

# HD74LS125A

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

REJ03D0430-0200

Rev.2.00

Feb.18.2005

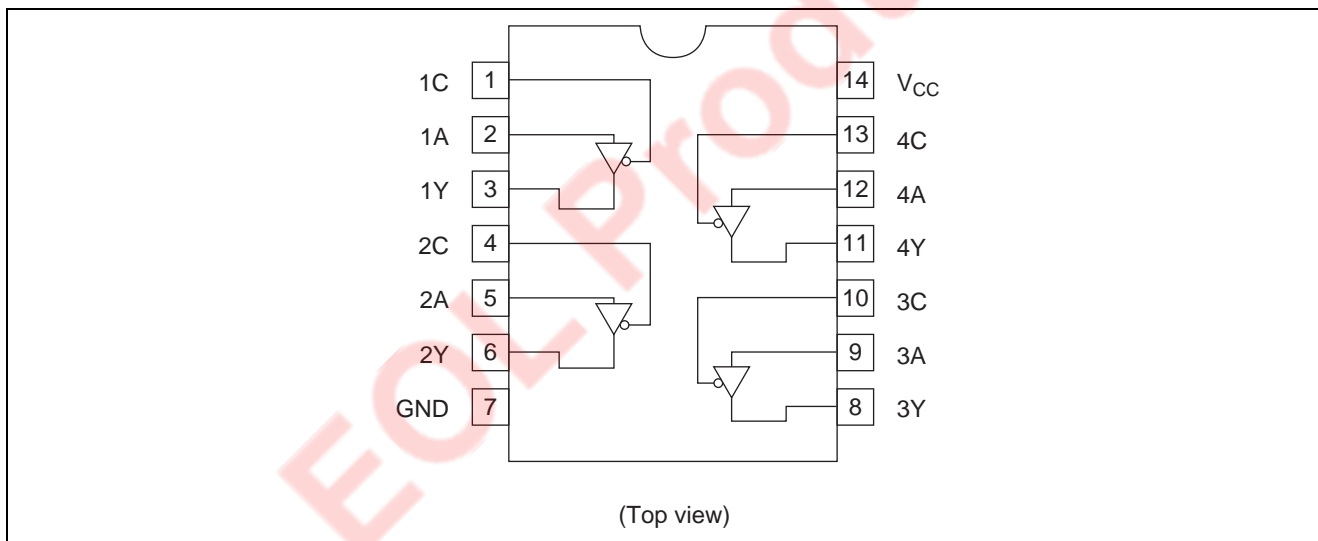
### Features

- Ordering Information

| Part Name      | Package Type       | Package Code (Previous Code) | Package Abbreviation | Taping Abbreviation (Quantity) |
|----------------|--------------------|------------------------------|----------------------|--------------------------------|
| HD74LS125AP    | DILP-14 pin        | PRDP0014AB-B (DP-14AV)       | P                    | —                              |
| HD74LS125AFPEL | SOP-14 pin (JEITA) | PRSP0014DF-B (FP-14DAV)      | FP                   | EL (2,000 pcs/reel)            |
| HD74LS125ARPEL | SOP-14 pin (JEDEC) | PRSP0014DE-A (FP-14DNV)      | RP                   | EL (2,500 pcs/reel)            |

Note: Please consult the sales office for the above package availability.

### Pin Arrangement



### 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

### Absolute Maximum Ratings

| Item                | Symbol    | Ratings     | Unit |
|---------------------|-----------|-------------|------|
| Supply voltage      | $V_{CC}$  | 7           | V    |
| Input voltage       | $V_{IN}$  | 7           | V    |
| Power dissipation   | $P_T$     | 400         | mW   |
| Storage temperature | $T_{stg}$ | -65 to +150 | °C   |

Note: Voltage value, unless otherwise noted, are with respect to network ground terminal.

