

# 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

## **HEF4555B**

## **MSI**

## Dual 1-of-4 decoder/demultiplexer

Product specification  
File under Integrated Circuits, IC04

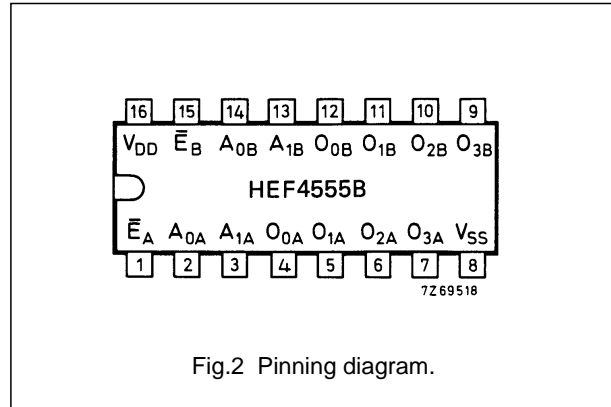
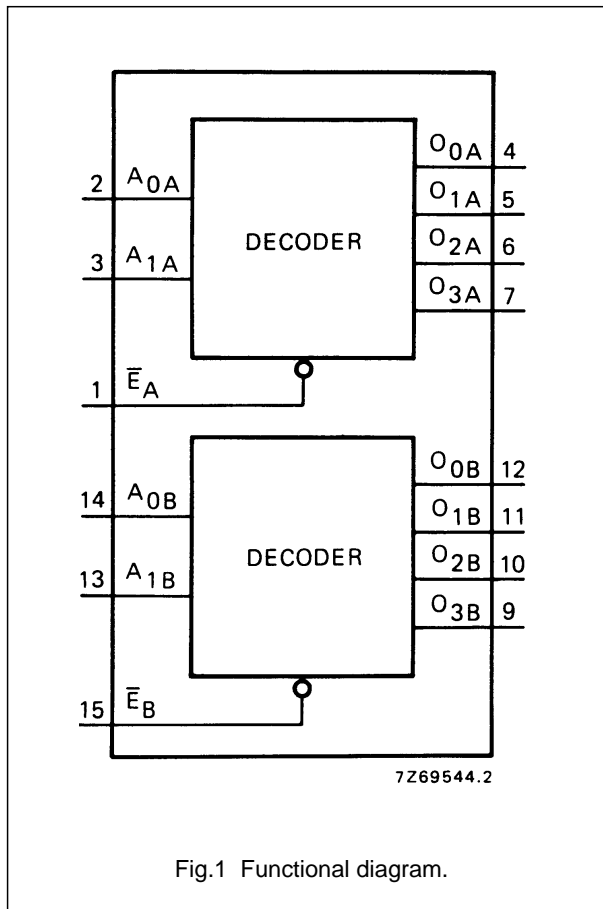
January 1995

# Dual 1-of-4 decoder/demultiplexer

# HEF4555B MSI

### DESCRIPTION

The HEF4555B is a dual 1-of-4 decoder/demultiplexer. Each has two address inputs ( $A_0$  and  $A_1$ ), an active LOW enable input ( $\bar{E}$ ) and four mutually exclusive outputs which are active HIGH ( $O_0$  to  $O_3$ ). When used as a decoder,  $\bar{E}$  when HIGH, forces  $O_0$  to  $O_3$  LOW. When used as a demultiplexer, the appropriate output is selected by the information on  $A_0$  and  $A_1$  with  $\bar{E}$  as data input. All unselected outputs are LOW.



- HEF4555BP(N): 16-lead DIL; plastic (SOT38-1)
- HEF4555BD(F): 16-lead DIL; ceramic (cerdip) (SOT74)
- HEF4555BT(D): 16-lead SO; plastic (SOT109-1)
- ( ): Package Designator North America

