# HD100155

## Quad. Multiplexers/Latches

The HD100155 contains four transparent latches, each of which can accept and store data from two sources. When both Enable ($\overline{En}$) inputs are low, the data that appears at an outputs is controlled by the Select (Sn) inputs, as shown in the operating mode table. In addition to routing data from either $D_0$ or $D_1$, the Select inputs can force the outputs low for the case where the latch is transparent (both Enables are low) and can steer a high signal from either $D_0$ or $D_1$ to an output. The Select inputs can be tied together for applications requiring only that data be steered from either $D_0$ or $D_1$.

A positive-going signal on either Enable input latches the outputs. A high signal on the Master Reset (MS) input overrides all the other inputs and forces the Q outputs low.

## ■ OPERATING MODE TABLE

| CONTROLS | | | | OUTPUT |
|---|---|---|---|---|
| $\overline{E}_1$ | $\overline{E}_2$ | $\overline{S}_0$ | $S_1$ | $Q_n$ |
| H | × | × | × | latched* |
| × | H | × | × | latched* |
| L | L | L | L | $D_{0n}$ |
| L | L | L | H | $D_{0n}+D_{1n}$ |
| L | L | H | L | L |
| L | L | H | H | $D_{1n}$ |

H = High Level
L = Low Level
× = Immaterial
* = Stores data present before En went high.

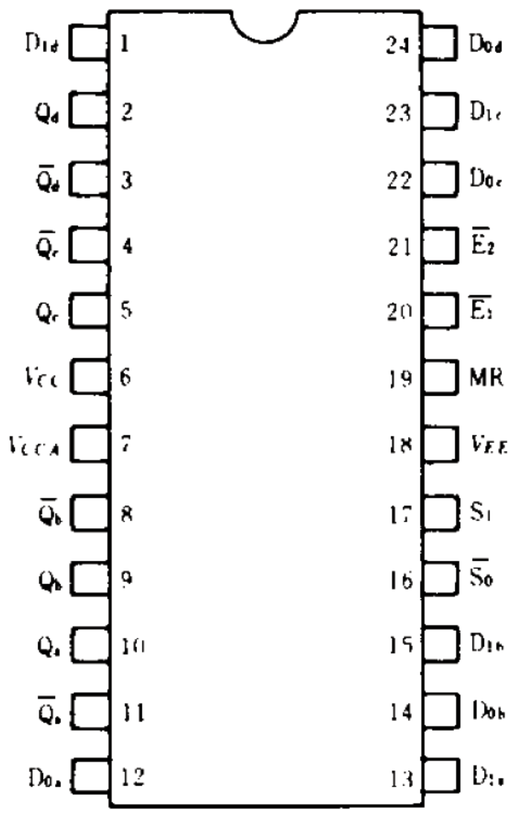
## ■ TRUTH TABLE

| | Input | | | | | | Output | |
|---|---|---|---|---|---|---|---|---|
| MR | $\overline{E}_1$ | $\overline{E}_2$ | $S_1$ | $\overline{S}_0$ | $D_{1a}$ $D_{1b}$ $D_{1c}$ $D_{1d}$ | $D_{0a}$ $D_{0b}$ $D_{0c}$ $D_{0d}$ | $\overline{Q}_a$ $\overline{Q}_b$ $\overline{Q}_c$ $\overline{Q}_d$ | $Q_a$ $Q_b$ $Q_c$ $Q_d$ |
| H | × | × | × | × | × | × | H | L |
| L | L | L | H | H | H | × | L | H |
| L | L | L | H | H | L | × | H | L |
| L | L | L | L | L | × | H | L | H |
| L | L | L | L | L | × | L | H | L |
| L | L | L | L | H | × | × | H | L |
| L | L | L | H | L | H | × | L | H |
| L | L | L | H | L | × | H | L | H |
| L | L | L | H | L | L | L | H | L |
| L | H | × | × | × | × | × | No Change | |
| L | × | H | × | × | × | × | No Change | |

