

1.1 Scope.

This specification covers the requirements for an ultrahigh speed current output digital-to-analog converter.

1.2 Part Number.

The complete part number is as follows:

Device	Part Number
-1	HDS-1250TM/883B

1.2.3 Case Outline.

See Appendix 1 of General Specification ADI-H-1000: package outline: M-24A. This package is non-standard to MIL-M-38510 Appendix C.

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

Supply Voltage	$\pm 17\text{ V}$
Power Dissipation	1.09 W
Digital Inputs	0 to +8 V
Junction Temperature	+165°C
Operating Temperature Range (Case)	-55°C to +125°C
Storage Temperature Range (Case)	-65°C to +150°C
Lead Temperature (Soldering 10 sec)	+300°C

1.5 Thermal Characteristics.

Thermal Resistance $\theta_{JC} = 12^\circ\text{C/W}$
 $\theta_{JA} = 34^\circ\text{C/W}$

HDS-1250TM – SPECIFICATIONS

Test	Symbol	Device	Design Limit @ +25°C	Sub Group 1	Sub Group 2, 3	Sub Group 4	Sub Group 5, 6	Sub Group 9	Test Conditions ¹	Units
Positive Power Supply Current (+V _S)	I _{CC}	-1		54~	54				Bits 1-12 Off	mA max
Negative Power Supply Current (-V _S)		-1		19	19				Bits 1-12 Off	mA max
Unipolar Offset	V _{OS}	-1	+0.5	1.5	1.5				Bits 1-12 Off	μA max
High Level Input Current	I _{IH}	-1	40	40					Bits 1-12 On; V _{IN} = 2.5 V	μA max
					100				Bits 1-12 On; T _C = +125°C; V _{IN} = 2.5 V	
					40				Bits 1-12 On; T _C = -55°C; V _{IN} = 2.5 V	
Bit 1 Low Level Input Current	I _L	-1		7.0	7.0				Bits 1-12 Off; V _{IN} = 0 V	mA max
Bits 2-12 Low Level Input Current				3.5	3.5				Bits 1-12 Off; V _{IN} = 0 V	mA max
Power Supply Rejection Ratio	PSRR	-1		0.06	0.08				Bits 1-12 On; ±V _S = ±14.5 V - ±15.5 V	%/% max
Bipolar Zero		-1	±0.1			±0.2			Bit 1 On; Bits 2-12 Off; Bipolar On	% FS max
Bipolar Offset	BP _{OS}	-1	±0.25			±0.5			Bits 1-12 Off; Bipolar On	% FS max
Unipolar Full Scale	U _{FS}	-1	±0.25			±0.25			Bits 1-12 On; Output = I _{OUT}	% FS max
Differential Nonlinearity	DNL	-1	±0.25				-1.0		Output = I _{OUT} All Major Carries	LSB min
						±0.5				LSB max
							2.0			
Integral Nonlinearity	INL	-1	±0.25			±0.5	±1.5		Output = I _{OUT} ; Best Straight Line Fit	LSB max
Unipolar Full-Scale Gain		-1	±0.1			±0.25				% FS max
Unipolar Full-Scale Gain Tempco		-1	±30				±60		Bits 1-12 On; Output = I _{OUT}	ppm/°C max
Unipolar Full-Scale Voltage		-1				±0.25			Bits 1-12 On; Output = V _{OUT} Using R _{LOAD}	% FS max
Bipolar Gain		-1				±0.25			Bits 1-12 On Bipolar On	% FS max
Bipolar Offset Tempco		-1	±15				±30		Bits 1-12 Off Bipolar On	ppm/°C max
Bipolar Zero Tempco		-1					±75		Bipolar On; Bit 1 On; Bits 2-12 Off	ppm/°C max
Settling Time	t _S	-1	35					35	Output = V _{OUT} ; See Note 2	ns max
High Level Input Current	I _{IN}	-1	40	40					Bits 1-12 On; V _{IN} = 7.0 V	μA max
					100				TC = +125°C	
					40				TC = -55°C	

NOTES

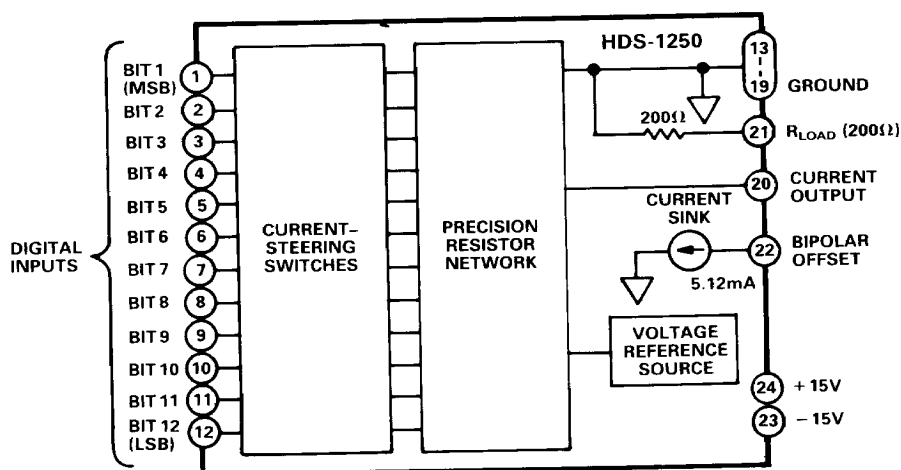
¹T_A = +25°C unless otherwise specified.

²With internal R_{LOAD} and LSB step at midscale to 0.1%.

Table 1.

REV. A

3.2.1 Functional Block Diagram and Terminal Assignments.



Pin Assignments

PIN	FUNCTION	PIN	FUNCTION
24	+ 15V	1	BIT 1 (MSB)
23	- 15V	2	BIT 2
22	BIPOLAR OFFSET	3	BIT 3
21	R _{LOAD} (200Ω)	4	BIT 4
20	OUTPUT	5	BIT 5
19	GROUND	6	BIT 6
18	GROUND	7	BIT 7
17	GROUND	8	BIT 8
16	GROUND	9	BIT 9
15	GROUND	10	BIT 10
14	GROUND	11	BIT 11
13	GROUND	12	BIT 12 (LSB)

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).