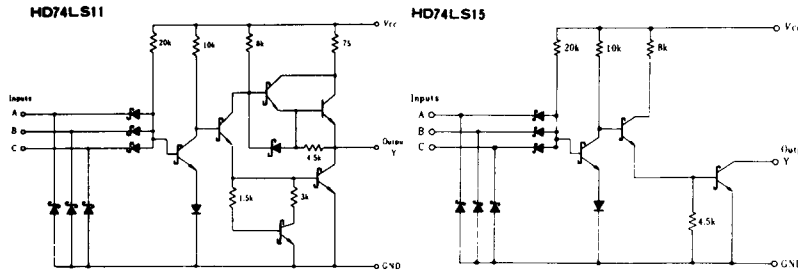


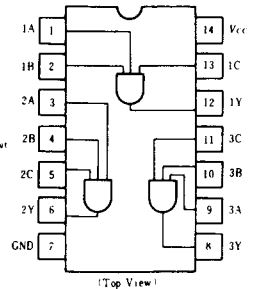
# HD74LS11/HD74LS15

- Triple 3-input Positive AND Gates
- Triple 3-input Positive AND Gates (with Open Collector Outputs)

## ■CIRCUIT SCHEMATIC(1/3)



## ■PIN ARRANGEMENT



## ■HD74LS15 RECOMMENDED OPERATING CONDITIONS

| Item                      | Symbol   | min | typ | max | Unit |
|---------------------------|----------|-----|-----|-----|------|
| High level output voltage | $V_{OH}$ | —   | —   | 5.5 | V    |
| Low level output current  | $I_{OL}$ | —   | —   | 8   | mA   |

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

| Item                         | Symbol    | Test Conditions                                                             | HD74LS11 |      |      | HD74LS15 |      |      | Unit          |
|------------------------------|-----------|-----------------------------------------------------------------------------|----------|------|------|----------|------|------|---------------|
|                              |           |                                                                             | min      | typ* | max  | min      | typ* | max  |               |
| Input voltage                | $V_{IH}$  |                                                                             | 2.0      | —    | —    | 2.0      | —    | —    | V             |
|                              | $V_{IL}$  |                                                                             | —        | —    | 0.8  | —        | —    | 0.8  | V             |
| Output voltage               | $V_{OH}$  | $V_{CC} = 4.75\text{V}$ , $V_{IH} = 2\text{V}$ , $I_{OH} = -400\mu\text{A}$ | 2.7      | —    | —    | —        | —    | —    | V             |
|                              | $V_{OL}$  | $V_{CC} = 4.75\text{V}$ , $V_{IL} = 0.8\text{V}$ , $I_{OL} = 8\text{mA}$    | —        | —    | 0.5  | —        | —    | 0.5  | V             |
|                              |           | $I_{OL} = 4\text{mA}$                                                       | —        | —    | 0.4  | —        | —    | 0.4  |               |
|                              |           |                                                                             | —        | —    | —    | —        | —    | —    |               |
| Input current                | $I_{IH}$  | $V_{CC} = 5.25\text{V}$ , $V_I = 2.7\text{V}$                               | —        | —    | 20   | —        | —    | 20   | $\mu\text{A}$ |
|                              | $I_{IL}$  | $V_{CC} = 5.25\text{V}$ , $V_I = 0.4\text{V}$                               | —        | —    | -0.4 | —        | —    | -0.4 | mA            |
|                              | $I_I$     | $V_{CC} = 5.25\text{V}$ , $V_I = 7\text{V}$                                 | —        | —    | 0.1  | —        | —    | 0.1  | mA            |
| Output current               | $I_{OH}$  | $V_{CC} = 4.75\text{V}$ , $V_{OH} = 5.5\text{V}$                            | —        | —    | —    | —        | —    | 100  | $\mu\text{A}$ |
| Short-circuit output current | $I_{OS}$  | $V_{CC} = 5.25\text{V}$                                                     | -20      | —    | -100 | —        | —    | —    | mA            |
| Supply current               | $I_{CCH}$ | $V_{CC} = 5.25\text{V}$                                                     | —        | 1.8  | 3.6  | —        | 1.8  | 3.6  | mA            |
|                              | $I_{CCL}$ | $V_{CC} = 5.25\text{V}$                                                     | —        | 3.3  | 6.6  | —        | 3.3  | 6.6  | mA            |
| Input clamp voltage          | $V_{IK}$  | $V_{CC} = 4.75\text{V}$ , $I_{IN} = -18\text{mA}$                           | —        | —    | -1.5 | —        | —    | -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                               | HD74LS11 |     |     | HD74LS15 |     |     | Unit |
|------------------------|-----------|-----------------------------------------------|----------|-----|-----|----------|-----|-----|------|
|                        |           |                                               | min      | typ | max | min      | typ | max |      |
| Propagation delay time | $t_{PLH}$ | $C_L = 15\text{pF}$ , $R_L = 2\text{k}\Omega$ | —        | 8   | 15  | —        | 20  | 35  | ns   |
|                        | $t_{PHL}$ |                                               | —        | 10  | 20  | —        | 17  | 35  | ns   |

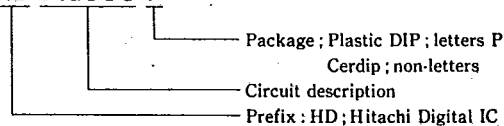
Note) Refer to Test Circuit and Waveform of the Common Item

# PACKAGING INFORMATION

T-90-20

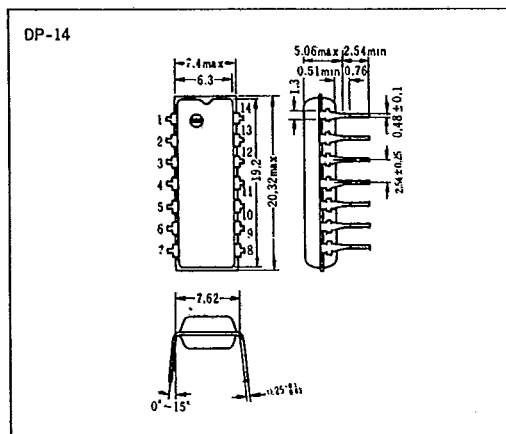
Factory orders for circuits described in this databook should include a three-part type number as explained in the following example.

