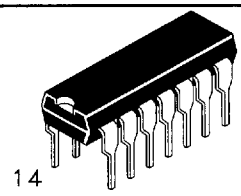
Available Q2, 1995

Hex Non-Inverter

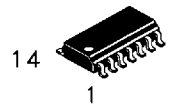
DV74HC34
DV74HCT34

This device contains six independent three-stage Non-inverters, each of which performs the logic Y=A function.

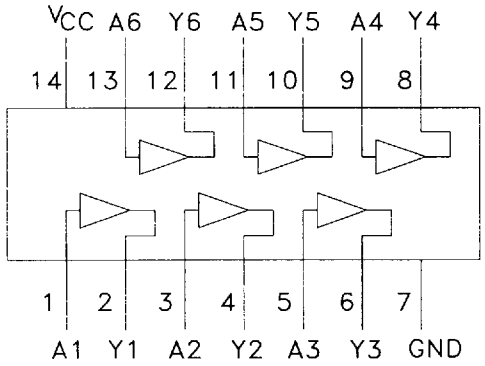
- **Output Drive Capability: 10 LSTTL Loads**
- **Outputs Directly Interface to CMOS, NMOS, and TTL**
- **Operating Voltage Range: 2 to 6 V for HC devices**
- **Low Input Current: 1 μA**
- **DC, AC parameters guaranteed from -55°C to 125°C**



N Suffix
Plastic DIP
AVG-001Case



D Suffix
Plastic SOP
AVG-002 Case



TRUTH TABLE
Y = A

Inputs	Outputs
A	**Y**
L	L
H	H

H = High Logic Level
L = Low Logic Level

ABSOLUTE MAXIMUM RATINGS

Maximum ratings are those values beyond which damage to the device may occur.

Symbol	Parameter	Value	Unit
V_{CC}	DC Supply Voltage (Referenced to GND)	–0.5 to +7.0	V
V_{IN}	DC Input Voltage (Referenced to GND)	–1.5 to V_{CC} +1.5	V
V_{OUT}	DC Output Voltage (Referenced to GND)	–0.5 to V_{CC} +0.5	V
I_{IN}	DC Input Current, per Pin	± 20	mA
I_{OUT}	DC Output Current, per Pin	± 25	mA
I_{CC}	DC Supply Current, V_{CC} and GND Pins	± 50	mA
T_{STG}	Storage Temperature Range	–65 to +150	°C
TL	Lead Temperature, 1mm from Case for 10 Seconds	260	°C

GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V_{CC}	DC Supply Voltage, HC (HCT), Referenced to GND	2.0 (4.5)	6.0 (5.5)	V
V_{IN}, V_{OUT}	DC Input Voltage, Output Voltage, Referenced to GND	0	V_{CC}	V
T_A	Ambient Temperature	–55	+125	°C
t_r, t_f	Input Rise and Fall Time: HC: V_{CC}=2.0V HCT: V_{CC}=5.5V / HC: V_{CC}=4.5V HC: V_{CC}=6.0V	0 0 0	1000 500 400	ns

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DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Vcc V	Guaranteed Limits			Unit
				25°C to −55°C	≤85°C	≤125°C	
V_{IH}	High Level Input Voltage (Referenced to GND)	V_{OUT} = 0.1 V $\|I_{OUT}\| \leq$ 20 µA	2.0 4.5 6.0	1.5 3.15 4.2	1.5 3.15 4.2	1.5 3.15 4.2	V
V_{IL}	Low Level Input Voltage	$V_{OUT} = V_{CC}$ − 0.1 V $\|I_{OUT}\| \leq$ 20 µA	2.0 4.5 6.0	0.5 1.35 1.8	0.5 1.35 1.8	0.5 1.35 1.8	V
V_{OH}	Minimum High Level Output Voltage	$V_{IN} = V_{IL}$ $\|I_{OUT}\| <$ 20 mA	2.0 4.5 6.0	1.9 4.4 5.9	1.9 4.4 5.9	1.9 4.4 5.9	V
		$V_{IN} = V_{IL}$, $\|I_{OUT}\| <$ 4.0 mA $\|I_{OUT}\| <$ 5.2 mA	4.5 6.0	3.98 5.48	3.84 5.34	3.70 5.20	V
V_{OL}	Maximum Low Level Output Voltage	$V_{IN} = V_{IH}$ $\|I_{OUT}\| \leq$ 20 µA	2.0 4.5 6.0	0.1 0.1 0.1	0.1 0.1 0.1	0.1 0.1 0.1	V
		$V_{IN} = V_{IH}$ $\|I_{OUT}\| <$ 4.0 mA $\|I_{OUT}\| <$ 5.2 mA	4.5 6.0	0.26 0.26	0.33 0.33	0.40 0.40	V
I_{IN}	Maximum Input Leakage Current	$V_{IN} = V_{CC}$ or GND	6.0	± 0.1	± 1.0	± 1.0	µA
I_{CC}	Maximum Quiescent Supply Current	$V_{IN} = V_{CC}$ or GND $\|I_{OUT}\| \leq$ 0 µA	6.0	2.0	20	40	µA

SWITCHING CHARACTERISTICS over full operating conditions (C_L=50 pF, Input t_f=t_r=6ns)

