



U74AHC126

CMOS IC

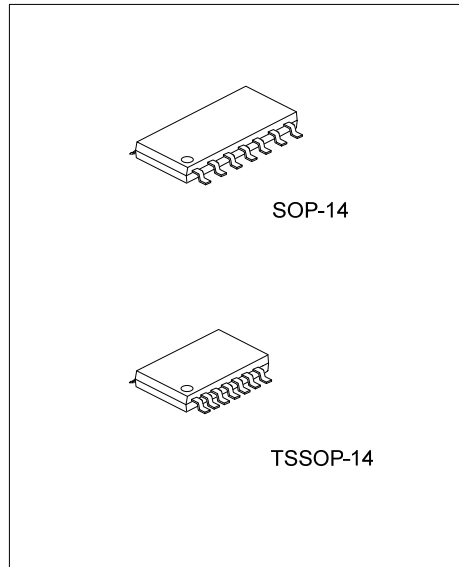
QUADRUPLE BUS BUFFER GATES WITH 3-STATE OUTPUTS

DESCRIPTION

The **U74HC126** is a quadruple bus buffer gate with 3-state outputs and 4 channels.

FEATURES

- * Operate from 2V to 5.5V
- * Max t_{pd} of 5.5ns at 5 V($CL=15pF$)
- * Typical $V_{IH} < 2.1V$ at $V_{CC}=3V, T_a=25^\circ C$
- * Typical $V_{IL} > 0.9V$ at $V_{CC}=3V, T_a=25^\circ C$

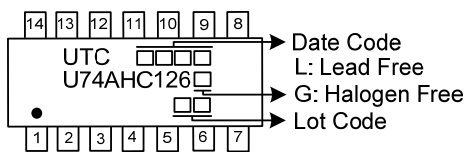


ORDERING INFORMATION

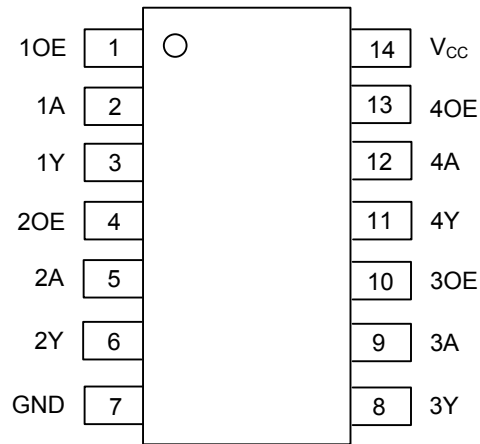
| Ordering Number | | Package | Packing |
|------------------|------------------|----------|-----------|
| Lead Free | Halogen Free | | |
| U74AHC126L-S14-R | U74AHC126G-S14-R | SOP-14 | Tape Reel |
| U74AHC126L-P14-R | U74AHC126G-P14-R | TSSOP-14 | Tape Reel |

| | |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <p>U74AHC126G-S14-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p> | <p>(1) R: Tape Reel</p> <p>(2) S14: SOP-14, P14: TSSOP-14</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|

