

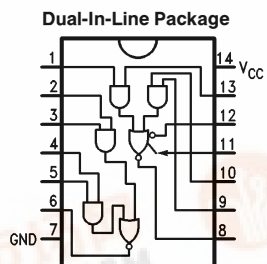
June 1989

DM7450 Expandable Dual 2-Wide 2-Input AND-OR-INVERT Gate

General Description

This device contains two independent combinations of gates, each of which perform the logic AND-OR-INVERT function. One set of gates has an expander node.

Connection Diagram



TL/F/9778-1

DM7450 Expandable Dual 2-Wide 2-Input AND-OR-INVERT Gate

Absolute Maximum Ratings (Note)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	7V
Input Voltage	5.5V
Operating Free Air Temperature Range	0°C to +70°C
DM74	
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	DM7450			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
I _{OH}	High Level Output Current			−0.4	mA
I _{OL}	Low Level Output Current			16	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 = −12 mA			−1.5	V
V _{OH}	High Level Output Voltage	V _{CC} = Min, I _{OH} = −400 μA V _{IL} = Max	2.4	3.4		V
V _{OL}	Low Level Output Voltage	V _{CC} = Min, I _{OL} = Max V _{IH} = Max		0.2	0.4	V
I _I	Input Current @ Max Input Voltage	V _{CC} = Max, V _I = 5.5V			1	mA
I _X	Expander Current	V _I = 0.4V, I _{OL} = 16 mA V _{CC} = Min, T _A = Min			3.1	mA
I _{IH}	High Level Input Current	V _{CC} = Max, V _I = 2.4V			40	μA
I _{IL}	Low Level Input Current	V _{CC} = Max, V _I = 0.4V			−1.6	mA
I _{OS}	Short Circuit Output Current	V _{CC} = Max (Note 2)	−18		−57	mA
I _{CCH}	Supply Current with Outputs High	V _{CC} = Max			8	mA
I _{CCL}	Supply Current with Outputs Low	V _{CC} = Max			14	mA
V _{BE(Q)}	Base-Emitter Voltage of Output Transistor Q	I _I = 0.62 mA I _{OL} = 16 mA R ₁ = 0Ω			1.0	V

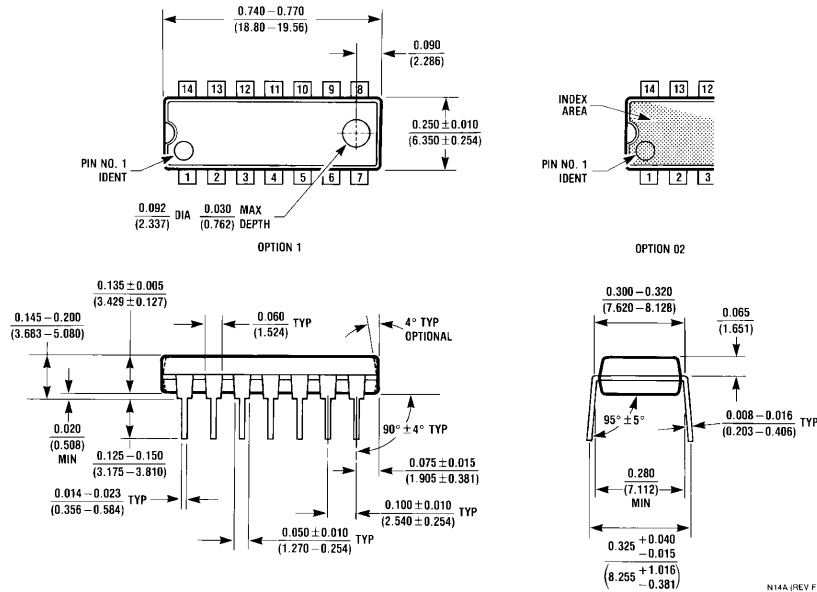
Switching Characteristics at $V_{CC} = 5V$ and $T_A = 25^\circ C$ (See Section 1 for Test Waveforms and Output Load)

Symbol	Parameter	Conditions	Min	Max	Units
t_{PLH}	Propagation Delay Time Low to High Level Output	$C_L = 15\text{ pF}$ $R_L = 400\Omega$		22	ns
t_{PHL}	Propagation Delay Time High to Low Level Output			15	ns

Note 1: All typicals are at $V_{CC} = 5V$, $T_A = 25^\circ C$.

Note 2: Not more than one output should be shorted at a time.

Physical Dimensions inches (millimeters)



14-Lead Molded Dual-In-Line Package (N)
Order Number DM7450N
NS Package Number N14A

N14A (REV F)

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