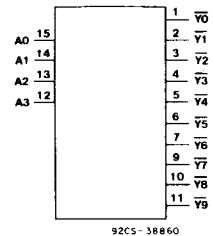


CD54HC42/3A CD54HCT42/3A

BCD-to-Decimal Decoder (1-to-10)

The RCA-CD54HC42 and CD54HCT42 BCD-to-decimal decoders utilize silicon-gate CMOS technology to achieve operating speeds similar to LSTTL decoders with the low power consumption of standard CMOS integrated circuits. These devices have the capability of driving 10 LSTTL loads and are compatible with the standard 54LS logic family. One of 10 outputs (low on select) is selected in accordance with the BCD input. Non-valid BCD inputs result in none of the outputs being selected (all outputs are high).



FUNCTIONAL DIAGRAM

Package Specifications

See Section 11, Fig. 11

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

CHARACTERISTICS	TEST CONDITIONS	HC/HCT				V _{IN}		LIMITS		UNITS
		V _{DD}	V _O	I _O	V _{CC} or GND	HC	HCT	MIN.	MAX.	
						V _{IL} or V _{IH}	V _{IL} or V _{IH}			
Quiescent Device Current I _{CC}	25°C	6	—	—	6, 0	—	—	—	8•	μA
	-55°C	6	—	—	6, 0	—	—	—	160•	
	+125°C	6	—	—	6, 0	—	—	—	160•	

HCT INPUT LOADING TABLE

INPUT	UNIT LOAD*
All	1

The complete static electrical test specification consists of the above by-type static tests combined with the standard static tests in the beginning of this section.

*Unit load is ΔI_{CC} limit specified in Static Characteristics Chart, e.g., 360 μA 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 Any Input to \bar{Y}	t _{PLH}	2	—	150	—	—	—	225	—	—	ns
	t _{PHL}	4.5	—	30•	—	35•	—	45•	—	53•	
		6	—	26	—	—	38	—	—	—	
Output Transition Time	t _{THL}	2	—	75	—	—	—	110	—	—	ns
	t _{TLH}	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/HCT42	1-7,9-11	8,12-15	16	1-7,9-11	8	12-16
Dynamic	OPEN	GROUND	1/2 V _{CC} (3V)	V _{CC} (6V)	OSCILLATOR	
					50 kHz	25 kHz
CD54HC/HCT42	—	8,12	1-7,9-11	16	14,15	13

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