
HD74HC251

1 of 8 Data Selectors/Multiplexers (with 3-state outputs)

HITACHI

Description

This multiplexer features both true (Y) and complement (W) outputs as well as a strobe input. The strobe must be at a low logic level to enable this device. When the strobe input is high, both outputs are in the high impedance state. When enabled, address information on the data select inputs determines which data input is routed to the Y and W outputs.

Features

- High Speed Operation: t_{pd} (A, B, C to Y) = 20 ns typ ($C_L = 50$ pF)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2$ to 6 V
- Low Input Current: 1 μ A max
- Low Quiescent Supply Current: I_{CC} (static) = 4 μ A max ($T_a = 25^\circ\text{C}$)

HD74HC251

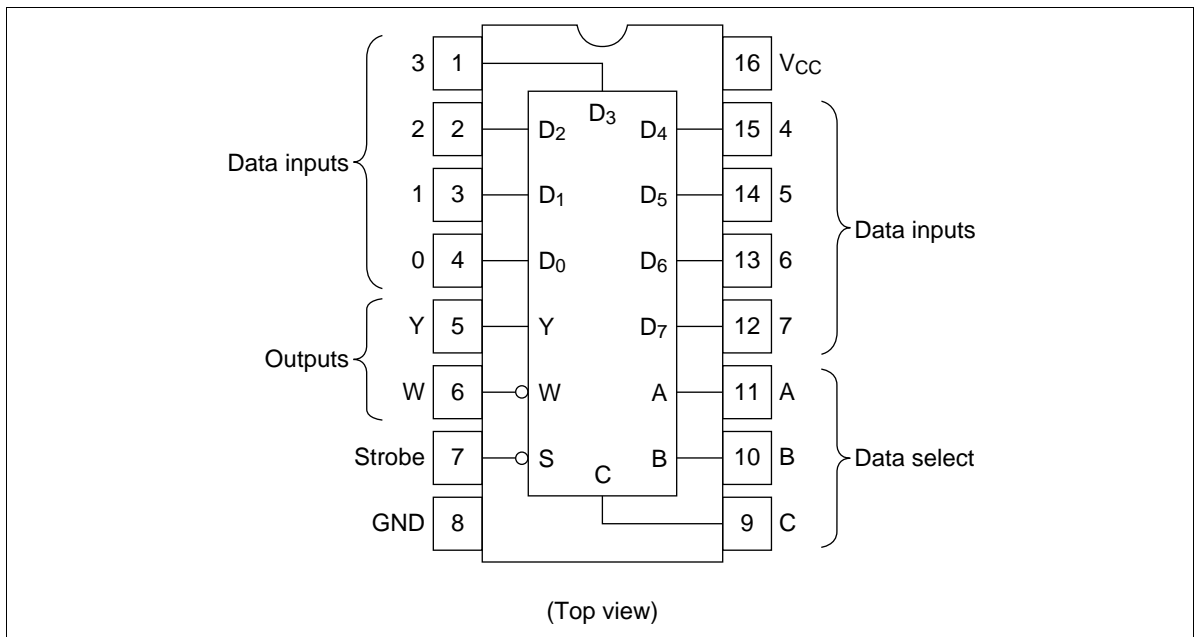
Function Table

Inputs

| Select | | | Strobe | Outputs | |
|--------|---|---|--------|----------------|-------------|
| C | B | A | S | Y | W |
| X | X | X | H | Z | Z |
| L | L | L | L | D ₀ | \bar{D}_0 |
| L | L | H | L | D ₁ | \bar{D}_1 |
| L | H | L | L | D ₂ | \bar{D}_2 |
| L | H | H | L | D ₃ | \bar{D}_3 |
| H | L | L | L | D ₄ | \bar{D}_4 |
| H | L | H | L | D ₅ | \bar{D}_5 |
| H | H | L | L | D ₆ | \bar{D}_6 |
| H | H | H | L | D ₇ | \bar{D}_7 |

