

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

HEF4539B

MSI

Dual 4-input multiplexer

Product specification
File under Integrated Circuits, IC04

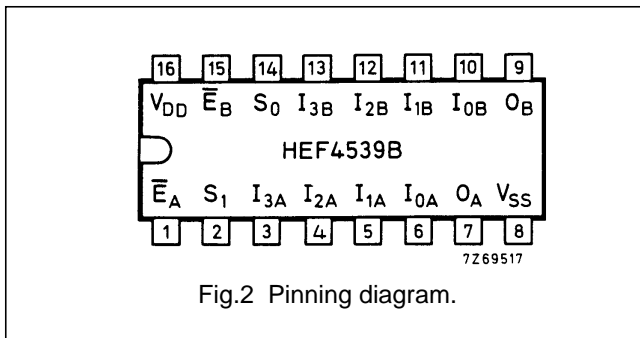
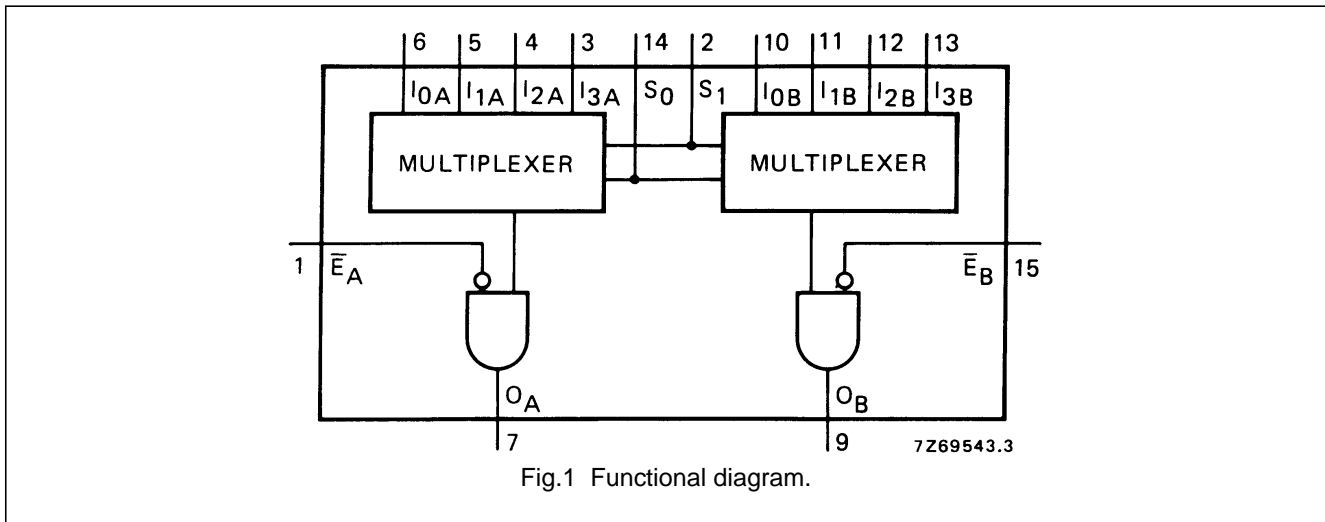
January 1995

Dual 4-input multiplexer

HEF4539B
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DESCRIPTION

The HEF4539B is a dual 4-input multiplexer with common select logic. Each multiplexer has four multiplexer inputs (I_0 and I_3), an active LOW enable input (\bar{E}) and a multiplexer output (O). When HIGH, \bar{E} forces O of the respective multiplexer LOW, independent of the select inputs (S_0 to S_1) and I_0 to I_3 . When \bar{E} is LOW, S_0 and S_1 determine which multiplexer input (I_0 to I_3) on each of the multiplexers is routed to the respective multiplexer output (O).



