

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

HEF4041B

buffers

Quadruple true/complement buffer

Product specification
File under Integrated Circuits, IC04

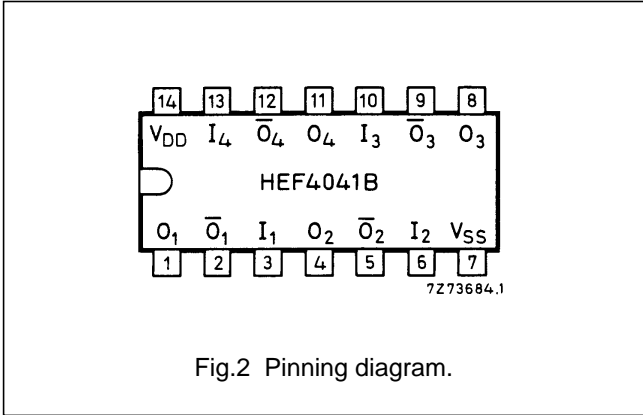
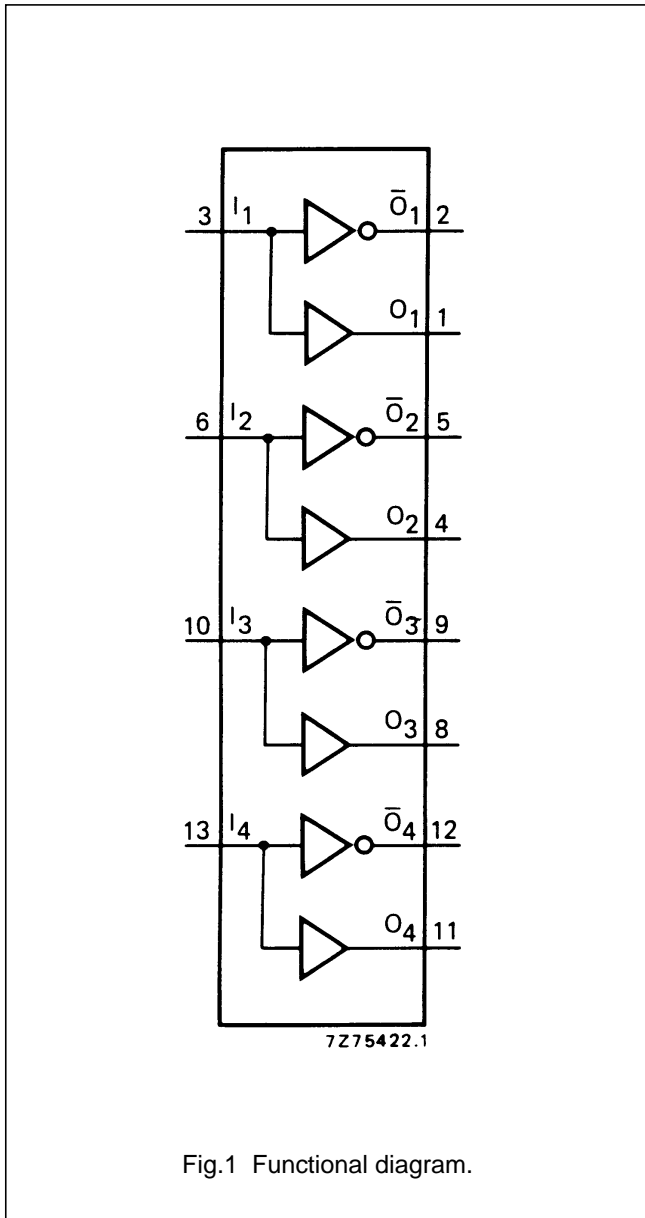
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Quadruple true/complement buffer

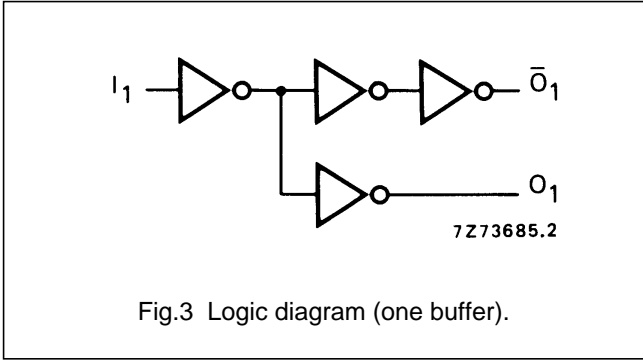
HEF4041B buffers

DESCRIPTION

The HEF4041B is a quadruple true/complement buffer which provides both an inverted active LOW output (\bar{O}) and a non-inverted active HIGH output (O) for each input (I). The buffers exhibit high current output capability suitable for driving TTL or high capacitive loads.



