

# HD74LS51

## 2-wide 2-input, 2-wide 3-input AND-OR-INVERT Gates

REJ03D0412-0300  
 Rev.3.00  
 Jul.22.2005

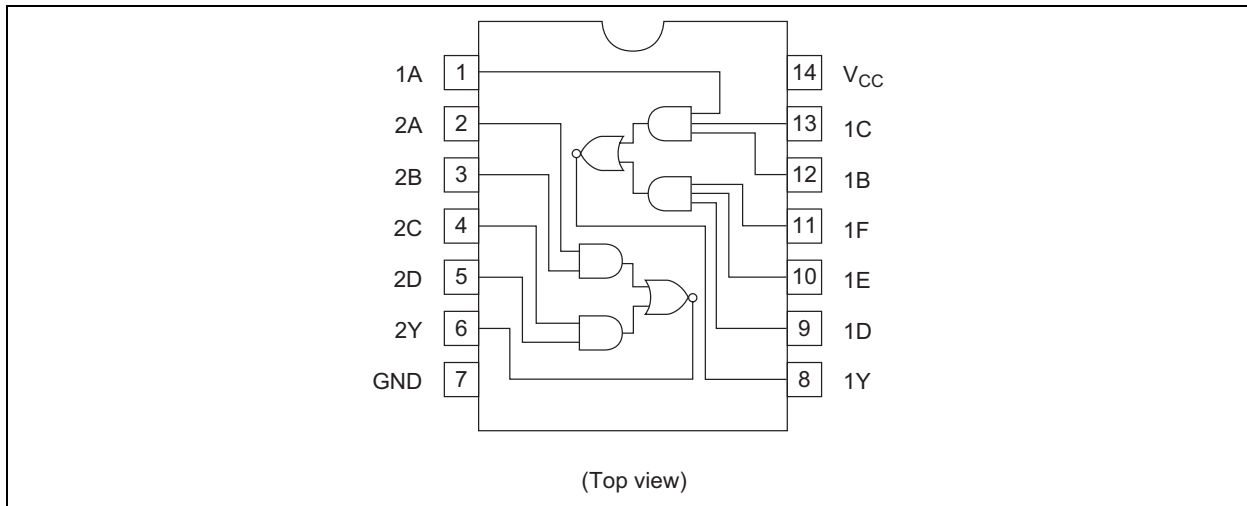
### Features

- Ordering Information

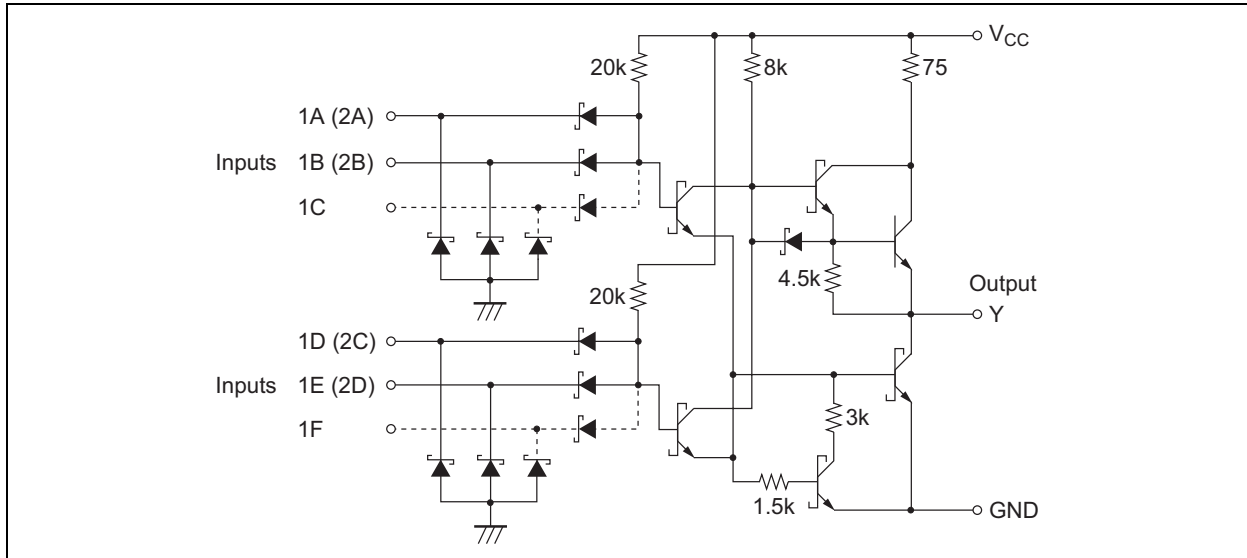
| Part Name    | Package Type       | Package Code (Previous Code) | Package Abbreviation | Taping Abbreviation (Quantity) |
|--------------|--------------------|------------------------------|----------------------|--------------------------------|
| HD74LS51P    | DILP-14 pin        | PRDP0014AB-B (DP-14AV)       | P                    | —                              |
| HD74LS51FPEL | SOP-14 pin (JEITA) | PRSP0014DF-B (FP-14DAV)      | FP                   | EL (2,000 pcs/reel)            |

