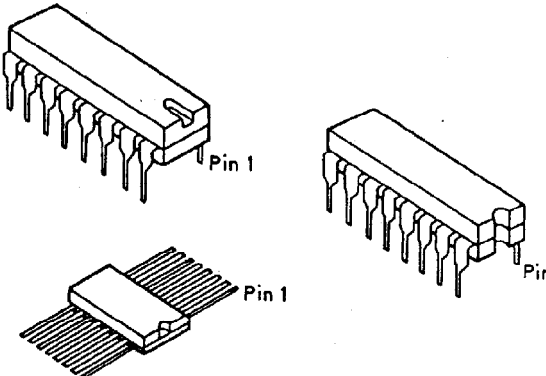


BRITISH STANDARDS INSTITUTION 2 PARK STREET, LONDON. W1A 2BS Specification available from:- AS SHOWN IN PD 9002 AND CECC 00 200 AND	BS CECC 90103 - 132 ISSUE 1 NOVEMBER 1981  Page 1 of 19 pages
ELECTRONIC COMPONENTS OF ASSESSED QUALITY DETAIL SPECIFICATION IN ACCORDANCE WITH: BS CECC 90 000 : 1976 BS CECC 90 100 : 1977	MANUFACTURERS TYPE NUMBER 54LS445 64LS445 74LS445 84LS445
Outline not to scale: Isometric projection Marking information see clause 1  Refer to IEC 191-1-50a (type A50C) 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 BCD-TO-DECIMAL DECODERS/ DRIVERS TYPICAL CONSTRUCTION SILICON MONOLITHIC BIPOLAR TTL-LOW-POWER SCHOTTKY 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)

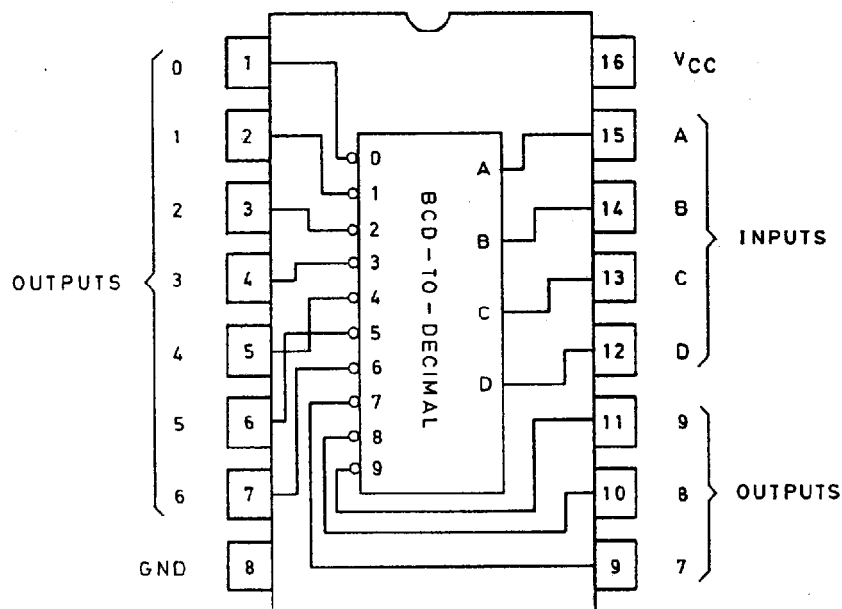
NO	INPUTS				OUTPUTS									
	D	C	B	A	0	1	2	3	4	5	6	7	8	9
0	L	L	L	L	L	H	H	H	H	H	H	H	H	H
1	L	L	L	H	H	L	H	H	H	H	H	H	H	H
2	L	L	H	L	H	H	L	H	H	H	H	H	H	H
3	L	L	H	H	H	H	H	L	H	H	H	H	H	H
4	L	H	L	L	H	H	H	H	L	H	H	H	H	H
5	L	H	L	H	H	H	H	H	H	L	H	H	H	H
6	L	H	H	L	H	H	H	H	H	H	L	H	H	H
7	L	H	H	H	H	H	H	H	H	H	H	L	H	H
8	H	L	L	L	H	H	H	H	H	H	H	H	L	H
9	H	L	L	H	H	H	H	H	H	H	H	H	H	L
INVALID	H	L	H	L	H	H	H	H	H	H	H	H	H	H
	H	L	H	H	H	H	H	H	H	H	H	H	H	H
	H	H	L	L	H	H	H	H	H	H	H	H	H	H
	H	H	L	H	H	H	H	H	H	H	H	H	H	H
	H	H	H	L	H	H	H	H	H	H	H	H	H	H
	H	H	H	H	H	H	H	H	H	H	H	H	H	H
	H	H	H	H	H	H	H	H	H	H	H	H	H	H

H = High level (OFF)

