

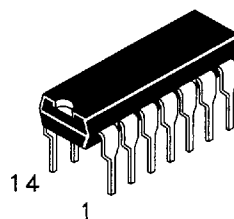
DV74ACT14 Available Q2, 1995

Hex Inverter Schmitt Trigger

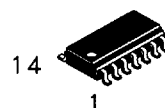
This inverter is identical in pinout to the LS14, LS04, and HC04. The inputs are compatible with standard CMOS outputs. With pullup resistors, they are compatible with LSTTL outputs. This device is used in applications to "square up" slow input rise and fall times. Excellent in noisy environments due to the hysteresis voltage of the Schmitt trigger.

- Advanced very high speed CMOS
- Outputs source/sink 24 mA
- Transmission line driving 50 ohms
- ACT has TTL compatible inputs
- AC device operation guaranteed from 2 to 6 volts
- DC & AC Parameters guaranteed over -40 to +85°C

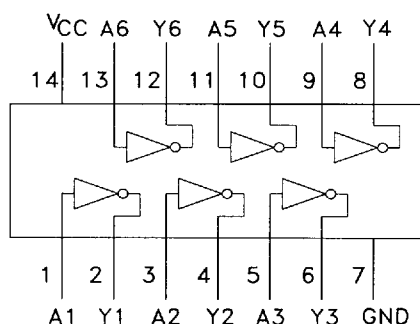
DV74AC14
DV74ACT14



N Suffix
Plastic DIP
AVG-001 Case



D Suffix
Plastic SOP
AVG-002 Case



TRUTH TABLE

Input	Output
A	Y
L	H
H	L

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	AC14, ACT14	Unit
V _{CC}	DC Supply Voltage (Referenced to GND)	- 0.5 to +7.0	V
V _{IN}	DC Input Voltage (Referenced to GND)	- 0.5 to V _{CC} +0.5	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 Sink/Source Current, per Pin	± 50	mA
I _{CC}	DC V _{CC} or GND Current per Output Pin	± 50	mA
T _{stg}	Storage Temperature	- 65 to +150	°C

GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	Min	Typ	Max	Unit
V _{CC}	Supply Voltage	'AC	2.0	5.0	V
		'ACT	4.5	5.0	
V _{IN} , V _{OUT}	DC Input Voltage, Output Voltage, (Ref. to GND)	0		V _{CC}	V
T _A	Operating Ambient Temperature Range	-40	25	85	°C
C _{IN}	Input Capacitance V _{CC} = 5.0 V		4.5		pF
C _{PD}	Power Dissipation Capacitance V _{CC} = 5.0 V		25		pF

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC} (V)	AC14			Unit					
				TA = +25°C		TA = −40 to +85°C						
				Typ	Guaranteed Limits							
VT+	Maximum Positive Threshold		3.0	2.2			V					
			4.5	3.2								
			5.5	3.9								
VT-	Minimum Negative Threshold		3.0	0.5			V					
			4.5	0.9								
			5.5	1.1								
VH	Minimum Input Hysteresis		3.0	0.3			V					
			4.5	0.4								
			5.5	0.5								
VOH	Minimum High Level Output Voltage	IOUT= −50 μA	3.0	2.99	2.9	2.9	V					
			4.5	4.49	4.4	4.4						
			5.5	5.49	5.4	5.4						
		VIN = VIL or VIH						V				
									−12mA	3.0	2.56	2.46
									IOH −24mA	4.5	3.86	3.76
−24mA	5.5	4.86	4.76									
VOL	Maximum Low Level Output Voltage	IOUT= 50 μA	3.0	0.002	0.1	0.1	V					
			4.5	0.001	0.1	0.1						
			5.5	0.001	0.1	0.1						
		VIN = VIL or VIH						V				
									12mA	3.0	0.36	0.44
									IOL 24mA	4.5	0.36	0.44
24mA	5.5	0.36	0.44									
IIN	Maximum Input Leakage Current	VIN = VCC or GND	5.5		±0.1	±1.0	μA					
ICC	Maximum Quiescent Supply Current	VIN = VCC or GND	5.5		4.0	40	μA					

