

HD74HC373/HD74HC533

Octal D-type Transparent Latches (with 3-state outputs)

Octal D-type Transparent Latches (with inverted 3-state outputs)

HITACHI

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-54151736
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Description

When the latch enable input is high, the Q outputs of HD74HC373 will follow the D inputs and the Q outputs of HD74HC533 will follow the inversion of the D inputs. When the latch enable goes low, data at the D inputs will be retained at the outputs until latch enable returns high again. When a high logic level is applied to the output control input, all outputs go to a high impedance state, regardless of what signals are present at the other inputs and the state of the storage elements.

Features

- High Speed Operation: t_{pd} (D to Q) = 16 ns typ ($C_L = 50$ pF)
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2$ to 6 V
- Low Input Current: 1 μ A max
- Low Quiescent Supply Current: I_{CC} (static) = 4 μ A max ($T_a = 25^\circ\text{C}$)

Function Table

| Output Control | Enable G | D | HD74HC373 Q | HD74HC533 \bar{Q} |
|----------------|-------------|---|----------------|------------------------|
| L | H | H | H | L |
| L | H | L | L | H |
| L | L | X | No change | No change |
| H | X | X | Z | Z |

X : irrelevant

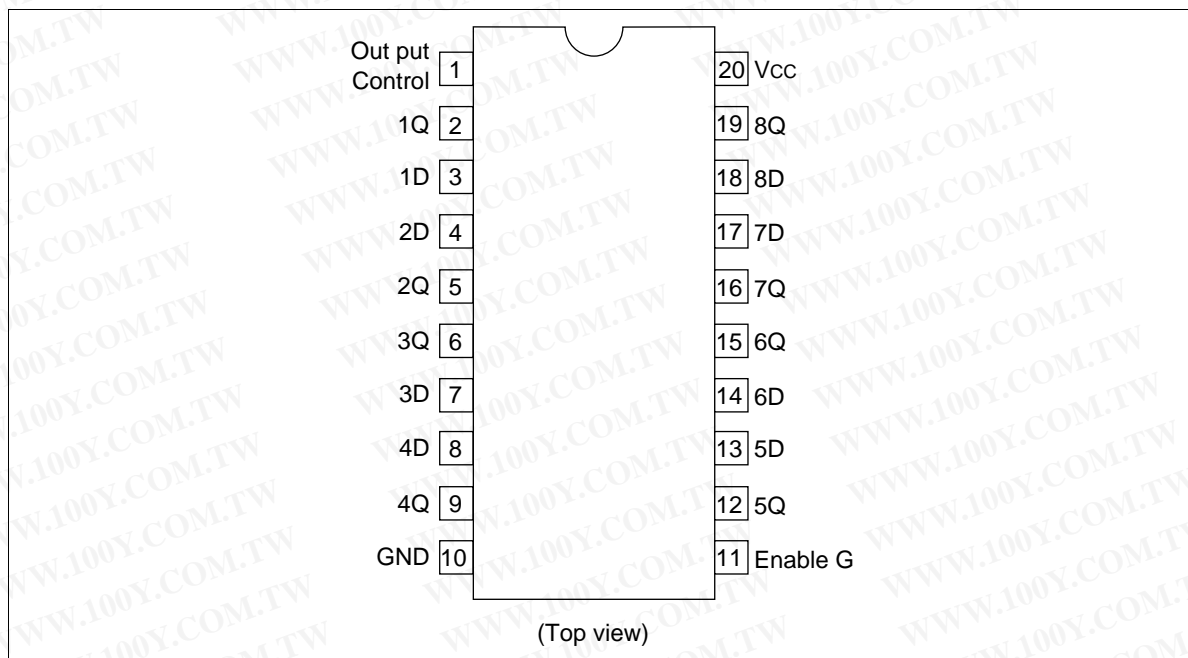
Z : Off (high-impedance) state of a 3-state output.

