

QUADRUPLE 3-STATE BUFFERS OE HIGH

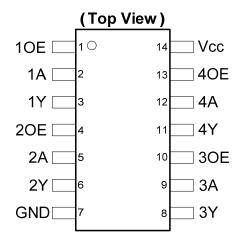
Description

The 74AHC126 provides provides four independent buffer gates with 3-state outputs. Each buffer has a separate enable pin that when driven with a low logic level places the corresponding output in the high impedance state. The device is designed for operation with a power supply range of 2.0V to 5.5V. The inputs are tolerant to 5.5V allowing this device to be used in a mixed voltage environment.

Features

- Wide Supply Voltage Range from 2.0V to 5.5V
- Outputs Sink or Source 8mA at V_{CC} = 4.5V
- **CMOS Low Power Consumption**
- Schmitt Trigger Action at All Inputs
- Inputs can be driven by 3.3V or 5.5V allowing for voltage translation applications.
- ESD Protection Exceeds JESD 22
 - 200-V Machine Model (A115-A)
 - 2000-V Human Body Model (A114-A)
 - Exceeds 1000-V Charged Device Model (C101C)
- Latch-Up Exceeds 250mA per JESD 78, Class II
- Range of Package Options SO-14 and TSSOP-14
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

Pin Assignments



SO-14 / TSSOP-14

Applications

- General Purpose Logic
- Wide array of products such as:
 - PCs, Networking, Notebooks, Netbooks
 - Computer Peripherals, Hard Drives, CD/DVD ROM
 - TV, DVD, DVR, Set Top Box

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 2. See http://www.diodes.com for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Click here for ordering information, located at the end of datasheet



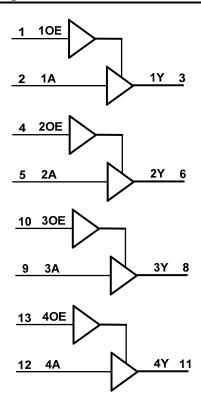
Pin Descriptions

Pin Number	Pin Name	Function		
1	10E	Data Enable Input (active low)		
2	1A	Data Input		
3	1Y	Data Output		
4	20E	Data Enable Input (active low)		
5	2A	Data Input		
6	2Y	Data Output		
7	GND	Ground		
8	3Y	Data Output		
9	3A	Data Input		
10	30E	Data Enable Input (active low)		
11	4Y	Data Output		
12	4A	Data Input		
13	40E	Data Enable Input (active low)		
14	V _{CC}	Supply Voltage		

Function Table

Inp	Output	
OE	Α	Υ
Н	Н	Н
Н	L	L
L	Х	Z

Logic Diagram



Absolute Maximum Ratings (Note 4) (@T_A = +25°C, unless otherwise specified.)

Symbol	Description	Rating	Unit
ESD HBM	Human Body Model ESD Protection	2	KV
ESD CDM	Charged Device Model ESD Protection	1	KV
ESD MM	Machine Model ESD Protection	200	V
V _{CC}	Supply Voltage Range	-0.5 to +7.0	V
VI	Input Voltage Range	-0.5 to +7.0	V
I _{IK}	Input Clamp Current V _I < -0.5V	-20	mA
I _{OK}	Output Clamp Current V _O < -0.5V	-20	mA
lok	Output Clamp Current V _O > V _{CC} +0.5V	25	mA
Io	Continuous Output Current -0.5V < V _O V _{CC} +0.5V	+/- 25	mA
Icc	Continuous Current Through V _{CC}	75	mA
I _{GND}	Continuous Current Through GND	-75	mA
TJ	Operating Junction Temperature	-40 to +150	°C
T _{STG}	Storage Temperature	-65 to +150	°C
P _{TOT}	Total Power Dissipation	500	mW

Note: 4. Stresses beyond the absolute maximum may result in immediate failure or reduced reliability. These are stress values and device operation should be within recommend values.



Recommended Operating Conditions (Note 5) (@TA = +25°C, unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Max	Unit
V _{CC}	Supply Voltage		2.0	5.5	V
VI	Input Voltage		0	5.5	V
Vo	Output Voltage		0	Vcc	V
Δt/ΔV	Input Transition Rise or Fall Rate	V_{CC} = 3.0V to 3.6V		100	ns/V
ΔυΔν	input Transition Rise of Fail Rate	V _{CC} = 4.5V to 5.5V		20	IIS/V
T _A	Operating Free-Air Temperature		-40	+125	°C

Note: 5. Unused inputs should be held at V_{CC} or Ground.

