

FEATURES

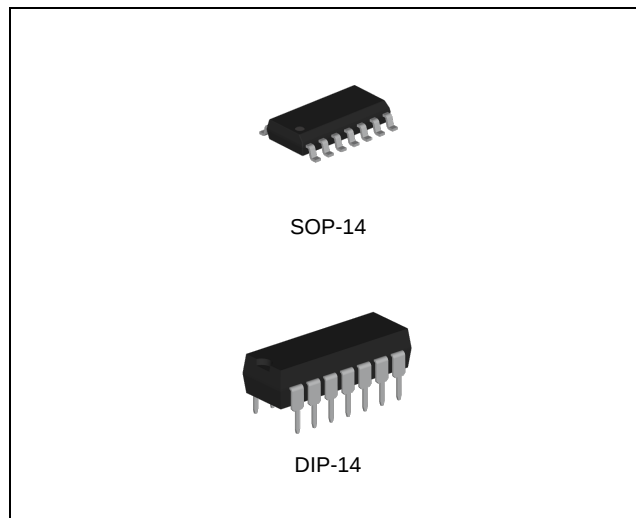
- Wide Operating Voltage Range of 2.0V to 6.0V
- Outputs Can Drive up to 10 LSTTL Loads
- Low Power Consumption, 20 μ A Maximum I_{CC}
- Typical t_{pd} : 11ns
- ± 4 mA Output Drive at 5.0V
- Low Input Current of 1 μ A Maximum

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	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-65	150	$^{\circ}\text{C}$

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)

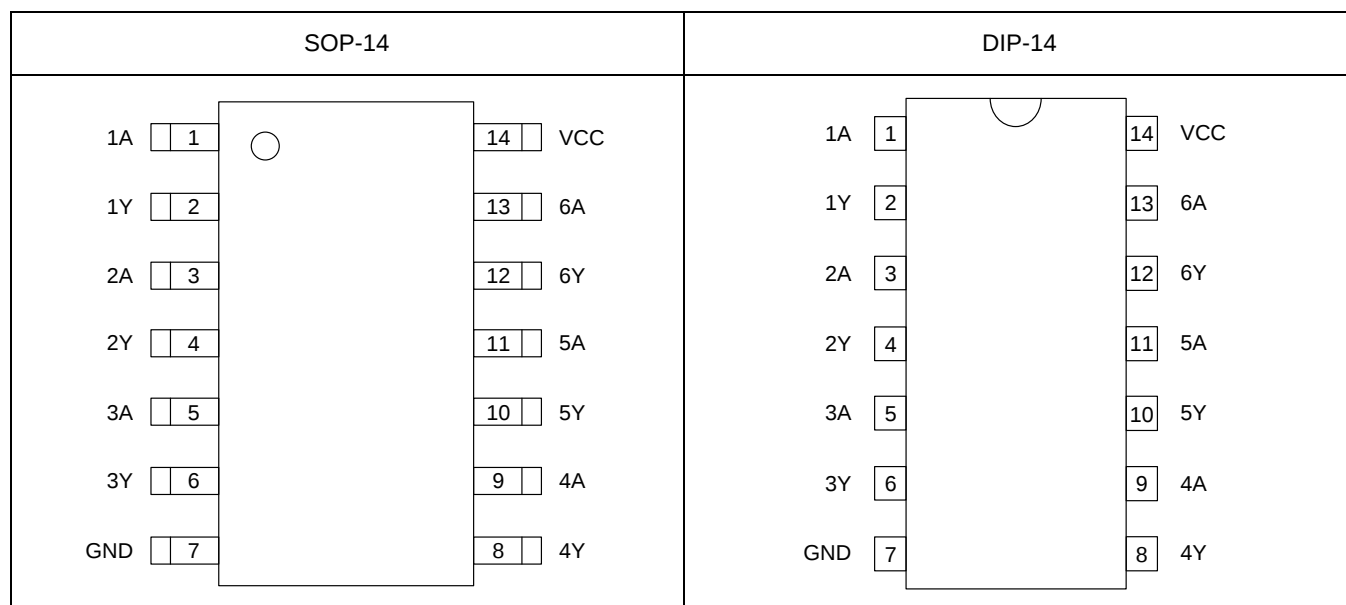
CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT
Supply Voltage	V_{CC}	2	6	V
DC Input Voltage	V_{IN}	0	V_{CC}	V
DC Output Voltage	V_{OUT}	0	V_{CC}	V
Operating Free-Air Temperature Range	T_A	-40	85	°C

