

1.1 Scope.

This specification covers the detail requirements for a high accuracy, pin-programmable, precision monolithic instrumentation amplifier. The AD524 doesn't require any external components for fixed gains of 1, 10, 100 and 1000. For other gain settings only a single resistor is required.

The gain equation is: $\frac{40,000}{RG} + 1 \pm 20\%$ with external resistor gain programming.

1.2 Part Number.

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

Device	Part Number
-1	AD524S(X)/883B

1.2.3 Case Outline.

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

(X)	Package	Description
D	D-16	16-Pin Side Brazed
E	E-20A	20 Contact LCC

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

Supply Voltage	$\pm 18\text{V}$
Internal Power Dissipation	450mW
Rated Operating Temperature Range	-55°C to $+125^\circ\text{C}$
Storage Temperature Range	-65°C to $+150^\circ\text{C}$
Lead Temperature (Soldering 10sec)	$+300^\circ\text{C}$

1.5 Thermal Characteristics.

Thermal Resistance θ_{JC}	$= 22^\circ\text{C/W}$ for D-16
θ_{JA}	$= 95^\circ\text{C/W}$ for D-16
θ_{JC}	$= 25^\circ\text{C/W}$ for E-20A
θ_{JA}	$= 150^\circ\text{C/W}$ for E-20A

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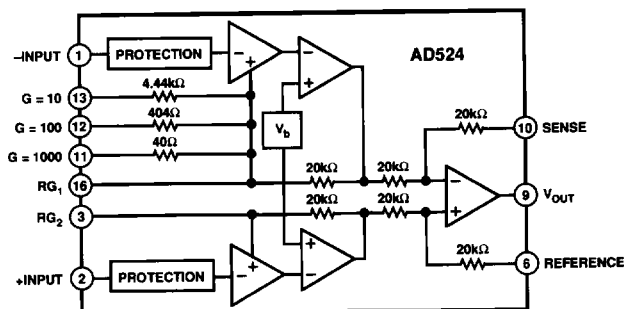
Table 1.

Test	Symbol	Device	Sub Group 1	Sub Group 2, 3	Test Condition ¹	Units
Gain Error 1	GE ₁	-1	0.05		G = 1, V _O = ±10V	± % max
Gain Error 10	GE ₁₀	-1	0.25		G = 10, V _O = ±10V	± % max
Gain Error 100	GE ₁₀₀	-1	0.5		G = 100, V _O = ±10V	± % max
Gain Error 1000	GE ₁₀₀₀	-1	2.0		G = 1000, V _O = ±10V	± % max
Gain Error Drift	TCGE ₁	-1		5	G = 1, V _O = ±10V	± ppm/°C max
Gain Error Drift 10	TCGE ₁₀	-1		10	G = 10, V _O = ±10V	± ppm/°C max
Gain Error Drift 100	TCGE ₁₀₀	-1		25	G = 100, V _O = ±10V	± ppm/°C max
Gain Error Drift 1000	TCGE ₁₀₀₀	-1		50	G = 1000, V _O = ±10V	± ppm/°C max
Input Offset Voltage	V _{OSI}	-1	100		V _{IN} = 0V	± μV max
Input Offset Voltage Drift	TCV _{OSI}	-1		2	G = 1000, V _{IN} = 0V	± μV/°C max
Output Offset Voltage	V _{OSO}	-1	3		V _{IN} = 0V	± mV max
Output Offset Drift	TCV _{OSO}	-1		50	G = 1, V _{IN} = 0V	± μV/°C max
Input Bias Current	I _B	-1	50		G = 1	± nA max
Input Offset Current	I _{OS}	-1	35		G = 1	± nA max
Common-Mode Rejection	+ CMRR ₁	-1	70		G = 1, V _{IN} = 0V to +10V	dB min
Common-Mode Rejection	- CMRR ₁	-1	70		G = 1, V _{IN} = 0V to -10V	dB min
Common-Mode Rejection	+ CMRR ₁₀	-1	90		G = 10, V _{IN} = 0V to +10V	dB min
Common-Mode Rejection	- CMRR ₁₀	-1	90		G = 10, V _{IN} = 0V to -10V	dB min
Common-Mode Rejection	+ CMRR ₁₀₀	-1	100		G = 100, V _{IN} = 0V to +10V	dB min
Common-Mode Rejection	- CMRR ₁₀₀	-1	100		G = 100, V _{IN} = 0V to -10V	dB min
Common-Mode Rejection	+ CMRR ₁₀₀₀	-1	110		G = 1000, V _{IN} = 0V to +10V	dB min
Common-Mode Rejection	- CMRR ₁₀₀₀	-1	110		G = 1000, V _{IN} = 0V to -10V	dB min
Power Supply Current	I _{CC}	-1	5.0		G = 1	mA max
Power Supply Rejection	PSRR ₁	-1	75		G = 1, V _S = ±12V, ±15V	dB min
Power Supply Rejection	PSRR ₁₀	-1	95		G = 10, V _S = ±12V, ±15V	dB min
Power Supply Rejection	PSRR ₁₀₀	-1	105		G = 100, V _S = ±12V, ±15V	dB min
Power Supply Rejection	PSRR ₁₀₀₀	-1	110		G = 1000, V _S = ±12V, ±15V	dB min

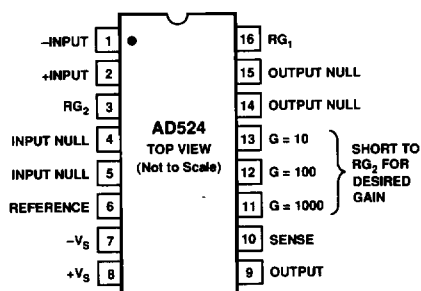
NOTE

¹V_S = ±15V, R_L = 2kΩ, unless otherwise specified.

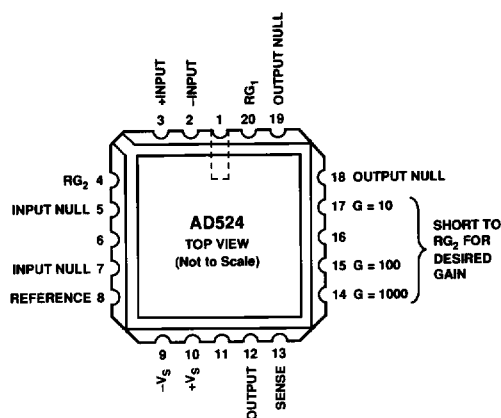
3.2.1 Functional Block Diagram and Terminal Assignments.



D Package



E Package (LCC)



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).

