

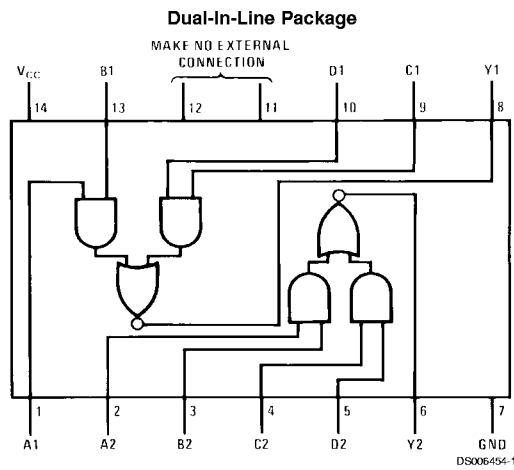
# DM74S51

## Dual 2-Wide 2-Input AND-OR-INVERT Gates

### General Description

This device contains two independent combinations of gates each of which performs the logic AND-OR-INVERT function.

### Connection Diagram



Order Number DM74S51N  
See Package Number N14A

### Function Table

$$Y = \overline{AB + CD}$$

Inputs				Output
A	B	C	D	Y
H	H	X	X	L
X	X	H	H	L
All other combinations				H

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

## Absolute Maximum Ratings (Note 1)

Supply Voltage  
Input Voltage

7V  
5.5V

Operating Free Air Temperature Range

DM74S  
Storage Temperature Range

0°C to +70°C  
-65°C to +150°C

## Recommended Operating Conditions

Symbol	Parameter	DM74S51			Units
		Min	Nom	Max	
V <sub>CC</sub>	Supply Voltage	4.75	5	5.25	V
V <sub>IH</sub>	High Level Input Voltage	2			V
V <sub>IL</sub>	Low Level Input Voltage			0.8	V
I <sub>OH</sub>	High Level Output Current			-1	mA
I <sub>OL</sub>	Low Level Output Current			20	mA
T <sub>A</sub>	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 (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 2)	Max	Units
V <sub>I</sub>	Input Clamp Voltage	V <sub>CC</sub> = Min, I <sub>I</sub> = -18 mA			-1.2	V
V <sub>OH</sub>	High Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OH</sub> = Max V <sub>IL</sub> = Max	DM74 2.7	3.4		V
V <sub>OL</sub>	Low Level Output Voltage	V <sub>CC</sub> = Min, I <sub>OL</sub> = Max V <sub>IH</sub> = Min			0.5	V
I <sub>I</sub>	Input Current @ Max Input Voltage	V <sub>CC</sub> = Max, V <sub>I</sub> = 5.5V			1	mA
I <sub>IH</sub>	High Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 2.7V			50	μA
I <sub>IL</sub>	Low Level Input Current	V <sub>CC</sub> = Max, V <sub>I</sub> = 0.5V			-2	mA
I <sub>OS</sub>	Short Circuit Output Current	V <sub>CC</sub> = Max (Note 3)	-40		-100	mA
I <sub>CCH</sub>	Supply Current with Outputs High	V <sub>CC</sub> = Max		8.2	17.8	mA
I <sub>CCL</sub>	Supply Current with Outputs Low	V <sub>CC</sub> = Max		14	22	mA

