

HD14532B

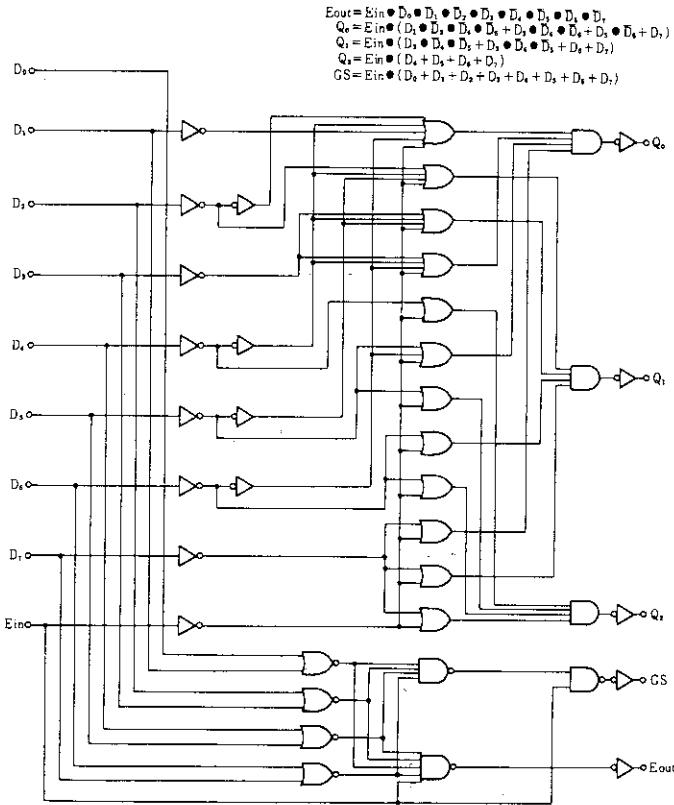
8-bit Priority Encoder

The HD14532B priority encoder is to provide a binary address for the active input with the highest priority. Eight data inputs (D0 thru D7) and an enable input (Ein) are provided. Five outputs are available, three are address outputs (Q0 thru Q2), one group select (GS) and one enable output (Eout).

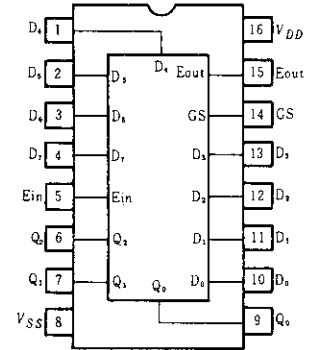
FEATURES

- Quiescent Current = 5nA/pkg typ. @5V
- Noise Immunity = 45% of V_{DD} typ.
- Low Input Capacitance = 5pF typ.
- Supply Voltage Range = 3 to 18V
- Capable of Driving One Low-power Schottky TTL Load Over the Rated Temperature Range

LOGIC DIAGRAM



PIN ARRANGEMENT



(Top View)

TRUTH TABLE

| Inputs | | | | | | | | Outputs | | | | | |
|----------|-------|-------|-------|-------|-------|-------|-------|---------|----|-------|-------|-------|-----------|
| E_{in} | D_7 | D_6 | D_5 | D_4 | D_3 | D_2 | D_1 | D_0 | GS | Q_2 | Q_1 | Q_0 | E_{out} |
| 0 | x | x | x | x | x | x | x | x | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1 | 1 | x | x | x | x | x | x | x | 1 | 1 | 1 | 1 | 0 |
| 1 | 0 | 1 | x | x | x | x | x | x | 1 | 1 | 1 | 0 | 0 |
| 1 | 0 | 0 | 1 | x | x | x | x | x | 1 | 1 | 0 | 1 | 0 |
| 1 | 0 | 0 | 0 | 1 | x | x | x | x | 1 | 1 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 1 | x | x | x | 1 | 0 | 1 | 1 | 0 |
| 1 | 0 | 0 | 0 | 0 | 0 | 1 | x | x | 1 | 0 | 0 | 1 | 0 |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | x | 1 | 0 | 0 | 0 | 0 |

