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NTE74LS13 **Integrated Circuit** **TTL – Dual 4–Input Positive NAND Schmitt Trigger**

Description:

The NTE74LS13 is a dual 4–Input NAND Schmitt trigger in a 14–Lead plastic DIP type package. The device is temperature–compensated and can be triggered from the slowest of input ramps and still give clean, jitter–free output signals.

Absolute Maximum Ratings: (Note 1)

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

Note 1. Unless otherwise specified, all voltages are referenced to GND.

Recommended Operating Conditions:

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	4.75	5.0	5.25	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)

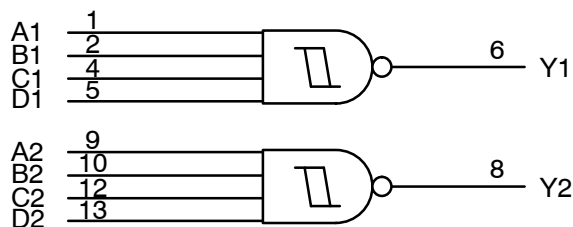
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Positive-Going Threshold Voltage	V_{T+}	$V_{CC} = 5V$	1.4	1.6	1.9	V
Negative-Going Threshold Voltage	V_{T-}	$V_{CC} = 5V$	0.5	0.8	1.0	V
Hysteresis Voltage	V_H	$V_{CC} = 5V$	0.4	0.8	–	V
Input Clamp Voltage	V_{IK}	$V_{CC} = \text{MIN}, I_I = -18\text{mA}$	–	–	–1.5	V
High Level Output Voltage	V_{OH}	$V_{CC} = \text{MIN}, V_I = 0.5V, I_{OH} = -0.4\text{mA}$	2.7	3.4	–	V
Low Level Output Voltage	V_{OL}	$V_{CC} = \text{MIN}, V_I = 1.9V, I_{OL} = 4\text{mA}$	–	0.25	0.4	V
		$V_{CC} = \text{MIN}, V_I = 1.9V, I_{OL} = 8\text{mA}$	–	0.35	0.5	V
Positive-Going Threshold Current	I_{T+}	$V_{CC} = 5V, V_I = V_{T+}$	–	–0.14	–	mA
Negative-Going Threshold Current	I_{T-}	$V_{CC} = 5V, V_I = V_{T-}$	–	–0.18	–	mA
Input Current	I_I	$V_{CC} = \text{MAX}, V_I = 7V$	–	–	0.1	mA
High Level Input Current	I_{IH}	$V_{CC} = \text{MAX}, V_I = 2.7V$	–	–	20	μA
Low Level Input Current	I_{IL}	$V_{CC} = \text{MAX}, V_I = 0.4V$	–	–	–0.4	mA
Short-Circuit Output Current	I_{OS}	$V_{CC} = \text{MAX}, \text{Note 4}$	–20	–	–100	mA
High Level Supply Current	I_{CCH}	$V_{CC} = \text{MAX}$	–	2.9	6.0	mA
Low Level Supply Current	I_{CCL}	$V_{CC} = \text{MAX}$	–	4.1	7.0	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 $V_{CC} = 5V$, $T_A = +25^\circ\text{C}$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Propagation Delay Time From Any Input to Y Output)	t_{PLH}	$R_L = 2k\Omega, C_L = 15\text{pF}$	–	15	22	ns
	t_{PHL}		–	18	27	ns

Logic Diagram

Pin14 = V_{CC}
Pin7 = GND

Pin Connection Diagram