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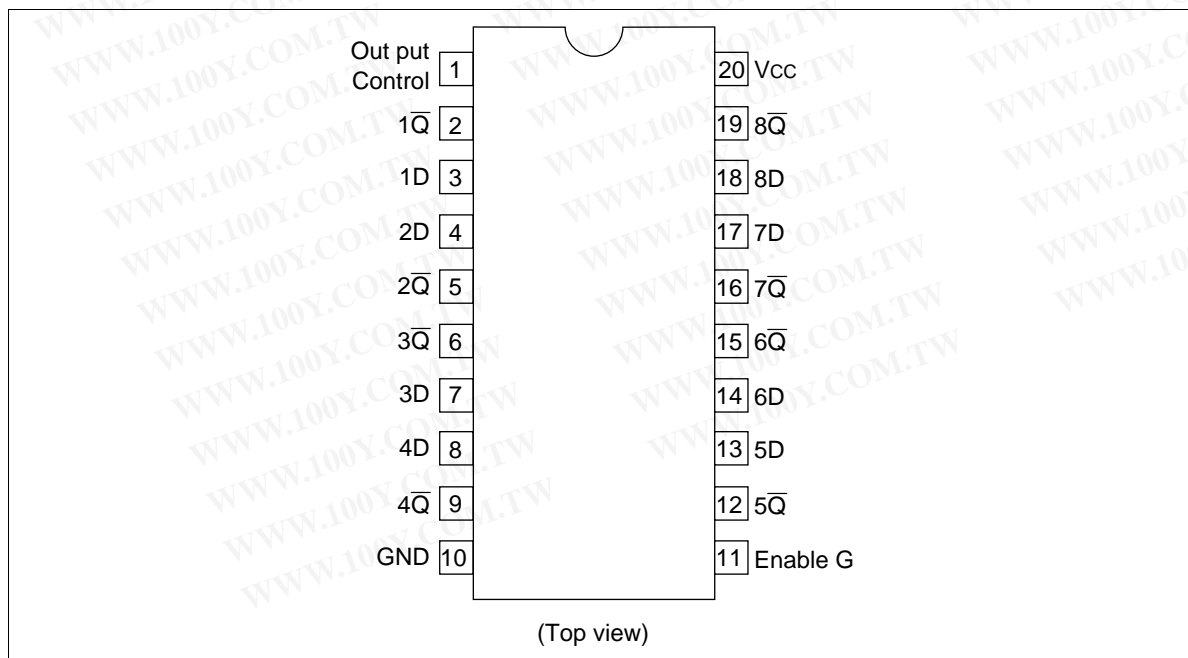
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Pin Arrangement

HD74HC373



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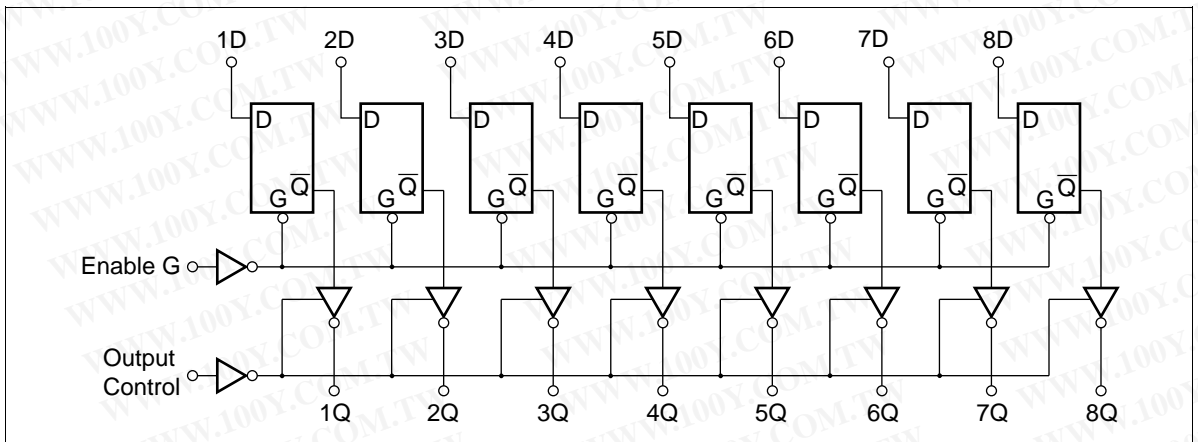
Absolute Maximum Ratings

| Item | Symbol | Rating | Unit |
|-----------------------------------|-------------------|------------------------|-------------|
| Supply voltage range | V_{CC} | -0.5 to +7.0 | V |
| Input voltage | V_{IN} | -0.5 to $V_{CC} + 0.5$ | V |
| Output voltage | V_{OUT} | -0.5 to $V_{CC} + 0.5$ | V |
| DC current drain per pin | I_{OUT} | ± 35 | mA |
| DC current drain per V_{CC} GND | I_{CC}, I_{GND} | ± 75 | mA |
| DC input diode current | I_{IK} | ± 20 | mA |
| DC output diode current | I_{OK} | ± 20 | mA |
| Power Dissipation per package | P_T | 500 | mW |
| Storage temperature | Tstg | -65 to +150 | $^{\circ}C$ |

