

ABSOLUTE MAXIMUM RATINGS	A MODELS	B MODELS
Power Supply Voltage		± 22V
Input Voltage		± 22V
Differential Input Voltage		± 0.7V
Power Dissipation		658 mW

FUNCTIONAL SPECIFICATIONS

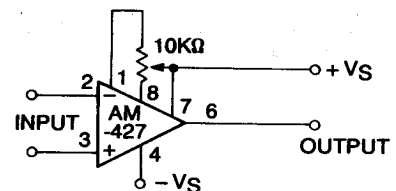
Typical at 25°C, ± 15V dc supplies, unless otherwise noted.

INPUT CHARACTERISTICS		
Input Voltage Range, minimum		± 11V
Input Resistance, diff. mode, minimum	0.8 MΩ	1.5 MΩ
Input Offset Voltage, maximum	100 μV	25 μV
Input Bias Current, maximum	± 80 nA	± 40 nA
Input Offset Current, maximum	75 nA	35 nA
OUTPUT CHARACTERISTICS		
Output Voltage, minimum ¹		± 11V
Output Current, S.C. protected, minimum		± 18 mA
Output Resistance, open loop ²		70Ω
PERFORMANCE		
DC Open Loop Gain, minimum ³	116 dB	120 dB
Input Offset Voltage Drift, maximum ⁴	1.8 μV/°C	0.6 μV/°C
Long Term Stability	2 μV/mo	1 μV/mo
Input Bias Current Drift, maximum	± 700 pA/°C	± 200 pA/°C
Input Offset Current Drift maximum	600 pA/°C	150 pA/°C
Common Mode Rejection Ratio, minimum	100 dB	114 dB
Input Noise Voltage, maximum, 0.1 to 10 Hz	0.25 μV peak-to-peak	0.18 μV peak-to-peak
Input Noise Voltage Density, maximum, 10 Hz	8 nV/√Hz	5.5 nV/√Hz
Input Noise Current Density, maximum, 1 kHz	0.6 pA/√Hz	0.6 pA/√Hz
Power Supply Rejection Ratio, minimum	94 dB	100 dB
Gain Bandwidth Product, minimum		5.0 MHz
Slew Rate, minimum		1.7V/microsecond
POWER REQUIREMENTS		
Voltage, Rated Performance		± 15V dc
Quiescent Current, maximum	± 5.7 mA	± 4.7 mA
Power Dissipation	170 mW	140 mW
PHYSICAL-ENVIRONMENTAL		
Operating Temperature Range: AM-427A,B		-25°C to +85°C
Storage Temperature Range		-65°C to +150°C
Package, AM-427-1		8-Pin Ceramic DIP
AM-427-2		8-Pin Hermetically Sealed TO-99
FOOTNOTES:		
1. RL = 600Ω		
2. Output Voltage = 0, output current = 0.		
3. RL = 2K ohm, V _{OUTPUT} = ± 10V.		
4. Guaranteed untrimmed or when nulled with an 8 kΩ to 20 kΩ potentiometer.		
5. Common mode voltage = ± 11V.		
6. V _S = ± 4V to ± 18V.		

TECHNICAL NOTES

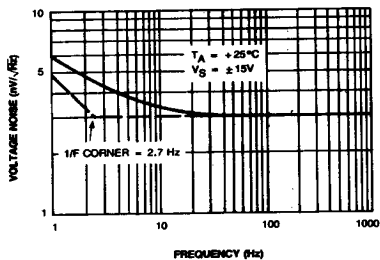
1. In order to maintain the specified drift performance, both input pins should be maintained at the same relative temperature. This is to avoid stray thermoelectric voltages which are generated by the dissimilar metals at the contacts of the input terminals.
2. To obtain the best possible linearity, circuit design should call for the minimum output current required by the application to assure high gain performance and excellent linearity, the output current range should be held to a maximum of ± 10 mA.
3. The AM-427 provides stable operation with load, capacitance of up to 2000 pF and ± 10 volt swings. Larger capacitances should be decoupled with a 50Ω decoupling resistor. To avoid additional phase shifting and phase margin, a 20 pF capacitor should be used in parallel with the feedback resistor when the value of the feedback resistor is greater than 2K ohm.
4. If adjustment of offset voltage is required, a 10 kΩ trimpot can be used without degrading the offset voltage drift specifications. A 1K ohm to 1 MΩ trimpot can be used, however, a 0.1 to 0.2 μV/°C degradation may occur. Trimming to a value other than zero will create a drift of (offset voltage/300) μV/°C. A 10K ohm offset trimpot will yield an adjustment range of ± 4 mV. A smaller trimpot in conjunction with fixed resistors can be used to obtain a smaller adjustment range with higher sensitivity and resolution.

