

1.1 Scope.

This specification covers the detail requirements for a voltage-to-frequency converter with full scale range of up to 1MHz.

1.2 Part Number.

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

Device	Part Number
- 1	AD650SD/883B

1.2.3 Case Outline.

See Appendix 1 of General Specification ADI-M-1000: package outline: D-14.

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

Supply Voltage $+V_S$ to $-V_S$	36V
Differential Input Voltage (Pins 2 & 3)	$\pm 10\text{V}$
Maximum Input Voltage	$\pm V_S$
Open Collector Output Voltage Above Digital GND	+36V
Open Collector Output Current	50mA
Amplifier Short Circuit to Ground	Indefinite
Comparator Input Voltage (Pin 9)	$\pm V_S$
Storage Temperature Range	-65°C to $+150^\circ\text{C}$
Lead Temperature (Soldering 10sec)	$+300^\circ\text{C}$

1.5 Thermal Characteristics.

Thermal Resistance $\theta_{JC} = 65^\circ\text{C}/\text{W}$
 $\theta_{JA} = 150^\circ\text{C}/\text{W}$

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Table 1.

Test	Symbol	Device	Design Limit ($\omega + 25^{\circ}\text{C}$)	Sub Group 1	Sub Group 2, 3	Sub Group 4	Test Condition ¹	Units
Linearity Error ²	LE	- 1	0.02	0.02			$V_{\text{IN}} = 10\text{mV}$, 10V $f = 100\text{kHz}$	% of FS max
			0.1	0.1			$V_{\text{IN}} = 10\text{mV}$, 10V $f = 1\text{MHz}$	% of FS max
Gain Error ²	A_E	- 1	10	10			$V_{\text{IN}} = 10\text{V}$, $f = 100\text{kHz}$	$\pm$ % of FS max
			15	15			$V_{\text{IN}} = 10\text{V}$, $f = 1\text{MHz}$	$\pm$ % of FS max
Gain Error vs. Supply	P_{SS}	- 1	0.015	0.015			$12.5 \leq V_S \leq 17.5\text{V}$ $f_{\text{FS}} = 100\text{kHz}$	$\pm$ % of FS/ % Supply max
Gain Error vs. Temperature	dA_E/dT	- 1			75		$V_{\text{IN}} = 10\text{V}$ $f = 10\text{kHz}$ 25°C to 125°C	$\pm$ ppm/ $^{\circ}\text{C}$ max
					75		-55°C to 25°C	
					150		$f = 100\text{kHz}$ 25°C to 125°C	
					150		-55°C to 25°C	
Input Offset Voltage ³	V_{IO}	- 1	4	4			$V_{\text{IN}} = 20\text{mV}$ $F = 100\text{kHz}$	$\pm$ mV max
Input Offset Voltage vs. Temperature	$\Delta V_{\text{IO}}/\Delta T$	- 1			30		$f = 10\text{kHz}$ 25°C to 125°C	$\pm$ $\mu\text{V}/^{\circ}\text{C}$ max
					30		-55°C to 25°C	
Input Bias Current	$+I_{\text{IB}}$	- 1	100	100			$V_{\text{IN}} = 100\text{mV}$	$\pm$ nA max
	$-I_{\text{IB}}$	- 1	20	20			$V_{\text{IN}} = 100\text{mV}$	$\pm$ nA max
Differential Impedance	Z_{IND}	- 1	$2 10$					M $\Omega \mu\text{F}$
Low Level Output Voltage	V_{OL}	- 1	0.4	0.4			$I_{\text{SINK}} = 8\text{mA}$	V max
Leakage Current	I_{OH}	- 1	100	100			$V_{\text{OUT}} = 15\text{V}$	nA max
Dynamic Response Settling Time (See Note 3 for Design Limits)	t_s	- 1	See Note 3				Full Scale Step Input	
Overload Recovery Time (See Note 3 for Design Limits)	OR	- 1	See Note 3					
Quiescent Current	$+I_S$	- 1	8	8			$V_S = \pm 15\text{V}$, $V_{\text{IN}} = 0\text{V}$	mA max
	$-I_S$	- 1	8	8			$V_S = \pm 15\text{V}$, $V_{\text{IN}} = 0\text{V}$	- mA min

NOTES

¹ $V_S = \pm 15\text{V}$, unless otherwise specified.

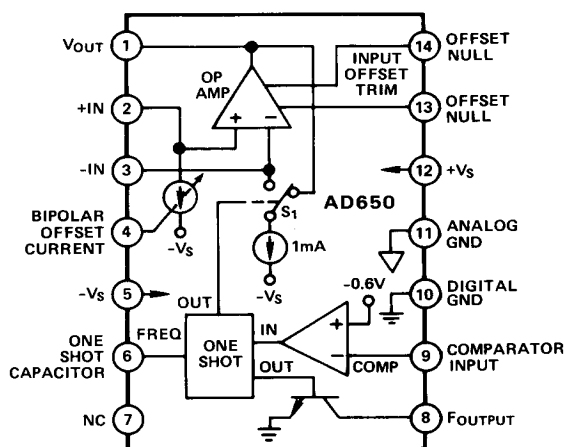
²Nonlinearity is defined as deviation from a straight line from zero to full scale, expressed as a fraction of full scale.

³1 pulse of new frequency plus $1\mu\text{s}$.

3.2.1 Functional Block Diagram and Terminal Assignments.

Top View

D Package



3.2.4 Microcircuit Technology Group.

This microcircuit is covered by technology group (57).

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).