### Recommended Operating Conditions

| Item                      | Symbol    | Min  | Typ  | Max  | Unit |
|---------------------------|-----------|------|------|------|------|
| Supply voltage            | $V_{CC}$  | 4.75 | 5.00 | 5.25 | V    |
| High level output current | $I_{OH}$  | —    | —    | -2.6 | mA   |
| Low level output current  | $I_{OL}$  | —    | —    | 24   | mA   |
| Operating temperature     | $T_{opr}$ | -20  | 25   | 75   | °C   |

### Electrical Characteristics

( $T_a = -20$  to  $+75$  °C)

| Item                         | Symbol   | min. | typ.* | max. | Unit    | Condition   |
|------------------------------|----------|------|-------|------|---------|---|
| Input voltage                | $V_{IH}$ | 2.0  | —     | —    | V       |   |
|                              | $V_{IL}$ | —    | —     | 0.8  | V       |   |
| Output voltage               | $V_{OH}$ | 2.4  | —     | —    | V       | $V_{CC} = 4.75$ V, $V_{IH} = 2$ V, $V_{IL} = 0.8$ V, $I_{OH} = -2.6$ mA |
|                              | $V_{OL}$ | —    | —     | 0.5  | V       |   |
| —                            |          | —    | 0.4   |      |         |   |
|                              | $I_{OZ}$ | —    | —     | 20   | $\mu$ A | $V_O = 2.4$ V<br>$V_{CC} = 5.25$ V, $V_{IH} = 2$ V, $V_{IL} = 0.8$ V    |
|                              |          | —    | —     | -20  |         |   |
| Input current                | $I_{IH}$ | —    | —     | 20   | $\mu$ A | $V_{CC} = 5.25$ V, $V_I = 2.7$ V  |
|                              | $I_{IL}$ | —    | —     | -0.4 | mA      | $V_{CC} = 5.25$ V, $V_I = 0.4$ V  |
|                              | $I_I$    | —    | —     | 0.1  | mA      | $V_{CC} = 5.25$ V, $V_I = 7$ V  |
| Short-circuit output current | $I_{OS}$ | -40  | —     | -225 | mA      | $V_{CC} = 5.25$ V   |
| Supply current               | $I_{CC}$ | —    | 11    | 20   | mA      | $V_{CC} = 5.25$ V   |
| Input clamp voltage          | $V_{IK}$ | —    | —     | -1.5 | V       | $V_{CC} = 4.75$ V, $I_{IN} = -18$ mA                                    |

