

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/HCT08 Quad 2-input AND gate

Product specification
File under Integrated Circuits, IC06

December 1990

Quad 2-input AND gate

74HC/HCT08

FEATURES

- Output capability: standard
- I_{CC} category: SSI

GENERAL DESCRIPTION

The 74HC/HCT08 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/HCT08 provide the 2-input AND function.

QUICK REFERENCE DATA

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

SYMBOL	PARAMETER	CONDITIONS	TYPICAL		UNIT
			HC	HCT	
t_{PHL}/t_{PLH}	propagation delay nA, nB to nY	$C_L = 15\text{ pF}$; $V_{CC} = 5\text{ V}$	7	11	ns
C_I	input capacitance		3.5	3.5	pF
C_{PD}	power dissipation capacitance per gate	notes 1 and 2	10	20	pF

Notes

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

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

f_i = input frequency in MHz

f_o = output frequency in MHz

C_L = output load capacitance in pF

V_{CC} = supply voltage in V

$\sum (C_L \times V_{CC}^2 \times f_o)$ = sum of outputs

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

ORDERING INFORMATION

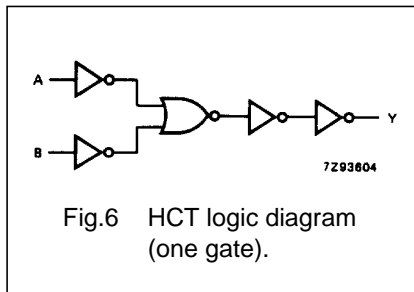
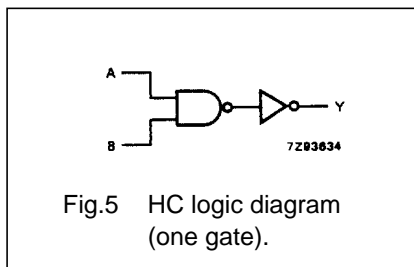
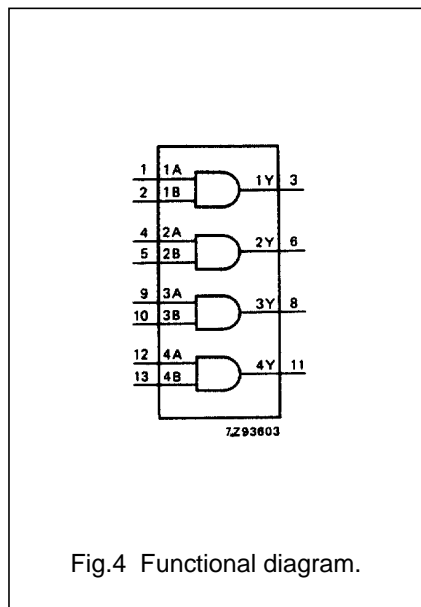
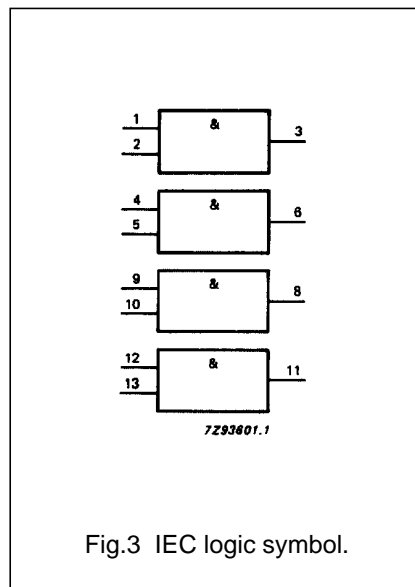
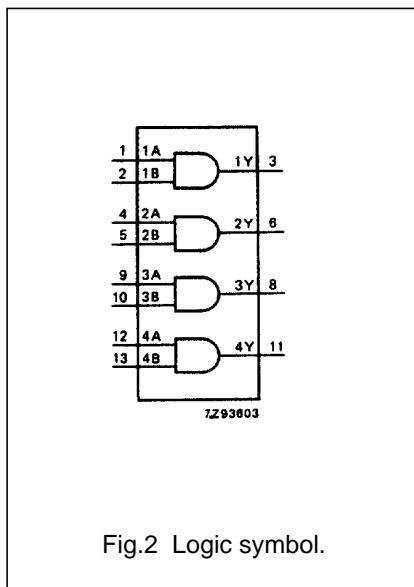
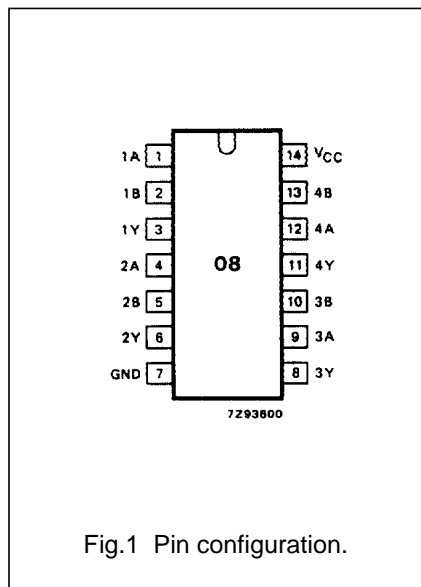
See *"74HC/HCT/HCU/HCMOS Logic Package Information"*.

