



**ANALOG  
DEVICES**

**High Speed  
Sample-and-Hold Amplifier**

**AD346**

**1.1 Scope.**

This specification covers the detail requirements for a high speed sample-and-hold amplifier.

**1.2 Part Number.**

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

Device	Part Number
-1	AD346SD/883B

**1.2.3 Case Outline.**

See Appendix 1 of General Specification ADI-H-1000: package outline: DH-14A

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

+V <sub>CC</sub> to GND (Pin 11)	+18V
-V <sub>CC</sub> to GND (Pin 14)	-18V
Digital Input (Pin 1)	0 to +7V
Analog Input (Pin 13)	±15V
Junction Temperature	+175°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering 10sec)	+300°C

**1.5 Thermal Characteristics.**

Thermal Resistance  $\theta_{JC} = 20^\circ\text{C}/\text{W}$   
 $\theta_{JA} = 60^\circ\text{C}/\text{W}$



# AD346—SPECIFICATIONS

Table 1.

Test	Symbol	Device	Design Limit @ +25°C	Sub Group 1	Sub Group 2, 3	Sub Group 4	Test Condition <sup>1</sup>	Units
Analog Input Voltage Range	V <sub>IN</sub>	-1	10			10		± V min
Overvoltage, No Damage	V <sub>OV</sub>	-1	15					± V max
Digital Input Logic "1" Current	I <sub>IH</sub>	-1	20					μA max
Digital Input Logic "0" Current	I <sub>IL</sub>	-1	360					- μA max
Digital Input Track Mode Logic "1"	V <sub>IH</sub>	-1	2.0 5.5					V min V max
Digital Input Hold Mode Logic "0"	V <sub>IL</sub>	-1	0 0.8					V min V max
Analog Output Voltage <sup>2</sup>	V <sub>O</sub>	-1	10.0			10.0		± V min
Offset Voltage <sup>3</sup>	V <sub>OS</sub>	-1	3	3				± mV max
Offset Voltage Temperature Coefficient	V <sub>OSTC</sub>	-1	20		20			± mV max
Gain Error	A <sub>E</sub>	-1	0.02	0.02			% of -1V/V	± % max
Gain Error Over Temperature	TCA <sub>E</sub>		0.05		0.05		% of -1V/V	± % max
Offset Step (Pedestal)	O <sub>S</sub>	-1	4	4				± mV max
Pedestal Over Temperature	TCO <sub>S</sub>	-1	20		20			± mV max
Droop Rate	T <sub>DR</sub>	-1	0.5	0.5				mV/ms max
Droop Rate over Temperature	T <sub>DRTC</sub>	-1	650		650			mV/ms max
Acquisition Time to ± 0.01% 10V Step	t <sub>A1</sub>	-1	2.0					μs max
Acquisition Time to ± 0.01% 20V Step	t <sub>A2</sub>	-1	2.5			2.5		μs max
Settling Time Sample Mode	t <sub>S1</sub>	-1	2.0					μs max
Sample to Hold	t <sub>S2</sub>	-1	1.0					μs max
Feedthrough (Hold Mode)	FT	-1	0.02			0.02	@ C <sub>L</sub> ≤ 200pF	% FSR max
Nominal Voltages for Rated Performance	V <sub>S</sub>	-1	15				(± 3%)	± V typ
Power Supply Rejection Ratio	PSRR	-1	300					μV/V max
Supply Currents	+ I <sub>SS</sub>	-1	18	18			V <sub>SS</sub> = ± 15V	mA max
	- I <sub>SS</sub>	-1	10	10			V <sub>SS</sub> = ± 15V	- mA max
Supply Currents Over Temperature	+ I <sub>SSTC</sub>	-1	20		20		V <sub>SS</sub> = ± 15V	mA max
	- I <sub>SSTC</sub>	-1	10		10		V <sub>SS</sub> = ± 15V	- mA max

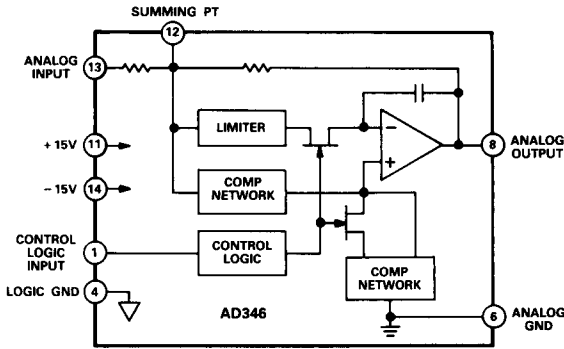
NOTES

<sup>1</sup>T<sub>A</sub> = +25°C and ± V<sub>S</sub> = ± 15V unless otherwise specified.

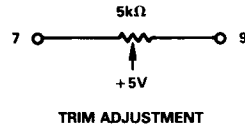
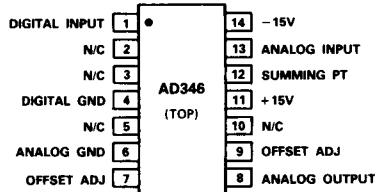
<sup>2</sup>Max Output Swing is 4V less than + V<sub>S</sub>.

<sup>3</sup>Voltage Offset is externally adjustable to zero.

### 3.2.1 Functional Block Diagram and Terminal Assignments.



DH-14A 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).

