

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

HEF40097B

buffers

3-state hex non-inverting buffer

Product specification
File under Integrated Circuits, IC04

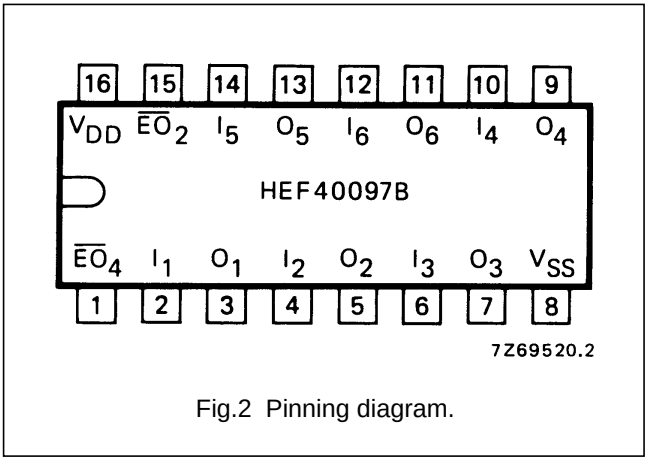
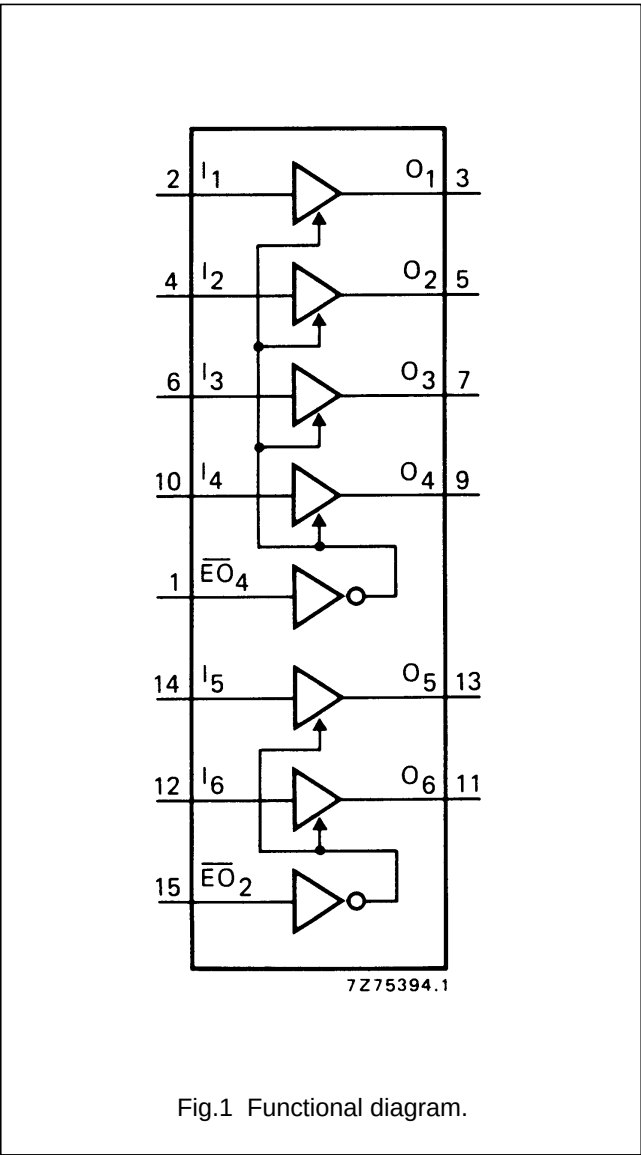
January 1995

3-state hex non-inverting buffer

HEF40097B
buffers

DESCRIPTION

The HEF40097B is a hex non-inverting buffer with 3-state outputs. The 3-state outputs are controlled by two enable inputs ($\overline{EO}_4$ and $\overline{EO}_2$). A HIGH on $\overline{EO}_4$ causes four of the six buffer elements to assume a high impedance or OFF-state, regardless of the other input conditions and a HIGH on $\overline{EO}_2$ causes the outputs of the remaining two buffer elements to assume a high impedance or OFF-state, regardless of the other input conditions.



- HEF40097BP(N): 16-lead DIL; plastic (SOT38-1)
- HEF40097BD(F): 16-lead DIL; ceramic (cerdip) (SOT74)
- HEF40097BT(D): 16-lead SO; plastic (SOT109-1)
- (): Package Designator North America