Block Diagram

HD74HC373

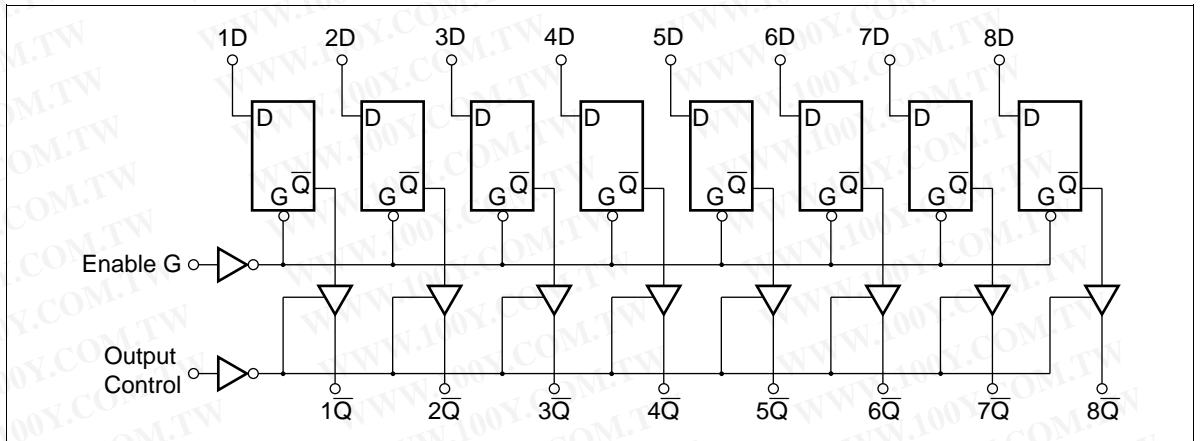
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DC Characteristics

| Item | Symbol | V _{cc} (V) | Ta = 25°C | | | Ta = -40 to +85°C | | Unit | Test Conditions | | |
|--------------------------|-----------------|--------------------------|-----------------|-----|------|-------------------|------|--------------------------|---|---------------------------|--|
| | | | Min | Typ | Max | Min | Max | | | | |
| Input voltage | V _{IH} | 2.0 | 1.5 | — | — | 1.5 | — | V | | | |
| | | 4.5 | 3.15 | — | — | 3.15 | — | | | | |
| | | 6.0 | 4.2 | — | — | 4.2 | — | | | | |
| | V _{IL} | 2.0 | — | — | 0.5 | — | 0.5 | | | V | |
| | | 4.5 | — | — | 1.35 | — | 1.35 | | | | |
| | | 6.0 | — | — | 1.8 | — | 1.8 | | | | |
| Output voltage | V _{OH} | 2.0 | 1.9 | 2.0 | — | 1.9 | — | V | Vin = V _{IH} or V _{IL} I _{OH} = -20 μA | | |
| | | 4.5 | 4.4 | 4.5 | — | 4.4 | — | | | | |
| | | 6.0 | 5.9 | 6.0 | — | 5.9 | — | | | | |
| | | 4.5 | 4.18 | — | — | 4.13 | — | | | I _{OH} = -6 mA | |
| | | 6.0 | 5.68 | — | — | 5.63 | — | | | I _{OH} = -7.8 mA | |
| | | 6.0 | — | 0.0 | 0.1 | — | 0.1 | | | V | Vin = V _{IH} or V _{IL} I _{OL} = 20 μA |
| | V _{OL} | 4.5 | — | 0.0 | 0.1 | — | 0.1 | | | | |
| | | 6.0 | — | 0.0 | 0.1 | — | 0.1 | | | | |
| | | 4.5 | — | — | 0.26 | — | 0.33 | I _{OL} = 6 mA | | | |
| | | 6.0 | — | — | 0.26 | — | 0.33 | I _{OL} = 7.8 mA | | | |
| | | Off-state output current | I _{OZ} | 6.0 | — | — | ±0.5 | — | ±5.0 | μA | |
| | | Input current | I _{in} | 6.0 | — | — | ±0.1 | — | ±1.0 | μA | Vin = V _{CC} or GND |
| Quiescent supply current | I _{CC} | 6.0 | — | — | 4.0 | — | 40 | μA | Vin = V _{CC} or GND, Iout = 0 μA | | |

