National Semiconductor

ADVANCE INFORMATION
February 2004

ADC081000
8-Bit, 1 GSPS A/D Converter with Internal Reference and Sample-and-Hold

General Description

NOTE: This product is currently in development. - ALL specifications are design targets and are subject to change.

The ADC081000 is a low power, high performance CMOS analog-to-digital converter that digitizes signals to 8 bits resolution at sampling rates up to 1.6 GSPS while consuming a typical 1.4 Watts from a single 1.9 Volt supply at 1.0 GSPS. This device is guaranteed to have no missing codes over the full operating temperature range. The unique folding/interpolating architecture, the fully differential comparator design and the innovative design of the internal sample-and-hold amplifier enable a very flat SINAD/ENOB response beyond Nyquist, producing a high 7.5 ENOB with a 100 MHz input signal and a 1 GHz sample rate. Output formatting is offset binary coding with LVDS digital outputs compliant with IEEE 1596.3-1996, with the exception of a reduced common mode voltage of 0.8V.

The converter has a 1:2 demultiplexer that feeds two LVDS buses and reduces the output data rate on each bus to half the sampling rate. The data on these buses are interleaved in time to provide a 500 MSPS output rate per bus and a combined output rate of 1 GSPS.

Setting the PD (Power Down) pin high places the converter into an inactive power down state, where it typically consumes less than 5 mW.

The ADC081000 is available in a 128-lead exposed pad LQFP and operates over the industrial ($-40^oC \le T_A \le +85^oC$) temperature range.

Features

- Internal Sample-and-Hold
- Single +1.9V ±0.1V Operation
- Adjustable Output Levels
- Guaranteed No Missing Codes
- Low Power Standby Mode

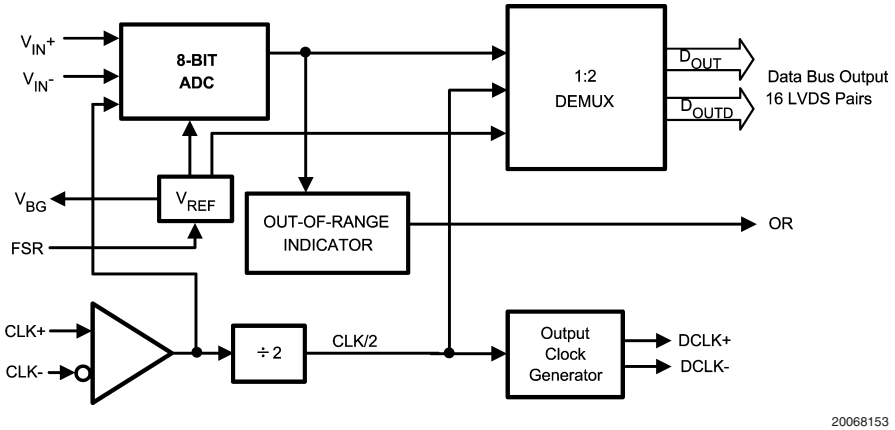
Key Specifications

■ Resolution	8 Bits
■ Max Conversion Rate	1 GSPS (min)
■ No Missing Codes	Guaranteed
■ ENOB @ 100 MHz Input	7.5 Bits (typ)
■ DNL	±0.25 LSB (typ)
■ Conversion Latency	7/8 Clock Cycles
■ PSRR	40 dB (typ)
■ Power Consumption	
— Operating	1.4 W (typ)
— Power Down Mode	5 mW (typ)

Applications

- Direct RF Down Conversion
- Digital Oscilloscopes
- RADAR / SONAR / ECM
- Satellite Set-top boxes
- WLANs
- Communications Systems
- Test Instrumentation