MARKING



■ PIN CONFIGURATION

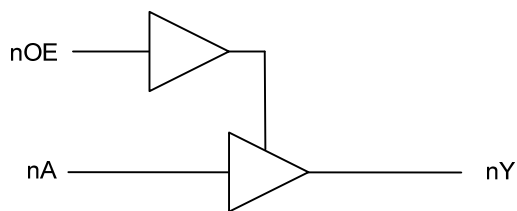


■ FUNCTION TABLE

| INPUTS(OE) | INPUTS(A) | OUTPUT(Y) |
|------------|-----------|-----------|
| H | L | L |
| H | H | H |
| L | X | Z |

Note: H: HIGH voltage level L: LOW voltage level Z: high impedance X: don't care

■ LOGIC DIAGRAM



■ ABSOLUTE MAXIMUM RATING ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-------------------------|-----------|-----------------------|--------------------|
| Supply Voltage | V_{CC} | -0.5 ~ 7 | V |
| Input Voltage | V_{IN} | -0.5 ~ 7 | V |
| Output Voltage | V_{OUT} | -0.5 ~ $V_{CC} + 0.5$ | V |
| V_{CC} or GND Current | I_{CC} | ± 50 | mA |
| Output Current | I_{OUT} | ± 25 | mA |
| Input Clamp Current | I_{IK} | -20 | mA |
| Output Clamp Current | I_{OK} | ± 20 | mA |
| Operating Temperature | T_{OPR} | -40 ~ + 85 | $^{\circ}\text{C}$ |
| Storage Temperature | T_{STG} | -65 ~ + 150 | $^{\circ}\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
 Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---------------------|----------|---------|----------------------|
| Junction to Ambient | SOP-14 | 76 | $^{\circ}\text{C/W}$ |
| | TSSOP-14 | 113 | $^{\circ}\text{C/W}$ |

■ RECOMMENDED OPERATING CONDITIONS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------------------------|------------|-------------------------------------|------|-----|----------|---------------|
| Supply Voltage | V_{CC} | | 2 | | 5.5 | V |
| High-Level Input Voltage | V_{IH} | $V_{CC}=2\text{V}$ | 1.5 | | | V |
| | | $V_{CC}=3\text{V}$ | 2.1 | | | V |
| | | $V_{CC}=5.5\text{V}$ | 3.85 | | | V |
| Low-Level Input Voltage | V_{IL} | $V_{CC}=2\text{V}$ | | | 0.5 | V |
| | | $V_{CC}=3\text{V}$ | | | 0.9 | V |
| | | $V_{CC}=5.5\text{V}$ | | | 1.65 | V |
| Input Voltage | V_{IN} | | 0 | | 5.5 | V |
| Output Voltage | V_{OUT} | | 0 | | V_{CC} | V |
| High-Level Input Current | I_{OH} | $V_{CC}=2\text{V}$ | | | -50 | μA |
| | | $V_{CC}=3.3\text{V}\pm 0.3\text{V}$ | | | -4 | mA |
| | | $V_{CC}=5\text{V}\pm 0.5\text{V}$ | | | -8 | mA |
| Low-Level Input Current | I_{OL} | $V_{CC}=2\text{V}$ | | | 50 | μA |
| | | $V_{CC}=3.3\text{V}\pm 0.3\text{V}$ | | | 4 | mA |
| | | $V_{CC}=5\text{V}\pm 0.5\text{V}$ | | | 8 | mA |
| Input Transition Rise or Fall rate | t_R, t_F | $V_{CC}=3.3\text{V}\pm 0.3\text{V}$ | | | 100 | ns/V |
| | | $V_{CC}=5\text{V}\pm 0.5\text{V}$ | | | 20 | ns/V |

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---------------------------|----------------------|-------------------------------------------------------------------------------------|------|-----|------|------|
| Output Voltage High-Level | V _{OH} | V _{CC} =2V, I _{OH} =-50μA | 1.9 | 2 | | V |
| | | V _{CC} =3V, I _{OH} =-50μA | 2.9 | 3 | | V |
| | | V _{CC} =4.5V, I _{OH} =-50μA | 4.4 | 4.5 | | V |
| | | V _{CC} =3V, I _{OH} =-4mA | 2.58 | | | V |
| | | V _{CC} =4.5V, I _{OH} =-8mA | 3.94 | | | V |
| Output Voltage Low-Level | V _{OL} | V _{CC} =2V, I _{OL} =50μA | | | 0.1 | V |
| | | V _{CC} =3V, I _{OL} =50μA | | | 0.1 | V |
| | | V _{CC} =4.5V, I _{OL} =50μA | | | 0.1 | V |
| | | V _{CC} =3V, I _{OL} =4mA | | | 0.36 | V |
| | | V _{CC} =4.5V, I _{OL} =8mA | | | 0.36 | V |
| Input Leakage Current | I _{I(LEAK)} | V _{CC} =0V~5.5V, V _{IN} = V _{CC} or GND | | | ±100 | nA |
| Output Off-State Current | I _{OZ} | V _{CC} =5.5V, V _{OUT} = V _{CC} or GND | | | ±250 | nA |
| Quiescent Supply Current | I _Q | V _{CC} =5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0 | | | 4 | μA |
| Input Capacitance | C _I | V _{CC} =5V | | 4 | 10 | pF |

