

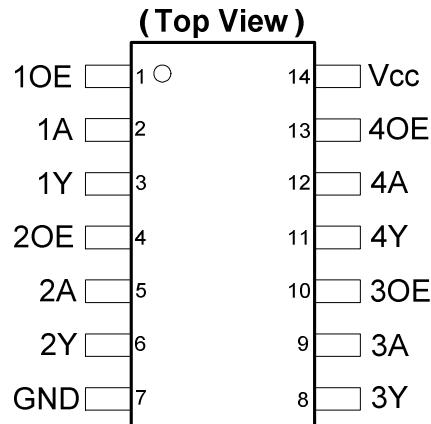
Description

The 74AHCT126 provides four independent buffer gates with 3-state outputs. Each buffer has a separate enable pin that if 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 4.5V to 5.5V.

Features

- Wide Supply Voltage Range from 4.5V to 5.5V
- Inputs Are TTL Voltage Level Compatible
- Outputs Sink or Source 8mA at $V_{CC} = 4.5V$
- CMOS Low Power Consumption
- Schmitt Trigger Action at All Inputs
- ESD Protection Exceeds JESD 22
 - 200-V Machine Model (A115)
 - 2000-V Human Body Model (A114)
 - Exceeds 1000-V Charged Device Model (C101)
- 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

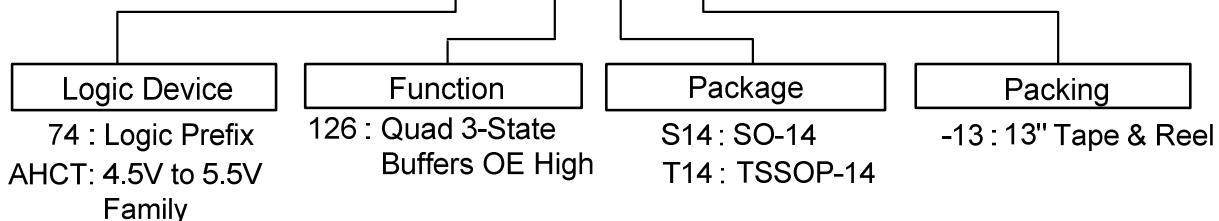
- General Purpose Logic
- Wide Array of Products Such as:
 - PCs, Networking, Notebooks, Netbooks
 - Computer Peripherals, Hard Drives, CD/DVD ROMs
 - TVs, DVDs, DVRs, Set Top Boxes

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.

Ordering Information

74 AHCT 126 XXX - 13



Part Number	Package Code	Packaging	7" Tape and Reel	
			Quantity	Part Number Suffix
74AHCT126S14-13	S14	SO-14	2,500/Tape & Reel	-13
74AHCT126T14-13	T14	TSSOP-14	2,500/Tape & Reel	-13

