

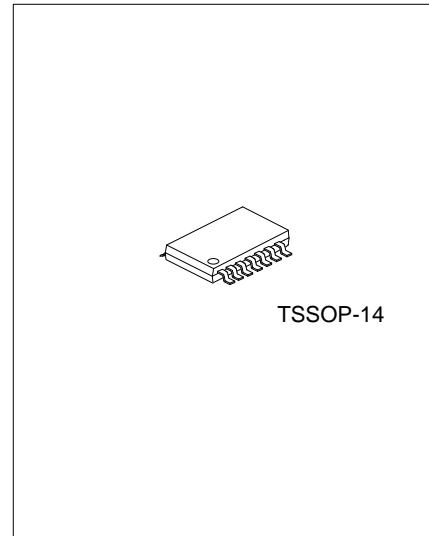


## U74LV126A

Advance

CMOS IC

### QUADRUPLE BUS BUFFER GATES WITH 3-STATE OUTPUTS



#### DESCRIPTION

The U74LV126A quadruple bus buffer gates are designed for 2V to 5.5V V<sub>CC</sub> operation.

The U74LV126A devices feature independent line drivers with 3-state outputs. Each output is disabled when the associated output-enable (OE) input is low.

To ensure the high-impedance state during power up or power down, OE should be tied to GND through a pull-down resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

#### FEATURES

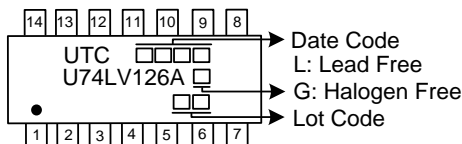
- \* 2V to 5.5V V<sub>CC</sub> Operation
- \* I<sub>OFF</sub> Supports Live Insertion, Partial Power Down Mode, and Back Drive Protection
- \* Support Mixed-Mode Voltage Operation on All Ports

#### ORDERING INFORMATION

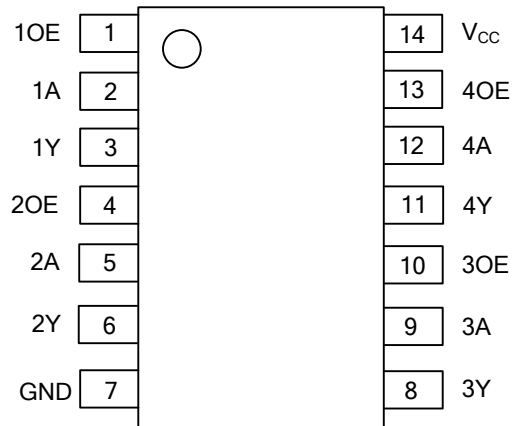
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LV126AL-P14-R	U74LV126AG-P14-R	TSSOP-14	Tape Reel

<p>U74LV126AG-P14-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) P14: TSSOP-14</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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#### MARKING