PINNING

- $I_{0A}, I_{1A}, I_{2A}, I_{3A}$ multiplexer inputs
- $I_{0B}, I_{1B}, I_{2B}, I_{3B}$ multiplexer inputs
- S_0, S_1 select inputs
- \bar{E}_A, \bar{E}_B enable inputs (active LOW)
- O_A, O_B multiplexer outputs

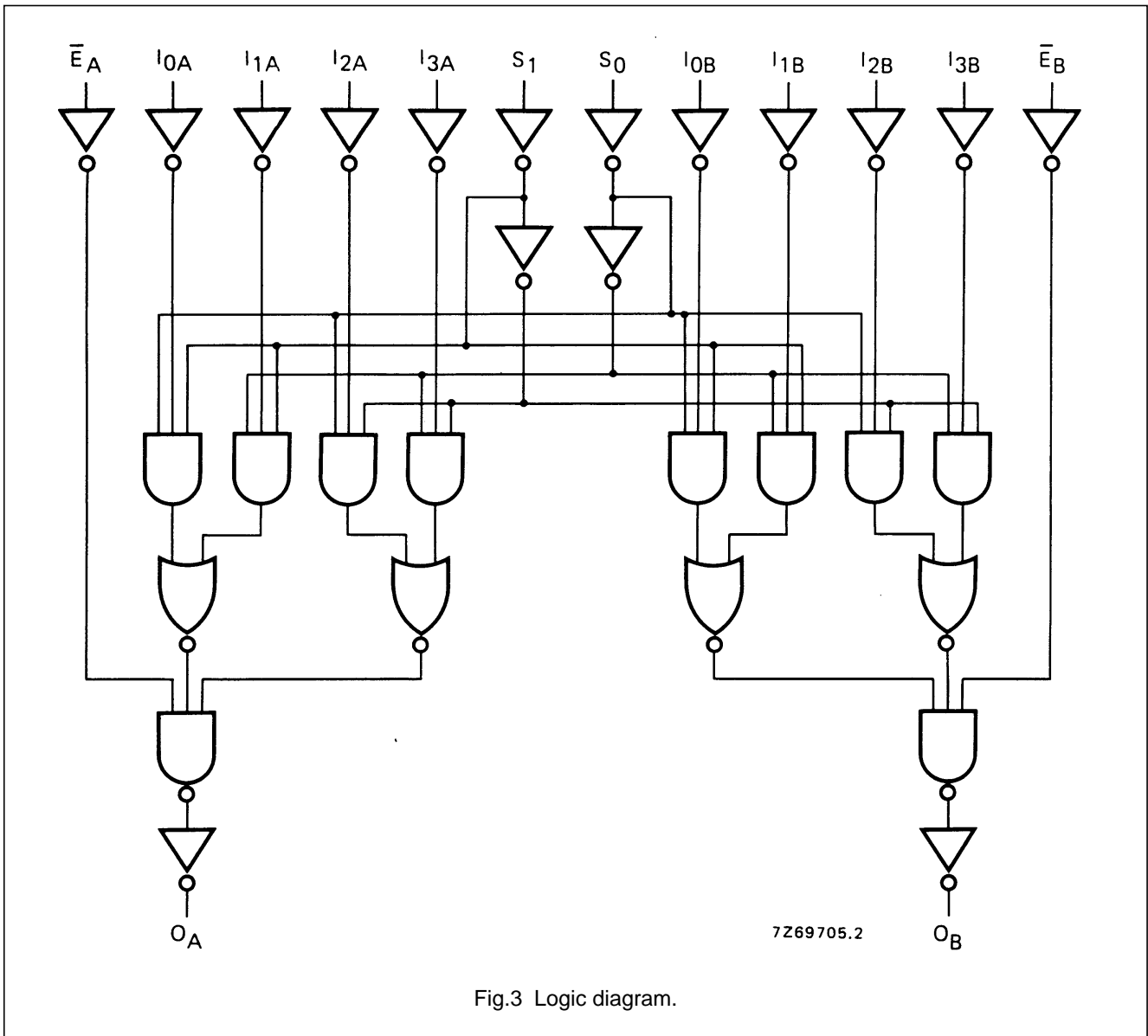
FAMILY DATA, I_{DD} LIMITS category MSI

See Family Specifications

- HEF4539BP(N): 16-lead DIL; plastic (SOT38-1)
 - HEF4539BD(F): 16-lead DIL; ceramic (cerdip) (SOT74)
 - HEF4539BT(D): 16-lead SO; plastic (SOT109-1)
- (): Package Designator North America

