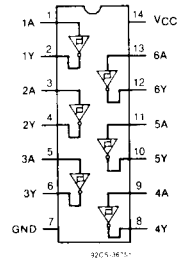


CD54HC14/3A CD54HCT14/3A

Hex Inverting Schmitt Trigger



The RCA-CD54HC14 and CD54HCT14 each contain six inverting Schmitt Triggers in one package.

Package Specifications

See Section 11, Fig. 10

FUNCTIONAL DIAGRAM

Static Electrical Characteristics (Limits with black dots (•) are tested 100%) — Complete Specification

CHARACTERISTIC	CD54HC14								CD54HCT14								UNITS
	TEST CONDITIONS			LIMITS				TEST CONDITIONS			LIMITS						
	V _I V	I _O mA	V _{CC} V	+25° C		-55/ +125° C		V _I V	V _{CC} V	+25° C		-55/ +125° C					
				Min.	Max.	Min.	Max.			Min.	Max.	Min.	Max.				
Input Switch Points	V _{T+}		2	0.7	1.5	0.7	1.5			—	—	—	—	V			
			4.5	1.7•	3.15•	1.7•	3.15•			4.5	1.2•	1.9•	1.2•		1.9•		
			6	2.1	4.2	2.1	4.2			5.5	1.4	2.1	1.4		2.1		
	V _{T-}		2	0.3	1	0.3	1			—	—	—	—	V			
			4.5	0.9•	2.2•	0.9•	2.2•			4.5	0.5•	1.2•	0.5•		1.2•		
			6	1.2	3	1.2	3			5.5	0.6	1.4	0.6		1.4		
V _H		2	0.2	1	0.2	1			—	—	—	—	V				
		4.5	0.4•	1.4•	0.4•	1.4•			4.5	0.4•	1.4•	0.4•		1.4•			
		6	0.6	1.6	0.6	1.6			5.5	0.4	1.5	0.4		1.5			
High-Level Output Voltage CMOS Loads	V _{OH}	V _{T-} or V _{T+}	-0.02	2	1.9	—	1.9	—	V _{T-} or V _{T+}		—	—	—	—	V		
				4.5	4.4•	—	4.4•	—			4.5	4.4•	—	4.4•		—	
				6	5.9	—	5.9	—			—	—	—	—		—	
	TTL Loads	V _{T-} or V _{T+}	-4 -5.2	—	—	—	—	—	V _{T-} or V _{T+}		—	—	—	—	V		
				4.5	3.98•	—	3.7•	—			4.5	3.98•	—	3.7•		—	
				6	5.48	—	5.2	—			—	—	—	—		—	
Low-Level Output Voltage CMOS Loads	V _{OL}	V _{T-} or V _{T+}	0.02	2	—	0.1	—	0.1	V _{T-} or V _{T+}		—	—	—	—	V		
				4.5	—	0.1•	—	0.1•			4.5	—	0.1•	—		0.1•	
				6	—	0.1	—	0.1			—	—	—	—		—	
	TTL Loads	V _{T-} or V _{T+}	4 5.2	—	—	—	—	—	V _{T-} or V _{T+}		—	—	—	—	V		
				4.5	—	0.26•	—	0.4•			4.5	—	0.26•	—		0.4•	
				6	—	0.26	—	0.4			—	—	—	—		—	
Input Leakage Current	I _I	V _{CC} or Gnd	6	—	±0.1•	—	±1•	Any Voltage Between V _{CC} and Gnd	5.5	—	±0.1•	—	±1•	μA			
Quiescent Device Current	I _{CC}	V _{CC} or Gnd	0	6	—	2•	—	40•	V _{CC} or Gnd	5.5	—	2•	—	40•	μA•		
Additional Quiescent Device Current per Input Pin: 1 unit load	ΔI _{CC} •							V _{CC} -2.1	4.5 to 5.5	Min Typ Max			—	490	μA		

*For dual-supply system theoretical worst case (V_I = 2.4 V, V_{CC} = 5.5 V) specification is 1.8 mA.

CD54HC14/3A

CD54HCT14/3A

HCT INPUT LOADING TABLE

INPUT	UNIT LOAD*
nA	0.6

*Unit load is ΔI_{CC} limit specified in Static Characteristics Chart, e.g., 360 μ A max. @ 25°C.

Switching Speed

(Limits with black dots (•) are tested 100%.)

SWITCHING CHARACTERISTICS ($C_L = 50$ pF, Input $t_r, t_f = 6$ ns)

CHARACTERISTIC	SYMBOL	V_{CC} V	25°C				-55°C to +125°C				UNITS
			HC		HCT		54HC		54HCT		
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
Propagation Delay A to Y	t_{PLH} t_{PHL}	2	—	135	—	—	—	205	—	—	ns
		4.5	—	27•	—	38•	—	41•	—	57•	
		6	—	23	—	—	—	35	—	—	
Output Transition Time	t_{TLH} t_{THL}	2	—	75	—	—	—	110	—	—	
		4.5	—	15	—	15	—	22	—	22	
		6	—	13	—	—	—	19	—	—	
Input Capacitance	C_i	—	—	10	—	10	—	10	—	10	pF

Burn-In Test-Circuit Connections

(Use Static II for /3A burn-in and Dynamic for Life Test.)

Static	STATIC BURN-IN I			STATIC BURN-IN II		
	OPEN	GROUND	V_{CC} (6V)	OPEN	GROUND	V_{CC} (6V)
CD54HC/HCT14	2,4,6,8,10, 12	1,3,5,7,9,11,13	14	2,4,6,8,10, 12	7	1,3,5,9,11,13,14
Dynamic	OPEN	GROUND	$1/2 V_{CC}$ (3V)	V_{CC} (6V)	OSCILLATOR	
CD54HC/HCT14	—	7	2,4,6,8,10,12	14	50 kHz	25 kHz
					1,3,5,9,11,13	—

NOTE: Each pin except V_{CC} and Gnd will have a resistor of 2k-47k ohms.