# QUADRUPLE 2-INPUT MULTIPLEXER

The HEF4519B provides four multiplexing circuits with common select inputs ($S_A$, $S_B$); each circuit contains two inputs ($A_n$, $B_n$) and one output ($O_n$). It may be used to select four bits of information from one of two sources.

The 'A' inputs are selected when $S_A$ is HIGH, the 'B' inputs when $S_B$ is HIGH. When $S_A$ and $S_B$ are HIGH, the output ($O_n$) is the logical EXCLUSIVE-NOR of the $A_n$ and $B_n$ inputs ($O_n = A_n \odot B_n$).

When $S_A$ and $S_B$ are LOW, the output ($O_n$) is LOW, independent of the multiplexer inputs ($A_n$ and $B_n$).

The HEF4519B cannot be used to multiplex analogue signals. The outputs utilize standard buffers for best performance.

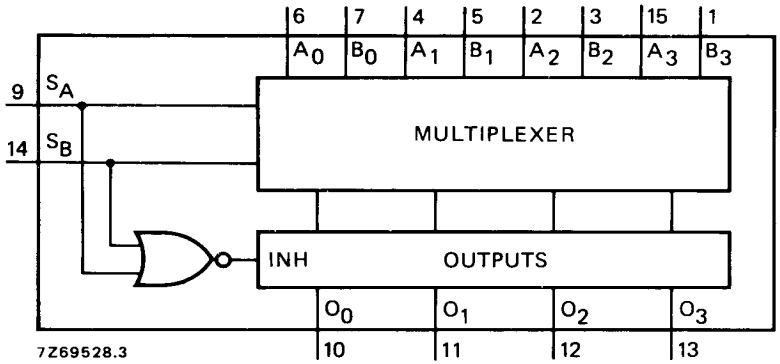


Fig. 1 Functional diagram.

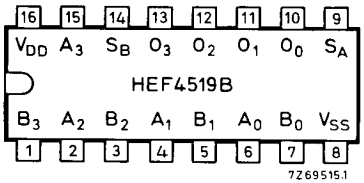


Fig. 2 Pinning diagram.

HEF4519BP : 16-lead DIL; plastic (SOT-38Z).
HEF4519BD: 16-lead DIL; ceramic (cerdip) (SOT-74).
HEF4519BT : 16-lead mini-pack; plastic (SO-16; SOT-109A).

**PINNING**

| | |
|---|---|
| $S_A$, $S_B$ | selects inputs (active HIGH) |
| $A_0$ to $A_3$ | multiplexer inputs |
| $B_0$ to $B_3$ | multiplexer inputs |
| $O_0$ to $O_3$ | multiplexer outputs |

**FAMILY DATA**

**$I_{DD}$ LIMITS category MSI** } see Family Specifications

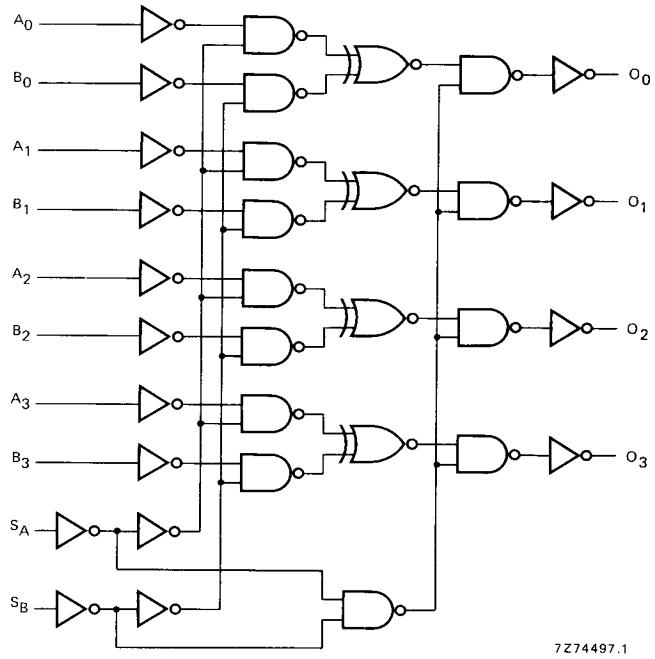


Fig. 3 Logic diagram.

