

DM74ALS30A 8-Input NAND Gate

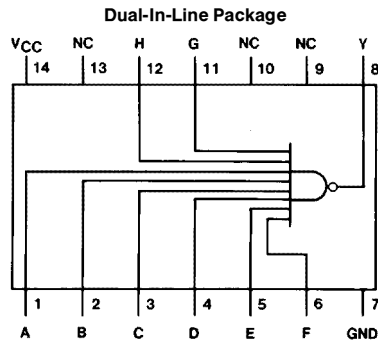
General Description

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 and low power Schottky TTL counterpart
- Improved AC performance over Schottky and low power Schottky counterparts

Connection Diagram



TL/F/6189-1

Order Number DM74ALS30AM, DM74ALS30AN or DM74ALS30ASJ
See NS Package Number M14A, M14D or N14A

Function Table

$$Y = \overline{ABCDEFGH}$$

Inputs A thru H	Output Y
All Inputs H	L
One or More Input L	H

H = High Logic Level
L = Low Logic Level

Absolute Maximum Ratings

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range DM74ALS	0°C to +70°C
Storage Temperature Range	-65°C to +150°C
Typical θ_{JA}	
N Package	86.5°C/W
M Package	116.0°C/W

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	DM74ALS30A			Units
		Min	Nom	Max	
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			-0.4	mA
I _{OL}	Low Level Output Current			8	mA
T _A	Free Air Operating Temperature	0		70	°C

Electrical Characteristics

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

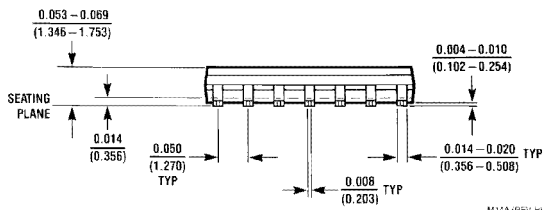
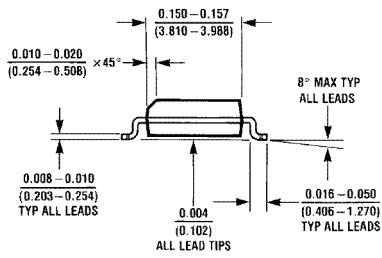
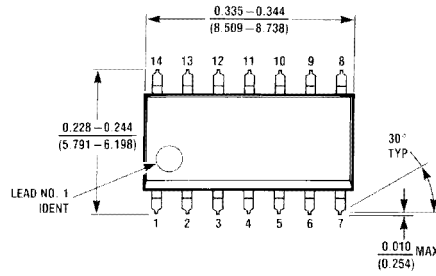
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{IK}	Input Clamp Voltage	V _{CC} = 4.5V, I _I = -18 mA			-1.5	V
V _{OH}	High Level Output Voltage	I _{OH} = -0.4 mA V _{CC} = 4.5V to 5.5V	V _{CC} - 2			V
V _{OL}	Low Level Output Voltage	V _{CC} = 4.5V 74ALS I _{OL} = 8 mA		0.35	0.5	V
I _I	Input Current 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			-0.1	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		0.22	0.36	mA
		Outputs Low		0.54	0.90	mA

Switching Characteristics over recommended operating free air temperature range (Note 1)

Symbol	Parameter	Conditions	DM74ALS30A		Units
			Min	Max	
t _{PLH}	Propagation Delay Time Low to High Level Output	V _{CC} = 4.5V to 5.5V R _L = 500Ω C _L = 50 pF	3	10	ns
t _{PHL}	Propagation Delay Time High to Low Level Output		3	12	ns

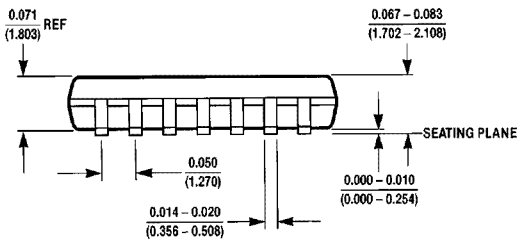
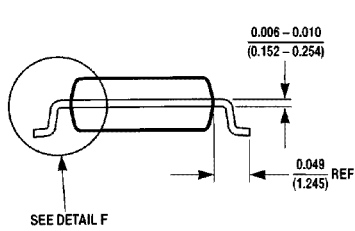
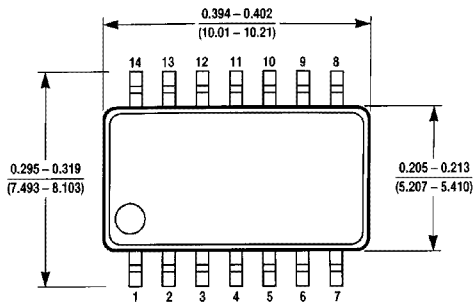
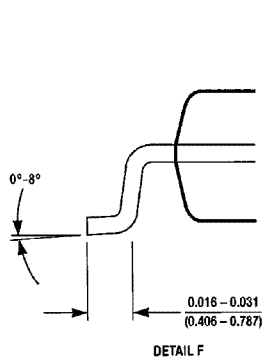
Note 1: See Section 5 for test waveforms and output load.

Physical Dimensions inches (millimeters)



M14A (REV. H)

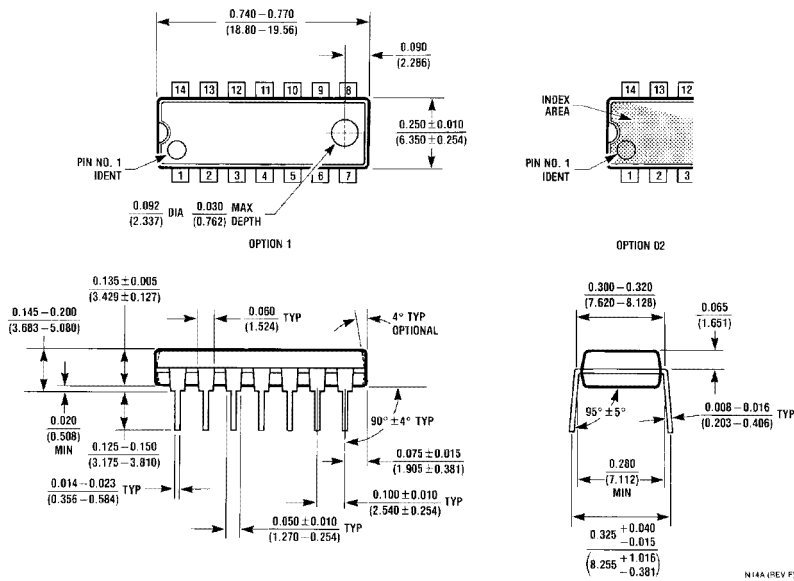
S.O. Package (M)
Order Number DM74ALS30AM
NS Package Number M14A



M14D (REV. A)

Small Outline Package (SJ)
Order Number DM74ALS30ASJ
NS Package Number M14D

Physical Dimensions inches (millimeters) (Continued)



**Molded Dual-In-Line Package (N)
Order Number DM74ALS30AN
NS Package Number N14A**

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