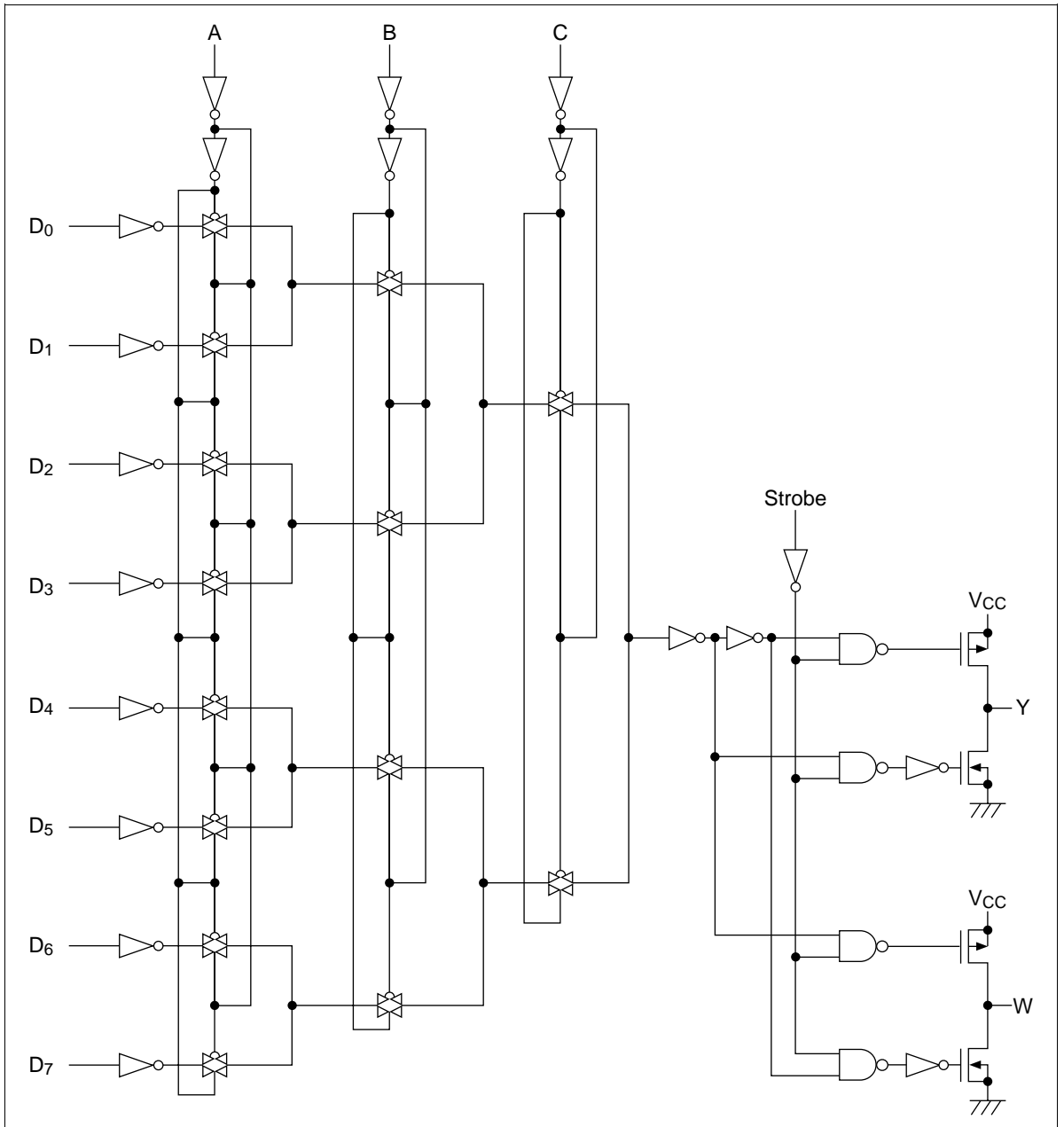
- Notes
1. H: high level, L: low level, X: irrelevant
 2. Z; high impedance (off-state)
 3. D₀ through D₇; the level of the respective D input.

