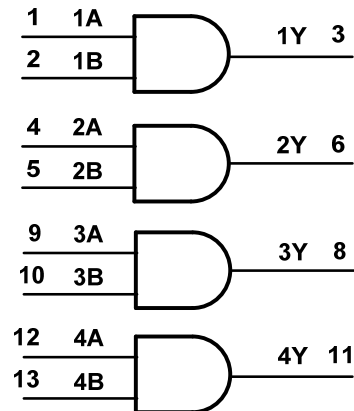


## Pin Descriptions

Pin Number	Pin Name	Function
1	1A	Data Input
2	1B	Data Input
3	1Y	Data Output
4	2A	Data Input
5	2B	Data Input
6	2Y	Data Output
7	GND	Ground
8	3Y	Data Output
9	3A	Data Input
10	3B	Data Input
11	4Y	Data Output
12	4A	Data Input
13	4B	Data Input
14	V <sub>CC</sub>	Supply Voltage

## Logic Diagram



## Function Table

Inputs		Output
A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

## Absolute Maximum Ratings (Note 4) (@T<sub>A</sub> = +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 <sub>CC</sub>	Supply Voltage Range	-0.5 to +7.0	V
V <sub>I</sub>	Input Voltage Range	-0.5 to +7.0	V
I <sub>IK</sub>	Input Clamp Current V <sub>I</sub> < -0.5V	-20	mA
I <sub>OK</sub>	Output Clamp Current V <sub>O</sub> < -0.5V	-20	mA
I <sub>OK</sub>	Output Clamp Current V <sub>O</sub> > V <sub>CC</sub> + 0.5V	25	mA
I <sub>O</sub>	Continuous Output Current - 0.5V < V <sub>O</sub> < V <sub>CC</sub> + 0.5V	+/- 25	mA
I <sub>CC</sub>	Continuous Current Through V <sub>CC</sub>	75	mA
I <sub>GND</sub>	Continuous Current Through GND	-75	mA
T <sub>J</sub>	Operating Junction Temperature	-40 to +150	°C
T <sub>STG</sub>	Storage Temperature	-65 to +150	°C
P <sub>TOT</sub>	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) (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>CC</sub>	Supply Voltage		2.0	5.5	V
V <sub>I</sub>	Input Voltage		0	5.5	V
V <sub>O</sub>	Output Voltage		0	V <sub>CC</sub>	V
Δt/ΔV	Input Transition Rise or Fall Rate	V <sub>CC</sub> = 3.0V to 3.6V		100	ns/V
		V <sub>CC</sub> = 4.5V to 5.5V		20	
T <sub>A</sub>	Operating Free-Air Temperature		-40	+125	°C

 Note: 5. Unused inputs should be held at V<sub>CC</sub> or Ground.

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	V <sub>CC</sub>	T <sub>A</sub> = -40°C to +85°C		T <sub>A</sub> = -40°C to +125°C		Unit
				Min	Max	Min	Max	
V <sub>IH</sub>	High-Level Input Voltage		2.0V	1.5		1.5		V
			3.0V	2.1		2.1		
			5.5V	3.85		3.85		
V <sub>IL</sub>	Low-Level Input Voltage		2.0V		0.5		0.5	V
			3.0V		0.9		0.9	
			5.5V		1.65		1.65	
V <sub>OH</sub>	High-Level Output Voltage	I <sub>OH</sub> = -50μA	2.0V	1.9		1.9		V
		I <sub>OH</sub> = -50μA	3.0V	2.9		2.9		
		I <sub>OH</sub> = -50μA	4.5V	4.4		4.4		
		I <sub>OH</sub> = -4mA	3.0V	2.48		2.40		
		I <sub>OH</sub> = -8mA	4.5V	3.80		3.70		
V <sub>OL</sub>	Low-Level Output Voltage	I <sub>OL</sub> = 50μA	2.0V		0.1		0.1	V
		I <sub>OL</sub> = 50μA	3.0V		0.1		0.1	
		I <sub>OL</sub> = 50μA	4.5V		0.1		0.1	
		I <sub>OL</sub> = 4mA	3.0V		0.44		0.55	
		I <sub>OL</sub> = 8mA	4.5V		0.44		0.55	
I <sub>I</sub>	Input Current	V <sub>I</sub> = GND to 5.5V	3.6V		±1		±2	μA
I <sub>CC</sub>	Supply Current	V <sub>I</sub> = GND or V <sub>CC</sub> , I <sub>O</sub> = 0	3.6V		20		40	μA

