



U74LVC2G126

CMOS IC

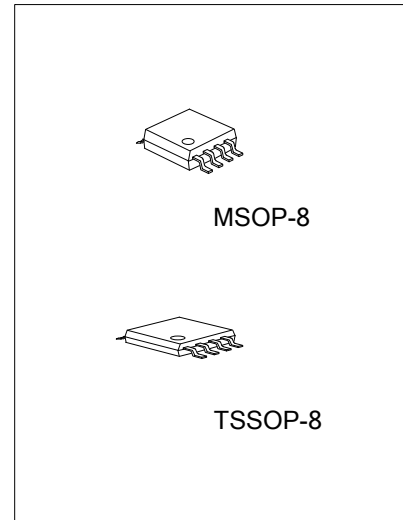
DUAL BUS BUFFER GATE WITH 3-STATE OUTPUTS

DESCRIPTION

The **U74LVC2G126** consists of two bus buffers with 3-state output controlled by enable input (nOE), when nOE is low, the output is disabling.

Inputs can be driven from either 3.3V or 5V devices, so the device can be used in a mix 3.3V/5V system.

This device is full specified for partial power-down protective circuit, preventing the backflow current through the device when it is powered down.



FEATURES

- * Operation voltage range: 1.65~5.5V
- * Support 5V V_{CC} operation
- * Low power dissipation
- * Input accept voltage to 5.5V

ORDERING INFORMATION

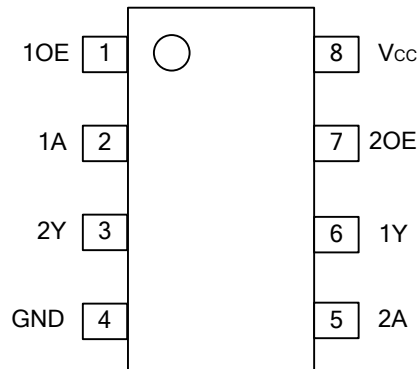
| Ordering Number | | Package | Packing |
|--------------------|--------------------|---------|-----------|
| Lead Free | Halogen Free | | |
| U74LVC2G126L-SM1-R | U74LVC2G126G-SM1-R | MSOP-8 | Tape Reel |
| U74LVC2G126L-P08-R | U74LVC2G126G-P08-R | TSSOP-8 | Tape Reel |

| | |
|---|---|
| <p>U74LVC2G08G-SM1-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p> | <p>(1) R: Tape Reel (2) SM1: MSOP-8, P08: TSSOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|---|---|

MARKING

| MSOP-8 | TSSOP-8 |
|--|--|
| <p>Date Code L: Lead Free G: Halogen Free Lot Code</p> | <p>Date Code L: Lead Free G: Halogen Free Lot Code</p> |

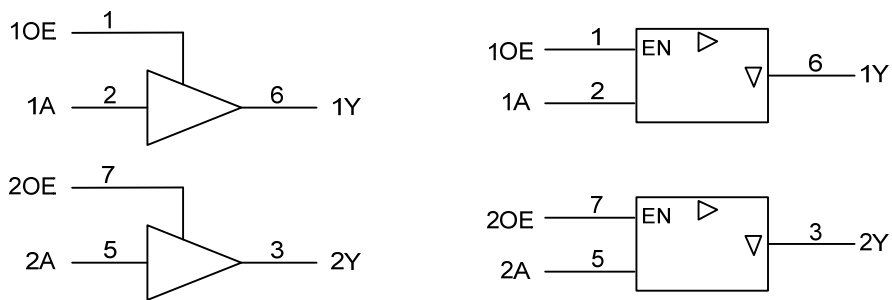
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