Quad 2-input AND gate

74HC/HCT08

PIN DESCRIPTION

PIN NO.	SYMBOL	NAME AND FUNCTION
1, 4, 9, 12	1A to 4A	data inputs
2, 5, 10, 13	1B to 4B	data inputs
3, 6, 8, 11	1Y to 4Y	data outputs
7	GND	ground (0 V)
14	V _{CC}	positive supply voltage



FUNCTION TABLE

INPUTS		OUTPUT
nA	nB	nY
L	L	L
L	H	L
H	L	L
H	H	H

Note

1. H = HIGH voltage level
L = LOW voltage level

Quad 2-input AND gate

74HC/HCT08

DC CHARACTERISTICS FOR 74HC

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

Output capability: standard

I_{CC} category: SSI

AC CHARACTERISTICS FOR 74HC

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

SYMBOL	PARAMETER	T _{amb} (°C)						UNIT	TEST CONDITIONS		
		74HC							V _{CC} (V)	WAVEFORMS	
		+25			-40 to +85		-40 to +125				
		min.	typ.	max.	min.	max.	min.				max.
t _{PHL} / t _{PLH}	propagation delay nA, nB to nY		25 9 7	90 18 15		115 23 20		135 27 23	ns	2.0 4.5 6.0	Fig.7
t _{THL} / t _{TLH}	output transition time		19 7 6	75 15 13		95 19 16		110 22 19	ns	2.0 4.5 6.0	Fig.7

Quad 2-input AND gate

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DC CHARACTERISTICS FOR 74HCT

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

Output capability: standard
 I_{CC} category: SSI

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.

