

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC74HC7266AP, TC74HC7266AF

QUAD EXCLUSIVE NOR GATE

The TC74HC7266A are high speed CMOS QUAD EXCLUSIVE NOR GATE fabricated with silicon gate C²MOS technology.

They achieve the high speed operation similar to equivalent LSTTL while maintaining the CMOS low power dissipation.

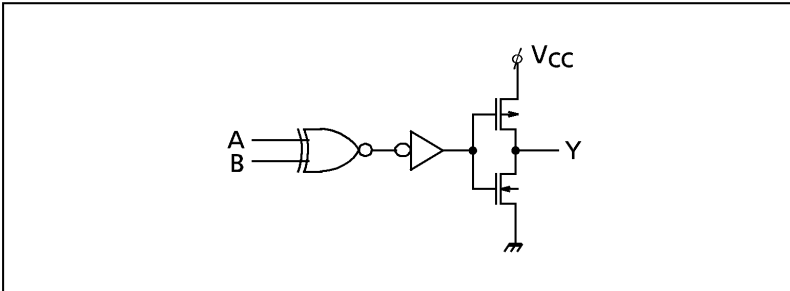
Each output has a buffer, which provide high noise immunity and stable output.

All inputs are equipped with protection circuits against static discharge or transient excess voltage.

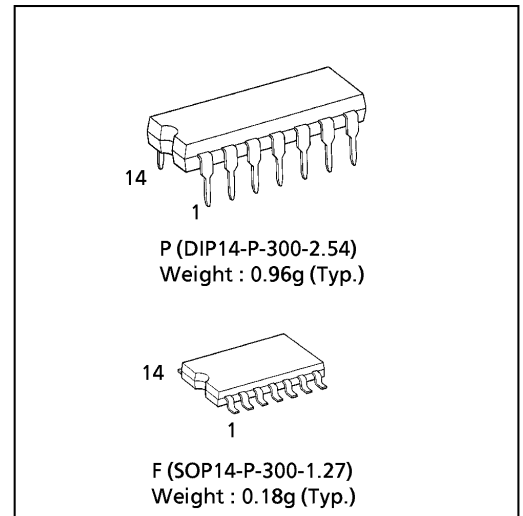
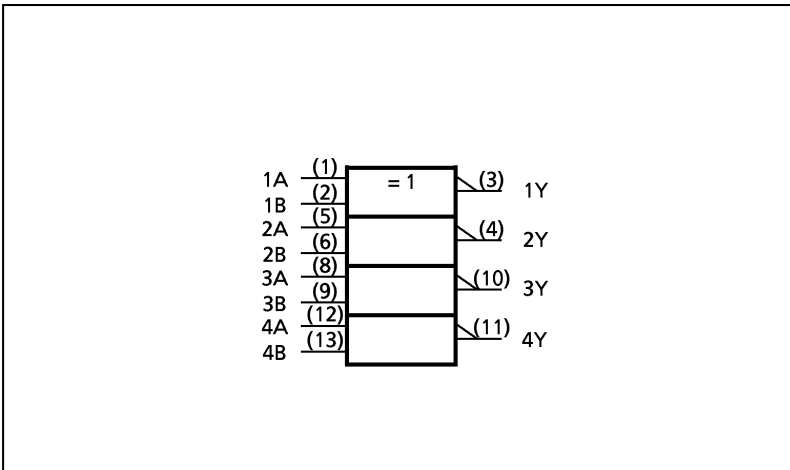
FEATURES :

- High Speed..... $t_{pd} = 10\text{ns}(\text{typ.})$ at $V_{CC} = 5\text{V}$
- Low Power Dissipation..... $I_{CC} = 1\mu\text{A}(\text{Max.})$ at $T_a = 25^\circ\text{C}$
- High Noise Immunity..... $V_{NIH} = V_{NIL} = 28\% V_{CC}$ (Min.)
- Output drive Capability..... 10 LSTTL Loads
- Symmetrical Output Impedance... $|I_{OH}| = I_{OL} = 4\text{mA}$ (Min.)
- Balanced Propagation Delays... $t_{pLH} \approx t_{pHL}$
- Wide Operating Voltage Range... V_{CC} (opr.) = 2V~6V
- Pin and Function Compatible with 74LS266

