

# 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

## **HEF4519B**

## **MSI**

## **Quadruple 2-input multiplexer**

Product specification  
File under Integrated Circuits, IC04

January 1995

# Quadruple 2-input multiplexer

## HEF4519B MSI

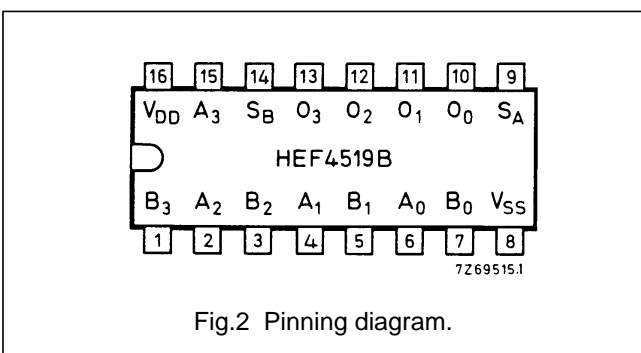
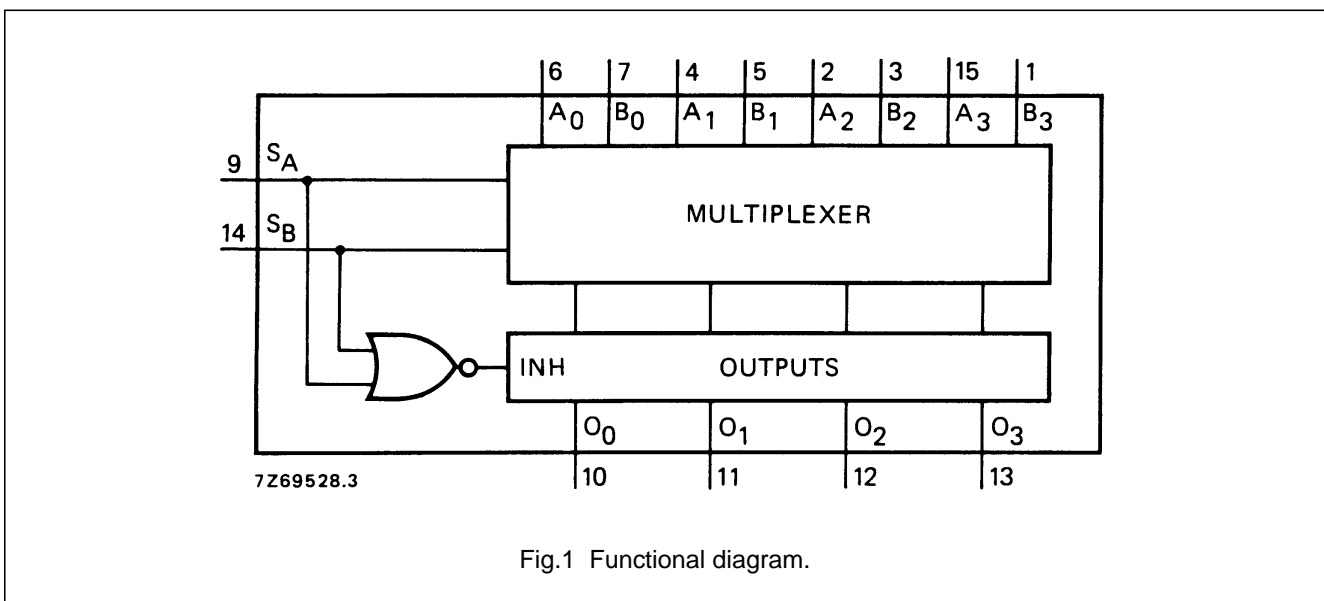
### DESCRIPTION

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.



