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NTE74LS240, NTE74LS241, NTE74LS244
Integrated Circuit
TTL– Octal Buffer and Line Driver
w/3–State Outputs

Description:

The NTE74LS240 (Inverting), NTE74LS241 (Non–Inverting, and NTE74LS244 (Non–Inverting) are octal buffers and line drivers in a 20–Lead DIP type package designed specifically to improve both the performance and density of three–state memory address drivers, clock drivers, and bus–oriented receivers and transmitters. The designer has a choice of selected combinations of inverting and non–inverting outputs, symmetrical $\overline{G}$ (active–low output control) inputs, and complementary G and $\overline{G}$ inputs. These devices feature high fan–out, improved fan–in, a 400mV noise margin, and can be used to drive terminated lines down to 133 ohms.

Features:

- 3–State Outputs Drive Bus Lines or Buffer Memory Address Registers
- PNP Inputs Reduce DC Loading
- Hysteresis at Inputs Improves Noise margins
- High Capacitive Load Drive Capability

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	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	3.4	–	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	–	–	0.4	V
			I_{OL} = 24mA	–	–	0.5	V
3−State Leakage Current	I_{OZH}	V_{CC} = MIN, V_{IH} = 2V, V_{IL} = MAX	V_O = 2.7V	–	–	20	μA
	I_{OZL}		V_O = 0.4V	–	–	−20	μA
Input Current	I_I	V_{CC} = MAX, 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	I_{IL}	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 All Types	I_{CC}	V_{CC} = MAX, Output Open	Outputs High	–	17	27	mA
NTE74LS240			Outputs Low	–	26	44	mA
NTE74LS241, NTE74LS244				–	27	46	mA
NTE74LS240			All Outputs Disabled	–	29	50	mA
NTE74LS241, NTE74LS244				–	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.

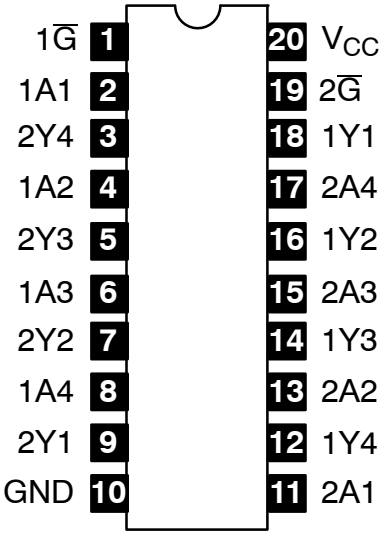
Note 4. Not more than one output should be shorted at a time, and the duration of the short−circuit should not exceed one second.

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

Parameter	Symbol	Test Conditions	NTE74LS240			NTE74LS241, NTE74LS244			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

Pin Connection Diagram

NTE74LS240, NTE74LS244



NTE74LS241

