National Semiconductor

MICROCIRCUIT DATA SHEET

MJLM119-X REV 0BL

Original Creation Date: 08/16/95
Last Update Date: 02/17/97
Last Major Revision Date: 08/16/95

HIGH SPEED DUAL COMPARATOR

Industry Part Number

LM119

NS Part Numbers

JL119BCA
JL119BIA

Prime Die

LM119

Controlling Document

38510/10306 REV D

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	+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: (B LEVEL ONLY)

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Vio	Input Offset Voltage	Vcc+ = 15V, Vcc- = -15V, Vcm = 0V, Rs = 50 Ohms			-4	+4	mV	1
					-7	+7	mV	2, 3
		Vcc+ = 27V, Vcc- = -3V, Vcm = -12V, Rs = 50 Ohms			-4	+4	mV	1
					-7	+7	mV	2, 3
		Vcc+ = 3V, Vcc- = -27V, Vcm = 12V, Rs = 50 Ohms			-4	+4	mV	1
					-7	+7	mV	2, 3
		Vcc+ = 2.5V, Vcc- = -2.5V, Vcm = 2.5V, Rs = 50 Ohms			-4	+4	mV	1
					-7	+7	mV	2, 3
Iio	Input Offset Current	Vcc+ = 15V, Vcc- = -15V, Vcm = 0V			-75	+75	nA	1, 2
					-100	+100	nA	3
		Vcc+ = 27V, Vcc- = -3V, Vcm = -12V			-75	+75	nA	1, 2
					-100	+100	nA	3
		Vcc+ = 3V, Vcc- = -27V, Vcm = 12V			-75	+75	nA	1, 2
					-100	+100	nA	3
+Icc	Power Supply Current	Vcc+ = 15V, Vcc- = -15V				10	mA	1, 2
						11.5	mA	3
-Icc	Power Supply Current	Vcc+ = 15V, Vcc- = -15V			-5		mA	1
					-4.5		mA	2
					-6		mA	3
Iib+	Input Bias Current	Vcc+ = 15V, Vcc- = -15V, Vcm = 0V			-0.1	500	nA	1, 2
					-0.1	1000	nA	3
		Vcc+ = 27V, Vcc- = -3V, Vcm = -12V			-0.1	750	nA	1, 2
					-0.1	1000	nA	3
		Vcc+ = 3V, Vcc- = -27V, Vcm = 12V			-0.1	750	nA	1, 2
					-0.1	1000	nA	3

Electrical Characteristics

DC PARAMETERS(Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: (B LEVEL ONLY)

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Iib-	Input Bias Current	Vcc+ = 15V, Vcc- = -15V, Vcm = 0V			-0.1	500	nA	1, 2
					-0.1	1000	nA	3
		Vcc+ = 27V, Vcc- = -3V, Vcm = -12V			-0.1	750	nA	1, 2
					-0.1	1000	nA	3
		Vcc+ = 3V, Vcc- = -27V, Vcm = 12V			-0.1	750	nA	1, 2
					-0.1	1000	nA	3
CMR	Common Mode Rejection	-12V ≤ Vcm ≤ +12V, -27V ≤ -Vcc ≤ -3V, 3V ≤ +VCC ≤ 27V, Rs = 50 Ohms			90		dB	1, 2, 3
Vol	Low Level Output Voltage	Vcc+ = 3.5V, Vcc- = -1V, Vcm = 1V, Vio = 7mV, Iout = 3.2mA				0.4	V	1, 2
						0.6	V	3
		Vcc+ = 2.25V, Vcc- = -2.25V, Vcm=2.25V, Vio = 7mV, Iout = 3.2mA				0.4	V	1, 2
						0.6	V	3
		Vcc+ = 27V, Vcc- = -3V, Vcm = -12V, Vio = 7mV, Iout = 25mA				1.5	V	1, 2, 3
		Vcc+ = 3V, Vcc- = -27V, Vcm = 12V, Vio = 7mV, Iout = 25mA				1.5	V	1, 2, 3
Icex	Output Leakage Current	Vcc+ = 18V, Vcc- = -18V, Vout = 18V			-1	2	uA	1
					-1	10	uA	2
Av	Voltage Gain (Collector)	Vcc+ = 15V, Vcc- = -15V, Vout = 1.5V to 11.5V	1		10		K	4
			1		5		K	5, 6

AC PARAMETERS

(The following conditions apply to all the following parameters, unless otherwise specified.)
AC: ±Vcc = ±15V, Cl = 50pF (B LEVEL ONLY)

tRLHC	Response Time (Collector Output)	Vod (overdrive) = +5mV, Vin = 100mV	2			125	nS	9
tRHLC	Response Time (Collector Output)	Vod (overdrive) = -5mV, Vin = 100mV	2			160	nS	9

Electrical Characteristics

DC PARAMETERS: DRIFT VALUES

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: (B LEVEL ONLY). "Delta calculations performed at Group B-5".