**Operating Characteristics**

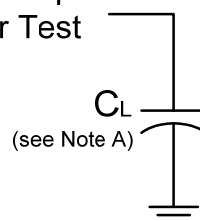
Parameter		Test Conditions	V <sub>CC</sub> = 2.0V	V <sub>CC</sub> = 3.3V	V <sub>CC</sub> = 5V	Unit
			Typ	Typ	Typ	
C <sub>pd</sub>	Power Dissipation Capacitance per Gate	f = 1 MHz	9.7	11.0	15	pF
C <sub>i</sub>	Input Capacitance	V <sub>I</sub> = V <sub>CC</sub> – or GND	4.0	4.0	4.0	pF

## Switching Characteristics

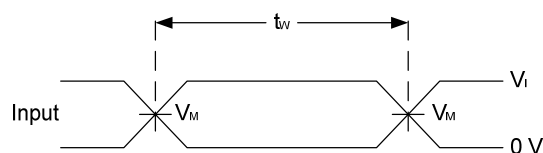
Symbol	Parameter	Test Conditions	V <sub>CC</sub>	T <sub>A</sub> = +25°C			-40°C to +85°C		-40°C to +125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
t <sub>PD</sub>	Propagation Delay A <sub>N</sub> to Y <sub>N</sub>	Figure 1 C <sub>L</sub> = 15pF	3.0V to 3.6V	0.5	4.5	7.9	0.5	9.5	0.5	10.0	ns
			4.5V to 5.5V	0.5	3.2	5.5	0.5	6.5	0.5	7.0	
		Figure 1 C <sub>L</sub> = 50pF	3.0V to 3.6V	0.5	6.0	11.4	0.5	13.0	0.5	14.5	
			4.5V to 5.5V	0.5	4.5	7.5	0.5	8.5	0.5	9.5	

## Parameter Measurement Information

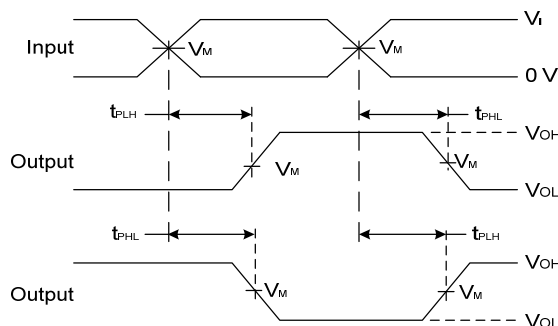
From Output  
Under Test



V <sub>CC</sub>	Inputs		V <sub>M</sub>	C <sub>L</sub>
	V <sub>I</sub>	t <sub>r</sub> /t <sub>f</sub>		
3.3V -3.6V	V <sub>CC</sub>	3ns	V <sub>CC</sub> /2	15pF, 50pF
4.5V to 5.5V	V <sub>CC</sub>	3ns	V <sub>CC</sub> /2	15pF, 50pF



**Voltage Waveform  
Pulse Duration**

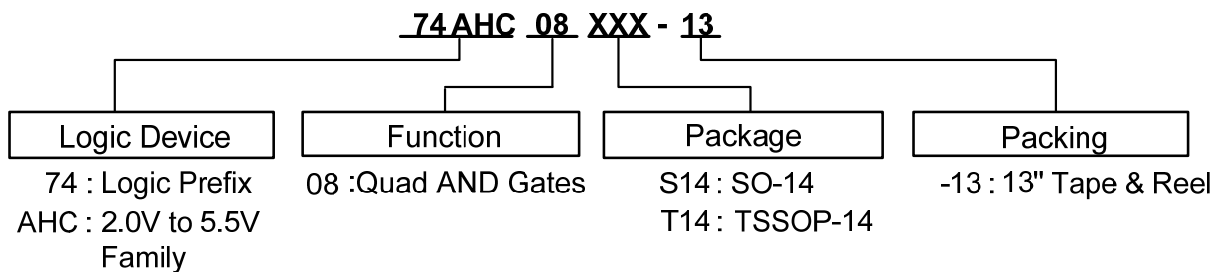


**Voltage Waveform  
Propagation Delay Times  
Inverting and Non Inverting Outputs**

**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<sub>PLH</sub> and t<sub>PHL</sub> are the same as t<sub>PD</sub>.

