

OPERATIONAL AMPLIFIERS

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

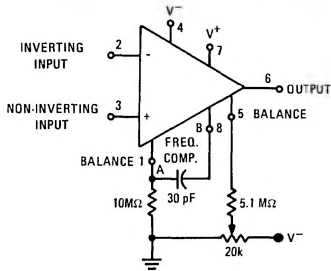


FIGURE 2 – FAST-SUMMING AMPLIFIER

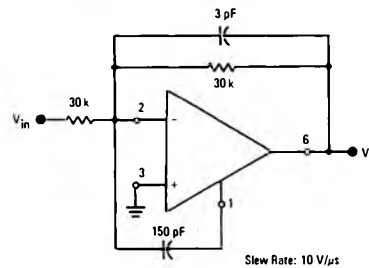


FIGURE 3 – DOUBLE-ENDED LIMIT DETECTOR

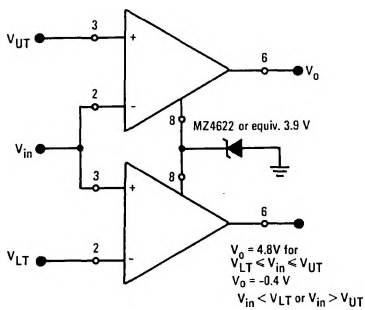
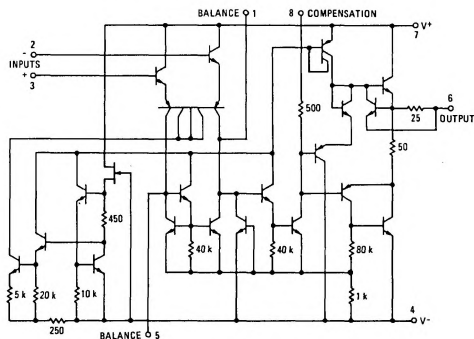


FIGURE 4 – CIRCUIT SCHEMATIC



MLM101AG, MLM201AG, MLM301AG (continued)

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) ≤ T _A ≤ T _A (max)	TC _{V_{io}}	-	3.0	15	-	6.0	30	μV/°C
Average Temperature Coefficient of Input Offset Current 25°C ≤ T _A ≤ T _A (max) T _A (min) ≤ T _A ≤ 25°C	TC _{I_{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	-	-	-	-	-	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