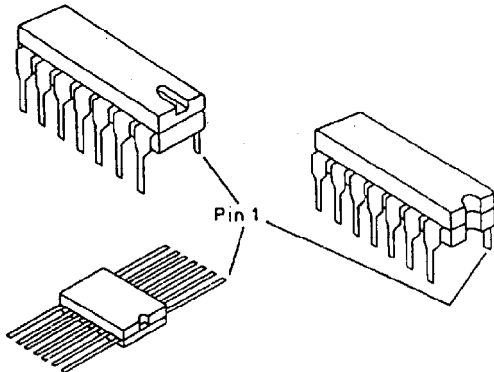




BRITISH STANDARDS INSTITUTION 2 PARK STREET, LONDON. W1A 2BS	BS CECC 90102 - 001 ISSUE 1 NOVEMBER 1981 
Specification available from:- AS SHOWN IN PD 9002 AND CECC 00 200 AND	Page 1 of 16 pages
ELECTRONIC COMPONENTS OF ASSESSED QUALITY DETAIL SPECIFICATION IN ACCORDANCE WITH: BS CECC 90 000 : 1976 BS CECC 90 100 : 1977	MANUFACTURERS TYPE NUMBER 54S00 64S00 74S00 84S00
Outline not to scale: Isometric projection Marking information see clause 1 	SEE PD 9002 AND CECC 00 200 For ordering information see clause 1
Refer to IEC 191-1-50a (type A50B) Dual-in-Line (plastic or ceramic) refer to Appendix A1.3 Flatpack (metal or ceramic)	QUADRUPL 2-INPUT POSITIVE NAND GATES TYPICAL CONSTRUCTION SILICON MONOLITHIC BIPOLAR CAVITY AND NON-CAVITY PACKAGES ASSESSMENT LEVELS R, S, T, AND V

1. Type description

1.1 Truth table

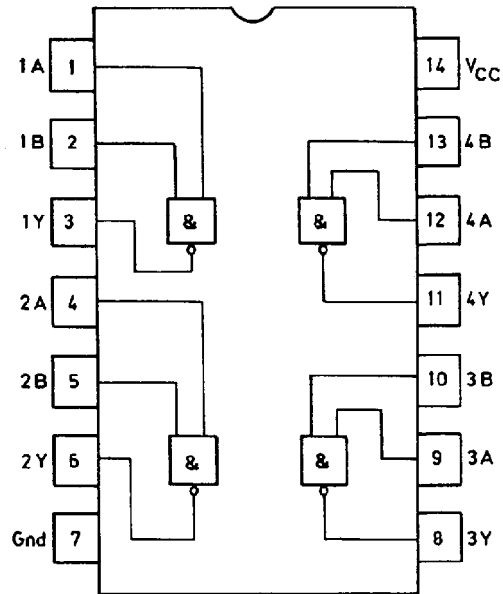
INPUTS		OUTPUT
A	B	Y
H	H	L
H	L	H
L	H	H
L	L	H

H = High level
L = Low level

Refer to Qualified Products List PD 9002 and/or CECC 00 200
for details of manufacturers approved to this specification

1.2 Terminal identification, type designation and marking

1.2.1 Terminal identification



Quadrate 2-input positive Nand gates

1.2.2 Type designation

TEMPERATURE RANGE	PACKAGE		
	Ceramic Dual-in-Line	Plastic Dual-in-Line	Ceramic Flatpack
0 + 70	74S00J	N	W
-25 + 85	84S00J		
-40 + 85	64S00J		
-55 +125	54S00J		

1.2.3 Marking

Each integrated circuit shall bear the following markings:

- (1) Terminal identification
- (2) Type designation
- (3) Date code
- (4) Factory identification code (unless derived from trademark)
- (5) Manufacturers trade name or mark
- (6) Mark of conformity (unless a certificate of conformity is used)

1.3 Ordering information

Orders for these integrated circuits shall contain the following minimum information:

Manufacturers integrated circuit type designation, screening procedures and assessment levels as detailed to this CECC specification number.

