

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

HEF4556B

MSI

Dual 1-of-4 decoder/demultiplexer

Product specification
File under Integrated Circuits, IC04

January 1995

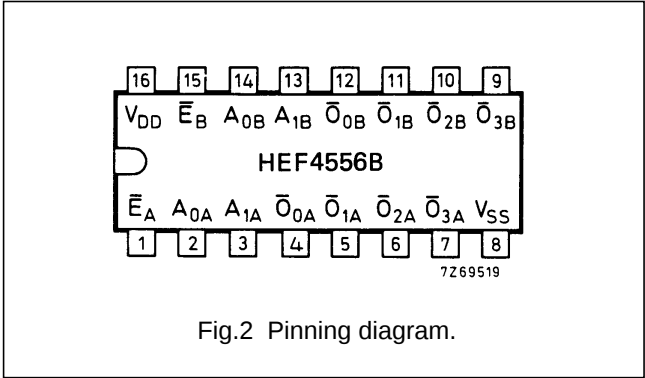
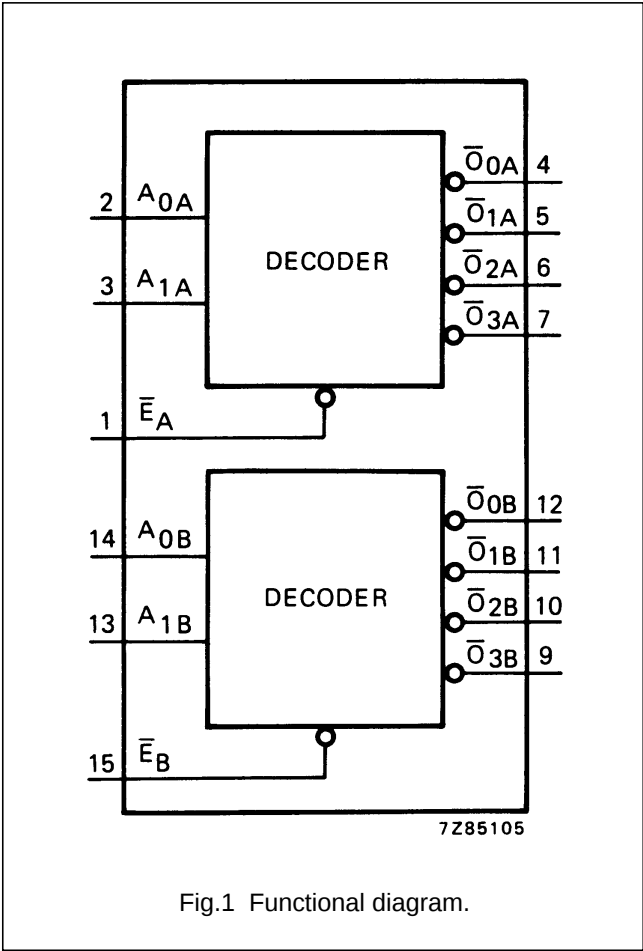
Dual 1-of-4 decoder/demultiplexer

HEF4556B

MSI

DESCRIPTION

The HEF4556B is a dual 1-of-4 decoder/demultiplexer. Each has two address inputs (A_0 and A_1), an active LOW enable input ($\overline{E}$) and four mutually exclusive outputs which are active LOW ($\overline{O}_0$ to $\overline{O}_3$). When used as a decoder, $\overline{E}$ when HIGH, forces $\overline{O}_0$ to $\overline{O}_3$ HIGH. When used as a demultiplexer, the appropriate output is selected by the information on A_0 and A_1 with $\overline{E}$ as data input. All unselected outputs are HIGH.



