



# High Speed, Low Drift FET Operational Amplifier

## AD380/AD381/AD382

### 1.1 Scope.

This specification covers the device requirements for a high speed, low drift FET input operational amplifier.

### 1.2 Part Number.

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

Device	Part Number
- 1	AD380SH/883B
- 2	AD381SH/883B
- 3	AD382SH/883B

### 1.2.3 Case Outline.

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

Device	Package
- 1	H-12A
- 2	H-08B
- 3	H-12A

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

Positive Supply Voltage	+18V
Negative Supply Voltage	-18V
Input Signal	$\pm V_S$
Differential Input Signal	$\pm 2 \times V_S$
Output Short Circuit Current to Ground (Device - 1, 3)	80mA Continuous
Output Short Circuit Current to Ground (Device - 2)	20mA Continuous
Junction Temperature	+175°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering 10sec)	+300°C

### 1.5 Thermal Characteristics.

Thermal Resistance $\theta_{JC}$	= 70°C/W for H-12A
$\theta_{JA}$	= 100°C/W for H-12A
$\theta_{JC}$	= 40°C/W for H-08B
$\theta_{JA}$	= 150°C/W for H-08B

# AD380/AD381/AD382 – SPECIFICATIONS

Test	Symbol	Device	Design Limit @ +25°C	Sub Group 1	Sub Group 2, 3	Sub Group 4	Test Condition <sup>1</sup>	Units
Open Loop Gain	A <sub>OL</sub>	-1	40,000			40,000	No Load	V/V min
		-1	25,000			25,000	Note 2	V/V min
		-2	100,000			100,000	Note 3	V/V min
		-3	35,000			35,000	Note 2	V/V min
		-3	150,000			150,000	Note 4	V/V min
Gain Bandwidth Product	GBP	-1	200			200	f = 60kHz, C <sub>C</sub> = 1pF	MHz min
			20			20	f = 60kHz, C <sub>C</sub> = 10pF	
Slew Rate	SR	-1	200			200	C <sub>C</sub> = 1pF, 20V Swing	V/μs
		-2, 3	20			20		
Output Voltage Swing	OVS	-1	12			10	R <sub>L</sub> = 200Ω	± V min
		-2		R <sub>L</sub> = 1kΩ				
		-3		R <sub>L</sub> = 200Ω				
Input Offset Voltage	V <sub>OS</sub>	-1	2.0	2.0				mV max
		-2, 3	1.0	1.0				
Input Offset Voltage vs. Temperature	V <sub>OSTC</sub>	-1	50		50			± μV/°C max
		-2, 3	10		10			
Output Short Circuit Current	I <sub>SC</sub>	-1	90			90	Short Circuit Current to Ground, Continuous	mA min
			220			220		mA max
		-2	20			20		mA min
			220			220		mA max
		-3	80			80		mA min
			220			220		mA max
Input Bias Current	I <sub>BIAS</sub>	-1	100			100	Either Input	pA max
		-2	100			100		
		-3	100			100		
Input Offset Current	I <sub>OS</sub>	-1, 2, 3	5				pA typ	
Common-Mode Range	V <sub>DIF</sub>	-1, 2, 3	10				± V max	
Common-Mode Rejection Ratio	CMRR	-1	60			60	V <sub>INPUT</sub> = ± 10V	dB min
		-2, 3	80			80		
Operating Power Supply	V <sub>SS</sub>	-1	6					± V min
			20					± V max
		-2, 3	5					± V min
			18					± V max
Quiescent Current	I <sub>SS</sub>	-1	17			17		± mA max
		-2, 3	6			6		

## NOTES

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

<sup>2</sup>V<sub>OUT</sub> = +10V to 0V 200Ω load, V<sub>OUT</sub> = 0V to -10V 200Ω load.