(For details of screening procedures see Appendix A1.1).

2. Limiting conditions of use (not for inspection purposes)

2.1	Minimum and maximum continuous supply voltage	V_{CC}						-0,5V +7,0V
2.2	Minimum and maximum input voltages							
2.2.1	Minimum and maximum input voltage	V_I						-0,5V +5,5V
2.2.2	Maximum input voltage between multiple emitter transistor inputs	V_{II}						+5,5V
2.3	Minimum and maximum operating ambient temperatures	$T_{amb}(^{\circ}C)$	min. max.	54S -55 +125	64S -40 +85	74S 0 +70	84S -25 +85	
2.4	Minimum and maximum storage temperatures	$T_{stg}(^{\circ}C)$	min. max.	-65 +150	(All types)			

3. Recommended operating conditions and associated characteristics (not for inspection purposes)

3.1 Recommended operating conditions

These apply over the full operating ambient temperature range unless otherwise stated.

Description	Symbol	Type	Value	Unit
Positive supply voltage range	V_{CC}	54S 64/74/84S	4,5 - 5,5 4,75 - 5,25	V V
Minimum value of Low level input voltage	V_{ILB}	All types	0	V
Maximum value of Low level input voltage	V_{ILA}	All types	0,8	V
Minimum value of High level input voltage	V_{IHB}	All types	2,0	V
Maximum value of High level input voltage	V_{IHA}	54S 64/74/84S	5,0 5,25	V V

3.1 (contd)

Description	Symbol	Type	Value	Unit
Maximum value of Low level output current for each output	I_{OLA}	All types	20,0	mA
Maximum value of High level output current	$-I_{OHA}$	All types	1,0	mA
D.C. noise margin at Low level ($V_{ILA} - V_{OLA}$)	V_{NL}	All types	0,3	V
at High level ($V_{OHB} - V_{IHB}$)	V_{NH}	54S	0,5	V
	V_{NH}	64/74/84S	0,7	V

3.2 Associated characteristics

3.2.1 Minimum and maximum values are given for the worst case operation within the ambient temperature range, except for those conditions marked with an asterisk (*).

	54S	64S	74S	84S	
T _{amb} min.	-55	-40	0	-25	°C
T _{amb} max.	+125	+85	+70	+85	
V _{CC} min.	4,5	4,75			V
V _{CC} max.	5,5	5,25			

3.2.2

Characteristics	Conditions	$V_{CC}(V)$	Symbol	Min.	Max.	Unit
Total supply current at High level	Apply input conditions to give High level output.	V_{CC} max.	I_{CCH}	-	16,0	mA
Total supply current at Low level	Apply input conditions to give Low level output	V_{CC} max.	I_{CCL}	-	36,0	mA
High level input current	$V_{IN} = 5,5V$	V_{CC} max.	$I_{IH(1)}$	-	1,0	mA
	$V_{IN} = 2,7V$		$I_{IH(2)}$	-	50,0	μA

(1) To all inputs

*See clauses 3.1 and 3.2.1 of this specification

3.2.2 (contd)

Characteristics	Conditions	$V_{CC}(V)$	Symbol	Min.	Max.	Unit
Low level input current	$V_{IN} = 0,5V$	$V_{CC} \text{ max.}$	$-I_{IL}$	-	2,0	mA
Input clamping voltage	$-I_{IC} = 18,0mA$	$V_{CC} \text{ min.}$	$-V_{IC}$	-	1,2	V
Output voltage 54S 64/74/84S	$I_{OL} = 20,0mA^{(2)}$ $-I_{OH} = 1,0mA$	$V_{CC} \text{ min.}$	V_{OL} V_{OH} V_{OH}	- 2,5 2,7	0,5 - -	V V V
Output short circuit current	$V_O = 0V^{(3)}$	$V_{CC} \text{ max.}$	$-I_{OS}$	40,0	100,0	mA
Propagation time	$T_{amb} = 25^{\circ}C^{*}$ test conditions as in Sub-group A5	5,0V				
Low to High level			t_{PLH}	-	4,5	ns
High to Low level			t_{PHL}	-	5,0	ns