### 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

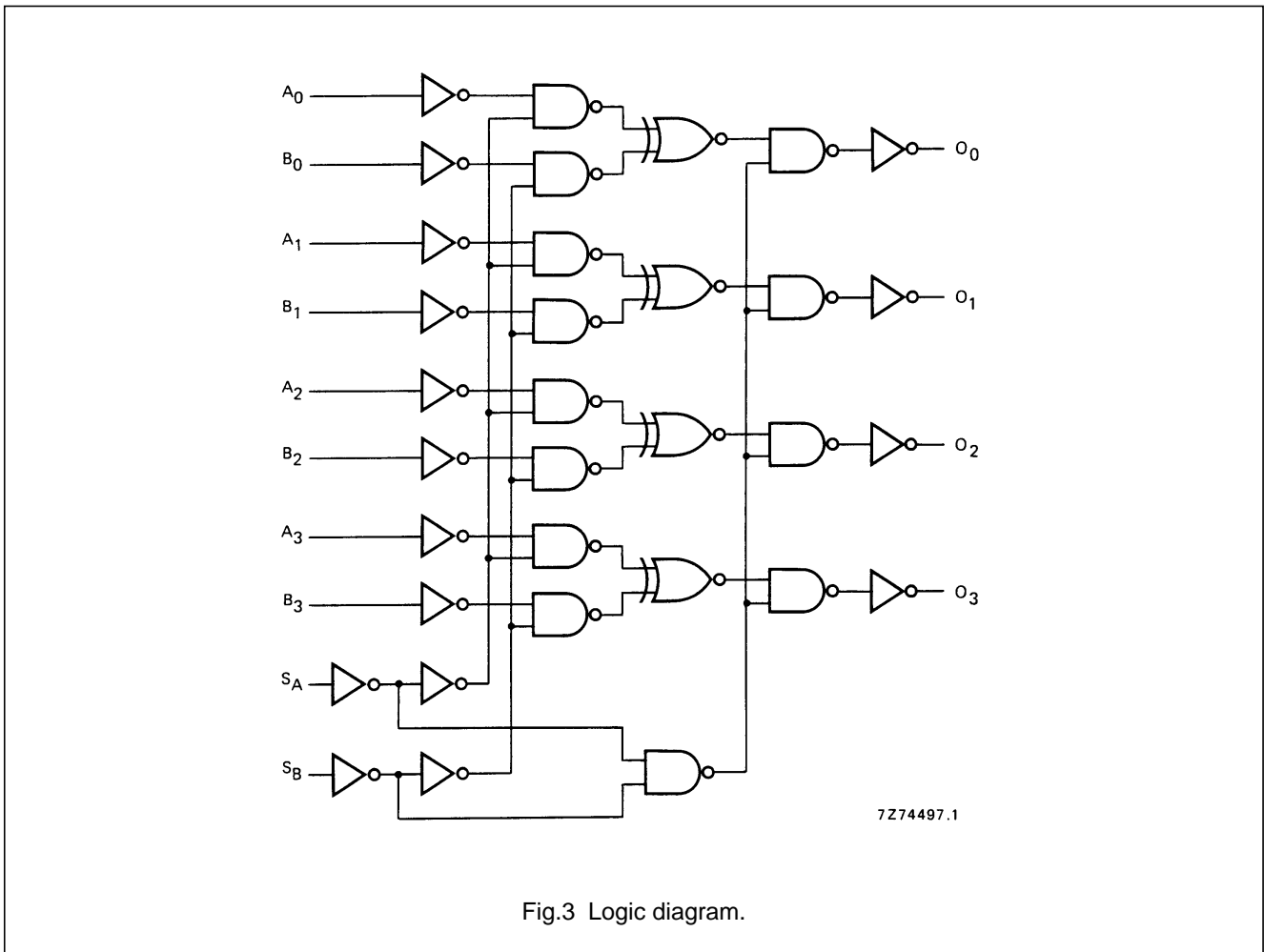
### FAMILY DATA, $I_{DD}$ LIMITS category MSI

See Family Specifications

- HEF4519BP(N): 16-lead DIL; plastic (SOT38-1)
- HEF4519BD(F): 16-lead DIL; ceramic (cerdip) (SOT74)
- HEF4519BT(D): 16-lead SO; plastic (SOT109-1)
- ( ): Package Designator North America

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FUNCTION TABLE

INPUTS				OUTPUT
S <sub>A</sub>	S <sub>B</sub>	A <sub>n</sub>	B <sub>n</sub>	O <sub>n</sub>
L	L	X	X	L
H	L	A <sub>n</sub>	X	A <sub>n</sub>
L	H	X	B <sub>n</sub>	B <sub>n</sub>
H	H	L	L	H
H	H	H	L	L
H	H	L	H	L
H	H	H	H	H

Notes

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

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## HEF4519B MSI

### 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	TYP.	MAX.		TYPICAL EXTRAPOLATION FORMULA
Propagation delays $A_n, B_n \rightarrow O_n$ HIGH to LOW  LOW to HIGH  $S_A, S_B \rightarrow O_n$ HIGH to LOW  LOW to HIGH	5	$t_{PHL}$	95	190	ns	$68\text{ ns} + (0,55\text{ ns/pF}) C_L$
	10		40	80	ns	$29\text{ ns} + (0,23\text{ ns/pF}) C_L$
	15		30	60	ns	$22\text{ ns} + (0,16\text{ ns/pF}) C_L$
	5	$t_{PLH}$	80	160	ns	$53\text{ ns} + (0,55\text{ ns/pF}) C_L$
	10		40	80	ns	$29\text{ ns} + (0,23\text{ ns/pF}) C_L$
	15		30	60	ns	$22\text{ ns} + (0,16\text{ ns/pF}) C_L$
	5	$t_{PHL}$	95	190	ns	$68\text{ ns} + (0,55\text{ ns/pF}) C_L$
	10		40	80	ns	$29\text{ ns} + (0,23\text{ ns/pF}) C_L$
	15		30	55	ns	$22\text{ ns} + (0,16\text{ ns/pF}) C_L$
	5	$t_{PLH}$	85	165	ns	$58\text{ ns} + (0,55\text{ ns/pF}) C_L$
	10		40	80	ns	$29\text{ ns} + (0,23\text{ ns/pF}) C_L$
	15		30	60	ns	$22\text{ ns} + (0,16\text{ ns/pF}) C_L$
Output transition times HIGH to LOW  LOW to HIGH	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	$6\text{ ns} + (0,28\text{ ns/pF}) C_L$
	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 ( $\mu\text{W}$ )	
Dynamic power dissipation per package (P)	5	$1000 f_i + \sum (f_o C_L) \times V_{DD}^2$	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)
	10	$6000 f_i + \sum (f_o C_L) \times V_{DD}^2$	
	15	$17\ 000 f_i + \sum (f_o C_L) \times V_{DD}^2$	

### APPLICATION INFORMATION

Some examples of applications for the HEF4519B are:

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