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NTE7423 Integrated Circuit TTL – Expandable Dual 4–Input Positive NOR Gate with Strobe

Description:

The NTE7423 contains dual 4–Input positive NOR gates with strobe in a 16–Lead plastic DIP type package. This device is expandable and performs the Boolean functions:

$$1Y = \overline{1G(1A + 1B + 1C + 1D) + X} \text{ and}$$

$$2Y = \overline{2G(2A + 2B + 2C + 2D)}$$

with X = output of NTE7460.

Absolute Maximum Ratings: (Note 1)

Supply Voltage, V _{CC}	7V
Input Voltage, V _{IN}	5.5V
Interemitter Voltage (Note 2)	5.5V
Operating Temperature Range, T _A	0°C to +70°C
Storage Temperature Range, T _{stg}	–65°C to +150°C

Note 1. Voltage values, except interemitter voltage, are with respect to network ground terminal.

Note 2. This is the voltage between two emitters of a multiple–emitter transistor.

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}	–	–	–0.8	mA
Low–Level Output Current	I _{OL}	–	–	16	mA
Operating Temperature Range	T _A	0	–	+70	°C

Note 3. The NTE7423 is designed for use with up to four NTE7460 expanders.

Electrical Characteristics: (Note 4, Note 5)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Clamp Voltage	V_{IK}	$V_{CC} = \text{MIN}, I_I = -12\text{mA}$	-	-	-1.5	V
High Level Output Voltage	V_{OH}	$V_{CC} = \text{MIN}, V_{IL} = 0.8\text{V}, I_{OH} = -0.8\text{mA}$	2.4	3.4	-	V
Low Level Output Voltage	V_{OL}	$V_{CC} = \text{MIN}, V_{IH} = 2\text{V}, I_{OL} = 16\text{mA}$	-	0.2	0.4	V
Input Current	I_I	$V_{CC} = \text{MAX}, V_I = 5.5\text{V}$	-	-	1	mA
High Level Input Current Data Inputs	I_{IH}	$V_{CC} = \text{MAX}, V_I = 2.4\text{V}$	-	-	40	μA
Strobe Inputs			-	-	160	μA
Low Level Input Current Data Inputs	I_{IL}	$V_{CC} = \text{MAX}, V_I = 0.4\text{V}$	-	-	-1.6	mA
Strobe Inputs			-	-	-6.4	mA
Short-Circuit Output Current	I_{OS}	$V_{CC} = \text{MAX}, \text{Note 6}$	-18	-	-55	mA
High Level Supply Current	I_{CCH}	$V_{CC} = \text{MAX}, \text{All Inputs at } 0\text{V}$	-	8	16	mA
Low Level Supply Current	I_{CCL}	$V_{CC} = \text{MAX}, \text{All Inputs at } 4.5\text{V}$	-	10	19	mA

Note 4. For conditions shown as MIN or MAX, use the appropriate value specified under "Recommended Operation Conditions". Expander inputs X and \bar{X} are open.

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

Note 6. Not more than one output should be shorted at a time.

Electrical Characteristics using Expander Inputs: ($V_{CC} = 4.5\text{V}, T_A = 0^\circ\text{C}, \text{Note 5}$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Expander Current	\bar{I}_X	$V_{XX} = 0.4\text{V}, I_{OL} = 16\text{mA}$	-	-	-3.8	mA
Base-Emitter Voltage of Output Transistor (Q)	$V_{BE(Q)}$	$I_{OL} = 16\text{mA}, I_X + \bar{I}_X = 0.62\text{mA}, R_{XX} = 0$	-	-	1	V
High-Level Output Voltage	V_{OH}	$I_{OH} = -0.4\text{mA}, I_X = 0.27\text{mA}, \bar{I}_X = -0.27\text{mA}$	2.4	3.4	-	V
Low-Level Output Voltage	V_{OL}	$I_{OL} = 16\text{mA}, I_X + \bar{I}_X = 0.43\text{mA}, R_{XX} = 130\Omega$	-	0.2	0.4	V

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

Switching Characteristics: ($V_{CC} = 5\text{V}, T_A = +25^\circ\text{C}, N = 10, \text{Note 7 unless otherwise specified}$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Propagation Delay Time	t_{PLH}	$R_L = 400\Omega, C_L = 15\text{pF}$	-	13	22	ns
	t_{PHL}		-	8	15	ns

Note 7. Switching characteristics are tested with the expander pins open.

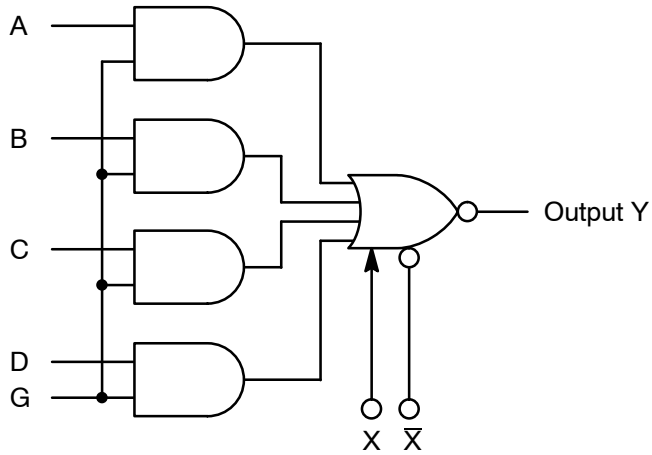
Truth Table:

Inputs					Output
A	B	C	D	G	Y
H	X	X	X	H	L
X	H	X	X	H	L
X	X	H	X	H	L
X	X	X	H	H	L
L	L	L	L	X	H
X	X	X	X	L	H

Expander inputs are open.

H = HIGH Level, L = LOW Level, X = Irrelevant

Logic Diagram



Pin Connection Diagram