| INPUT(nOE) | INPUT(A) | OUTPUT(Y) |
|------------|----------|-----------|
| H | L | L |
| H | H | H |
| L | X | Z |

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATING (unless otherwise specified)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-------------------------------------|------------|---------------------|------|
| Supply Voltage | V_{CC} | -0.5 ~ 6.5 | V |
| Input Voltage | V_{IN} | -0.5 ~ 6.5 | V |
| Output Voltage | Enable | -0.5 ~ $V_{CC}+0.5$ | V |
| | Disable | -0.5 ~ 6.5 | V |
| | Power-down | -0.5 ~ 6.5 | V |
| V_{CC} or GND Current | I_{CC} | ±100 | mA |
| Input Clamp Current($V_{IN}<0$) | I_{IK} | -50 | mA |
| Output Clamp Current($V_{OUT}<0$) | I_{OK} | -50 | mA |
| Output Current | I_{OUT} | ±50 | mA |
| Power Dissipation | P_D | 300 | mW |
| Storage Temperature | T_{STG} | -65 ~ +150 | °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.

■ RECOMMENDED OPERATING CONDITIONS

| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------------------------|------------|--------------------------|------|-----|----------|------|
| Supply Voltage | V_{CC} | | 1.65 | | 5.5 | V |
| Input Voltage | V_{IN} | | 0 | | 5.5 | V |
| Output Voltage | Enable | $V_{CC} = 1.65\sim 5.5V$ | 0 | | V_{CC} | V |
| | Disable | $V_{CC} = 1.65\sim 5.5V$ | 0 | | 5.5 | V |
| | Power-down | $V_{CC} = 0V$ | 0 | | 5.5 | V |
| Input Transition Rise or Fall Rate | t_R, t_F | $V_{CC} = 1.65\sim 2.7V$ | 0 | | 20 | ns/V |
| | | $V_{CC} = 2.7\sim 5.5V$ | 0 | | 10 | ns/V |
| Operating Temperature | T_A | | -40 | | 125 | °C |

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

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|----------------------|---|--------------------------|------|--------------------------|------|
| Positive-Going Input Threshold Voltage | V _{T+} | V _{CC} =1.65V~1.95V | 0.65× V _{CC} | | | V |
| | | V _{CC} =2.3V~2.7V | 1.7 | | | V |
| | | V _{CC} =2.7V~3.6V | 2 | | | V |
| | | V _{CC} =4.5V~5.5V | 0.7× V _{CC} | | | V |
| Negative-Going Input Threshold Voltage | V _{T-} | V _{CC} =1.65V~1.95V | | | 0.35× V _{CC} | V |
| | | V _{CC} =2.3V~2.7V | | | 0.7 | V |
| | | V _{CC} =2.7V~3.6V | | | 0.8 | V |
| | | V _{CC} =4.5V~5.5V | | | 0.3× V _{CC} | V |
| High-Level Output Voltage | V _{OH} | V _{CC} =1.65V~5.5V, I _{OH} =-100μA | V _{CC} -0.1 | | | V |
| | | V _{CC} =1.65V, I _{OH} =-4mA | 1.2 | | | V |
| | | V _{CC} =2.3V, I _{OH} =-8mA | 1.9 | | | V |
| | | V _{CC} =2.7V, I _{OH} =-12mA | 2.2 | | | V |
| | | V _{CC} =3V, I _{OH} =-24mA | 2.3 | | | V |
| | | V _{CC} =4.5V, I _{OH} =-32mA | 3.8 | | | V |
| Low-Level Output Voltage | V _{OL} | V _{CC} =1.65V~5.5V, I _{OL} =100μA | | | 0.1 | V |
| | | V _{CC} =1.65V, I _{OL} =4mA | | | 0.45 | V |
| | | V _{CC} =2.3V, I _{OL} =8mA | | | 0.3 | V |
| | | V _{CC} =2.7V, I _{OL} =12mA | | | 0.4 | V |
| | | V _{CC} =3V, I _{OL} =24mA | | | 0.55 | V |
| | | V _{CC} =4.5V, I _{OL} =32mA | | | 0.55 | V |
| Input Leakage Current | I _{I(LEAK)} | V _{CC} =5.5V, V _{IN} =5.5V or GND | | ±0.1 | ±5 | μA |
| Output OFF -State Current | I _{OZ} | V _{CC} =3.6V, V _{OUT} =V _{CC} or GND | | ±0.1 | ±10 | μA |
| Power OFF Leakage Current | I _{OFF} | V _{CC} =0V, V _{IN} or V _{OUT} =5.5V | | ±0.1 | ±10 | μA |
| Quiescent Supply Current | I _Q | V _{CC} =5.5V, V _{IN} =V _{CC} or GND I _{OUT} =0 | | 0.1 | 10 | μA |
| Additional Quiescent Supply Current | Δ I _Q | V _{CC} =2.3V~5.5V, One input at V _{CC} - 0.6V, other inputs at V _{CC} or GND | | 5 | 500 | μA |
| Input Capacitance | C _{IN} | V _{IN} =V _{CC} or GND | | 2 | | pF |