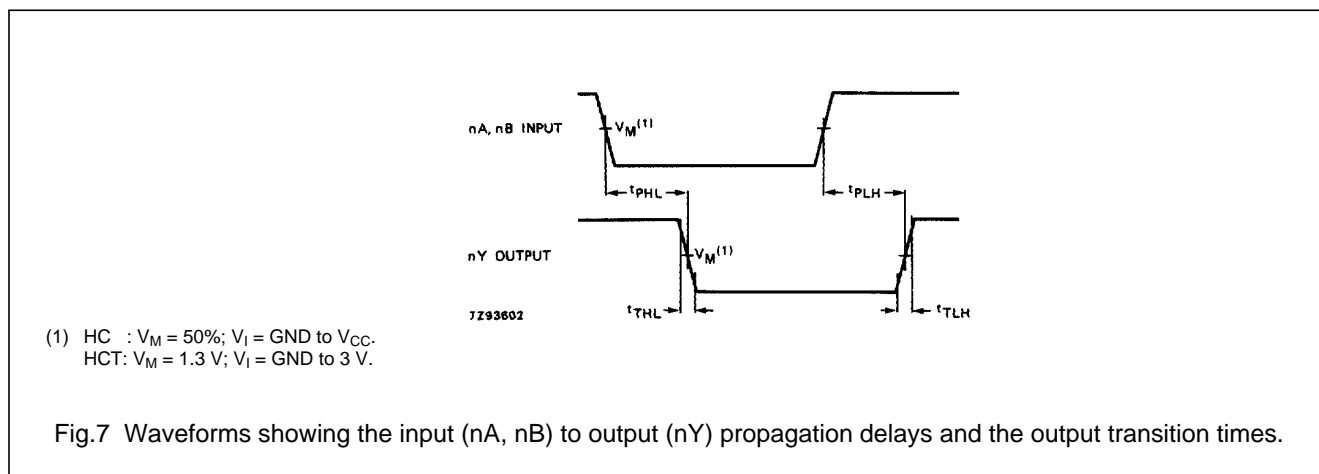
INPUT	UNIT LOAD COEFFICIENT
nA, nB	0.6

AC CHARACTERISTICS FOR 74HCT

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

SYMBOL	PARAMETER	T_{amb} (°C)						UNIT	TEST CONDITIONS		
		74HCT							V_{CC} (V)	WAVEFORMS	
		+25			-40 to +85		-40 to +125				
		min.	typ.	max.	min.	max.	min.				max.
t_{PHL} / t_{PLH}	propagation delay nA, nB to nY		14	24		30		36	ns	4.5	Fig.7
t_{THL} / t_{TLH}	output transition time		7	15		19		22	ns	4.5	Fig.7

AC WAVEFORMS



PACKAGE OUTLINES

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

74HC08;74HCT08; Quad 2-input AND gate

Information as of 2003-04-22

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General description	Features	Applications	Datasheet
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General description

The 74HC/HCT08 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/HCT08 provide the 2-input AND function.

Features

- Output capability: standard
- ICC category: SSI

Datasheet

<u>Type number</u>	<u>Title</u>	<u>Publication release date</u>	<u>Datasheet status</u>	<u>Page count</u>	<u>File size (kB)</u>	<u>Datasheet</u>
74HC08;74HCT08	Quad 2-input AND gate	12/1/1990	Product specification	3	32	Download

Additional datasheet info

To complete the device datasheet with package and family information, also download the following PDF files. The "Logic Package Information" document is required to determine in which package(s) this device is available.

Document	Description
1 HCT_FAMILY_SPECIFICATIONS	HC/T Family Specifications, The IC06 74HC/HCT/HCMOS Logic Family Specifications
2 HCT_PACKAGE_INFO	HC/T Package Info, The IC06 74HC/HCT/HCMOS Logic Package Information

Parametrics

Type number	Package	Description	Propagation Delay(ns)	Voltage	No. of Pins	Power Dissipation Considerations	Logic Switching Levels	Output Drive Capability
74HC08D	SOT108-1 (SO14)	Quad 2-Input AND Gate	15	5 Volts +	14	Low Power or Battery Applications	CMOS	Low
74HC08DB	SOT337-1 (SSOP14)	Quad 2-Input AND Gate	15	5 Volts +	14	Low Power or Battery Applications	CMOS	Low
74HC08N	SOT27-1 (DIP14)	Quad 2-Input AND Gate	15	5 Volts +	14	Low Power or Battery Applications	CMOS	Low
74HC08PW	SOT402-1 (TSSOP14)	Quad 2-Input AND Gate	15	5 Volts +	14	Low Power or Battery Applications	CMOS	Low
74HCT08D	SOT108-1 (SO14)	Quad 2-Input AND Gate; TTL Enabled	15	5 Volts +	14	Low Power or Battery Applications	TTL	Low
74HCT08DB	SOT337-1 (SSOP14)	Quad 2-Input AND Gate; TTL Enabled	15	5 Volts +	14	Low Power or Battery Applications	TTL	Low
74HCT08N	SOT27-1 (DIP14)	Quad 2-Input AND Gate; TTL Enabled	15	5 Volts +	14	Low Power or Battery Applications	TTL	Low
74HCT08PW	SOT402-1 (TSSOP14)	Quad 2-Input AND Gate; TTL Enabled	15	5 Volts +	14	Low Power or Battery Applications	TTL	Low