AC CHARACTERISTICS over full operating conditions

Symbol	Parameter	V _{CC} ±10% (V)	AC14				Unit
			T _A = +25°C C _L = 50 pF		T _A = − 40°C to +85°C C _L = 50 pF		
			Min	Max	Min	Max	
t _{PLH}	Propagation Delay	3.3 5.0	1.5 1.5	13.5 10.0	1.5 1.5	15.0 11.0	ns
t _{PHL}	Propagation Delay	3.3 5.0	1.5 1.5	11.5 8.5	1.5 1.5	13.0 9.5	ns

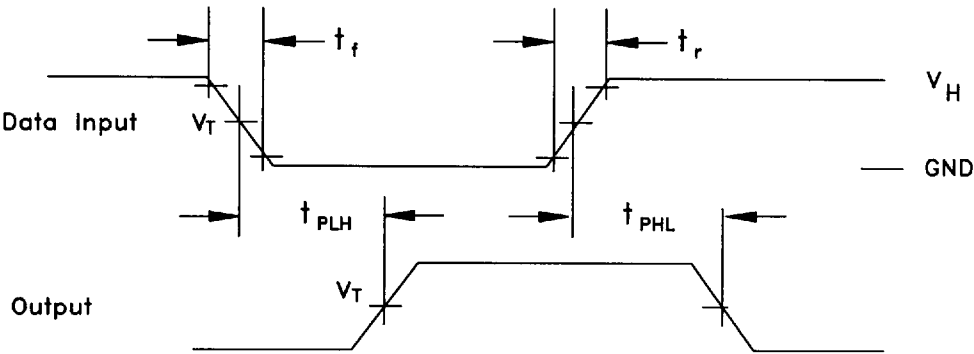
DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC} (V)	ACT14			Unit
				TA = +25°C		TA = −40 to +85°C	
				Typ	Guaranteed Limits		
V _{T+}	Maximum Positive Threshold		4.5	2.0			V
V _{T-}	Minimum Negative Threshold		4.5	0.8			V
V _H	Minimum Input hysteresis		4.5	0.4			V
V _{OH}	Minimum High Level Output Voltage	I _{OUT} = −50 μA	4.5 5.5	4.49 5.49	4.4 5.4	4.4 5.4	V
		V _{IN} = V _{IL} or V _{IH} I _{OH} −24mA −24 mA	4.5 5.5		3.86 4.86	3.76 4.76	V
V _{OL}	Maximum Low Level Output Voltage	I _{OUT} = 50 μA	4.5 5.5	0.001 0.001	0.1 0.1	0.1 0.1	V
		V _{IN} = V _{IL} or V _{IH} I _{OL} 24mA 24 mA	4.5 5.5		0.36 0.36	0.44 0.44	V
I _{IN}	Maximum Input Leakage Current	V _{IN} = V _{CC} or GND	5.5		±0.1	±1.0	μA
ΔI _{CC} T	Additional Max I _{CC} /Input	V _{IN} = V _{CC} − 2.1 V	5.5	0.6		1.5	mA
I _{CC}	Maximum Quiescent Supply Current	V _{IN} = V _{CC} or GND	5.5		4.0	40	μA

AC CHARACTERISTICS over full operating conditions

Symbol	Parameter	V _{CC} ±10% (V)	ACT14				Unit
			T _A = +25°C C _L = 50 pF		T _A = − 40°C to +85°C C _L = 50 pF		
			Min	Max	Min	Max	
t _{PLH}	Propagation Delay	5.0	1.5	11.5	1.0	12.5	ns
t _{PHL}	Propagation Delay	5.0	1.5	10.0	1.0	11.0	ns

SWITCHING WAVEFORMS



Input and output threshold voltage:
V_T = 50% V_{CC} for AC; 1.5V for ACT
V_H = V_{CC} for AC, 3V for ACT