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If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via **salesaddresses@nexperia.com**). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

INTEGRATED CIRCUITS

DATA SHEET

For a complete data sheet, please also download:

- The IC06 74HC/HCT/HCU/HCMOS Logic Family Specifications
- The IC06 74HC/HCT/HCU/HCMOS Logic Package Information
- The IC06 74HC/HCT/HCU/HCMOS Logic Package Outlines

74HC/HCT241Octal buffer/line driver; 3-state

Product specification
File under Integrated Circuits, IC06

September 1993





74HC/HCT241

FEATURES

· Output capability: bus driver

I_{CC} category: MSI

GENERAL DESCRIPTION

The 74HC/HCT241 are high-speed Si-gate CMOS devices and are pin compatible with low power Schottky TTL (LSTTL). They are specified in compliance with JEDEC standard no. 7A.

The 74HC/HCT241 are octal non-inverting buffer/line drivers with 3-state outputs. The 3-state outputs are controlled by the output enable inputs $1\overline{OE}$ and $2\overline{OE}$.

QUICK REFERENCE DATA

GND = 0 V; $T_{amb} = 25 \, ^{\circ}C$; $t_r = t_f = 6 \, \text{ns}$

SYMBOL	PARAMETER	CONDITIONS	TYP	UNIT		
STIVIBUL	PARAMETER	CONDITIONS	нс	нст	UNII	
t _{PHL} / t _{PLH}	propagation delay 1A _n to 1Y _n ; 2A _n to 2Y _n	$C_L = 15 \text{ pF}; V_{CC} = 5 \text{ V}$	7	11	ns	
Cı	input capacitance		3.5	3.5	pF	
C _{PD}	power dissipation capacitance per buffer	notes 1 and 2	30	30	pF	

Notes

1. C_{PD} is used to determine the dynamic power dissipation (P_D in μW):

$$P_D = C_{PD} \times V_{CC}^2 \times f_i + \sum (C_L \times V_{CC}^2 \times f_o)$$
 where:

f_i = input frequency in MHz

f_o = output frequency in MHz

 $\sum (C_1 \times V_{CC}^2 \times f_0) = \text{sum of outputs}$

C_L = output load capacitance in pF

V_{CC} = supply voltage in V

2. For HC the condition is $V_I = GND$ to V_{CC}

For HCT the condition is $V_I = GND$ to $V_{CC} - 1.5 \text{ V}$

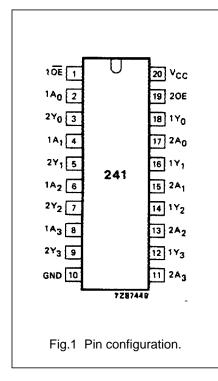
ORDERING INFORMATION

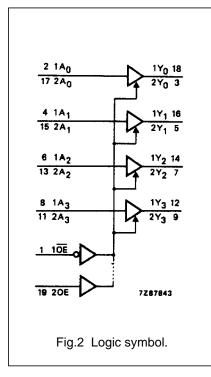
See "74HC/HCT/HCU/HCMOS Logic Package Information".

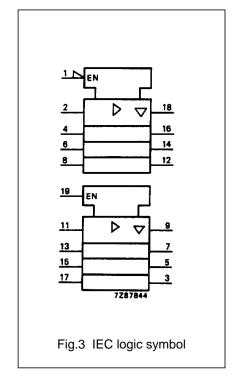
74HC/HCT241

PIN DESCRIPTION

PIN NO.	SYMBOL	NAME AND FUNCTION
1	1 OE	output enable input (active LOW)
2, 4, 6, 8	1A ₀ to 1A ₃	data inputs
3, 5, 7, 9	2Y ₀ to 2Y ₃	bus outputs
10	GND	ground (0 V)
17, 15, 13, 11	2A ₀ to 2A ₃	data inputs
18, 16, 14, 12	1Y ₀ to 1Y ₃	bus outputs
19	20E	output enable input (active HIGH)
20	V _{CC}	positive supply voltage







74HC/HCT241

FUNCTION TABLES

INP	UTS	OUTPUT				
1 OE	1A _n	1Y _n				
L	L	L				
L	Н	Н				
Н	X	Z				

INP	UTS	OUTPUT
20E	2A _n	2Y _n
Н	L	L
Н	Н	Н
L	X	Z

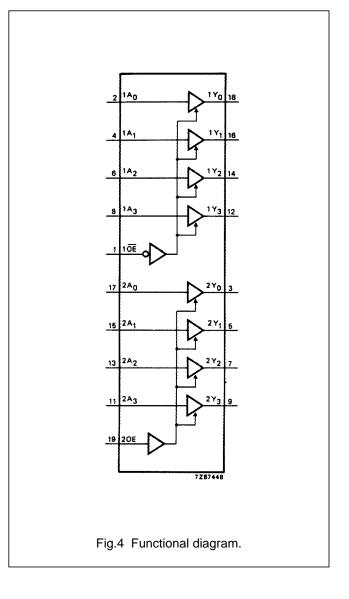
Note

1. H = HIGH voltage level

L = LOW voltage level

X = don't care

Z = high impedance OFF-state



Philips Semiconductors Product specification

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74HC/HCT241

DC CHARACTERISTICS FOR 74HC

For the DC characteristics see "74HC/HCT/HCU/HCMOS Logic Family Specifications".

