MCP300X 10-Bit Analog-to-Digital Converters

Product Information

The Microchip MCP300X family of 10-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 MCP3001, MCP3002, MCP3004 and MCP3008, the MCP300X 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 MCP300X family offers existing Microchip customers added flexibility when incorporating analog inputs into their designs. The industry standard SPI interface allows 10-bit ADC capability to be added to any PICmicro® microcontroller. In addition, new customers will find the performance and price of the MCP300X family very attractive.

Applications for the MCP300X 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:

- 200k samples/second
- 1, 2, 4 or 8 channels
- Low Power: 5 nA typical standby, 425 µA typical active
- ±1 LSB INL, ±1 LSB DNL
- No missing codes
- Industrial temperature range: -40°C to +85°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
- AN699 Anti-Aliasing Analog Filters for Data Acquisition Systems

MCP300X 10-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 *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

MCP300X High-Performance 10-Bit Analog-to-Digital Converters

Product	Resolution (Bits)	No. of Channels	Sampling Rate (ksps)	INL (±LSB)	DNL (±LSB)	Supply Voltage	Temperature Range	Standby Current @ 5V (typical, µA)	Operating Current @ 5V (typical, µA)	Packages
MCP3001	10	1	200	1	1	2.7 - 5.5	-40° to +85°C	0.005	400	8P, 8SO, 8TSSOP
MCP3002	10	2	200	1	1	2.7 - 5.5	-40° to +85°C	0.005	525	8P, 8SO, 8TSSOP
MCP3004	10	4	200	1	1	2.7 - 5.5	-40° to +85°C	0.005	425	14P, 14SO, 14TSSOP
MCP3008	10	8	200	1	1	2.7 - 5.5	-40° to +85°C	0.005	425	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 MCP300X device-specific evaluation board. Windows® -based software features powerful data collection and analysis

Americas

Atlanta	(770) 640-0034
Austin-Analog	(512) 345-2030
Boston	(978) 692-3848
Boston-Analog	(978) 371-6400
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