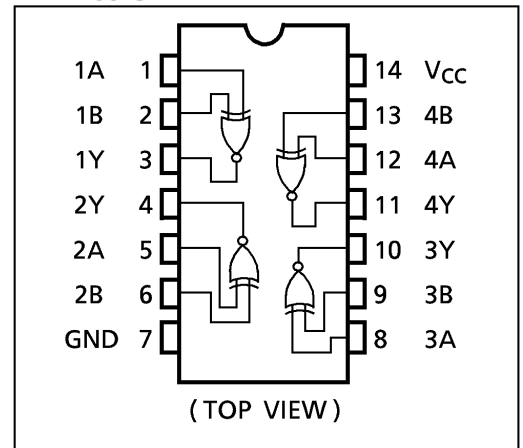
SYSTEM DIAGRAM



IEC LOGIC SYMBOL



PIN ASSIGNMENT



TRUTH TABLE

| A | B | Y |
|---|---|---|
| L | L | H |
| L | H | L |
| H | L | L |
| H | H | H |

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ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | VALUE | UNIT |
|-----------------------------|-----------|------------------------|------|
| Supply Voltage Range | V_{CC} | -0.5~7 | V |
| DC Input Voltage | V_{IN} | -0.5~ $V_{CC}+0.5$ | V |
| DC Output Voltage | V_{OUT} | -0.5~ $V_{CC}+0.5$ | V |
| Input Diode Current | I_{IK} | ±20 | mA |
| Output Diode Current | I_{OK} | ±20 | mA |
| DC Output Current | I_{OUT} | ±25 | mA |
| DC V_{CC} /Ground Current | I_{CC} | ±50 | mA |
| Power Dissipation | P_D | 500 (DIP)* / 180 (SOP) | mW |
| Storage Temperature | T_{stg} | -65~150 | °C |

*500mW in the range of $T_a = -40^{\circ}\text{C} \sim 65^{\circ}\text{C}$. From $T_a = 65^{\circ}\text{C}$ to 85°C a derating factor of $-10\text{mW}/^{\circ}\text{C}$ shall be applied until 300mW.

RECOMMENDED OPERATING CONDITIONS

| PARAMETER | SYMBOL | VALUE | UNIT |
|--------------------------|------------|---|------|
| Supply Voltage | V_{CC} | 2~6 | V |
| Input Voltage | V_{IN} | 0~ V_{CC} | V |
| Output Voltage | V_{OUT} | 0~ V_{CC} | V |
| Operating Temperature | T_{opr} | -40~85 | °C |
| Input Rise and Fall Time | t_r, t_f | 0~1000 ($V_{CC} = 2.0\text{V}$) 0~500 ($V_{CC} = 4.5\text{V}$) 0~400 ($V_{CC} = 6.0\text{V}$) | ns |

