

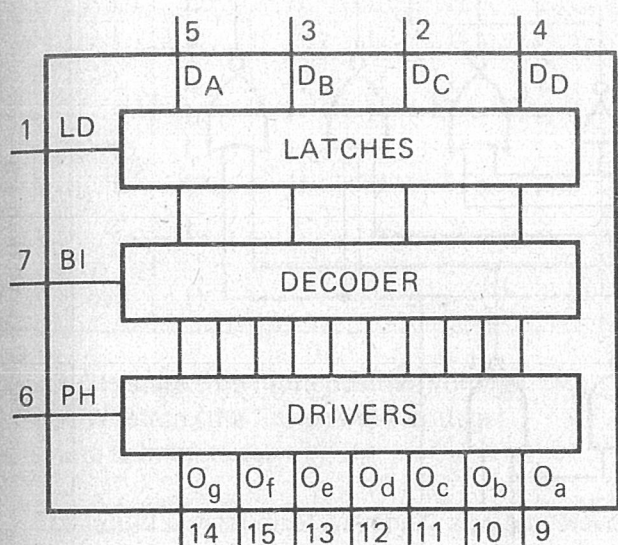
## BCD TO 7-SEGMENT LATCH/DECODER/DRIVER



The HEF4543B is a BCD to 7-segment latch/decoder/driver for liquid crystal and LED displays. It has four address inputs ( $D_A$  to  $D_D$ ), an active HIGH latch disable input (LD), an active HIGH blanking input (BI), an active HIGH phase input (PH) and seven buffered segment outputs ( $O_a$  to  $O_g$ ).

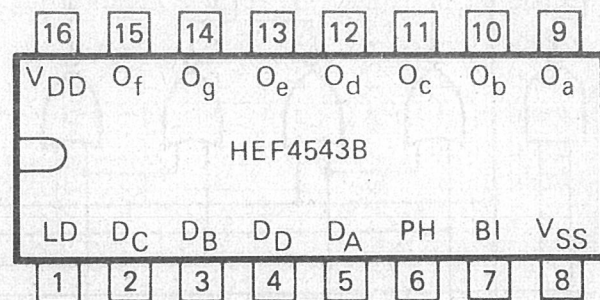
The circuit provides the function of a 4-bit storage latch and an 8-4-2-1 BCD to 7-segment decoder/driver. It can invert the logic levels of the output combination. The phase (PH), blanking (BI) and latch disable (LD) inputs are used to reverse the function table phase, blank the display and store a BCD code, respectively.

For liquid crystal displays a square-wave is applied to PH and the electrical common back-plane of the display. The outputs of the device are directly connected to the segments of the liquid crystal.



7272880.2

Fig. 1 Functional diagram.



7272881.1

Fig. 2 Pinning diagram.

HEF4543BP: 16-lead DIL; plastic (SOT-38Z).  
 HEF4543BD: 16-lead DIL; ceramic (SOT-74).  
 HEF4543BT: 16-lead flat pack; plastic (SO-16; SOT-109A).

## PINNING

$D_A$  to  $D_D$  address (data) inputs  
 PH phase input (active HIGH)  
 BI blanking input (active HIGH)  
 LD latch disable input (active HIGH)  
 $O_a$  to  $O_g$  segment outputs

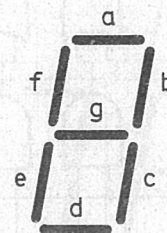


Fig. 3 Segment designation.

## FAMILY DATA

$I_{DD}$  LIMITS category MSI

} see Family Specifications

FUNCTION TABLE

| inputs   |    |      |                |                |                |                | outputs          |                |                |                |                |                |                |          |
|----------|----|------|----------------|----------------|----------------|----------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------|
| LD       | BI | PH * | D <sub>D</sub> | D <sub>C</sub> | D <sub>B</sub> | D <sub>A</sub> | O <sub>a</sub>   | O <sub>b</sub> | O <sub>c</sub> | O <sub>d</sub> | O <sub>e</sub> | O <sub>f</sub> | O <sub>g</sub> | display  |
| X        | H  | L    | X              | X              | X              | X              | L                | L              | L              | L              | L              | L              | L              | blank    |
| H        | L  | L    | L              | L              | L              | L              | H                | H              | H              | H              | H              | H              | L              | 0        |
| H        | L  | L    | L              | L              | L              | H              | L                | H              | H              | L              | L              | L              | L              | 1        |
| H        | L  | L    | L              | L              | H              | L              | H                | H              | L              | H              | H              | L              | H              | 2        |
| H        | L  | L    | L              | L              | H              | H              | H                | H              | H              | L              | L              | L              | H              | 3        |
| H        | L  | L    | L              | H              | L              | L              | L                | H              | H              | L              | L              | H              | H              | 4        |
| H        | L  | L    | L              | H              | L              | H              | H                | L              | H              | H              | L              | H              | H              | 5        |
| H        | L  | L    | L              | H              | H              | L              | H                | L              | H              | H              | H              | H              | H              | 6        |
| H        | L  | L    | L              | H              | H              | H              | H                | H              | H              | L              | L              | L              | L              | 7        |
| H        | L  | L    | H              | L              | L              | L              | H                | H              | H              | H              | H              | H              | H              | 8        |
| H        | L  | L    | H              | L              | L              | H              | H                | H              | H              | L              | H              | H              | H              | 9        |
| H        | L  | L    | H              | L              | H              | L              | L                | L              | L              | L              | L              | L              | L              | blank    |
| H        | L  | L    | H              | L              | H              | H              | L                | L              | L              | L              | L              | L              | L              | blank    |
| H        | L  | L    | H              | H              | L              | L              | L                | L              | L              | L              | L              | L              | L              | blank    |
| H        | L  | L    | H              | H              | H              | L              | L                | L              | L              | L              | L              | L              | L              | blank    |
| H        | L  | L    | H              | H              | H              | H              | L                | L              | L              | L              | L              | L              | L              | blank    |
| L        | L  | L    | X              | X              | X              | X              |                  |                |                |                |                |                |                | **       |
| as above |    | H    | as above       |                |                |                | inverse of above |                |                |                |                |                |                | as above |

HIGH state (the more positive voltage)  
 LOW state (the less positive voltage)  
 state is immaterial

For liquid crystal displays, apply a square-wave to PH.  
 For common cathode LED displays, select PH = LOW.  
 For common anode LED displays, select PH = HIGH.  
 Depends upon the BCD-code previously applied when LD = HIGH.

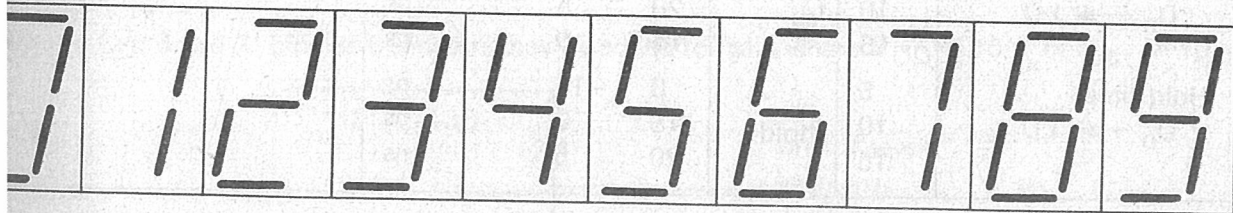


Fig. 5 Display.

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