



## U74AHCT126

CMOS IC

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

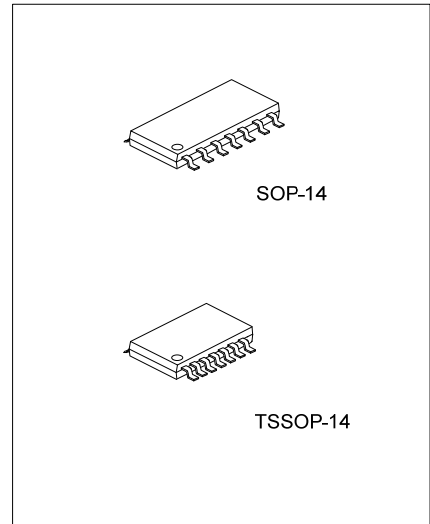
#### DESCRIPTION

The **U74AHCT126** are quadruple bus buffer gates featuring independent line drivers with 3-state outputs. When OE is low, the nY outputs are in a high-impedance state. When OE is high, the device passes noninverted data from the nA input to its nY output.

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-sourcing capability of the driver.

#### FEATURES

- \* TTL-Voltage compatible
- \* Max  $t_{PD}$  of 7.5 ns from A to Y at  $V_{CC} = 5V$ ,  $C_L = 50pF$
- \* Low power consumption,  $I_{CC} = 2\mu A$  (Max) at 5.5V
- \*  $\pm 8mA$  output driver at 5V

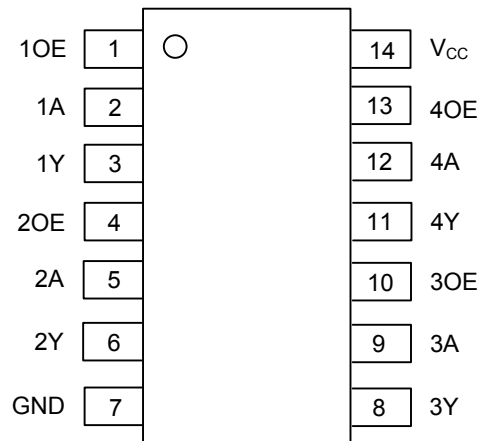


#### ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT126L-S14-T	U74AHCT126G-S14-T	SOP-14	Tube
U74AHCT126L-S14-R	U74AHCT126G-S14-R	SOP-14	Tape Reel
U74AHCT126L-P14-T	U74AHCT126G-P14-T	TSSOP-14	Tube
U74AHCT126L-P14-R	U74AHCT126G-P14-R	TSSOP-14	Tape Reel

<p>U74AHCT126L-S14-T</p> <p>(1)Packing Type (2)Package Type (3)Lead Free</p>	<p>(1) R: Tape Reel, T: Tube (2) S14: SOP-14, P14: TSSOP-14 (3) G: Halogen Free, L: Lead Free</p>
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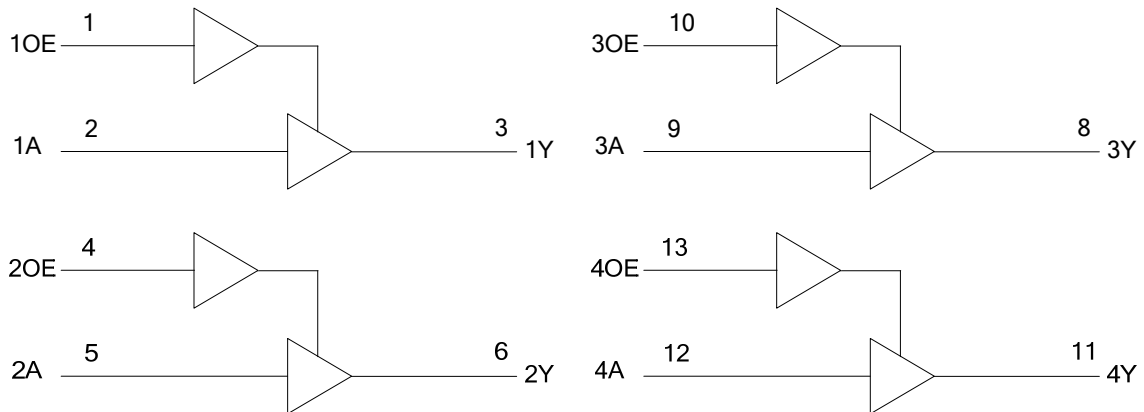
■ PIN CONFIGURATION