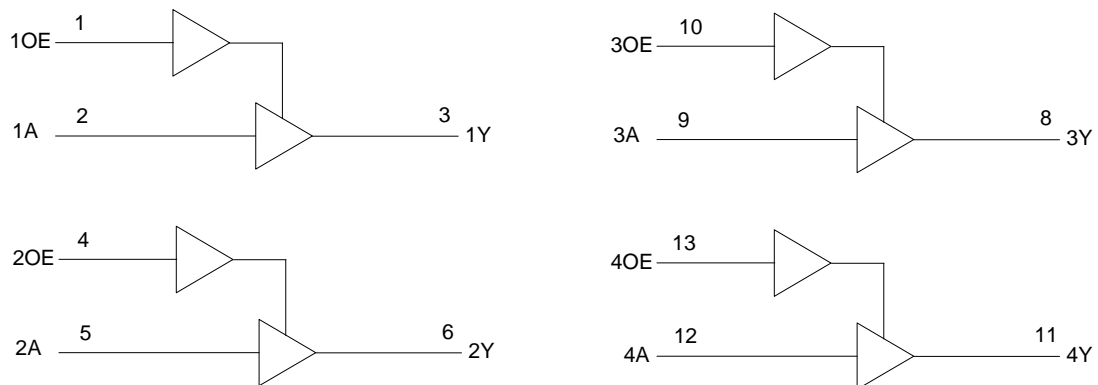
## ■ PIN CONFIGURATION



## ■ FUNCTION TABLE

INPUT		OUTPUT
OE	A	Y
H	H	H
H	L	L
L	X	Z

## ■ LOGIC DIAGRAM (positive logic)



■ **ABSOLUTE MAXIMUM RATING** ( $T_A=25^\circ\text{C}$ , unless otherwise specified) (Note 1)

PARAMETER	SYMBOL	TEST CONDITIONS	RATINGS	UNIT
Supply Voltage	$V_{CC}$		-0.5 ~ 7	V
Input Voltage (Note 2)	$V_{IN}$		-0.5 ~ 7	V
Output Voltage (Note 2, 3)	$V_{OUT}$		-0.5 ~ $V_{CC}+0.5$	V
Input Clamp Current	$I_{IK}$	$V_{IN}<0$	-20	mA
Output Clamp Current	$I_{OK}$	$V_{OUT}<0$ , or $V_{OUT}>V_{CC}$	$\pm 50$	mA
Output Continuous Current	$I_{OUT}$		$\pm 35$	mA
$V_{CC}$ or GND Current	$I_{CC}$		$\pm 70$	mA
Power Dissipation	$P_D$		500	mW
Storage Temperature	$T_{STG}$		-65 ~ +150	$^\circ\text{C}$

Notes: 1. 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.

2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

3. This value is limited to 5.5V maximum.

■ **RECOMMENDED OPERATING CONDITIONS**

PARAMETER	SYMBOL	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
		$V_{CC}=2.3\text{V to }2.7\text{V}$	$V_{CC}\times 0.7$			V
		$V_{CC}=3\text{V to }3.6\text{V}$	$V_{CC}\times 0.7$			V
		$V_{CC}=4.5\text{V to }5.5\text{V}$	$V_{CC}\times 0.7$			V
Low-Level Input Voltage	$V_{IL}$	$V_{CC}=2\text{V}$			0.5	V
		$V_{CC}=2.3\text{V to }2.7\text{V}$			$V_{CC}\times 0.3$	V
		$V_{CC}=3\text{V to }3.6\text{V}$			$V_{CC}\times 0.3$	V
		$V_{CC}=4.5\text{V to }5.5\text{V}$			$V_{CC}\times 0.3$	V
Input Voltage	$V_{IN}$		0		5.5	V
Output Voltage	$V_{OUT}$	High or Low state	0		$V_{CC}$	V
		3-state	0		5.5	V
Input Transition Rise or Fall Rate	$\Delta t/\Delta V$	$V_{CC}=2.3\text{V to }2.7\text{V}$			200	ns/V
		$V_{CC}=3\text{V to }3.6\text{V}$			100	ns/V
		$V_{CC}=4.5\text{V to }5.5\text{V}$			20	ns/V
Operating Temperature	$T_A$		-40		+125	$^\circ\text{C}$

