MAXIM

1Gsps, 8-Bit ADC with Track/Hold

MAX104

_____General Description

The MAX104 ECL-compatible, 1Gsps, 8-bit analog-to-digital converter (ADC) allows accurate digitizing of analog signals from DC to 1.5GHz. Designed with Maxim's proprietary advanced GST-2 bipolar process, the MAX104 contains a high-performance track/hold (T/H) amplifier and a quantizer on a single monolithic die.

The innovative design of the internal T/H, which has an exceptionally wide input bandwidth of 1.5GHz, results in high, 7.3 effective bits performance at Nyquist. Special comparator design and decoding circuitry reduce out-of-sequence code errors and provide excellent metastable performance of less than one error per 10^{12} clock cycles. Unlike other ADCs, which can have errors that result in false full-scale or zero-scale outputs, the MAX104 keeps the error magnitude to 1LSB.
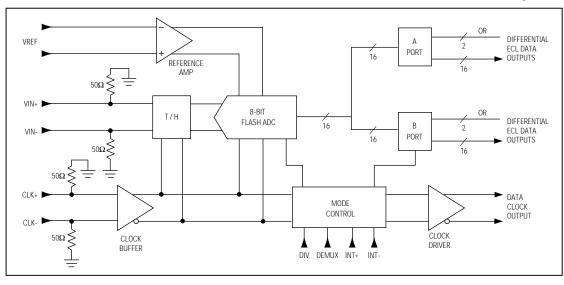
The analog input is designed for differential or single-ended use with a 300mV input range. Dual differential ECL-compatible output data paths provide for easy interfacing and include an 8:16 demultiplexer that reduces output data rates to one-half the clock rate. Control inputs are provided for interleaving additional MAX104 devices to increase the effective system sampling rate.

_____Features

♦ **1Gsps (min) Conversion Rate**
♦ **7.3 Effective Bits at 500MHz**
♦ **Less than ±1/2LSB DNL and INL**
♦ **50Ω Differential Input**
♦ **300mV Input Signal Range**
♦ **On-Chip Differential Reference Amplifier**
♦ **3.5W Power Dissipation**
♦ **Latched, ECL-Compatible Differential Outputs with Overrange Bit**
♦ **Low Error Rate, Less than 10^{-12} Metastable States**
♦ **Selectable On-Chip 8:16 Demultiplexer**
♦ **Control Inputs for Interleaving**
♦ **±5V Power Supplies**
♦ **100-Pin PowerQuad-2 Plastic Package**

_____Applications

Digital RF/IF Signal Processing
High-Speed Data Acquisition
High-Energy Physics
Medical Systems
Radar/Sonar/ECM Systems

_____Functional Diagram

MAXIM

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