MP87098

CMOS

Very Low Power, 750 KSPS, 10-Bit Analog-to-Digital Converter with 4-Channel Mux

EXAR

FEATURES

- 10-Bit Resolution
- 4-Channel Mux
- Sampling Rates from <1 kHz to 750 kHz
- Very Low Power CMOS - 30 mW (typ)
- Power Down; Lower Consumption – 3 mW (typ)
- Input Range between GND and V_{DD}
- No S/H Required for Analog Signals less than 100 kHz
- No S/H Required for CCD Signals less than 750 kHz
- Single Power Supply (4 to 6 Volts)
- Latch-Up Free CMOS Technology
- High ESD Protection: 2000 Volts Minimum
- Recommended Replacement: MP8798

BENEFITS

- Reduced Board Space (Small Package)
- Reduced External Parts, No Sample/Hold Needed
- Suitable for Battery & Power Critical Applications
- Designer Can Adapt Input Range & Scaling

APPLICATIONS

- µP/DSP Interface and Control Applications
- Multiplexed Data Acquisition
- Low Power A/D Applications

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GENERAL DESCRIPTION

The MP87098 is a flexible, easy to use, precision 10-bit Analog-to-Digital Converter with a 4-channel mux that operates over a wide range of input and sampling conditions. The MP87098 can operate with pulsed "on demand" conversion operation or continuous "pipeline" operation for sampling rates up to 750 kHz. The *elimination of the S/H and small package size offer the* designer a low cost solution. No sample and hold is required for charge coupled device applications up to 750 kHz, or multiplexed input applications when the signal source bandwidth is limited to 100 kHz. The input architecture of the MP87098 allows direct interface to any analog input range between GND and AV_{DD} (0 to 2 V, 1 to 4 V, 0 to 5 V, etc.). The user simply sets $V_{REF(+)}$ and $V_{REF(-)}$ to encompass the desired input range. Scaled reference resistor (an 1/2 R allows for customizing the transfer curve as well as providing a 1/2 span reference voltage. Digital outputs are CMOS and TTL compatible.

The MP87098 uses a subranging technique. The first segment converts the 4 MSBs and consists of 15 autobalanced comparators, latches, an encoder, and buffer storage registers. The second segment converts the remaining 6 LSBs.

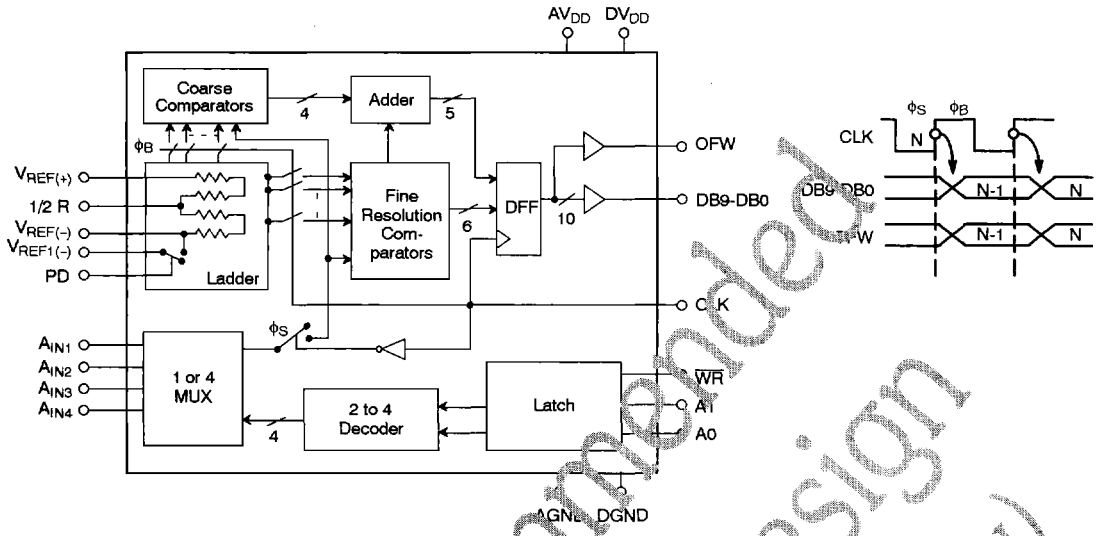
When the power down input is "high", the data outputs DB9 to DB0 hold their current values and $V_{REF(-)}$ is disconnected from $V_{REF(-)}$. The power consumption during the power down mode is approximately 3mW.

Specified for operation over the commercial / industrial (–40 to +85°C) temperature range, the MP87098 is available in Plastic Dual-in-line (PDIP) and Surface Mount (SOIC), and Shrink Small Outline (SSOP) packages.

ORDERING INFORMATION

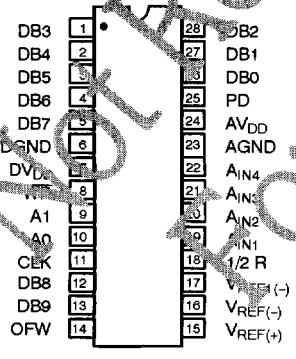
Package Type	Temperature Range	Part No.	DNL (LSB)	INL (LSB)
SOIC	–40 to +85°C	MP87098AS	±1	±2
PDIP	–40 to +85°C	MP87098AN	±1	±2
SSOP	–40 to +85°C	MP87098AQ	±1	±2

SIMPLIFIED BLOCK AND TIMING DIAGRAM

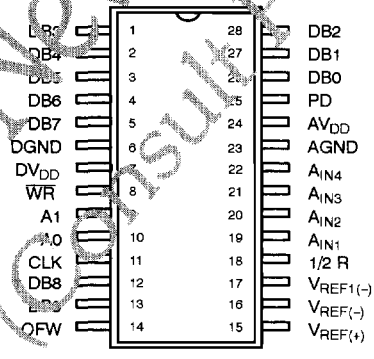


PIN CONFIGURATIONS

See Packaging Section for Package Dimensions



28 Pin PDIP (0.300")



28 Pin SOIC (Jedec, 0.300")
28 Pin SSOP