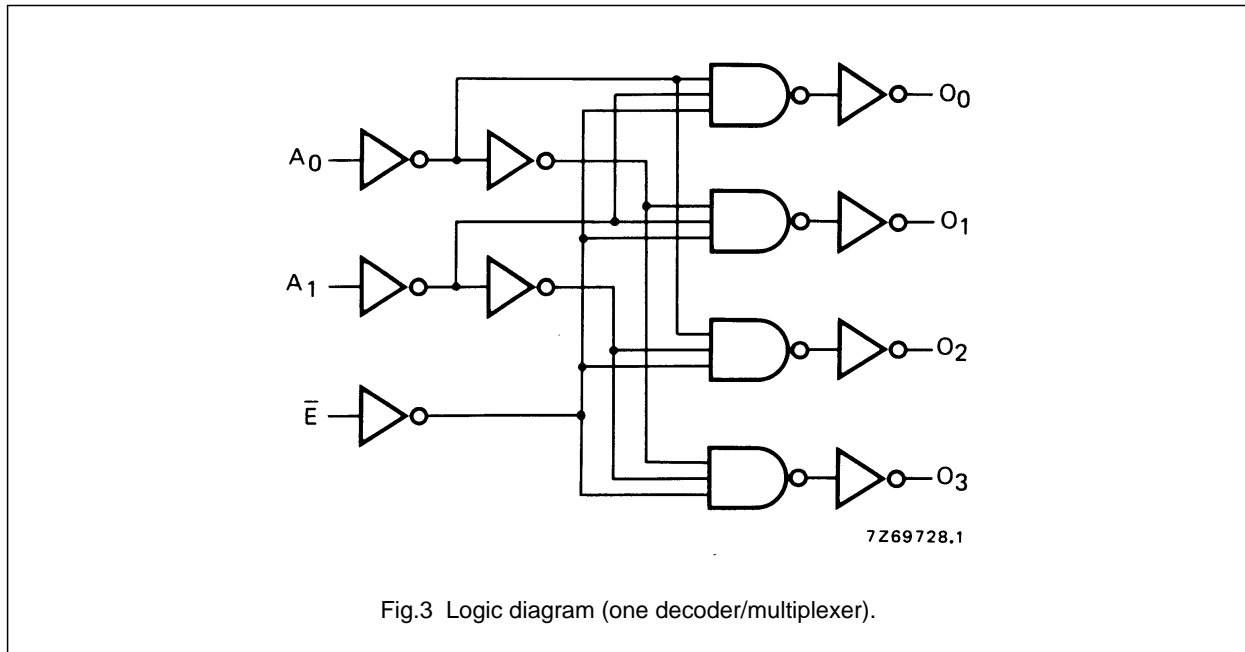
### PINNING

- $\bar{E}$  enable inputs (active LOW)
- $A_0$  and  $A_1$  address inputs
- $O_0$  to  $O_3$  outputs (active HIGH)

### FAMILY DATA, I<sub>DD</sub> LIMITS category MSI

See Family Specifications

## Dual 1-of-4 decoder/demultiplexer

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## TRUTH TABLE

INPUTS			OUTPUTS			
$\bar{E}$	$A_0$	$A_1$	$O_0$	$O_1$	$O_2$	$O_3$
L	L	L	H	L	L	L
L	H	L	L	H	L	L
L	L	H	L	L	H	L
L	H	H	L	L	L	H
H	X	X	L	L	L	L

## Notes

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

## Dual 1-of-4 decoder/demultiplexer

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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	MIN.	TYP.	MAX.	TYPICAL EXTRAPOLATION FORMULA			
Propagation delays	$A_n \rightarrow O_n$ HIGH to LOW	$t_{PHL}$		115	230	ns	$88\text{ ns} + (0,55\text{ ns/pF}) C_L$		
				10	45	90	ns	$34\text{ ns} + (0,23\text{ ns/pF}) C_L$	
				15	30	65	ns	$22\text{ ns} + (0,16\text{ ns/pF}) C_L$	
	LOW to HIGH	$t_{PLH}$		140	280	ns	$113\text{ ns} + (0,55\text{ ns/pF}) C_L$		
				10	55	105	ns	$44\text{ ns} + (0,23\text{ ns/pF}) C_L$	
				15	40	75	ns	$32\text{ ns} + (0,16\text{ ns/pF}) C_L$	
	$\bar{E}_n \rightarrow O_n$	HIGH to LOW	$t_{PHL}$		125	250	ns	$98\text{ ns} + (0,55\text{ ns/pF}) C_L$	
					10	50	95	ns	$39\text{ ns} + (0,23\text{ ns/pF}) C_L$
					15	30	65	ns	$22\text{ ns} + (0,16\text{ ns/pF}) C_L$
		LOW to HIGH	$t_{PLH}$		150	295	ns	$123\text{ ns} + (0,55\text{ ns/pF}) C_L$	
					10	55	110	ns	$44\text{ ns} + (0,23\text{ ns/pF}) C_L$
					15	40	75	ns	$32\text{ ns} + (0,16\text{ ns/pF}) C_L$
Output transition times	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	$6\text{ ns} + (0,28\text{ ns/pF}) C_L$	
	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 ( $\mu\text{W}$ )	
Dynamic power dissipation per package (P)	5	$4500 f_i + \sum (f_o C_L) \times V_{DD}^2$	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	$18\ 800 f_i + \sum (f_o C_L) \times V_{DD}^2$	
	15	$45\ 700 f_i + \sum (f_o C_L) \times V_{DD}^2$	

**APPLICATION INFORMATION**

Some examples of applications for the HEF4555B are:

- Code conversion.
- Address decoding.
- Demultiplexing: when using the enable input as data input.