

To all our customers

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Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

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Keep safety first in your circuit designs!

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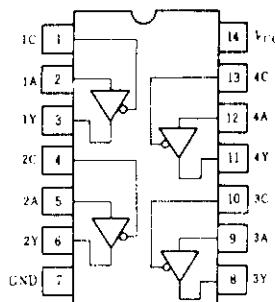
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# HD74LS125A ● Quadruple Bus Buffer Gates (with three-state outputs)

## PIN ARRANGEMENT



(Top View)

## FUNCTION TABLE

| Inputs |   | Outputs |
|--------|---|---------|
| C      | A | Y       |
| H      | X | Z       |
| L      | L | L       |
| L      | H | H       |

Note) H; high level,  
L; low level,  
X; irrelevant  
Z; off (high-impedance) state  
of a 3-state output

## RECOMMENDED OPERATING CONDITIONS

| Item                      | Symbol   | min | typ | max  | Unit |
|---------------------------|----------|-----|-----|------|------|
| High level output current | $I_{OH}$ | —   | —   | -2.6 | mA   |
| Low level output current  | $I_{OL}$ | —   | —   | 24   | mA   |

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

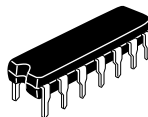
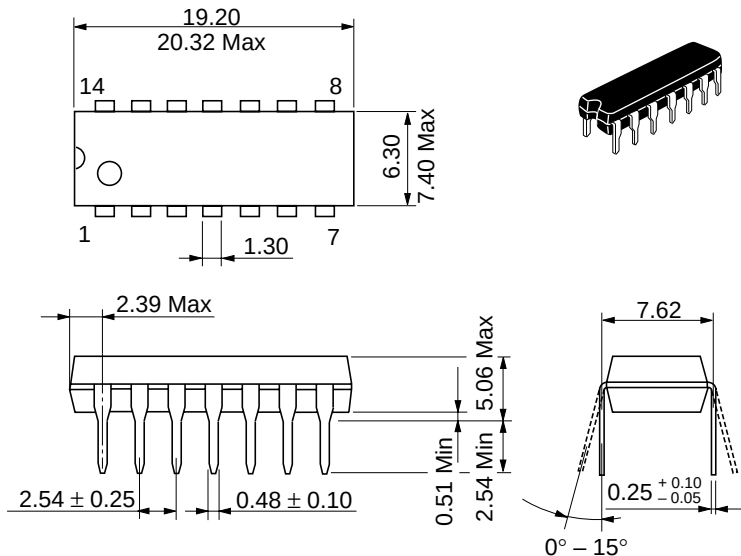
| Item                         | Symbol   | Test Conditions                                                                            | min                  | typ* | max  | Unit          |
|------------------------------|----------|--------------------------------------------------------------------------------------------|----------------------|------|------|---------------|
| Input voltage                | $V_{IH}$ |                                                                                            | 2.0                  | —    | —    | V             |
|                              | $V_{IL}$ |                                                                                            | —                    | —    | 0.8  | V             |
| Output voltage               | $V_{OH}$ | $V_{CC}=4.75\text{V}$ , $V_{IH}=2\text{V}$ , $V_{IL}=0.8\text{V}$ , $I_{OH}=-2.6\text{mA}$ | 2.4                  | —    | —    | V             |
|                              | $V_{OL}$ | $V_{CC}=4.75\text{V}$ , $V_{IH}=2\text{V}$ , $V_{IL}=0.8\text{V}$                          | $I_{OL}=24\text{mA}$ | —    | 0.5  | V             |
|                              |          |                                                                                            | $I_{OL}=12\text{mA}$ | —    | 0.4  |               |
|                              | $I_{OZ}$ | $V_{CC}=5.25\text{V}$ , $V_{IH}=2\text{V}$ , $V_{IL}=0.8\text{V}$                          | $V_O=2.4\text{V}$    | —    | 20   | $\mu\text{A}$ |
|                              |          |                                                                                            | $V_O=0.4\text{V}$    | —    | 20   |               |
| 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 | $I_{OS}$ | $V_{CC}=5.25\text{V}$                                                                      | -40                  | —    | 225  | mA            |
| Supply current               | $I_{CC}$ | $V_{CC}=5.25\text{V}$                                                                      | —                    | 11   | 20   | mA            |
| Input clamp voltage          | $V_{IK}$ | $V_{CC}=4.75\text{V}$ , $I_{IN}=-18\text{mA}$                                              | —                    | —    | -1.5 | V             |

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

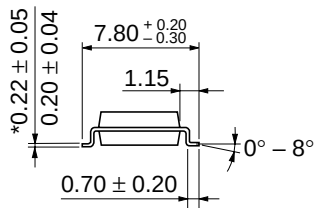
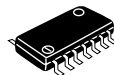
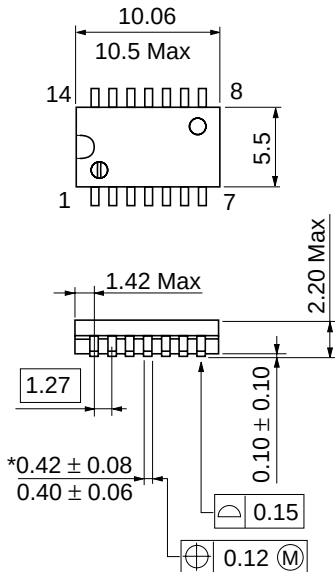
## SWITCHING CHARACTERISTICS ( $V_{CC}=5\text{V}$ , $T_a=25^\circ\text{C}$ )

| Item                   | Symbol    | Test Conditions                      | min | typ | max | Unit |
|------------------------|-----------|--------------------------------------|-----|-----|-----|------|
| Propagation delay time | $t_{PLH}$ | $C_L=45\text{pF}$<br>$R_L=667\Omega$ | —   | 9   | 15  | ns   |
|                        | $t_{PHL}$ |                                      | —   | 7   | 18  |      |
| Output enable time     | $t_{ZH}$  |                                      | —   | 12  | 20  |      |
|                        | $t_{ZL}$  |                                      | —   | 15  | 25  |      |
| Output disable time    | $t_{HZ}$  | $C_L=5\text{pF}$<br>$R_L=667\Omega$  | —   | —   | 20  |      |
|                        | $t_{LZ}$  |                                      | —   | —   | 20  |      |

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

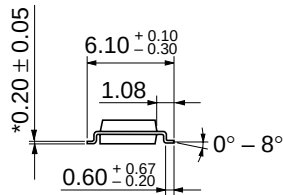
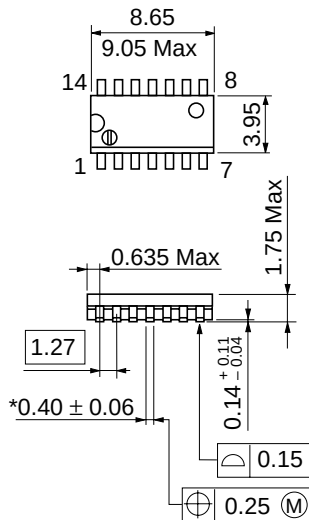


|                          |          |
|--------------------------|----------|
| Hitachi Code             | DP-14    |
| JEDEC                    | Conforms |
| EIAJ                     | Conforms |
| Weight (reference value) | 0.97 g   |



|                          |          |
|--------------------------|----------|
| 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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