x = Don't Care

■ ELECTRICAL CHARACTERISTICS

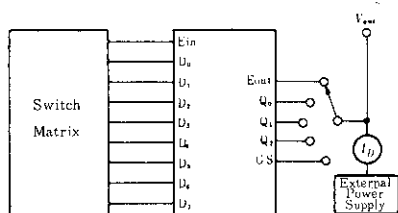
| Characteristic | Symbol | $V_{DD}(V)$ | Test Conditions | -40°C | | 25°C | | | 85°C | | Unit |
|-----------------------|----------|-----------------|---|-------|-----------|-------|--------------|-----------|-------|-----------|---------|
| | | | | min | max | min | typ | max | min | max | |
| Output Voltage | V_{OL} | 5.0 | $V_{in} = V_{DD}$ or 0 | — | 0.05 | — | 0 | 0.05 | — | 0.05 | V |
| | | 10 | | — | 0.05 | — | 0 | 0.05 | — | 0.05 | |
| | | 15 | | — | 0.05 | — | 0 | 0.05 | — | 0.05 | |
| | V_{OH} | 5.0 | $V_{in} = 0$ or V_{DD} | 4.95 | — | 4.95 | 5.0 | — | 4.95 | — | V |
| | | 10 | | 9.95 | — | 9.95 | 10 | — | 9.95 | — | |
| | | 15 | | 14.95 | — | 14.95 | 15 | — | 14.95 | — | |
| Input Voltage | V_{IL} | 5.0 | $V_{out} = 4.5$ or $0.5V$ | — | 1.5 | — | 2.25 | 1.5 | — | 1.5 | V |
| | | 10 | $V_{out} = 9.0$ or $1.0V$ | — | 3.0 | — | 4.50 | 3.0 | — | 3.0 | |
| | | 15 | $V_{out} = 13.5$ or $1.5V$ | — | 4.0 | — | 6.75 | 4.0 | — | 4.0 | |
| | V_{IH} | 5.0 | $V_{out} = 0.5$ or $4.5V$ | 3.5 | — | 3.5 | 2.75 | — | 3.5 | — | V |
| | | 10 | $V_{out} = 1.0$ or $9.0V$ | 7.0 | — | 7.0 | 5.50 | — | 7.0 | — | |
| | | 15 | $V_{out} = 1.5$ or $13.5V$ | 11.0 | — | 11.0 | 8.25 | — | 11.0 | — | |
| Output Drive Current | I_{OH} | 5.0 | $V_{OH} = 2.5V$ | -1.0 | — | -0.8 | -1.7 | — | -0.6 | — | mA |
| | | 5.0 | $V_{OH} = 4.6V$ | -0.2 | — | -0.16 | -0.36 | — | -0.12 | — | |
| | | 10 | $V_{OH} = 9.5V$ | -0.5 | — | -0.4 | -0.9 | — | -0.3 | — | |
| | | 15 | $V_{OH} = 13.5V$ | -1.4 | — | -1.2 | -3.5 | — | -1.0 | — | |
| | I_{OL} | 5.0 | $V_{OL} = 0.4V$ | 0.52 | — | 0.44 | 0.88 | — | 0.36 | — | mA |
| | | 10 | $V_{OL} = 0.5V$ | 1.3 | — | 1.1 | 2.25 | — | 0.9 | — | |
| 15 | | $V_{OL} = 1.5V$ | 3.6 | — | 3.0 | 8.8 | — | 2.4 | — | | |
| Input Current | I_{in} | 15 | | — | ± 0.3 | — | ± 0.0001 | ± 0.3 | — | ± 1.0 | μA |
| Input Capacitance | C_{in} | | $V_{in} = 0$ | — | — | — | 5.0 | 7.5 | — | — | pF |
| Quiescent Current | I_{DD} | 5.0 | Zero Signal, per Package | — | 20 | — | 0.005 | 20 | — | 150 | μA |
| | | 10 | | — | 40 | — | 0.010 | 40 | — | 300 | |
| | | 15 | | — | 80 | — | 0.015 | 80 | — | 600 | |
| Total Supply Current* | I_T | 5.0 | Dynamic $\div I_{DD}$, per Gate $C_L = 50pF, f = 1kHz$ | — | — | — | 1.74 | — | — | — | μA |
| | | 10 | | — | — | — | 3.65 | — | — | — | |
| | | 15 | | — | — | — | 5.73 | — | — | — | |

* To calculate total supply current at frequency other than 1kHz.

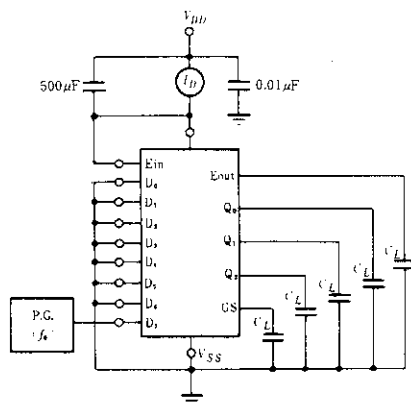
@ $V_{DD} = 5.0V$ $I_T = (1.74\mu A/kHz)f + I_{DD}$. @ $V_{DD} = 10V$ $I_T = (3.65\mu A/kHz)f + I_{DD}$. @ $V_{DD} = 15V$ $I_T = (5.73\mu A/kHz)f + I_{DD}$