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

### Pin Arrangement



Circuit Schematic (1/2)



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       |
| Output current        | $I_{OH}$  | —    | —    | -400 | $\mu A$ |
|                       | $I_{OL}$  | —    | —    | 8    | mA      |
| Operating temperature | $T_{opr}$ | -20  | 25   | 75   | °C      |

## Electrical Characteristics

(Ta = -20 to +75 °C)

| Item                         | Symbol           | min. | typ.* | max. | Unit | Condition  |
|------------------------------|------------------|------|-------|------|------|--|
| Input voltage                | V <sub>IH</sub>  | 2.0  | —     | —    | V    |  |
|                              | V <sub>IL</sub>  | —    | —     | 0.8  | V    |  |
| Output voltage               | V <sub>OH</sub>  | 2.7  | —     | —    | V    | V <sub>CC</sub> = 4.75 V, V <sub>IL</sub> = 0.8 V, I <sub>OH</sub> = -400 μA |
|                              | V <sub>OL</sub>  | —    | —     | 0.5  | V    | V <sub>CC</sub> = 4.75 V, V <sub>IH</sub> = 2 V                              |
|                              |                  | —    | —     | 0.4  |      |  |
| Input current                | I <sub>IH</sub>  | —    | —     | 20   | μA   | V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 2.7 V                             |
|                              | I <sub>IL</sub>  | —    | —     | -0.4 | mA   | V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 0.4 V                             |
|                              | I <sub>I</sub>   | —    | —     | 0.1  | mA   | V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 7 V                               |
| Short-circuit output current | I <sub>OS</sub>  | -20  | —     | -100 | mA   | V <sub>CC</sub> = 5.25 V   |
| Supply current               | I <sub>CCH</sub> | —    | 0.8   | 1.6  | mA   | V <sub>CC</sub> = 5.25 V   |
|                              | I <sub>CCL</sub> | —    | 1.4   | 2.8  | mA   | V <sub>CC</sub> = 5.25 V   |
| Input clamp voltage          | V <sub>IK</sub>  | —    | —     | -1.5 | V    | V <sub>CC</sub> = 4.75 V, I <sub>IN</sub> = -18 mA                           |

