DATEL

AM-430
Ultra-Low Drift, Monolithic Operational Amplifier

PRODUCT DATA SHEET

FEATURES

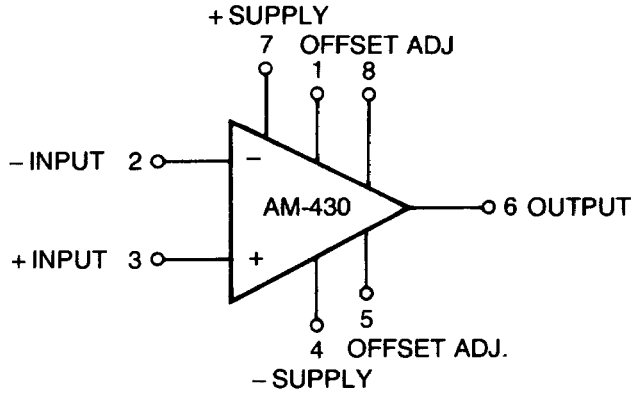
- **0.6 Microvolts/°C maximum drift**
- **25 Microvolts maximum input offset voltage.**
- **2.5 MHz Bandwidth**
- **10^7 Open loop gain**
- **9 nV/$\sqrt{Hz}$ Voltage noise**
- **$\pm$4 nA Maximum bias**

GENERAL DESCRIPTION

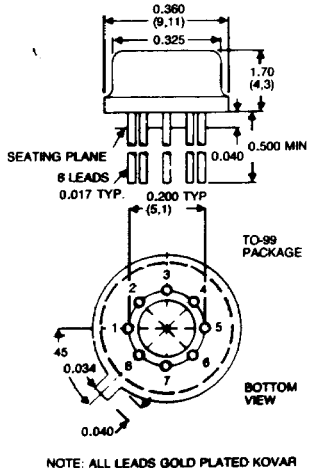
The AM-430 is a chopperless, ultra-low drift monolithic operational amplifier. Excellent input characteristics in conjunction with 2.5 MHz unity gain bandwidth make this amplifier extremely useful for precision integrator, biomedical, and low level signal amplification applications. This amplifier features 25 microvolts maximum input offset voltage, eliminating the need for external zeroing in most applications, and a maximum input offset voltage drift of only 0.6 microvolts/°C; specifications that rival those of more expensive chopper stabilized amplifiers.

Other significant features include 10^7 open loop voltage gain, 100 dB minimum common mode rejection ratio, and $\pm$4 nA maximum bias current. The AM-430 also has low input noise characteristics of 9 nV/$\sqrt{Hz}$ voltage noise density and 0.2 pA/$\sqrt{Hz}$ current noise density. Output voltage range is $\pm$10V minimum at $\pm$25 mA load current with a short circuit protected output.

Dynamic characteristics include a settling time of 11 microseconds to 0.1%, and a minimum slew rate of 0.5V/microsecond. Its unique combination of specifications make the AM-430 ideal for transducer amplification, threshold detector applications, low drift active filters and precision D/A converter output amplifiers.



MECHANICAL DIMENSIONS INCHES (MM)



NOTE: ALL LEADS GOLD PLATED KOVAR

INPUT/OUTPUT CONNECTIONS

PIN	FUNCTION
1	OFFSET ADJ.
2	– INPUT
3	+ INPUT
4	– SUPPLY VOLTAGE
5	OFFSET ADJ.*
6	OUTPUT
7	+ SUPPLY VOLTAGE
8	OFFSET ADJ.*

*PINS 5 AND 8 ARE INTERNALLY CONNECTED.

ABSOLUTE MAXIMUM RATINGS[1]	AM-430A	AM-430B
Power Supply Voltage		± 20V
Differential Input Voltage		± 15V
Power Dissipation[2]		300 mW

FUNCTIONAL SPECIFICATIONS

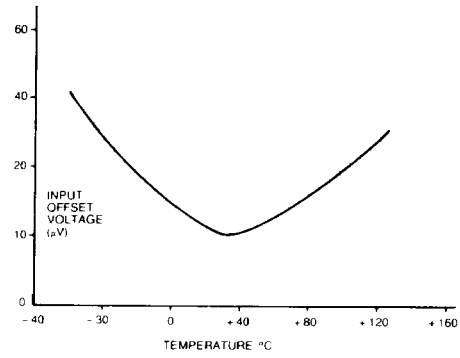
Typical at +25°C, ±15V dc supplies, unless otherwise noted.

