

To all our customers

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

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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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HD74HC32

Quad. 2-input OR Gates

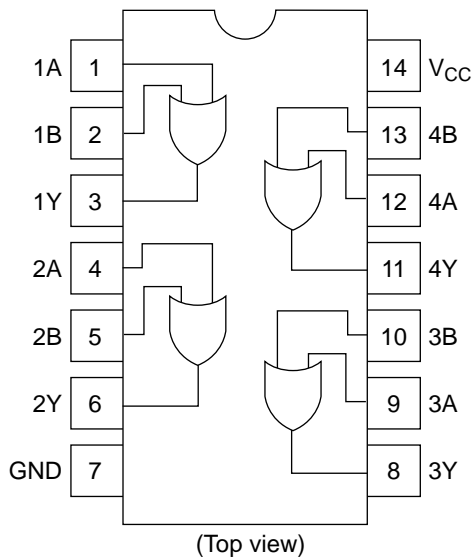
RENESAS

ADE-205-417 (Z)
1st. Edition
Sep. 2000

Features

- High Speed Operation: $t_{pd} = 10 \text{ ns typ}$ ($C_L = 50 \text{ pF}$)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2 \text{ to } 6 \text{ V}$
- Low Input Current: $1 \mu\text{A max}$
- Low Quiescent Supply Current: $I_{CC}(\text{static}) = 1 \mu\text{A max}$ ($T_a = 25^\circ\text{C}$)

Pin Arrangement



DC Characteristics

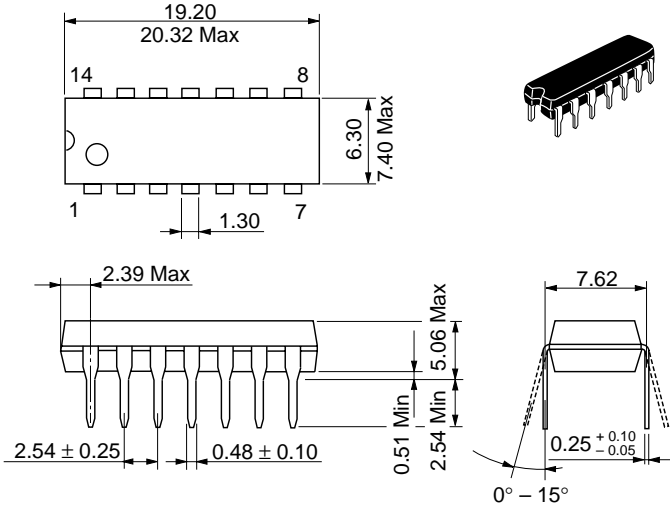
| Item | Symbol | V _{CC} (V) | Ta = 25°C | | Ta = -40 to +85°C | | Unit | Test Conditions | | |
|--------------------------|-----------------|---------------------|-----------|-----|-------------------|------|------|-----------------|--|---|
| | | | Min | Typ | Max | Min | | | Max | |
| Input voltage | 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} = -4 mA | |
| | | 6.0 | 5.68 | — | — | 5.63 | — | | I _{OH} = -5.2 mA | |
| | V _{OL} | 2.0 | — | 0.0 | 0.1 | — | 0.1 | V | Vin = V _{IH} or V _{IL} I _{OL} = 20 μA | |
| | | 4.5 | — | 0.0 | 0.1 | — | 0.1 | | | |
| | | 6.0 | — | 0.0 | 0.1 | — | 0.1 | | | |
| | | 4.5 | — | — | 0.26 | — | 0.33 | | | I _{OL} = 4 mA |
| | | 6.0 | — | — | 0.26 | — | 0.33 | | | I _{OL} = 5.2 mA |
| Input current | I _{in} | 6.0 | — | — | ±0.1 | — | ±1.0 | μA | Vin = V _{CC} or GND | |
| Quiescent supply current | I _{CC} | 6.0 | — | — | 1.0 | — | 10 | μA | Vin = V _{CC} or GND, I _{out} = 0 μA | |

