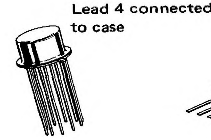
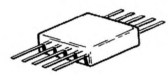
MC1433

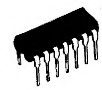
. . . designed for use as a summing amplifier, integrator, or amplifier with operating characteristics as a function of the external feedback components.



CASE 71
"G" SUFFIX



CASE 72
(TO-91)
"F" SUFFIX



CASE 93
(TO-116)
"P" SUFFIX

Typical Amplifier Features:

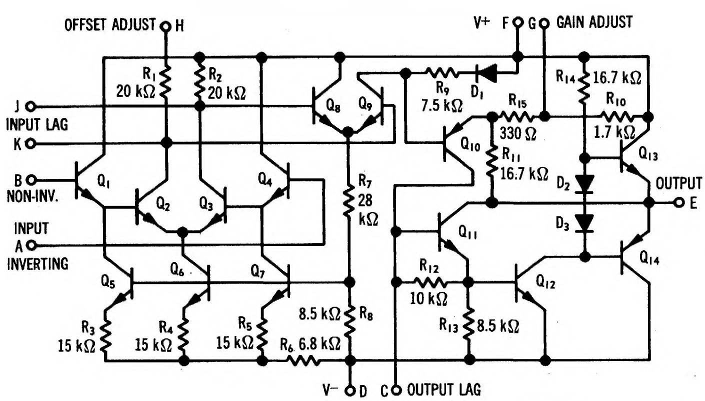
- High-Performance Open Loop Gain Characteristics
  A_{VOL} = 60,000 typical
- Low Temperature Drift — ±8.0 μV/°C
- Large Output Voltage Swing — ±13 V typical @ ±15 V Supply
- Low Output Impedance — Z_{out} = 100 ohms typical
- Input Offset Voltage Adjustable to Zero

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

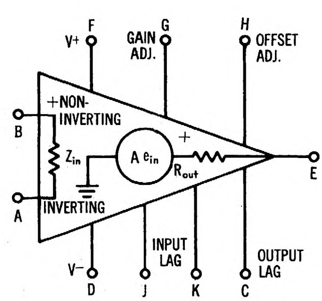
Rating	Symbol	Value	Unit
Power Supply Voltage	V+ V−	+18 -18	Vdc Vdc
Differential Input Signal	V_{in}	±10	Volts
Common Mode Input Swing	CMV_{in}	±V+	Volts
Load Current	I_L	10	mA
Output Short Circuit Duration	t_S	1.0	s
Power Dissipation (Package Limitation) Metal Can Derate above 25°C Flat Package Derate above 25°C Plastic Package Derate above 25°C	P_D	 680 4.6 500 3.3 400 3.3	 mW mW/°C mW mW/°C mW mW/°C
Operating Temperature Range*	T_A	0 to +75	°C
Storage Temperature Range Metal Can and Flat Package Plastic Package	T_{stg}	 -65 to +150 -65 to +125	°C

*For full temperature range (-55°C to +125°C) and characteristic curves, see MC1533 data sheet.

CIRCUIT SCHEMATIC



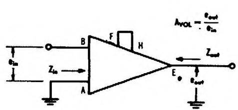
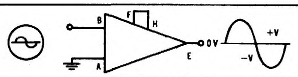
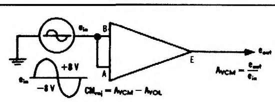
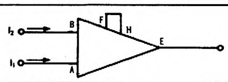
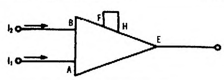
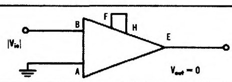
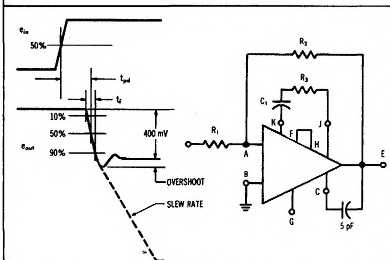
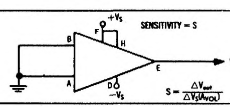
EQUIVALENT CIRCUIT