Products, packages, availability and ordering

Type number	North American type number	Ordering code (12NC)	Marking/Packing  Discretes packing info	Package	Device status	Buy online
74HC08D	74HC08D	9337 142 70652	Standard Marking * Bulk Pack, CECC	SOT108-1 (SO14)	Full production	order this 
	74HC08D-T	9337 142 70653	Standard Marking * Reel Pack, SMD, 13", CECC	SOT108-1 (SO14)	Full production	order this 
74HC08DB	74HC08DB	9351 743 10112	Standard Marking * Bulk Pack	SOT337-1 (SSOP14)	Full production	order this 

	74HC08DB-T	9351 743 10118	Standard Marking * Reel Pack, SMD, 13"	SOT337-1 (SSOP14)	Full production	order this <input type="checkbox"/>
74HC08N	74HC08N	9336 687 80652	Standard Marking * Bulk Pack, CECC	SOT27-1 (DIP14)	Full production	order this <input type="checkbox"/>
74HC08PW	74HC08PW	9351 742 70112	Standard Marking * Bulk Pack	SOT402-1 (TSSOP14)	Full production	order this <input type="checkbox"/>
	74HC08PW-T	9351 742 70118	Standard Marking * Reel Pack, SMD, 13"	SOT402-1 (TSSOP14)	Full production	order this <input type="checkbox"/>
74HCT08D	74HCT08D	9337 143 50652	Standard Marking * Bulk Pack, CECC	SOT108-1 (SO14)	Full production	order this <input type="checkbox"/>
	74HCT08D-T	9337 143 50653	Standard Marking * Reel Pack, SMD, 13", CECC	SOT108-1 (SO14)	Full production	order this <input type="checkbox"/>
74HCT08DB	74HCT08DB	9351 743 20112	Standard Marking * Bulk Pack	SOT337-1 (SSOP14)	Full production	order this <input type="checkbox"/>
	74HCT08DB-T	9351 743 20118	Standard Marking * Reel Pack, SMD, 13"	SOT337-1 (SSOP14)	Full production	order this <input type="checkbox"/>
74HCT08N	74HCT08N	9336 689 10652	Standard Marking * Bulk Pack, CECC	SOT27-1 (DIP14)	Full production	order this <input type="checkbox"/>
74HCT08PW	74HCT08PW	9351 742 90112	Standard Marking * Bulk Pack	SOT402-1 (TSSOP14)	Full production	order this <input type="checkbox"/>
	74HCT08PW-T	9351 742 90118	Standard Marking * Reel Pack, SMD, 13"	SOT402-1 (TSSOP14)	Full production	order this <input type="checkbox"/>

Products in the above table are all in production. Some variants are discontinued; [click here](#) for information on these variants.

Similar products

 [74HC08;74HCT08](#) links to the similar products page containing an overview of products that are similar in function or related to the type number(s) as listed on this page. The similar products page includes products from the same catalog tree(s), relevant selection guides and products from the same functional category.

Support & tools

 [HC/T Family Specifications, The IC06 74HC/HCT/HCMOS Logic Family Specifications](#)(date 01-Mar-98)

 [HC/T User Guide](#)(date 01-Nov-97)

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