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NTE74LS51 Integrated Circuit TTL – Dual AND/OR Invert Gate

Description:

The NTE74LS51 is a dual AND/OR invert gate in a 14-Lead plastic DIP type package that contains one 2-wide 3-input and one 2-wide 2-input AND/OR Invert gate that performs the Boolean functions $1Y = \overline{(1A \cdot 1B \cdot 1C)} + \overline{(1D \cdot 1E \cdot 1F)}$ and $2Y = \overline{(2A \cdot 2B)} + \overline{(2C \cdot 2D)}$.

Absolute Maximum Ratings: (Note 1)

Supply Voltage, V_{CC} 7V
 Input Voltage 7V
 Operating Temperature Range, T_A 0°C to +70°C
 Storage Temperature Range, T_{stg} -65°C to +150°C

Note 1. Voltage values are with respect to network ground terminal..

Recommended Operating Conditions:

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	4.75	5.0	5.25	V
High-Level Input Voltage	V_{IH}	2	-	-	V
Low-Level Input Voltage	V_{IL}	-	-	0.8	V
High-Level Output Current	I_{OH}	-	-	-0.4	mA
Low-Level Output Current	I_{OL}	-	-	8	mA
Operating Temperature Range	T_A	0	-	+70	°C

Electrical Characteristics: (Note 2, Note 3)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Input Clamp Voltage	V_{IK}	$V_{CC} = \text{MIN}, I_I = -18\text{mA}$	-	-	-1.5	V	
High Level Output Voltage	V_{OH}	$V_{CC} = \text{MIN}, V_{IL} = \text{MAX}, I_{OH} = -0.4\text{mA}$	2.7	3.4	-	V	
Low Level Output Voltage	V_{OL}	$V_{CC} = \text{MIN}, V_{IH} = 2V$	$I_{OL} = 4\text{mA}$	-	0.25	0.4	V
			$I_{OL} = 8\text{mA}$	-	0.35	0.5	V
Input Current	I_I	$V_{CC} = \text{MAX}, V_I = 7V$	-	-	0.1	mA	

Note 2. For conditions shown as MIN or MAX, use the appropriate value specified under "Recommended Operation Conditions".

Note 3. All typical values are at $V_{CC} = 5V, T_A = +25^\circ\text{C}$.

Electrical Characteristics (Cont'd): (Note 2, Note 3)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
High Level Input Current	I_{IH}	$V_{CC} = MAX, V_I = 2.7V$	-	-	20	μA
Low Level Input Current	I_{IL}	$V_{CC} = MAX, V_I = 0.4V$	-	-	-0.4	mA
Short-Circuit Output Current	I_{OL}	$V_{CC} = MAX, \text{Note 4}$	-20	-	-100	mA
Supply Current	I_{CCH}	$V_{CC} = MAX, V_I = 0V$	-	0.8	1.6	mA
	I_{CCL}	$V_{CC} = MAX, \text{Note 5}$	-	1.4	2.8	mA

Note 2. For conditions shown as MIN or MAX, use the appropriate value specified under "Recommended Operation Conditions".

Note 3. All typical values are at $V_{CC} = 5V, T_A = +25^\circ C$.

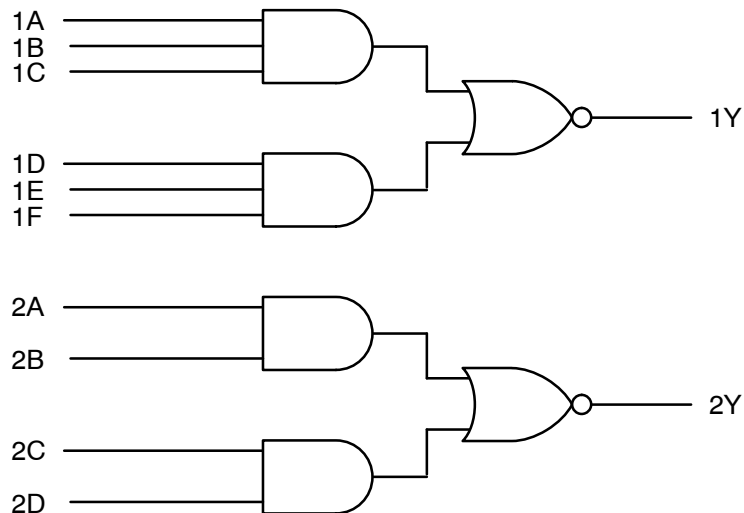
Note 4. Not more than one output should be shorted at a time, and the duration of the short-circuit should not exceed one second.

Note 5. All inputs of one AND gate at 4.5V, all others at GND

Switching Characteristics: ($V_{CC} = 5V, T_A = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Propagation Delay Time (From Any Input to Y Output)	t_{PLH}	$R_L = 2k\Omega, C_L = 15pF$	-	12	20	ns
	t_{PHL}		-	12.5	20	ns

Logic Diagram



Pin Connection Diagram