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Comple al	Parameter	Took Conditions	.,	T _A = -40°	C to +85°C	T _A = -40°C	to +125°C	11
Symbol	Parameter	Test Conditions	V _{CC}	Min	Max	Min	Max	Unit
			2.0V	1.5		1.5		
V_{IH}	High-Level Input Voltage		3.0V	2.1		2.1		V
	input voltage		5.5V	3.85		3.85		
			2.0V		0.5		0.5	
V_{IL}	Low-Level Input Voltage		3.0V		0.9		0.9	V
	Voltage		5.5V		1.65		1.65	
	High-Level Output Voltage	I _{OH} = -50μA	2.0V	1.9		1.9		V
		I _{OH} = -50μA	3.0V	2.9		2.9		
V_{OH}		I _{OH} = -50μA	4.5V	4.4		4.4		
		I _{OH} = -4mA	3.0V	2.48		2.40		
		I _{OH} = -8mA	4.5V	3.80		3.70		
		I _{OL} = 50μA	2.0V		0.1		0.1	
		I _{OL} = 50μA	3.0V		0.1		0.1	
V_{OL}	Low-Level Output Voltage	I _{OL} = 50μA	4.5V		0.1		0.1	V
	Output Voltage	I _{OL} = 4mA	3.0V		0.44		0.55	
		I _{OL} = 8mA	4.5V		0.44		0.55	
l _{OZ}	Z State Leakage Current	V _O = 0 to 5.5V V _I = GND or 5.5V	5.5V		±2.5		±10	μΑ
lı	Input Current	V _I = GND to 5.5V	3.6V		±1		±2	μΑ
Icc	Supply Current	$V_1 = GND \text{ or } V_{CC}, I_O = 0$	3.6V		20		40	μA



Operating Characteristics

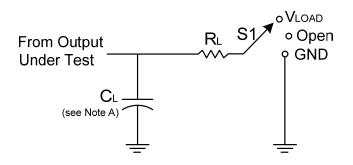
Parameter		Test	V _{CC} = 2.0V	V _{CC} = 3.3V	V _{CC} = 5V	Unit
	Faranieter		Тур	Тур	Тур	Ollit
C_{pd}	Power Dissipation Capacitance per Gate	f = 1MHz	10.1	13.1	15	pF
C _i	Input Capacitance	$V_i = V_{CC} - or$ GND	4.0	4.0	4.0	pF

Switching Characteristics

Sumbol	Parameter	Test	st v		Γ _A = +25°(2	-40°C to	+85°C	-40°C to	+125°C	Unit	
Symbol	Parameter	Conditions	V _{CC}	Min	Тур	Max	Min	Max	Min	Max	Onit	
		Figure 1	3.0V to 3.6V	0.5	4.4	8.0	0.5	9.5	0.5	11.5		
	Propagation	$C_L = 15pF$	4.5V to 5.5V	0.5	3.0	5.5	0.5	6.5	0.5	7.0	20	
t _{PD}	Delay A _N to Y _N	Figure 1	3.0V to 3.6V	0.5	6.2	11.5	0.5	13.0	0.5	14.5	ns	
		$C_L = 50pF$	4.5V to 5.5 V	0.5	4.3	7.5	0.5	8.5	0.5	9.5		
	Enable Time C _L = 15	Figure 1	3.0V to 3.6V	0.5	4.7	8.0	0.5	9.5	0.5	11.5		
4		$C_L = 15 pF$	4.5V to 5.5V	0.5	3.3	5.1	0.5	6.0	0.5	7.5	20	
$t_{\sf EN}$	OE _N to Y _N	OE _N to Y _N Figure 1 $C_L = 50pF$	3.0V to 3.6V	0.5	6.8	11.5	0.5	13.0	0.5	14.5	ns	
			4.5V to 5.5V	0.5	4.7	7.1	0.5	8.0	0.5	9.0		
		Figure 1 classification	3.0V to 3.6V	0.5	6.7	9.7	0.5	11.5	0.5	12.5		
	Disable Time OE _N to Y _N		4.5V to 5.5V	0.5	4.8	6.8	0.5	8.0	0.5	8.5		
t _{DIS}		S OE _N to Y _N Figur	Figure 1	3.0V to 3.6V	0.5	9.6	13.2	0.5	15.0	0.5	16.5	ns
		C _L = 50pF	4.5V to 5.5V	0.5	6.8	8.8	0.5	10.0	0.5	11.0		