PIN CONNECTIONS

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

ELECTRICAL CHARACTERISTICS ($V^+ = +15$ Vdc, $V^- = -15$ Vdc, $T_A = 25°C$ unless otherwise noted)

Characteristic Definitions①	Characteristic	Symbol	Min	Typ	Max	Unit
	Open Loop Voltage Gain	A_{VOL}				-
	(V @ Pin G = +15 Vdc)		30,000	60,000	-	
	(Pin G open)		10,000	30,000	-	
	(V @ Pin G = +15 Vdc, $T_A = 0°C$, +75°C)		20,000	50,000	-	
	(Pin G open, $T_A = 0°C$, +75°C)		5,000	25,000	-	
	Output Impedance (Pin G open, f = 20 Hz)	Z_{out}	-	100	150	Ω
	Input Impedance (Pin G open, f = 20 Hz)	Z_{in}	300	600	-	kΩ
	Output Voltage Swing	V_{out}				V_{peak}
	(R_L = 10 kΩ)		±12	±13	-	
	(R_L = 2 kΩ)		±10	±12	-	
	Input Common Mode Voltage Swing	CMV_{in}	±8	±9	-	V_{peak}
	Common Mode Rejection Ratio	CM_{rej}				dB
	(V @ Pin G = +15 Vdc)		80	100	-	
	(Pin G open)		70	94	-	
	Input Bias Current $\left(I_b = \frac{I_1 + I_2}{2}\right)$	I_b				µA
	($T_A = +25°C$)		-	0.5	2.0	
	($T_A = 0°C$)		-	-	4.0	
	Input Offset Current	I_{io}				µA
	($I_{io} = I_1 - I_2$)		-	0.1	0.50	
	($I_{io} = I_1 - I_2$, $T_A = 0°C$)		-	-	0.75	
	($I_{io} = I_1 - I_2$, $T_A = +75°C$)		-	-	0.75	
	Input Offset Voltage ②	V_{io}				mV
	($T_A = 25°C$)		-	1.0	7.5	
	($T_A = 0°C$, +75°C)		-	-	10.0	
	Step Response					
	(Gain = 100, 15% overshoot,	t_f	-	0.15	-	µs
	R_1 = 1 kΩ, R_2 = 100 kΩ,	t_{pd}	-	0.06	-	µs
	R_3 = 100 Ω, C_1 = 0.02 µF)	dV_{out}/dt ③	-	11.0	-	V/µs
	(Gain = 10, no overshoot,	t_f	-	0.3	-	µs
	R_1 = 1 kΩ, R_2 = 10 kΩ,	t_{pd}	-	0.1	-	µs
	R_3 = 10 Ω, C_1 = 0.05 µF)	dV_{out}/dt ③	-	1.5	-	V/µs
	(Gain = 1, 20% overshoot,	t_f	-	0.2	-	µs
	R_1 = 10 kΩ, R_2 = 10 kΩ,	t_{pd}	-	0.3	-	µs
	R_3 = 5 Ω, C_1 = 0.1 µF)	dV_{out}/dt ③	-	0.8	-	V/µs
	Average Temperature Coefficient of Input Offset Voltage	TC_{Vio}				µV/°C
	(T_A = 0°C to +25°C)		-	10	-	
	(T_A = +25°C to +75°C)		-	8	-	
	Average Temperature Coefficient of Input Offset Current	TC_{Iio}				nA/°C
	(T_A = 0°C to +25°C)		-	0.1	-	
	(T_A = +25°C to +75°C)		-	0.05	-	
	DC Power Dissipation (Power Supply = ±15 V, V_{out} = 0)	P_D	-	125	240	mW
	Positive Supply Sensitivity (V^- constant)	S^+	-	50	200	µV/V
	Negative Supply Sensitivity (V^+ constant)	S^-	-	50	200	µV/V

① All definitions imply linear operation

② Input offset voltage (V_{io}) may be adjusted to zero by varying the potential on pin H

③ dV_{out}/dt = Slew Rate