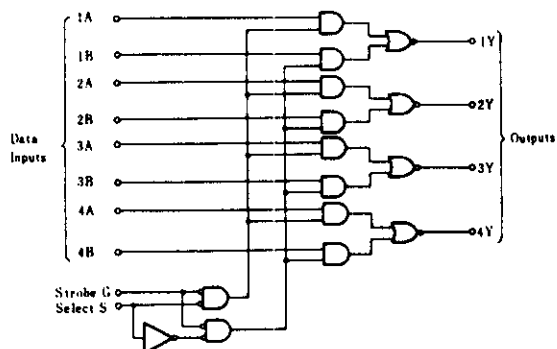


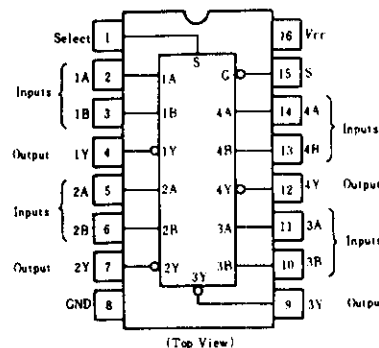
# HD74LS158 • Quadruple 2-line-to-1-line Data Selectors/Multiplexers (inverted outputs)

This data selector/multiplexer contains inverters and drivers to supply full on-chip data selection to the four output gates. A separate strobe input is provided. A 4-bit word is selected from one of two sources and is routed to the four outputs. Then, outputs present inverted data to minimize propagation delay time.

## ■ BLOCK DIAGRAM



## ■ PIN ARRANGEMENT



## ■ FUNCTION TABLE

| Inputs |        |   |   | Output |
|--------|--------|---|---|--------|
| Strobe | Select | A | B | Y      |
| H      | X      | X | X | H      |
| L      | L      | L | X | H      |
| L      | L      | H | X | L      |
| L      | H      | X | L | H      |
| L      | H      | X | H | L      |

H; high level L; low level, X; irrelevant

## ■ 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               |      | $V_{OH}$ | $V_{CC}=4.75\text{V}, V_{IH}=2\text{V}, V_{IL}=0.8\text{V}, I_{OH}=-400\mu\text{A}$ | 2.7 | —    | —    | V             |
|                              |      | $V_{OL}$ | $V_{CC}=4.75\text{V}, V_{IH}=2\text{V}, I_{OL}=4\text{mA}$                          | —   | —    | 0.4  | V             |
|                              |      |          | $V_{IL}=0.8\text{V}, I_{OL}=8\text{mA}$                                             | —   | —    | 0.5  |               |
| Input current                | G, S | $I_{IH}$ | $V_{CC}=5.25\text{V}, V_I=2.7\text{V}$                                              | —   | —    | 40   | $\mu\text{A}$ |
|                              | A, B |          |                                                                                     | —   | —    | 20   |               |
|                              | G, S | $I_{IL}$ | $V_{CC}=5.25\text{V}, V_I=0.4\text{V}$                                              | —   | —    | -0.8 | mA            |
|                              | A, B |          |                                                                                     | —   | —    | -0.4 |               |
|                              | G, S | $I_I$    | $V_{CC}=5.25\text{V}, V_I=7\text{V}$                                                | —   | —    | 0.2  | mA            |
|                              | A, B |          |                                                                                     | —   | —    | 0.1  |               |
| Short-circuit output current |      | $I_{OS}$ | $V_{CC}=5.25\text{V}$                                                               | -20 | —    | -100 | mA            |
| Supply current **            |      | $I_{CC}$ | $V_{CC}=5.25\text{V}$                                                               | —   | 4.8  | 8    | mA            |
| Input clamp voltage          |      | $V_{IK}$ | $V_{CC}=4.75\text{V}, I_{IH}=-18\text{mA}$                                          | —   | —    | -1.5 | V             |

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

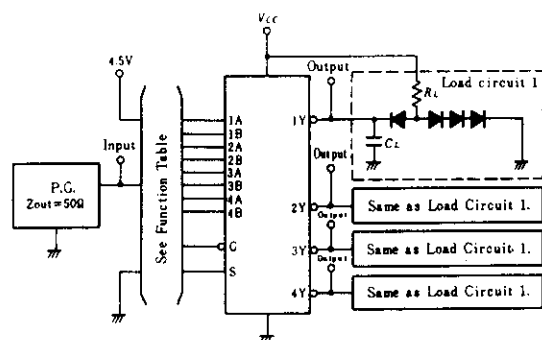
\*\*  $I_{CC}$  is measured with all outputs open and all inputs at 4.5V.