H = High Level
L = Low Level
× = Immaterial

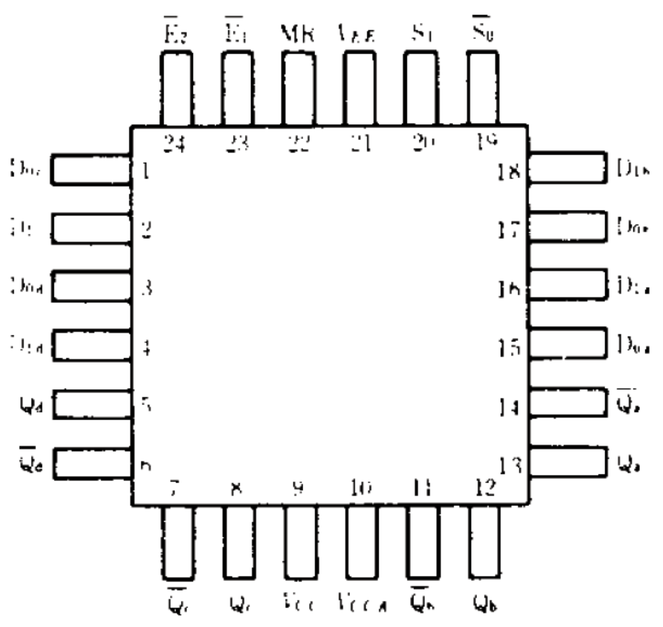
## ■ PIN ARRANGEMENT

### ● HD100155



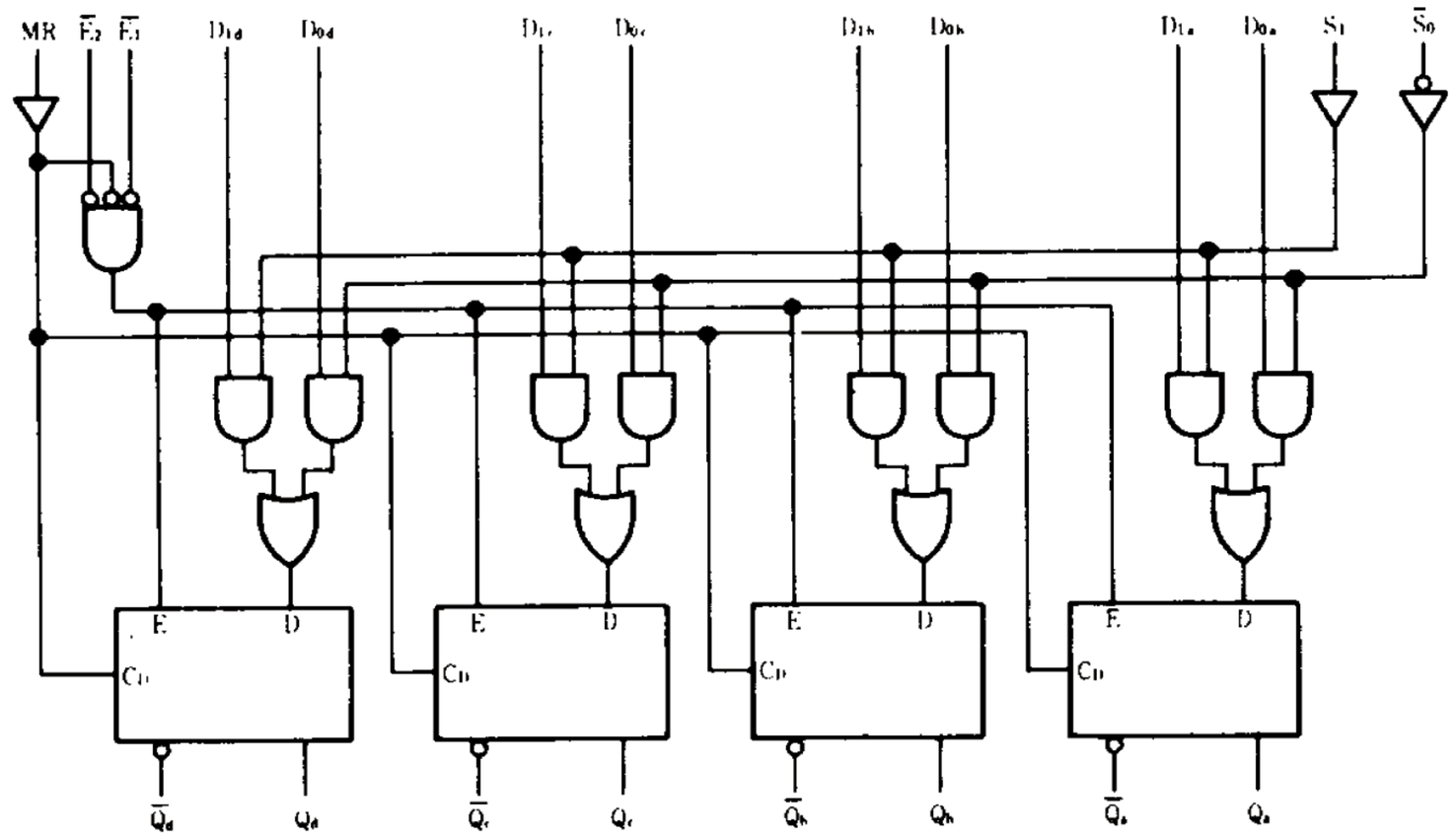

(Top View)

### ● HD100155F




(Top View)

