

BRITISH STANDARDS INSTITUTION

2 PARK STREET, LONDON. W1A 2BS

Specification available from:- AS SHOWN IN PD 9002
AND CECC 00 200 AND

BS CECC 90102 - 025

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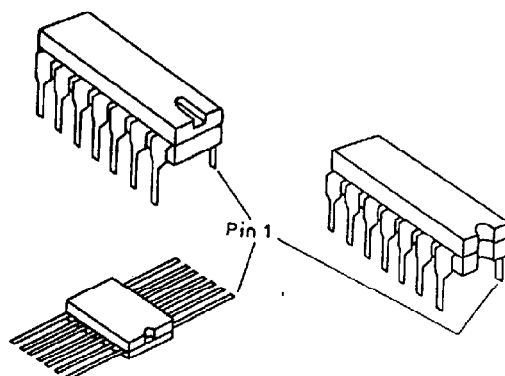
ELECTRONIC COMPONENTS OF ASSESSED QUALITY
DETAIL SPECIFICATION IN ACCORDANCE WITH:

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

MANUFACTURERS TYPE NUMBER

54S140
64S140
74S140
84S140

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)

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

DUAL 4-INPUT NAND 50-OHM
LINE DRIVER

TYPICAL CONSTRUCTION
SILICON MONOLITHIC BIPOLAR
CAVITY AND NON-CAVITY
PACKAGES

ASSESSMENT LEVELS
R, S, T, AND V

1. Type description

1.1 Truth table (see page 2)

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

1.1 Truth table (contd)

INPUTS				OUTPUT
A	B	C	D	Y
H	H	H	H	L
L	X	X	X	H
X	L	X	X	H
X	X	L	X	H
X	X	X	L	H

H = High level

L = Low level

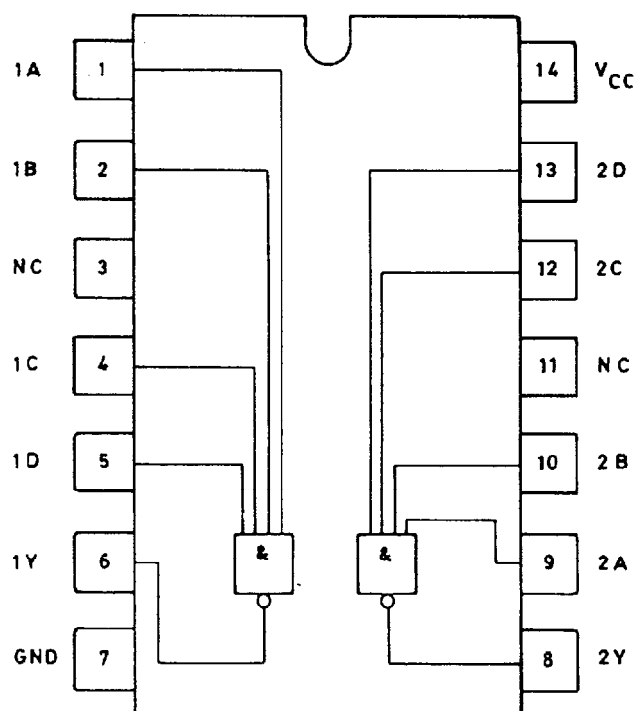
X = Logic level irrelevant

1.1.1 Boolean equation

$$Y = \overline{ABCD}$$

1.2 Terminal identification, type designation and marking

1.2.1 Terminal identification



Dual 4-input Nand 50-ohm line driver

1.2.1 (contd)

Terminals marked with NC are not connected internally and may be used as electrical support points. The applied voltage shall not exceed 7,0V.

1.2.2 Type designation

TEMPERATURE RANGE	PACKAGE		
	Ceramic Dual-in-Line	Plastic Dual-in-Line	Ceramic Flatpack
0 + 70	74S140J	N	W
-25 + 85	84S140J		
-40 + 95	64S140J		
-55 +125	54S140J		

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 voltages | V_I | -0,5V
+5,5V |
| 2.2.2 | Maximum input voltage between multiple emitter transistor inputs | V_{II} | +5,5V |

			54S	64S	74S	84S
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)		

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

3.1 Recommended operating conditions

These apply over the 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 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}	All types	0,8	V
Maximum value of Low level output current for each output	I_{OLA}	All types	60,0	mA
Maximum value of output current for each output at V_{OH}	I_{OHA}	All types	40,0	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 64/74/84S	0,5 0,7	V 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 (*)

3.2.1 (contd)

	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	$V_{CC}(\text{V})$	Symbol	Min.	Max.	Unit
Total supply current at High level	All outputs High	$V_{CC} \text{ max.}$	I_{CCH}	-	18,0	mA
Total supply current at Low level	All outputs Low	$V_{CC} \text{ max.}$	I_{CCL}	-	44,0	mA
High level input current	$V_{IH(1)} = 5,5\text{V}$	$V_{CC} \text{ max.}$	$I_{IH(1)}$	-	1,0	mA
	$V_{IH(2)} = 2,7\text{V}$	$V_{CC} \text{ max.}$	$I_{IH(2)}$	-	100,0	μA
Low level input current	$V_{IN} = 0,5\text{V}$	$V_{CC} \text{ max.}$	$-I_{IL}$	-	4,0	mA
Input clamping voltage	$-I_{IN} = 18,0\text{mA}$	$V_{CC} \text{ min.}$	$-V_{IC}$	-	1,2	V
Output voltage	54S $-I_{OH} = 3,0\text{mA}$ 64/74/84S $-I_{OH} = 3,0\text{mA}$ 50 Ω to ground All types $I_{IL} = 60,0\text{mA} \text{ (1)}$	$V_{CC} \text{ min.}$	V_{OH}	2,5	-	V
			V_{OH}	2,7	-	V
			V_{OH}	2,0	-	V
			V_{OL}	-	0,5	V
Output short circuit current	V_{IN} as defined by the truth table to give High level output (2) $V_O = 0\text{V}$	$V_{CC} \text{ max.}$	$-I_{OS}$	50,0	225,0	mA

- (1) Fan out = 30,
 (2) Only one output at a time, duration $t \leq 1 \text{ sec}$

3.2.2 (contd)

Characteristics	Conditions	$V_{CC}(V)$	Symbol	Min.	Max.	Unit
Propagation times All types	$T_{amb} = 25^{\circ}C^{*}$ test conditions as in Sub-group A5	5,0V				
High to Low level From To Input, A, B, Output Y C or D			t_{PHL}	-	6,5	ns
Low to High level From To Input, A, B, Output Y C or D			t_{PLH}	-	6,5	ns

*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

