

MN4532B/MN4532BS

8-Bit Priority Encoder

■ Outline

The MN4532B/S is a 8-bit input priority encoder having active "H" priority inputs ($I_0 \sim I_7$), active "H" outputs ($O_0 \sim O_2$), an active "H" enable input (E_{in}), an active "H" output (E_{out}), and an active "H" group select output (GS).

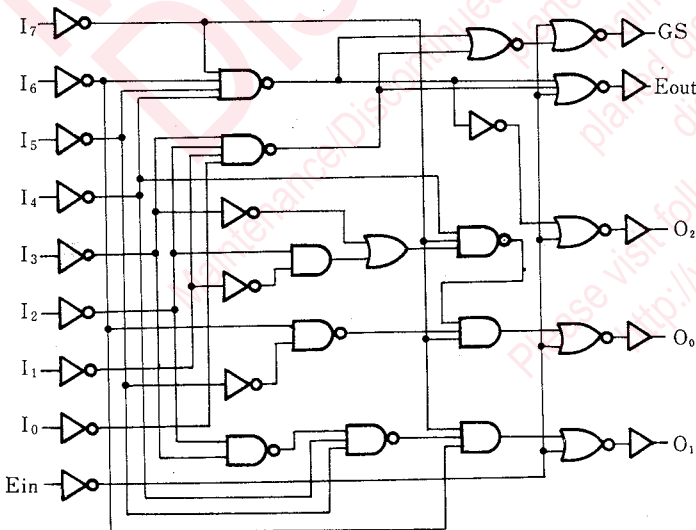
Data is input to $I_0 \sim I_7$, and when the level of E_{in} is "H", the most significant "H" level input of the priority inputs ($I_0 \sim I_7$) is converted into a binary code and output to $O_0 \sim O_2$. The level of E_{out} becomes "H" when the levels of $I_0 \sim I_7$ is "L" and the level of E_{in} is "H". The level of GS, on the other hand, becomes "H" when the level of at least one priority input is "H" and the level of E_{in} is "H".

When the level of E_{in} is "L", the levels of all the outputs ($O_0 \sim O_2$, GS, E_{out}) become "L".

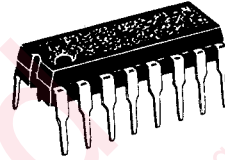
Pin description

- I_0 to I_7 : Priority input
- E_{in} : Enable input
- E_{out} : Enable output
- GS : Group select output
- O_0 to O_2 : Active output

■ Logic Diagram

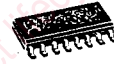


P-3



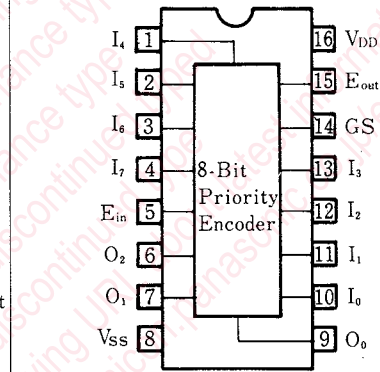
16-pin plastic DIL package

P-4



16-pin PANAFLAT package (SO-16D)

Pin Configuration



■ Absolute Maximum Ratings (Ta=25°C)

| Item | Symbol | Rating | Unit |
|------------------------------------|-------------------|---|------|
| Supply voltage | V _{DD} | -0.5~+18 | V |
| Input voltage | V _I | -0.5~V _{DD} +0.5* | V |
| Output pin voltage | V _O | -0.5~V _{DD} +0.5* | V |
| Peak input · output pin current | ±I _I | max. 10 | mA |
| Power dissipation (per package) | P _D | max. 400 | mW |
| | | Decrease to 200mW at the rate of 8mW/°C | |
| Power dissipation (per output pin) | P _D | max. 100 | mW |
| Operating ambient temperature | T _{opr} | -40~+85 | °C |
| Storage temperature | T _{strg} | -65~+150 | °C |

* V_{DD}+0.5V should be lower than 18V.