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

| Item | Symbol | V_{CC} (V) | $T_a = 25^\circ\text{C}$ | | $T_a = -40$ to $+85^\circ\text{C}$ | | Unit | Test Conditions |
|------------------------|-----------|--------------|--------------------------|-----|------------------------------------|-----|------|-----------------|
| | | | Min | Typ | Max | Min | | |
| Propagation delay time | t_{PLH} | 2.0 | — | — | 100 | — | 125 | ns |
| | | 4.5 | — | 10 | 20 | — | 25 | |
| | | 6.0 | — | — | 17 | — | 21 | |
| | t_{PHL} | 2.0 | — | — | 100 | — | 125 | ns |
| | | 4.5 | — | 10 | 20 | — | 25 | |
| | | 6.0 | — | — | 17 | — | 21 | |
| Output rise time | t_{TLH} | 2.0 | — | — | 75 | — | 95 | ns |
| | | 4.5 | — | 5 | 15 | — | 19 | |
| | | 6.0 | — | — | 13 | — | 16 | |
| Output fall time | t_{THL} | 2.0 | — | — | 75 | — | 95 | ns |
| | | 4.5 | — | 5 | 15 | — | 19 | |
| | | 6.0 | — | — | 13 | — | 16 | |
| Input capacitance | C_{in} | — | — | 5 | 10 | — | 10 | pF |

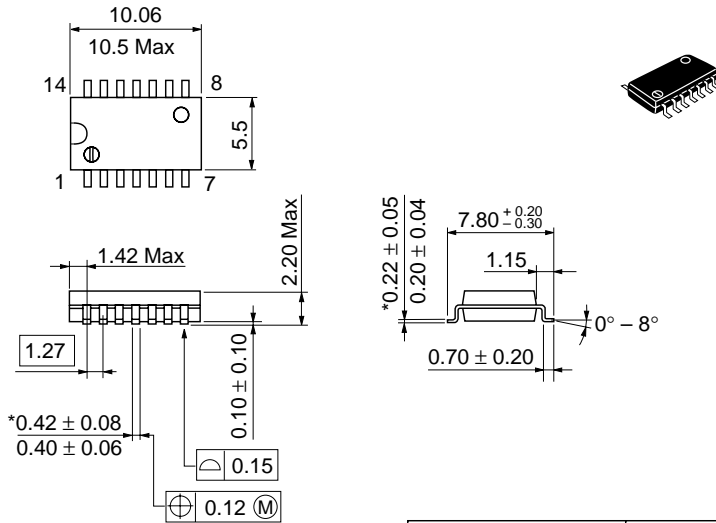
Package Dimensions

Unit: mm



| | |
|------------------------|----------|
| Hitachi Code | DP-14 |
| JEDEC | Conforms |
| EIAJ | Conforms |
| Mass (reference value) | 0.97 g |

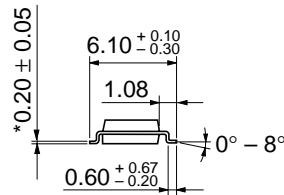
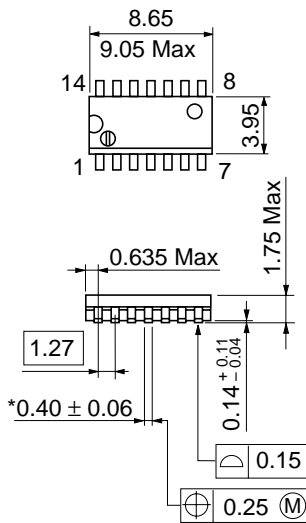
Unit: mm



| | |
|------------------------|----------|
| Hitachi Code | FP-14DA |
| JEDEC | — |
| EIAJ | Conforms |
| Mass (reference value) | 0.23 g |

*Dimension including the plating thickness
Base material dimension

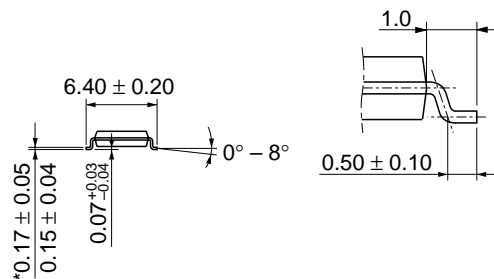
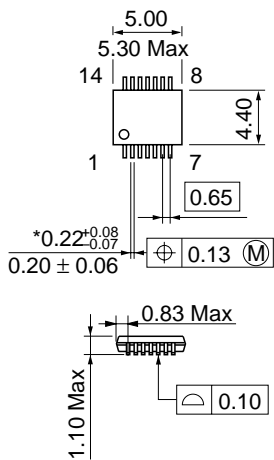
Unit: mm



| | |
|------------------------|----------|
| Hitachi Code | FP-14DN |
| JEDEC | Conforms |
| EIAJ | Conforms |
| Mass (reference value) | 0.13 g |

*Pd plating

Unit: mm



| | |
|------------------------|---------|
| Hitachi Code | TTP-14D |
| JEDEC | — |
| EIAJ | — |
| Mass (reference value) | 0.05 g |

*Dimension including the plating thickness
Base material dimension

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