National Semiconductor

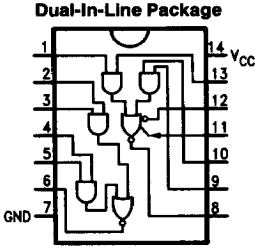
DM7450 Expandable Dual 2-Wide 2-Input AND-OR-INVERT Gate

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

Dual-In-Line Package



TL/F/9778–1

Order Number DM7450N
See NS Package Number N14A

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	
DM74	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	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	V1 = 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	I1 = 0.62 mA I_{OL} = 16 mA R_1 = 0Ω			1.0	V

Switching Characteristics at V_{CC} = 5V and T_A = 25°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 pF R_L = 400Ω		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°C.

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