- HEF4556BP(N): 16-lead DIL; plastic (SOT38-1)
- HEF4556BD(F): 16-lead DIL; ceramic (cerdip) (SOT74)
- HEF4556BT(D): 16-lead SO; plastic (SOT109-1)
- (): Package Designator North America

PINNING

- $\overline{E}$ enable inputs (active LOW)
- A_0 and A_1 address inputs
- $\overline{O}_0$ to $\overline{O}_3$ outputs (active LOW)

FAMILY DATA, I_{DD} LIMITS category MSI
See Family Specifications

Dual 1-of-4 decoder/demultiplexer

HEF4556B
MSI

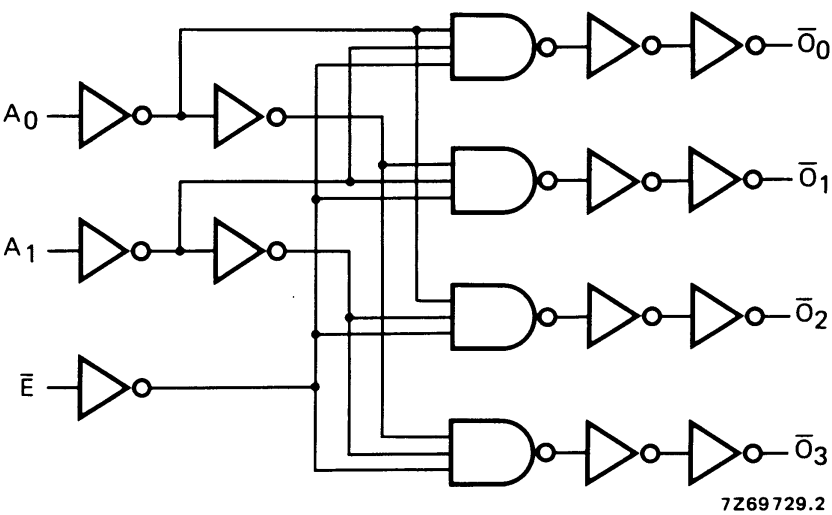


Fig.3 Logic diagram (one decoder/multiplexer).

TRUTH TABLE

INPUTS			OUTPUTS			
$\bar{E}$	A_0	A_1	$\bar{O}_0$	$\bar{O}_1$	$\bar{O}_2$	$\bar{O}_3$
L	L	L	L	H	H	H
L	H	L	H	L	H	H
L	L	H	H	H	L	H
L	H	H	H	H	H	L
H	X	X	H	H	H	H

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

HEF4556B
MSI

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							
A _n → $\overline{O}_n$	5	t _{PHL}		130	255	ns	103 ns + (0,55 ns/pF) C _L
HIGH to LOW	10			50	100	ns	39 ns + (0,23 ns/pF) C _L
	15			35	65	ns	27 ns + (0,16 ns/pF) C _L
LOW to HIGH	5	t _{PLH}		105	210	ns	78 ns + (0,55 ns/pF) C _L
	10			40	85	ns	29 ns + (0,23 ns/pF) C _L
	15			30	60	ns	22 ns + (0,16 ns/pF) C _L
$\overline{E}_n$ → $\overline{O}_n$	5	t _{PHL}		120	240	ns	93 ns + (0,55 ns/pF) C _L
HIGH to LOW	10			45	90	ns	34 ns + (0,23 ns/pF) C _L
	15			30	60	ns	22 ns + (0,16 ns/pF) C _L
LOW to HIGH	5	t _{PLH}		105	205	ns	78 ns + (0,55 ns/pF) C _L
	10			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	t _{THL}		60	120	ns	10 ns + (1,0 ns/pF) C _L
HIGH to LOW	10			30	60	ns	9 ns + (0,42 ns/pF) C _L
	15			20	40	ns	6 ns + (0,28 ns/pF) C _L
LOW to HIGH	5	t _{TLH}		60	120	ns	10 ns + (1,0 ns/pF) C _L
	10			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)	
Dynamic power dissipation per package (P)	5	$4400 f_i + \sum (f_o C_L) \times V_{DD}^2$	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	$18\,000 f_i + \sum (f_o C_L) \times V_{DD}^2$	
	15	$43\,300 f_i + \sum (f_o C_L) \times V_{DD}^2$	

APPLICATION INFORMATION

Some examples of applications for the HEF4556B are:

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