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## CHAPTER 12

### M68HC12 ANALOG INPUT

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#### OBJECTIVES

In this chapter we will learn how to initialize and use the M68HC12 A/D converter system.

- 12.1 Introduction
- 12.2 M68HC12 A/D Converter
  - A/D Initialization
  - A/D Operation
  - Digital Results from the A/D
- 12.3 A/D Input Synchronization
  - Polling A/D Conversion Complete
  - Clearing Status Flags
- 12.4 A/D Interrupts
- 12.5 Miscellaneous A/D Registers
- 12.6 A/D Control Register Summary
- 12.7 A/D Programming Summary
- 12.8 A/D Programming Example
- 12.9 Chapter Summary Points

- ! The M68HC12 is an 8-bit successive approximation converter that may have 10-bit capability in the future.
- ! The A/D must be powered up by writing a one to the ADPU bit in the ATDCTL2 register.
- ! A 100 μs delay must be observed after powering up the A/D before using it.
- ! There are eight input channels selected by an input multiplexer.
- ! The conversion time is programmable and can range from 18 - 32 ATD clock periods.
- ! The total sample-and-hold aperture time ranges from 4 - 18 ATD clock periods.
- ! Four or eight channels are converted in sequence with the results appearing in four or eight A/D results registers.
- ! Analog input synchronization may be done by polling the Sequence Complete Flag or any of the eight Conversion Complete Flags in the ATDSTAT registers.
- ! The A/D can generate a Sequence Complete interrupt.