

1.1 Scope.

This specification covers the requirements for a 12-bit, high speed analog-to-digital converter (ADC). The AD9034 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	AD9034(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 Hermetic Metal DIP
Z	Z-40	40-Lead Leaded Flatpack

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

Power Supply Voltages ($\pm V_S$)	$\pm 6\text{ V}$
Analog Input Voltage	$-V_S$ to $+V_S$
Digital Input Voltage	$-V_S$ to 0 V
Gain Adjust	$-V_S$ to $+V_S$
Offset Adjust	$-V_S$ to $+V_S$
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:

$$\theta_{CA} = 13^\circ\text{C/W in still air}$$

$$\theta_{CA} = 5^\circ\text{C/W with 500 LFPM air flow}$$

$$T_J - T_C = 10^\circ\text{C max}$$

AD9034—SPECIFICATIONS

Table 1.

Test	Symbol	Design Limits ¹	Sub Group 1	Sub Group 2, 3	Sub Group 4	Sub Group 5, 6	Test Conditions ²	Units
Differential Nonlinearity	DNL				±1.0	±1.25		LSB
Gain Error			±1.0	±2.5				% FS
Offset Error	V _{OS}		±15	±30				mV
Input Bias Current	I _B		100	200				μA max
Input Resistance	R _I		50	50				Ω min
Conversion Rate					DC	DC		Msp/s min
					20.48	20.48		Msp/s max
Aperture Delay	t _A	1/7						ns min/max
Aperture Uncertainty (Jitter)	t _J	10						ps rms max
Output Delay	t _{OD}	7/13						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					V min
Encode Pulse Voltage (LOW)	V _{E(L)}		-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				74	70	F _{IN} = 1.2 MHz	dBc min
					70	67	F _{IN} = 9.6 MHz	
Signal-to-Noise Ratio ²	SNR				65	64	F _{IN} = 1.2 MHz	dB min
					63	62	F _{IN} = 9.6 MHz	
High Level Output Voltage	V _{OH}		-1.1	-1.1			Outputs Through 510 Ω -5.2 V; C _L < 4 pF	V min
Low Level Output Voltage	V _{OL}		-1.5	-1.5			Outputs Through 510 Ω -5.2 V; C _L < 4 pF	V max
Positive Analog Supply Current (+5.0 V)	+I _{AS}		230	230				mA max
Negative Analog Supply Current (-5.2 V)	-I _{AS}		760	760				mA max
Power Dissipation	PDI _{SS}		5.1	5.1				W max
Power Supply Rejection Ratio ³	PSRR				8.0	8.0		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 = 20.48 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.