Symbol	Parameter	Vcc V	Guaranteed Limit			Unit
			25°C to −55°C	≤85°C	≤125°C	
t_{PLH}, t_{PHL}	Propagation Delay Time, Input A To Output Y	2.0 4.5 6.0	90 18 15	115 23 20	135 27 23	ns
t_{TLH}, t_{THL}	Output Transition Time Any Output	2.0 4.5 6.0	75 15 13	95 19 16	110 22 19	ns
C_{IN}	Maximum Input Capacitance	—	10	10	10	pF

C_{PD}	Power Dissipation Capacitance (Per Inverter) Used to determine the no-load dynamic power consumption, $P_D = C_{PD} V_{CC}^2 f + I_{CC} V_{CC}$	Typical @ 25°C, V_{CC} = 5 V 20	pF

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DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Vcc V	Guaranteed Limits			Unit
				25°C to −55°C	≤85°C	≤125°C	
V_{IH}	High Level Input Voltage (Referenced to GND)	V_{OUT} = 0.1 V $\|I_{OUT}\| \leq$ 20 µA	4.5 5.5	2 2	2 2	2 2	V
V_{IL}	Low Level Input Voltage	$V_{OUT} = V_{CC}$ − 0.1 V $\|I_{OUT}\| \leq$ 20 µA	4.5 5.5	0.8 0.8	0.8 0.8	0.8 0.8	V

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Symbol	Parameter	Conditions	V_{CC} V	Guaranteed Limits			Unit
				25°C to −55°C	≤85°C	≤125°C	
V_{OH}	Minimum High Level Output Voltage	$V_{IN} = V_{IL}$ $\|I_{OUT}\| \leq 20\ \mu A$	4.5 5.5	4.4 5.4	4.4 5.4	4.4 5.4	V
		$V_{IN} = V_{IL}$ $\|I_{OUT}\| \leq 4.0$ mA	4.5	3.98	3.84	3.70	V
V_{OL}	Maximum Low Level Output Voltage	$V_{IN} = V_{IH}$ $\|I_{OUT}\| \leq 20\ \mu A$	4.5 5.5	0.1 0.1	0.1 0.1	0.1 0.1	V
		$V_{IN} = V_{IH}$ $\|I_{OUT}\| \leq 4.0$ mA	4.5	0.26	0.33	0.40	V
I_{IN}	Maximum Input Leakage Current	$V_{IN} = V_{CC}$ or GND	5.5	± 0.1	± 1.0	± 1.0	µA
I_{CC}	Maximum Quiescent Supply Current	$V_{IN} = V_{CC}$ or GND $\|I_{OUT}\| = 0\ \mu A$	5.5	2.0	20	40	µA

ΔI_{CC}	Additional Quiescent Supply Current	V_{IN}=2.4 V, Any One Input V_{IN}=V_{CC} or GND, Other Inputs I_{out}=0µA	5.5	≥-55°C	25°C to 125°C	mA
				2.9	2.4	

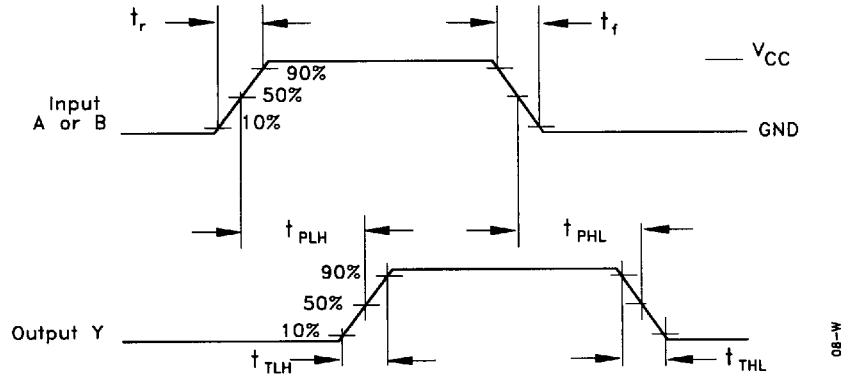
Total Supply Current = $I_{CC}+\Sigma\Delta I_{CC}$

SWITCHING CHARACTERISTICS over full operating conditions (V_{CC}=5V, C_L=50 pF, Input t_f=t_r=6ns)

Symbol	Parameter	Guaranteed Limit			Unit
		25°C to −55°C	≤85°C	≤125°C	
t_{PLH} t_{PHL}	Propagation Delay Time, Input A To Output Y	22	28	33	ns
t_{TLH}, t_{THL}	Output Transition Time Any Output	15	19	22	ns
C_{IN}	Maximum Input Capacitance	10	10	10	pF

C_{PD}	Power Dissipation Capacitance (Per Inverter) Used to determine the no-load dynamic power consumption, $P_D = C_{PD} V_{CC}^2 f + I_{CC} V_{CC}$	Typical @ 25°C, V_{CC} = 5 V	pF
		22	

SWITCHING WAVEFORMS



Input and Output threshold voltage, V_T=50% V_{CC} for HC; 1.3V for HCT
V_H=V_{CC} for HC, 3V for HCT