

INTEGRATED CIRCUITS

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

HEF4070B

gates

Quadruple exclusive-OR gate

Product specification
File under Integrated Circuits, IC04

January 1995



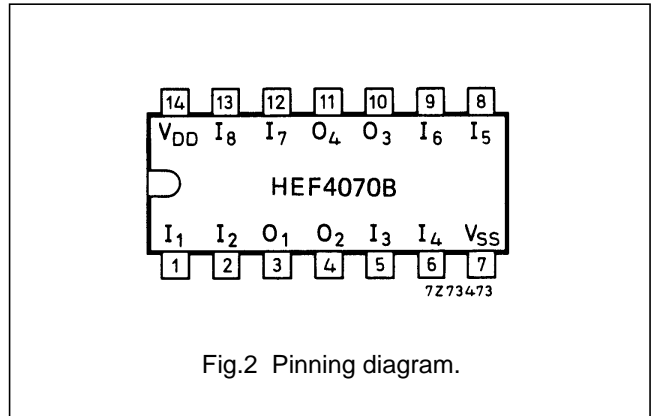
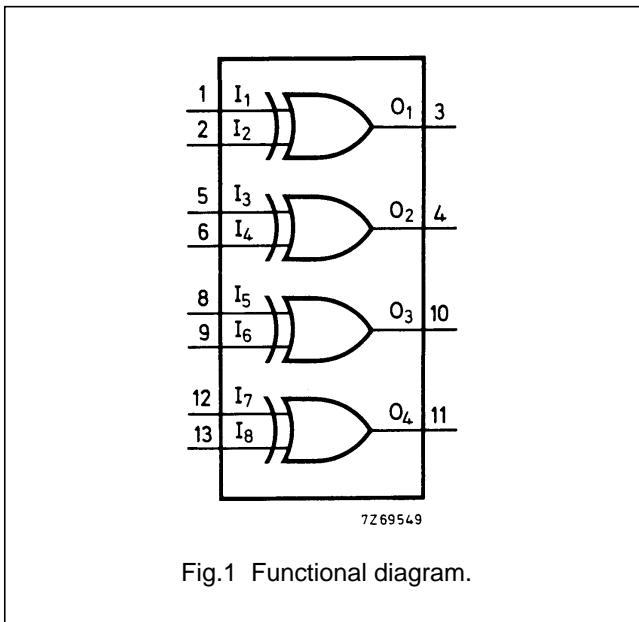
PHILIPS

Quadruple exclusive-OR gate

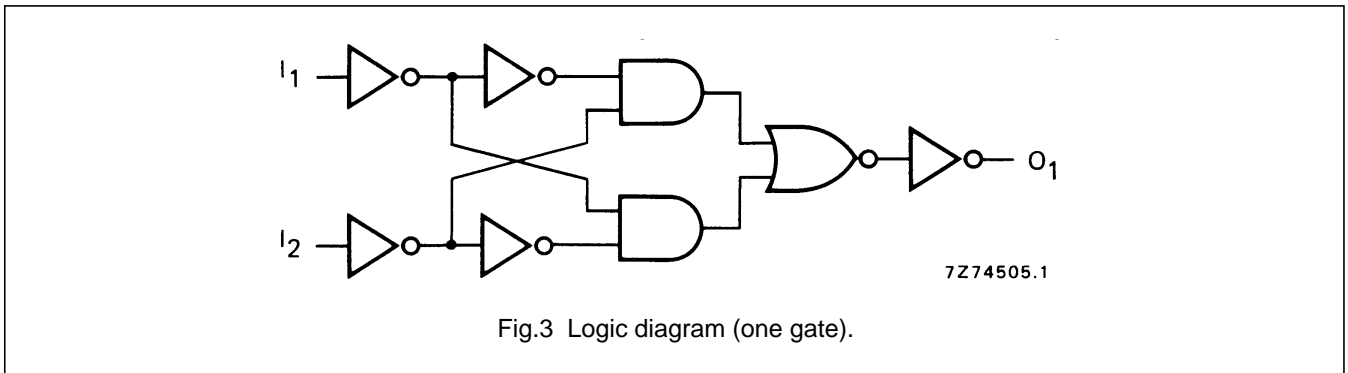
HEF4070B gates

DESCRIPTION

The HEF4070B provides the positive quadruple exclusive-OR function. The outputs are fully buffered for highest noise immunity and pattern insensitivity of output impedance.



- HEF4070BP(N): 14-lead DIL; plastic (SOT27-1)
- HEF4070BD(F): 14-lead DIL; ceramic (cerdip) (SOT73)
- HEF4070BT(D): 14-lead SO; plastic (SOT108-1)
- (): Package Designator North America



APPLICATION INFORMATION

Some examples of applications for the HEF4070B are:

- Logical comparators
- Parity checkers and generators

FAMILY DATA, I_{DD} LIMITS category GATES

See Family Specifications

TRUTH TABLE

I ₁	I ₂	O ₁
L	L	L
H	L	H
L	H	H
H	H	L

Note

1. H = HIGH state (the more positive voltage)
L = LOW state (the less positive voltage)



Quadruple exclusive-OR gate

HEF4070B
gates**AC CHARACTERISTICS** $V_{SS} = 0\text{ V}$; $T_{amb} = 25\text{ °C}$; $C_L = 50\text{ pF}$; input transition times $\leq 20\text{ ns}$

	V_{DD} V	SYMBOL	TYP.	MAX.		TYPICAL EXTRAPOLATION FORMULA	
Propagation delays $I_n \rightarrow O_n$ HIGH to LOW	5	t_{PHL}	85	175	ns	$58\text{ ns} + (0,55\text{ ns/pF}) C_L$	
	10		35	75	ns	$24\text{ ns} + (0,23\text{ ns/pF}) C_L$	
	15		30	55	ns	$21\text{ ns} + (0,16\text{ ns/pF}) C_L$	
	LOW to HIGH	5	t_{PLH}	75	150	ns	$48\text{ ns} + (0,55\text{ ns/pF}) C_L$
		10		30	65	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 (μW)	
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	$4900 f_i + \sum (f_o C_L) \times V_{DD}^2$	
	15	$14\ 400 f_i + \sum (f_o C_L) \times V_{DD}^2$	