SYMBOL	PARAMETER	CONDITIONS	NOTES	PIN-NAME	MIN	MAX	UNIT	SUB-GROUPS
Vio	Input Offset Voltage	Vcc+ = 15V, Vcc- = -15V, Vcm = 0V, Rs = 50 Ohms			-1	1	mV	1
		Vcc+ = 27V, Vcc- = -3V, Vcm = -12V, Rs = 50 Ohms			-1	1	mV	1
		Vcc+ = 3V, Vcc- = -27V, Vcm = 12V, Rs = 50 Ohms			-1	1	mV	1
Iib+	Input Bias Current	Vcc+ = 15V, Vcc- = -15V, Vcm = 0V			-50	50	nA	1
		Vcc+ = 27V, Vcc- = -3V, Vcm = -12V			-50	50	nA	1
		Vcc+ = 3V, Vcc- = -27V, Vcm = 12V			-50	50	nA	1
Iib-	Input Bias Current	Vcc+ = 15V, Vcc- = -15V, Vcm = 0V			-50	50	nA	1
		Vcc+ = 27V, Vcc- = -3V, Vcm = -12V			-50	50	nA	1
		Vcc+ = 3V, Vcc- = -27V, Vcm = 12V			-50	50	nA	1

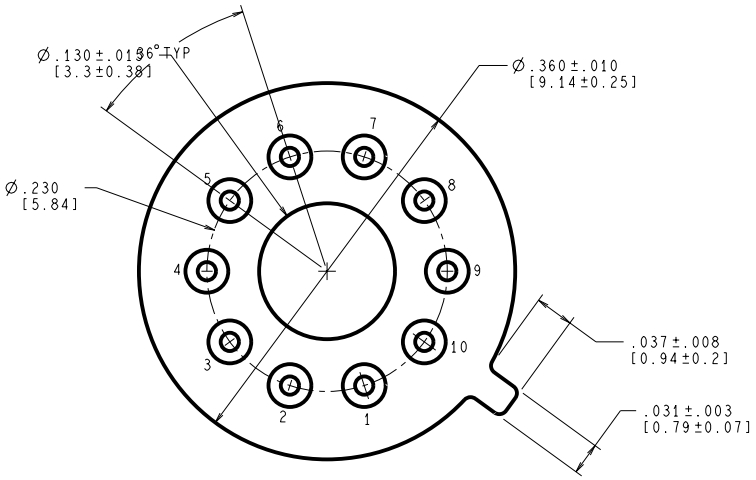
Note 1: Datalog in K = V/mV.
Note 2: Refer to SP-16655.

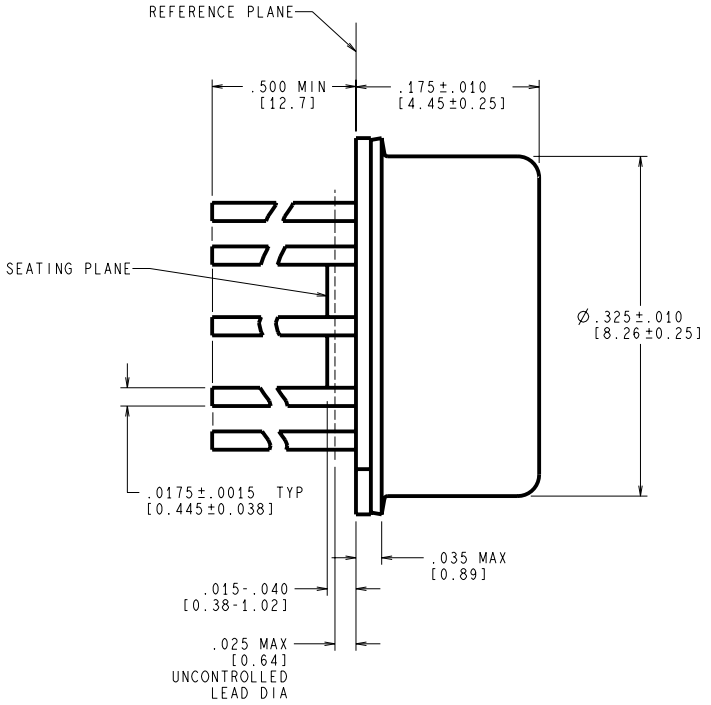
Graphics and Diagrams

GRAPHICS#	DESCRIPTION
6028HRB1	CERDIP (J), 14 LEAD (B/I CKT)
6030HRB1	10LD .230 DIA P.C. 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)

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

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

APPROVALS	DATE
DRAWN: MARTA SUCHY	06/26/95
DFTG. CHK.	
ENGR. CHK.	

