



U74AHCT126

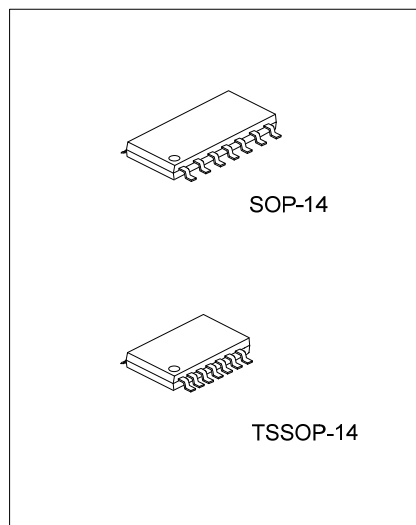
CMOS IC

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

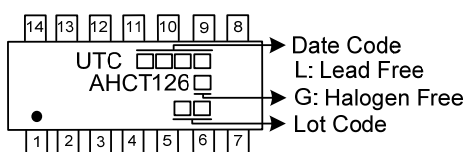
- * TTL-Voltage compatible
- * Max t_{PD} of 7.5 ns from A to Y at $V_{CC} = 5V$, $C_L = 50pF$
- * Low power consumption, $I_{CC} = 2\mu A$ (Max) at 5.5V
- * $\pm 8mA$ output driver at 5V

ORDERING INFORMATION

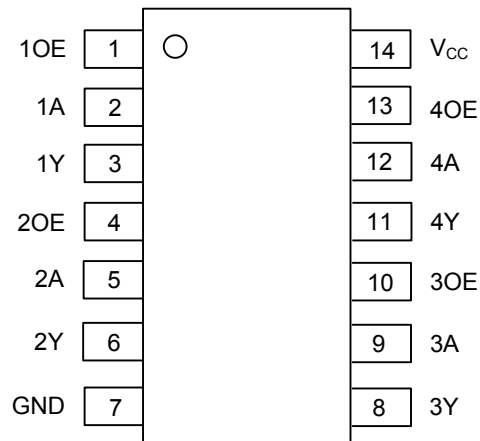
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT126L-P14-R	U74AHCT126G-P14-R	SOP-14	Tape Reel
U74AHCT126L-S14-R	U74AHCT126G-S14-R	TSSOP-14	Tape Reel

<p>U74AHCT126G-S14-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) S14: SOP-14, P14: TSSOP-14 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



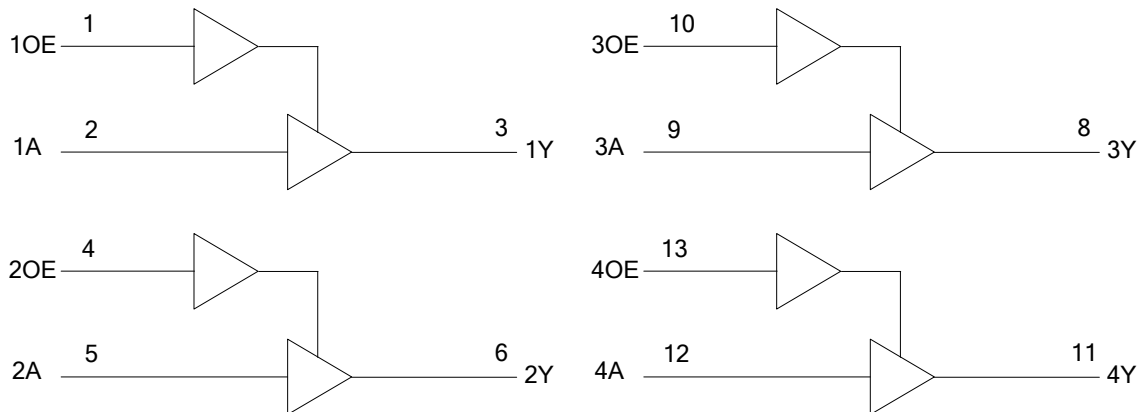
■ PIN CONFIGURATION



■ FUNCTION TABLE

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

■ LOGIC DIAGRAM



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■ 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}	±20	mA
Output Current	I_{OUT}	±25	mA
V_{CC} or GND Current	I_{CC}	±50	mA
Storage Temperature	T_{STG}	-65 ~ +150	°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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-14	80	°C/W
	TSSOP-14	120	