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

| Item                   | Symbol    | Inputs | Output | Test Conditions          | min | typ | max | Unit |
|------------------------|-----------|--------|--------|--------------------------|-----|-----|-----|------|
| Propagation delay time | $t_{PLH}$ | Data   | Y      | $C_L=15pF, R_L=2k\Omega$ | —   | 7   | 12  | ns   |
|                        | $t_{PHL}$ |        |        |                          | —   | 7   | 12  |      |
|                        | $t_{PLH}$ | Strobe | Y      |                          | —   | 11  | 17  | ns   |
|                        | $t_{PHL}$ |        |        |                          | —   | 12  | 18  |      |
|                        | $t_{PLH}$ | Select | Y      |                          | —   | 13  | 20  | ns   |
|                        | $t_{PHL}$ |        |        |                          | —   | 16  | 24  |      |

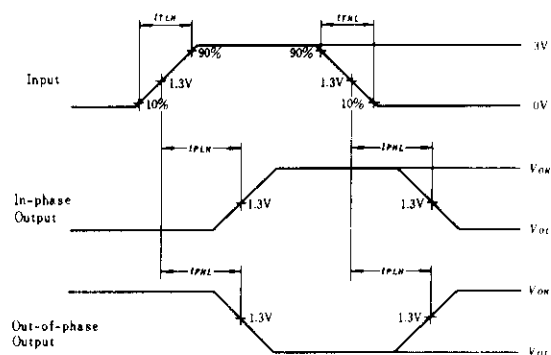
## ■TESTING METHOD

### 1) Test Circuit



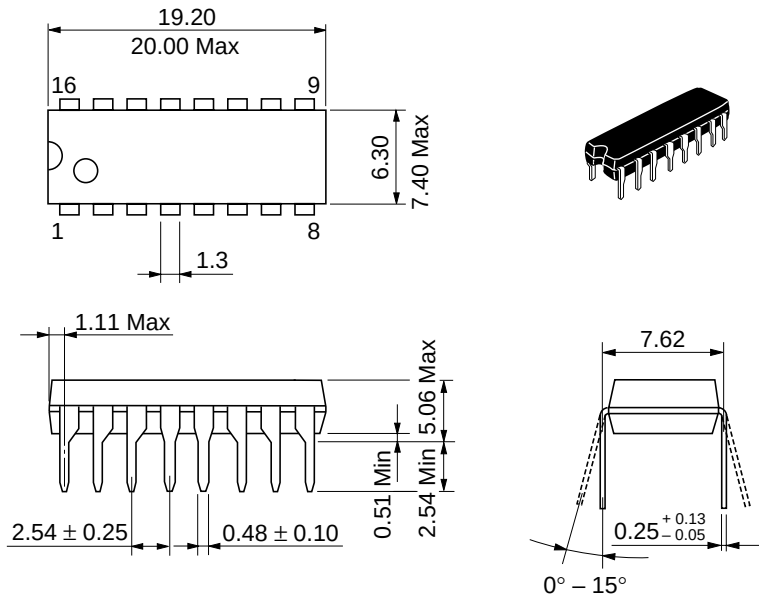
- Notes) 1.  $C_L$  includes probe and jig capacitance.  
2. All diodes are 1S2074 (H).

