MLM101AG
MLM201AG
MLM301AG

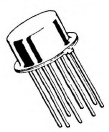
MONOLITHIC OPERATIONAL AMPLIFIER

The MLM101AG, MLM201AG, and MLM301AG are functionally, electrically, and pin-for-pin equivalent to the National Semiconductor LM101A, LM201A, and LM301A respectively.

- Low Input Offset Current – 20 nA maximum Over Temperature Range
- External Frequency Compensation for Flexibility
- Class AB Output Provides Excellent Linearity
- Output Short-Circuit Protection
- Guaranteed Drift Characteristics

OPERATIONAL AMPLIFIER

MONOLITHIC SILICON
INTEGRATED CIRCUIT



METAL PACKAGE
CASE 601
(TO-99)

Case connected to pin 4 through substrate

FIGURE 1 – STANDARD COMPENSATING AND OFFSET BALANCING CIRCUIT

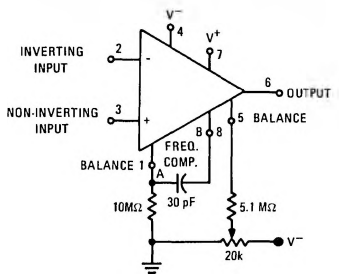


FIGURE 2 – FAST-SUMMING AMPLIFIER

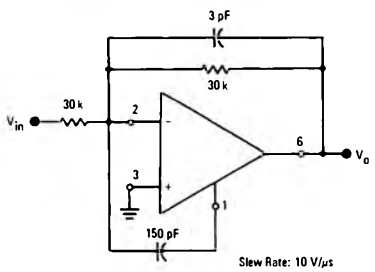


FIGURE 3 – DOUBLE-ENDED LIMIT DETECTOR

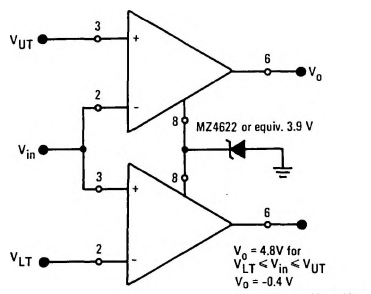
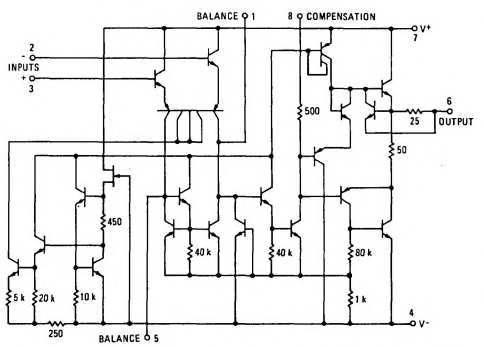


FIGURE 4 – CIRCUIT SCHEMATIC



See Packaging Information Section for outline dimensions.

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

Rating	Symbol	VALUE			Unit
		MLM101AG	MLM201AG	MLM301AG	
Power Supply Voltage	$V, ^+V^-$	±22	±22	±18	Vdc
Differential Input Voltage	V_{in}	±30			Volts
Common-Mode Input Swing (Note 1)	CMV_{in}	±15			Volts
Output Short Circuit Duration (Note 2)	t_{SC}	Continuous			
Power Dissipation (Package Limitation) Metal Can Derate above T_A = +75°C	P_D	500 6.8			mW mW/°C
Operating Temperature Range	T_A	-55 to +125	-25 to +85	0 to +70	°C
Storage Temperature Range	T_{stg}	-65 to +150			°C

Note 1. For supply voltages less than ± 15 V, the absolute maximum input voltage is equal to the supply voltage.

Note 2. Unless otherwise specified, these specifications apply for supply voltages from ±5.0 V to ±20 V for the MLM101AG and MLM201AG, and from ±5.0 V to ±15V for the MLM301AG

ELECTRICAL CHARACTERISTICS (T_A = +25°C unless otherwise noted, see Note 2 above.)

Characteristics	Symbol	MLM101AG MLM201AG			MLM301AG			Unit
		Min	Typ	Max	Min	Typ	Max	
Input Offset Voltage (R_S = ≤50 kΩ)	$\|V_{io}\|$	–	0.7	2.0	-	2.0	7.5	mV
Input Offset Current	$\|I_{io}\|$	–	1.5	10	–	3.0	50	nA
Input Bias Current	I_b	–	30	75	–	70	250	nA
Input Resistance	R_{in}	1.5	4.0	–	0.5	2.0	–	Megohms
Supply Current V_S = ±20 V V_S = ±15 V	I_D	– –	1.8 –	3.0 –	– –	– 1.8	– 3.0	mA
Large Signal Voltage Gain V_S = ±15 V, V_o = ±10 V, R_L > 2.0 kΩ	A_V	50	160	–	25	160	–	V/mV

The following specifications apply over the operating temperature range.

Input Offset Voltage (R_S ≤ 50 kΩ)	$\|V_{io}\|$	–	–	3.0	–	–	10	mV
Input Offset Current	$\|I_{io}\|$	–	–	20	–	–	70	nA
Average Temperature Coefficient of Input Offset Voltage $T_{A(min)} \leq T_A \leq T_{A(max)}$	$\|TCV_{io}\|$	–	3.0	15	–	6.0	30	µV/°C
Average Temperature Coefficient of Input Offset Current 25°C ≤ $T_A \leq T_{A(max)}$ $T_{A(min)} \leq T_A \leq$ 25°C	$\|TCI_{io}\|$	– –	0.01 0.02	0.1 0.2	– –	0.01 0.02	0.3 0.6	nA/°C
Input Bias Current	I_b	–	–	100	–	–	300	nA
Large Signal Voltage Gain V_S = ±15 V, V_o = ±10 V, R_L > 2.0 kΩ	A_V	25	–	–	15	–	–	V/mV
Input Voltage Range V_S = ±20 V V_S = ±15 V	V_{in}	±15 –	– –	– –	– ±12	– –	– –	V
Common-Mode Rejection Ratio R_S ≤ 50 kΩ	CM_{rej}	80	96	–	70	90	–	dB
Supply Voltage Rejection Ratio R_S ≤ 50 kΩ	S^+, S^-	80	96	–	70	96	–	dB
Output Voltage Swing V_S = ±15 V, R_L = 10 kΩ R_L = 2.0 kΩ	V_o	±12 ±10	±14 ±13	– –	±12 ±10	+14 ±13	– –	V
Supply Current ($T_A = T_{A(max)}$, V^+ = ± 20 V)	I_D	–	1.2	2.5	–	–	–	mA