

FEATURES

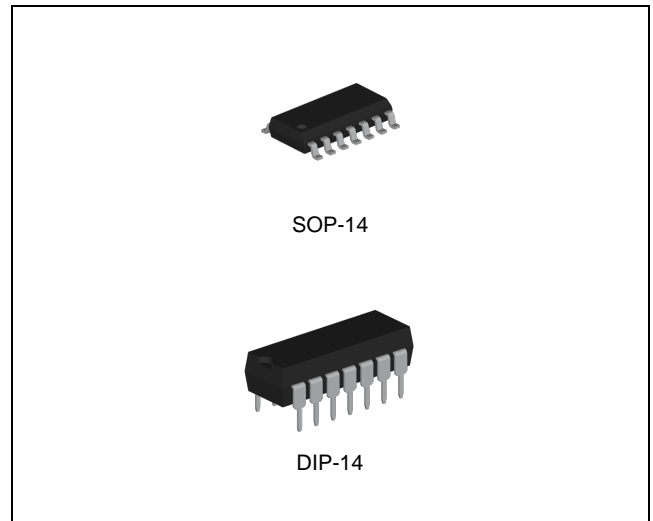
- Wide Operating Voltage Range of 2.0V to 6.0V
- Outputs Can Drive up to 10 LSTTL Loads
- Low Power Consumption, 20 μ A Maximum I_{CC}
- Typical t_{pd} : 11ns
- ± 4 mA Output Drive at 5.0V
- Low Input Current of 1 μ A Maximum

APPLICATIONS

- Microwave Oven
- Mice
- Printers
- AC Inverter Drives
- UPS
- AC Servo Drives
- Other Motor Drives

DESCRIPTION

The 74HC14 types consist of six inverter circuits with Schmitt-trigger inputs. They perform the Boolean function $Y = \bar{A}$ in positive logic. Each of the six inverters is a single stage.



ORDERING INFORMATION

| Device | Package |
|---------|---------|
| 74HC14D | SOP-14 |
| 74HC14N | DIP-14 |

ABSOLUTE MAXIMUM RATINGS ^(Note 1)

| CHARACTERISTIC | | SYMBOL | MIN. | MAX. | UNIT |
|--|-----------------------------|-----------|------|----------|--------------|
| DC Supply Voltage | | V_{CC} | -0.5 | 7 | V |
| Input Clamp Current ^(Note 2) | $V_I < 0$ or $V_I > V_{CC}$ | I_{IK} | - | ± 20 | mA |
| Output Clamp Current ^(Note 2) | $V_O < 0$ | I_{OK} | - | ± 20 | mA |
| Continuous Output Current | $V_O = 0$ to V_{CC} | I_{IN} | - | ± 25 | mA |
| Continuous Current through V_{CC} or GND | | | - | ± 50 | mA |
| Maximum Junction Temperature | | T_J | - | 150 | $^{\circ}$ C |
| Storage Temperature | | T_{STG} | -65 | 150 | $^{\circ}$ C |

Note 1. Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

Note 2. The input and output negative-voltage ratings may be exceeded if the input and output clamp current ratings are observed.

RECOMMENDED OPERATING CONDITIONS (Note 3)

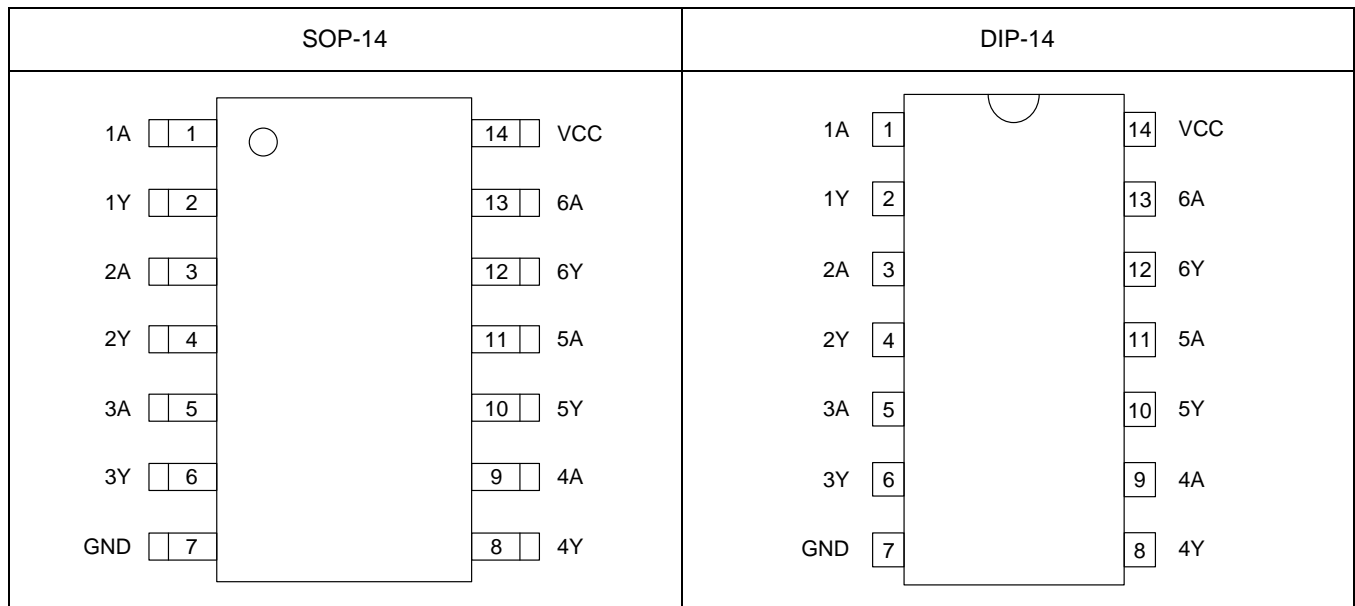
| CHARACTERISTIC | SYMBOL | MIN. | MAX. | UNIT |
|--------------------------------------|-----------|------|----------|------|
| Supply Voltage | V_{CC} | 2 | 6 | V |
| DC Input Voltage | V_{IN} | 0 | V_{CC} | V |
| DC Output Voltage | V_{OUT} | 0 | V_{CC} | V |
| Operating Free-Air Temperature Range | T_A | -40 | 85 | °C |

