

BRITISH STANDARDS INSTITUTION

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BS CECC 90103 - 004

ISSUE 1

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Page 1 of 15 pages

ELECTRONIC COMPONENTS OF ASSESSED QUALITY
 DETAIL SPECIFICATION IN ACCORDANCE WITH:

BS CECC 90 000 : 1976
 BS CECC 90 100 : 1977

MANUFACTURERS TYPE NUMBER

54LS03
 64LS03
 74LS03
 84LS03

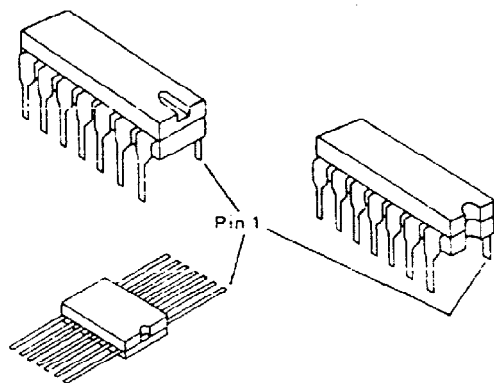
SEE PD 9002 AND CECC 00 200
 For ordering information see
 clause 1

QUAD 2-INPUT NAND GATES
 WITH OPEN COLLECTOR OUTPUTS

TYPICAL CONSTRUCTION
 SILICON MONOLITHIC
 BIPOLAR TTL-LOW-POWER
 SCHOTTKY

ASSESSMENT LEVELS
 R, S, T AND V

Outline not to scale: Isometric projection
 Marking 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)

1. Type description

1.1 Truth table (each gate)

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

H = High level
 L = Low level

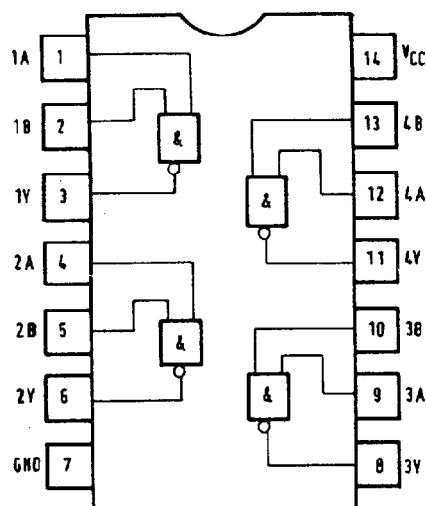
Refer to Qualified Products List PD 9002 and/or CECC 00 200
 for details of manufacturers approved to this specification

1.1.1 Boolean equation

$$Y = \overline{AB}$$

1.2 Terminal identification, type designation and marking

1.2.1 Terminal identification



Quad 2-input Nand gates
with open collector outputs

1.2.2 Type designation

TEMPERATURE RANGE	PACKAGE		
	Ceramic Dual-in-Line	Plastic Dual-in-Line	Ceramic Flat pack
0 +70	74LS03J	N	W
-25 +85	84LS03J		
-40 +85	64LS03J		
-55 +125	54LS03J		

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 procedure 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 Maximum continuous supply voltage V_{CC} -0,5V
+7,0V

2.2 Maximum input voltages V_I -0,5V
+7,0V

			54LS	64LS	74LS	84LS
2.3	Minimum and maximum operating ambient temperatures	$T_{amb}(^{\circ}C)$	min. -55 max. +125	-40 +85	0 +70	-25 +85

2.4	Minimum and maximum storage temperatures	$T_{stg}(^{\circ}C)$	min. -65 max. +150	(All types)		
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3. Recommended operating conditions and associated characteristics (not for inspection purposes).

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

Description	Symbol	Type	Value	Unit
Positive supply voltage range	V_{CC}	54LS 64/74/84LS	4,5 - 5,5 4,75 - 5,25	V V
Minimum value of High level input voltage	V_{IHB}	All types	2,0	V
Maximum value of High level input voltage	V_{IHA}	All types	5,5	V
Minimum value of Low level input voltage	V_{ILB}	All types	-0,3	V
Maximum value of Low level input voltage	V_{ILA}	54LS 64/74/84LS	0,7 0,8	V V
Maximum value of Low level output current for each output	I_{OLA}	All types 64/74/84LS	4,0 8,0	mA mA
Maximum value of output current (leakage) for each output at V_{OH}	I_{OHX}	All types	100,0	μA
Maximum value of applied off state output voltage	V_{OHA}	All types	5,5	V

3.2 Associated characteristics

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

	54LS	64LS	74LS	84LS	
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			

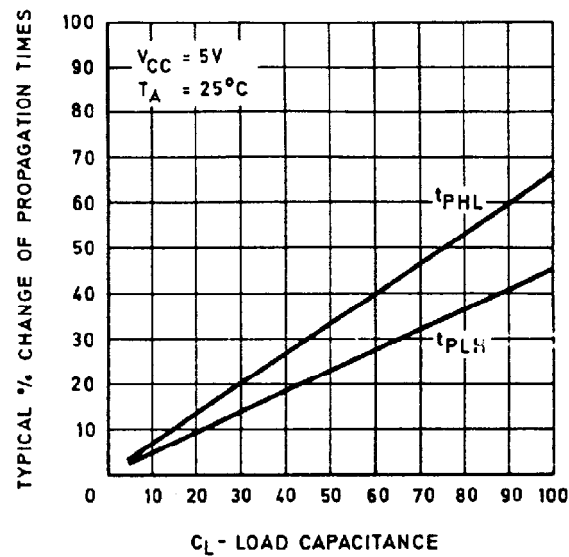
3.2.2

Characteristics	Conditions	$V_{CC}(V)$	Symbol	Min.	Max.	Unit
Total supply current with High level output	$V_{IL} = 0V^{(1)}$	V_{CC} max.	I_{CCH}	-	1,6	mA
Total supply current with Low level output	$V_{IH} = 4,5V$	V_{CC} max.	I_{CCL}	-	4,4	mA
High level input current	$V_{IH(1)} = 7,0V$	V_{CC} max.	$I_{IH(1)}$	-	0,1	mA
	$V_{IH(2)} = 2,7V$	V_{CC} max.	$I_{IH(2)}$	-	20,0	µA
Low level input current	$V_{IL} = 0,4V$	V_{CC} max.	$-I_{IL}$	-	0,4	mA
Input clamping voltage	$-I_{IC} = 18,0mA$	V_{CC} min.	$-V_{ICA}$	-	1,5	V
Output voltage	54LS $I_{OL(1)} = 4,0mA^{(2)}$	V_{CC} min.	$V_{OL(1)}$	-	0,4	V
	64/74/84LS $I_{OL(2)} = 8,0mA^{(3)}$	V_{CC} min.	$V_{OL(2)}$	-	0,5	V
Propagation times All types	$T_{amb} = 25°C^*$ test conditions as in Sub-group A5	5,0V	t_{PHL}	-	28,0	ns
			t_{PLH}	-	32,0	ns

(1) To all inputs, (2) Fan out = 10, (3) Fan out = 20,
* See 3.2.1 of this specification.

3.3 Supplementary information

3.3.1 Change of typical propagation time with output loading



Propagation time Vs. load capacitance

3.3.2 Variation of propagation time with temperature

