



MILITARY DATA SHEET

MNLM711AM-X REV 1A0

Original Creation Date: 10/26/95
 Last Update Date: 11/10/95
 Last Major Revision Date: 10/26/95

DUAL HIGH SPEED DIFFERENTIAL COMPARATOR

General Description

The LM711 is a dual differential voltage comparator featuring high accuracy, fast response times, large input voltage range, low power consumption and compatibility with practically all integrated logic forms. When used as a sense amplifier, the threshold voltage can be adjusted over a wide range, almost independent of the integrated circuit characteristics. Independent strobing of each comparator channel is provided, and pulse stretching on the output is easily accomplished. Other applications of the dual comparator include a window discriminator in pulse height detectors and a double ended limit detector for automatic Go-No-Go test equipment.

Industry Part Number

LM711AM

NS Part Numbers

LM711AMH/883
 LM711AMJ/883
 LM711AMW/883

Prime Die

LM711AM

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

Features

- Fast Response Time
- Low Offset Voltage
- Low Offset Current
- Independent Comparator Strobing

(Absolute Maximum Ratings)

Storage Temperature Range	-65 C to 175 C
Operating Temperature Range	-55 C to 125 C
Lead Temperature (Soldering, 60 seconds)	300 C
Internal Power Dissipation (Note 1)	
Can	350mW
DIP	400mW
Flatpack	330mW
Positive Supply Voltage	14V
Negative Supply Voltage	-7V
Peak Output Current	50mA
Differential Input Voltage	±5V
Input Voltage	±7V
Strobe Voltage	0V to 6V
Short Circuit Duration	10s
Thermal Resistance	
ThetaJA	
H-Package (Still Air)	211 C/W
(500LF/Min Air flow)	120 C/W
J-Package (Still Air)	126 C/W
(500LF/Min Air flow)	70 C/W
W-Package (Still Air)	250 C/W
(500LF/Min Air flow)	152 C/W
ThetaJC	
H-Package	37 C/W
J-Package	24 C/W
W-Package	42 C/W

Note 1: Rating applies to ambient temperatures up to 125 C. Above 125 C ambient, derate linearly at 150 C/W for the Can and Flatpack and 120 C/W for the Dip.

Electrical Characteristics

DC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: $V_{cc+} = 12V$, $V_{cc-} = -6V$

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Vio	Input Offset Voltage	$V_{cc-} = -7V$, $R_s = 200 \text{ Ohms}$, $V_{cm} = +5V$	1		-5	5	mV	1
			1		-6	6	mV	2, 3
		$V_{cc-} = -7V$, $R_s = 200 \text{ Ohms}$, $V_{cm} = -5V$	1		-5	5	mV	1
			1		-6	6	mV	2, 3
		$V_{cm} = 0V$, $R_s = 200 \text{ Ohms}$	1		-3.5	3.5	mV	1
			1		-4.5	4.5	mV	2, 3
$V_{cm} = 0V$, $R_s = 50 \text{ Ohms}$	1		-3.5	3.5	mV	1		
	1		-4.5	4.5	mV	2, 3		
Iio	Input Offset Current	$V_{cm} = 0V$	1			10	μA	1
			1			20	μA	2, 3
Iib	Input Bias Current	$V_{out} = V_{ol}$, $V_{cm} = 0V$				75	μA	1
						150	μA	2, 3
Avs	Voltage Gain				750		V	1
					500		V	2, 3
Voh	Positive Output Level	$V_{in} = 10mV$, $I_o = 0mA$			2.5	5	V	1, 2, 3
		$V_{in} = 10mV$, $I_o = 5mA$			2.5	5	V	1, 2, 3
Vol	Negative Output Level	$V_{in} = -10mV$, $I_o = 0mA$			-1	0	V	1, 2, 3
OD Vol	Over Driven Negative Output Level	$V_{in} = 5V$, $I_o = 0mA$			-1	0	V	1, 2, 3
Isink	Output Sink Current	$V_{in} = -10mV$, $V_o = 0V$			0.5		mA	1
					0.12		mA	2
					0.25		mA	3
Icc+	Power Supply Current	$V_{in} = -5mV$, $V_{out} = \text{Gnd}$	2			13.3	mA	1, 2, 3
Icc-	Power Supply Current	$V_{in} = -5mV$, $V_{out} = \text{Gnd}$	2		-6.1		mA	1, 2, 3
Istrobe	Strobe Current	$V_{in} = 10mV$, $V_{st} = 100mV$				2.5	mA	1, 2, 3
Vo(ST)	Strobed Output	$V_{st} = .3V$			-1	0	V	1, 2, 3
CMRR	Common Mode Rejection Ratio	$V_{cc-} = -7V$, $V_{cm} = \pm 5V$, $R_s = 200 \text{ Ohms}$			80		dB	1, 2, 3