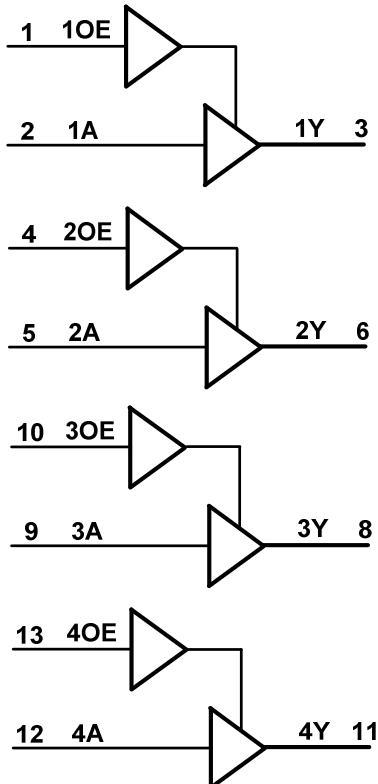
Pin Descriptions

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

Function Table

Inputs		Output
OE	A	Y
H	H	H
H	L	L
L	X	Z

Logic Diagram



Absolute Maximum Ratings (Note 4) ($T_A = +25^\circ\text{C}$, 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
V_I	Input Voltage Range	-0.5 to +7.0	V
I_{IK}	Input Clamp Current $V_I < -0.5\text{V}$	-20	mA
I_{OK}	Output Clamp Current $V_O < 0\text{V}$	-20	mA
I_{OK}	Output Clamp Current $V_O > V_{CC}$	20	mA
I_O	Continuous Output Current $0\text{V} < V_O < V_{CC}$	+/- 25	mA
I_{CC}	Continuous Current Through V_{CC}	50	mA
I_{GND}	Continuous Current Through GND	-50	mA
T_J	Operating Junction Temperature	-40 to +150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-65 to +150	$^\circ\text{C}$
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 recommended values.

Recommended Operating Conditions (Note 5) ($T_A = +25^\circ\text{C}$, unless otherwise specified.)

Symbol	Parameter	Min	Max	Unit
V_{CC}	Supply Voltage	4.5	5.5	V
V_I	Input Voltage	0	5.5	V
V_O	Output Voltage	0	V_{CC}	V
$\Delta t/\Delta V$	Input transition Rise or Fall Rate	-	20	ns/V
T_A	Operating Free-Air Temperature	-40	+125	$^\circ\text{C}$

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

Electrical Characteristics

Symbol	Parameter	Test Conditions	V _{CC}	T _A = -40°C to +85°C		T _A = -40°C to +125°C		Unit
				Min	Max	Min	Max	
V _{IH}	High-Level Input Voltage	-	4.5V to 5.5V	2.0	-	2.0	-	V
V _{IL}	Low-Level Input Voltage	-	4.5V to 5.5V	-	0.8	-	0.8	V
V _{OH}	High-Level Output Voltage	I _{OH} = -50µA	4.5V	4.4	-	4.4	-	V
		I _{OH} = -8mA	4.5V	3.80	-	3.70	-	
V _{OL}	Low-Level Output Voltage	I _{OL} = 50µA	4.5V	-	0.1	-	0.1	V
		I _{OL} = 8mA	4.5V	-	0.44	-	0.55	
I _{OZ}	Z State Leakage Current	V _O = 0 to 5.5V	5.5V	-	±2.5	-	±10	µA
I _I	Input Current	V _I = GND to 5.5V	3.6V	-	±1	-	±2	µA
I _{CC}	Supply Current	V _I = GND or V _{CC} , I _O = 0	3.6V	-	20	-	40	µA
ΔI _{CC}	Additional Supply Current	One input at V _{CC} -2.1V Other pins at V _{CC} or GND	5.5V	-	1.35	-	5	mA

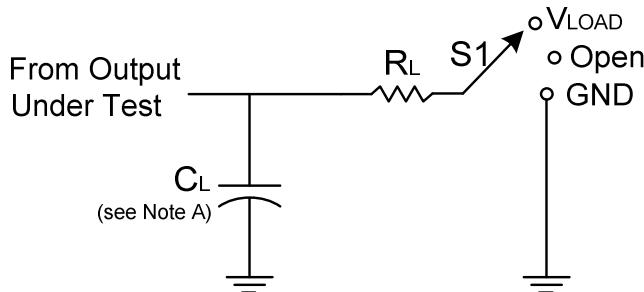
Operating Characteristics

Parameter	Test Conditions	V _{CC} = 5.5V	Unit
		Typ	
C _{PD}	Power Dissipation Capacitance per Gate f = 1MHz	14.8	pF
C _i	Input Capacitance V _i = V _{CC} – or GND	4.0	pF

Switching Characteristics (V_{CC} = 4.5V to 5.5V)