L = Low level (ON)

1.2 Terminal identification, type designation and marking

1.2.1 Terminal identification



BCD-to-decimal decoders/drivers

- 2 -

CECC 90103 - 132
Iss

Documents



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1.2.2 Type designation

TEMPERATURE RANGE	PACKAGE		
	Ceramic Dual-in-Line	Plastic Dual-in-Line	Ceramic Flatpack
0 + 70	74LS445J	N	W
-25 + 85	84LS445J		
-40 + 85	64LS445J		
-55 +125	54LS445J		

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

2.2 Maximum input voltages

2.2.1 Maximum input voltage V_I -0,5V
+7,0V

2.2.2 Maximum input voltage between multiple emitter transistor inputs V_{II} +5,5V

			54LS	64LS	74LS	84LS
2.3	Minimum and maximum operating ambient temperatures	$T_{amb}(^{\circ}C)$	min. -55	-40	0	-25
			max. +125	+85	+70	+85
2.4	Minimum and maximum storage temperatures	$T_{stg}(^{\circ}C)$	min. -65	(All types)		
			max. +150			

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}	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 level of applied High level output voltage (leakage)	$V_{OUT(off)}$	All types	7,0	V
Maximum value of "on" level output $V_{OUT(on)} = 0,4V$ $V_{OUT(on)} = 0,5V$	$I_{OUT(on)}$ $I_{OUT(on)}$	All types 64/74/84LS	12,0 24,0	mA mA
Maximum value of "on" level output current $V_{OUT(on)X} = 3,0V$	$I_{OUT(on)X}$	All types	80,0	mA
D.C. noise margin at Low level ($V_{ILA} - V_{OLA}$) at High level ($V_{OHB} - V_{IHB}$)	V_{NL} V_{NH}	All types 54LS 64/74/84LS	0,3 0,5 0,7	V 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

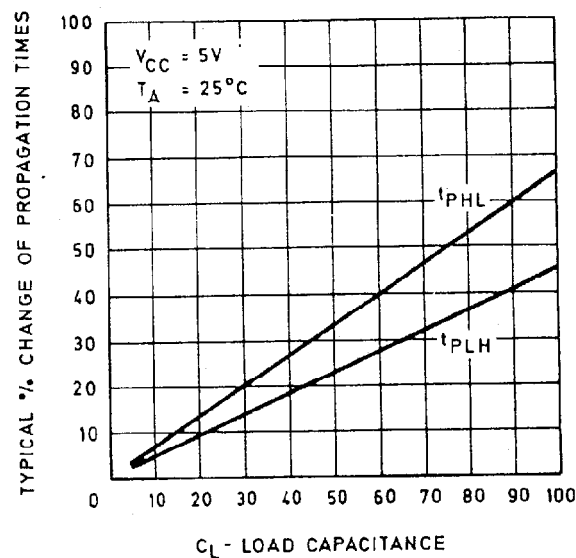
Characteristics	Conditions	$V_{CC}(V)$	Symbol	Min.	Max.	Unit
Total supply current per package	Outputs open and inputs grounded	V_{CC} max.	I_{CC}	-	13,0	mA
High level input current	$V_{IH(1)} = 7,0V$	V_{CC} max.	$I_{IH(1)}$	-	0,1	mA
	$V_{IH(2)} = 2,7V$	V_{CC} max.	$I_{IH(2)}$	-	20,0	µA
Low level input current	$V_{IL} = 0,4V$ to each input in turn, other related inputs at 7,0V	V_{CC} max.	$-I_{IL}$	-	0,4	mA
Input clamping voltage	$-I_{IC} = 18,0mA$	V_{CC} min.	$-V_{ICA}$	-	1,5	V
"on" level output voltage All types 64/74/84LS	$I_{OUT(on)X} = 80,0mA$ $I_{OUT(on)} = 12,0mA$ (1) $I_{OUT(on)} = 24,0mA$ (2)	V_{CC} min.	$V_{OUT(on)}$	-	3,0	V
			$V_{OUT(on)}$	-	0,4	V
			$V_{OUT(on)}$	-	0,5	V
			$V_{OUT(on)}$	-	0,5	V
"off" level output	$V_{OUT(off)} = 7,0V$	V_{CC} max.	$I_{OUT(off)}$	-	250,0	µA
Propagation times All types	$T_{amb} = 25^{\circ}C$ test conditions as in Sub-group A5	5,0V				
High to Low level			t_{PHL}	-	50,0	ns
Low to High level			t_{PLH}	-	50,0	ns

(1) Fan out = 30, (2) Fan out = 60

*See 3.2.1 of this specification

3.3 Supplementary information

3.3.1 Change of typical propagation time with output loading



Propagation times Vs. load capacitance

3.3.2 Variation of propagation time with temperature

