

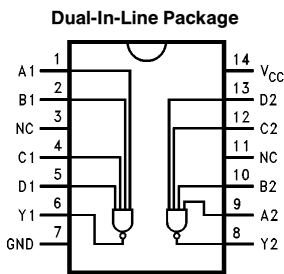
DM74LS22

Dual 4-Input NAND Gate with Open-Collector Output

General Description

The 'LS22 contains two independent NAND gates, each with four data inputs.

Connection Diagram



TL/F/10168-1

Order Number DM74LS22M or DM74LS22N
See NS Package Number M14A or N14A

Truth Table

$$Y = \overline{ABCD}$$

Inputs				Outputs
A	B	C	D	Y
X	X	X	L	H
X	X	L	X	H
X	L	X	X	H
L	X	X	X	H
H	H	H	H	L

H = High Logic Level
L = Low Logic Level
X = Either Low or High Logic Level

Absolute Maximum Ratings (Note)

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range	0°C to +70°C
DM74LS	
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	DM74LS22			Units
		Min	Nom	Max	
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
V _{OH}	High Level Output Voltage			5.5	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 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
I _{CEX}	High Level Output Current	V _{CC} = Min, V _O = 5.5V, V _{IL} = Max			100	μA
V _{OL}	Low Level Output Voltage	V _{CC} = Min, I _{OL} = Max, V _{IH} = Min	DM74		0.5	V
		I _{OL} = 4 mA, V _{CC} = Min	DM74		0.4	
I _I	Input Current @ Max Input Voltage	V _{CC} = Max, V _I = 5.5V			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			-0.4	mA
I _{CCH}	Supply Current Outputs High	V _{CC} = Max, V _{IN} = GND			0.8	mA
I _{CCL}	Supply Current Outputs Low	V _{CC} = Max, V _{IN} = Open			2.2	mA

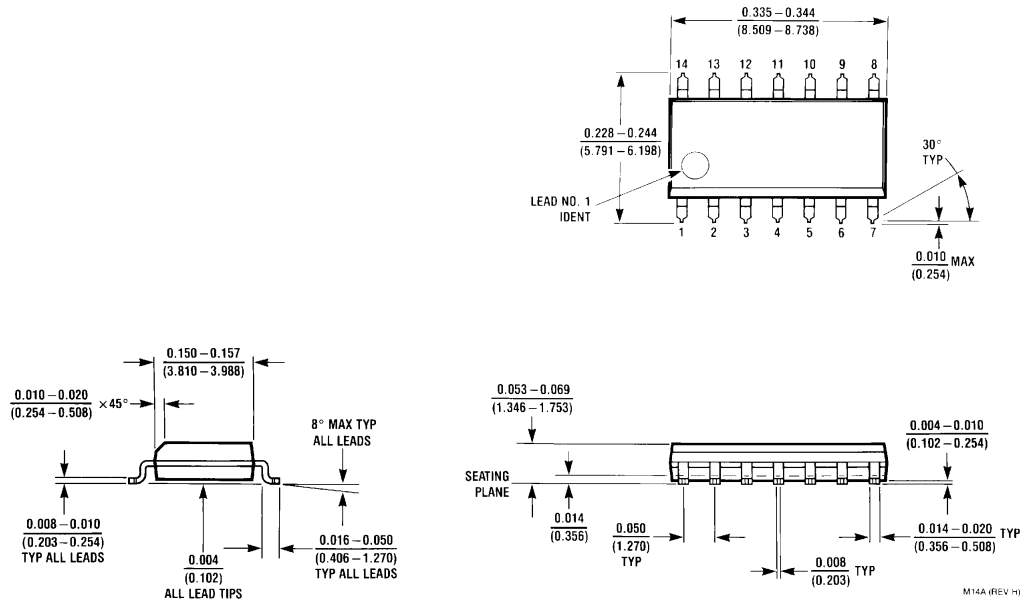
Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C.

Switching Characteristics

at $V_{CC} = +5.0V$, $T_A = +25^\circ C$

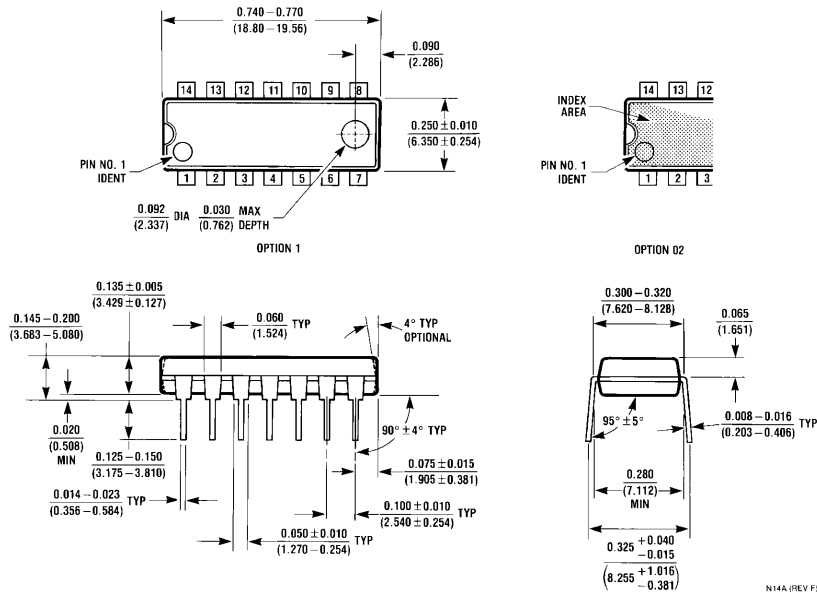
Symbol	Parameter	$R_L = 2\text{ k}\Omega$, $C_L = 15\text{ pF}$		Units
		Min	Max	
t_{PLH}	Propagation Delay Time Low to High Level Output		22	ns
t_{PHL}	Propagation Delay Time High to Low Level Output		24	ns

Physical Dimensions inches (millimeters)



14-Lead Small Outline Molded Package (M)
Order Number DM74LS22M
NS Package Number M14A

Physical Dimensions inches (millimeters) (Continued)



14-Lead Molded Dual-In-Line Package (N)
Order Number DM74LS22N
NS Package Number N14A

N14A (REV F)

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