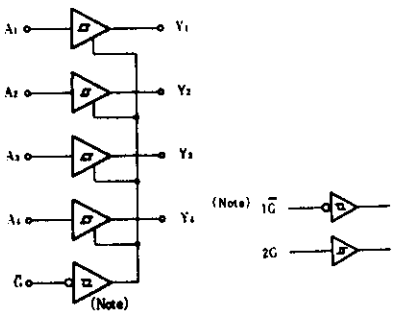
# HD74LS241 ●Octal Buffers/Line Drivers/Line Receivers (non inverted three-state outputs)

## ■BLOCK DIAGRAM (½)

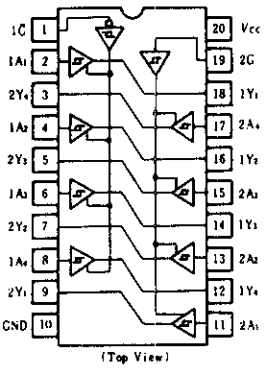



## ■FUNCTION TABLE

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

Note) H; high level,
L; low level,
X; irrelevant
Z; off (high-impedance) state of a 3-state output

## ■PIN ARRANGEMENT




## ■ELECTRICAL CHARACTERISTICS ($Ta = -20 \sim +75°C$)

| Item | | Symbol | Test Conditions | | min | typ* | max | Unit |
|---|---|---|---|---|---|---|---|---|
| Input voltage | | $V_{IH}$ | | | 2.0 | – | – | V |
| | | $V_{IL}$ | | | – | – | 0.8 | V |
| Hysteresis | | $V_T^+ - V_T^-$ | $V_{CC}=4.75V$ | | 0.2 | 0.4 | – | V |
| Output voltage | | $V_{OH}$ | $V_{CC}=4.75V$, $V_{IH}=2V$, $V_{IL}=0.8V$, $I_{OH}=-3mA$ | | 2.4 | – | – | V |
| | | | $V_{CC}=4.75V$, $V_{IH}=2V$, $V_{IL}=0.5V$, $I_{OH}=-15mA$ | | 2.0 | – | – | |
| | | $V_{OL}$ | $V_{CC}=4.75V$, $V_{IH}=2V$, $V_{IL}=0.8V$ | $I_{OL}=12mA$ | – | – | 0.4 | V |
| | | | | $I_{OL}=24mA$ | – | – | 0.5 | |
| Output current | | $I_{OZH}$ | $V_{CC}=5.25V$, $V_{IH}=2V$, $V_{IL}=0.8V$ | $V_O=2.7V$ | – | – | 20 | μA |
| | | $I_{OZL}$ | | $V_O=0.4V$ | – | – | −20 | |
| Input current | | $I_{IH}$ | $V_{CC}=5.25V$, $V_I=2.7V$ | | – | – | 20 | μA |
| | | $I_{IL}$ | $V_{CC}=5.25V$, $V_I=0.4V$ | | – | – | −0.2 | mA |
| | | $I_I$ | $V_{CC}=5.25V$, $V_I=7V$ | | – | – | 0.1 | mA |
| Short-circuit output current | | $I_{OS}$ | $V_{CC}=5.25V$ | | −40 | – | −225 | mA |
| Supply current** | Outputs high | $I_{CC}$ | $V_{CC}=5.25V$ | | – | 13 | 23 | mA |
| | Outputs low | | | | – | 27 | 46 | |
| | All outputs disabled | | | | – | 32 | 54 | |
| Input clamp voltage | | $V_{IK}$ | $V_{CC}=4.75V$, $I_{IN}=-18mA$ | | – | – | −1.5 | V |

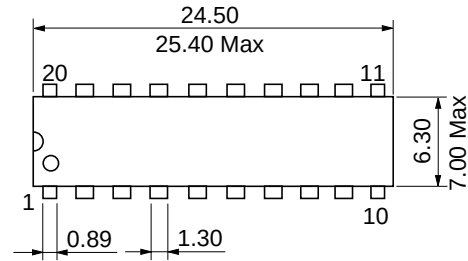
* $V_{CC}$=5V, $Ta$=25°C
** $I_{CC}$ is measured with all outputs open.

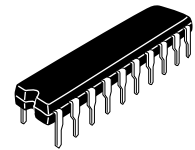
## ■SWITCHING CHARACTERISTICS ($V_{CC}=5V$, $Ta=25°C$)

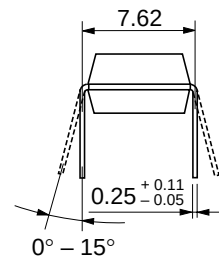
| Item | Symbol | Test Conditions | min | typ | max | Unit |
|---|---|---|---|---|---|---|
| Propagation delay time | $t_{PLH}$ | $C_L=45pF$, $R_L=667\Omega$ | – | 12 | 18 | ns |
| | $t_{PHL}$ | | – | 12 | 18 | |
| Output enable time | $t_{ZL}$ | | – | 20 | 30 | ns |
| | $t_{ZH}$ | | – | 15 | 23 | ns |
| Output disable time | $t_{LZ}$ | $C_L=5pF$, $R_L=667\Omega$ | – | 15 | 25 | ns |
| | $t_{HZ}$ | | – | 10 | 18 | ns |

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

Unit: mm

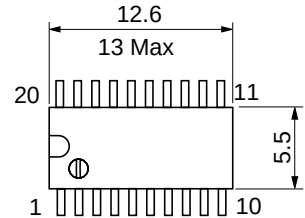


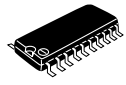



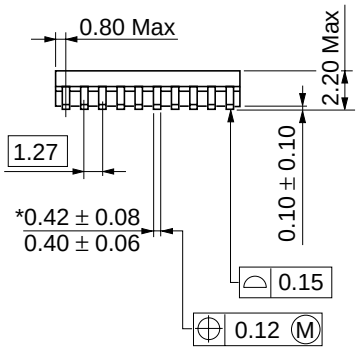


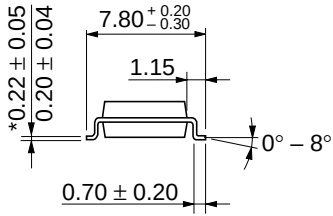

| | |
|---|---|
| Hitachi Code | DP-20N |
| JEDEC | — |
| EIAJ | Conforms |
| Weight (reference value) | 1.26 g |

Unit: mm



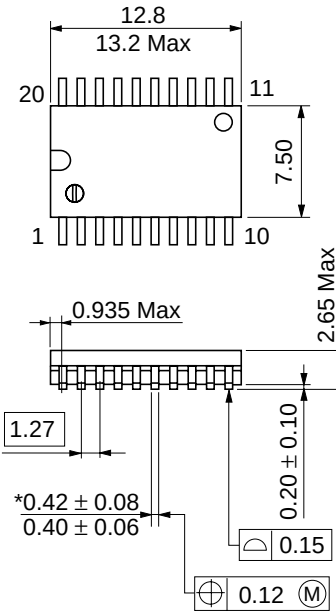


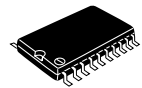



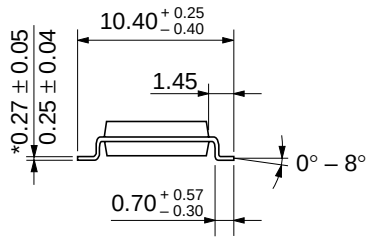

*Dimension including the plating thickness
Base material dimension

| | |
|---|---|
| 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 |

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