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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

Cautions

Keep safety first in your circuit designs!

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Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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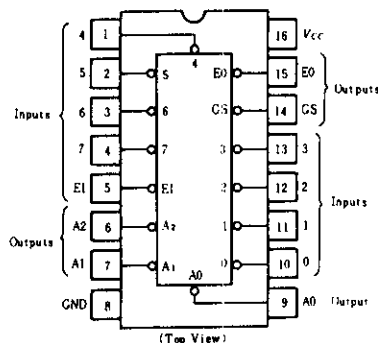
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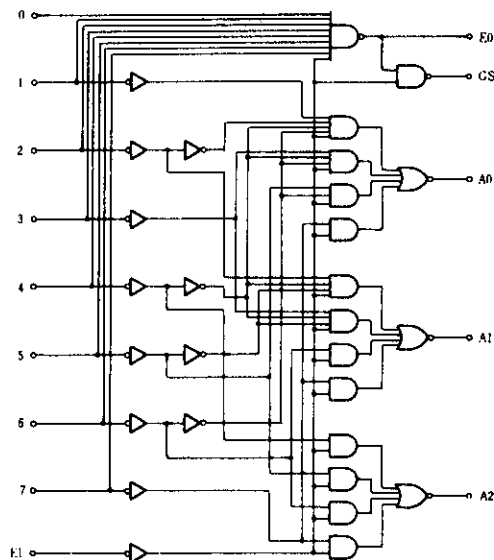
HD74LS148 ● 8-line-to-3-line Octal Priority Encoders

The HD74LS148 encodes eight data lines to three-line (4-2-1) binary (octal). Cascading circuitry (enable input EI and enable output EO) has been provided to allow octal expansion without the need for external circuitry. The data inputs and outputs are active at the low logic level.

■ PIN ARRANGEMENT



■ BLOCK DIAGRAM



■ FUNCTION TABLE

| Inputs | | | | | | | | | Outputs | | | | |
|--------|---|---|---|---|---|---|---|---|---------|----|----|----|----|
| EI | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | A2 | A1 | A0 | CS | EO |
| H | X | X | X | X | X | X | X | X | H | H | H | H | H |
| L | H | H | H | H | H | H | H | H | H | H | H | H | L |
| L | X | X | X | X | X | X | X | L | L | L | L | L | H |
| L | X | X | X | X | X | X | L | H | L | L | L | L | H |
| L | X | X | X | X | L | H | H | H | L | H | L | L | H |
| L | X | X | X | L | H | H | H | H | H | L | L | L | H |
| L | X | X | L | H | H | H | H | H | H | L | H | L | H |
| L | X | L | H | H | H | H | H | H | H | H | L | L | H |
| L | L | H | H | H | H | H | H | H | H | H | H | L | H |

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

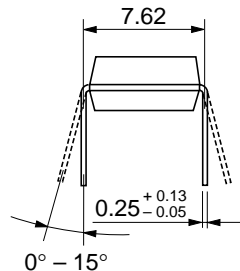
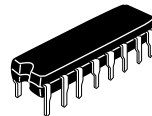
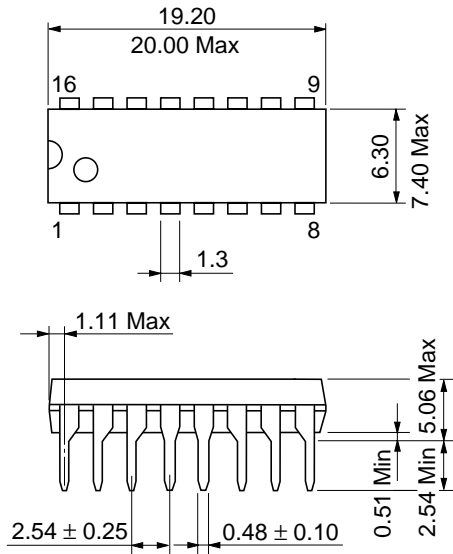
■ ELECTRICAL CHARACTERISTICS ($T_a = -20 \sim +75^\circ\text{C}$)

| 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 | I_{IH} | $V_{CC}=5.25\text{V}$, $V_I=2.7\text{V}$ | — | — | 40 | μA |
| | | | — | — | 20 | |
| | I_{IL} | $V_{CC}=5.25\text{V}$, $V_I=0.4\text{V}$ | — | — | -0.8 | mA |
| | | | — | — | -0.4 | |
| | I_I | $V_{CC}=5.25\text{V}$, $V_I=7\text{V}$ | — | — | 0.2 | mA |
| | | | — | — | 0.1 | |
| Short-circuit output current | I_{OS} | $V_{CC}=5.25\text{V}$ | -20 | — | -100 | mA |
| Supply current ** | I_{CC} | $V_{CC}=5.25\text{V}$ | Condition 1 | 12 | 20 | mA |
| | | | Condition 2 | 10 | 17 | |
| Input clamp voltage | V_{IK} | $V_{CC}=4.75\text{V}$, $I_{IH}=-18\text{mA}$ | — | — | -1.5 | V |

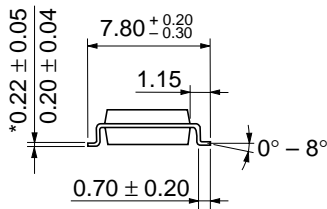
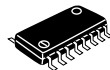
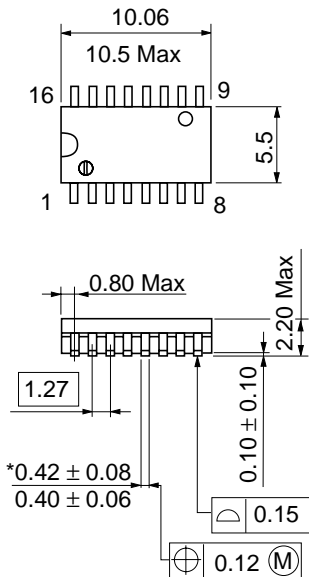
* $V_{CC}=5\text{V}$, $T_a=25^\circ\text{C}$

** The condition 1 is measured with inputs 7 and EI grounded, other inputs and outputs open, the condition 2 is measured with all inputs and outputs open.

Unit: mm

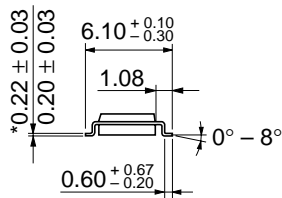
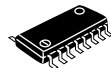
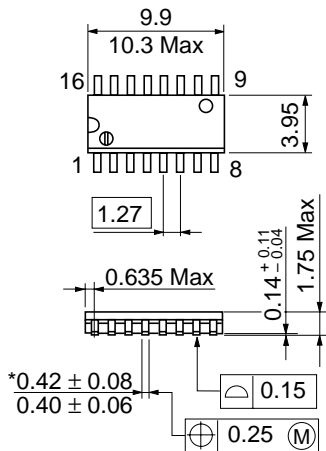


| | |
|--------------------------|----------|
| Hitachi Code | DP-16 |
| JEDEC | Conforms |
| EIAJ | Conforms |
| Weight (reference value) | 1.07 g |



*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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