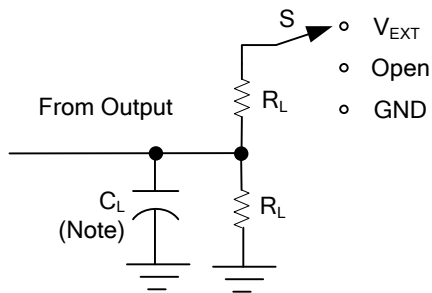
■ DYNAMIC CHARACTERISTICS

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|-------------------|------------------------|-----|-----|------|------|
| Propagation Delay From Input(A) to Output(Y) | t_{PHL}/t_{PLH} | $V_{CC}=1.8V\pm 0.15V$ | 1 | 3.9 | 9.8 | ns |
| | | $V_{CC}=2.5V\pm 0.2V$ | 0.5 | 2.6 | 4.9 | ns |
| | | $V_{CC}=2.7V$ | 1 | 2.8 | 4.7 | ns |
| | | $V_{CC}=3.3V\pm 0.3V$ | 0.5 | 2.4 | 4.3 | ns |
| | | $V_{CC}=5.0V\pm 0.5V$ | 0.5 | 1.9 | 3.2 | ns |
| Propagation Delay From Input(nOE) to Output(Y) | t_{PZH}/t_{PZL} | $V_{CC}=1.8V\pm 0.15V$ | 1.0 | 4.1 | 10 | ns |
| | | $V_{CC}=2.5V\pm 0.2V$ | 1.0 | 2.6 | 5 | ns |
| | | $V_{CC}=2.7V$ | 1.0 | 2.8 | 4.7 | ns |
| | | $V_{CC}=3.3V\pm 0.3V$ | 1.0 | 2.4 | 4.1 | ns |
| | | $V_{CC}=5.0V\pm 0.5V$ | 0.5 | 1.8 | 3.1 | ns |
| Propagation Delay From Input(nOE) to Output(Y) | t_{PLZ}/t_{PHZ} | $V_{CC}=1.8V\pm 0.15V$ | 1 | 3.3 | 12.6 | ns |
| | | $V_{CC}=2.5V\pm 0.2V$ | 0.5 | 1.9 | 5.7 | ns |
| | | $V_{CC}=2.7V$ | 1 | 3.0 | 4.8 | ns |
| | | $V_{CC}=3.3V\pm 0.3V$ | 1 | 2.5 | 4.4 | ns |
| | | $V_{CC}=5.0V\pm 0.5V$ | 0.5 | 1.8 | 3.3 | ns |

■ OPERATING CHARACTERISTICS ($T_A=25^\circ C$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-------------------------------|----------|-----------------|-----|-----|-----|------|
| Power Dissipation Capacitance | C_{PD} | Output Enable | | 17 | | pF |
| | | Output Disable | | 5 | | pF |