PROJECTION — INCH [MM]

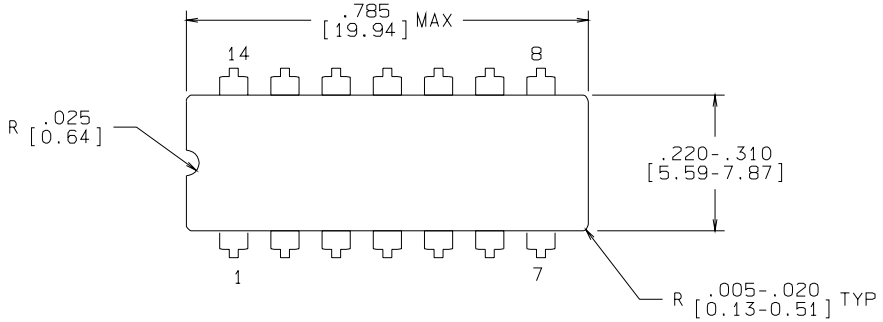
National Semiconductor
2900 Semiconductor dr, Santa Clara, CA 95052-8090

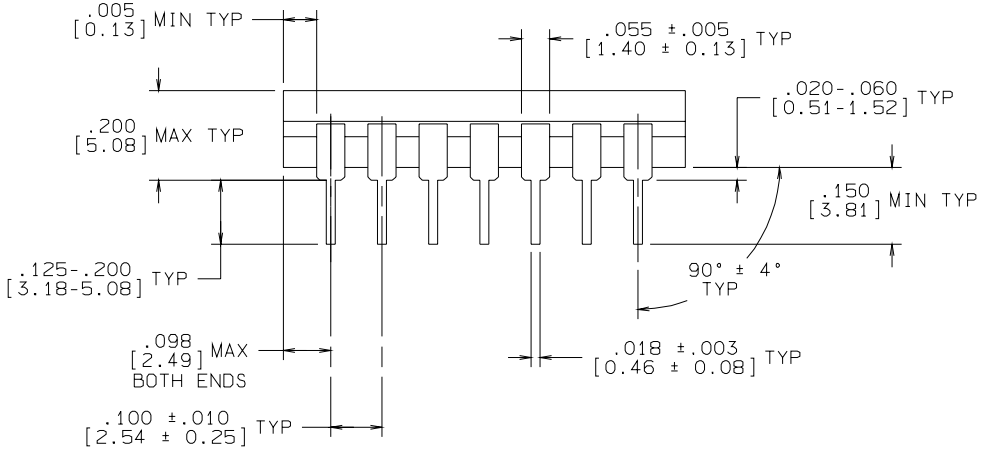
METAL CAN, TO-100, 10 LEAD, .230 DIA P.C.

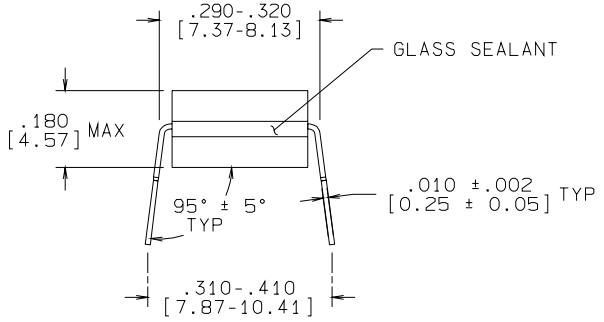
SCALE	SIZE	DRAWING NUMBER	REV
N/A	C	MKT-H10C	F

DO NOT SCALE DRAWING — SHEET 1 of 1

REVISIONS				
LTR	DESCRIPTION	E.C.N.	DATE	BY/APP'D
H	REVISE PER CURRENT STD; REDRAW	10001	09/15/93	TL/







CONTROLLING DIMENSION: INCH

MIL/AERO CONFIGURATION CONTROL

MIL-M-38510 CONFIGURATION CONTROL

NOTES: UNLESS OTHERWISE SPECIFIED

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

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

PROJECTION

INCH [MM]

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

CERDIP (J), 14 LEAD,

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

DO NOT SCALE DRAWING | SHEET 1 OF 1