■ SWITCHING CHARACTERISTICS (C_L=15pF, T_A=25°C, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---------------------------------------------|------------------------------------|----------------------------|-----|-----|------|------|
| Propagation Delay From Input A to Output Y | t _{PLH} /t _{PHL} | V _{CC} =3.3V±0.3V | 1 | | 9.5 | ns |
| | | V _{CC} =5V±0.5V | 1 | | 6.5 | ns |
| Propagation Delay From Input OE to Output Y | t _{PZH} /t _{PZL} | V _{CC} =3.3V±0.3V | 1 | | 9.5 | ns |
| | | V _{CC} =5V±0.5V | 1 | | 6 | ns |
| Propagation Delay From Input OE to Output Y | t _{PHZ} /t _{PLZ} | V _{CC} =3.3V±0.3V | 1 | | 11.5 | ns |
| | | V _{CC} =5V±0.5V | 1 | | 8 | ns |

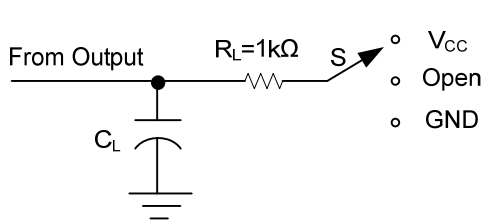
■ SWITCHING CHARACTERISTICS (C_L=50pF, T_A=25°C, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---------------------------------------------|------------------------------------|----------------------------|-----|-----|-----|------|
| Propagation Delay From Input A to Output Y | t _{PLH} /t _{PHL} | V _{CC} =3.3V±0.3V | 1 | | 13 | ns |
| | | V _{CC} =5V±0.5V | 1 | | 8.5 | ns |
| Propagation Delay From Input OE to Output Y | t _{PZH} /t _{PZL} | V _{CC} =3.3V±0.3V | 1 | | 13 | ns |
| | | V _{CC} =5V±0.5V | 1 | | 8 | ns |
| Propagation Delay From Input OE to Output Y | t _{PHZ} /t _{PLZ} | V _{CC} =3.3V±0.3V | 1 | | 15 | ns |
| | | V _{CC} =5V±0.5V | 1 | | 10 | ns |

■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

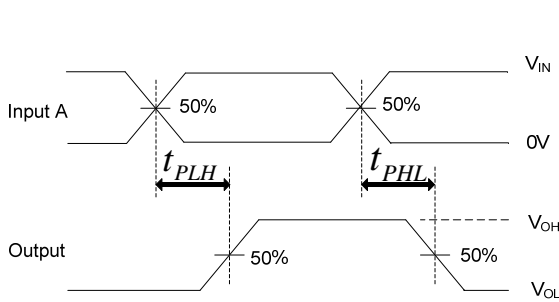
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-------------------------------|-----------------|-----------------|-----|-----|-----|------|
| Power Dissipation Capacitance | C _{PD} | No Load, f=1MHz | | 14 | | pF |

■ TEST CIRCUIT AND WAVEFORMS

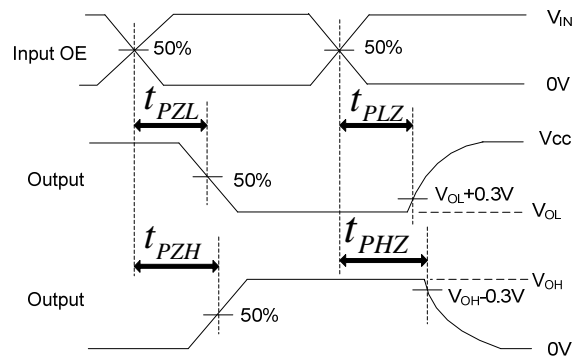


TEST CIRCUIT

| TEST | S |
|-------------------|----------|
| t_{PLH}/t_{PHL} | Open |
| t_{PHZ}/t_{PZH} | GND |
| t_{PLZ}/t_{PZL} | V_{CC} |



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

Note: C_L includes probe and jig capacitance.

All input pulses are supplied by generators having the following characteristics: PRR ≤ 1 MHz, $Z_o = 50\Omega$, $t_r \leq 3$ ns, $t_f \leq 3$ ns.

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