■ FUNCTION TABLE

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

■ LOGIC DIAGRAM



### ■ ABSOLUTE MAXIMUM RATING (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
Input Clamp Current ( $V_{IN} < 0$ )	$I_{IK}$	-20	mA
Output Clamp Current ( $V_{OUT} < 0$ , or $V_{OUT} > V_{CC}$ )	$I_{OK}$	$\pm 20$	mA
Output Current	$I_{OUT}$	$\pm 25$	mA
$V_{CC}$ or GND Current	$I_{CC}$	$\pm 50$	mA
Storage Temperature	$T_{STG}$	-65 ~ +150	$^{\circ}C$

Note: 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

2. 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	$\theta_{JA}$	80	$^{\circ}C/W$
		120	

### ■ RECOMMENDED OPERATING COMDITIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$	4.5		5.5	V
High-Level Input Voltage	$V_{IH}$	2			V
Low-Level Input Voltage	$V_{IL}$			0.8	V
Input Voltage	$V_{IN}$	0		5.5	V
Output Voltage	$V_{OUT}$	0		$V_{CC}$	V
High-level Output Current	$I_{OH}$			-8	$\mu A$
Low-level Output Current	$I_{OL}$			8	$\mu A$
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$			20	ns/V
Operating Temperature	$T_A$	-40		85	$^{\circ}C$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Output Voltage	$V_{OH}$	$I_{OH} = -50\mu A, V_{CC} = 4.5V$	4.4	4.5		V
		$I_{OH} = -8mA, V_{CC} = 4.5V$	3.94			
Low-Level Output Voltage	$V_{OL}$	$I_{OH} = 50\mu A, V_{CC} = 4.5V$			0.1	V
		$I_{OH} = 8mA, V_{CC} = 4.5V$			0.36	
Input Leakage Current (A or OE input)	$I_{I(LEAK)}$	$V_{IN} = 5.5V$ or GND, $V_{CC} = 0$ to 5.5V			$\pm 0.1$	$\mu A$
High-impedance state Current	$I_{OZ}$	$V_{OUT} = V_{CC}$ or GND, $V_{CC} = 5.5V$			$\pm 0.25$	$\mu A$
Quiescent Supply Current	$I_{CC}$	$V_{IN} = V_{CC}$ or GND, $I_{OUT} = 0$ , $V_{CC} = 5.5V$			2	$\mu A$
Additional quiescent Supply Current	$\Delta I_{CC}$	One input at 3.4V, $V_{CC} = 5.5V$ , other inputs at $V_{CC}$ or GND			1.35	mA
Input Capacitance	$C_{IN}$	$V_{IN} = V_{CC}$ or GND, $V_{CC} = 5V$		4	10	pF
Output Capacitance	$C_{OUT}$	$V_O = V_{CC}$ or GND, $V_{CC} = 5V$		15		pF

