

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

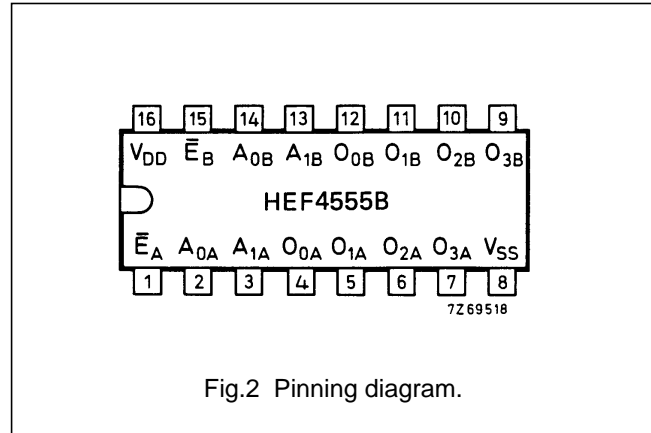
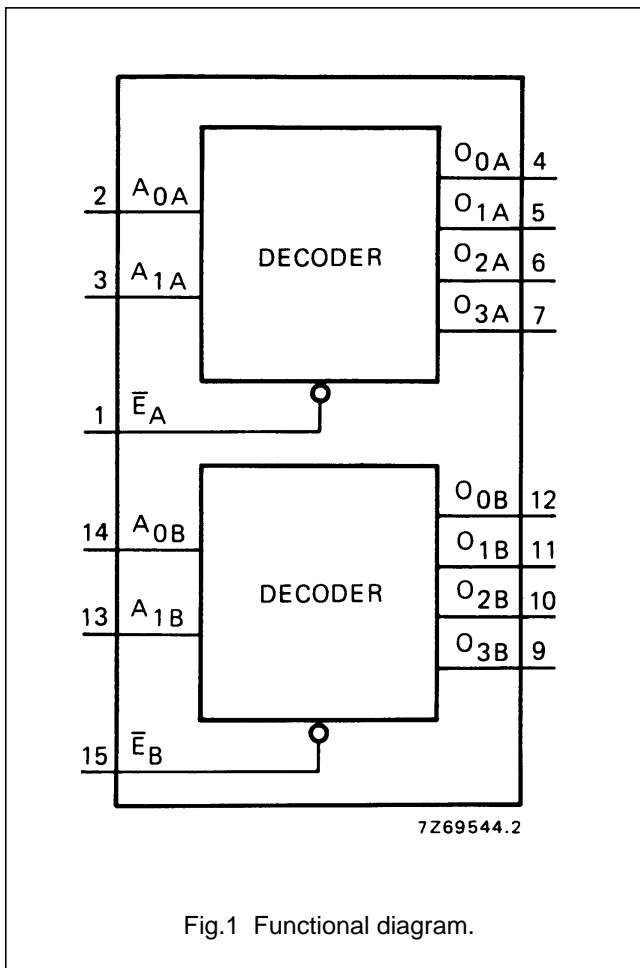
January 1995

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_{DD} LIMITS category MSI

See Family Specifications

Dual 1-of-4 decoder/demultiplexer

HEF4555B
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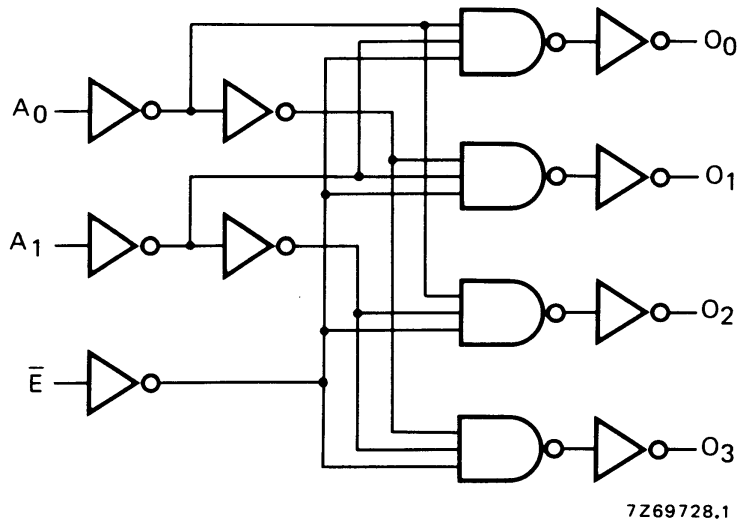


