ANALOG DEVICES

Ultralow Noise Precision Op Amp

AD OP-27

1.1 Scope.

This specification covers the detail requirements for an ultralow noise and low offset voltage bipolar amplifier.

1.2 Part Number.

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

Device	Part Number
−1	AD OP-27C(X)/883B
−2	AD OP-27B(X)/883B
−3	AD OP-27A(X)/883B

1.2.3 Case Outline.

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

(X)	Package	Description
Q	Q-8	8-Pin Cerdip
H	H-08A	8-Pin TO-99 Metal Can

1.3 Absolute Maximum Ratings. (T_A = +25°C unless otherwise noted)

Supply Voltage	±18V
Internal Power Dissipation[1]	500mW
Differential Input Voltage[2]	±0.7V
Input Voltage	$\pm V_S$
Output Short Circuit Duration	Indefinite
Storage Temperature Range	−65°C to +150°C
Operating Temperature Range	
AD OP-27A, AD OP-27B, AD OP-27C	−55°C to +125°C
Lead Temperature Range (Soldering 60sec)	+300°C
Differential Input Current[2]	±25mA

NOTE

[1]Maximum package power dissipation vs. ambient temperature.

Package Type	MAXIMUM AMBIENT Temperature for Rating	DERATE ABOVE MAXIMUM Ambient Temperature
TO-99 (H)	80°C	7.1mW/°C
Cerdip (Q)	75°C	6.7mW/°C

[2]The input pins of this amplifier are protected by back-to-back diodes. If the differential voltage exceeds ±0.7V, external series protection resistors should be added to limit the input current to less than 25mA.

1.5 Thermal Characteristics.

Thermal Resistance θ_{JC} = 65°C/W for H-08A
θ_{JA} = 150°C/W for H-08A
θ_{JC} = 22°C/W for Q-8
θ_{JA} = 110°C/W for Q-8

AD OP-27—SPECIFICATIONS

Table 1.

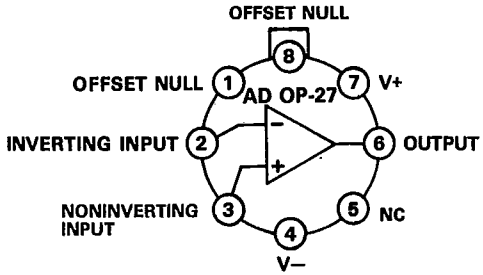
Test	Symbol	Device	Sub Group 1	Sub Group 2,3	Sub Group 4	Test Condition[1]	Units
Gain Open Loop	A_{OL}	−1	700	300		$R_L \geq 2k\Omega$, $V_{OUT} = \pm 10V$	V/mV min
		−2	1000	500		$R_L \geq 2k\Omega$, $V_{OUT} = \pm 10V$	
			800			$R_L \geq 1k\Omega$, $V_{OUT} = \pm 10V$	
		−3	1000	600		$R_L \geq 2k\Omega$, $V_{OUT} = \pm 10V$	
			800			$R_L \geq 1k\Omega$, $V_{OUT} = \pm 10V$	
Output Voltage Swing	V_{OUT}	−1	11.5	10.5		$R_L \geq 2k\Omega$	±V min
			10.0			$R_L = 600\Omega$	
		−2	12.0	11.0		$R_L \geq 2k\Omega$	
			10.0			$R_L = 600\Omega$	
		−3	12.0	11.5		$R_L \geq 2k\Omega$	
			10.0			$R_L = 600\Omega$	
Input Offset Voltage	V_{OS}	−1	100	300			±μV max
		−2	60	200			
		−3		60	25		
Input Offset Drift[2]	TCV_{OS}	−1		1.8			±μV/°C max
		−2		1.3			
		−3		0.6			
Input Offset Current	I_{OS}	−1	75	135			±nA max
		−2	50	85			
		−3	35	50			
Input Bias Current	I_B	−1	80	150			±nA max
		−2	55	95			
		−3	40	60			
Common-Mode Rejection Ratio	CMRR	−1	100	94		$V_{CM} = \pm 11V$	dB min
		−2	106	100		$V_{CM} = \pm 10V$ for	
		−3	114	108		Subgroup 2, 3	
Common-Mode Voltage Range	CMVR	−1	11.0	10.2			±V min
		−2,3	11.0	10.3			
Power Supply Current	I_Q	−1	5.6			$V_S = \pm 15V$	mA max
		−2,3	4.6				
Power Consumption	P_D	−1	170			$V_{OUT} = 0V$	mW max
		−2,3	140				
Power Supply Rejection	PSR	−1	20	51		$V_S = \pm 4V$ to $\pm 18V$	μV/V max
		−2	10	20		$V_S = \pm 4.5V$ to $\pm 18V$	
		−3	10	16		Subgroup 2, 3	

NOTES
[1]$V_S = \pm 15$ unless otherwise noted.
[2]TCV_{OS} is within specification unnulled, or when nulled with $R_P = 8$ to 20kΩ.

3.2.1 Functional Block Diagram and Terminal Assignments.

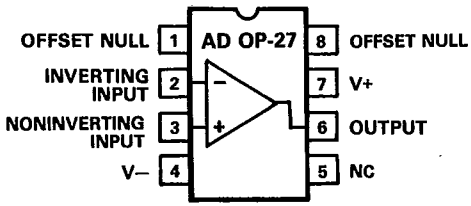
Top View

H Package



NOTE: PIN 4 CONNECTED TO CASE

Q Package (Cerdip)



3.2.4 Microcircuit Technology Group.

This microcircuit is covered by technology group (49).

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).