

## MCP33151D/41D-XX

1 Msps/500 kSPS, 14/12-bit Differential Input SAR ADC

### General Information

The MCP33151D/41-10 and MCP33151D/41D-05 are differential input, 14-bit and 12-bit, single-channel 1 Msps and 500 kSPS ADC family devices, respectively, featuring low-power consumption and high performance, using a successive approximation register (SAR) architecture. The devices operate with an external Voltage Reference ( $V_{REF}$ ) from  $AV_{DD}$  to 5.1V, which supports a wide range of input full-scale range from  $-V_{REF}$  to  $V_{REF}$ . The devices address the rigorous and harsh demands of the automotive and industrial markets and are designed to operate in both high-temperature and electromagnetic environments.



### Features

- Sample rate (throughput):
  - MCP33151D/41D-10: 1 Msps
  - MCP33151D/41D-05: 500 kSPS
- 14/12-bit resolution with no missing codes
- Wide operating voltage range:
  - Analog supply voltage ( $AV_{DD}$ ): 1.8V
  - Digital input/output interface voltage (DVIO): 1.7–5.5V
  - $V_{REF}$ :  $AV_{DD}$ –5.1V
- Differential input operation
  - Input full-scale range:  $-V_{REF}$  to  $+V_{REF}$
- Ultra-low current consumption (typical):
  - During input acquisition (standby):  $\sim 1.5 \mu A$
- During conversion:
  - MCP33151D/41D-10:  $\sim 0.66 mA$
  - MCP33151D/41D-05:  $\sim 0.33 mA$
- SPI-compatible serial communication:
  - SCLK clock rate: up to 100 MHz

### Applications

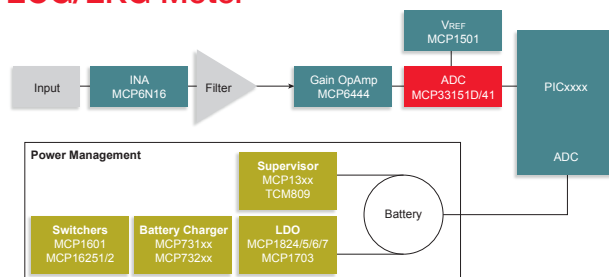
- Medical instruments
- Test equipment
- Electric vehicle battery management systems
- Motor control applications
- High-precision data acquisition
- Battery-powered equipment

### Benefits

- Ultra-low current consumption enables designs in space-constrained applications and saves cost
- Low-cost 1 Msps, 14-bit, differential input SAR ADC with automotive qualification (AEC-Q100)
- Self-calibration feature improves offset, gain and linearity errors which enable the designer in high-accuracy systems



### ECG/EKG Meter



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