# HD74HCT241

Octal Buffers/Line Drivers/Line Receivers
(with noninverted 3-state outputs)

HITACHI

## Description

The HD74HCT241 is a noninverting buffer and has one active low enable and one active high enable. Each enable independently controls 4 buffers.

This device does not have schmitt trigger inputs.

## Features

- LSTTL Output Logic Level Compatibility as well as CMOS Output Compatibility
- High Speed Operation: $t_{pd}$ (A to Y) = 10 ns typ ($C_L$ = 50 pF)
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage: $V_{CC}$ = 4.5 to 5.5 V
- Low Input Current: 1 µA max
- Low Quiescent Supply Current: $I_{CC}$ (static) = 4 µA max (Ta = 25°C)

## Function Table

| Inputs | | | Output |
|---|---|---|---|
| $1\overline{G}$ | 2G | A | Y |
| H | L | X | Z |
| L | H | H | H |
| L | H | L | L |

H : High level
L : Low level
X : Irrelevant
Z : Off (high impedance) state of a 3-state output

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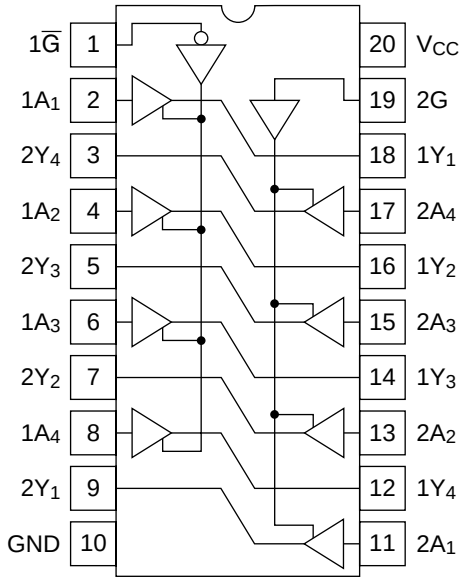
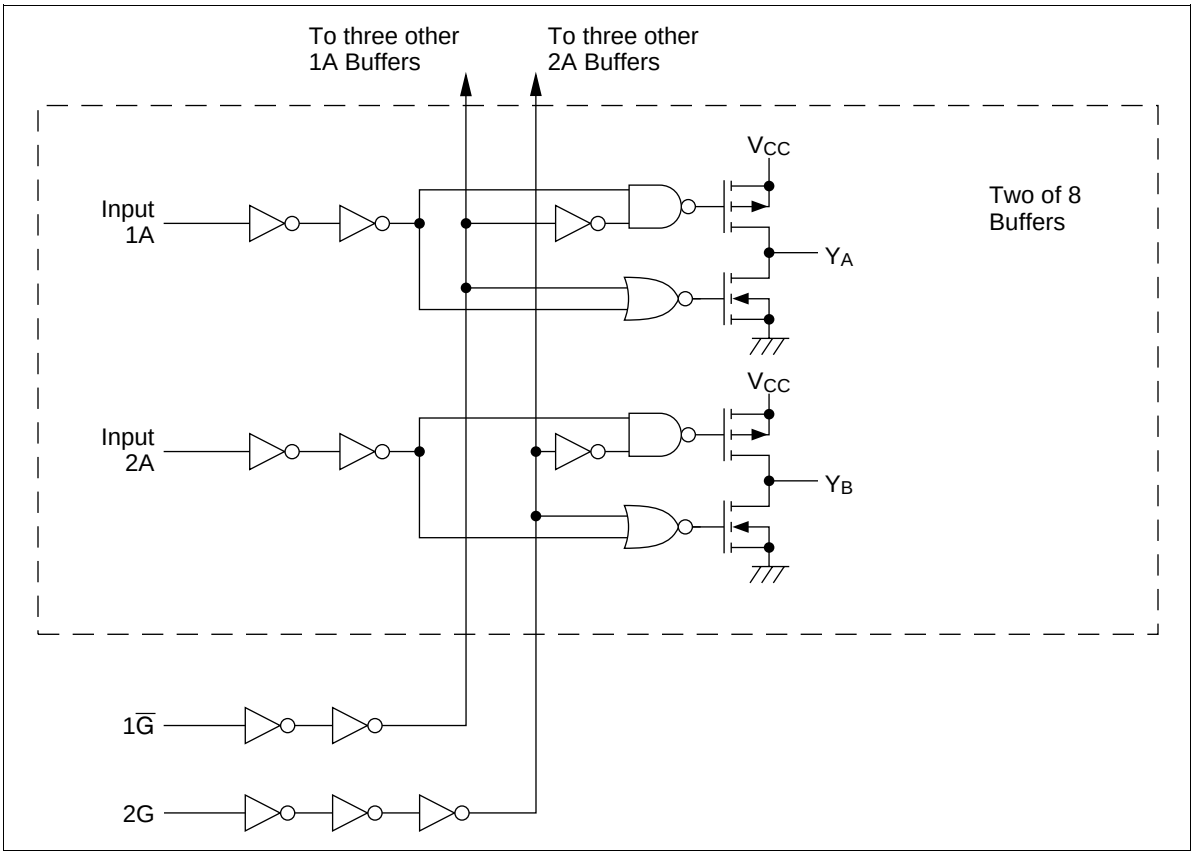
## Pin Arrangement




