National Semiconductor

MICROCIRCUIT DATA SHEET

MNLM4250-X REV 0CL

Original Creation Date: 08/15/95
Last Update Date: 09/03/97
Last Major Revision Date: 08/15/95

PROGRAMMABLE OPERATIONAL AMPLIFIER

Industry Part Number

LM4250

NS Part Numbers

LM4250H-MIL
LM4250J-MIL

Prime Die

LM4250

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883, Method 5005

Subgrp	Description	Temp (^{O}C)
1	Static tests at	+25
2	Static tests at	+85
3	Static tests at	-25
4	Dynamic tests at	+25
5	Dynamic tests at	+85
6	Dynamic tests at	-25
7	Functional tests at	+25
8A	Functional tests at	+85
8B	Functional tests at	-25
9	Switching tests at	+25
10	Switching tests at	+85
11	Switching tests at	-25

Electrical Characteristics

DC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: Iset = 10uA, Rs = 100K Ohms, Vcm = 0V

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Is	Supply Current	Vcc = ±18V, Rs = 0 Ohms				120	uA	1
		Vcc = ±18V, Rs = 0 Ohms				150	uA	2, 3
		Vcc = ±15V, Rs = 0 Ohms				90	uA	1
		Vcc = ±15V, Rs = 0 Ohms				100	uA	2, 3
		Vcc = ±15V, Rs = 0 Ohms, Iset = 2uA				20	uA	1
		Vcc = ±15V, Rs = 0 Ohms, Iset = 2uA				22	uA	2, 3
		Vcc = ±3.5V, Rs = 0 Ohms				80	uA	1
		Vcc = ±3.5V, Rs = 0 Ohms				90	uA	2, 3
		Vcc = ±3.5V, Rs = 0 Ohms, Iset = 2uA				15	uA	1
		Vcc = ±3.5V, Rs = 0 Ohms, Iset = 2uA				16	uA	2, 3
Pd	Power Dissipation	Vcc = ±18V, Rs = 0 Ohms				4.32	mW	1
		Vcc = ±18V, Rs = 0 Ohms				5.4	mW	2, 3
		Vcc = ±15V, Rs = 0 Ohms				2.7	mW	1
		Vcc = ±15V, Rs = 0 Ohms				3	mW	2, 3
		Vcc = ±15V, Rs = 0 Ohms, Iset = 2uA				600	uW	1
		Vcc = ±15V, Rs = 0 Ohms, Iset = 2uA				660	uW	2, 3
		Vcc = ±3.5V, Rs = 0 Ohms				560	uW	1
		Vcc = ±3.5V, Rs = 0 Ohms				630	uW	2, 3
		Vcc = ±3.5V, Rs = 0 Ohms, Iset = 2uA				105	uW	1
		Vcc = ±3.5V, Rs = 0 Ohms, Iset = 2uA				112	uW	2, 3

Electrical Characteristics

DC PARAMETERS(Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: Iset = 10uA, Rs = 100K Ohms, Vcm = 0V

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Vio	Input Offset Voltage	Vcc = ±3.5V, Iset = 2uA			-3	3	mV	1
		Vcc = ±3.5V, Iset = 2uA			-4	4	mV	2, 3
		Vcc = ±15V, Iset = 2uA			-3	3	mV	1
		Vcc = ±15V, Iset = 2uA			-4	4	mV	2, 3
		Vcc = ±3.5V			-5	5	mV	1
		Vcc = ±3.5V			-6	6	mV	2, 3
		Vcc = ±3.5V, Vcm = 0.7V			-5	5	mV	1
		Vcc = ±3.5V, Vcm = 0.7V			-6	6	mV	2, 3
		Vcc = ±3.5V, Vcm = -0.7V			-5	5	mV	1
		Vcc = ±3.5V, Vcm = -0.7V			-6	6	mV	2, 3
		Vcc = ±15V			-5	5	mV	1
		Vcc = ±15V			-6	6	mV	2, 3
		Vcc = ±15V, Vcm = -13.5V			-5	5	mV	1
		Vcc = ±15V, Vcm = -13.5V			-6	6	mV	2, 3
		Vcc = ±15V, Vcm = 13.5V			-5	5	mV	1
		Vcc = ±15V, Vcm = 13.5V			-6	6	mV	2, 3
Iio	Input Offset Current	Vcc = ±3.5V, Iset = 2uA			-6	6	nA	1, 2, 3
		Vcc = ±15V, Iset = 2uA			-6	6	nA	1, 2, 3
		Vcc = ±3.5V			-10	10	nA	1, 2, 3
		Vcc = ±3.5V, Vcm = 0.7V			-10	10	nA	1, 2, 3
		Vcc = ±3.5V, Vcm = -0.7V			-10	10	nA	1, 2, 3
		Vcc = ±15V			-10	10	nA	1, 2, 3
		Vcc = ±15V, Vcm = 13.5V			-10	10	nA	1, 2, 3
		Vcc = ±15V, Vcm = -13.5V			-10	10	nA	1, 2, 3