■ DC Characteristics (V_{SS}=0V)

| Item | V _{DD} (V) | Symbol | Condition | Ta=-40°C | | Ta=25°C | | Ta=85°C | | Unit | |
|---------------------------|---------------------|------------------|--|---|------|---------|------|---------|------|------|---|
| | | | | min. | max. | min. | max. | min. | max. | | |
| Static supply current | 5 | I _{DD} | V _I =V _{SS} or V _{DD} | — | 20 | — | 20 | — | 150 | μA | |
| | 10 | | | — | 40 | — | 40 | — | 300 | | |
| | 15 | | | — | 80 | — | 80 | — | 600 | | |
| Output voltage low level | 5 | V _{OL} | V _I =V _{SS} or V _{DD} I _O <1μA | — | 0.05 | — | 0.05 | — | 0.05 | V | |
| | 10 | | | — | 0.05 | — | 0.05 | — | 0.05 | | |
| | 15 | | | — | 0.05 | — | 0.05 | — | 0.05 | | |
| Output voltage high level | 5 | V _{OH} | V _I =V _{SS} or V _{DD} I _O <1μA | 4.95 | — | 4.95 | — | 4.95 | — | V | |
| | 10 | | | 9.95 | — | 9.95 | — | 9.95 | — | | |
| | 15 | | | 14.95 | — | 14.95 | — | 14.95 | — | | |
| Input voltage low level | 5 | V _{IL} | I _O <1μA | V _O =0.5V or 4.5V V _O =1V or 9V V _O =1.5V or 13.5V | — | 1.5 | — | 1.5 | — | 1.5 | V |
| | 10 | | | | — | 3 | — | 3 | — | 3 | |
| | 15 | | | | — | 4 | — | 4 | — | 4 | |
| Input voltage high level | 5 | V _{IH} | I _O <1μA | V _O =0.5V or 4.5V V _O =1V or 9V V _O =1.5V or 13.5V | 3.5 | — | 3.5 | — | 3.5 | — | V |
| | 10 | | | | 7 | — | 7 | — | 7 | — | |
| | 15 | | | | 11 | — | 11 | — | 11 | — | |
| Output current low level | 5 | I _{OL} | V _O =0.4V, V _I =0 or 5V V _O =0.5V, V _I =0 or 10V V _O =1.5V, V _I =0 or 15V | 0.52 | — | 0.44 | — | 0.36 | — | mA | |
| | 10 | | | 1.3 | — | 1.1 | — | 0.9 | — | | |
| | 15 | | | 3.6 | — | 3 | — | 2.4 | — | | |
| Output current high level | 5 | -I _{OH} | V _O =4.6V, V _I =0 or 5V V _O =9.5V, V _I =0 or 10V V _O =13.5V, V _I =0 or 15V | 0.52 | — | 0.44 | — | 0.36 | — | mA | |
| | 10 | | | 1.3 | — | 1.1 | — | 0.9 | — | | |
| | 15 | | | 3.6 | — | 3 | — | 2.4 | — | | |
| Output current high level | 5 | -I _{OH} | V _O =2.5V, V _I =0 or 5V | 1.7 | — | 1.4 | — | 1.1 | — | mA | |
| Input leakage current | 15 | ±I _I | V _I =0 or 15V | — | 0.3 | — | 0.3 | — | 1 | μA | |

■ Switching Characteristics (Ta=25°C, V_{SS}=0V, C_L=50pF)

