NTE7413
Integrated Circuit
TTL − Dual 4−Input Positive NAND Schmitt Trigger

Description:

The NTE7413 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} 5.5V
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}	–	–	−0.8	mA
Low−Level Output Current	I_{OL}	–	–	16	mA
Operating Temperature Range	T_A	0	–	+70	°C

Electrical Characteristics: (Note 2, Note 3)

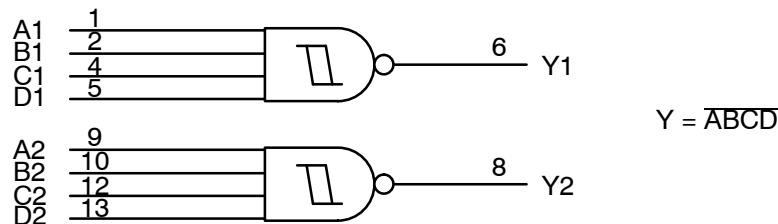| Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Positive–Going Threshold Voltage	V_{T+}	V_{CC} = 5V	1.5	1.7	2.0	V
Negative–Going Threshold Voltage	V_{T-}	V_{CC} = 5V	0.6	0.9	1.1	V
Hysteresis Voltage	V_H	V_{CC} = 5V	0.4	0.8	–	V
Input Clamp Voltage	V_{IK}	V_{CC} = MIN, I_I = –12mA	–	–	–1.5	V
High Level Output Voltage	V_{OH}	V_{CC} = MIN, V_I = 0.6V, I_{OH} = –0.8mA	2.4	3.4	–	V
Low Level Output Voltage	V_{OL}	V_{CC} = MIN, V_I = 12V, I_{OL} = 16mA	–	0.2	0.4	V
Positive–Going Threshold Current	I_{T+}	V_{CC} = 5V, V_I = V_{T+}	–	–0.65	–	mA
Negative–Going Threshold Current	I_{T-}	V_{CC} = 5V, V_I = V_{T-}	–	–0.85	–	mA
Input Current	I_I	V_{CC} = MAX, V_I = 5.5V	–	–	1	mA
High Level Input Current	I_{IH}	V_{CC} = MAX, V_I = 2.4V	–	–	40	μA
Low Level Input Current	I_{IL}	V_{CC} = MAX, V_I = 0.4V	–	–1.0	–1.6	mA
Short–Circuit Output Current	I_{OS}	V_{CC} = MAX, Note 4	–18	–	–55	mA
High Level Supply Current	I_{CCH}	V_{CC} = MAX	–	14	23	mA
Low Level Supply Current	I_{CCL}	V_{CC} = MAX	–	20	32	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°C.

Switching Characteristics: (V_{CC} = 5V, T_A = +25°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 = 400Ω, C_L = 15pF	–	18	27	ns
	t_{PHL}		–	15	22	ns

Logic Diagram

A1 1
B1 2
C1 4
D1 5
6 Y1

$Y = \overline{ABCD}$

A2 9
B2 10
C2 12
D2 13
8 Y2

Pin14 = V_{CC}
Pin7 = GND

Pin Connection Diagram

Pin	Signal		Pin	Signal
1	1A		14	V_{CC}
2	1B		13	2D
3	N.C.		12	2C
4	1C		11	N.C.
5	1D		10	2B
6	1Y		9	2A
7	GND		8	2Y

14   8

1   7

.785 (19.95) Max

.200
(5.08)
Max

.300 (7.62)

.100 (2.45)

.099 (2.5) Min

.600 (15.24)