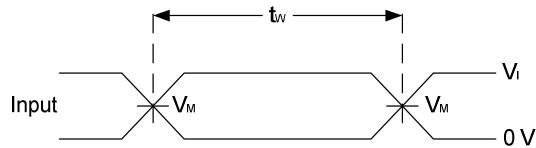
Symbol	Parameter	Test Conditions	T _A = +25°C			-40°C to +85°C		-40°C to +125°C		Unit
			Min	Typ	Max	Min	Max	Min	Max	
t _{PD}	Propagation Delay A _N to Y _N	Figure 1 C _L = 15pF	0.5	3.0	5.5	0.5	6.5	0.5	7.0	ns
		Figure 1 C _L = 50pF	0.5	4.3	7.5	0.5	8.5	0.5	9.5	
t _{EN}	Enable Time \overline{OE}_N to Y _N	Figure 1 C _L = 15 pF	0.5	3.3	5.1	0.5	6.0	0.5	6.5	ns
		Figure 1 C _L = 50pF	0.5	4.7	7.1	0.5	8.0	0.5	9.0	
t _{DIS}	Disable Time \overline{OE}_N to Y _N	Figure 1 C _L = 15pF	0.5	4.8	6.8	0.5	8.0	0.5	8.5	ns
		Figure 1 C _L = 50pF	0.5	6.5	8.9	0.5	10.0	0.5	11.5	

Parameter Measurement Information

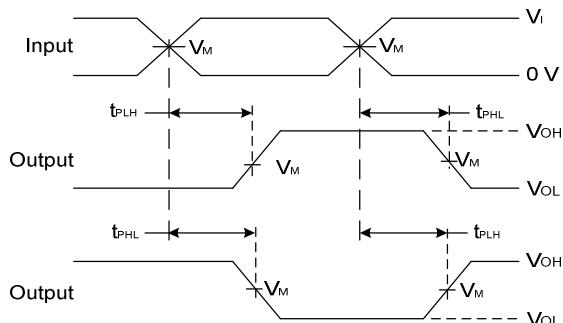


TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	V_{load}
t_{PHZ}/t_{PZH}	GND

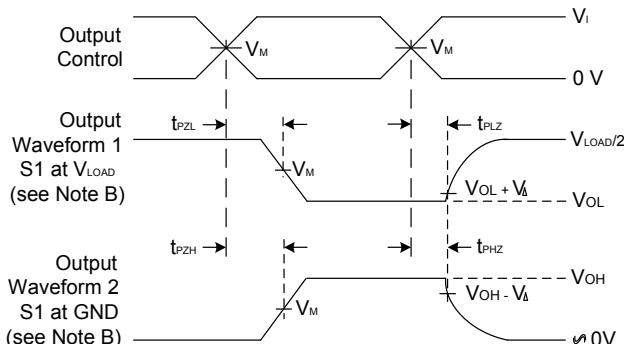
V _{CC}	Inputs		V _M Inputs	V _M Outputs	V _{LOAD}	C _L	R _L	V _Δ
	V _I	t _r /t _f						
4.5V to 5.5V	3 V	≤3ns	1.5 V	V _{CC} /2	V _{CC}	15pF, 50pF	1K	0.3V



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

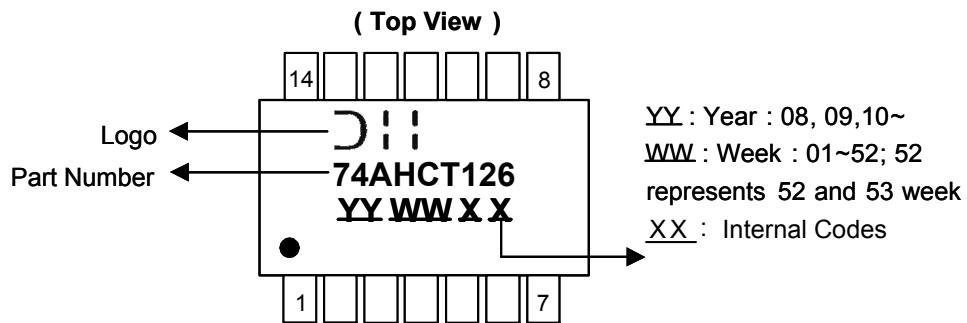
Notes:

