

MCP320X 12-Bit Analog-to-Digital Converters

Product Information

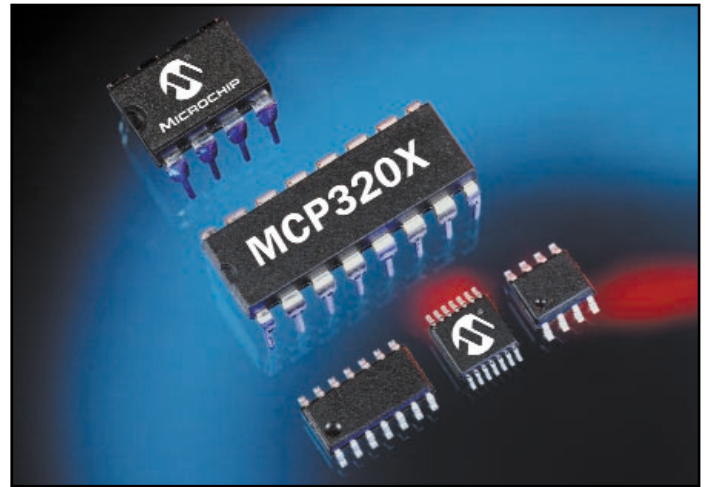


The Microchip MCP320X family of 12-bit analog-to-digital converters (ADCs) combines high performance and low power consumption in a small package – making it ideal for embedded control applications.

Consisting of the MCP3201, MCP3202, MCP3204 and MCP3208, the MCP320X family features a successive approximation register (SAR) architecture and an industry-standard SPI™ serial interface. Devices are available with 1, 2, 4 or 8 input channels and in PDIP, SOIC and TSSOP packages.

The MCP320X family offers existing Microchip customers added flexibility when incorporating analog inputs into their designs. The industry standard SPI interface allows 12-bit ADC capability to be added to any PICmicro® microcontroller. In addition, new customers will find the performance and price of the MCP320X family very attractive.

Applications for the MCP320X family include data acquisition, instrumentation and measurement, multi-channel data loggers, industrial PCs, motor control, robotics, industrial automation, smart sensors, portable instrumentation and home medical appliances.



Features:

- 100k samples/second
- 1, 2, 4 or 8 channels
- Low Power: 500 nA typical standby, 400 μ A typical active
- ± 1 LSB INL, ± 1 LSB DNL (B grade)
- No missing codes
- Industrial temperature range: -40°C to $+85^{\circ}\text{C}$
- Single supply operation: 2.7V to 5.5V
- SPI serial interface
- PDIP and SOIC packages

Related Application Notes:

- AN679 Temperature Sensing Technologies
- AN684 Single Supply Temperature Sensing with Thermocouples
- AN685 Thermistors in Single Supply Temperature Sensing Circuits
- AN687 Precision Temperature Sensing with RTD Circuits
- AN688 Layout Tips for 12-bit Applications
- AN699 Anti-Aliasing Analog Filters for Data Acquisition Systems
- AN702 Interfacing the MCP3201 ADC to an 8051-based Microcontroller
- AN704 Interfacing the MCP3201 ADC to an MC68HC11E9-based Microcontroller

MCP320X 12-Bit Analog-to-Digital Converters *Continued*

Additional Information:

- Microchip's web site: www.microchip.com
- Microchip's *Technical Library CD-ROM*, Order No. [DS00161](#)
- More than 112 Application Notes available:
 - *Embedded Control Handbook*, Order No. [DS00092](#)
 - *Embedded Control Handbook, Volume 2, Math Library*, Order No. [DS00167](#)
- Microchip's *Non-Volatile Memory Products Data Book*, Order No. [DS00157](#)
- Microchip's *Overview, Quality Systems and Customer Interface System*, Order No. [DS00169](#)
- Third party software and hardware support:
 - Emulators
 - Programmers
 - Gang Programmers
 - Software Tools
 - Development Boards and Accessories
 - Design Consultants
 - *Third Party Guide*, Order No. [DS00104](#)

MCP320X High-Performance 12-Bit Analog-to-Digital Converters

| Product | Resolution (Bits) | No. of Channels | Sampling Rate (ksps) | INL (\pm LSB, B Grade) | DNL (\pm LSB) | Supply Voltage | Temperature Range | Standby Current @ 5V (typical, μ A) | Operating Current @ 5V (typical, μ A) | Packages |
|---------|-------------------|-----------------|----------------------|---------------------------|------------------|----------------|-------------------|---|---|------------------------|
| MCP3201 | 12 | 1 | 100 | 1 | 1 | 2.7 - 5.5 | -40° to +85°C | 0.5 | 300 | 8P, 8SO, 8TSSOP, 8MSOP |
| MCP3202 | 12 | 2 | 100 | 1 | 1 | 2.7 - 5.5 | -40° to +85°C | 0.5 | 375 | 8P, 8SO, 8TSSOP |
| MCP3204 | 12 | 4 | 100 | 1 | 1 | 2.7 - 5.5 | -40° to +85°C | 0.5 | 300 | 14P, 14SO, 14TSSOP |
| MCP3208 | 12 | 8 | 100 | 1 | 1 | 2.7 - 5.5 | -40° to +85°C | 0.5 | 300 | 16P, 16SO |

Development Tool Support

Microchip is offering a comprehensive set of support tools including application notes and the Analog Evaluation System. The evaluation system consists of the analog evaluation driver board, incorporating a PICmicro microcontroller, coupled with an MCP320X device-specific evaluation board. Windows®-based software features powerful data collection and analysis capabilities, including Fast Fourier Transforms (FFT) and histograms.

Americas

| | |
|----------------------|----------------|
| Atlanta | (770) 640-0034 |
| Austin-Analog | (512) 345-2030 |
| Boston | (978) 692-3848 |
| Boston-Analog | (978) 371-6400 |
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| Italy | 39 039 65791 1 |
| United Kingdom | 44 118 921 5869 |

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