| Item | V _{DD} (V) | Symbol | min. | typ. | max. | Unit |
|---|---------------------|------------------|------|------|------|------|
| Output rise time | 5 | | — | 60 | 120 | |
| | 10 | t _{TLH} | — | 30 | 60 | ns |
| | 15 | | — | 20 | 40 | |
| Output fall time | 5 | | — | 60 | 120 | |
| | 10 | t _{THL} | — | 30 | 60 | ns |
| | 15 | | — | 20 | 40 | |
| Propagation time E _{in} →E _{out} (L→H) | 5 | | — | 80 | 160 | |
| | 10 | t _{PLH} | — | 35 | 70 | ns |
| | 15 | | — | 30 | 60 | |
| Propagation time E _{in} →E _{out} (H→L) | 5 | | — | 95 | 190 | |
| | 10 | t _{PHL} | — | 45 | 90 | ns |
| | 15 | | — | 35 | 70 | |
| Propagation time E _{in} →GS (L→H) | 5 | | — | 80 | 160 | |
| | 10 | t _{PLH} | — | 40 | 80 | ns |
| | 15 | | — | 30 | 60 | |
| Propagation time E _{in} →GS (H→L) | 5 | | — | 85 | 170 | |
| | 10 | t _{PHL} | — | 45 | 90 | ns |
| | 15 | | — | 35 | 70 | |
| Propagation time E _{in} →On (L→H) | 5 | | — | 85 | 170 | |
| | 10 | t _{PLH} | — | 40 | 80 | ns |
| | 15 | | — | 30 | 60 | |
| Propagation time E _{in} →On (H→L) | 5 | | — | 80 | 160 | |
| | 10 | t _{PHL} | — | 40 | 80 | ns |
| | 15 | | — | 30 | 60 | |
| Propagation time In→On (H→L) | 5 | | — | 115 | 230 | |
| | 10 | t _{PLH} | — | 50 | 100 | ns |
| | 15 | | — | 35 | 70 | |
| Propagation time In→On (H→L) | 5 | | — | 115 | 230 | |
| | 10 | t _{PHL} | — | 50 | 100 | ns |
| | 15 | | — | 35 | 70 | |
| Propagation time In→GS (L→H) | 5 | | — | 115 | 230 | |
| | 10 | t _{PHL} | — | 50 | 100 | ns |
| | 15 | | — | 40 | 80 | |
| Propagation time In→GS (H→L) | 5 | | — | 115 | 230 | |
| | 10 | t _{PLH} | — | 50 | 100 | ns |
| | 15 | | — | 40 | 80 | |
| Input capacitance | | C _I | — | — | 7.5 | pF |

■ Truth Table

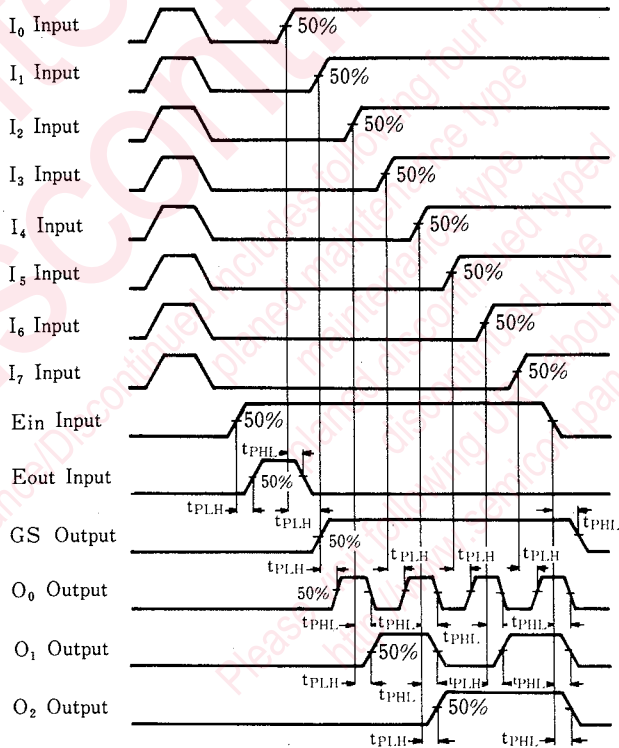
| inputs | | | | | | | | | outputs | | | | |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-----------|
| E_{in} | I_7 | I_6 | I_5 | I_4 | I_3 | I_2 | I_1 | I_0 | GS | O_2 | O_1 | O_0 | E_{out} |
| L | × | × | × | × | × | × | × | × | L | L | L | L | L |
| H | L | L | L | L | L | L | L | L | L | L | L | L | H |
| H | H | × | × | × | × | × | × | × | H | H | H | H | L |
| H | L | H | × | × | × | × | × | × | H | H | H | L | L |
| H | L | L | H | × | × | × | × | × | H | H | L | H | L |
| H | L | L | L | H | × | × | × | × | H | H | H | L | L |
| H | L | L | L | L | H | × | × | × | H | L | H | H | L |
| H | L | L | L | L | L | H | × | × | H | L | H | L | L |
| H | L | L | L | L | L | L | H | × | H | L | L | H | L |
| H | L | L | L | L | L | L | L | H | H | L | L | L | L |

H : "H" state

L : "L" state

× : state is immaterial

● Switching time measuring waveforms



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