National Semiconductor

February 1992

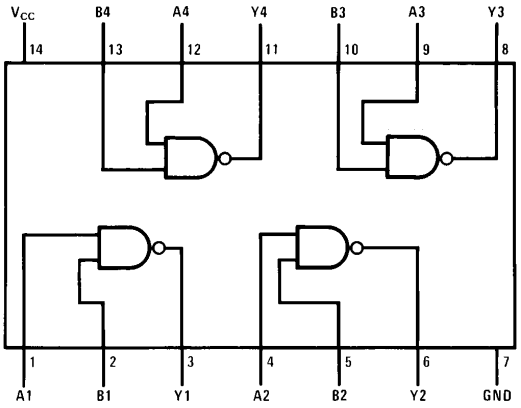
DM74LS37
Quad 2-Input NAND Buffers

General Description

This device contains four independent buffer gates each of which performs the logic NAND function.

Connection Diagram

Dual-In-Line Package



TL/F/6362–1

Order Number DM74LS37M or DM74LS37N
See NS Package Number M14A or N14A

Function Table

$Y = \overline{AB}$

Inputs		Output
A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

H = High Logic Level
L = Low Logic Level

RRD-B30M105/Printed in U. S. A.

Absolute Maximum Ratings (Note)

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range	0°C to +70°C
Storage Temperature Range	−65°C to +150°C

Note: *The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the "Electrical Characteristics" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.*

Recommended Operating Conditions

Symbol	Parameter	Min	Nom	Max	Units
V_{CC}	Supply Voltage	4.75	5	5.25	V
V_{IH}	High Level Input Voltage	2			V
V_{IL}	Low Level Input Voltage			0.8	V
I_{OH}	High Level Output Current			−1.2	mA
I_{OL}	Low Level Output Current			24	mA
T_A	Free Air Operating Temperature	0		70	°C

Electrical Characteristics over recommended operating free air temperature range (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 1)	Max	Units
V_I	Input Clamp Voltage	V_{CC} = Min, I_I = −18 mA			−1.5	V
V_{OH}	High Level Output Voltage	V_{CC} = Min, I_{OH} = Max, V_{IL} = Max	2.7	3.4		V
V_{OL}	Low Level Output Voltage	V_{CC} = Min, I_{OL} = Max, V_{IH} = Min		0.35	0.5	V
		I_{OL} = 12 mA, V_{CC} = Min		0.25	0.4	
I_I	Input Current @ Max Input Voltage	V_{CC} = Max, V_I = 7V			0.1	mA
I_{IH}	High Level Input Current	V_{CC} = Max, V_I = 2.7V			20	μA
I_{IL}	Low Level Input Current	V_{CC} = Max, V_I = 0.4V			−0.36	mA
I_{OS}	Short Circuit Output Current	V_{CC} = Max (Note 2)	−20		−100	mA
I_{CCH}	Supply Current with Outputs High	V_{CC} = Max		0.9	2	mA
I_{CCL}	Supply Current with Outputs Low	V_{CC} = Max		6	12	mA

Switching Characteristics

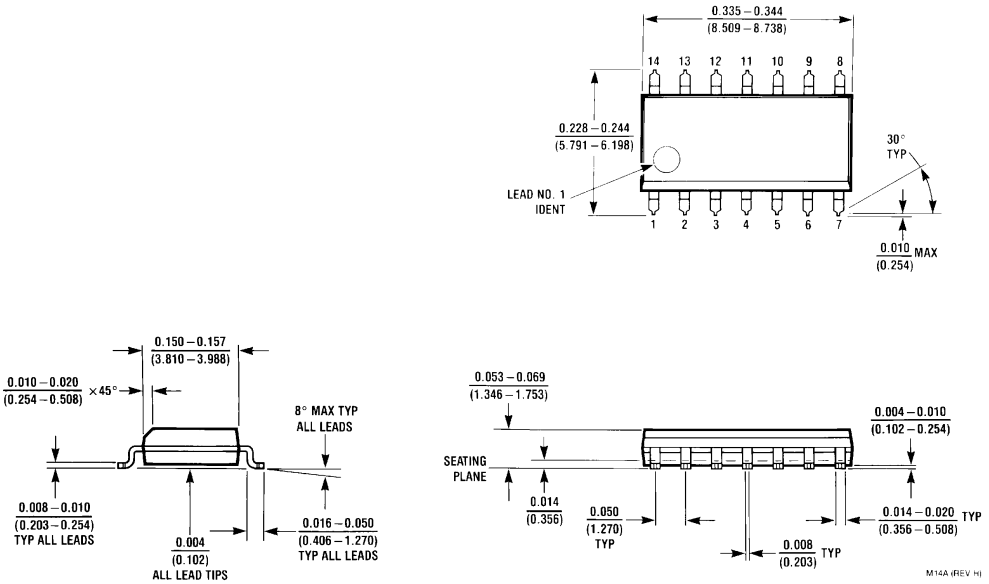
at V_{CC} = 5V and T_A = 25°C

Symbol	Parameter	C_L = 50 pF, R_L = 667Ω		C_L = 150 pF R_L = 667Ω		Units
		Min	Max	Min	Max	
t_{PLH}	Propagation Delay Time Low to High Level Output	3	15	4	18	ns
t_{PHL}	Propagation Delay Time High to Low Level Output	3	15	4	21	ns

Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C.

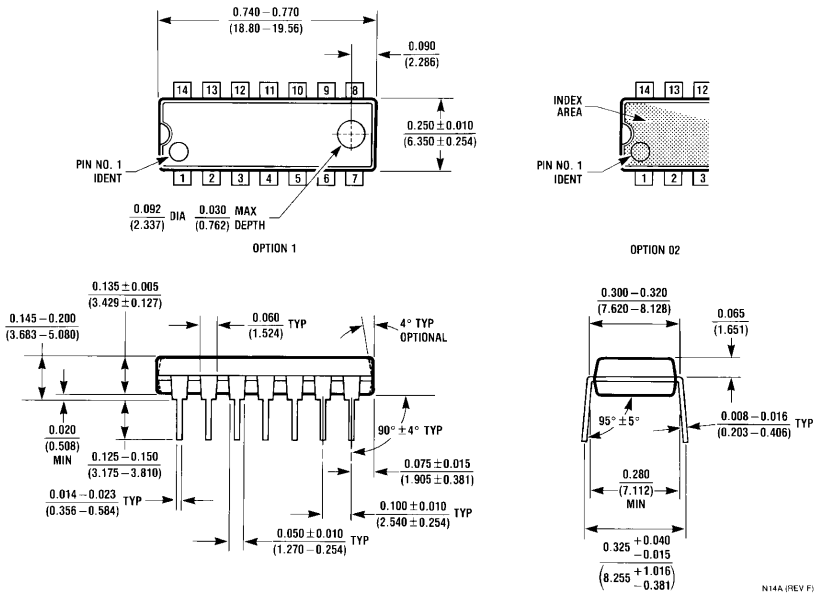
Note 2: Not more than one output should be shorted at a time, and the duration should not exceed one second.

Physical Dimensions inches (millimeters)



14-Lead Small Outline Molded Package (M)
Order Number DM74LS37M
NS Package Number M14A

Physical Dimensions inches (millimeters) (Continued)



14-Lead Molded Dual-In-Line Package (N)
Order Number DM74LS37N
NS Package Number N14A

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