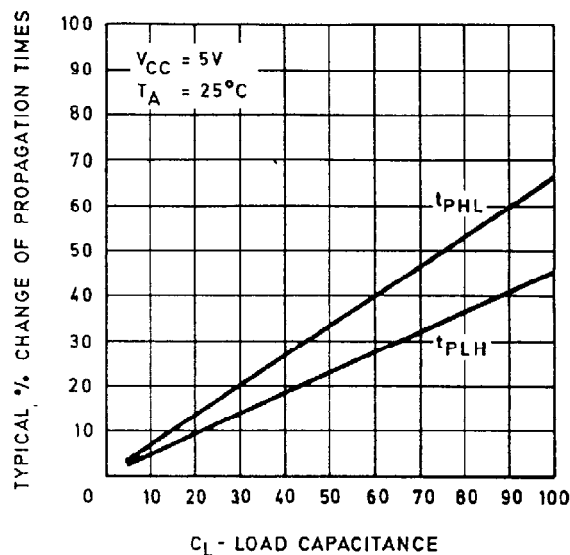
(2) Fan out = 10

(3) Only one output at a time, duration $t \leq 1s$

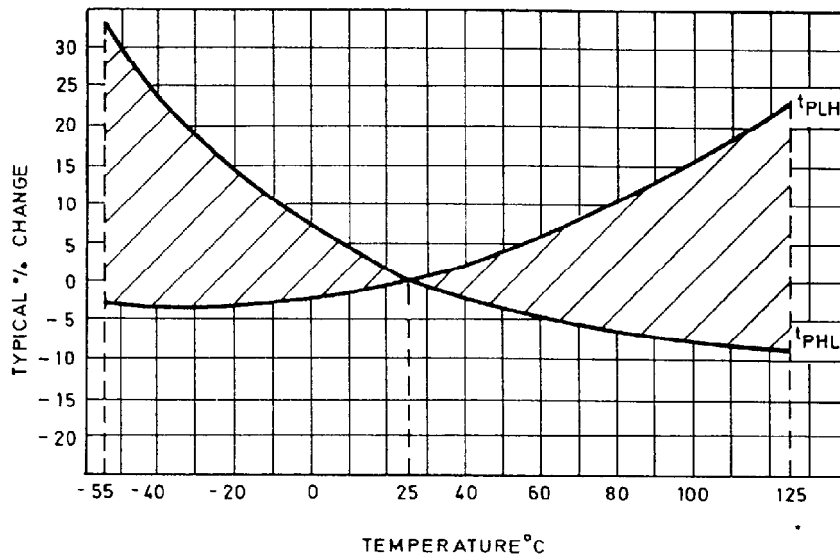
*See Clauses 3.1 and 3.2.1 of this specification

3.3 Supplementary information

3.3.1 Change of typical propagation time with output loading



3.3.2 Variation of propagation time with temperature



3.3.3 Gates

Inputs of unused gates should be connected in such a way that the output is set to High level to ensure minimum power dissipation.

For Nand gates unused inputs shall be maintained at a positive voltage $\geq 2,5V$ (54S) or $2,7V$ (64/74/84S), but shall not exceed the absolute maximum rating of $5,5V$.

3.4 Typical values* ($V_{CC} = 5,0V$, $T_{amb} = 25^{\circ}C$)

typical supply current of the device (50% duty cycle)

$$SOO \quad I_{CC} = 15,0mA$$

Typical propagation time:

$$SOO \quad t_{Ptyp} = \frac{t_{PLH} + t_{PHL}}{2} = 3,0ns$$

*See 3.2 of this specification