detection
- 24-bit digital offset and gain error calibration registers

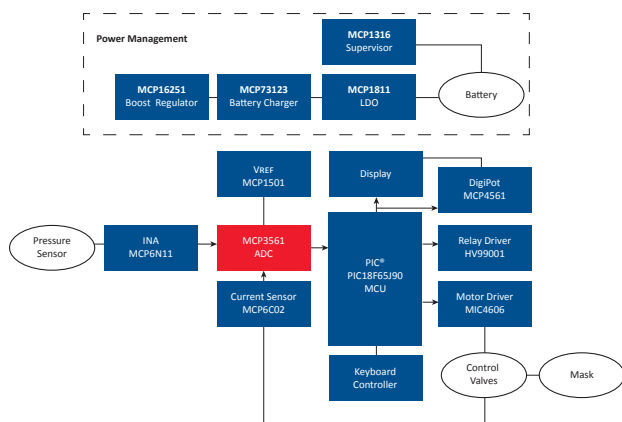
### Applications

- Precision sensor transducers and transmitters
- Factory automation and process controls
- Portable instrumentation
- Temperature measurements

### Benefits

- Several applications with higher resolution and faster programmable data rates
- Smaller footprint takes less space and reduces design cost
- Integrated features eliminate the need for external components

### Total System Solution (TSS) for a Ventilator



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