



12-Bit, 25 MSPS A/D Converter

ANALOG DEVICES INC

AD9032

1.1 Scope.

This specification covers the requirements for a 12-bit, high speed analog-to-digital converter (ADC). The AD9032 is a complete 12-bit ADC which includes on-board track-and-hold amplifier, voltage reference, and timing circuits.

1.2 Part Number.

The complete part number per Table 1 of this specification is as follows:

Device	Part Number
-1	AD9032T(X)/883B

1.2.3 Case Outline.

See Appendix 1 of General Specification ADI-M-1000: package outline:

(X)	Package	Description
D	DH-40A	40-Pin Ceramic DIP with Kovar Seal Ring (Metal Lid)
Z	Z-40	40-Lead Leaded Ceramic Flatpack

1.3 Absolute Maximum Ratings. ($T_A = +25^\circ\text{C}$ unless otherwise noted)

Power Supply Voltages ($\pm V_S$)	± 7 V
Analog Input Voltage	$-V_S$ to $+V_S$
Digital Input Voltage	$-V_S$ to 0 V
Digital Output Current	20 mA
Operating Temperature Range (Case)	-55°C to $+125^\circ\text{C}$
Storage Temperature Range (Case)	-65°C to $+150^\circ\text{C}$
Lead Temperature (Soldering 10 sec)	$+300^\circ\text{C}$

1.5 Thermal Characteristics.

Maximum junction temperature should not be allowed to exceed $+175^\circ\text{C}$.

Typical thermal impedances:

- $\theta_{CA} = 13^\circ\text{C}/\text{W}$ in still air
- $\theta_{CA} = 5^\circ\text{C}/\text{W}$ with 500 LFPM air flow
- $T_J - T_C = 10^\circ\text{C}$ max

AD9032—SPECIFICATIONS

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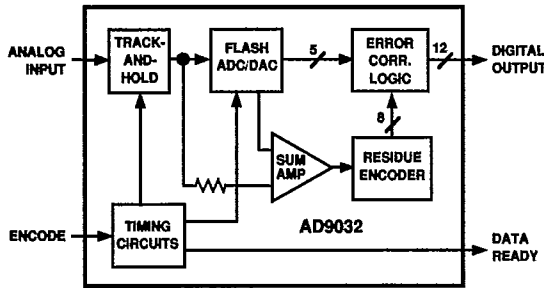
Table 1.

	Symbol	Design Limits ¹	Sub Group 1	Sub Group 2, 3	Sub Group 4	Sub Group 5, 6	Test Condition ²	Units
Differential Nonlinearity	DNL				1.0	1.5		LSB max
Gain Error			±1.0	±2.5				% FS max
Offset Error	V _{OS}		±15	±30				mV max
Input Resistance	R _I		95	95				Ω min
			105	105				Ω max
Conversion Rate					dc	dc		Msp/s min
					25.6	25.6		
Aperture Delay	t _A	1/5						ns min/max
Aperture Uncertainty (Jitter)	t _J	8						ps rms max
Output Delay	t _{OD}	9/17						ns min/max
Data Ready Delay	t _{DR}	3.5/10.5						ns min max
Output Time Skew	t _{OTS}	2						ns max
Encode Pulse Voltage (HIGH)	V _{E(H)}		-1.1	-1.1				V min
			-0.8	-0.8				V max
Encode Pulse Voltage (LOW)	V _{E(L)}		-1.95	-1.95				V min
			-1.5	-1.5				V max
Encode Pulse Current (HIGH)	I _{E(H)}		300	300				μA max
Encode Pulse Current (LOW)	I _{E(L)}		300	300				μA max
Harmonic Distortion	HD				75	70	F _{IN} = 1.2 MHz	dBc min
					72	64	F _{IN} = 9.6 MHz	
Signal-to-Noise Ratio ³	SNR				64	61	F _{IN} = 1.2 MHz	dB min
					62	58	F _{IN} = 9.6 MHz	
High Level Output Voltage	V _{OH}		-1.1	-1.1			Outputs through 510 Ω to -5.2 V; C _L < 4 pF.	V min
Low Level Output Voltage	V _{OL}		-1.5	-1.5			Outputs through 510 Ω to -5.2 V; C _L < 4 pF.	V max
Positive Analog Supply Current (+5.0 V)	+I _{AS}		160	160				mA max
Negative Analog Supply Current (-5.2 V)	-I _{AS}		672	672				mA max
Power Dissipation	P _{DISS}		4.5	4.5				W max
Power Supply Rejection Ratio ⁴	PSRR				10	10		mV/V max

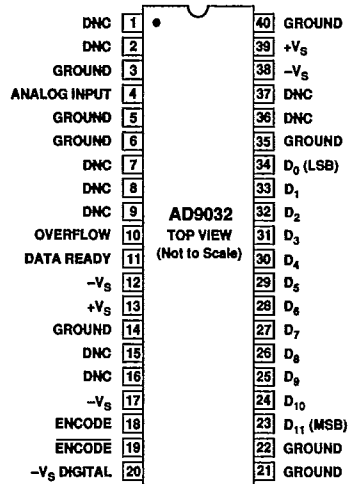
NOTES

¹Value shown is over full temperature range. Number in this column indicates specification is guaranteed but not tested.²+V_S = +5 V; -V_S = -5.2 V; Encode = 25.6 Msps, unless otherwise noted.³Input at 1 dB below full scale; rms signal to rms noise, including harmonics.⁴Sensitivity of offset error with respect to power supply variations within 5% limits of nominal (+5.0 V and -5.2 V) values.

3.2.1 Functional Block Diagram and Terminal Assignments.



DH-40A Package



3.2.4 Microcircuit Technology Group.

This microcircuit is covered by technology group (I).

4.2.1 Life Test/Burn-In Circuit.

Steady state life test is per MIL-STD-883 Method 1005. Burn-in is per MIL-STD-883 Method 1015 test condition (B).

