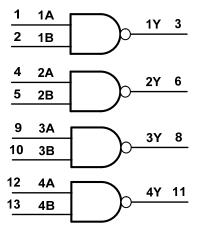


Pin Descriptions

| 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 _{CC} | Supply Voltage |

Logic Diagram



Function Table

| Inp | Output | |
|-----|--------|---|
| Α | В | Υ |
| L | L | Н |
| L | Н | Н |
| Н | L | Н |
| Н | Н | L |

Absolute Maximum Ratings (Note 4) (@TA = +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 |
| lık | Input Clamp Current V _I < -0.5V | -20 | mA |
| I _{OK} | Output Clamp Current V _O < -0.5V | -20 | mA |
| I _{OK} | Output Clamp Current V _O > V _{CC} +0.5V | 25 | mA |
| I _O | 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 |
| Ртот | 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. V_{CC} to the extent the maximum clamp current is exceeded.



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

| Symbol | Parameter | Conditions | Min | Max | Unit |
|----------------|------------------------------------|----------------------------------|-----|----------|--------|
| Vcc | Supply Voltage | | 2.0 | 5.5 | V |
| VI | Input Voltage | | 0 | 5.5 | V |
| Vo | Output Voltage | | 0 | V_{CC} | V |
| Δt/ΔV | Input Transition Rise or Fall Rate | V _{CC} = 3.0V to 3.6V | | 100 | ns/V |
| ΔυΔν | Input Transition Rise of Fall Rate | $V_{CC} = 4.5V \text{ to } 5.5V$ | | 20 | 115/ 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.)

| 0 | B | Total Complitions | ., | T _A = -40° | C to +85°C | T _A = -40°C to +125°C | | |
|----------|--|---|------|-----------------------|------------|----------------------------------|------|------|
| Symbol | Parameter | Test Conditions | Vcc | Min | Max | Min | Max | Unit |
| | | | 2.0V | 1.5 | | 1.5 | | |
| V_{IH} | High-Level Input | | 3.0V | 2.1 | | 2.1 | | V |
| | Voltage | | 5.5V | 3.85 | | 3.85 | | |
| | | | 2.0V | | 0.5 | | 0.5 | |
| V_{IL} | Low-Level Input | | 3.0V | | 0.9 | | 0.9 | V |
| | Voltage | | 5.5V | | 1.65 | | 1.65 | |
| | V _{OH} 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 |
| | | I _{OL} = 4mA | 3.0V | | 0.44 | | 0.55 | |
| | | I _{OL} = 8mA | 4.5V | | 0.44 | | 0.55 | |
| II | Input Current | V _I = GND to 5.5V | 3.6V | | ±1 | | ±2 | μA |
| Icc | Supply Current | V _I = GND or V _{CC} , I _O =0 | 3.6V | | 20 | | 40 | μA |

Operating Characteristics

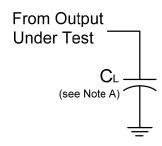
| | Parameter | Test | V _{CC} = 2.0V | $V_{CC} = 3.3V$ | V _{CC} = 5 | Unit |
|----------------|---|--------------------------------|------------------------|-----------------|---------------------|-------|
| | raiametei | Conditions | Тур | Тур | Тур | Offic |
| C_{pd} | Power Dissipation Capacitance per Gate | f = 1MHz | 9.7 | 11.0 | 14.8 | pF |
| C _i | Input Capacitance | $V_i = V_{CC} - \text{or GND}$ | 4.0 | 4.0 | 4.0 | pF |



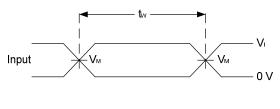
Switching Characteristics

| Symbol Parameter | | Test | V | T _A = +25°C | | -40°C to +85°C | | -40°C to +125°C | | Unit | |
|------------------|--|--------------|-----------------|------------------------|-----|----------------|-----|-----------------|-----|------|------|
| Syllibol | Parameter | Conditions | V _{CC} | Min | Тур | Max | Min | Max | Min | Max | Unit |
| | | Figure 1 | 3.0V to 3.6V | 0.5 | 4.5 | 7.9 | 1.0 | 9.5 | 0.5 | 10.0 | |
| | Propagation | $C_L = 15pF$ | 4.5V to 5.5V | 0.5 | 3.2 | 5.5 | 1.0 | 6.5 | 0.5 | 7.0 | 20 |
| t _{PD} | Delay A _N to Y _N | Figure 1 | 3.0V to 3.6V | 0.5 | 6.0 | 11.4 | 1.0 | 13.0 | 0.5 | 14.5 | ns |
| | | $C_L = 50pF$ | 4.5V to 5.5V | 0.5 | 4.5 | 7.5 | 1.0 | 8.5 | 0.5 | 9.5 | |

