DATA SHEET

For a complete data sheet, please also download:

- The IC04 LOCMOS HE4000B Logic Family Specifications HEF, HEC
- The IC04 LOCMOS HE4000B Logic Package Outlines/Information HEF, HEC

HEF4023B
gates
Triple 3-input NAND gate

Product specification
File under Integrated Circuits, IC04

January 1995

Philips Semiconductors

PHILIPS

Triple 3-input NAND gate

HEF4023B gates

DESCRIPTION

The HEF4023B provides the positive triple 3-input NAND function. The outputs are fully buffered for highest noise immunity and pattern insensitivity of output impedance.

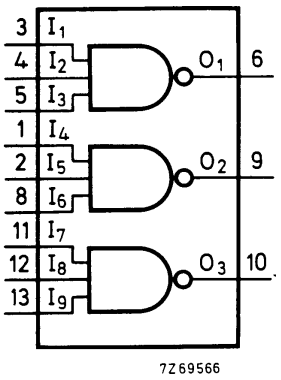

Fig.1 Functional diagram.

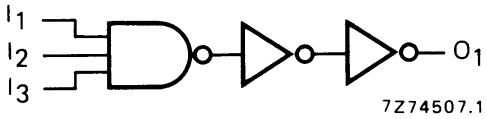

Fig.3 Logic diagram (one gate).

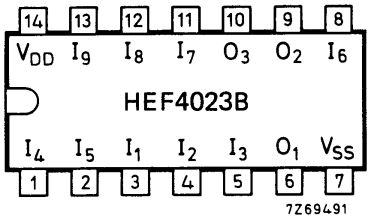

Fig.2 Pinning diagram.

HEF4023BP(N): 14-lead DIL; plastic (SOT27-1)

HEF4023BD(F): 14-lead DIL; ceramic (cerdip) (SOT73)

HEF4023BT(D): 14-lead SO; plastic (SOT108-1)

( ): Package Designator North America

FAMILY DATA, I_{DD} LIMITS category GATES

See Family Specifications

AC CHARACTERISTICS

V_{SS} = 0 V; T_{amb} = 25 °C; C_L = 50 pF; input transition times ≤ 20 ns

	V_{DD} V	SYMBOL	TYP.	MAX.		TYPICAL EXTRAPOLATION FORMULA
Propagation delays						
$I_n \rightarrow O_n$	5		65	135	ns	38 ns + (0,55 ns/pF) C_L
HIGH to LOW	10	t_{PHL}	25	50	ns	14 ns + (0,23 ns/pF) C_L
	15		15	30	ns	7 ns + (0,16 ns/pF) C_L
	5		65	130	ns	38 ns + (0,55 ns/pF) C_L
LOW to HIGH	10	t_{PLH}	30	60	ns	19 ns + (0,23 ns/pF) C_L
	15		25	45	ns	17 ns + (0,16 ns/pF) C_L
Output transition times	5		60	120	ns	10 ns + (1,0 ns/pF) C_L
HIGH to LOW	10	t_{THL}	30	60	ns	9 ns + (0,42 ns/pF) C_L
	15		20	40	ns	6 ns + (0,28 ns/pF) C_L
	5		60	120	ns	10 ns + (1,0 ns/pF) C_L
LOW to HIGH	10	t_{TLH}	30	60	ns	9 ns + (0,42 ns/pF) C_L
	15		20	40	ns	6 ns + (0,28 ns/pF) C_L

	V_{DD} V	TYPICAL FORMULA FOR P (μW)	
Dynamic power	5	$1200\ f_i + \sum (f_o C_L) \times V_{DD}^2$	where
dissipation per	10	$5500\ f_i + \sum (f_o C_L) \times V_{DD}^2$	f_i = input freq. (MHz)
package (P)	15	$16\ 400\ f_i + \sum (f_o C_L) \times V_{DD}^2$	f_o = output freq. (MHz)
			C_L = load capacitance (pF)
			$\sum (f_o C_L)$ = sum of outputs
			V_{DD} = supply voltage (V)