## ■ LOGIC DIAGRAM




## ■ DC CHARACTERISTICS ( $V_{EE}$ = −4.2 to −4.8V, $V_{CC}$ = $V_{CCA}$ =GND, $Ta$=0 to +85℃)

| Item | Symbol | Test Condition | | min | typ | max | Unit |
|---|---|---|---|---|---|---|---|
| Supply Current | $I_{EE}$ | All input open | | 60 | 95 | 133 | mA |
| Input Current | $I_{IH}$ | $V_{IN}$ = $V_{IH\ max}$ | $S_n$ input | | | 220 | μA |
| | | | $\overline{E_n}$ input | | | 350 | |
| | | | Data input | | | 340 | |
| | | | MR input | | | 430 | |

Note) As for other items, refer to the "Common DC Characteristics".

## ■AC CHARACTERISTICS ($V_{EE}$ = −2.2 to −2.8V, $V_{CC}$ = $V_{CCA}$ = 2.0V)

### ● HD100155

| Item | Symbol | Test Condition | | 0℃ | | 25℃ | | | 85℃ | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | min | max | min | typ | max | min | max | |
| Propagation Delay Time | $t_{PLH}$, $t_{PHL}$ | See test circuit and waveform | Date input | 0.55 | 1.50 | 0.60 | 1.00 | 1.55 | 0.60 | 1.55 | ns |
| | | | S input | 1.40 | 3.00 | 1.50 | 1.80 | 3.10 | 1.50 | 3.10 | |
| | | | $\overline{E}$ input | 0.90 | 1.90 | 1.00 | 1.40 | 2.00 | 1.00 | 2.00 | |
| | | | MR input | 0.95 | 1.65 | 1.00 | 1.70 | 2.50 | 1.00 | 2.50 | |
| Transition Time | $t_{TLH}$, $t_{THL}$ | | | 0.55 | 1.75 | 0.50 | 1.10 | 1.65 | 0.50 | 1.65 | ns |
| Setup Time | $t_{st}$ | | Data input | 0.60 | — | 0.60 | — | — | 0.60 | — | ns |
| | | | S input | 2.30 | — | 2.30 | — | — | 2.30 | — | |
| | | | MR input (Release Time) | 1.30 | — | 1.50 | — | — | 1.50 | — | |
| Hold Time | $t_h$ | | Data input | 0.50 | — | 0.40 | — | — | 0.40 | — | ns |
| | | | S input | −0.45 | — | −0.50 | — | — | −0.50 | — | |
| Pulse Width | $t_w$ | | $\overline{E_1}$, $\overline{E_2}$ (L) | 2.00 | — | 2.00 | — | — | 2.00 | — | ns |
| | | | MR (H) | 2.00 | — | 2.00 | — | — | 2.00 | — | |

### ● HD100155F

| Item | Symbol | Test Condition | | 0℃ | | 25℃ | | | 85℃ | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | min | max | min | typ | max | min | max | |
| Propagation Delay Time | $t_{PLH}$, $t_{PHL}$ | See test circuit and waveform | Data input | 0.60 | 1.45 | 0.70 | 0.95 | 1.55 | 0.70 | 1.55 | ns |
| | | | S input | 1.50 | 3.00 | 1.50 | 1.80 | 3.20 | 1.50 | 3.20 | |
| | | | $\overline{E}$ input | 0.90 | 2.10 | 1.00 | 1.50 | 2.20 | 1.00 | 2.20 | |
| | | | MR input | 1.00 | 2.50 | 1.00 | 1.60 | 2.70 | 1.00 | 2.70 | |
| Transition Time | $t_{TLH}$, $t_{THL}$ | | | 0.50 | 1.65 | 0.50 | 1.00 | 1.65 | 0.50 | 1.65 | ns |
| Setup Time | $t_{st}$ | | Data input | 0.50 | — | 0.60 | — | — | 0.60 | — | ns |
| | | | S input | 2.10 | — | 2.30 | — | — | 2.30 | — | |
| | | | MR input (Release Time) | 1.20 | — | 1.40 | — | — | 1.40 | — | |
| Hold Time | $t_h$ | | Data imput | 0.30 | — | 0.30 | — | — | 0.30 | — | ns |
| | | | S input | −0.70 | — | −0.70 | — | — | −0.80 | — | |
| Pulse Width | $t_w$ | | $\overline{E_1}$, $\overline{E_2}$ (L) | 2.00 | — | 2.00 | — | — | 2.00 | — | ns |
| | | | MR (H) | 2.00 | — | 2.00 | — | — | 2.00 | — | |

Note) The circuits in a test socket or mounted on a printed circuit board and transverse air flow greater than 2.5m s (500 linear fpm) is maintained.