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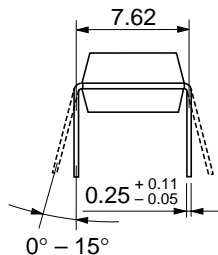
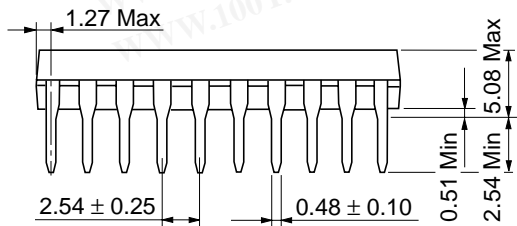
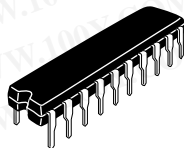
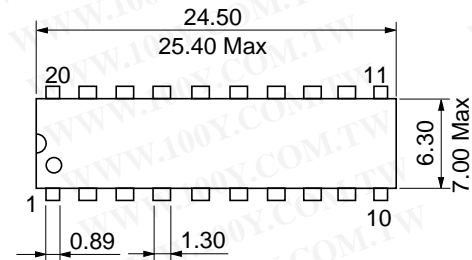
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AC Characteristics ($C_L = 50 \text{ pF}$, Input $t_r = t_f = 6 \text{ ns}$)

| Item | Symbol | V_{CC} (V) | $T_a = 25^\circ\text{C}$ | | | $T_a = -40 \text{ to } +85^\circ\text{C}$ | | Unit | Test Conditions |
|------------------------|-----------|--------------|--------------------------|-----|-----|---|-----|------|-----------------|
| | | | Min | Typ | Max | Min | Max | | |
| Propagation delay time | t_{PLH} | 2.0 | — | — | 150 | — | 190 | ns | G to Q |
| | | 4.5 | — | 18 | 30 | — | 38 | | |
| | | 6.0 | — | — | 26 | — | 33 | | |
| | t_{PHL} | 2.0 | — | — | 125 | — | 155 | ns | D to Q |
| | | 4.5 | — | 16 | 25 | — | 31 | | |
| | | 6.0 | — | — | 21 | — | 26 | | |
| Output enable time | t_{ZL} | 2.0 | — | — | 150 | — | 190 | ns | |
| | | 4.5 | — | 12 | 30 | — | 38 | | |
| | | 6.0 | — | — | 26 | — | 33 | | |
| | t_{ZH} | 2.0 | — | — | 150 | — | 190 | ns | |
| | | 4.5 | — | 15 | 30 | — | 38 | | |
| | | 6.0 | — | — | 26 | — | 33 | | |
| Output disable time | t_{LZ} | 2.0 | — | — | 150 | — | 190 | ns | |
| | | 4.5 | — | 13 | 30 | — | 38 | | |
| | | 6.0 | — | — | 26 | — | 33 | | |
| | t_{HZ} | 2.0 | — | — | 150 | — | 190 | ns | |
| | | 4.5 | — | 16 | 30 | — | 38 | | |
| | | 6.0 | — | — | 26 | — | 33 | | |
| Setup time | t_{su} | 2.0 | 100 | — | — | 125 | — | ns | |
| | | 4.5 | 20 | 1 | — | 25 | — | | |
| | | 6.0 | 17 | — | — | 21 | — | | |
| Hold time | t_h | 2.0 | 50 | — | — | 65 | — | ns | |
| | | 4.5 | 10 | 1 | — | 13 | — | | |
| | | 6.0 | 9 | — | — | 11 | — | | |
| Pulse width | t_w | 2.0 | 80 | — | — | 100 | — | ns | |
| | | 4.5 | 16 | 6 | — | 20 | — | | |
| | | 6.0 | 14 | — | — | 17 | — | | |
| Output rise/fall time | t_{TLH} | 2.0 | — | — | 60 | — | 75 | ns | |
| | | 4.5 | — | 4 | 12 | — | 15 | | |
| | | 6.0 | — | — | 10 | — | 13 | | |
| Input capacitance | C_{in} | — | — | 5 | 10 | — | 10 | pF | |