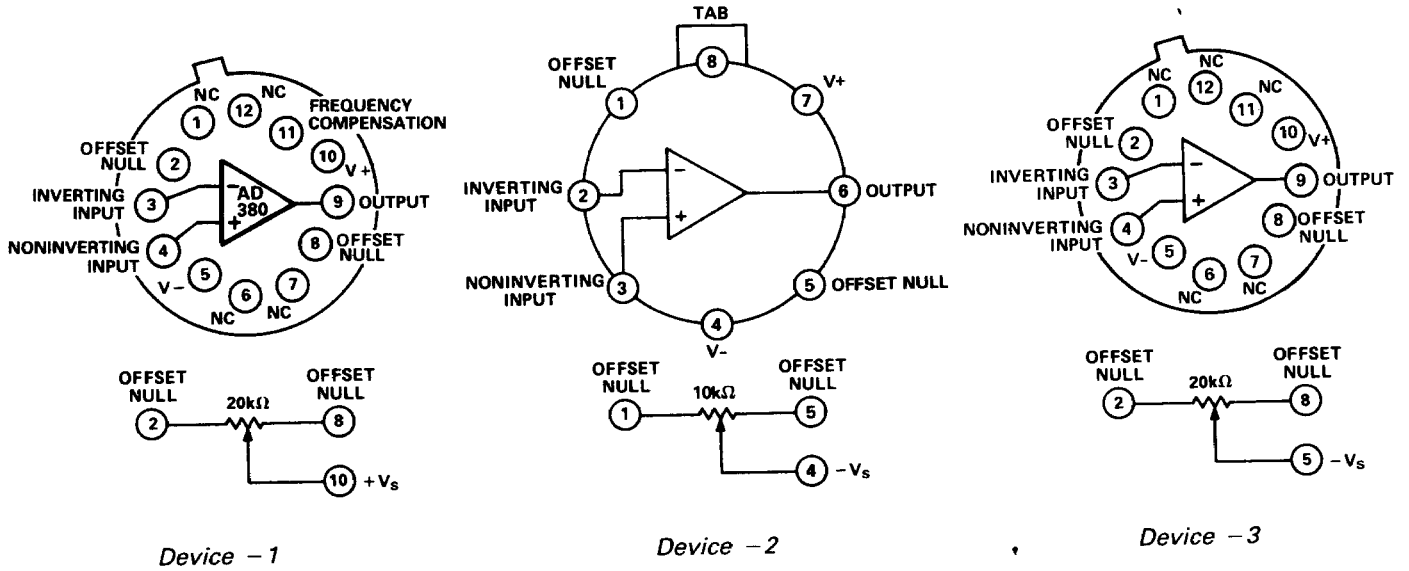
<sup>3</sup>V<sub>OUT</sub> = +10V to 0V 2k load, V<sub>OUT</sub> = 0V to -10V 2k load.

<sup>4</sup>V<sub>OUT</sub> = +10V to 0V 10kΩ load, V<sub>OUT</sub> = 0V to -10V 10kΩ load.

Table 1.

## 3.2.1 Functional Block Diagram and Terminal Assignments.

Top View

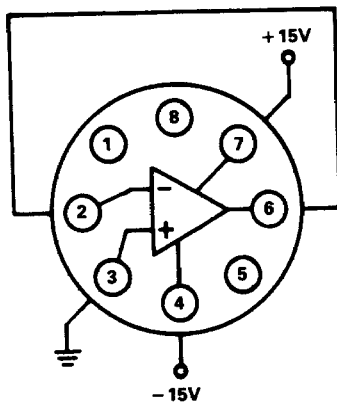


## 3.2.4 Microcircuit Technology Group.

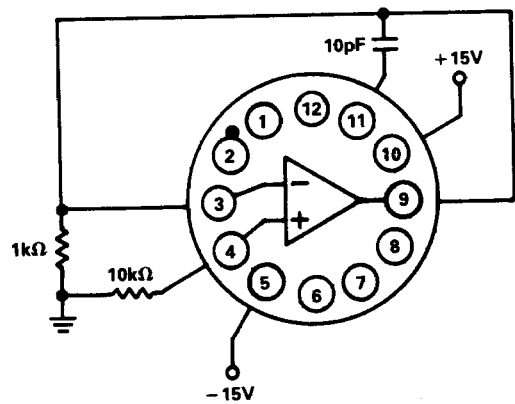
This microcircuit is covered by technology group (I).

### 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).



Device -2



Device -1 or -3