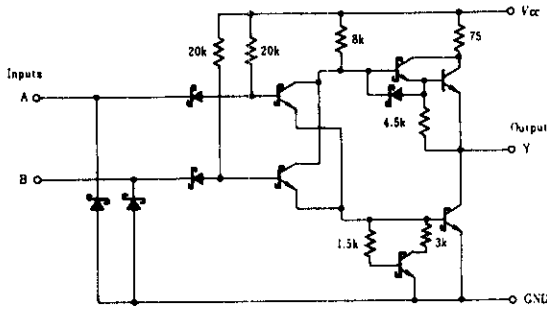
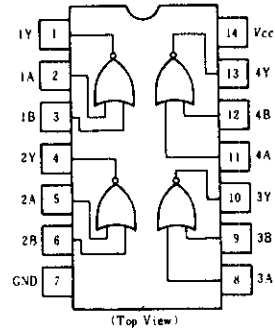


# HD74LS02 • Quadruple 2-input Positive NOR Gates

## ■ CIRCUIT SCHEMATIC (1/4)



## ■ PIN ARRANGEMENT



## ■ ELECTRICAL CHARACTERISTICS ( $T_a = -20 \sim +75^\circ\text{C}$ )

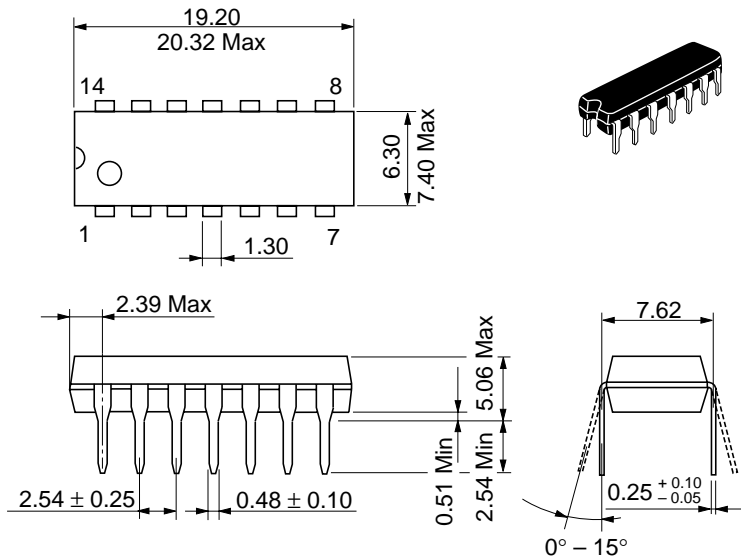
| Item                         | Symbol    | Test Conditions   | min                 | typ* | max  | Unit          |   |
|------------------------------|-----------|---|---------------------|------|------|---------------|---|
| Input voltage                | $V_{IH}$  |   | 2.0                 | —    | —    | V             |   |
|                              | $V_{IL}$  |   | —                   | —    | 0.8  | V             |   |
| Output voltage               | $V_{OH}$  | $V_{CC}=4.75\text{V}, V_{IL}=0.8\text{V}, I_{OH}=-400\mu\text{A}$ | 2.7                 | —    | —    | V             |   |
|                              | $V_{OL}$  | $V_{CC}=4.75\text{V}, V_{IH}=2\text{V}$                           | $I_{OL}=8\text{mA}$ | —    | —    | 0.5           | V |
|                              |           |   | $I_{OL}=4\text{mA}$ | —    | —    | 0.4           |   |
| Input current                | $I_{IH}$  | $V_{CC}=5.25\text{V}, V_i=2.7\text{V}$                            | —                   | —    | 20   | $\mu\text{A}$ |   |
|                              | $I_{IL}$  | $V_{CC}=5.25\text{V}, V_i=0.4\text{V}$                            | —                   | —    | -0.4 | mA            |   |
|                              | $I_i$     | $V_{CC}=5.25\text{V}, V_i=7\text{V}$                              | —                   | —    | 0.1  | mA            |   |
| Short-circuit output current | $I_{OS}$  | $V_{CC}=5.25\text{V}$   | -20                 | —    | -100 | mA            |   |
| Supply current               | $I_{CCH}$ | $V_{CC}=5.25\text{V}$   | —                   | 1.6  | 3.2  | mA            |   |
|                              | $I_{CCL}$ | $V_{CC}=5.25\text{V}$   | —                   | 2.8  | 5.4  | mA            |   |
| Input clamp voltage          | $V_{IK}$  | $V_{CC}=4.75\text{V}, I_{IN}=-18\text{mA}$                        | —                   | —    | -1.5 | V             |   |

\*  $V_{CC}=5\text{V}, T_a=25^\circ\text{C}$

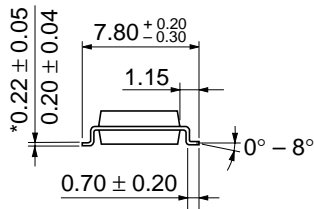
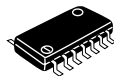
## ■ SWITCHING CHARACTERISTICS ( $V_{CC}=5\text{V}, T_a=25^\circ\text{C}$ )

| Item                   | Symbol    | Test Conditions                        | min | typ | max | Unit |
|------------------------|-----------|--|-----|-----|-----|------|
| Propagation delay time | $t_{PLH}$ | $C_L=15\text{pF}, R_L=2\text{k}\Omega$ | —   | 10  | 15  | ns   |
|                        | $t_{PHL}$ |  | —   | 10  | 15  | ns   |

Note) Refer to Test Circuit and Waveform of the Common Item

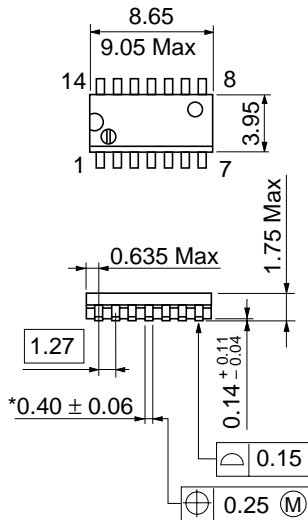


|                          |          |
|--------------------------|----------|
| Hitachi Code             | DP-14    |
| JEDEC                    | Conforms |
| EIAJ                     | Conforms |
| Weight (reference value) | 0.97 g   |



|                          |          |
|--------------------------|----------|
| Hitachi Code             | FP-14DA  |
| JEDEC                    | —        |
| EIAJ                     | Conforms |
| Weight (reference value) | 0.23 g   |

\*Dimension including the plating thickness  
Base material dimension



|                          |          |
|--------------------------|----------|
| Hitachi Code             | FP-14DN  |
| JEDEC                    | Conforms |
| EIAJ                     | Conforms |
| Weight (reference value) | 0.13 g   |

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