

# 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

## **HEF4731B; HEF4731V** **LSI**

### Quadruple 64-bit static shift register

Product specification  
File under Integrated Circuits, IC04

January 1995

# Quadruple 64-bit static shift register

## HEF4731B; HEF4731V LSI

### DESCRIPTION

The HEF4731B and HEF4731V are quadruple 64-bit static shift registers each with separate serial data inputs ( $D_A$  to  $D_D$ ), clock inputs ( $\overline{CP}_A$  to  $\overline{CP}_D$ ) and data outputs ( $O_{63A}$  to  $O_{63D}$ ) from the 64th register position.

Recommended supply voltage range for HEF4731B is 3 to 15 V and for HEF4731V is 4,5 to 12,5 V.

Data are shifted to the next stage on the negative-going transitions of the clock. Low impedance outputs are provided for direct interface to TTL.

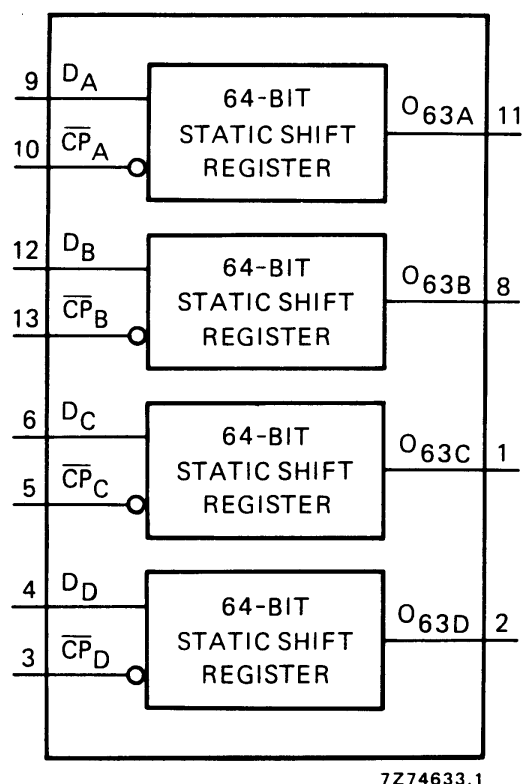


Fig.1 Functional diagram.

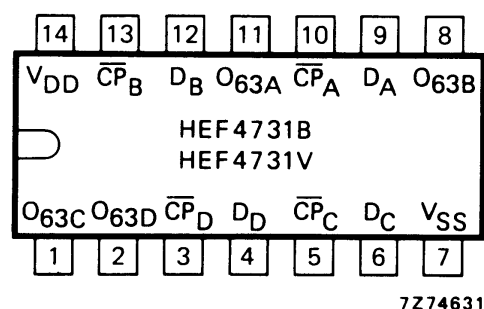


Fig.2 Pinning diagram.

HEF4731BP; 14-lead DIL; plastic  
HEF4731VP(N): (SOT27-1)

HEF4731BD; 14-lead DIL; ceramic (cerdip)  
HEF4731VD(F): (SOT73)