Electrical Characteristics

DC PARAMETERS(Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: Iset = 10uA, Rs = 100K Ohms, Vcm = 0V

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Iib	Input Bias Current	Vcc = ±3.5V, Iset = 2uA				15	nA	1, 2, 3
		Vcc = ±15V, Iset = 2uA				15	nA	1, 2, 3
		Vcc = ±3.5V				50	nA	1, 2, 3
		Vcc = ±3.5V, Vcm = 0.7V				50	nA	1, 2, 3
		Vcc = ±3.5V, Vcm = -0.7V				50	nA	1, 2, 3
		Vcc = ±15V				50	nA	1, 2, 3
		Vcc = ±15V, Vcm = 13.5V				50	nA	1, 2, 3
		Vcc = ±15V, Vcm = -13.5V				50	nA	1, 2, 3
PSRR	Power Supply Rejection Ratio	Vcc = ±4V to ±14V, Rs = 10K Ohms			76		dB	1, 2, 3
		Vcc = ±3V to ±4V, Rs=10K Ohms, Iset=2uA			76		dB	1, 2, 3
CMRR	Common Mode Rejection Ratio	Vcc = ±3.5V, Iset=2uA, Rs=10K Ohms, Vcm = -0.7V to 0.7V			70		dB	1, 2, 3
		Vcc = ±15V, Rs=10K Ohms, Vcm = -13.5V to 13.5V			70		dB	1, 2, 3
-Avs	Voltage Gain	Vcc = ±15V, Rl=10K Ohms, Vo=0 to -10V, Rs=0V			100		K	1
		Vcc = ±15V, Rl=10K Ohms, Vo=0 to -10V, Rs=0V			50		K	2, 3
		Vcc = ±15V, Iset=2uA, Vo = 0 to -10V, Rs=0V			100		K	1
		Vcc = ±15V, Iset=2uA, Vo = 0 to -10V, Rs=0V			50		K	2, 3
+Avs	Voltage Gain	Vcc = ±15V, Rl=10K Ohms, Vo=0 to 10V, Rs=0V			100		K	1
		Vcc = ±15V, Rl=10K Ohms, Vo=0 to 10V, Rs=0V			50		K	2, 3
		Vcc = ±15V, Iset=2uA, Vo = 0 to 10V, Rs=0V			100		K	1
		Vcc = ±15V, Iset=2uA, Vo = 0 to 10V, Rs=0V			50		K	2, 3

Electrical Characteristics

DC PARAMETERS(Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: Iset = 10uA, Rs = 100K Ohms, Vcm = 0V

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
+Vio	Offset Null	Vcc = ±15V, Rs = 0K Ohms			6		mV	1, 2, 3
-Vio	Offset Null	Vcc = ±15V, Rs = 0K Ohms				-6	mV	1, 2, 3
+Ios	Short Circuit Current	Vcc = ±15V, Vin = -100mV, Vout = -14V			-25		mA	1, 2, 3
-Ios	Short Circuit Current	Vcc = ±15V, Vin = 100mV, Vout = 14V				25	mA	1, 2, 3
+Vout	Output Voltage Swing	Vcc = ±15V, Rl = 10K Ohms			12		V	1, 2, 3
		Vcc = ±15V, Iset=2uA, Rl=0K Ohms			12		V	1, 2, 3
		Vcc = ±3.5V, Iset=2uA, Rl=0K Ohms			2.5		V	1, 2, 3
		Vcc = ±3.5V, Rl=10K Ohms			2.5		V	1, 2, 3
-Vout	Output Voltage Swing	Vcc = ±15V, Rl = 10K Ohms				-12	V	1, 2, 3
		Vcc = ±15V, Iset=2uA, Rl=0K Ohms				-12	V	1, 2, 3
		Vcc = ±3.5V, Iset=2uA, Rl=0K Ohms				-2.5	V	1, 2, 3
		Vcc = ±3.5V, Rl=10K Ohms				-2.5	V	1, 2, 3

DC PARAMETERS: DRIFT VALUES

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: Iset = 10uA, Rs = 100K Ohms, Vcm = 0V. "Deltas not required on B-Level product. Deltas required for S-Level product ONLY as specified on Internal Processing Instructions (IPI)."

Vio	Input Offset Voltage	Vcc = ±15V			-1	1	mV	1
Iio	Input Offset Current	Vcc = ±15V			-2	2	nA	1
Iib	Input Bias Current	Vcc = ±15V			-10	10	nA	1

Graphics and Diagrams

GRAPHICS#	DESCRIPTION
See attached graphics following this page.	

Graphics and Diagrams (Continued)

GRAPHICS#	DESCRIPTION
H08CRE	(blank)
J08	(blank)

See attached graphics following this page.

Revision History

Rev	ECN #	Rel Date	Originator	Changes
0CL	M0002130	09/03/97	Barbara Lopez	Changed MDS: MNLM4250-X Rev. 0BL to MNLM4250-X Rev. 0CL. Corrected Typo on Main Table to read +25 C, +85 C, -25 C from +25 C, +125 C, -55 C.