## HD 74LS00 P

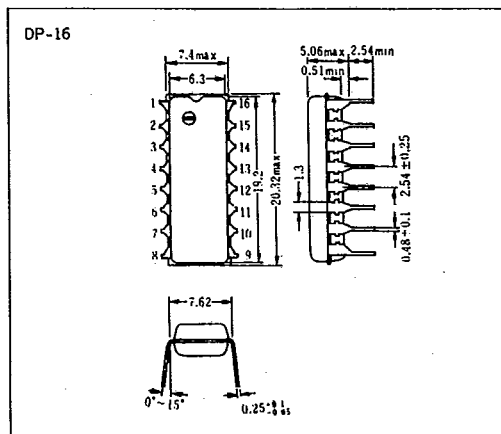


### ■ Plastic DIP

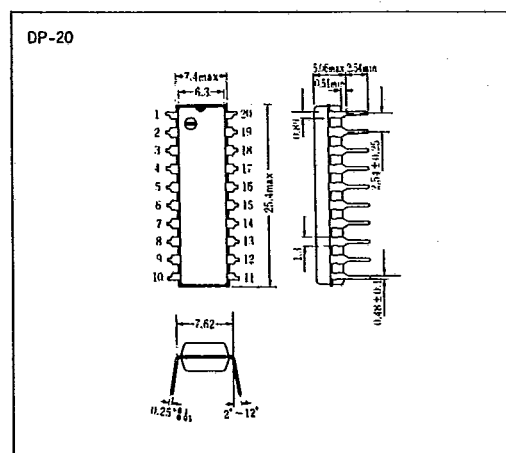
#### ● 14 Pin



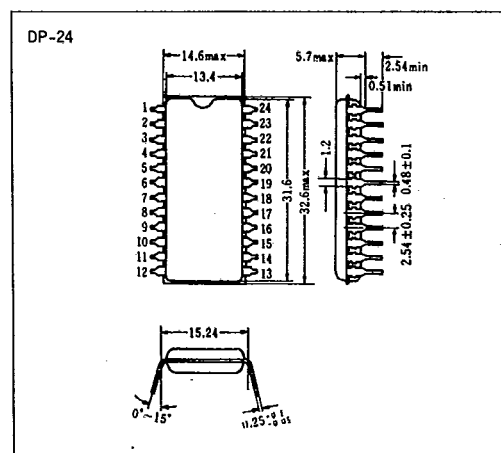
#### ● 16 Pin



#### ● 20 Pin



#### ● 24 Pin



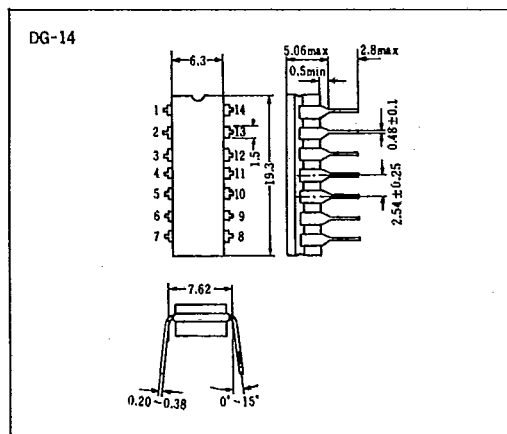
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T-90-20

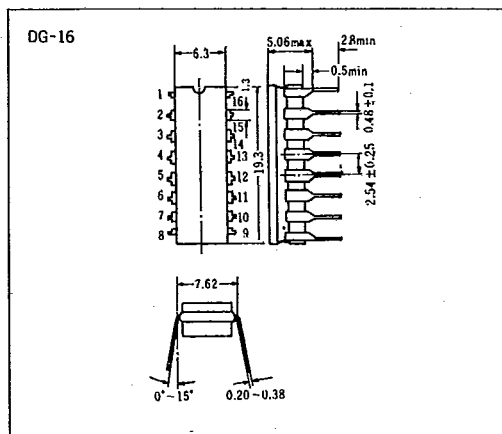
# PACKAGING INFORMATION

## ■Cerdip

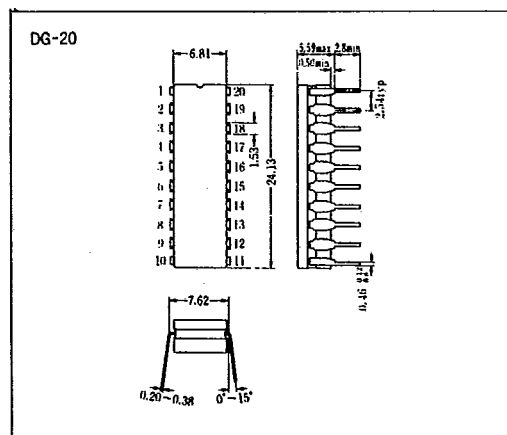
### ●14 Pin



### ●16 Pin



### ●20 Pin



### ●24 Pin

