

GENERAL DESCRIPTION

The LM108A/LM108, LM208A/LM208 and LM308A/LM308 are Super Beta operational amplifiers fabricated on single silicon chips using the planar epitaxial process.

The LM108A/LM108 offer specifications an order of magnitude better than FET amplifiers over a temperature range -55°C to +125°C.

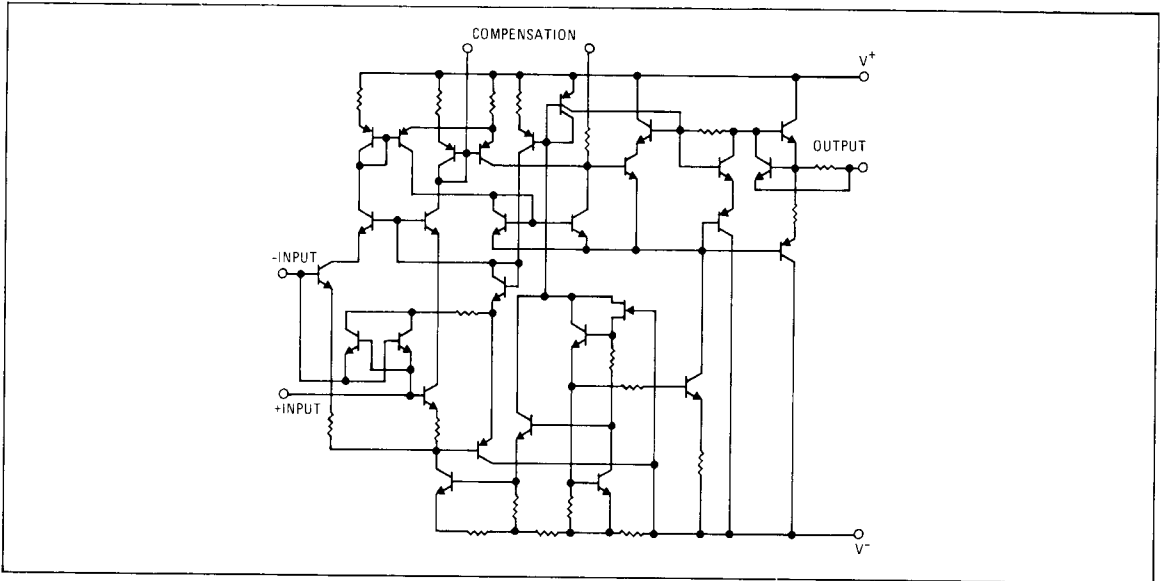
The LM208A/LM208 are identical to the LM108A/LM108 except their performance is guaranteed from -25°C to +85°C.

The LM308A/LM308 provide lower input offset voltage of 0.5mV maximum, and drift characteristics of 5.0µV/°C maximum. These devices can be compensated by the conventional technique used with the LM101/LM101A series.

DESIGN FEATURES

- Offset Voltage Over Temperature Range 0.5mV Maximum
- Input Current Over Temperature Range 3.0nA Maximum
- Offset Current Over Temperature Range 400pA Maximum
- Supply Current Only 400µA
- Guaranteed Drift Characteristics 5.0µV/°C Maximum
- Supply Voltage ±2V to ±20V

SCHEMATIC DIAGRAM



CONNECTION INFORMATION

**TE
Metal Can Package
(Top View)**

**DE and NB
Dual In-line Packages
(Top View)**

PIN	FUNCTION
1	COMP
2	-INPUT
3	+INPUT
4	V ⁻
5	NC
6	OUTPUT
7	V ⁺
8	COMP

Order Part Nos.:

LM108AH, LM208AH, LM308AH, LM108H, LM208H, LM308H

Order Part Nos.:

LM108ADE, LM208ADE, LM108DE, LM208DE, LM308DE, LM308AE, LM308N

NOTE: THE LM108A SERIES IS AVAILABLE ON SPECIAL ORDER IN THE DC (14-PIN) CERAMIC DIP AND CQ (10-PIN) FLATPAK PACKAGES.