(Top view)

## Block Diagram




## 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 | °C |

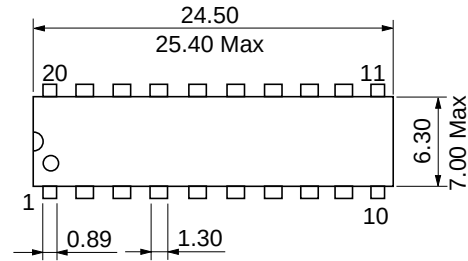
## DC Characteristics

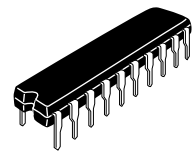
| Item | Symbol | Ta = 25°C | | | Ta = –40 to +85°C | | Unit | Test Conditions | |
|---|---|---|---|---|---|---|---|---|---|
| | | Min | Typ | Max | Min | Max | | $V_{CC}$ (V) | |
| Input voltage | $V_{IH}$ | 2.0 | — | — | 2.0 | — | V | 4.5 to 5.5 | |
| | $V_{IL}$ | — | — | 0.8 | — | 0.8 | V | 4.5 to 5.5 | |
| Output voltage | $V_{OH}$ | 4.4 | — | — | 4.4 | — | V | 4.5 | Vin = $V_{IH}$ or $V_{IL}$, $I_{OH}$ = –20 µA |
| | | 4.18 | — | — | 4.13 | — | | 4.5 | $I_{OH}$ = –6 mA |
| | $V_{OL}$ | — | — | 0.1 | — | 0.1 | V | 4.5 | Vin = $V_{IH}$ or $V_{IL}$, $I_{OL}$ = 20 µA |
| | | — | — | 0.26 | — | 0.33 | | 4.5 | $I_{OL}$ = 6 mA |
| Off-state output current | $I_{OZ}$ | — | — | ±0.5 | — | ±5.0 | µA | 5.5 | Vin = $V_{IH}$ or $V_{IL}$, Vout = $V_{CC}$ or GND |
| Input current | Iin | — | — | ±0.1 | — | ±1.0 | µA | 5.5 | Vin = $V_{CC}$ or GND |
| Quiescent current | $I_{CC}$ | — | — | 4.0 | — | 40 | µA | 5.5 | Vin = $V_{CC}$ or GND, Iout = 0 µA |

## AC Characteristics ($C_L$ = 50 pF, Input $t_r$ = $t_f$ = 6 ns)

| Item | Symbol | Ta = 25°C | | | Ta = –40 to +85°C | | Unit | Test Conditions |
|---|---|---|---|---|---|---|---|---|
| | | Min | Typ | Max | Min | Max | | $V_{CC}$ (V) |
| Propagation delay | $t_{PHL}$ | — | 11 | 20 | — | 25 | ns | 4.5 |
| time | $t_{PLH}$ | — | 9 | 20 | — | 25 | | 4.5 |
| Output enable | $t_{ZL}$ | — | 14 | 30 | — | 38 | ns | 4.5 |
| time | $t_{ZH}$ | — | 12 | 30 | — | 38 | | 4.5 |
| Output disable | $t_{LZ}$ | — | 13 | 30 | — | 38 | ns | 4.5 |
| time | $t_{HZ}$ | — | 17 | 30 | — | 38 | | 4.5 |
| Output rise/fall time | $t_{TLH}$ $t_{THL}$ | — | 4 | 12 | — | 15 | ns | 4.5 |
| Input capacitance | Cin | — | 5 | 10 | — | 10 | pF | — |