Note 3. The device is not guaranteed to function outside its operating ratings.

ORDERING INFORMATION

| Package | Order No. | Description | Supplied As | Status |
|---------|-----------|-------------------------------|-------------|------------|
| SOP-14 | 74HC14D | Hex Schmitt Trigger Inverters | Tape & Reel | Active |
| DIP-14 | 74HC14N | Hex Schmitt Trigger Inverters | Tube | Contact Us |

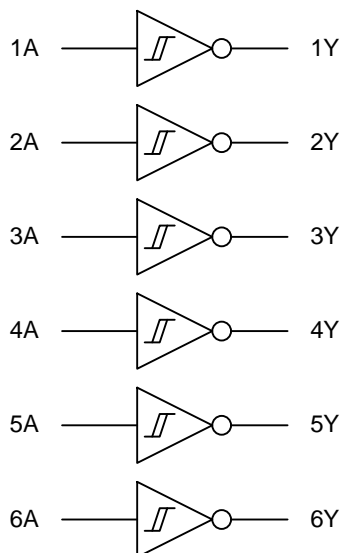
PIN CONFIGURATION



PIN DESCRIPTION

| Pin No. | | Pin Name | Pin Function |
|---------|--------|----------|--------------|
| SOP-14 | DIP-14 | | |
| 1 | 1 | 1A | Input 1 |
| 2 | 2 | 1Y | Output 1 |
| 3 | 3 | 2A | Input 2 |
| 4 | 4 | 2Y | Output 2 |
| 5 | 5 | 3A | Input 3 |
| 6 | 6 | 3Y | Output 3 |
| 7 | 7 | GND | Ground |
| 8 | 8 | 4Y | Output 4 |
| 9 | 9 | 4A | Input 4 |
| 10 | 10 | 5Y | Output 5 |
| 11 | 11 | 5A | Input 5 |
| 12 | 12 | 6Y | Output 6 |
| 13 | 13 | 6A | Input 6 |
| 14 | 14 | VCC | Power Supply |

BLOCK DIAGRAM



DC ELECTRICAL CHARACTERISTICS

Over operating free-air temperature range (unless otherwise noted); Voltages referenced to GND.

| SYMBOL | PARAMETER | TEST CONDITION | V _{CC} | MIN | TYP | MAX | UNIT | |
|-----------------|---|---|-------------------------|-------|------|-------|------|---|
| V _{TP} | Positive-Going Input Threshold Voltage | | 2.0 V | 0.7 | 1.2 | 1.5 | V | |
| | | | 4.5 V | 1.55 | 2.5 | 3.15 | | |
| | | | 6.0 V | 2.1 | 3.3 | 4.2 | | |
| V _{TN} | Negative-Going Input Threshold Voltage | | 2.0 V | 0.3 | 0.6 | 1 | V | |
| | | | 4.5 V | 0.9 | 1.6 | 2.45 | | |
| | | | 6.0 V | 1.2 | 2 | 3.2 | | |
| V _H | Hysteresis (V _{TP} - V _{TN}) | | 2.0 V | 0.2 | 0.6 | 1.2 | V | |
| | | | 4.5 V | 0.4 | 0.9 | 2.1 | | |
| | | | 6.0 V | 0.5 | 1.3 | 2.5 | | |
| V _{OH} | Output High Voltage | V _{IN} = V _{IH} or V _{IL} | I _{OH} = -20μA | 2.0 V | 1.9 | 1.998 | - | V |
| | | | | 4.5 V | 4.4 | 4.499 | - | |
| | | | I _{OH} = -4mA | 4.5 V | 3.98 | 4.3 | - | |
| | | | | 6.0 V | 5.9 | 5.999 | - | |
| V _{OL} | Output Low Voltage | V _{IN} = V _{IH} or V _{IL} | I _{OH} = 20μA | 2.0 V | - | 0.002 | 0.1 | V |
| | | | | 4.5 V | - | 0.001 | 0.1 | |
| | | | | 6.0 V | - | 0.001 | 0.1 | |
| | | | I _{OH} = 4mA | 4.5 V | - | 0.15 | 0.26 | |
| | | | | 6.0 V | - | 0.17 | 0.26 | |
| I _{IN} | Input Leakage Current | V _{IN} = V _{CC} or GND | 6.0 V | - | ±0.1 | ±100 | nA | |
| I _{CC} | Quiescent Supply Current | V _{IN} = V _{CC} or GND, I _O = 0A | 6.0 V | - | - | 2.0 | μA | |