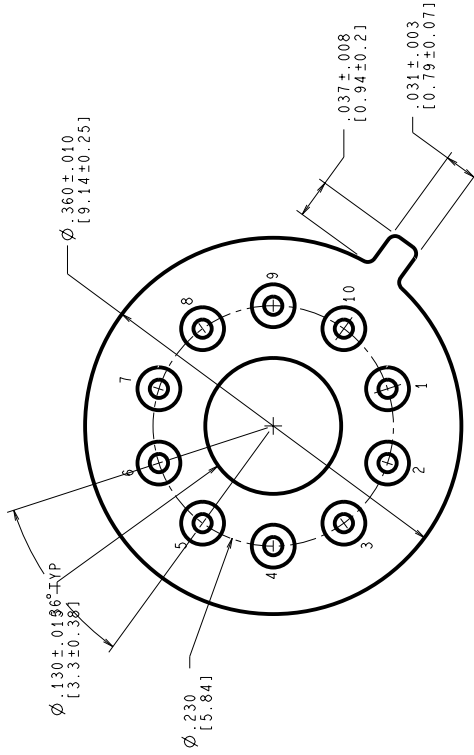
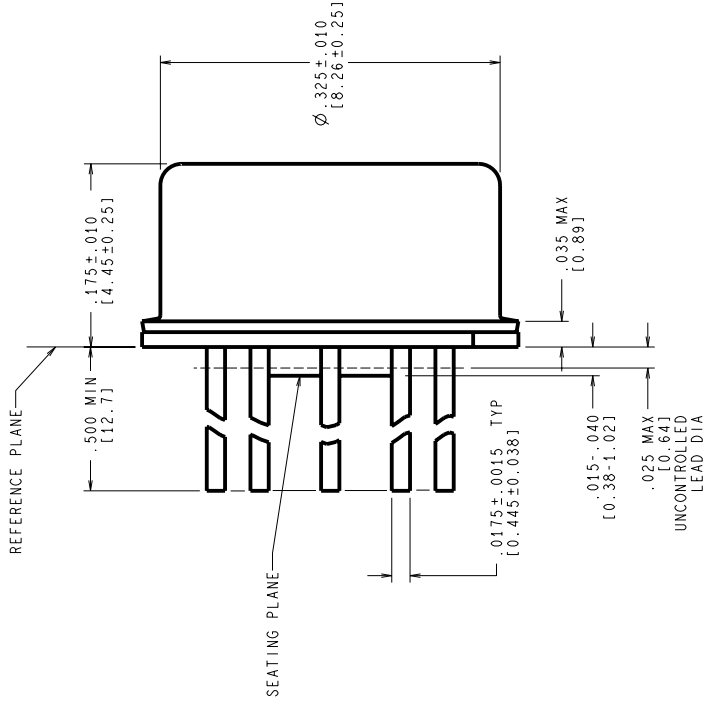
Graphics and Diagrams