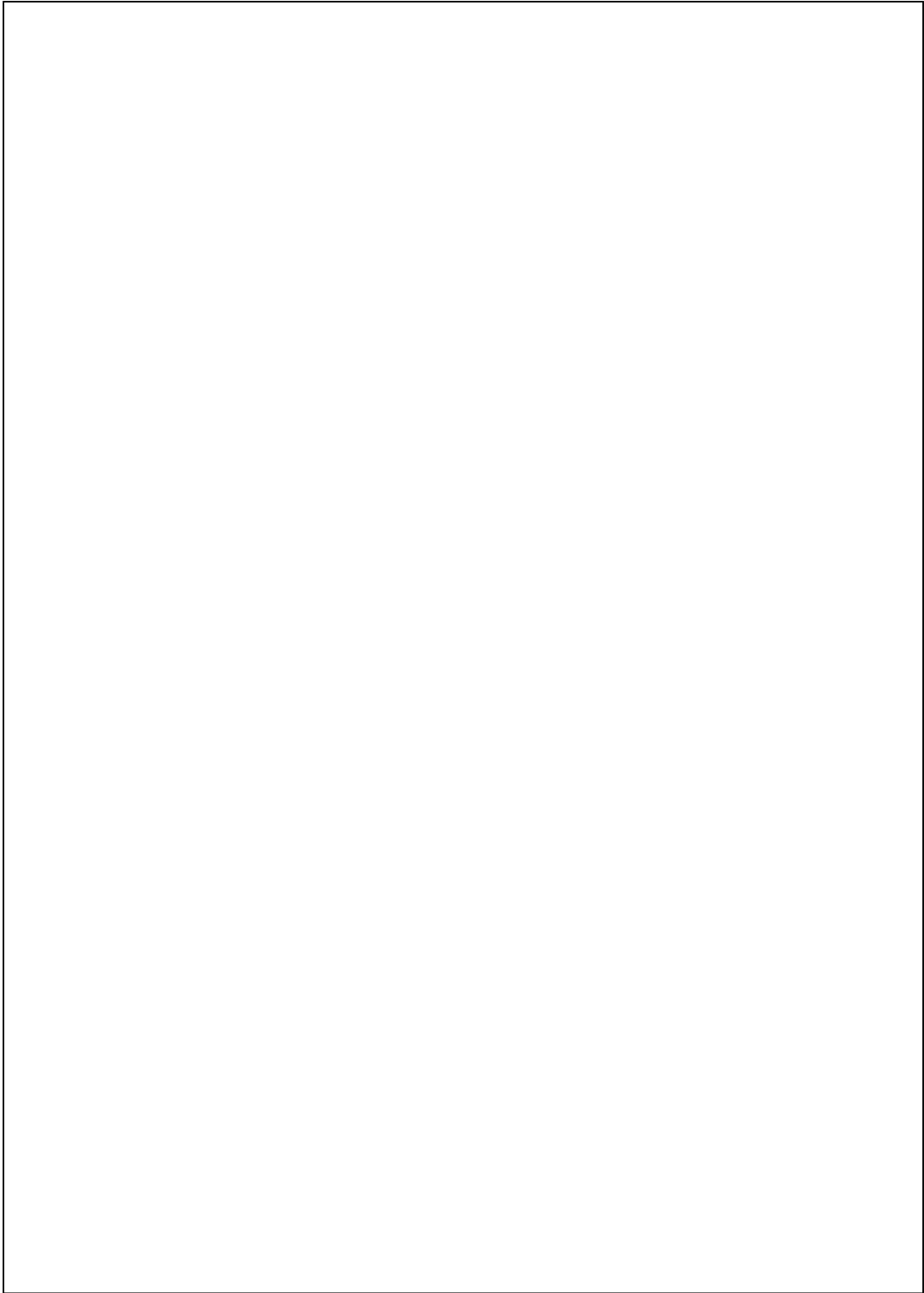
## Switching Characteristics

at V<sub>CC</sub> = 5V and T<sub>A</sub> = 25°C

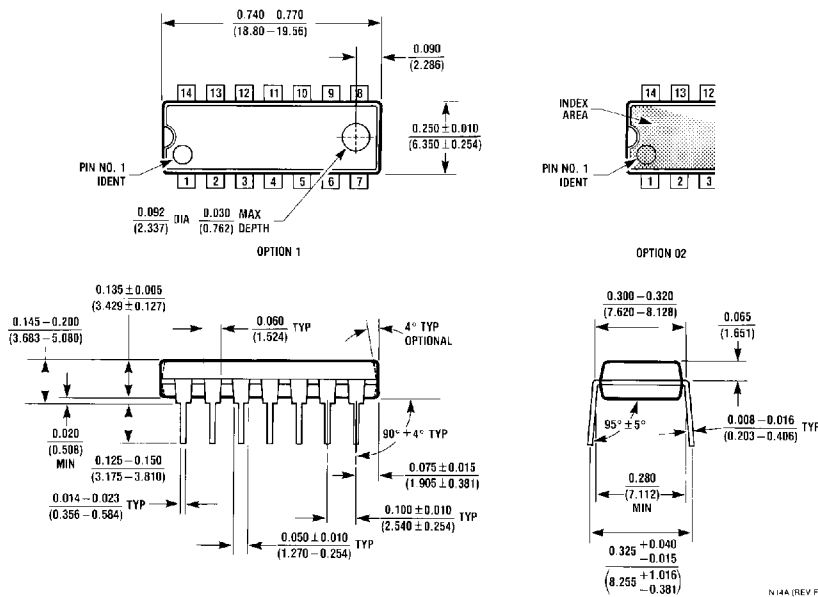
Symbol	Parameter	R <sub>L</sub> = 280Ω				Units
		C <sub>L</sub> = 15 pF		C <sub>L</sub> = 50 pF		
		Min	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay Time Low to High Level Output	2	5.5	3	8	ns
t <sub>PHL</sub>	Propagation Delay Time High to Low Level Output	2	5.5	3	8	ns

**Note 2:** All typicals are at V<sub>CC</sub> = 5V, T<sub>A</sub> = 25°C.

**Note 3:** Not more than one output should be shorted at a time, and the duration should not exceed one second.



**Physical Dimensions** inches (millimeters) unless otherwise noted



**14-Lead Molded Dual-In-Line Package (N)**  
**Order Number DM74S51N**  
**Package Number N14A**

N14A (REV F)

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