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**NTE74C240 & NTE74C244  
 Integrated Circuit  
 TTL- CMOS Octal Buffers and Line Drivers  
 w/3-State Outputs  
 20-Lead DIP**

**Description:**

The NTE74C240 (Inverting) and NTE74C244 (Non-Inverting) octal buffers and line drivers are monolithic complementary MOS (CMOS) integrated circuits in a 20-Lead DIP type package with 3-state outputs. These outputs have been specially designed to drive highly capacitive loads such as bus-oriented systems. These devices have a fan out of 6 low power Schottky loads. A high logic level on the output disable control input G makes the outputs go into the high impedance state.

**Features:**

- Wide Supply Range: 3V to 15V
- High Noise Immunity: 0.45 V<sub>CC</sub> (typ)
- Low Power Consumption
- High Capacitive Load Drive Capability
- 3-State Outputs
- Input Protection
- TTL Compatible
- High Speed: 25ns (typ.) at 10V, 50pF (NTE74C244 **ONLY**)

**Absolute Maximum Ratings:** (Note 1)

Voltage at Any Pin .....	-0.3V to V <sub>CC</sub> +0.3V
Power Dissipation, P <sub>D</sub> .....	700mW
Operating V <sub>CC</sub> Range .....	3V to 15V
Maximum V <sub>CC</sub> Voltage .....	18V
Operating Temperature Range, T <sub>A</sub> .....	-40° to +85°C
Storage Temperature Range, T <sub>stg</sub> .....	-65° to +150°C
Lead Temperature (During Soldering, 10sec), T <sub>L</sub> .....	+260°C

Note 1. "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except for "Operating Temperature Range", they are not meant to imply that the devices should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

**DC Electrical Characteristics:** ( $T_A = -40^\circ$  to  $+85^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
<b>CMOS to CMOS</b>							
Logical "1" Input Voltage	$V_{IN(1)}$	$V_{CC} = 5V$	3.5	-	-	V	
		$V_{CC} = 10V$	8.0	-	-	V	
Logical "0" Input Voltage	$V_{IN(0)}$	$V_{CC} = 5V$	-	-	1.5	V	
		$V_{CC} = 10V$	-	-	2.0	V	
Logical "1" Output Voltage	$V_{OUT(1)}$	$V_{CC} = 5V$	4.5	-	-	V	
		$I_O = -10\mu A$					
Logical "0" Output Voltage	$V_{OUT(0)}$	$V_{CC} = 5V$	-	-	0.5	V	
		$I_O = 10\mu A$					
Logical "1" Input Current	$I_{IN(1)}$	$V_{CC} = 15V, V_{IN} = 15V$	-	0.005	1.0	$\mu A$	
Logical "0" Input Current	$I_{IN(0)}$	$V_{CC} = 15V, V_{IN} = 0V$	-1.0	-0.005	-	$\mu A$	
Supply Current	$I_{CC}$	$V_{CC} = 15V$	-	0.05	300	$\mu A$	
<b>CMOS/LPTTL Interface</b>							
Logical "1" Input Voltage	$V_{IN(1)}$	$V_{CC} = 4.75V$	$V_{CC}-1.5$	-	-	V	
Logical "0" Input Voltage	$V_{IN(0)}$	$V_{CC} = 4.75V$	-	-	0.8	V	
Logical "1" Output Voltage	$V_{OUT(1)}$	$V_{CC} = 4.75V$	$I_O = -450\mu A$	-	-	V	
			$I_O = -2.2mA$				2.4
Logical "0" Output Voltage	$V_{OUT(0)}$	$V_{CC} = 4.75V, I_O = 2.2mA$	-	-	0.4	V	
<b>Output Drive</b>							
Output Source Current (P-Channel)	$I_{SOURCE}$	$V_{CC} = 5V$	$V_{OUT} = 0,$ $T_A = +25^\circ\text{C}$	-14	-30	-	mA
		$V_{CC} = 10V$		-36	-70	-	mA
Output Sink Current (N-Channel)	$I_{SINK}$	$V_{CC} = 5V$	$V_{OUT} = V_{CC},$ $T_A = +25^\circ\text{C}$	12	20	-	mA
		$V_{CC} = 10V$		48	70	-	mA

**AC Electrical Characteristics:** ( $T_A = +25^\circ, C_L = 50pF$ , Note 2 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Propagation Delay (Data In to Out) NTE74C240	$t_{PD(1)}, t_{PD(0)}$	$V_{CC} = 5V$	-	60	90	ns	
			$C_L = 150pF$	-	80	110	ns
		$V_{CC} = 10V$	-	40	70	ns	
			$C_L = 150pF$	-	60	90	ns
		NTE74C244	$V_{CC} = 5V$	-	45	70	ns
				$C_L = 150pF$	-	60	90
$V_{CC} = 10V$	-	25	50	ns			
	$C_L = 150pF$	-	40	70	ns		
Propagation Delay Output Disable to High Impedance State (from a Logic Level)	$t_{1H}, t_{0H}$	$V_{CC} = 5V$	-	45	80	ns	
		$V_{CC} = 10V$	-	35	60	ns	
Propagation Delay Output Disable to Logic Level (from High Impedance State)	$t_{H1}, t_{H0}$	$V_{CC} = 5V$	-	50	90	ns	
		$V_{CC} = 10V$	-	30	60	ns	
Transition Time	$t_{T(HL)}, t_{T(LH)}$	$V_{CC} = 5V$	-	45	80	ns	
			$C_L = 150pF$	-	75	140	ns
		$V_{CC} = 10V$	-	30	60	ns	
			$C_L = 150pF$	-	50	100	ns

Note 2. AC Parameters are guaranteed by DC correlated testing.

**AC Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ$ ,  $C_L = 50\text{pF}$ , Note 2 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Power Dissipation Capacitance (Output Enabled Buffer)	$C_{PD}$	Note 4	-	100	-	pF
Power Dissipation Capacitance (Output Disabled Buffer)	$C_{PD}$	Note 4	-	10	-	pF
NTE74C240			-	0	-	pF
Input Capacitance (Any Input)	$C_{IN}$	$V_{IN} = 0\text{V}$ , $f = 1\text{Mhz}$ , $T_A = +25^\circ\text{C}$	-	10	-	pF
Output Capacitance (Output Disabled)	$C_O$		-	10	-	pF

Note 2. AC Parameters are guaranteed by DC correlated testing.

Note 3. Capacitance is guaranteed by periodic testing.

Note 4.  $C_{pd}$  determines the no load AC power consumption of any CMOS device.

**Truth Table (NTE74C240):**

ODA	IA	OA	ODB	IA	OB
1	X	Z	1	X	Z
1	X	Z	1	X	Z
0	0	1	0	0	1
0	1	0	0	1	0

1 = High Level

0 = Low Level

X = Don't Care

Z = 3-State

**Truth Table (NTE74C244):**

ODA	IA	OA	ODB	IA	OB
1	X	Z	1	X	Z
1	X	Z	1	X	Z
0	0	0	0	0	0
0	1	1	0	1	1

1 = High Level

0 = Low Level

X = Don't Care

Z = 3-State

**Pin Connection Diagram**