GRAPHICS#	DESCRIPTION
5970HRA2	10LD .230DIA PC TO-100 METAL CAN PKG H (B/I CKT)
6202HRA1	CERDIP (J), 14 LEAD (B/I CKT)
6209HRA1	CERPAC (W), 10 LEAD (B/I CKT)
8356HRA1	10LD .230DIA PC TO-100 METAL CAN H(B/I CKT)
H10CRF	10LD .230DIA PC TO-100 METAL CAN H(P/P DWG)
J14ARH	CERDIP (J), 14 LEAD (P/P DWG)
P000030A	10LD .230DIA PC TO-100 METAL CAN H(PIN OUT)
P000110A	CERDIP (J), 14 LEAD (PIN OUT)
P000111A	CERPAC (W), 10 LEAD (PIN OUT)
W10ARG	CERPAC (W), 10 LEAD (P/P DWG)

See attached graphics following this page.

REVISIONS

LTR	DESCRIPTION	E.C. N.	DATE	BY/APP'D
F	REVISE & REDRAW PER CURRENT STANDARD; UPDATE MIL/AERO STAMP & TITLE.	11003	06/26/95	MS/



CONTROLLING DIMENSION IS INCH
VALUES IN [] ARE MILLIMETERS

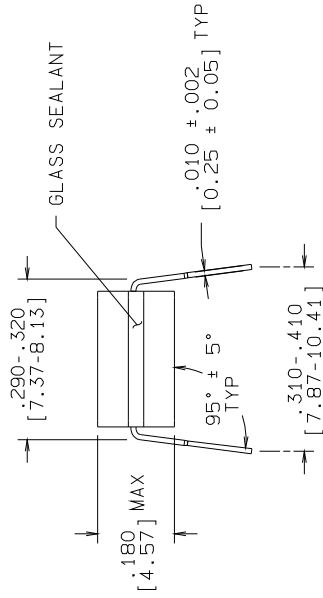
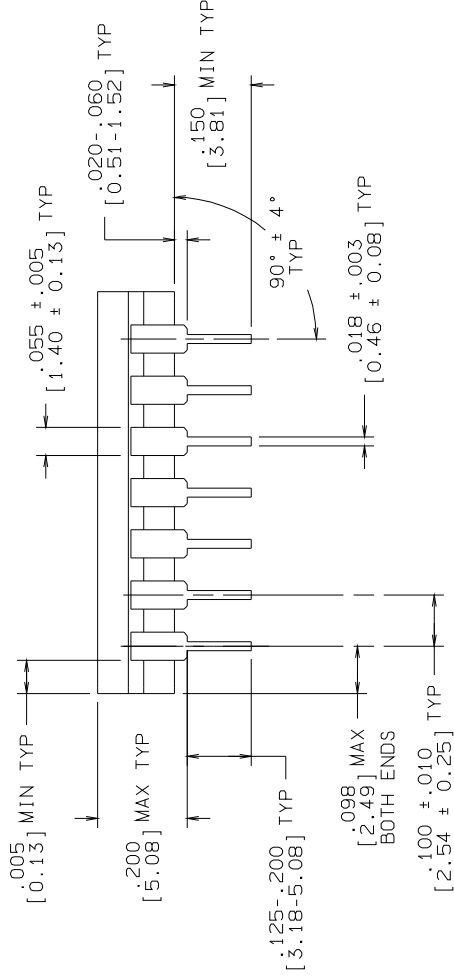
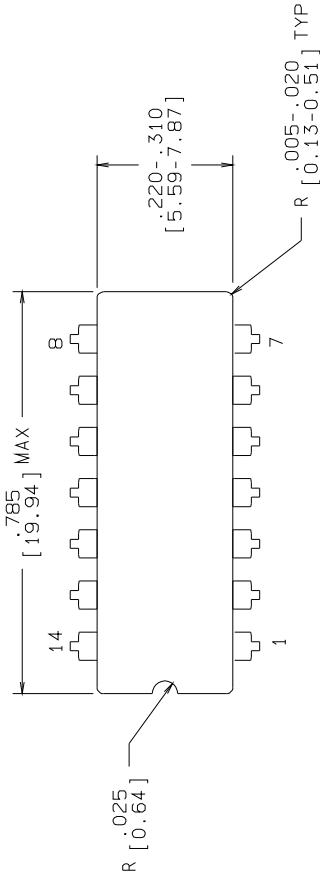
MIL-I-38535
CONFIGURATION CONTROL