■ SWITCHING CHARACTERISTICS ( $V_{CC} = 5V \pm 0.5V$ ,  $T_A = 25^\circ C$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay from Input A to Output Y, $t_{PD}$	$t_{PLH}$	$C_L = 15pF$ , $R_L = 1k\Omega$		3.8	5.5	ns
		$C_L = 50pF$ , $R_L = 1k\Omega$		5.3	7.5	
	$t_{PHL}$	$C_L = 15pF$ , $R_L = 1k\Omega$		3.8	5.5	ns
		$C_L = 50pF$ , $R_L = 1k\Omega$		5.3	7.5	
Propagation Delay from Input OE to Output Y, $t_{EN}$	$t_{PZH}$	$C_L = 15pF$ , $R_L = 1k\Omega$		3.6	5.1	ns
		$C_L = 50pF$ , $R_L = 1k\Omega$		5.1	7.1	
	$t_{PZL}$	$C_L = 15pF$ , $R_L = 1k\Omega$		3.6	5.1	ns
		$C_L = 50pF$ , $R_L = 1k\Omega$		5.1	7.1	
Propagation delay from input OE to output Y, $t_{DIS}$	$t_{PHZ}$	$C_L = 15pF$ , $R_L = 1k\Omega$		4.6	6.8	ns
		$C_L = 50pF$ , $R_L = 1k\Omega$		6.1	8.8	
	$t_{PLZ}$	$C_L = 15pF$ , $R_L = 1k\Omega$		4.6	6.8	ns
		$C_L = 50pF$ , $R_L = 1k\Omega$		6.1	8.8	
Skew Between any Two Outputs of the Same Package Switching in the Same Direction	$T_{SK(O)}$	$C_L = 50pF$			1	ns

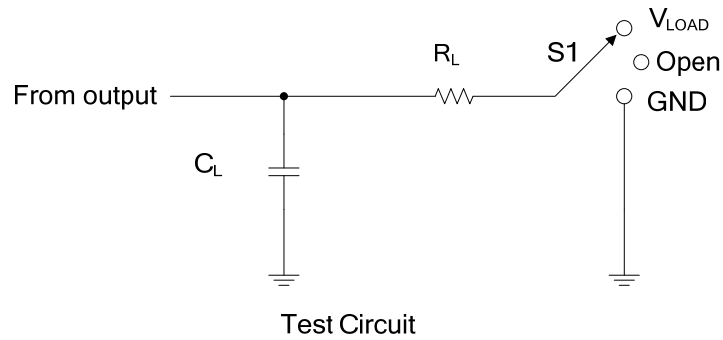
■ NOISE CHARACTERISTICS ( $T_A = 25^\circ C$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN		MAX	UNIT
Quiet Output, Maximum Dynamic $V_{OL}$	$V_{OL(P)}$	$V_{CC} = 5V$ , $C_L = 50pF$			0.8	V
Quiet Output, Minimum Dynamic $V_{OL}$	$V_{OL(V)}$	$V_{CC} = 5V$ , $C_L = 50pF$			-0.8	V
Quiet Output, Minimum Dynamic $V_{OH}$	$V_{OH(V)}$	$V_{CC} = 5V$ , $C_L = 50pF$	4.4			V
High-Level Dynamic Input Voltage	$V_{IH(D)}$	$V_{CC} = 5V$ , $C_L = 50pF$	2			V
Low-Level Dynamic Input Voltage	$V_{IL(D)}$	$V_{CC} = 5V$ , $C_L = 50pF$			0.8	V

■ OPERATING CHARACTERISTICS ( $T_A = 25^\circ C$ )

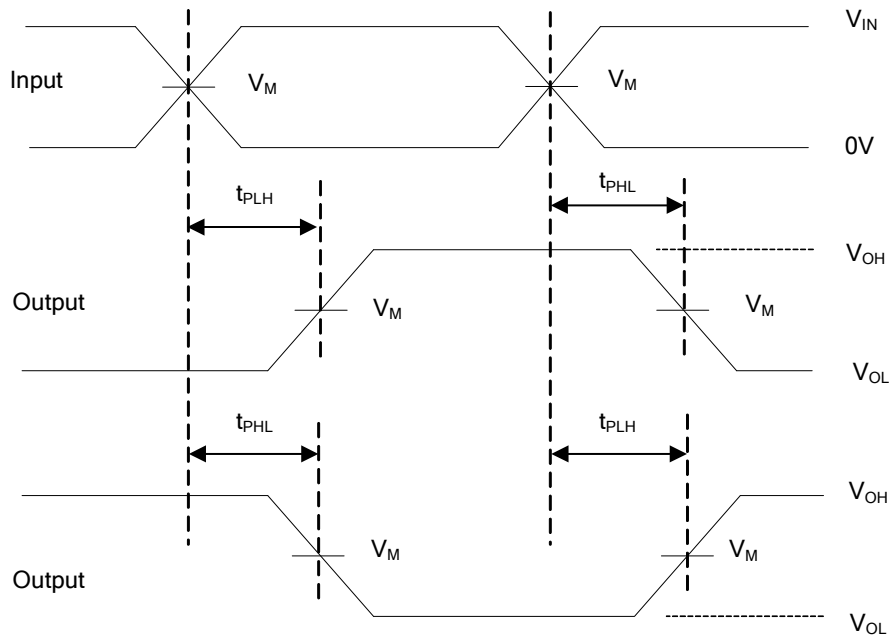
PARAMETER	SYMBOL	TEST CONDITIONS	TYP	UNIT
Power Dissipation Capacitance	$C_{PD}$	$V_{CC} = 5V$ , $f = 1MHz$ , No load	14	pF

