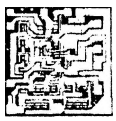
MC1430
MC1431

A MONOLITHIC SILICON EPITAXIAL PASSIVATED OPERATIONAL AMPLIFIER



. . . designed for use as a summing amplifier, integrator, or amplifier with operating characteristics as a function of the external feedback components.

- High Open Loop Gain
  A_{VOL} = 74 dB typical
- Large Output Voltage Swing
  typically ±5 V @ ±6 V Supply
- Low Output Impedance
  Z_{out} = 25 ohms typical
- High Slew Rate
  typically 4.5 V/μs

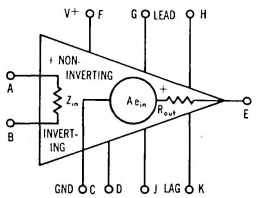
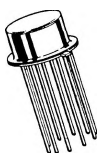


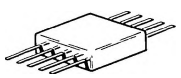
FIGURE 1 – EQUIVALENT CIRCUIT BOTH TYPES

OPERATIONAL AMPLIFIER INTEGRATED CIRCUITS

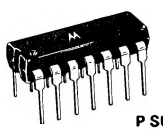


Pin 4 Electrically Connected to Can

G SUFFIX
METAL PACKAGE
CASE 602B



F SUFFIX
CERAMIC PACKAGE
CASE 606
TO-91



P SUFFIX
PLASTIC PACKAGE
CASE 605
TO-116

MAXIMUM RATINGS (T_A = +25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Power Supply Voltage	V^+	+8.0	Vdc
Power Supply Voltage	V^-	-8.0	Vdc
Differential Input Signal	V_{in}	±5.0	Volts
Load Current	I_L	10	mA
Power Dissipation (Package Limitation)	P_D		
Metal Package		680	mW
Derate above T_A = +25°C		4.6	mW/°C
Ceramic Flat Package		500	mW
Derate above T_A = +25°C		3.3	mW/°C
Plastic Dual In-Line Package		400	mW
Derate above T_A = +25°C		3.3	mW/°C
Operating Temperature Range*	T_A	0 to +75	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C

*For full temperature range (-55°C to +125°C) see MC1530-MC1531 data sheet.

FIGURE 2 – MC1430
(STANDARD INPUT)

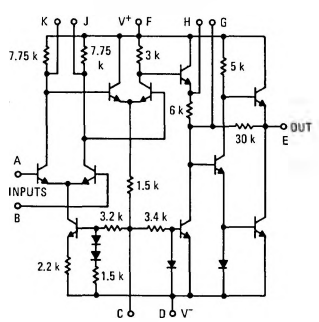
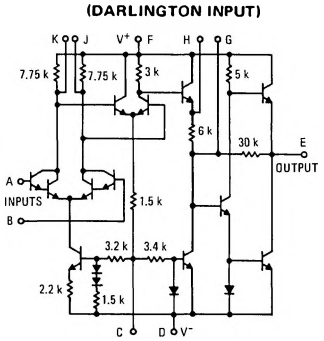


FIGURE 3 – MC1431
(DARLINGTON INPUT)

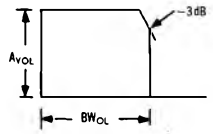
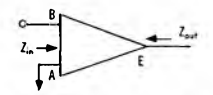
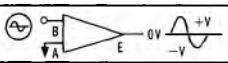
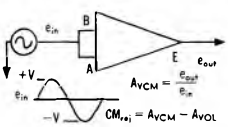
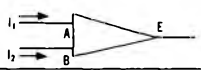
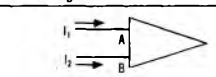
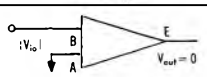


PIN CONNECTIONS

Schematic	A	B	C	D	E	F	G	H	J	K
"F" & "G" Pkgs.	1	2	3	4	5	6	7	8	9	10
"P" Package	4	6	8	7	11	12	13	14	1	2

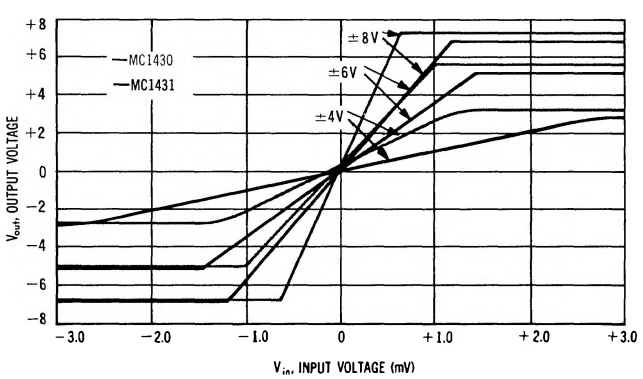
See Packaging Information Section for outline dimensions.

ELECTRICAL CHARACTERISTICS ($V^+ = +6$ Vdc, $V^- = -6$ Vdc, $T_A = +25°C$ unless otherwise noted)

Characteristic Definitions*	Characteristic		Symbol	Min	Typ	Max	Unit
	Open Loop Voltage Gain	MC1430	A_{VOL}	69	74	—	dB
		MC1431		62	71	—	dB
		MC1430		3000	5000	—	V/V
		MC1431		1500	3500	—	V/V
	Open Loop Bandwidth (no roll-off capacitance)	MC1430	BW_{OL}	1.0	1.2	—	MHz
		MC1431		0.15	0.4	—	
	Output Impedance (f = 20 Hz)	MC1430, MC1431	Z_{out}	—	25	50	ohms
	Input Impedance (f = 20 Hz)	MC1430	Z_{in}	5.0	15	—	k ohms
		MC1431		300	600	—	
	Output Voltage Swing (1000 ohm Load)	MC1430, MC1431	V_{out}	±4.0	±5.0	—	V_{peak}
	Input Common Mode Voltage Swing	MC1430	CMV_{in}	±2.0	±2.5	—	V_{peak}
		MC1431		±2.0	±2.2	—	
	Common Mode Rejection Ratio	MC1430	CM_{rej}	65	75	—	dB
		MC1431		60	75	—	
	Input Bias Current $\left(I_b = \frac{I_1 + I_2}{2}\right)$	MC1430	I_b	—	5.0	15	μA
		MC1431		—	0.1	0.3	
	Input Offset Current $I_{io} = I_1 - I_2$	MC1430	I_{io}	—	0.4	4.0	μA
		MC1431		—	0.01	0.1	
	Input Offset Voltage	MC1430	$\|V_{io}\|$	—	2.0	10	mV
		MC1431		—	5.0	15	
	DC Power Dissipation (Power Supply = ±6 V, V_{out} = 0)		P_D	—	110	150	mW
	Input Offset Voltage		$\|V_{io}\|$				mV
	+75°C	MC1430		—	3.0	12.0	
	0°C			—	3.0	11.0	
	+75°C	MC1431		—	6.0	18.0	
	0°C			—	6.0	16.5	

*All definitions imply linear operation (V_{io} = 0)

FIGURE 4 – NORMALIZED DC OPEN LOOP TRANSFER CHARACTERISTICS



RECOMMENDED OPERATING CONDITIONS

1. For High Slew Rate use Circuit A, Figure 9
2. For Minimum Noise use Circuit B, Figure 9
3. For operational stability Power Supply decoupling should be employed at all times.
4. Self Biasing network used to hold output voltage less than ±1 volt dc (quiescent)