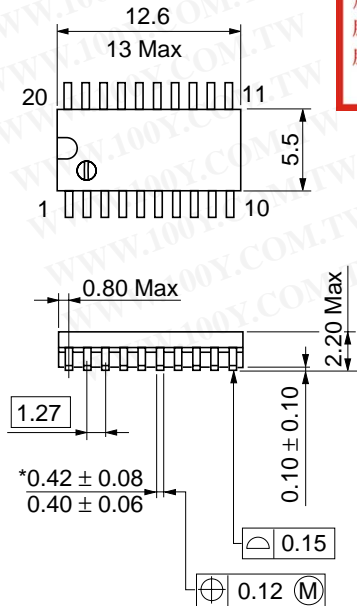
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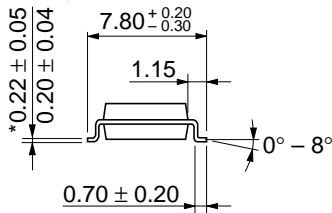
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| | |
|--------------------------|----------|
| Hitachi Code | DP-20N |
| JEDEC | — |
| EIAJ | Conforms |
| Weight (reference value) | 1.26 g |

Unit: mm



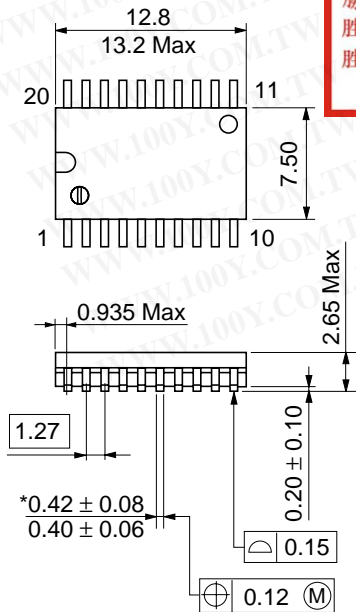
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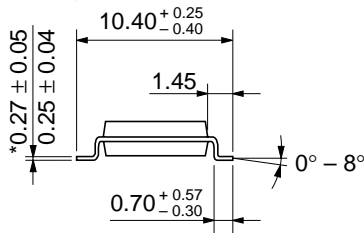
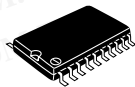
*Dimension including the plating thickness
 Base material dimension

| | |
|--------------------------|----------|
| Hitachi Code | FP-20DA |
| JEDEC | — |
| EIAJ | Conforms |
| Weight (reference value) | 0.31 g |

Unit: mm



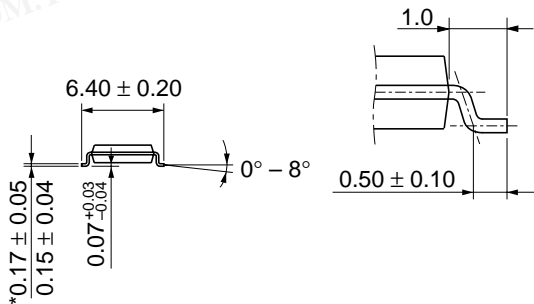
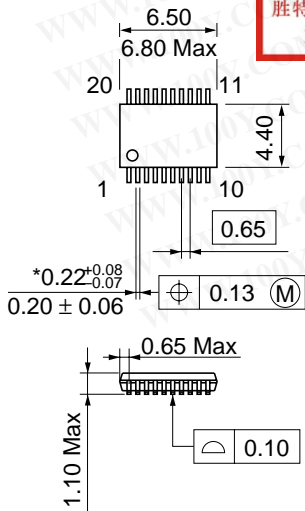
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| | |
|--------------------------|----------|
| Hitachi Code | FP-20DB |
| JEDEC | Conforms |
| EIAJ | — |
| Weight (reference value) | 0.52 g |

*Dimension including the plating thickness
 Base material dimension

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*Dimension including the plating thickness
 Base material dimension

| | |
|--------------------------|----------|
| Hitachi Code | TTP-20DA |
| JEDEC | — |
| EIAJ | — |
| Weight (reference value) | 0.07 g |

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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.
179 East Tasman Drive,
San Jose, CA 95134
Tel: <1> (408) 433-1990
Fax: <1> (408) 433-0223

Hitachi Europe GmbH
Electronic components Group
Dornacher Straße 3
D-85622 Feldkirchen, Munich
Germany
Tel: <49> (89) 9 9180-0
Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.
Electronic Components Group.
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA, United Kingdom
Tel: <44> (1628) 585000
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