DC ELECTRICAL CHARACTERISTICS

| PARAMETER | SYMBOL | TEST CONDITION | V_{CC} (V) | $T_a = 25^{\circ}\text{C}$ | | | $T_a = -40 \sim 85^{\circ}\text{C}$ | | UNIT |
|-----------------------------|----------|--|---------------------------|----------------------------|------|------|-------------------------------------|------|---------------|
| | | | | MIN. | TYP. | MAX. | MIN. | MAX. | |
| High - Level Input Voltage | V_{IH} | | 2.0 | 1.50 | — | — | 1.50 | — | V |
| | | | 4.5 | 3.15 | — | — | 3.15 | — | |
| | | | 6.0 | 4.20 | — | — | 4.20 | — | |
| Low - Level Input Voltage | V_{IL} | | 2.0 | — | — | 0.50 | — | 0.50 | V |
| | | | 4.5 | — | — | 1.35 | — | 1.35 | |
| | | | 6.0 | — | — | 1.80 | — | 1.80 | |
| High - Level Output Voltage | V_{OH} | $V_{IN} = V_{IH}$ or V_{IL} | $I_{OH} = -20\mu\text{A}$ | 2.0 | 1.9 | 2.0 | — | 1.9 | V |
| | | | | 4.5 | 4.4 | 4.5 | — | 4.4 | |
| | | 6.0 | 5.9 | 6.0 | — | 5.9 | | | |
| | | $I_{OH} = -4\text{ mA}$ $I_{OH} = -5.2\text{ mA}$ | 4.5 | 4.18 | 4.31 | — | 4.13 | — | |
| 6.0 | 5.68 | | 5.80 | — | 5.63 | — | | | |
| Low - Level Output Voltage | V_{OL} | $V_{IN} = V_{IH}$ or V_{IL} | $I_{OL} = 20\mu\text{A}$ | 2.0 | — | 0.0 | 0.1 | — | V |
| | | | | 4.5 | — | 0.0 | 0.1 | — | |
| | | 6.0 | — | 0.0 | 0.1 | — | 0.1 | | |
| | | $I_{OL} = 4\text{ mA}$ $I_{OL} = 5.2\text{ mA}$ | 4.5 | — | 0.17 | 0.26 | — | 0.33 | |
| 6.0 | — | | 0.18 | 0.26 | — | 0.33 | | | |
| Input Leakage Current | I_{IN} | $V_{IN} = V_{CC}$ or GND | 6.0 | — | — | ±0.1 | — | ±1.0 | μA |
| Quiescent Supply Current | I_{CC} | $V_{IN} = V_{CC}$ or GND | 6.0 | — | — | 1.0 | — | 10.0 | |

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AC ELECTRICAL CHARACTERISTICS ($C_L = 15\text{pF}$, $V_{CC} = 5\text{V}$, $T_a = 25^\circ\text{C}$, Input $t_r = t_f = 6\text{ns}$)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|------------------------|-----------|----------------|------|------|------|------|
| Output Transition Time | t_{TLH} | | — | 4 | 8 | ns |
| | t_{THL} | | | | | |
| Propagation Delay Time | t_{pLH} | | — | 10 | 17 | ns |
| | t_{pHL} | | | | | |

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

| PARAMETER | SYMBOL | TEST CONDITION | $T_a = 25^\circ\text{C}$ | | | $T_a = -40\sim 85^\circ\text{C}$ | | UNIT | |
|-------------------------------|-----------|----------------|--------------------------|------|------|----------------------------------|------|------|------|
| | | | V_{CC} (V) | MIN. | TYP. | MAX. | MIN. | | MAX. |
| Output Transition Time | t_{TLH} | | 2.0 | — | 30 | 75 | — | 95 | ns |
| | t_{THL} | | 4.5 | — | 8 | 15 | — | 19 | |
| | | | 6.0 | — | 7 | 13 | — | 16 | |
| Propagation Delay Time | t_{pLH} | | 2.0 | — | 40 | 100 | — | 125 | ns |
| | t_{pHL} | | 4.5 | — | 12 | 20 | — | 25 | |
| | | | 6.0 | — | 10 | 17 | — | 21 | |
| Input Capacitance | C_{IN} | | | — | 5 | 10 | — | 10 | pF |
| Power Dissipation Capacitance | C_{PD} | Note (1) | | — | 30 | — | — | — | |

Note (1) C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load.

Average operating current can be obtained by the equation :

$$I_{CC}(\text{opr}) = C_{PD} \cdot V_{CC} \cdot f_{IN} + I_{CC}/4 \text{ (per Gate)}$$

DIP 14PIN OUTLINE DRAWING (DIP14-P-300-2.54)

Unit in mm



SOP 14PIN (200mil BODY) OUTLINE DRAWING (SOP14-P-300-1.27)

Unit in mm