Pin Arrangement



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Block Diagram

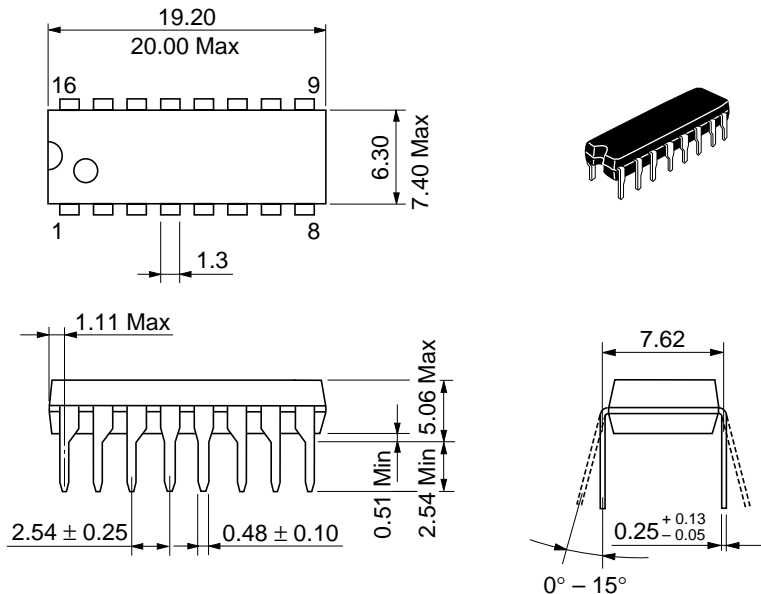


DC Characteristics

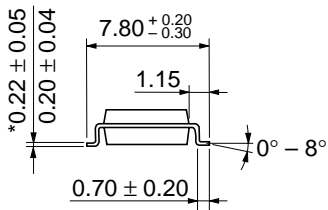
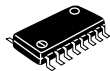
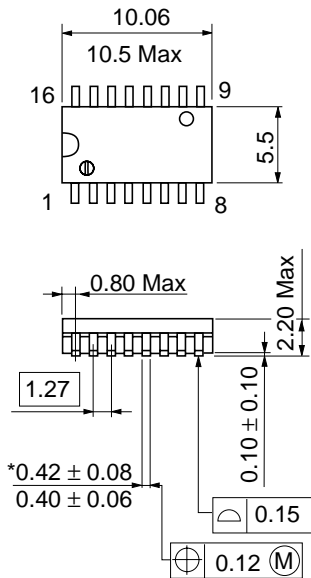
| Item | Symbol | V _{CC} (V) | Ta = 25°C | | Ta = -40 to +85°C | | Unit | Test Conditions | |
|--------------------------|-----------------|---------------------|-----------|-----|-------------------|------|------|---|---|
| | | | Min | Typ | Max | Min | | | Max |
| Input voltage | V _{IH} | 2.0 | 1.5 | — | — | 1.5 | — | V | |
| | | 4.5 | 3.15 | — | — | 3.15 | — | | |
| | | 6.0 | 4.2 | — | — | 4.2 | — | | |
| | V _{IL} | 2.0 | — | — | 0.5 | — | 0.5 | | V |
| | | 4.5 | — | — | 1.35 | — | 1.35 | | |
| | | 6.0 | — | — | 1.8 | — | 1.8 | | |
| Output voltage | V _{OH} | 2.0 | 1.9 | 2.0 | — | 1.9 | — | Vin = V _{IH} or V _{IL} I _{OH} = -20 μA | |
| | | 4.5 | 4.4 | 4.5 | — | 4.4 | — | | |
| | | 6.0 | 5.9 | 6.0 | — | 5.9 | — | | |
| | | 4.5 | 4.18 | — | — | 4.13 | — | | I _{OH} = -4 mA |
| | | 6.0 | 5.68 | — | — | 5.63 | — | | I _{OH} = -5.2 mA |
| | V _{OL} | 2.0 | — | 0.0 | 0.1 | — | 0.1 | Vin = V _{IH} or V _{IL} I _{OL} = 20 μA | |
| | | 4.5 | — | 0.0 | 0.1 | — | 0.1 | | |
| | | 6.0 | — | 0.0 | 0.1 | — | 0.1 | | |
| | | 4.5 | — | — | 0.26 | — | 0.33 | | I _{OL} = 4 mA |
| | | 6.0 | — | — | 0.26 | — | 0.33 | | I _{OL} = 5.2 mA |
| Off-state output current | I _{OZ} | 6.0 | — | — | ±0.5 | — | ±5.0 | μA | Vin = V _{IH} or V _{IL} , Vout = V _{CC} or GND |
| Input current | I _{in} | 6.0 | — | — | ±0.1 | — | ±1.0 | μA | Vin = V _{CC} or GND |
| Quiescent supply current | I _{CC} | 6.0 | — | — | 4.0 | — | 40 | μA | Vin = V _{CC} or GND, Iout = 0 μA |