### ■ TEST CIRCUIT AND WAVEFORMS



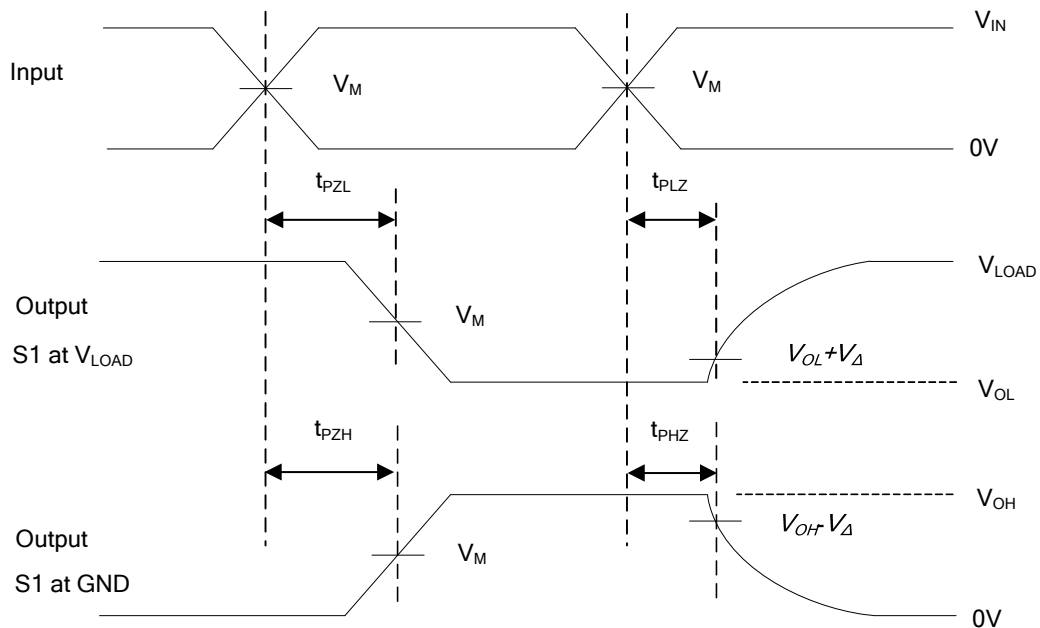
TEST	S1
$t_{PLH}/t_{PHL}$	Open
$t_{PLZ}/t_{PZL}$	$V_{LOAD}$
$t_{PHZ}/t_{PZH}$	GND

$V_{CC}$	Input		$V_M$	$V_{LOAD}$	$C_L$	$R_L$	$V_{\Delta}$
	$V_{IN}$	$t_R, t_F$					
$5V \pm 0.5V$	$V_{CC}$	$\leq 3ns$	$V_{CC}/2$	$V_{CC}$	15pF	$1k\Omega$	0.5V
					50pF		



Voltage Waveforms Propagation Delay Times

### ■ TEST CIRCUIT AND WAVEFORMS(Cont.)



Voltage Waveforms Enable and Disable Times

Notes: 1.  $C_L$  includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics: PRR  $\leq 1$ MHz,  $Z_0 = 50\Omega$ .

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