Note: \*  $V_{CC} = 5$  V,  $T_a = 25$ °C

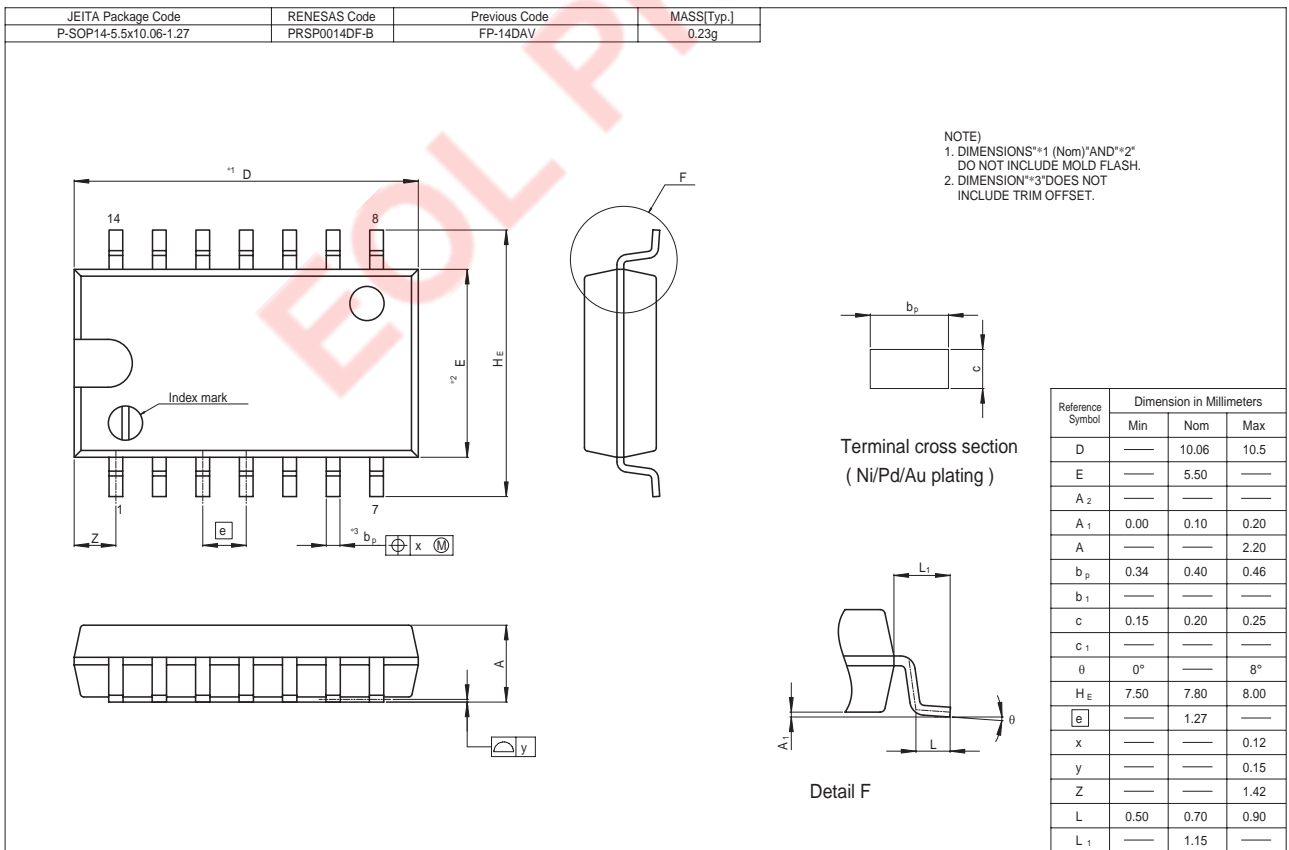
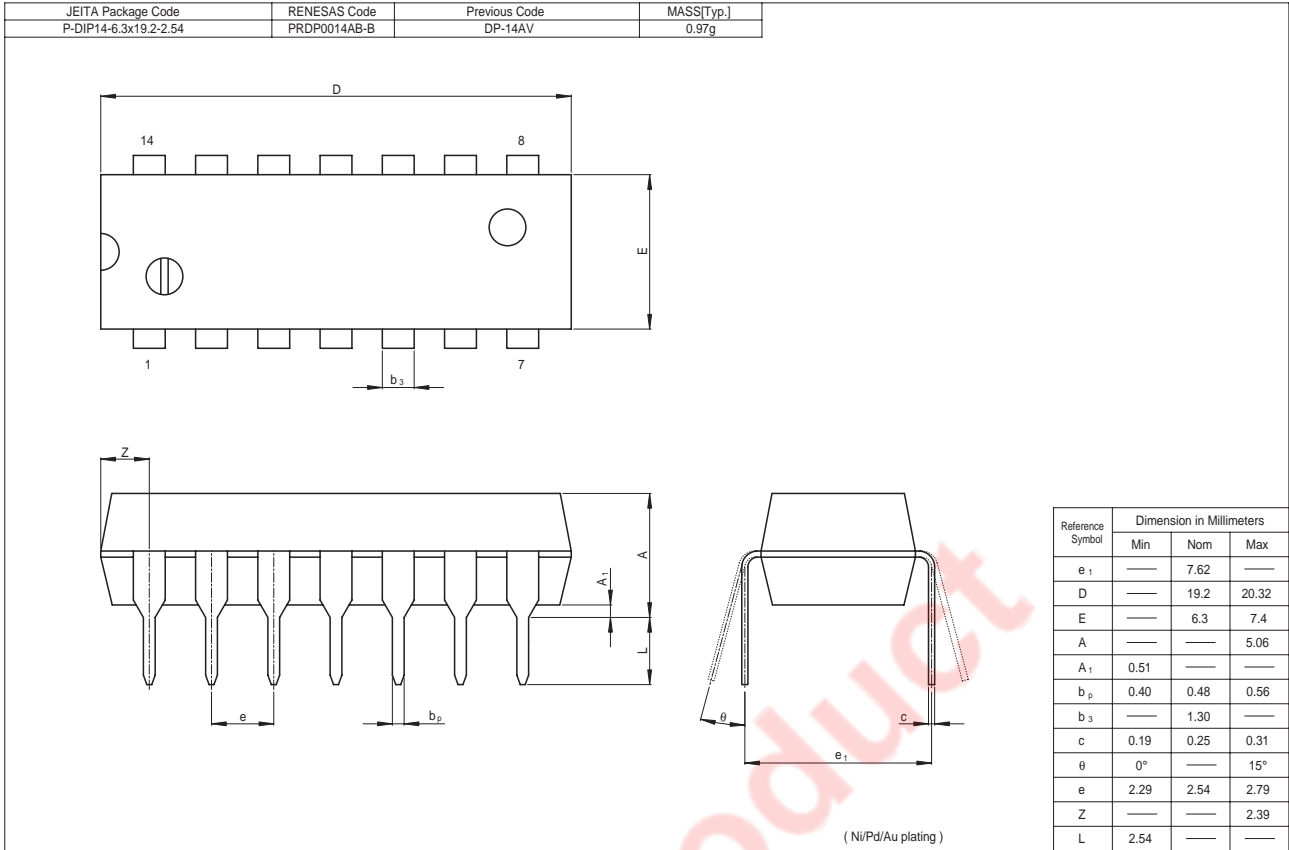
### Switching Characteristics