NOTES: UNLESS OTHERWISE SPECIFIED

- LEADS TO BE LOCATED WITHIN .007 IN/ 0.18 mm OF THEIR TRUE POSITIONS RELATIVE TO A MAXIMUM WIDTH TAB.
- STANDARD METAL CAN TYPE: SOLID BASE WITH CERAMIC STANDOFF.
- APPLIES TO MIL-AERO AND LINEAR PRODUCTS.
- REFERENCE JEDEC REGISTRATION TO-100, JEDEC PUBLICATION No. 95.

APPROVALS	DATE	SCALE	SIZE	DRAWING NUMBER	REV
DRWY: MARTA SUCHY	06/26/95	N/A	C	MKT-H10C	F
DTG: CHK.					
ENGR: CHK.					
PROJECTION					
National Semiconductor 2800 Semiconductor dr., Santa Clara, CA 95052-8090					
METAL CAN TO-100, 10 LEAD, .230 DIA P.C.					
DO NOT SCALE DRAWING SHEET 1 of 1					

R E V I S I O N S			
LTR	DESCRIPTION	E.C.N.	DATE
H	REVISE PER CURRENT STD; REDRAW	10001	09/15/93
			TL/



CONTROLLING DIMENSION: INCH

NOTES: UNLESS OTHERWISE SPECIFIED

1. LEAD FINISH TO BE 200 MICRONS / 5.08 MICROMETERS MINIMUM SOLDER MEASURED AT THE CREST OF THE MAJOR FLATS.
2. JEDEC REGISTRATION MO-036, VARIATION AB, DATED 04/1981.

MIL/AERO MIL-M-38510
 CONFIGURATION CONTROL CONFIGURATION CONTROL

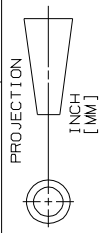
APPROVALS	DATE	APPROVALS	DATE
DRAWN: T. LEQUANG	09/15/93		
DFTG. CHK.			
ENGR. CHK.			
APPROVAL			