Output capability: bus driver

I_{CC} category: MSI

AC CHARACTERISTICS FOR 74HC

 $GND = 0 V; t_r = t_f = 6 ns; C_L = 50 pF$

	PARAMETER	T _{amb} (°C)							шыт	TEST CONDITIONS	
SYMBOL		74HC									WAVEFORMS
		+25			-40 to +85		-40 to +125		UNIT	V _{CC} (V)	WAVEFORWIS
		min.	typ.	max.	min.	max.	min.	max.		(•)	
t _{PHL} / t _{PLH}	propagation delay 1A _n to 1Y _n ;		25 9 7	100 20 17		125 25 21		150 30 26	ns	2.0 4.5 6.0	Fig.5
t _{PZH} / t _{PZL}	2A _n to 2Y _n 3-state output enable time 1OE to 1Y _n ; 2OE to 2Y _n		30 11 9	150 30 26		190 38 33		225 45 38	ns	2.0 4.5 6.0	Fig.6
t _{PHZ} / t _{PLZ}	3-state output disable time 10E to 1Y _n ; 20E to 2Y _n		39 14 11	150 30 26		190 38 33		225 45 38	ns	2.0 4.5 6.0	Fig.6
t _{THL} / t _{TLH}	output transition time		14 5 4	60 12 10		75 15 13		90 18 15	ns	2.0 4.5 6.0	Fig.5

74HC/HCT241

DC CHARACTERISTICS FOR 74HCT

For the DC characteristics see "74HC/HCT/HCU/HCMOS Logic Family Specifications".

Output capability: bus driver

I_{CC} category: MSI

Note to HCT types

The value of additional quiescent supply current (ΔI_{CC}) for a unit load of 1 is given in the family specifications. To determine ΔI_{CC} per input, multiply this value by the unit load coefficient shown in the table below.

INPUT	UNIT LOAD COEFFICIENT							
1A _n	0.70							
2A _n 1OE	0.70							
1 OE	0.70							
20E	1.50							

AC CHARACTERISTICS FOR 74HCT

 $GND = 0 \text{ V; } t_r = t_f = 6 \text{ ns; } C_L = 50 \text{ pF}$

	PARAMETER	T _{amb} (°C)								TEST CONDITIONS		
SYMBOL		74HCT									WAVEFORMS	
		+25			-40 to +85 -40 to		-40 to +125		V _{CC} (V)	VVAVEFORIVIS		
		min.	typ.	max.	min.	max.	min.	max.		(-,		
t _{PHL} / t _{PLH}	propagation delay 1A _n to 1Y _n ; 2A _n to 2Y _n		13	22		28		33	ns	4.5	Fig.5	
t _{PZH} / t _{PZL}	3-state output enable time 10E to 1Y _n ; 20E to 2Y _n		15	30		38		45	ns	4.5	Fig.6	
t _{PHZ} / t _{PLZ}	3-state output disable time 10E to 1Y _n ; 20E to 2Y _n		18	30		38		45	ns	4.5	Fig.6	
t _{THL} / t _{TLH}	output transition time		5	12		15		18	ns	4.5	Fig.5	

74HC/HCT241

AC WAVEFORMS

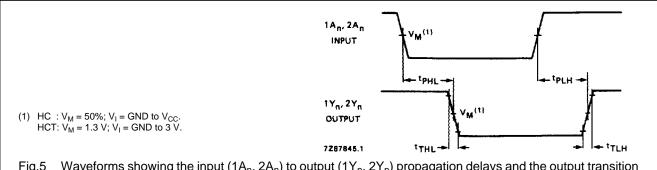
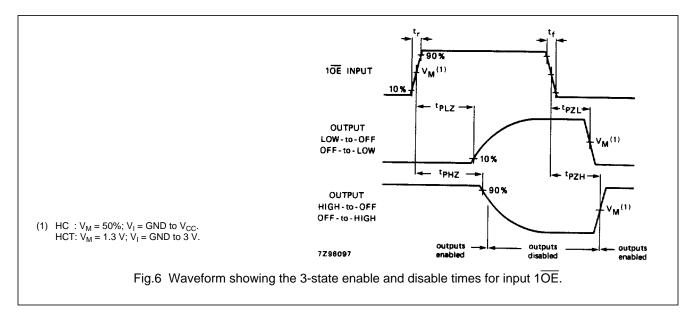
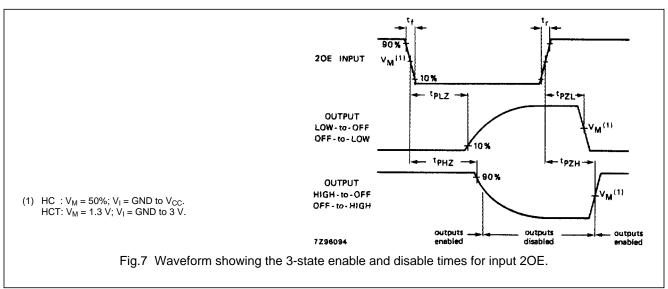


Fig.5 Waveforms showing the input (1A_n, 2A_n) to output (1Y_n, 2Y_n) propagation delays and the output transition times.





Philips Semiconductors Product specification

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PACKAGE OUTLINES

See "74HC/HCT/HCU/HCMOS Logic Package Outlines".