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FUNCTION TABLE

INPUTS			OUTPUT
S ₀	S ₁	\bar{E}_n	O _n
X	X	H	L
L	L	L	I ₀
H	L	L	I ₁
L	H	L	I ₂
H	H	L	I ₃

Notes

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

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AC CHARACTERISTICS

 $V_{SS} = 0\text{ V}$; $T_{amb} = 25\text{ }^{\circ}\text{C}$; $C_L = 50\text{ pF}$; input transition times $\leq 20\text{ ns}$

	V_{DD} V	SYMBOL	MIN.	TYP.	MAX.	TYPICAL EXTRAPOLATION FORMULA		
Propagation delays	5	$I_n \rightarrow O_n$ HIGH to LOW	t_{PHL}	120	240	ns	$93\text{ ns} + (0,55\text{ ns/pF}) C_L$	
				10	45	90	ns	$34\text{ ns} + (0,23\text{ ns/pF}) C_L$
				15	30	60	ns	$22\text{ ns} + (0,16\text{ ns/pF}) C_L$
	5	LOW to HIGH	t_{PLH}	120	245	ns	$93\text{ ns} + (0,55\text{ ns/pF}) C_L$	
				10	50	100	ns	$39\text{ ns} + (0,23\text{ ns/pF}) C_L$
				15	35	65	ns	$27\text{ ns} + (0,16\text{ ns/pF}) C_L$
	$S_n \rightarrow O_n$ HIGH to LOW	5	t_{PHL}	165	330	ns	$138\text{ ns} + (0,55\text{ ns/pF}) C_L$	
				10	65	125	ns	$54\text{ ns} + (0,23\text{ ns/pF}) C_L$
				15	40	80	ns	$32\text{ ns} + (0,16\text{ ns/pF}) C_L$
	LOW to HIGH	5	t_{PLH}	155	310	ns	$128\text{ ns} + (0,55\text{ ns/pF}) C_L$	
				10	60	120	ns	$49\text{ ns} + (0,23\text{ ns/pF}) C_L$
				15	40	80	ns	$32\text{ ns} + (0,16\text{ ns/pF}) C_L$
$\bar{E}_n \rightarrow O_n$ HIGH to LOW	5	t_{PHL}	100	200	ns	$73\text{ ns} + (0,55\text{ ns/pF}) C_L$		
			10	40	80	ns	$29\text{ ns} + (0,23\text{ ns/pF}) C_L$	
			15	30	55	ns	$22\text{ ns} + (0,16\text{ ns/pF}) C_L$	
LOW to HIGH	5	t_{PLH}	100	200	ns	$73\text{ ns} + (0,55\text{ ns/pF}) C_L$		
			10	40	80	ns	$29\text{ ns} + (0,23\text{ ns/pF}) C_L$	
			15	30	55	ns	$22\text{ ns} + (0,16\text{ ns/pF}) C_L$	
Output transition times	5	HIGH to LOW	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	LOW to HIGH	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 (μW)	
Dynamic power dissipation per package (P)	5	$700 f_i + \sum (f_o C_L) \times V_{DD}^2$	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	$2900 f_i + \sum (f_o C_L) \times V_{DD}^2$	
	15	$8100 f_i + \sum (f_o C_L) \times V_{DD}^2$	

APPLICATION INFORMATION

Some examples of applications for the HEF4539B are: * Data selectors * Data multiplexers