PINNING

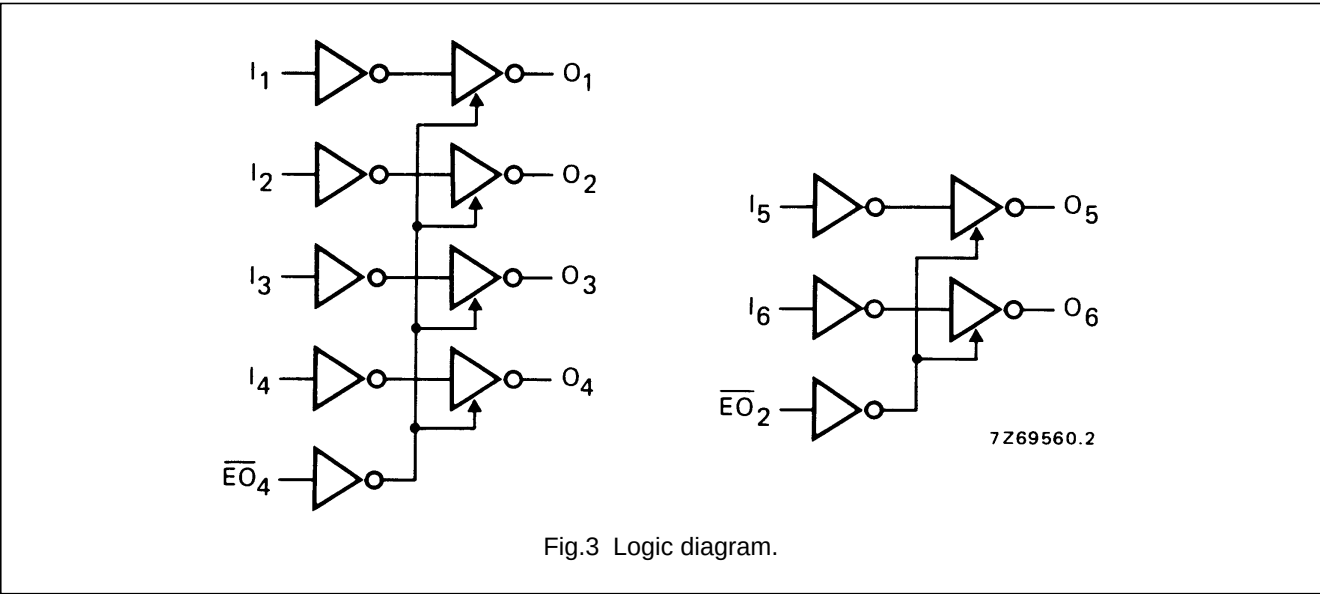
- | | |
|---------------------------------------|------------------------------|
| I_1 to I_6 | buffer inputs |
| $\overline{EO}_4$, $\overline{EO}_2$ | enable inputs (active LOW) |
| O_1 to O_6 | buffer outputs (active HIGH) |

FAMILY DATA, I_{DD} LIMITS category BUFFERS

See Family Specifications

3-state hex non-inverting buffer

HEF40097B
buffers



DC CHARACTERISTICS

V_{SS} = 0 V

HEF	V _{DD} V	V _{OH} V	V _{OL} V	SYMBOL	T _{amb} (°C)					
					-40		+25		+85	
					MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
Output current HIGH	5	4,6		-I _{OH}	1,2	1,0			0,8	mA
	10	9,5			3,8	3,2			2,5	mA
	15	13,5			12,0	10,0			8,0	mA
HIGH	5	2,5		-I _{OH}	3,8	3,2			2,5	mA
Output current LOW	4,75		0,4	I _{OL}	3,5	2,9			2,3	mA
	10		0,5		12,0	10,0			8,0	mA
	15		1,5		24,0	20,0			16,0	mA

HEC	V _{DD} V	V _{OH} V	V _{OL} V	SYMBOL	T _{amb} (°C)					
					-55		+25		+125	
					MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
Output current HIGH	5	4,6		-I _{OH}	1,25	1,0			0,6	mA
	10	9,5			4,0	3,2			2,1	mA
	15	13,5			12,5	10,0			6,7	mA
HIGH	5	2,5		-I _{OH}	4,0	3,2			2,1	mA
Output current LOW	4,75		0,4	I _{OL}	3,6	2,9			1,9	mA
	10		0,5		12,5	10,0			6,7	mA
	15		1,5		25,0	20,0			13,0	mA

3-state hex non-inverting buffer

HEF40097B
buffers

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 10 15	t_{PHL}	70 30 25	140 60 50	ns	60 ns + (0,20 ns/pF) C_L 26 ns + (0,08 ns/pF) C_L 22 ns + (0,06 ns/pF) C_L
LOW to HIGH	5 10 15	t_{PLH}	60 25 20	120 50 40	ns	45 ns + (0,30 ns/pF) C_L 19 ns + (0,13 ns/pF) C_L 16 ns + (0,09 ns/pF) C_L
Output transition times HIGH to LOW	5 10 15	t_{THL}	30 15 10	60 30 20	ns	15 ns + (0,30 ns/pF) C_L 10 ns + (0,11 ns/pF) C_L 7 ns + (0,07 ns/pF) C_L
LOW to HIGH	5 10 15	t_{TLH}	35 20 15	70 40 30	ns	10 ns + (0,50 ns/pF) C_L 8 ns + (0,24 ns/pF) C_L 6 ns + (0,18 ns/pF) C_L
3-state propagation delays Output disable times $\overline{EO}_2, \overline{EO}_4 \rightarrow O_n$ HIGH	5 10 15	t_{PHZ}	45 35 30	95 70 60	ns	
LOW	5 10 15	t_{PLZ}	60 35 25	120 70 55	ns	
Output enable times $\overline{EO}_2, \overline{EO}_4 \rightarrow O_n$ HIGH	5 10 15	t_{PZH}	75 35 30	150 70 60	ns	
LOW	5 10 15	t_{PZL}	95 40 30	190 80 65	ns	

	V_{DD} V	TYPICAL FORMULA FOR P (μ W)	
Dynamic power dissipation per package (P)	5 10 15	5 400 $f_i + \sum (f_o C_L) \times V_{DD}^2$ 25 200 $f_i + \sum (f_o C_L) \times V_{DD}^2$ 96 500 $f_i + \sum (f_o C_L) \times V_{DD}^2$	where f_i = input freq. (MHz) f_o = output freq. (MHz) C_L = load cap. (pF) $\sum (f_o C_L)$ = sum of outputs V_{DD} = supply voltage (V)