Fig.3 Logic diagram (one decoder/multiplexer).

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

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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 | 5 | t_{PHL} | | 115 | 230 | ns | 88 ns + (0,55 ns/pF) C_L | | |
| | | | | HIGH to LOW | 45 | 90 | ns | 34 ns + (0,23 ns/pF) C_L | |
| | | | | | 30 | 65 | ns | 22 ns + (0,16 ns/pF) C_L | |
| | 5 | t_{PLH} | | 140 | 280 | ns | 113 ns + (0,55 ns/pF) C_L | | |
| | | | | LOW to HIGH | 55 | 105 | ns | 44 ns + (0,23 ns/pF) C_L | |
| | | | | | 40 | 75 | ns | 32 ns + (0,16 ns/pF) C_L | |
| | $\bar{E}_n \rightarrow O_n$ | 5 | t_{PHL} | | 125 | 250 | ns | 98 ns + (0,55 ns/pF) C_L | |
| | | | | | HIGH to LOW | 50 | 95 | ns | 39 ns + (0,23 ns/pF) C_L |
| | | | | | | 30 | 65 | ns | 22 ns + (0,16 ns/pF) C_L |
| | | 5 | t_{PLH} | | 150 | 295 | ns | 123 ns + (0,55 ns/pF) C_L | |
| | | | | | LOW to HIGH | 55 | 110 | ns | 44 ns + (0,23 ns/pF) C_L |
| | | | | | | 40 | 75 | ns | 32 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 | 30 | 60 | ns | 9 ns + (0,42 ns/pF) C_L | |
| | | | | | 20 | 40 | ns | 6 ns + (0,28 ns/pF) C_L | |
| | 5 | t_{TLH} | | 60 | 120 | ns | 10 ns + (1,0 ns/pF) C_L | | |
| | | | | LOW to HIGH | 30 | 60 | ns | 9 ns + (0,42 ns/pF) C_L | |
| | | | | | 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 | $4500 f_i + \sum (f_o C_L) \times V_{DD}^2$ | 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 | $45\,700 f_i + \sum (f_o C_L) \times V_{DD}^2$ | |