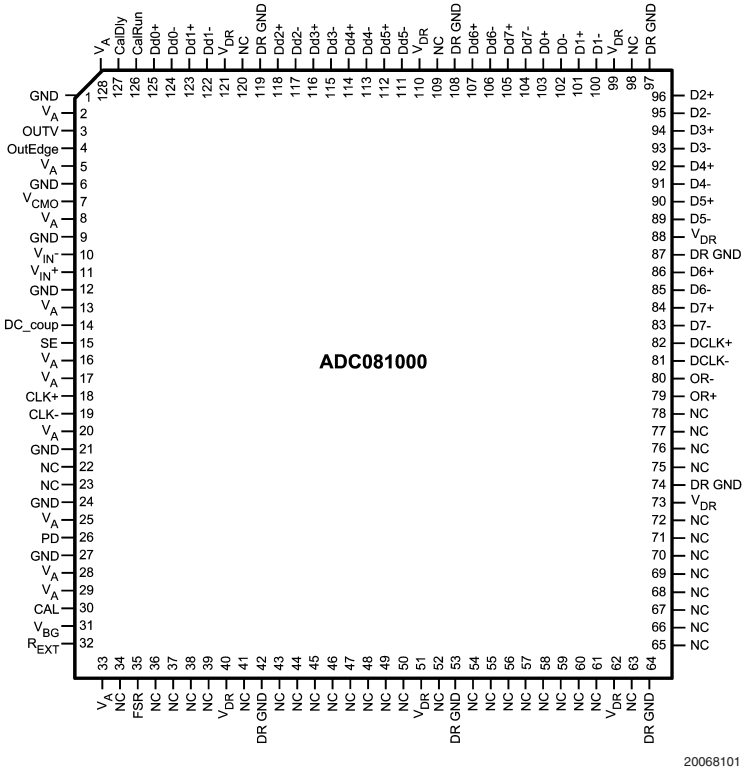
Block Diagram



Ordering Information

Extended Commercial Temperature Range (-40˚C < T_A < +85˚C)	NS Package
ADC081000CIYB	128-Pin Exposed Pad LQFP
ADC081000LEVAL	Evaluation Board

Pin Configuration



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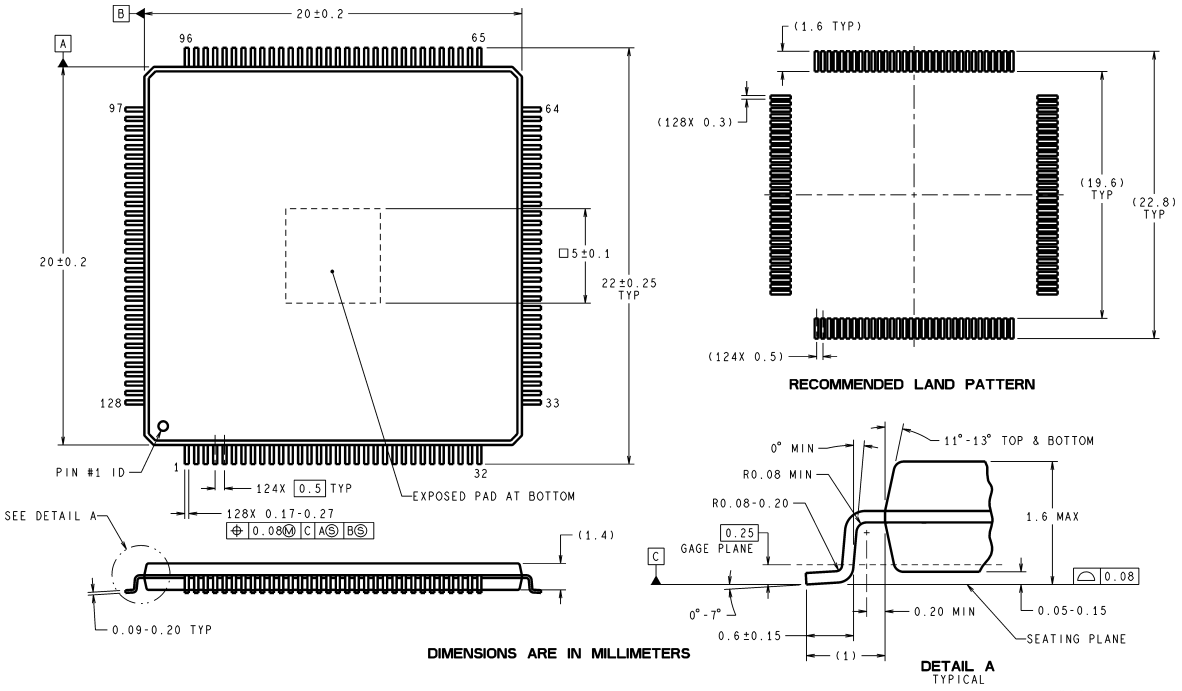
Physical Dimensions inches (millimeters) unless otherwise noted



NOTES: UNLESS OTHERWISE SPECIFIED

REFERENCE JEDEC REGISTRATION MS-026, VARIATION BFB.

24-Lead Package TC
Order Number ADC081000CIMT
NS Package Number VNX128A

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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