MP87L98

Low Voltage CMOS
Very Low Power 10-Bit, Analog-to-Digital
Converter with 4-Channel Mux

EXAR

FEATURES

- 3.3 V Operation
- 10-Bit Resolution
- Sampling Rates from <1 kHz to 500 kHz
- DNL better than 1/2 LSB (typ) up to 250 kHz
- Very Low Power CMOS - 5 mW (typ)
- Power Down: Lower Consumption – 1 mW (typ)
- Interface to any Input Range between GND and V_{DD}
- 4-Channel Mux
- No S/H Required for CCD Signals less than 250 kHz
- Latch-Up Free
- ESD Protection: 2000 Volts Minimum
- Monotonic; No Missing Codes

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
- High Resolution Imaging – Scanners, Copiers, Facsimile
- Multiplexed Data Acquisition
- Radar Pulse Analysis

GENERAL DESCRIPTION

The MP87L98 is a flexible, easy to use, precision 10-bit Analog-to-Digital Converter with 4-channel mux that operates over a wide range of input and sampling conditions. The MP87L98 can operate with pulsed "on demand" conversion operation or continuous "pipeline" operation for sampling rates up to 250 kHz. The elimination of the S/H, requirements, very low power, and small package size offer the designer a low cost solution. No sample and hold is required for charge couple device applications, up to 250 kHz, or multiplexed input applications when the signal source bandwidth is limited to 25 kHz. The input architecture of the MP87L98 allows direct interface to any analog input range between AGND and AV_{DD} (0 to 2 V, 1 to 3 V etc.). The user simply sets $V_{REF(+)}$ and $V_{REF(-)}$ to encompass the desired input range.

Scaled reference resistor tap at 1/2 R allows for customizing the transfer curve as well as providing a 1/2 span reference voltage.

The MP87L98 uses a two-step flash 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.

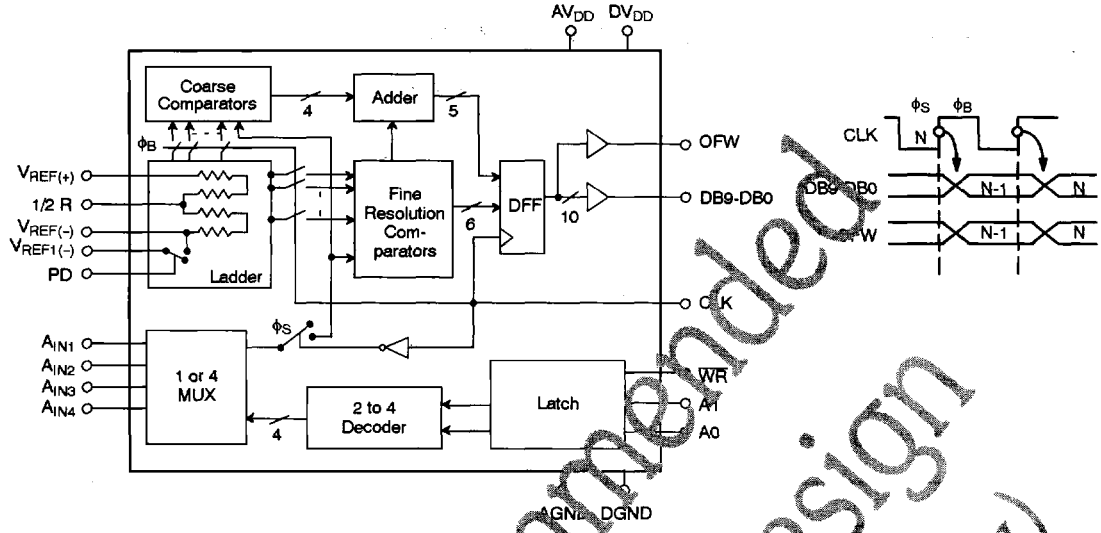
When the power down input is "high", the data outputs DB9 to DB0 hold the current values and $V_{REF(-)}$ is disconnected from $V_{REF1(-)}$. The power consumption during the power down mode is approximately 1mW.

Specified for operation over the commercial / industrial (–40 to +85°C) temperature range, the MP87L98 is available in Plastic Dual-in-Line (PDIP), Surface Mount (SOIC), and Shrunk Small Outline (SSOP) packages.

ORDERING INFORMATION

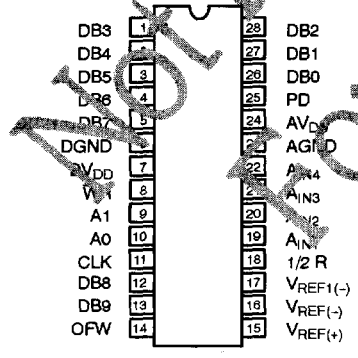
Package Type	Temperature Range	Part No.	DNL (LSB)	INL (LSB)
SOIC	–40 to +85°C	MP87L98AS	±1	±2
PDIP	–40 to +85°C	MP87L98AN	±1	±2
SSOP	–40 to +85°C	MP87L98AQ	±1	±2

SIMPLIFIED BLOCK AND TIMING DIAGRAM

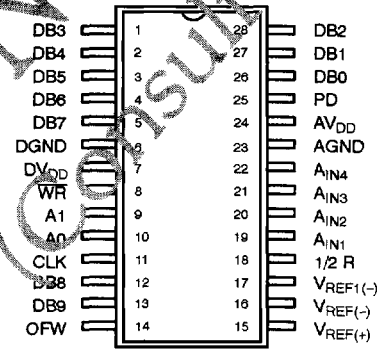


PIN CONFIGURATIONS

See Packaging Section for Package Dimensions



28 Pin PDIP (0.300")



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