■ DC CHARACTERISTIC TEST CIRCUIT

● I_{OH}, I_{OL}



● Typical Power Dissipation

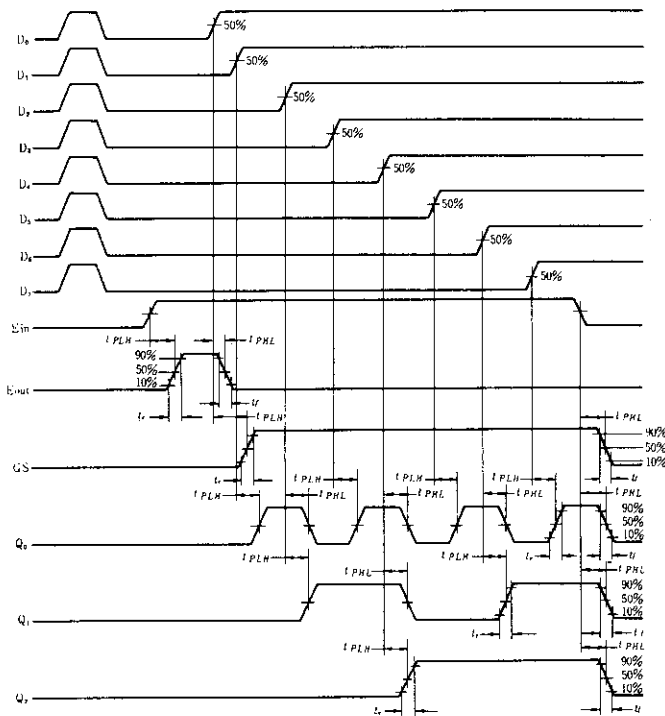
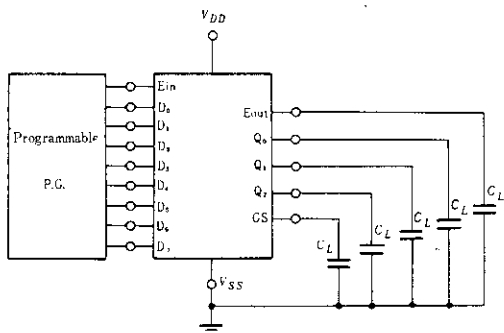


| Output Under Test | I_{OL} | | I_{OH} | | |
|-------------------|-------------------------------------|----------|---|-------|----------|
| | $V_{GS} = V_{DD}, V_{DS} = V_{out}$ | | $V_{GS} = -V_{DD}, V_{DS} = V_{out} - V_{DD}$ | | |
| | $D_0 \sim D_7$ | E_{in} | $D_0 \sim D_6$ | D_7 | E_{in} |
| E_{out} | × | 0 | 0 | 0 | 1 |
| Q_0 | × | 0 | 0 | 1 | 1 |
| Q_1 | × | 0 | 0 | 1 | 1 |
| Q_2 | × | 0 | 0 | 1 | 1 |
| GS | × | 0 | 0 | 1 | 1 |

■ SWITCHING CHARACTERISTICS ($C_L=50\text{pF}$, $T_a=25^\circ\text{C}$)

| Characteristic | | Symbol | V_{DD} (V) | min | typ | max | Unit |
|------------------------|-------------|-----------|--------------|-----|-----|-----|------|
| Output Rise Time | | t_r | 5.0 | — | 180 | 400 | ns |
| | | | 10 | — | 90 | 200 | |
| | | | 15 | — | 65 | 160 | |
| Output Fall Time | | t_f | 5.0 | — | 100 | 200 | ns |
| | | | 10 | — | 50 | 100 | |
| | | | 15 | — | 37 | 80 | |
| Propagation Delay Time | Ein to Eout | | 5.0 | — | 205 | 475 | ns |
| | | | 10 | — | 110 | 250 | |
| | | | 15 | — | 80 | 190 | |
| | Ein to GS | | 5.0 | — | 175 | 400 | |
| | | | 10 | — | 90 | 200 | |
| | | | 15 | — | 65 | 155 | |
| | Ein to Qn | t_{PLH} | 5.0 | — | 280 | 650 | |
| | | | 10 | — | 140 | 325 | |
| | | | 15 | — | 100 | 250 | |
| | Dn to Qn | t_{PHL} | 5.0 | — | 300 | 720 | |
| | | | 10 | — | 170 | 350 | |
| | | | 15 | — | 110 | 265 | |
| Dn to GS | | 5.0 | — | 280 | 650 | | |
| | | 10 | — | 140 | 325 | | |
| | | 15 | — | 100 | 250 | | |

■ SWITCHING TIME TEST CIRCUIT





| | |
|--------------------------|----------|
| Hitachi Code | DP-16 |
| JEDEC | Conforms |
| EIAJ | Conforms |
| Weight (reference value) | 1.07 g |

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