



MICROCIRCUIT DATA SHEET

MDLM144X-1 REV 0AL

Original Creation Date: 07/26/95
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HIGH VOLTAGE OPERATIONAL AMPLIFIER

Industry Part Number

LM144

NS Part Numbers

LM144-X/883

Prime Die

LM144

Controlling Document

DESC.# 78003G REV *

Processing

MIL-STD-883, Method 5004

Quality Conformance Inspection

MIL-STD-883, Method 5005

Subgrp	Description	Temp (°C)
1	Static tests at	+25
2	Static tests at	+125
3	Static tests at	-55
4	Dynamic tests at	+25
5	Dynamic tests at	+125
6	Dynamic tests at	-55
7	Functional tests at	+25
8A	Functional tests at	+125
8B	Functional tests at	-55
9	Switching tests at	+25
10	Switching tests at	+125
11	Switching tests at	-55

Electrical Characteristics

DC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
 DC: $V_s = \pm 28V$, $R_s = 50 \text{ Ohms}$, $V_{cm} = 0V$

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS		
Vio	Input Offset Voltage	$V_{cm} = -24V$, $R_l = 5K \text{ Ohms}$			-5	5	mV	1		
					-7	7	mV	2, 3		
		$V_{cm} = 24V$, $R_l = 5K \text{ Ohms}$			-5	5	mV	1		
					-7	7	mV	2, 3		
		$R_l = 5K \text{ Ohms}$			-5	5	mV	1		
					-7	7	mV	2, 3		
		$V_{cm} = -24V$, $R_l = 5K \text{ Ohms}$, $R_s = 50K \text{ Ohms}$			-5	5	mV	1		
					-7	7	mV	2, 3		
		$V_{cm} = 24V$, $R_l = 5K \text{ Ohms}$, $R_s = 50K \text{ Ohms}$			-5	5	mV	1		
					-7	7	mV	2, 3		
		$V_s = \pm 28V$, $R_l = 5K \text{ Ohms}$					5	mV	1	
		$V_s = \pm 28V$, $R_l = 5K \text{ Ohms}$					7	mV	2, 3	
		Iio	Input Offset Current	$V_{cm} = -24V$, $R_l = 5K \text{ Ohms}$			-3	3	nA	1
							-7	7	nA	2, 3
$V_{cm} = 24V$, $R_l = 5K \text{ Ohms}$					-3	3	nA	1		
					-7	7	nA	2, 3		
					-3	3	nA	1		
					-7	7	nA	2, 3		
$V_s = \pm 28V$, $R_l = 5K \text{ Ohms}$							3	nA	1	
$V_s = \pm 28V$, $R_l = 5K \text{ Ohms}$							7	nA	2, 3	
Iib	Input Bias Current			$V_{cm} = -24V$, $R_l = 5K \text{ Ohms}$			0.1	20	nA	1
							0.1	35	nA	2, 3
		$V_{cm} = 24V$, $R_l = 5K \text{ Ohms}$			0.1	20	nA	1		
					0.1	35	nA	2, 3		
					0.1	20	nA	1		
					0.1	35	nA	2, 3		
		$V_s = \pm 28V$, $R_l = 5K \text{ Ohms}$					20	nA	1	
		$V_s = \pm 28V$, $R_l = 5K \text{ Ohms}$					35	nA	2, 3	

Electrical Characteristics

DC PARAMETERS (Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)
 DC: $V_s = \pm 28V$, $R_s = 50 \text{ Ohms}$, $V_{cm} = 0V$

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
I _{cc}	Supply Current	R _l = 5K Ohms				4	mA	1
		V _s = $\pm 28V$, R _l = 5K Ohms				4	mA	1
		V _s = $\pm 28V$, R _l = 5K Ohms				4.5	mA	2, 3
+V _o	Output Voltage Swing	R _l = 5K Ohms			22		V	1, 2, 3
-V _o	Output Voltage Swing	R _l = 5K Ohms				-22	V	1, 2, 3
V _o	Output Voltage Swing	V _s = $\pm 28V$, R _l = 5K Ohms			± 22		V	1, 2, 3
I _{os+}	Output Short Circuit Current					-12	mA	1
I _{os-}	Output Short Circuit Current				12		mA	1
I _{os}	Output Short Circuit Current		4		± 12		mA	1
V _{ir}	Input Voltage Range	R _l = 5K Ohms	1		-24	24	V	1, 2, 3
		V _s = $\pm 28V$, R _l = 5K Ohms	1		-24	24	V	1, 2, 3

Electrical Characteristics

DC/AC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)

DC: $V_s = \pm 28V$, $R_s = 50 \text{ Ohms}$, $V_{cm} = 0V$

AC: $V_s = \pm 28V$, $R_s = 50 \text{ Ohms}$, $V_{cm} = 0V$

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
SVRR	Supply Voltage Rejection Ratio	$V_s = \pm 15V \text{ to } \pm 28V$	2		80		dB	4, 5, 6
CMRR	Common Mode Rejection Ratio	$V_{cm} = -24V \text{ to } +24V$, $R_l = 5K \text{ Ohms}$			80		dB	4, 5, 6
		$V_s = \pm 28V$, $R_l = 5K \text{ Ohms}$			80		dB	4, 5, 6
-Avol	Large Signal Voltage Gain	$V_o = -10V$, $R_l = 2K \text{ Ohms}$			100		V/mV	4
					50		V/mV	5, 6
+Avol	Large Signal Voltage Gain	$V_o = +10V$, $R_l = 2K \text{ Ohms}$			100		V/mV	4
					50		V/mV	5, 6
Avol	Large Signal Voltage Gain	$V_o = \pm 10V$, $R_l = 2K \text{ Ohms}$	3		100		V/mV	4
		$V_o = \pm 10V$, $R_l = 2K \text{ Ohms}$	3		50		V/mV	5, 6
Sr+	Slew Rate	$A_v = 1$, $V_{in} = -10V \text{ to } +10V$			1.4		V/uS	4
Sr-	Slew Rate	$A_v = 1$, $V_{in} = +10V \text{ to } -10V$			1.4		V/uS	4
Sr	Slew Rate	$A_v = 1$	4		1.4		V/uS	4

Note 1: Parameter tested go-no-go only.

Note 2: 80dB is equivalent to 100uV/V.

Note 3: Datalog reading in K = V/mV.

Note 4: Tested on LTX system.