

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

HEF4012B **gates** Dual 4-input NAND gate

Product specification
File under Integrated Circuits, IC04

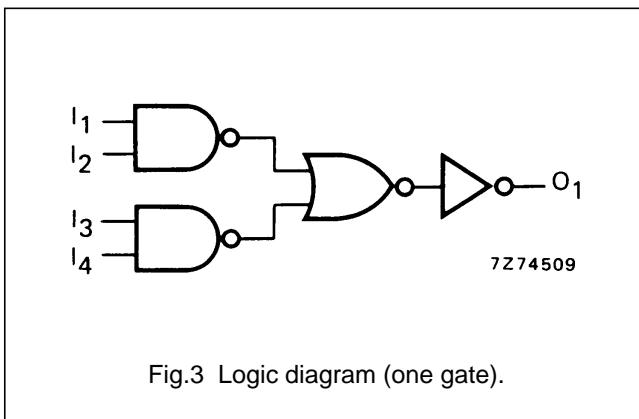
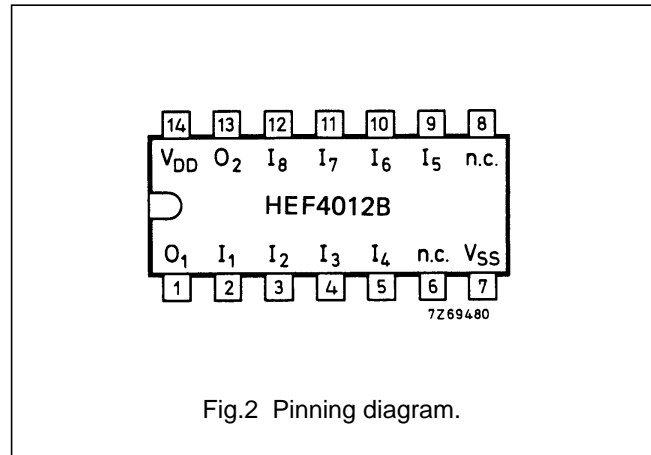
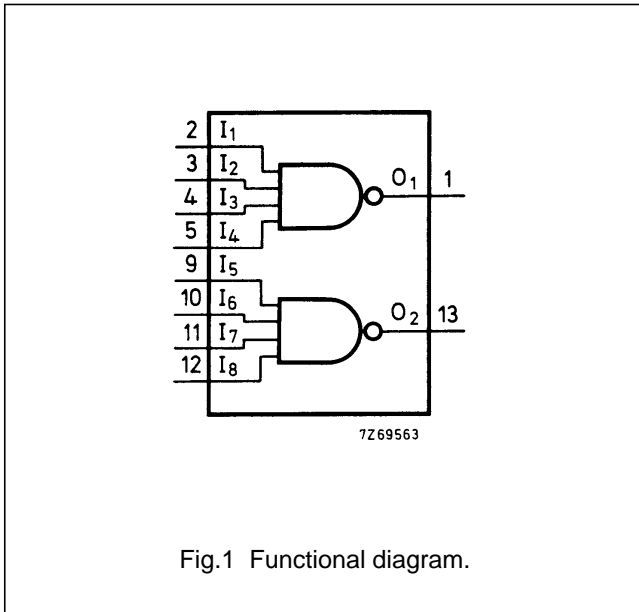
January 1995

Dual 4-input NAND gate

HEF4012B gates

DESCRIPTION

The HEF4012B provides the positive dual 4-input NAND function. The outputs are fully buffered for highest noise immunity and pattern insensitivity of output impedance.



- HEF4012BP(N): 14-lead DIL; plastic (SOT27-1)
- HEF4012BD(F): 14-lead DIL; ceramic (cerdip) (SOT73)
- HEF4012BT(D): 14-lead SO; plastic (SOT108-1)
- (): Package Designator North America

FAMILY DATA, I_{DD} LIMITS category GATES

see Family Specifications

Dual 4-input NAND gate

HEF4012B
gates**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 $I_n \rightarrow O_n$ HIGH to LOW	5	t_{PHL}	70	135	ns	$43 \text{ ns} + (0,55 \text{ ns/pF}) C_L$
	10		25	50	ns	$14 \text{ ns} + (0,23 \text{ ns/pF}) C_L$
	15		20	35	ns	$12 \text{ ns} + (0,16 \text{ ns/pF}) C_L$
LOW to HIGH	5	t_{PLH}	70	140	ns	$43 \text{ ns} + (0,55 \text{ ns/pF}) C_L$
	10		30	60	ns	$19 \text{ ns} + (0,23 \text{ ns/pF}) C_L$
	15		25	50	ns	$17 \text{ ns} + (0,16 \text{ ns/pF}) C_L$
Output transition times HIGH to LOW	5	t_{THL}	60	120	ns	$10 \text{ ns} + (1,0 \text{ ns/pF}) C_L$
	10		30	60	ns	$9 \text{ ns} + (0,42 \text{ ns/pF}) C_L$
	15		20	40	ns	$6 \text{ ns} + (0,28 \text{ ns/pF}) C_L$
LOW to HIGH	5	t_{TLH}	60	120	ns	$10 \text{ ns} + (1,0 \text{ ns/pF}) C_L$
	10		30	60	ns	$9 \text{ ns} + (0,42 \text{ ns/pF}) C_L$
	15		20	40	ns	$6 \text{ ns} + (0,28 \text{ ns/pF}) C_L$

	V_{DD} V	TYPICAL FORMULA FOR P (μ W)	
Dynamic power dissipation per package (P)	5	$1100 f_i + \sum (f_o C_L) \times V_{DD}^2$	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	$4400 f_i + \sum (f_o C_L) \times V_{DD}^2$	
	15	$12\,900 f_i + \sum (f_o C_L) \times V_{DD}^2$	