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	Active

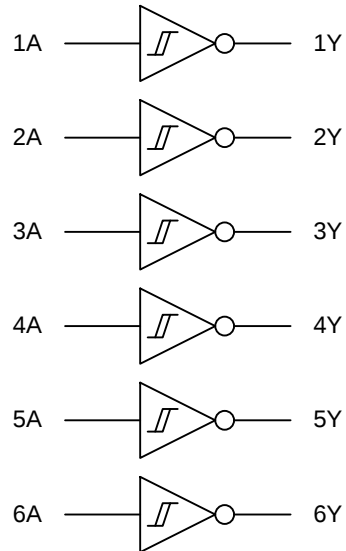
PIN CONFIGURATION



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	–	
				6.0 V	5.9	5.999	–	
			I _{OH} = –4mA	4.5 V	3.98	4.3	–	
				I _{OH} = –5.2mA	6.0 V	5.48	5.8	
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	
			I _{OH} = 5.2mA	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); $C_L = 50 \text{ pF}$, $Z_O = 50\Omega$, Input $t_r = t_f = 6 \text{ ns}$

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

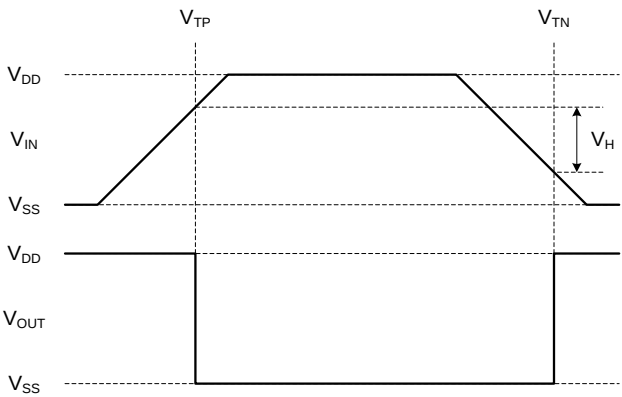


Fig. 1. Hysteresis Definition

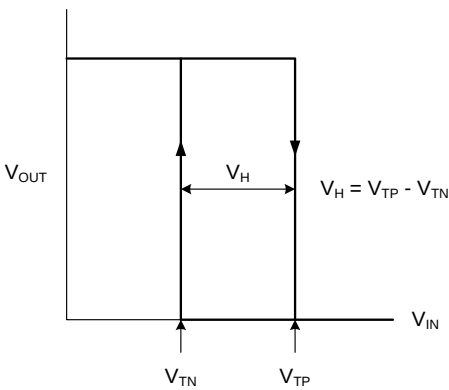


Fig. 2. Hysteresis Characteristic

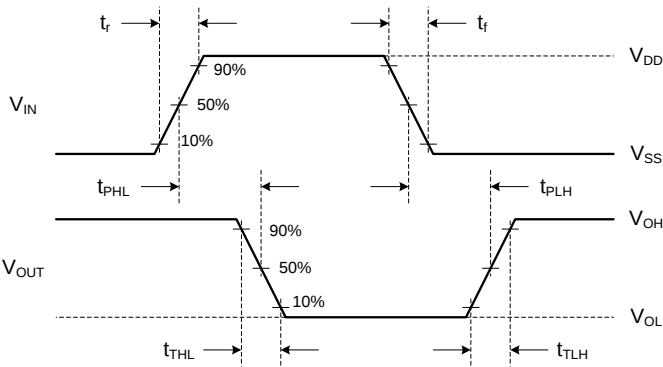


Fig. 3. Switching Time Waveforms

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.