

QUADRUPLE EXCLUSIVE-OR GATE



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

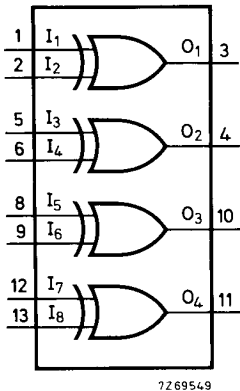


Fig. 1 Functional diagram.

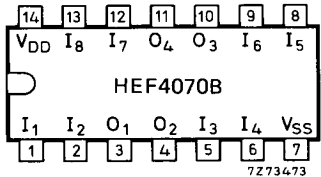


Fig. 2 Pinning diagram.

HEF4070BP : 14-lead DIL; plastic (SOT-27).
HEF4070BD : 14-lead DIL; ceramic (cerdip) (SOT-73).
HEF4070BT : 14-lead mini-pack; plastic (SO-14; SOT-108A).

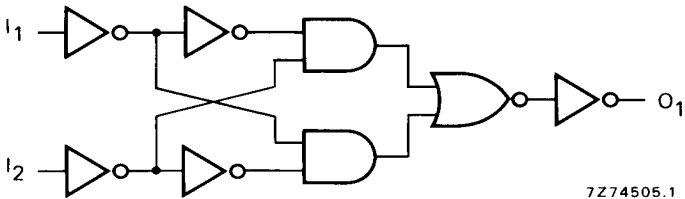


Fig. 3 Logic diagram (one gate).

APPLICATION INFORMATION

Some examples of applications for the HEF4070B are:

- Logical comparators
- Parity checkers and generators

TRUTH TABLE

I ₁	I ₂	O ₁
L	L	L
H	L	H
L	H	H
H	H	L

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

FAMILY DATA

I_{DD} LIMITS category GATES

see Family Specifications



A.C. CHARACTERISTICS

 $V_{SS} = 0 \text{ V}$; $T_{amb} = 25 \text{ }^{\circ}\text{C}$; $C_L = 50 \text{ pF}$; 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)	where f_i = input freq. (MHz) f_o = output freq. (MHz) C_L = load capacitance (pF) $\Sigma(f_o C_L)$ = sum of outputs V_{DD} = supply voltage (V)
Dynamic power dissipation per package (P)	5	$1100 f_i + \Sigma(f_o C_L) \times V_{DD}^2$	
	10	$4900 f_i + \Sigma(f_o C_L) \times V_{DD}^2$	
	15	$14\,400 f_i + \Sigma(f_o C_L) \times V_{DD}^2$	