

# 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

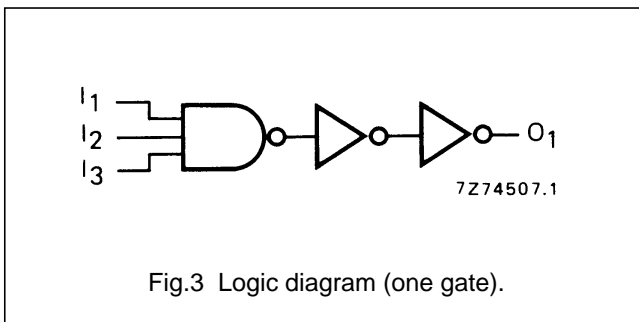
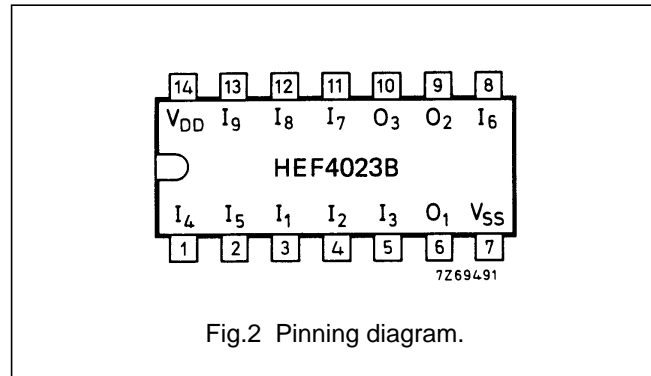
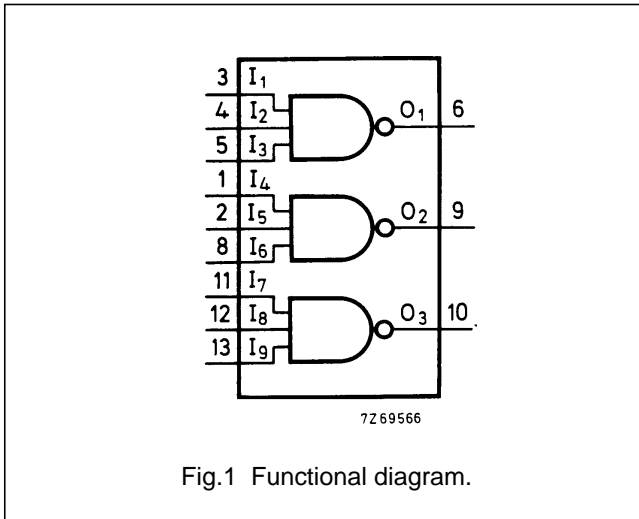
January 1995

# 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.



- 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<sub>DD</sub> LIMITS category GATES

See Family Specifications

## Triple 3-input NAND gate

HEF4023B  
gates**AC CHARACTERISTICS** $V_{SS} = 0$  V;  $T_{amb} = 25$  °C;  $C_L = 50$  pF; input transition times  $\leq 20$  ns

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

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



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