Precision Operational Amplifiers

ABSOLUTE MAXIMUM RATINGS

Supply Voltage	LM108A/LM108: ±20V LM208A/LM208: ±20V LM308A/LM308: ±18V	Operating Temperature Range	LM108A/LM108: -55°C to +125°C LM208A/LM208: -25°C to +85°C LM308A/LM308: 0°C to +70°C
Power Dissipation (Note 1)	500mW	Storage Temperature Range	-65°C to +150°C
Differential Input Current (Note 3)	±10mA	Lead Temperature (Soldering, 60s)	300°C
Input Voltage (Note 2)	±15V		
Output Short-Circuit Duration	Indefinite		

ELECTRICAL CHARACTERISTICS (Notes 4 and 5)

PARAMETER	CONDITIONS	LM108A/LM208A			LM308A			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
Input Offset Voltage	T _A =25°C		0.3	0.5		0.3	0.5	mV
Large Signal Voltage Gain	T _A =25°C, V _S =±15V, V _{out} =±10V, R _L ≥10kΩ	80	300		80	300		V/mV
Input Offset Voltage				1.0			0.73	mV
Average Temperature Coefficient of Input Offset Voltage			1.0	5.0		1.0	5.0	μV/°C
Large Signal Voltage Gain	V _S =±15V, V _{out} =±10V, R _L ≥10kΩ	40			60			V/mV
Common Mode Rejection Ratio		96	110		96	110		dB
Supply Voltage Rejection Ratio		96	110		96	110		dB

PARAMETER	CONDITIONS	LM108/LM208			LM308			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
Input Offset Voltage	T _A =25°C		0.7	2.0		2.0	7.5	mV
Input Offset Current	T _A =25°C		0.05	0.2		0.2	1.0	nA
Input Bias Current	T _A =25°C		0.8	2.0		1.5	7.0	nA
Input Resistance	T _A =25°C	30	70		10	40		MΩ
Supply Current	T _A =25°C		0.3	0.6		0.3	0.8	mA
Large Signal Voltage Gain	T _A =25°C, V _S =±15V, V _{out} =±10V, R _L ≥10kΩ	50	300		25	300		V/mV
Input Offset Voltage				3.0			10	mV
Average Temperature Coefficient of Input Offset Voltage			3.0	15		6.0	30	μV/°C
Input Offset Current				0.4			1.5	nA
Average Temperature Coefficient of Offset Current			0.5	2.5		2.0	10	pA/°C
Input Bias Current				3.0			10	nA
Supply Current	T _A =+125°C		0.15	0.4				mA
Large Signal Voltage Gain	V _S =±15V, V _{out} =+10V, R _L ≥10kΩ	25			15			V/mV
Output Voltage Swing	V _S =±15V, R _L =10kΩ	±13	±14		±13	±14		V
Input Voltage Range	V _S =±15V	±13.5			14			V
Common Mode Rejection Ratio		85	100		80	100		dB
Supply Voltage Rejection Ratio		80	96		80	96		dB

NOTES:

- For operating at elevated temperatures, the device must be derated based on +150°C for LM108, +100°C for LM308 maximum junction temperature and a thermal resistance of 150°C/W junction to ambient or 45°C/W junction to case.
- For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.
- The inputs are shunted with back-to-back diodes for overvoltage protection. Therefore, excessive current will flow if a differential input voltage in excess of 1V is applied between the inputs unless some limiting resistance is used.
- These specifications apply for ±5V < V_S < ±20V and -55°C < T_A < +125°C, LM108A/LM108; ±5V < V_S < ±20V and -25°C < T_A < +85°C, LM208A/LM208.
- These specifications apply for ±5V < V_S < ±15V and 0°C < T_A < +70°C, LM308A/LM308.