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NTE74LS242 & NTE74LS243
Integrated Circuit
TTL – Quad Bus Transceiver

Description:

The NTE74LS242 (Inverting) and NTE74LS243 (Non–Inverting) are four–data–line transceivers in a 14–Lead plastic DIP type package designed for asynchronous two–way communications between data buses and can be used to drive terminated lines down to 133 ohms.

Features:

- Two–Way Asynchronous Communication Between Data Buses
- PNP Inputs Reduce DC Loading
- Hysteresis (Typically 400mV) at Inputs Improves Noise Margin

Absolute Maximum Ratings: (Note 1)

Supply Voltage, V_{CC} 7V
Input Voltage, V_{IN} 7V
Off–State Output Voltage 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 (Note 1)	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}	–	–	–15	mA
Low–Level Output Current	I_{OL}	–	–	24	mA
Operating Temperature Range	T_A	0	–	+70	°C

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

Electrical Characteristics: (Note 2, Note 3)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Input Clamp Voltage (A or B)	V_{IK}	V_{CC} = MIN, I_I = −18mA		–	–	−1.5	V
Hysteresis	$V_{T+} - V_{T-}$	V_{CC} = MIN		0.2	0.4	–	V
High Level Output Voltage	V_{OH}	V_{CC} = MIN, V_{IH} = 2V, V_{IL} = MAX, I_{OH} = -3mA		2.4	3.1	–	V
		V_{CC} = MIN, V_{IH} = 2V, V_{IL} = 0.5V, I_{OH} = MAX		2.0	–	–	V
Low Level Output Voltage	V_{OL}	V_{CC} = MIN, V_{IH} = 2V, V_{IL} = MAX	I_{OL} = 12mA	–	0.25	0.4	V
			I_{OL} = 24mA	–	0.35	0.5	V
3−State Leakage Current	I_{OZH}	V_{CC} = MIN, V_{IH} = 2V, V_{IL} = MAX	V_O = 2.7V	–	–	40	μA
	I_{OZL}		V_O = 0.4V	–	–	−200	μA
Input Current A or B	I_I	V_{CC} = MAX	V_I = 5.5V	–	–	0.1	mA
$\overline{G}$AB or GBA			V_I = 7V	–	–	0.1	mA
High Level Input Current	I_{IH}	V_{CC} = MAX, V_I = 2.7V		–	–	20	μA
Low Level Input Current A inputs	I_{IL}	V_{CC} = MAX, V_{IL} = 0.4V, GAB and GBA = 0V		–	–	−0.2	mA
B Inputs		V_{CC} = MAX, V_{IL} = 0.4V, GAB and GBA = 4.5V		–	–	−0.2	mA
$\overline{G}$AB or GBA		V_{CC} = MAX, V_{IL} = 0.4V		–	–	−0.2	mA
Short−Circuit Output Current	I_{OS}	V_{CC} = MAX, Note 4		−40	–	−225	mA
Supply Current NTE74LS242, NTE74LS243	I_{CC}	V_{CC} = MAX, Output Open, Note 5	Outputs High	–	22	38	mA
NTE74LS242, NTE74LS243			Outputs Low	–	29	50	mA
NTE74LS242			All Outputs Disabled	–	29	50	mA
NTE74LS243				–	32	54	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.

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. I_{CC} is measured with transceivers enabled in one direction only, or with all transceivers disabled.

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

Parameter	Symbol	Test Conditions	NTE74LS242			NTE74LS243			Unit
			Min	Typ	Max	Min	Typ	Max	
Propagation Delay Time	t_{PLH}	R_L = 667Ω, C_L = 45pF	–	9	14	–	12	18	ns
	t_{PHL}		–	12	18	–	12	18	ns
Output Enable Time	t_{PZL}		–	20	30	–	20	30	ns
	t_{PZH}		–	15	23	–	15	23	ns
Output Disable Time	t_{PLZ}	R_L = 667Ω, C_L = 5pF	–	10	20	–	10	20	ns
	t_{PHZ}		–	15	25	–	15	25	ns

Function Table (Each Transceiver):

Inputs			
$\overline{G}$AB	GBA	NTE74LS242	NTE74LS243
L	L	$\overline{A}$ to B	A to B
H	H	$\overline{B}$ to A	B to A
H	L	Isolation	Isolation
L	H	Latch A and B ($A = \overline{B}$)	Latch A and B (A = B)

Pin Connection Diagram