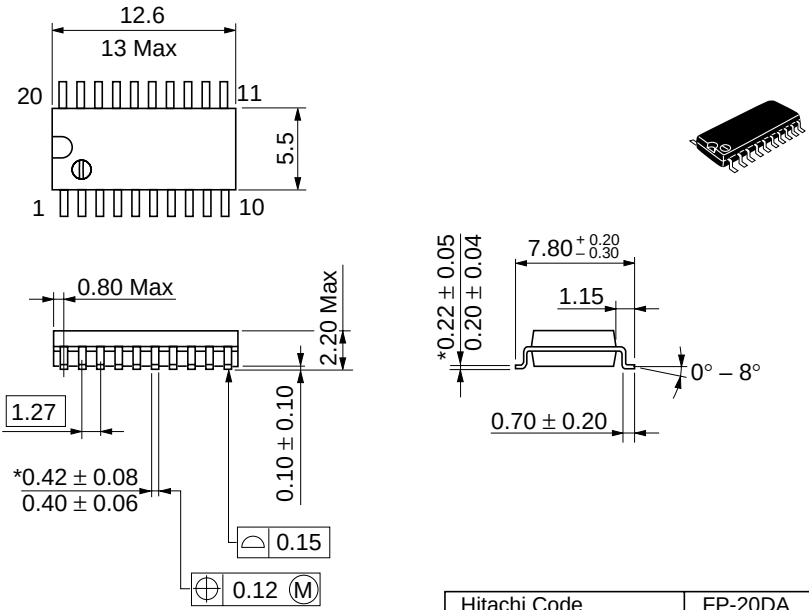
Unit: mm



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

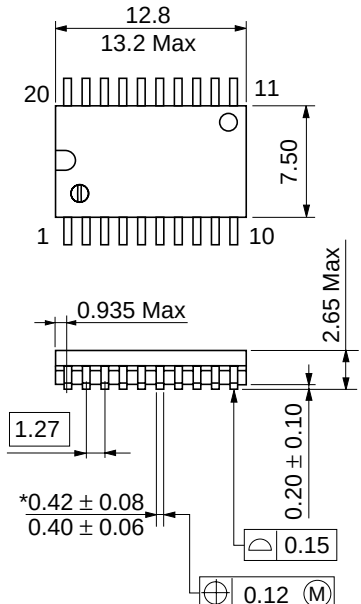
Unit: mm

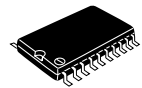


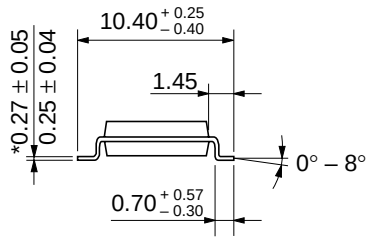

*Dimension including the plating thickness
Base material dimension

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

Unit: mm



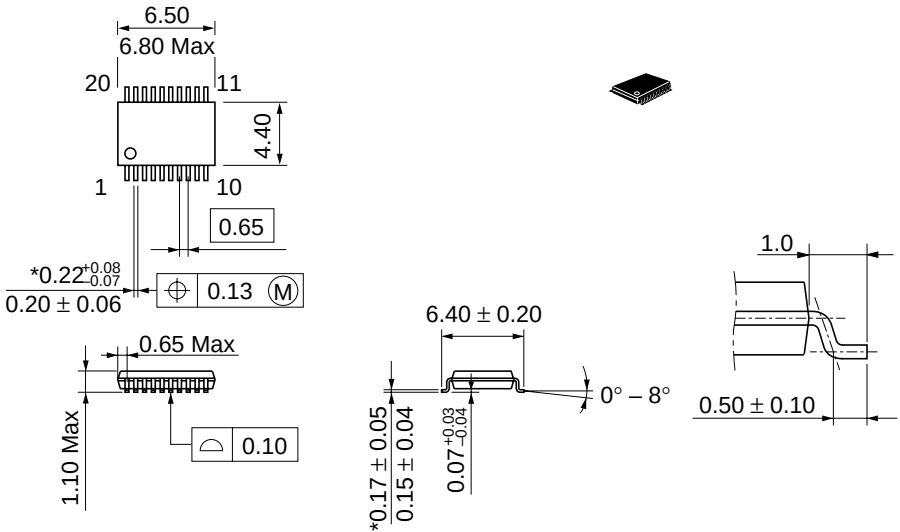






*Dimension including the plating thickness
Base material dimension

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

Unit: mm




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

*Dimension including the plating thickness
Base material dimension

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