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

Figure 1. Load Circuit and Voltage Waveforms

Marking Information

(1) SO-14, TSSOP-14

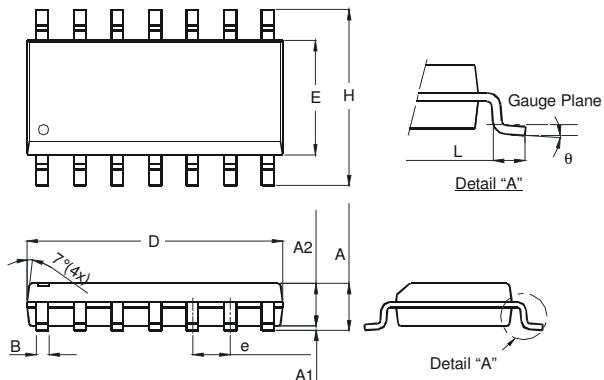


Part Number	Package
74AHCT126S14	SO-14
74AHCT126T14	TSSOP-14

Package Outline Dimensions (All dimensions in mm.)

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

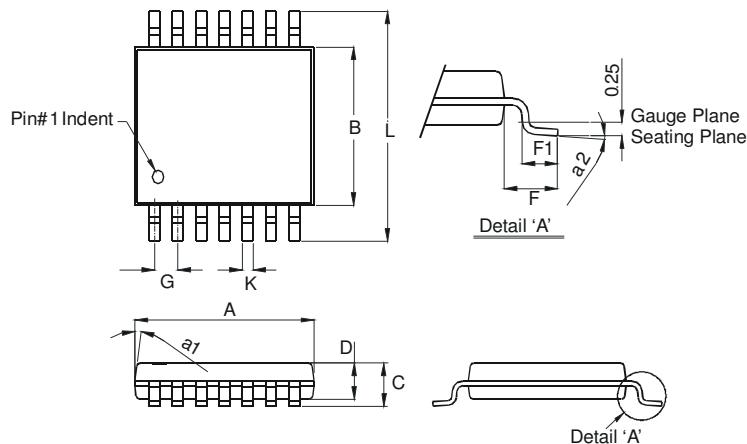
Package Type: SO-14



SO-14		
Dim	Min	Max
A	1.47	1.73
A1	0.10	0.25
A2	1.45	Typ
B	0.33	0.51
D	8.53	8.74
E	3.80	3.99
e	1.27	Typ
H	5.80	6.20
L	0.38	1.27
θ	0°	8°

All Dimensions in mm

Package Type: TSSOP-14



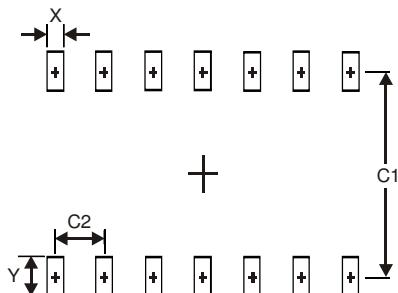
TSSOP-14		
Dim	Min	Max
a1	7° (4X)	
a2	0°	8°
A	4.9	5.10
B	4.30	4.50
C	—	1.2
D	0.8	1.05
F	1.00	Typ
F1	0.45	0.75
G	0.65	Typ
K	0.19	0.30
L	6.40	Typ

All Dimensions in mm

Suggested Pad Layout

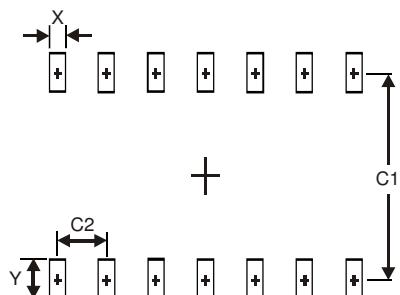
Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

Package Type: SO-14



Dimensions	Value (in mm)
X	0.60
Y	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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