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NTE74LS245 Integrated Circuit TTL- Octal Bus Transceiver w/3-State Outputs

Description:

The NTE74LS245 is an octal bus transceiver in a 20-Lead DIP type package designed for asynchronous two-way communication between data buses. The control function implementation minimizes external timing requirements.

This device allows data transmission from the A bus to the B bus or from the B bus to the A bus depending upon the logic level at the direction control (DIR) input. The enable input (\overline{G}) can be used to disable the device so that the buses are effectively isolated.

Features:

- 3-State Outputs Drive Bus Lines Directly
- PNP Inputs Reduce DC Loading on Bus Lines
- Hysteresis at Bus Inputs Improve Noise Margins

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 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	
High-Level Input Voltage	V_{IH}		2	-	-	V	
Low-Level Input Voltage	V_{IL}		-	-	0.8	V	
Input Clamp Voltage	V_{IK}	$V_{CC} = \text{MIN}, I_I = -18\text{mA}$	-	-	-1.5	V	
Hysteresis	$V_{T+} - V_{T-}$	$V_{CC} = \text{MIN}$	0.2	0.4	-	V	
High Level Output Voltage	V_{OH}	$V_{CC} = \text{MIN}, V_{IH} = 2\text{V}, V_{IL} = \text{MAX}, I_{OH} = -3\text{mA}$	2.4	3.4	-	V	
		$V_{CC} = \text{MIN}, V_{IH} = 2\text{V}, V_{IL} = \text{MAX}, I_{OH} = \text{MAX}$	2.0	-	-	V	
Low Level Output Voltage	V_{OL}	$V_{CC} = \text{MIN}, V_{IH} = 2\text{V}, V_{IL} = \text{MAX}$	$I_{OL} = 12\text{mA}$	-	-	0.4	V
			$I_{OL} = 24\text{mA}$	-	-	0.5	V
3-State Leakage Current	I_{OZH}	$V_{CC} = \text{MIN}, \bar{G}$ at 2V	$V_O = 2.7\text{V}$	-	-	20	μA
	I_{OZL}		$V_O = 0.4\text{V}$	-	-	-200	μA
Input Current	I_I	$V_{CC} = \text{MAX}, V_I = 5.5\text{V}$	A or B	-	-	0.1	mA
		$V_{CC} = \text{MAX}, V_I = 7\text{V}$	DIR or \bar{G}	-	-	0.1	mA
High Level Input Current	I_{IH}	$V_{CC} = \text{MAX}, V_I = 2.7\text{V}$	-	-	20	μA	
Low Level Input Current	I_{IL}	$V_{CC} = \text{MAX}, V_{IL} = 0.4\text{V}$	-	-	-0.2	mA	
Short-Circuit Output Current	I_{OS}	$V_{CC} = \text{MAX}, \text{Note 4}$	-40	-	-225	mA	
Supply Current	I_{CC}	$V_{CC} = \text{MAX}, \text{Output Open}$	Outputs High	-	48	70	mA
			Outputs Low	-	62	90	mA
			Outputs at Hi-Z	-	64	95	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 $V_{CC} = 5\text{V}, T_A = +25^\circ\text{C}$.

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.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Propagation Delay Time	t_{PLH}, t_{PHL}	$C_L = 45\text{pF}, R_L = 667\Omega$	-	8	12	ns
Output Enable Time	t_{PZL}		-	27	40	ns
	t_{PZH}		-	25	40	ns
Output Disable Time	t_{PLZ}	$C_L = 5\text{pF}, R_L = 667\Omega$	-	15	25	ns
	t_{PHZ}		-	15	28	ns

Function Table:

Enable G	Direction Control DIR	Operation
L	L	B Data to A Bus
L	H	A Data to B Bus
H	X	Isolation

H = HIGH Level

L = LOW Level

X = Irrelevant

Pin Connection Diagram

