



Ultralow Noise Precision Op Amp

ANALOG DEVICES INC

65E D

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	± 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

¹Maximum package power dissipation vs. ambient temperature.

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

²The 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

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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 ≥ 2kΩ, V _{OUT} = ± 10V	V/mV min
			1000	500		R _L ≥ 2kΩ, V _{OUT} = ± 10V	
		-3	800			R _L ≥ 1kΩ, V _{OUT} = ± 10V	
			1000	600		R _L ≥ 2kΩ, V _{OUT} = ± 10V	
			800			R _L ≥ 1kΩ, V _{OUT} = ± 10V	
Output Voltage Swing	V _{OUT}	-1	11.5	10.5		R _L ≥ 2kΩ	± V min
			10.0			R _L = 600Ω	
		-2	12.0	11.0		R _L ≥ 2kΩ	
			10.0			R _L = 600Ω	
		-3	12.0	11.5		R _L ≥ 2kΩ	
			10.0			R _L = 600Ω	
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} = ± 11V	dB min
		-2	106	100		V _{CM} = ± 10V for Subgroup 2, 3	
		-3	114	108			
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 = ± 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 = ± 4V to ± 18V	μV/V max
		-2	10	20		V _S = ± 4.5V to ± 18V	
		-3	10	16		Subgroup 2, 3	

NOTES

¹V_S = ± 15 unless otherwise noted.

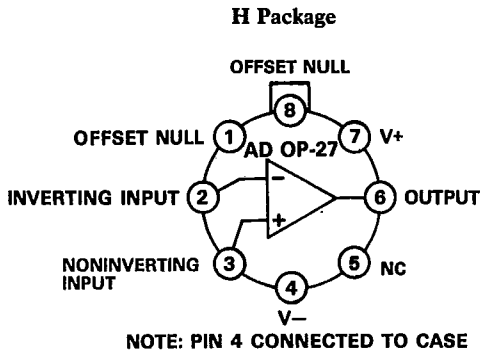
²TCV_{OS} is within specification unnullled, or when nulled with R_P = 8 to 20kΩ.

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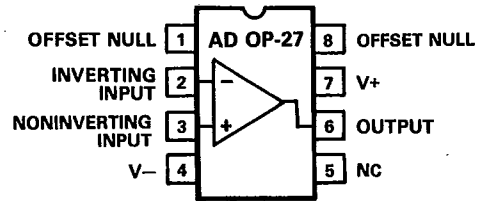
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3.2.1 Functional Block Diagram and Terminal Assignments.

Top View



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).