TYPICAL CONNECTION DIAGRAM

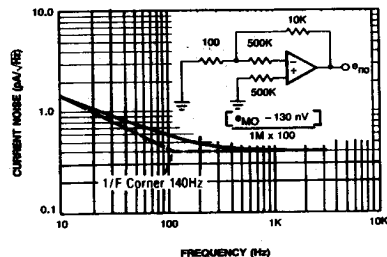


TYPICAL PERFORMANCE

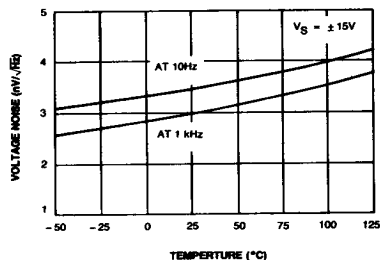
VOLTAGE NOISE VS. FREQUENCY



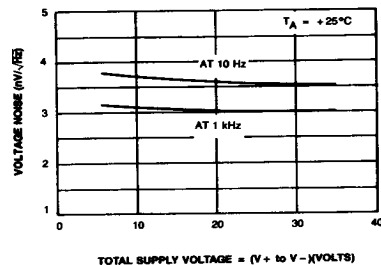
CURRENT NOISE VS. FREQUENCY



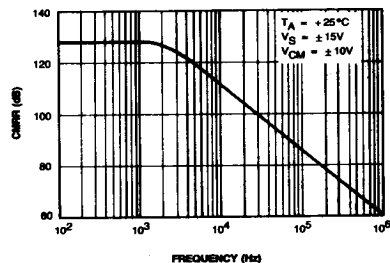
VOLTAGE NOISE VS. TEMPERATURE



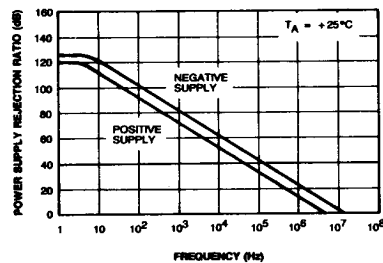
VOLTAGE NOISE VS. SUPPLY VOLTAGE



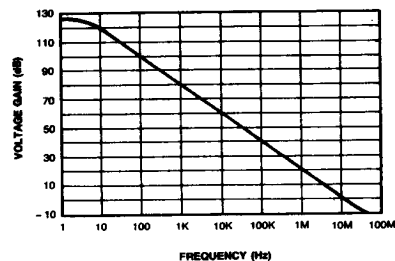
CMRR VS. FREQUENCY



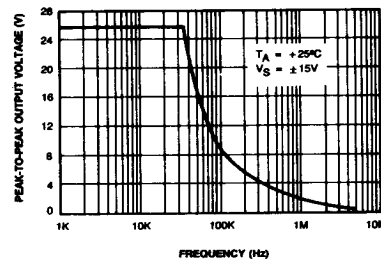
PSRR VS. FREQUENCY



OPEN LOOP GAIN VS. FREQUENCY

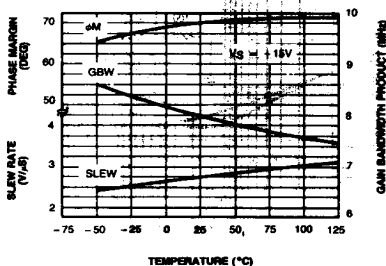


MAXIMUM UNDISTORTED OUTPUT VS. FREQUENCY

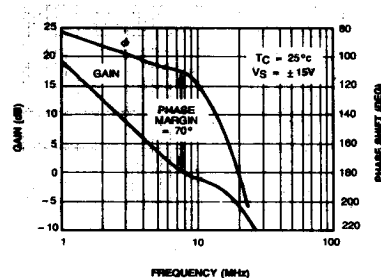


TYPICAL PERFORMANCE AND APPLICATIONS

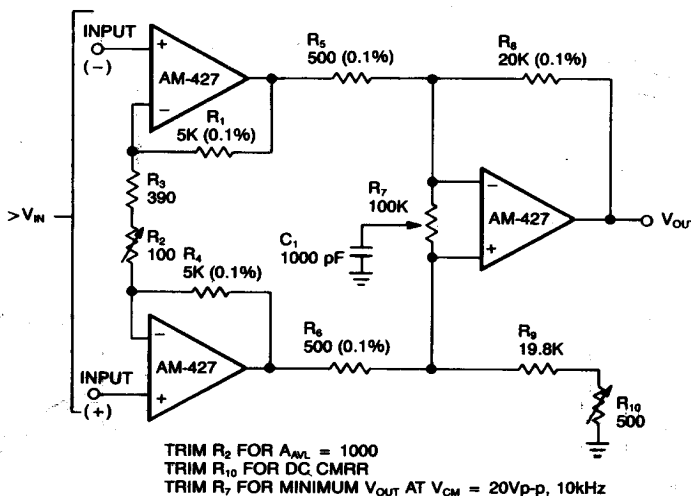
SLEW RATE, GAIN-BANDWIDTH PRODUCT, PHASE MARGIN VS. TEMPERATURE



GAIN, PHASE SHIFT VS. FREQUENCY



INSTRUMENTATION AMPLIFIER



The AM-427 is particularly useful in instrumentation applications. In a single difference amplifier configuration, the AM-427 exhibits excellent common mode rejection and spot noise voltage so low, it is dominated by the resistor Johnson noise.

The three amplifier configuration shown avoids the low input impedance characteristics of difference amplifiers. Because of the additional amplifiers used, the spectral noise voltage will increase from a typical of 3 nV/√Hz to approximately 4.9 nV/√Hz. The overall gain of the circuit is set at 1000, and with balanced source resistors, a CMRR of 100 dB is achieved.

ORDERING INFORMATION

MODEL NO.	PACKAGE
AM-427-1A	8-Pin Ceramic DIP
AM-427-1B	8-Pin Ceramic DIP
AM-427-2A	8-Pin TO-99
AM-427-2B	8-Pin TO-99