AC ELECTRICAL CHARACTERISTICS

Over operating free-air temperature range (unless otherwise noted); C_L = 50 pF, Z_O = 50Ω, Input t_r = t_f = 6 ns

| SYMBOL | PARAMETER | V _{CC} | MIN | TYP | MAX | UNIT |
|--|--|-----------------|-----|-----|-----|------|
| t _{PLH} , t _{PHL} | Propagation Delay, Input A to Output Y (Figure 3) | 2.0 V | - | 55 | 125 | ns |
| | | 4.5 V | - | 12 | 25 | |
| | | 6.0 V | - | 11 | 21 | |
| t _{TLH} , t _{THL} | Transition Time, Any Output (Figure 3) | 2.0 V | - | 38 | 75 | ns |
| | | 4.5 V | - | 8 | 15 | |
| | | 6.0 V | - | 6 | 13 | |

FUNCTION TABLE

| Input (A) | Output (Y) |
|-----------|------------|
| H | L |
| L | H |

SWITCHING CHARACTERISTICS

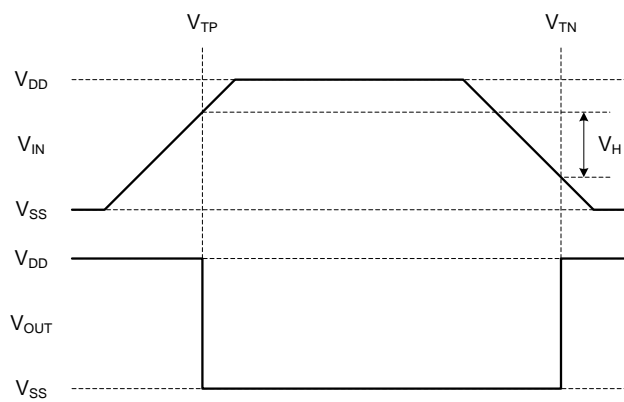


Fig. 1. Hysteresis Definition

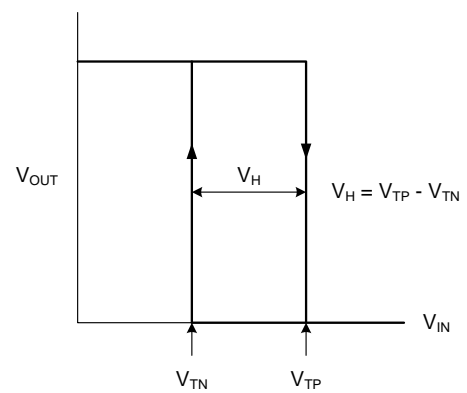


Fig. 2. Hysteresis Characteristic

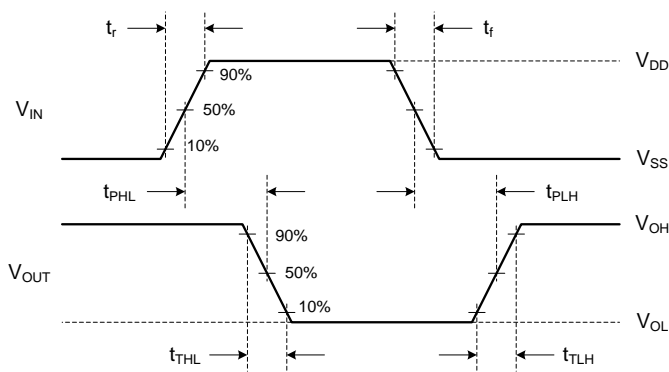


Fig. 3. Switching Time Waveforms

TYPICAL OPERATING CHARACTERISTICS

T.B.D.

REVISION NOTICE

The description in this datasheet is subject to change without any notice to describe its electrical characteristics properly.