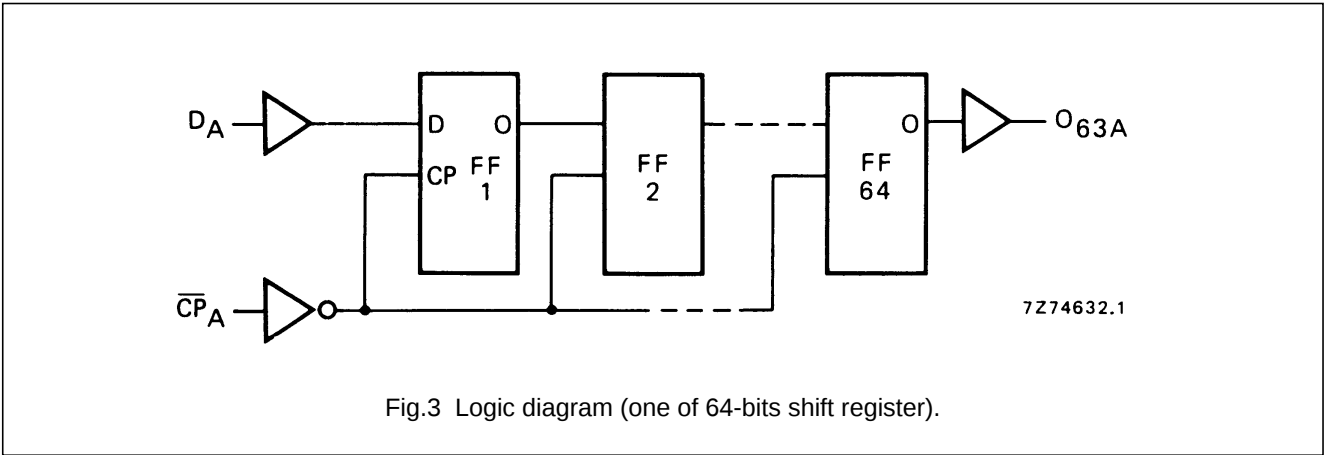
( ): Package Designator North America

### FAMILY DATA, $I_{DD}$ LIMITS category LSI

See Family Specifications

Quadruple 64-bit static shift register

HEF4731B; HEF4731V  
LSI



The values given at  $V_{DD} = 15\text{ V}$  in the following DC and AC characteristics, are not applicable to the HEF4731V, because of its reduced supply voltage range.

DC CHARACTERISTICS

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

|                                    | $V_{DD}$<br>V | $V_{OL}$<br>V | $V_{OH}$<br>V | SYMBOL    | $T_{amb} (^{\circ}\text{C})$ |      |      |      |      |      |
|------------------------------------|---------------|---------------|---------------|-----------|------------------------------|------|------|------|------|------|
|                                    |               |               |               |           | -40                          |      | + 25 |      | + 85 |      |
|                                    |               |               |               |           | MIN.                         | MAX. | MIN. | MAX. | MIN. | MAX. |
| Output (source)<br>current<br>HIGH | 5             |               | 2,5           | $-I_{OH}$ | 3                            |      | 2,5  |      | 2,0  | mA   |
|                                    | 5             |               | 4,6           |           | 1                            |      | 0,85 |      | 0,65 | mA   |
|                                    | 10            |               | 9,5           |           | 3                            |      | 2,5  |      | 2,0  | mA   |
|                                    | 15            |               | 13,5          |           | 10                           |      | 8,5  |      | 6,5  | mA   |
| Output (sink)<br>current<br>LOW    | 4,75          | 0,4           |               | $I_{OL}$  | 2,3                          |      | 2,0  |      | 1,6  | mA   |
|                                    | 10            | 0,5           |               |           | 6,0                          |      | 5,0  |      | 4,0  | mA   |
|                                    | 15            | 1,5           |               |           | 20,0                         |      | 18,0 |      | 14,0 | mA   |

AC CHARACTERISTICS

$V_{SS} = 0\text{ V}$ ;  $T_{amb} = 25\text{ }^{\circ}\text{C}$ ; input transition times  $\leq 20\text{ ns}$

|                                                 | $V_{DD}$<br>V | TYPICAL FORMULA FOR P ( $\mu\text{W}$ )          |                                                                                                                                                                         |
|-------------------------------------------------|---------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dynamic power<br>dissipation per<br>package (P) | 5             | $13\,000\,f_i + \sum (f_o C_L) \times V_{DD}^2$  | where<br>$f_i$ = input freq. (MHz)<br>$f_o$ = output freq. (MHz)<br>$C_L$ = load capacitance (pF)<br>$\sum (f_o C_L)$ = sum of outputs<br>$V_{DD}$ = supply voltage (V) |
|                                                 | 10            | $55\,000\,f_i + \sum (f_o C_L) \times V_{DD}^2$  |                                                                                                                                                                         |
|                                                 | 15            | $140\,000\,f_i + \sum (f_o C_L) \times V_{DD}^2$ |                                                                                                                                                                         |