( $V_{CC} = 5$  V,  $T_a = 25$ °C)

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

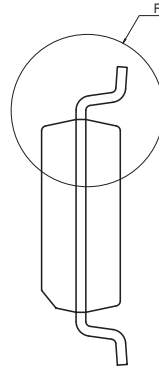
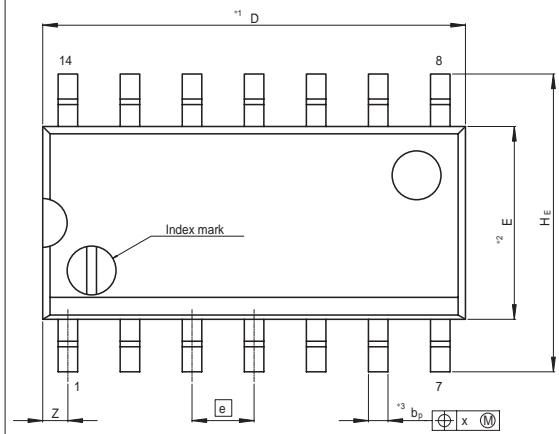
Note: Refer to Test Circuit and Waveform of the Common Item "TTL Common Matter (Document No.: REJ27D0005-0100)".

Package Dimensions



# HD74LS125A

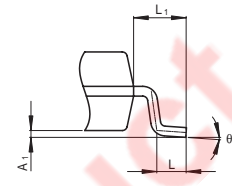
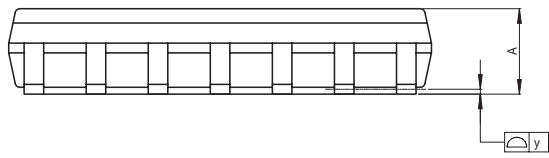
|  |                              |                           |                     |
|--|------------------------------|---------------------------|---------------------|
| JEITA Package Code<br>P-SOP14-3.95x8.65-1.27 | RENESAS Code<br>PRSP0014DE-A | Previous Code<br>FP-14DNV | MASS[Typ.]<br>0.13g |
|--|------------------------------|---------------------------|---------------------|



NOTE)  
1. DIMENSIONS\*1 (Nom)\*AND\*2\*  
DO NOT INCLUDE MOLD FLASH.  
2. DIMENSION\*3\*DOES NOT  
INCLUDE TRIM OFFSET.

Terminal cross section  
( Ni/Pd/Au plating )

| Reference Symbol | Dimension in Millimeters |      |       |
|------------------|--------------------------|------|-------|
|                  | Min                      | Nom  | Max   |
| D                | —                        | 8.65 | 9.05  |
| E                | —                        | 3.95 | —     |
| A <sub>2</sub>   | —                        | —    | —     |
| A <sub>1</sub>   | 0.10                     | 0.14 | 0.25  |
| A                | —                        | —    | 1.75  |
| b <sub>p</sub>   | 0.34                     | 0.40 | 0.46  |
| b <sub>1</sub>   | —                        | —    | —     |
| c                | 0.15                     | 0.20 | 0.25  |
| c <sub>1</sub>   | —                        | —    | —     |
| θ                | 0°                       | —    | 8°    |
| H <sub>E</sub>   | 5.80                     | 6.10 | 6.20  |
| e                | —                        | 1.27 | —     |
| x                | —                        | —    | 0.25  |
| y                | —                        | —    | 0.15  |
| Z                | —                        | —    | 0.635 |
| L                | 0.40                     | 0.60 | 1.27  |
| L <sub>1</sub>   | —                        | 1.08 | —     |



Detail F

EOL Product

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