### Waveform

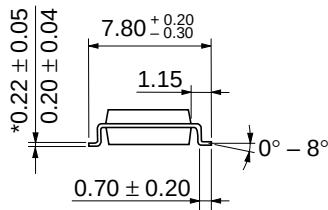
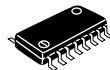
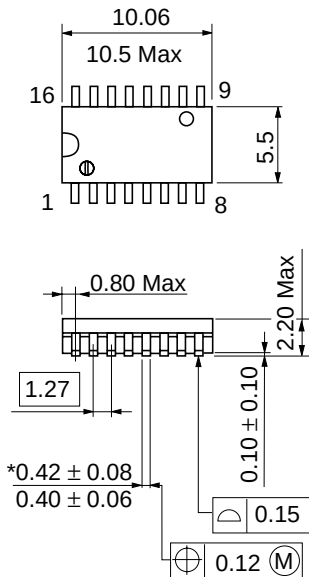


Input pulse;  $t_{PLH} \leq 15ns$ ,  $t_{PHL} \leq 6ns$ ,  
 $PRR=1MHz$ , duty cycle 50%.

Unit: mm

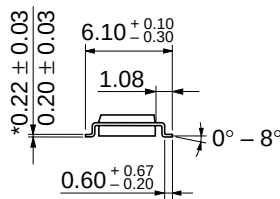
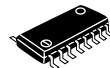
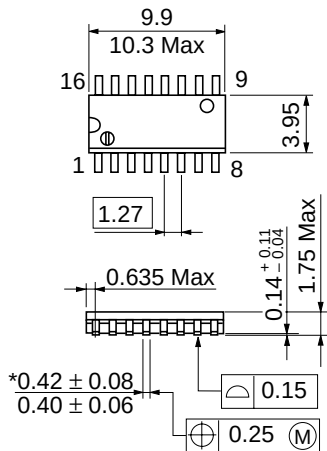


|                          |          |
|--------------------------|----------|
| Hitachi Code             | DP-16    |
| JEDEC                    | Conforms |
| EIAJ                     | Conforms |
| Weight (reference value) | 1.07 g   |



\*Dimension including the plating thickness  
Base material dimension

|                          |          |
|--------------------------|----------|
| Hitachi Code             | FP-16DA  |
| JEDEC                    | —        |
| EIAJ                     | Conforms |
| Weight (reference value) | 0.24 g   |



\*Dimension including the plating thickness  
Base material dimension

|                          |          |
|--------------------------|----------|
| Hitachi Code             | FP-16DN  |
| JEDEC                    | Conforms |
| EIAJ                     | Conforms |
| Weight (reference value) | 0.15 g   |

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# HITACHI

## Hitachi, Ltd.

Semiconductor & Integrated Circuits.  
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan  
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

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## For further information write to:

|                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hitachi Semiconductor (America) Inc.<br>179 East Tasman Drive,<br>San Jose, CA 95134<br>Tel: <1> (408) 433-1990<br>Fax: <1> (408) 433-0223 | Hitachi Europe GmbH<br>Electronic components Group<br>Dornacher Straße 3<br>D-85622 Feldkirchen, Munich<br>Germany<br>Tel: <49> (89) 9 9180-0<br>Fax: <49> (89) 9 29 30 00<br><br>Hitachi Europe Ltd.<br>Electronic Components Group.<br>Whitebrook Park<br>Lower Cookham Road<br>Maidenhead<br>Berkshire SL6 8YA, United Kingdom<br>Tel: <44> (1628) 585000<br>Fax: <44> (1628) 778322 |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Hitachi Asia Pte. Ltd.  
16 Collyer Quay #20-00  
Hitachi Tower  
Singapore 049318  
Tel: 535-2100  
Fax: 535-1533

Hitachi Asia Ltd.  
Taipei Branch Office  
3F, Hung Kuo Building, No.167,  
Tun-Hwa North Road, Taipei (105)  
Tel: <886> (2) 2718-3666  
Fax: <886> (2) 2718-8180

Hitachi Asia (Hong Kong) Ltd.  
Group III (Electronic Components)  
7/F., North Tower, World Finance Centre,  
Harbour City, Canton Road, Tsim Sha Tsui,  
Kowloon, Hong Kong  
Tel: <852> (2) 735 9218  
Fax: <852> (2) 730 0281  
Telex: 40815 HITEC HX

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