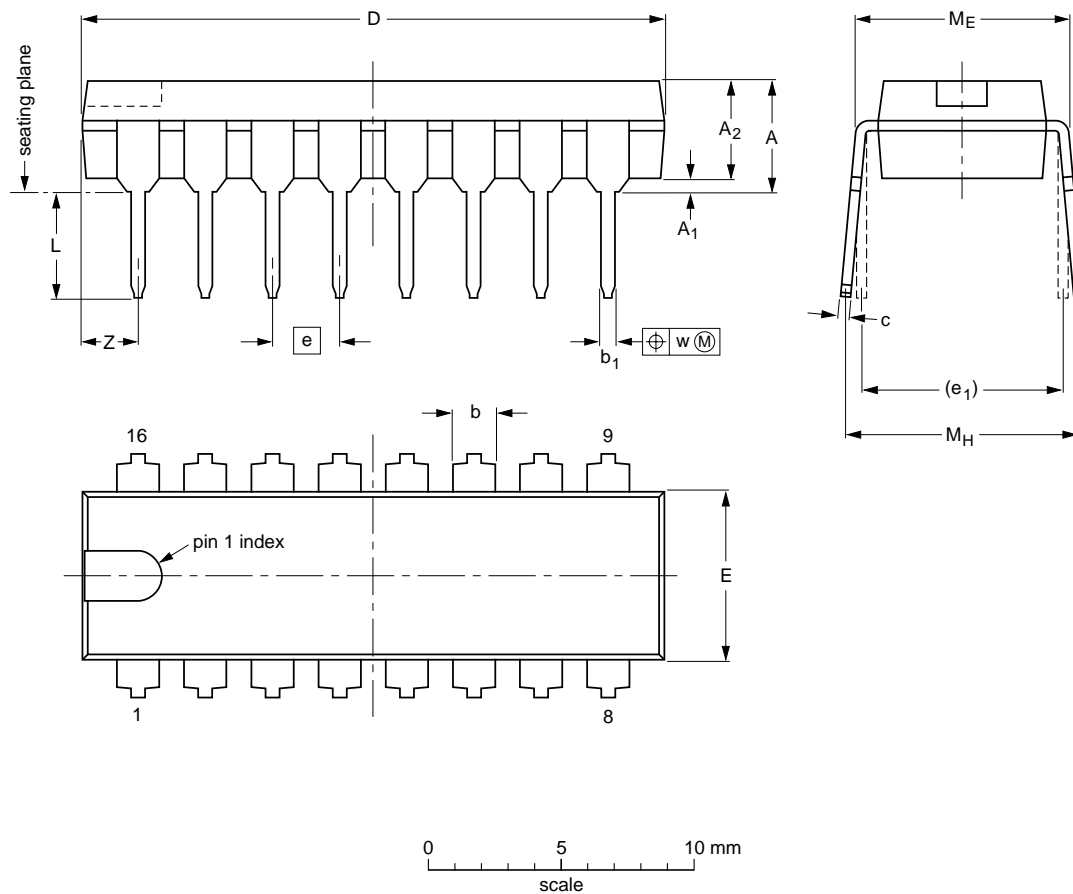
APPLICATION INFORMATION

Some examples of applications for the HEF4555B are:

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

DIP16: plastic dual in-line package; 16 leads (300 mil); long body

SOT38-1



DIMENSIONS (inch dimensions are derived from the original mm dimensions)

| UNIT | A max. | A ₁ min. | A ₂ max. | b | b ₁ | c | D ⁽¹⁾ | E ⁽¹⁾ | e | e ₁ | L | M _E | M _H | w | Z ⁽¹⁾ max. |
|--------|--------|---------------------|---------------------|----------------|----------------|----------------|------------------|------------------|------|----------------|--------------|----------------|----------------|-------|-----------------------|
| mm | 4.7 | 0.51 | 3.7 | 1.40 1.14 | 0.53 0.38 | 0.32 0.23 | 21.8 21.4 | 6.48 6.20 | 2.54 | 7.62 | 3.9 3.4 | 8.25 7.80 | 9.5 8.3 | 0.254 | 2.2 |
| inches | 0.19 | 0.020 | 0.15 | 0.055 0.045 | 0.021 0.015 | 0.013 0.009 | 0.86 0.84 | 0.26 0.24 | 0.10 | 0.30 | 0.15 0.13 | 0.32 0.31 | 0.37 0.33 | 0.01 | 0.087 |