AC Characteristics ($C_L = 50$ pF, Input $t_r = t_f = 6$ ns)

| Item | Symbol | V_{CC} (V) | $T_a = 25^\circ\text{C}$ | | $T_a = -40$ to $+85^\circ\text{C}$ | | Unit | Test Conditions | |
|------------------------|-----------|--------------|--------------------------|-----|------------------------------------|-----|------|-----------------|----------------------------------|
| | | | Min | Typ | Max | Min | | | Max |
| Propagation delay time | t_{PLH} | 2.0 | — | — | 205 | — | 255 | ns | A, B or C to Y |
| | t_{PHL} | 4.5 | — | 20 | 41 | — | 51 | | |
| | | 6.0 | — | — | 35 | — | 43 | | |
| | t_{PLH} | 2.0 | — | — | 205 | — | 255 | ns | A, B or C to W |
| | t_{PHL} | 4.5 | — | 20 | 41 | — | 51 | | |
| | | 6.0 | — | — | 35 | — | 43 | | |
| | t_{PLH} | 2.0 | — | — | 195 | — | 245 | ns | Data to Y |
| | t_{PHL} | 4.5 | — | 17 | 39 | — | 49 | | |
| | | 6.0 | — | — | 33 | — | 42 | | |
| | t_{PLH} | 2.0 | — | — | 185 | — | 230 | ns | Data to W |
| | t_{PHL} | 4.5 | — | 17 | 37 | — | 46 | | |
| | | 6.0 | — | — | 31 | — | 39 | | |
| Output enable time | t_{ZH} | 2.0 | — | — | 150 | — | 190 | ns | strobe to W $R_L = 1$ k Ω |
| | t_{ZL} | 4.5 | — | 11 | 30 | — | 38 | | |
| | | 6.0 | — | — | 26 | — | 33 | | |
| | t_{ZH} | 2.0 | — | — | 145 | — | 180 | ns | strobe to Y $R_L = 1$ k Ω |
| | t_{ZL} | 4.5 | — | 11 | 29 | — | 36 | | |
| | | 6.0 | — | — | 25 | — | 31 | | |
| Output disable time | t_{HZ} | 2.0 | — | — | 220 | — | 275 | ns | strobe to W $R_L = 1$ k Ω |
| | t_{LZ} | 4.5 | — | 12 | 44 | — | 55 | | |
| | | 6.0 | — | — | 37 | — | 47 | | |
| | t_{HZ} | 2.0 | — | — | 195 | — | 245 | ns | strobe to Y $R_L = 1$ k Ω |
| | t_{LZ} | 4.5 | — | 12 | 39 | — | 49 | | |
| | | 6.0 | — | — | 33 | — | 42 | | |
| Output rise/fall time | t_{TLH} | 2.0 | — | — | 75 | — | 90 | ns | |
| | t_{THL} | 4.5 | — | 5 | 15 | — | 19 | | |
| | | 6.0 | — | — | 13 | — | 16 | | |
| Input capacitance | C_{in} | — | — | 5 | 10 | — | 10 | pF | |

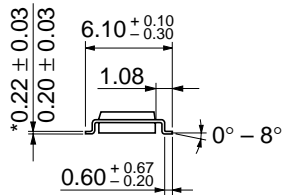
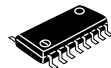
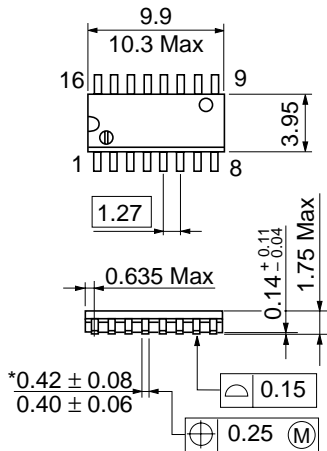


| | |
|--------------------------|----------|
| Hitachi Code | DP-16 |
| JEDEC | Conforms |
| EIAJ | Conforms |
| Weight (reference value) | 1.07 g |



*Dimension including the plating thickness
 Base material dimension

| | |
|--------------------------|----------|
| Hitachi Code | FP-16DA |
| JEDEC | — |
| EIAJ | Conforms |
| Weight (reference value) | 0.24 g |



*Dimension including the plating thickness
Base material dimension

| | |
|--------------------------|----------|
| Hitachi Code | FP-16DN |
| JEDEC | Conforms |
| EIAJ | Conforms |
| Weight (reference value) | 0.15 g |

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