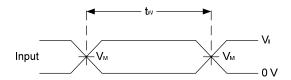


Parameter Measurement Information

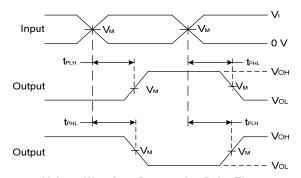


TEST	S1
t _{PLH} /t _{PHL}	Open
t _{PLZ} /t _{PZL}	Vload
t _{PHZ} /t _{PZH}	GND

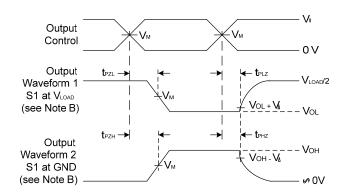
Ī	V	Inp	uts		V		Б	V/A
	Vcc	VI	t _r /t _f	V _M	V _{LOAD}	CL	K <u>L</u>	V Δ
	3.3V±0.3V	3 V	≤3ns	V _{CC} /2	V _{CC}	15,50 pF	1ΚΩ	0.3 V
	5V±0.5V	V _{CC}	≤3ns	V _{CC} /2	V _{CC}	15,50 pF	1ΚΩ	0.3 V



Voltage Waveform Pulse Duration



Voltage Waveform Propagation Delay Times Inverting and Non Inverting Outputs



Voltage Waveform Enable and Disable Times Low and High Level Enabling

Figure 1. Load Circuit and Voltage Waveforms

Notes: A. Includes test lead and test apparatus capacitance.

B. All pulses are supplied at pulse repetition rate ≤ 1 MHz.

C. Inputs are measured separately one transition per measurement.

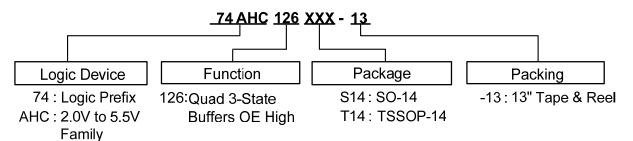
D. t_{PLZ} and t_{PHZ} are the same as t_{dis} .

E. t_{PZL} and t_{PZH} are the same as t_{EN0}.

F. t_{PLH} and t_{PHL} are the same as t_{PD} .



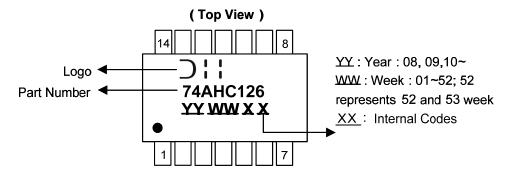
Ordering Information



	Device Package Code		Dackaging	7" Tape and Reel		
	Device	Fackage Code	Packaging	Quantity	Part Number Suffix	
Lead-free Green	74AHC126S14-13	S14	SO-14	2500/Tape & Reel	-13	
Pb Lead-free Green	74AHC126T14-13	T14	TSSOP-14	2500/Tape & Reel	-13	

Marking Information

(1) SO-14, TSSOP-14



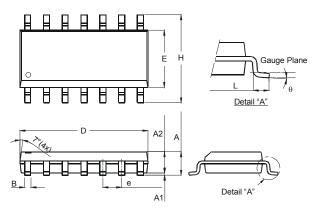
Part Number	Package		
74AHC126S14	SO-14		
74AHC126T14	TSSOP-14		



Package Outline Dimensions (All dimensions in mm.)

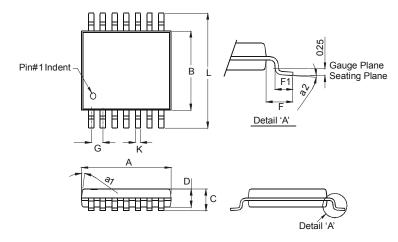
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.

Package Type: SO-14



	SO-14				
Dim	Min	Max			
Α	1.47	1.73			
A1	0.10	0.25			
A2	1.45	Тур			
В	0.33	0.51			
D	8.53	8.74			
Е	3.80	3.99			
е	1.27	Тур			
Н	5.80	6.20			
٦	0.38	1.27			
θ	0°	8°			
All Di	All Dimensions in mm				

Package Type: TSSOP-14



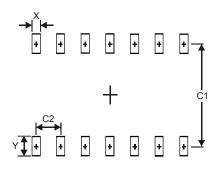
TSSOP-14			
Dim	Min	Max	
a1	7° (4X)		
a2	0°	8°	
Α	4.9	5.10	
В	4.30	4.50	
၁		1.2	
D	0.8	1.05	
F	1.00 Typ		
F1	0.45	0.75	
O	0.65 Typ		
K	0.19	0.30	
L	6.40 Typ		
All Dimensions in mm			



Suggested Pad Layout

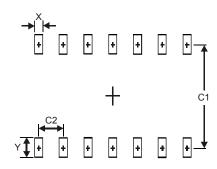
Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.

Package Type: SO-14



Dimensions	Value (in mm
Х	0.60
Υ	1.50
C1	5.4
C2	1.27

Package Type: TSSOP-14



Dimensions	Value (in mm)	
X	0.45	
Y	1.45	
C1	5.9	
C2	0.65	



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