■ **ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Output Voltage	$V_{OH}$	$V_{CC}=2\text{V}\sim 5.5\text{V}$ , $I_{OH}=-50\mu\text{A}$	$V_{CC}-0.1$			V
		$V_{CC}=2.3\text{V}$ , $I_{OH}=-2\text{mA}$	2			V
		$V_{CC}=3\text{V}$ , $I_{OH}=-8\text{mA}$	2.48			V
		$V_{CC}=4.5\text{V}$ , $I_{OH}=-16\text{mA}$	3.8			V
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=2\text{V}\sim 5.5\text{V}$ , $I_{OL}=50\mu\text{A}$			0.1	V
		$V_{CC}=2.3\text{V}$ , $I_{OL}=2\text{mA}$			0.4	V
		$V_{CC}=3\text{V}$ , $I_{OL}=8\text{mA}$			0.44	V
		$V_{CC}=4.5\text{V}$ , $I_{OL}=16\text{mA}$			0.55	V
Input Leakage Current (A or OE input)	$I_{I(LEAK)}$	$V_{CC}=0\sim 5.5\text{V}$ , $V_{IN}=5.5\text{V}$ or GND			$\pm 1$	$\mu\text{A}$
High-impedance state Current	$I_{OZ}$	$V_{CC}=5.5\text{V}$ , $V_{OUT}=V_{CC}$ or GND			$\pm 5$	$\mu\text{A}$
Quiescent Supply Current	$I_{CC}$	$V_{CC}=5.5\text{V}$ , $V_{IN}=V_{CC}$ or GND, $I_{OUT}=0\text{A}$			20	$\mu\text{A}$
Power OFF Leakage Current	$I_{OFF}$	$V_{CC}=0\text{V}$ , $V_{IN}$ or $V_{OUT}=0\sim 5.5\text{V}$			5	$\mu\text{A}$
Input Capacitance	$C_{IN}$	$V_{CC}=3.3\text{V}$ , $V_{IN}=V_{CC}$ or GND		1.6		pF

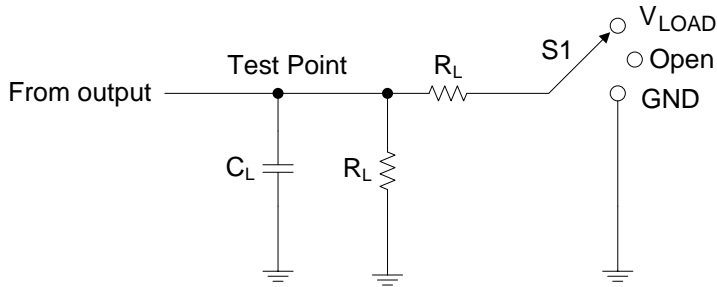
■ **SWITCHING CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input A to output Y	$t_{PD}$	$V_{CC}=2.5\text{V}\pm 0.2\text{V}$ , $C_L=15\text{pF}$		7.1	13	ns
		$V_{CC}=2.5\text{V}\pm 0.2\text{V}$ , $C_L=50\text{pF}$		9.2	16.5	ns
		$V_{CC}=3.3\text{V}\pm 0.3\text{V}$ , $C_L=15\text{pF}$		5	8	ns
		$V_{CC}=3.3\text{V}\pm 0.3\text{V}$ , $C_L=50\text{pF}$		6.4	11.5	ns
		$V_{CC}=5\text{V}\pm 0.5\text{V}$ , $C_L=15\text{pF}$		3.5	5.5	ns
		$V_{CC}=5\text{V}\pm 0.5\text{V}$ , $C_L=50\text{pF}$		4.6	7.5	ns
Propagation delay from input OE to output Y	$t_{EN}$	$V_{CC}=2.5\text{V}\pm 0.2\text{V}$ , $C_L=15\text{pF}$		7.4	13	ns
		$V_{CC}=2.5\text{V}\pm 0.2\text{V}$ , $C_L=50\text{pF}$		9.5	16.5	ns
		$V_{CC}=3.3\text{V}\pm 0.3\text{V}$ , $C_L=15\text{pF}$		5.1	8	ns
		$V_{CC}=3.3\text{V}\pm 0.3\text{V}$ , $C_L=50\text{pF}$		6.6	11.5	ns
		$V_{CC}=5\text{V}\pm 0.5\text{V}$ , $C_L=15\text{pF}$		3.6	5.1	ns
		$V_{CC}=5\text{V}\pm 0.5\text{V}$ , $C_L=50\text{pF}$		4.6	7.1	ns
Propagation delay from input OE to output Y	$t_{DIS}$	$V_{CC}=2.5\text{V}\pm 0.2\text{V}$ , $C_L=15\text{pF}$		5.7	14.7	ns
		$V_{CC}=2.5\text{V}\pm 0.2\text{V}$ , $C_L=50\text{pF}$		8.1	18.2	ns
		$V_{CC}=3.3\text{V}\pm 0.3\text{V}$ , $C_L=15\text{pF}$		4.4	9.7	ns
		$V_{CC}=3.3\text{V}\pm 0.3\text{V}$ , $C_L=50\text{pF}$		6.1	13.2	ns
		$V_{CC}=5\text{V}\pm 0.5\text{V}$ , $C_L=15\text{pF}$		3.3	6.8	ns
		$V_{CC}=5\text{V}\pm 0.5\text{V}$ , $C_L=50\text{pF}$		4.3	8.8	ns
Skew between any two outputs of the same package switching in the same direction	$t_{SK(O)}$	$V_{CC}=2.5\text{V}\pm 0.2\text{V}$ , $C_L=50\text{pF}$			2	ns
		$V_{CC}=3.3\text{V}\pm 0.3\text{V}$ , $C_L=50\text{pF}$			1.5	ns
		$V_{CC}=5\text{V}\pm 0.5\text{V}$ , $C_L=50\text{pF}$			1	ns