INPUT CHARACTERISTICS		
Common Mode Voltage Range, minimum[3]		± 12V
Input Resistance, diff. mode		30 MΩ
Input Offset Voltage, maximum	75 μV	25 μV
Input Bias Current, maximum	± 4 nA	± 2 nA
Input Offset Current, maximum	4 nA	2 nA
OUTPUT CHARACTERISTICS		
Output Voltage, minimum[4]		± 10V
Output Current, S.C. protected, minimum		± 15 mA
Output Resistance, open loop[5]		45Ω
PERFORMANCE		
DC Open Loop Gain, minimum[6]		120 dB
Input Offset Voltage Drift, maximum	1.3 μV/°C	0.6 μV/°C
Input Bias Current Drift, maximum		40 pA/°C
Input Offset Current Drift, maximum		40 pA/°C
Common Mode Rejection Ratio, minimum		100 dB
Input Noise Voltage Density, 1 kHz		9 nV/√Hz
Input Noise Current Density, 1 kHz		0.2 pA/√Hz
Power Supply Rejection Ratio, minimum[7]		94 dB
DYNAMIC CHARACTERISTICS		
Unity Gain Bandwidth		2.5 MHz
Full Power Frequency		10 kHz
Slew Rate, minimum		0.5V/μsec.
Settling Time, 10V to 0.1%[8]		11 μsec.
Rise Time		340 nsec.
POWER REQUIREMENTS		
Voltage, Rated Performance		± 15V dc
Quiescent Current, maximum[9]		1.3 mA
PHYSICAL/ENVIRONMENTAL		
Operating Temperature Range: AM-430A,B		0°C to +70°C
Storage Temperature Range		−65°C to +150°C
Package, Hermetically Sealed		TO-99

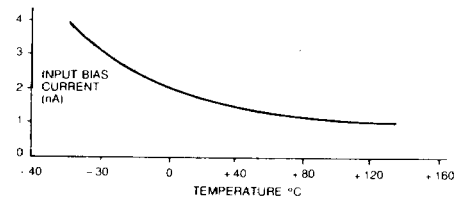
FOOTNOTES:

1. Maximum ratings are limiting values, applied individually, beyond which the serviceability of the circuit may be impaired. Functional operation under any of these conditions is not necessarily implied.
2. Derate at 6.8 mW/°C for operation at temperatures above +75°C.
3. Specified at full operating temperature.
4. R_L = 600Ω.
5. Measured under open loop conditions, f = 100 Hz.
6. Vout = ±10V, R_L = 2 kΩ.
7. Vsupp = ±5V dc to ±20V dc. Specified at full operating temperature.
8. G = −1.
9. Specified at full operating temperature.

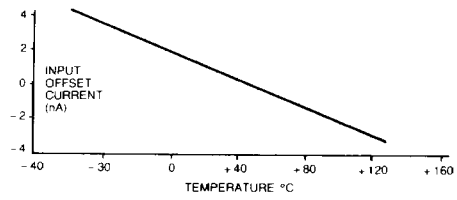
TYPICAL INPUT OFFSET VOLTAGE VS. TEMP



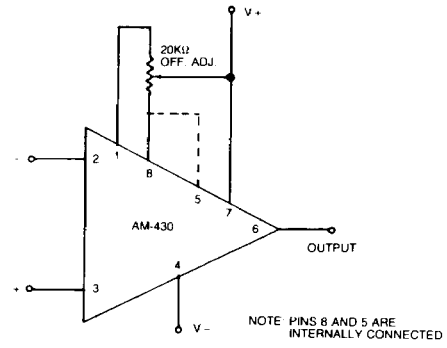
TYPICAL INPUT BIAS CURRENT VS. TEMP.



TYPICAL INPUT OFFSET CURRENT VS. TEMP.



CONNECTION DIAGRAM



ORDERING INFORMATION

MODEL	INPUT OFFSET VOLTAGE DRIFT
AM-430A	1.3 μV/°C maximum
AM-430B	0.6 μV/°C maximum

DS-0130

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SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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