**FUNCTION TABLE**

| inputs | | | | output |
|---|---|---|---|---|
| $S_A$ | $S_B$ | $A_n$ | $B_n$ | $O_n$ |
| L | L | X | X | L |
| H | L | $A_n$ | X | $A_n$ |
| L | H | X | $B_n$ | $B_n$ |
| H | H | L | L | H |
| H | H | H | L | L |
| H | H | L | H | L |
| H | H | H | H | H |

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

## A.C. 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 | | | | | | |
| $A_n$, $B_n$ → $O_n$ | 5 | | 95 | 190 | ns | 68 ns + (0,55 ns/pF)$C_L$ |
| HIGH to LOW | 10 | $t_{PHL}$ | 40 | 80 | ns | 29 ns + (0,23 ns/pF)$C_L$ |
| | 15 | | 30 | 60 | ns | 22 ns + (0,16 ns/pF)$C_L$ |
| | 5 | | 80 | 160 | ns | 53 ns + (0,55 ns/pF)$C_L$ |
| LOW to HIGH | 10 | $t_{PLH}$ | 40 | 80 | ns | 29 ns + (0,23 ns/pF)$C_L$ |
| | 15 | | 30 | 60 | ns | 22 ns + (0,16 ns/pF)$C_L$ |
| $S_A$, $S_B$ → $O_n$ | 5 | | 95 | 190 | ns | 68 ns + (0,55 ns/pF)$C_L$ |
| HIGH to LOW | 10 | $t_{PHL}$ | 40 | 80 | ns | 29 ns + (0,23 ns/pF)$C_L$ |
| | 15 | | 30 | 55 | ns | 22 ns + (0,16 ns/pF)$C_L$ |
| | 5 | | 85 | 165 | ns | 58 ns + (0,55 ns/pF)$C_L$ |
| LOW to HIGH | 10 | $t_{PLH}$ | 40 | 80 | ns | 29 ns + (0,23 ns/pF)$C_L$ |
| | 15 | | 30 | 60 | ns | 22 ns + (0,16 ns/pF)$C_L$ |
| Output transition times | 5 | | 60 | 120 | ns | 10 ns + (1,0 ns/pF) $C_L$ |
| HIGH to LOW | 10 | $t_{THL}$ | 30 | 60 | ns | 9 ns + (0,42 ns/pF) $C_L$ |
| | 15 | | 20 | 40 | ns | 6 ns + (0,28 ns/pF) $C_L$ |
| | 5 | | 60 | 120 | ns | 10 ns + (1,0 ns/pF) $C_L$ |
| LOW to HIGH | 10 | $t_{TLH}$ | 30 | 60 | ns | 9 ns + (0,42 ns/pF) $C_L$ |
| | 15 | | 20 | 40 | ns | 6 ns + (0,28 ns/pF) $C_L$ |

| | $V_{DD}$ V | typical formula for P (μW) | where |
|---|---|---|---|
| Dynamic power dissipation per package (P) | 5 | 1000 $f_i$ + $\Sigma(f_oC_L)$ × $V_{DD}^2$ | $f_i$ = input freq. (MHz)<br>$f_o$ = output freq. (MHz)<br>$C_L$ = load capacitance (pF)<br>$\Sigma(f_oC_L)$ = sum of outputs<br>$V_{DD}$ = supply voltage (V) |
| | 10 | 6000 $f_i$ + $\Sigma(f_oC_L)$ × $V_{DD}^2$ | |
| | 15 | 17 000 $f_i$ + $\Sigma(f_oC_L)$ × $V_{DD}^2$ | |

## APPLICATION INFORMATION

Some examples of applications for the HEF4519B are:

- 2-input multiplexers.
- True/complement selectors.