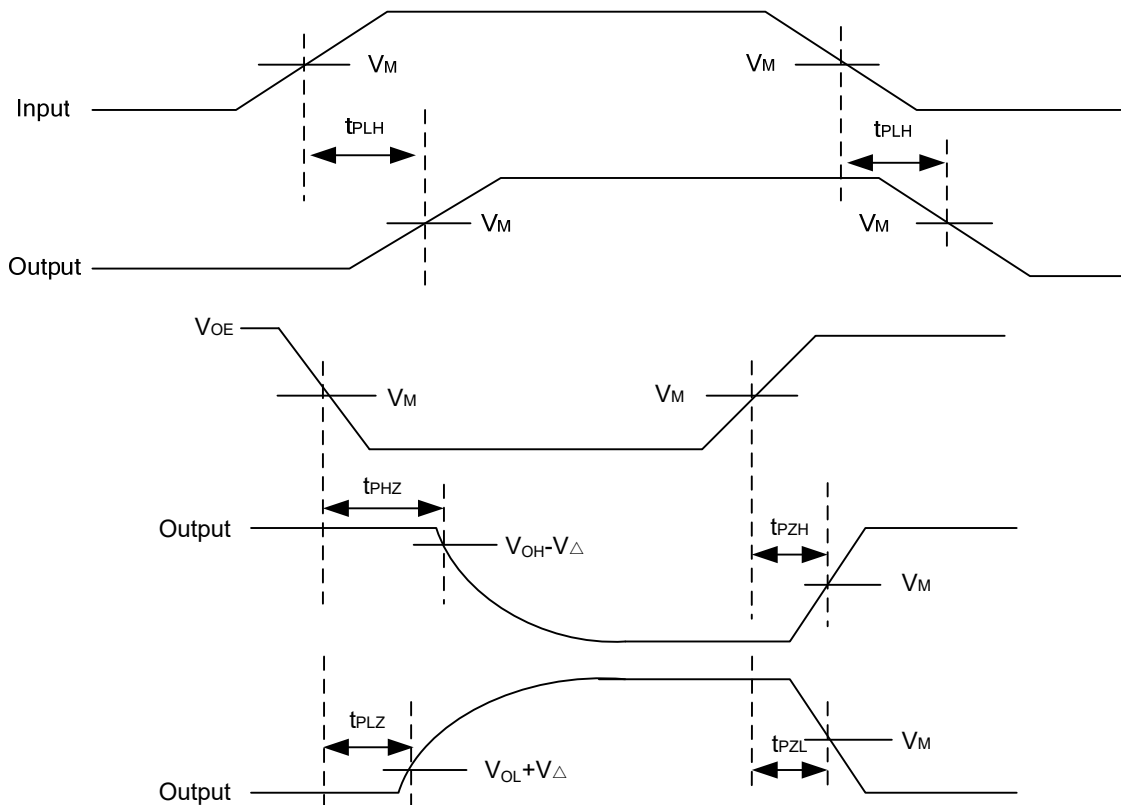
TEST CIRCUIT AND WAVEFORMS



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

Note : C_L includes probe and jig capacitance.

| V_{CC} | V_{IN} | t_r, t_f | V_M | V_{EXT} | C_L | R_L | V_{Δ} |
|------------------|----------|--------------|------------|--------------|-------|--------------|--------------|
| $1.8V \pm 0.15V$ | V_{CC} | $\leq 2ns$ | $V_{CC}/2$ | $2 * V_{CC}$ | 30pF | 1K Ω | 0.15V |
| $2.5V \pm 0.2V$ | V_{CC} | $\leq 2ns$ | $V_{CC}/2$ | $2 * V_{CC}$ | 30pF | 500 Ω | 0.15V |
| 2.7V | 2.7V | $\leq 2.5ns$ | 1.5V | 6V | 50pF | 500 Ω | 0.3V |
| $3.3V \pm 0.3V$ | 2.7V | $\leq 2.5ns$ | 1.5V | 6V | 50pF | 500 Ω | 0.3V |
| $5V \pm 0.5V$ | V_{CC} | $\leq 2.5ns$ | $V_{CC}/2$ | $2 * V_{CC}$ | 50pF | 500 Ω | 0.3V |



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