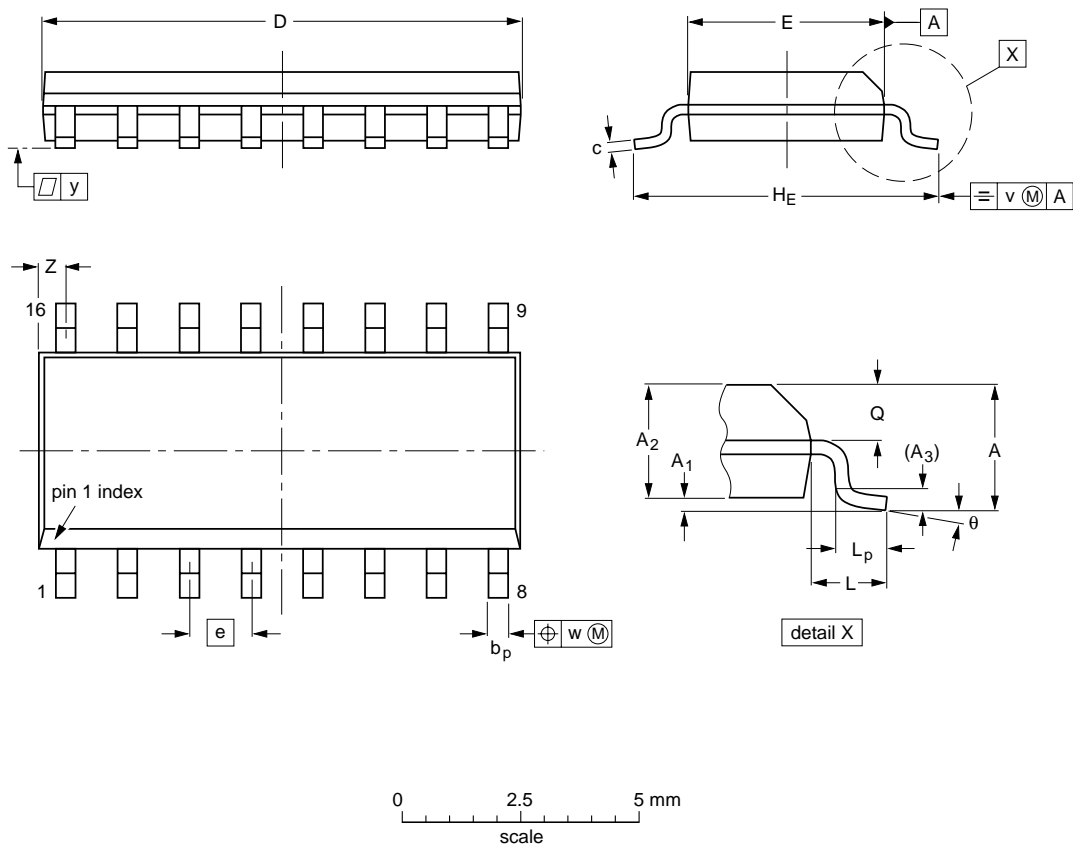
Note

1. Plastic or metal protrusions of 0.25 mm maximum per side are not included.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|----------|------|--|---------------------|----------------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT38-1 | 050G09 | MO-001AE | | | | 92-10-02 95-01-19 |

SO16: plastic small outline package; 16 leads; body width 3.9 mm

SOT109-1



DIMENSIONS (inch dimensions are derived from the original mm dimensions)

| UNIT | A max. | A ₁ | A ₂ | A ₃ | b _p | c | D ⁽¹⁾ | E ⁽¹⁾ | e | H _E | L | L _p | Q | v | w | y | Z ⁽¹⁾ | θ |
|--------|--------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|-------|----------------|-------|----------------|----------------|------|------|-------|------------------|----------|
| mm | 1.75 | 0.25 0.10 | 1.45 1.25 | 0.25 | 0.49 0.36 | 0.25 0.19 | 10.0 9.8 | 4.0 3.8 | 1.27 | 6.2 5.8 | 1.05 | 1.0 0.4 | 0.7 0.6 | 0.25 | 0.25 | 0.1 | 0.7 0.3 | 8° 0° |
| inches | 0.069 | 0.010 0.004 | 0.057 0.049 | 0.01 | 0.019 0.014 | 0.0100 0.0075 | 0.39 0.38 | 0.16 0.15 | 0.050 | 0.244 0.228 | 0.041 | 0.039 0.016 | 0.028 0.020 | 0.01 | 0.01 | 0.004 | 0.028 0.012 | |

Note

1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|----------|------|--|---------------------|----------------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT109-1 | 076E07S | MS-012AC | | | | 95-01-23 97-05-22 |