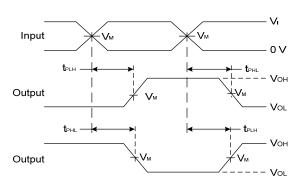
Parameter Measurement Information



| V | Inp | uts | V. | |
|-----------------|-----------------|--------------------------------|--------------------|----------------|
| V _{CC} | VI | t _r /t _f | V _M | G _L |
| 3.3V to 3.6V | V _{CC} | 3ns | V _{CC} /2 | 15pF, 50pF |
| 4.5V to 5.5V | V _{CC} | 3ns | V _{CC} /2 | 15pF, 50pF |



Voltage Waveform Pulse Duration



Voltage Waveform Propagation Delay Times Inverting and Non Inverting Outputs

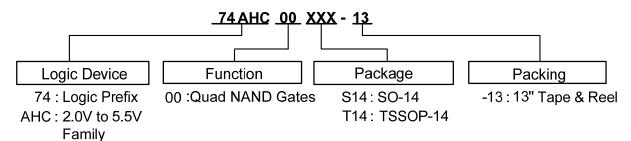
Figure 1 Load Circuit and Voltage Waveforms

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_{PLH} and t_{PHL} are the same as t_{PD}



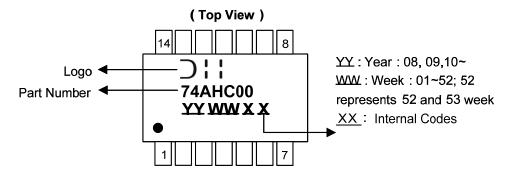
Ordering Information



7" Tape and Reel Package Code **Device Packaging** Quantity Part Number Suffix 74AHC00S14-13 SO-14 S14 2500/Tape & Reel -13 74AHC00T14-13 T14 TSSOP-14 2500/Tape & Reel -13

Marking Information

(1) SO-14, TSSOP-14



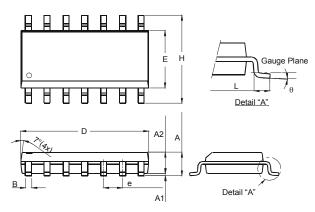
| Part Number | Package |
|-------------|----------|
| 74AHC00S14 | SO-14 |
| 74AHC00T14 | TSSOP-14 |



Package Outline Dimensions (All dimensions in mm.)

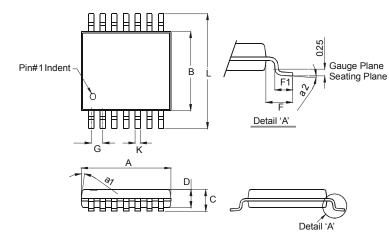
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.

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 | | | |
| L | 0.38 | 1.27 | | | |
| θ | 0° | 8° | | | |
| All Di | mensions | s in mm | | | |

Package Type: TSSOP-14



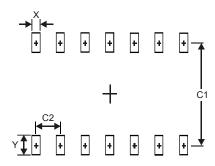
| TSSOP-14 | | | | | |
|----------|----------|---------|--|--|--|
| Dim | Min | Max | | | |
| a1 | 7° (| 4X) | | | |
| a2 | 0° | 8° | | | |
| Α | 4.9 | 5.10 | | | |
| В | 4.30 | 4.50 | | | |
| С | | 1.2 | | | |
| D | 8.0 | 1.05 | | | |
| F | 1.00 | Тур | | | |
| F1 | 0.45 | 0.75 | | | |
| G | 0.65 Typ | | | | |
| K | 0.19 | 0.30 | | | |
| Ĺ | 6.40 | Тур | | | |
| All Dir | nensions | s in mm | | | |



Suggested Pad Layout

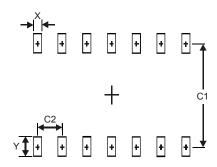
Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.

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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