■ RECOMMENDED OPERATING CONDITIONS

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	μA
Low-level Output Current	I_{OL}			8	μA
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$			20	ns/V
Operating Temperature	T_A	-40		85	°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}	$I_{OH} = -50\mu\text{A}, V_{CC} = 4.5\text{V}$	4.4	4.5		V
		$I_{OH} = -8\text{mA}, V_{CC} = 4.5\text{V}$	3.94			
Low-Level Output Voltage	V_{OL}	$I_{OL} = 50\mu\text{A}, V_{CC} = 4.5\text{V}$			0.1	V
		$I_{OL} = 8\text{mA}, V_{CC} = 4.5\text{V}$			0.36	
Input Leakage Current (A or OE input)	$I_{I(LEAK)}$	$V_{IN} = 5.5\text{V}$ or GND, $V_{CC} = 0$ to 5.5V			±0.1	μA
High-impedance state Current	I_{OZ}	$V_{OUT} = V_{CC}$ or GND, $V_{CC} = 5.5\text{V}$			±0.25	μA
Quiescent Supply Current	I_{CC}	$V_{IN} = V_{CC}$ or GND, $I_{OUT} = 0$, $V_{CC} = 5.5\text{V}$			2	μA
Additional quiescent Supply Current	ΔI_{CC}	One input at 3.4V, $V_{CC} = 5.5\text{V}$, other inputs at V_{CC} or GND			1.35	mA
Input Capacitance	C_{IN}	$V_{IN} = V_{CC}$ or GND, $V_{CC} = 5\text{V}$		4	10	pF
Output Capacitance	C_{OUT}	$V_O = V_{CC}$ or GND, $V_{CC} = 5\text{V}$		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

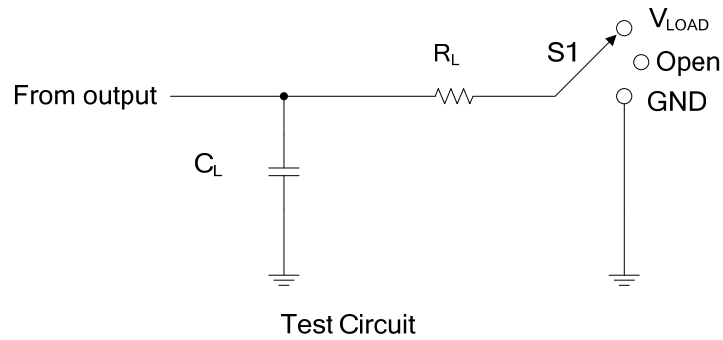
■ NOISE CHARACTERISTICS ($T_A = 25^\circ C$)

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 ($T_A = 25^\circ C$)