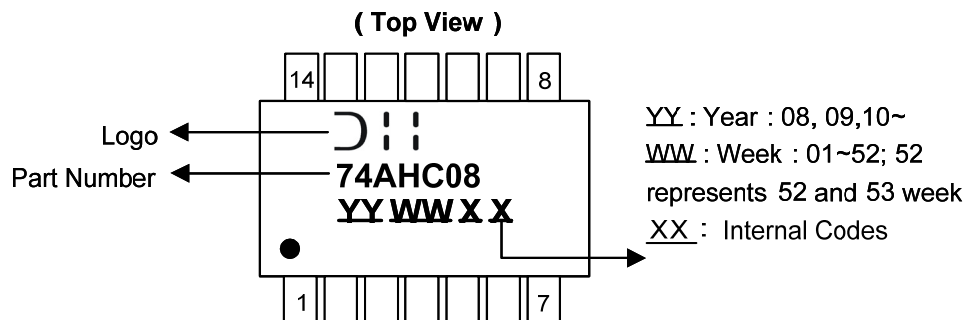
## Ordering Information



Device	Package Code	Packaging	7" Tape and Reel	
			Quantity	Part Number Suffix
74AHC08S14-13	S14	SO-14	2500/Tape & Reel	-13
74AHC08T14-13	T14	TSSOP-14	2500/Tape & Reel	-13

## Marking Information

(1) SO-14, TSSOP-14

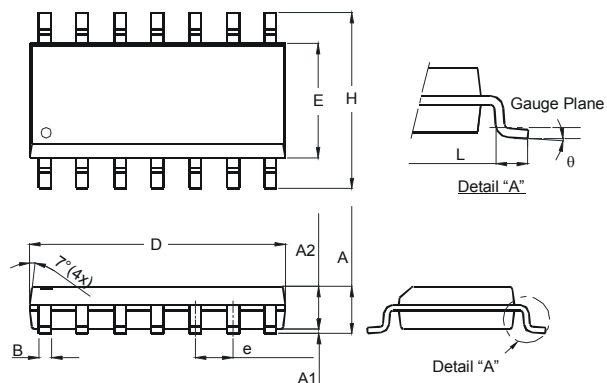


Part Number	Package
74AHC08S14	SO-14
74AHC08T14	TSSOP-14

## Package Outline Dimensions (All dimensions in mm.)

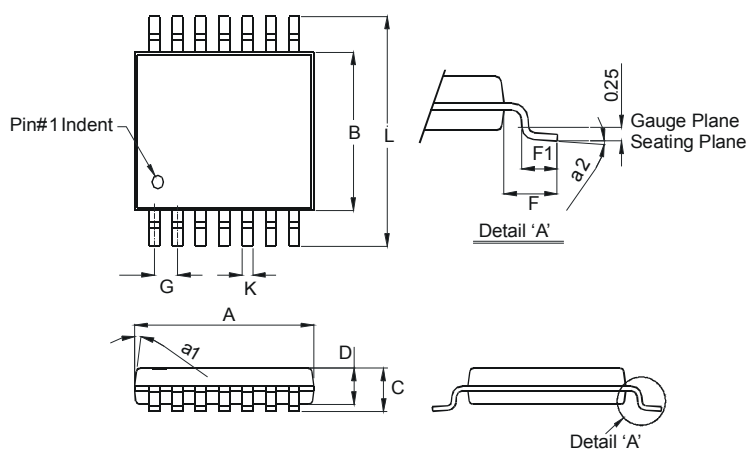
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.

### Package Type: SO-14



SO-14		
Dim	Min	Max
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

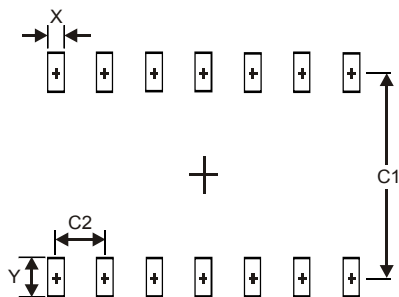


TSSOP-14		
Dim	Min	Max
a1	7° (4X)	
a2	0°	8°
A	4.9	5.10
B	4.30	4.50
C	—	1.2
D	0.8	1.05
F	1.00 Typ	
F1	0.45	0.75
G	0.65 Typ	
K	0.19	0.30
L	6.40 Typ	
All Dimensions in mm		

## Suggested Pad Layout

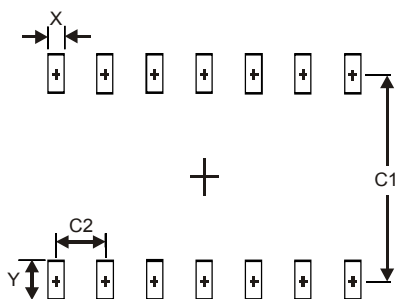
Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

### 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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