Note: \* V<sub>CC</sub> = 5 V, Ta = 25°C

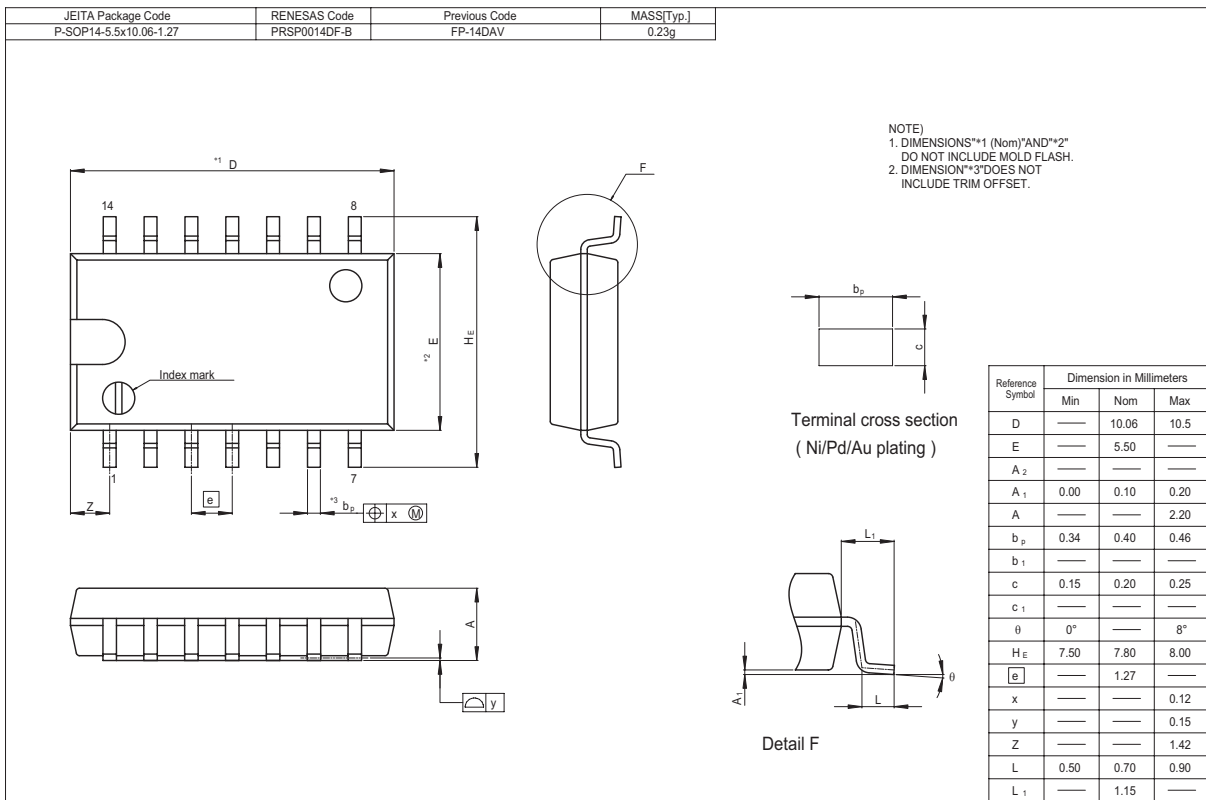
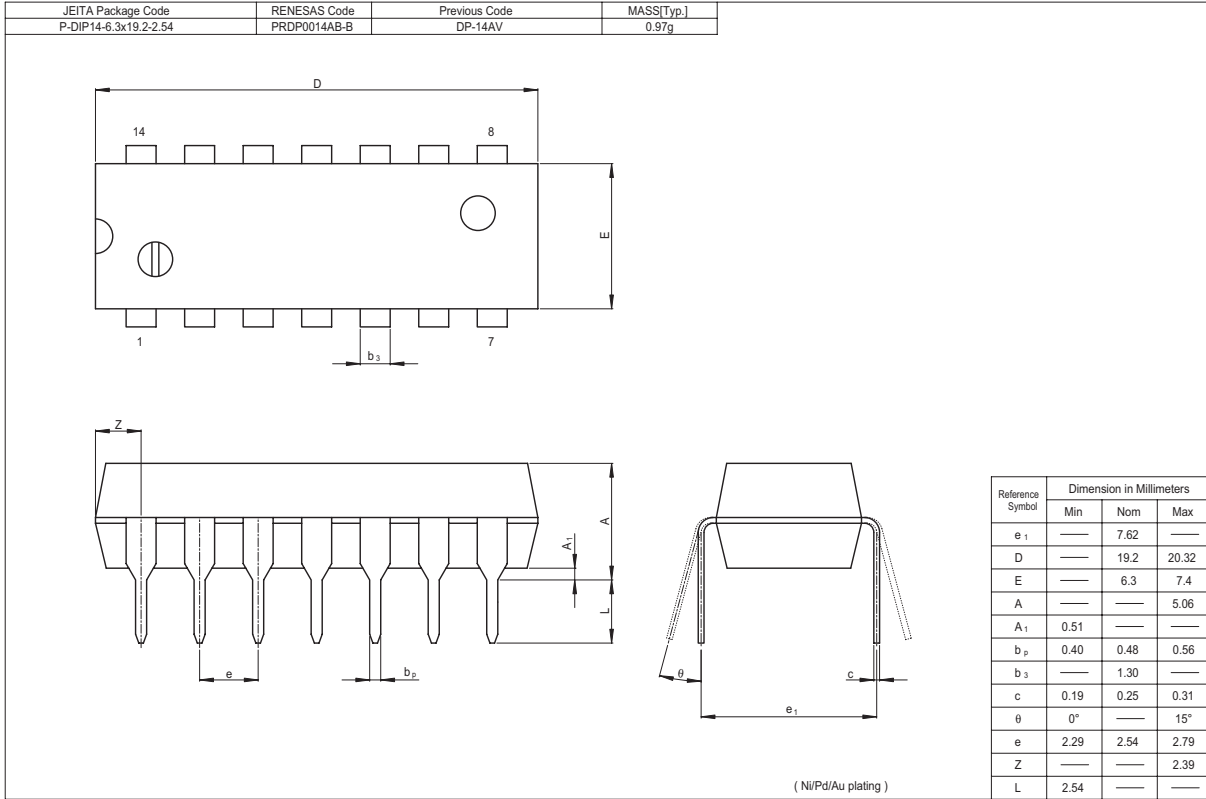
## Switching Characteristics

(V<sub>CC</sub> = 5 V, Ta = 25°C)

| Item                   | Symbol           | min. | typ. | max. | Unit | Condition                                     |
|------------------------|------------------|------|------|------|------|---|
| Propagation delay time | t <sub>PLH</sub> | —    | 12   | 20   | ns   | C <sub>L</sub> = 15 pF, R <sub>L</sub> = 2 kΩ |
|                        | t <sub>PHL</sub> | —    | 12.5 | 20   | ns   |   |

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

Package Dimensions



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