- HEF4041BP(N): 14-lead DIL; plastic (SOT27-1)
 - HEF4041BD(F): 14-lead DIL; ceramic (cerdip) (SOT73)
 - HEF4041BT(D): 14-lead SO; plastic (SOT108-1)
- (): Package Designator North America



APPLICATION INFORMATION

- Some examples of applications for the HEF4041B are:
- LOCMOS to DTL/TTL converter
 - High current sink and source driver

FAMILY DATA, I_{DD} LIMITS category BUFFERS

See Family Specifications

Quadruple true/complement buffer

HEF4041B buffers

DC CHARACTERISTICS

$V_{SS} = 0\text{ V}$; $V_I = V_{SS}$ or V_{DD}

| | V_{DD} V | V_{OH} V | V_{OL} V | SYMBOL | T_{amb} (°C) | | | | | |
|---------------------------------|---------------|---------------|---------------|-----------|----------------|------|------|------|------|------|
| | | | | | -40 | | +25 | | +85 | |
| | | | | | MIN. | MAX. | MIN. | TYP. | MIN. | MAX. |
| Output (source) current HIGH | 5 | 4,6 | | $-I_{OH}$ | 1,6 | 1,3 | 2,6 | 1,0 | mA | |
| | 10 | 9,5 | | | 4,5 | 3,6 | 7,0 | 2,7 | mA | |
| | 15 | 13,5 | | | 16,0 | 14,0 | 30,0 | 10,0 | mA | |
| HIGH | 5 | 2,5 | | $-I_{OH}$ | 5,0 | 4,0 | 8,0 | 3,0 | mA | |
| Output (sink) current LOW | 4,75 | | 0,4 | I_{OL} | 2,0 | 1,7 | 4,0 | 1,35 | mA | |
| | 10 | | 0,5 | | 7,5 | 6,0 | 12,0 | 4,5 | mA | |
| | 15 | | 1,5 | | 23,0 | 20,0 | 35,0 | 15,0 | mA | |

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 | MIN. | TYP. | MAX. | TYPICAL EXTRAPOLATION FORMULA | |
|--|---------------|-----------|------|------|------|-------------------------------|----------------------------|
| | | | | | | | |
| Propagation delays $I_n \rightarrow O_n$ HIGH to LOW LOW to HIGH $I_n \rightarrow \bar{O}_n$ HIGH to LOW LOW to HIGH | 5 | t_{PHL} | | 30 | 65 | ns | 17 ns + (0,27 ns/pF) C_L |
| | 10 | | 20 | 40 | ns | 14 ns + (0,11 ns/pF) C_L | |
| | 15 | | 15 | 30 | ns | 12 ns + (0,08 ns/pF) C_L | |
| | 5 | t_{PLH} | | 30 | 55 | ns | 17 ns + (0,27 ns/pF) C_L |
| | 10 | | 15 | 30 | ns | 9 ns + (0,11 ns/pF) C_L | |
| | 15 | | 10 | 20 | ns | 7 ns + (0,08 ns/pF) C_L | |
| | 5 | t_{PHL} | | 35 | 75 | ns | 22 ns + (0,27 ns/pF) C_L |
| | 10 | | 20 | 40 | ns | 14 ns + (0,11 ns/pF) C_L | |
| | 15 | | 15 | 30 | ns | 12 ns + (0,08 ns/pF) C_L | |
| | 5 | t_{PLH} | | 35 | 75 | ns | 22 ns + (0,27 ns/pF) C_L |
| | 10 | | 20 | 40 | ns | 14 ns + (0,11 ns/pF) C_L | |
| | 15 | | 15 | 30 | ns | 12 ns + (0,08 ns/pF) C_L | |
| Output transition times $O_n \rightarrow \bar{O}_n$ HIGH to LOW LOW to HIGH | 5 | t_{THL} | | 25 | 50 | ns | 5 ns + (0,40 ns/pF) C_L |
| | 10 | | 12 | 25 | ns | 2 ns + (0,21 ns/pF) C_L | |
| | 15 | | 8 | 20 | ns | 1 ns + (0,14 ns/pF) C_L | |
| | 5 | t_{TLH} | | 25 | 45 | ns | 5 ns + (0,40 ns/pF) C_L |
| | 10 | | 12 | 25 | ns | 2 ns + (0,21 ns/pF) C_L | |
| | 15 | | 8 | 20 | ns | 1 ns + (0,14 ns/pF) C_L | |

 Quadruple true/complement buffer

 HEF4041B
 buffers

| | V_{DD} V | TYPICAL FORMULA FOR P (μ W) | |
|---|---------------|--|---|
| Dynamic power dissipation per package (P) | 5 10 15 | $3100 f_i + \sum(f_o C_L) \times V_{DD}^2$ $12\ 700 f_i + \sum(f_o C_L) \times V_{DD}^2$ $33\ 800 f_i + \sum(f_o C_L) \times V_{DD}^2$ | 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) |