SCALE	SIZE	DRAWING NUMBER	REV
N/A	B	MKT-J14A	H

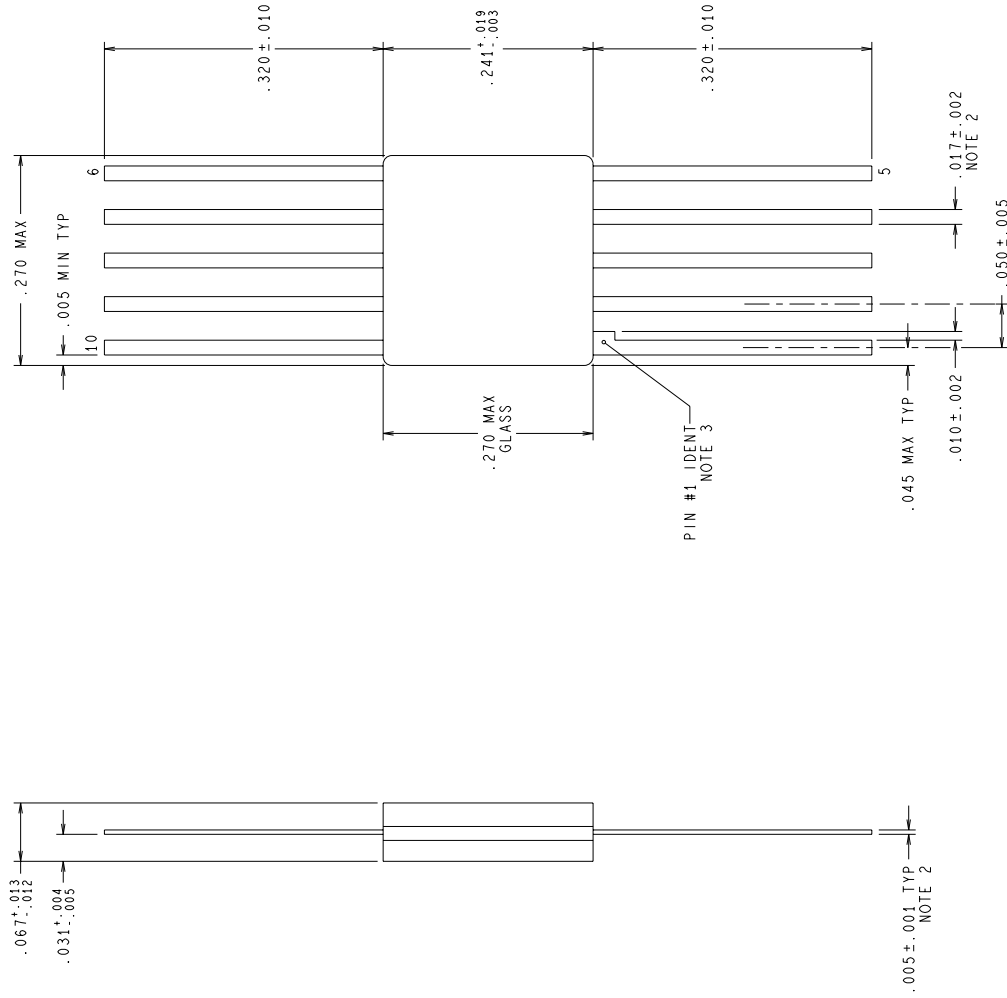
DO NOT SCALE DRAWING	SHEET	OF
	1	1

NATIONAL SEMICONDUCTOR CORPORATION
 2900 Semiconductor Drive, Santa Clara, CA 95052-8090

CERDIP (J),
 14 LEAD,



REVISIONS			
LTR	DESCRIPTION	E.C.N.	DATE
F	REVISE AND REDRAW PER NEW STANDARD.	10510	07/28/94 DEG/AEP
G	.017±.002 WAS .017±.020.	10654	10/21/94 DEG/



NOTES: UNLESS OTHERWISE SPECIFIED.

- LEAD FINISH: SOLDER DIPPED WITH Sn60 OR Sn63 SOLDER CONFORMING TO MIL-M-38510 TO A MINIMUM THICKNESS OF 200 MICRONS. SOLDER MAY BE APPLIED OVER LEAD BASIS METAL OR Sn PLATE.
- MAXIMUM LIMIT MAY BE INCREASED BY .003 INCHES AFTER LEAD FINISH APPLIED.
- LEAD 1 IDENTIFICATION SHALL BE:
 - A NOTCH OR OTHER MARK WITHIN THIS AREA
 - A TAB ON LEAD 1, EITHER SIDE
- REFERENCE JEDEC REGISTRATION M0-003, VARIATION AG, DATED 06/01/76.

MIL/AERO
CONFIGURATION CONTROL

MIL-M-38510
CONFIGURATION CONTROL

APPROVALS		DATE	
DRWN	<i>D. F. Grady</i>		07/28/94
DTG. CHK.			
ENGR. CHK.			

National Semiconductor			
2800 Semiconductor dr., Santa Clara, CA 95052-8090			
SCALE		DRAWING NUMBER	
N/A	C	MKT-W10A	REV
DO NOT SCALE DRAWING			G

PROJECTION	

CERPACK, 10 LEAD	
SHEET 1 of 1	