FAIRCHILD SEMICONDUCTOR™

February 1998

DM74AS30
8 Input NAND Gate

General Description

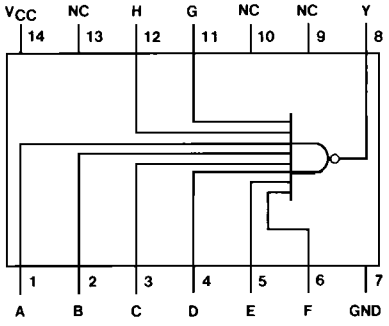
This device contains a single gate which performs the logic NAND function.

Features

- Switching specifications at 50 pF
- Switching specifications guaranteed over full temperature and V_{CC} range
- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Functionally and pin for pin compatible with Schottky, low power Schottky, and advanced low power Schottky TTL counterpart
- Improved AC performance over Schottky, low power Schottky, and advanced low power Schottky counterparts

Connection Diagram

Dual-In-Line Package



DS006279-1

Order Number DM74AS30M or DM74AS30N
See Package Number M14A or N14A

Function Table

$$Y = \overline{ABCDEFGH}$$

Inputs	Output
A thru H	**Y**
All inputs H	L
One or More Inputs L	H

H = High Logic Level
L = Low Logic Level

Absolute Maximum Ratings (Note 1)

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range	0°C to +70°C
Storage Temperature Range	−65°C to +150°C
Typical θ_{JA}	
N Package	84.0°C/W
M Package	114.0°C/W

Recommended Operating Conditions

Symbol	Parameter	Min	Nom	Max	Units
V_{CC}	Supply Voltage	4.5	5	5.5	V
V_{IH}	High Level Input Voltage	2			V
V_{IL}	Low Level Input Voltage			0.8	V
I_{OH}	High Level Output Current			−2	mA
I_{OL}	Low Level Output Current			20	mA
T_A	Free Air Operating Temperature	0		70	°C

Note 1: 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.

Electrical Characteristics

over recommended operating free air temperature range. All typical values are measured at V_{CC} = 5V, T_A = 25°C.

Symbol	Parameter	Conditions		Min	Typ	Max	Units
V_{IK}	Input Clamp Voltage	V_{CC} = 4.5V, I_I = −18 mA				−1.2	V
V_{OH}	High Level Output Voltage	I_{OH} = −2 mA V_{CC} = 4.5V to 5.5V		V_{CC} − 2			V
V_{OL}	Low Level Output Voltage	V_{CC} = 4.5V, I_{OL} = 20 mA			0.35	0.5	V
I_I	Input Current at Max Input Voltage	V_{CC} = 5.5V, V_{IH} = 7V				0.1	mA
I_{IH}	High Level Input Current	V_{CC} = 5.5V, V_{IH} = 2.7V				20	µA
I_{IL}	Low Level Input Current	V_{CC} = 5.5V, V_{IL} = 0.4V				−0.5	mA
I_O	Output Drive Current	V_{CC} = 5.5V, V_O = 2.25V		−30		−112	mA
I_{CC}	Supply Current	V_{CC} = 5.5V	Outputs High		1	1.5	mA
			Outputs Low		3.4	4.9	mA

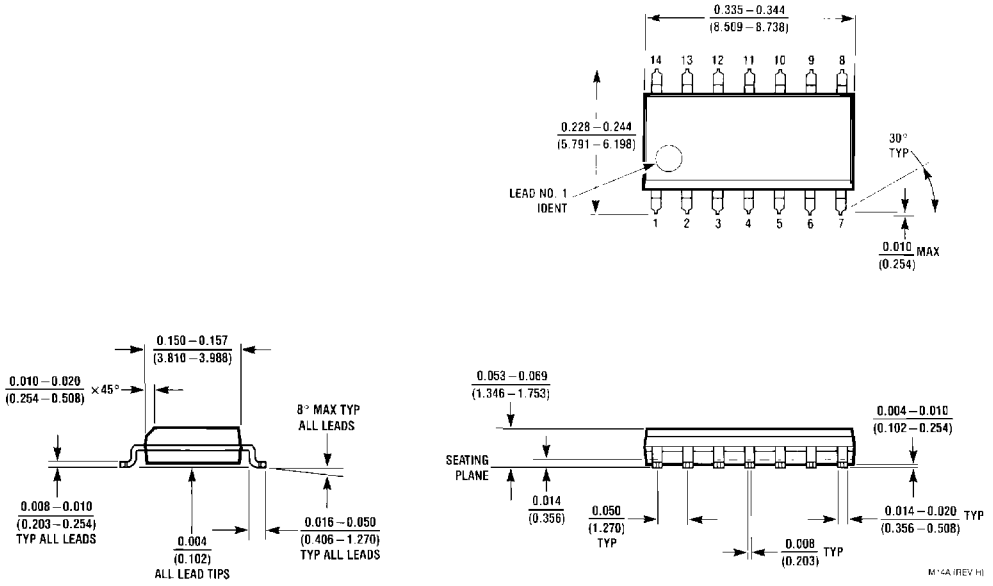
Switching Characteristics

over recommended operating free air temperature range (Note 2)

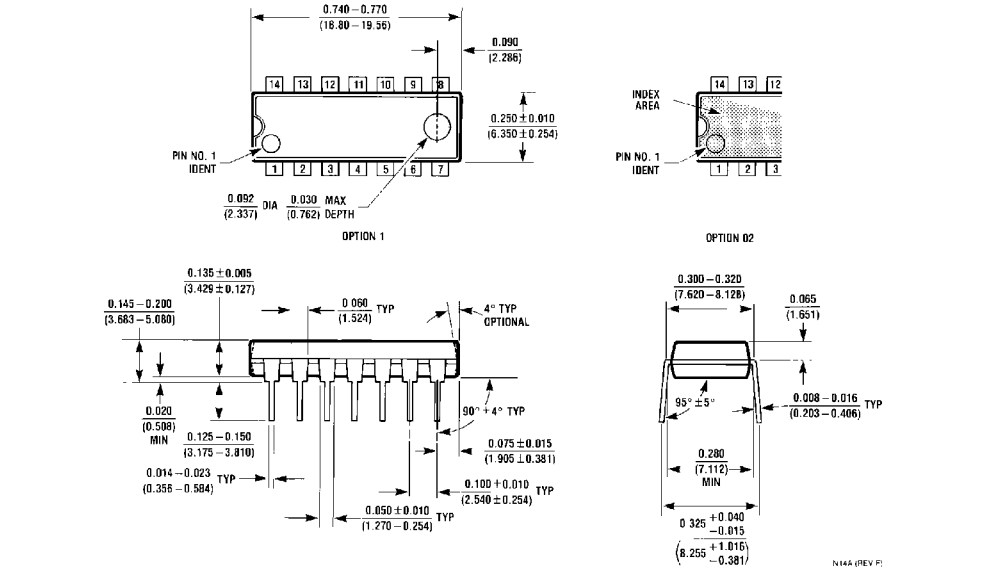
Symbol	Parameter	Conditions	Min	Max	Units
t_{PLH}	Propagation Delay Time Low to High Level Output	V_{CC} = 4.5V to 5.5V R_L = 500Ω C_L = 50 pF	1	5	ns
t_{PHL}	Propagation Delay Time High to Low Level Output		1	4.5	ns

Note 2: See Section 1 for test waveforms and output load.

Physical Dimensions inches (millimeters) unless otherwise noted



S.O. Package (M)
Order Number DM74AS30M
Package Number M14A



Molded Dual-In-Line Package (N)
Order Number DM74AS30N
Package Number N14A

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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