■ **OPERATING CHARACTERISTICS** ( $C_L=50\text{pF}$ ,  $f=10\text{MHz}$ ,  $T_A=25^\circ\text{C}$ , unless otherwise specified)

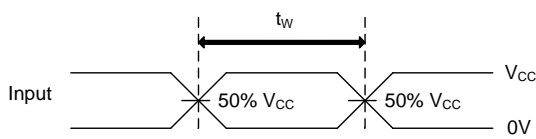
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power dissipation capacitance per gate	$C_{PD}$	$V_{CC}=3.3\text{V}$		14.4		pF
		$V_{CC}=5\text{V}$		15.9		pF

■ TEST CIRCUIT AND WAVEFORMS

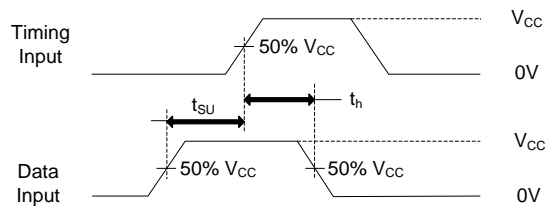


TEST	S
$t_{PLH}/t_{PHL}$	Open
$t_{PLZ}/t_{PZL}$	$V_{CC}$
$t_{PHZ}/t_{PZH}$	GND
Open Drain	$V_{CC}$

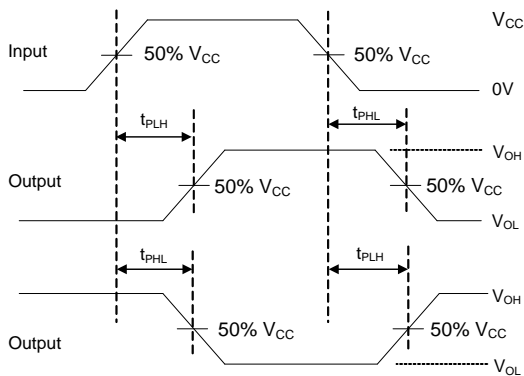
TEST CIRCUIT



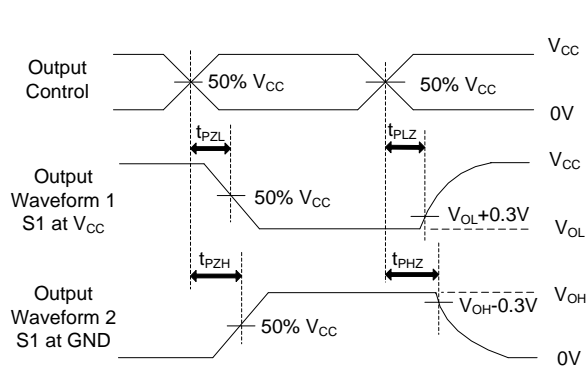
PULSE DURATION



SETUP AND HOLD TIMES



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

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