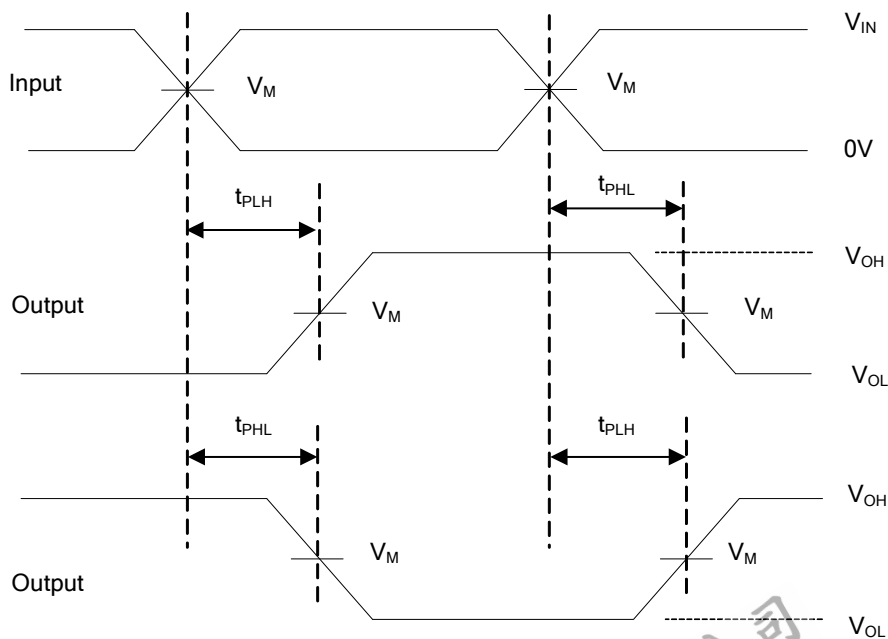
PARAMETER	SYMBOL	TEST CONDITIONS	TYP	UNIT
Power Dissipation Capacitance	C_{PD}	$V_{CC} = 5V$, $f = 1MHz$, No load	14	pF

■ TEST CIRCUIT AND WAVEFORMS



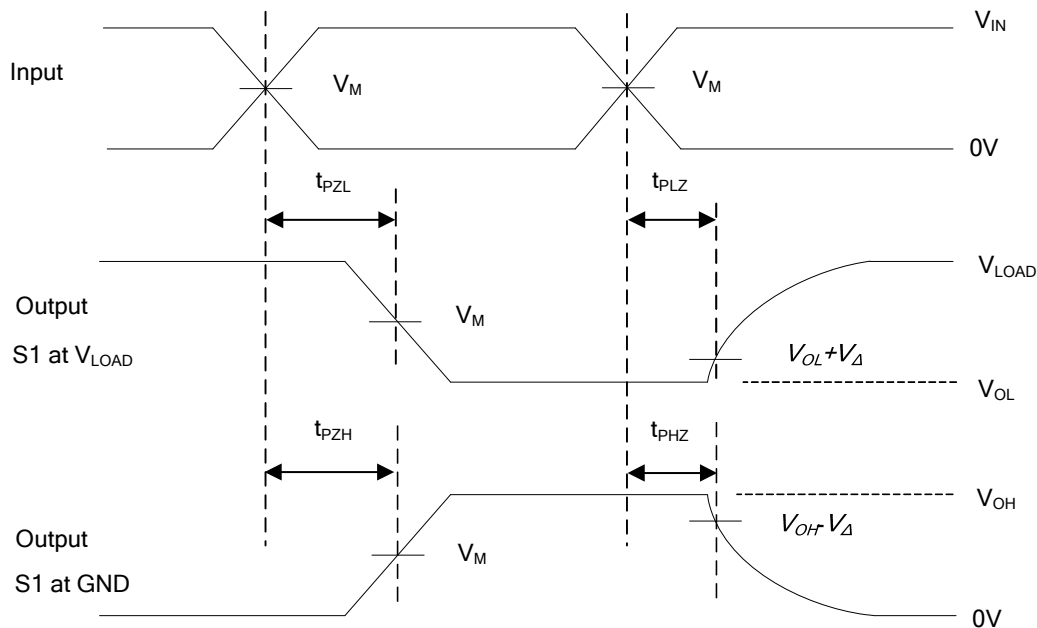
TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND

V_{CC}	Input		V_M	V_{LOAD}	C_L	R_L	V_{Δ}
	V_{IN}	t_R, t_F					
$5V \pm 0.5V$	V_{CC}	$\leq 3ns$	$V_{CC}/2$	V_{CC}	15pF	1k Ω	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 ≤ 1 MHz, $Z_o = 50\Omega$.

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