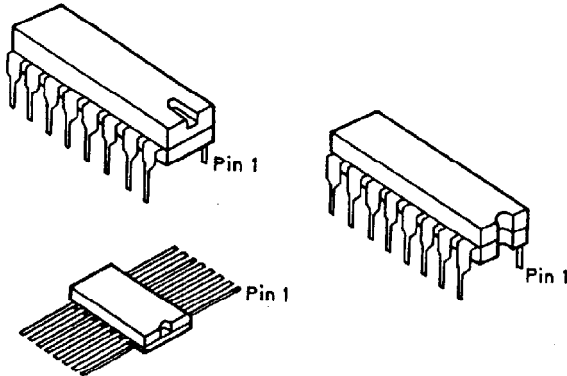


BRITISH STANDARDS INSTITUTION 2 PARK STREET, LONDON. W1A 2BS	BS CECC 90103 - 106 ISSUE 1 AUGUST 1981  Page 1 of 20 pages	Specification available from:- AS SHOWN IN PD 9002 AND CECC 00 200 AND
ELECTRONIC COMPONENTS OF ASSESSED QUALITY DETAIL SPECIFICATION IN ACCORDANCE WITH: BS CECC 90 000 : 1976 BS CECC 90 100 : 1977		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)
	MANUFACTURERS TYPE NUMBER 54LS283 64LS283 74LS283 84LS283 SEE PD 9002 AND CECC 00 200 For ordering information see clause 1	
	4-BIT BINARY FULL ADDERS WITH FAST CARRY 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)

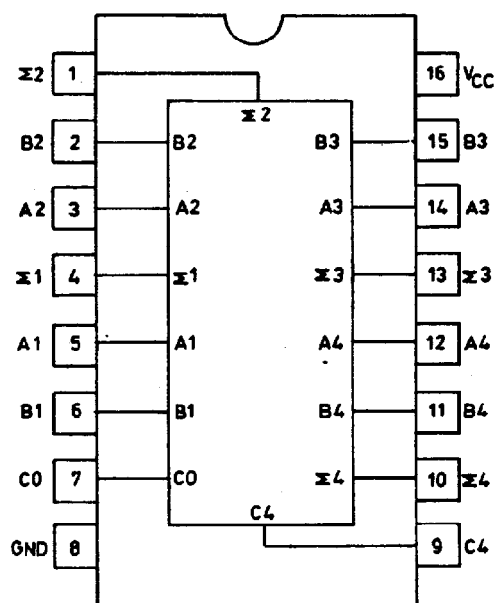
INPUT				WHEN CO = L			WHEN CO = H		
				WHEN C2 = L			WHEN C2 = H		
A1 A3	B1 B3	A2 A4	B2 B4	$\Sigma 1$ $\Sigma 3$	$\Sigma 2$ $\Sigma 4$	C2 C4	$\Sigma 1$ $\Sigma 3$	$\Sigma 2$ $\Sigma 4$	C2 C4
L	L	L	L	L	L	L	H	L	L
H	L	L	L	H	L	L	L	H	L
L	H	L	L	H	L	L	L	H	L
H	H	L	L	L	H	L	H	H	L
L	L	H	L	L	H	L	H	H	L
H	L	H	L	H	H	L	L	L	H
L	H	H	L	H	H	L	L	L	H
H	H	H	L	L	L	H	H	L	H
L	L	L	H	L	H	L	H	H	L
H	L	L	H	H	H	L	L	L	H
L	H	L	H	L	L	H	L	L	H
H	H	L	H	L	L	H	H	L	H
L	L	H	H	L	L	H	L	L	H
H	L	H	H	H	L	H	L	H	H
L	H	H	H	H	L	H	L	H	H
H	H	H	H	L	H	H	H	H	H

L = Low level
H = High level

NOTE: Input conditions at A1, B1, A2, B2 and Co are used to determine outputs $\Sigma 1$ and $\Sigma 2$ and the value of the internal carry C2. The values at C2, A3, B3, A4 and B4 are then used to determine outputs $\Sigma 3$, $\Sigma 4$ and C4.

1.2 Terminal identification, type designation and marking

1.2.1 Terminal identification



4-bit binary full adders with fast carry

1.2.2 Type designation

TEMPERATURE RANGE	PACKAGE		
	Ceramic Dual-in-Line	Plastic Dual-in-Line	Ceramic Flatpack
0 + 70	74LS283J	N	W
-25 + 85	84LS283J		
-40 + 85	64LS283J		
-55 +125	54LS283J		

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

3.1 (contd)

Description	Symbol	Type	Value	Unit
Maximum value of Low level output current for each output	I_{OLA}	54LS 64/74/84LS	4,0 8,0	mA 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}	54LS 64/74/84LS	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 (*)

	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	All inputs at 0V All B inputs Low other inputs at 4,5V All inputs at 4,5V	V_{CC} max.	I_{CC}	- - -	39,0 34,0 34,0	mA mA mA
High level input current	$V_{IH(1)} = 7,0V$ Any A or B CO (other input 0V) $V_{IH(2)} = 2,7V$ Any A or B CO (Other input 0V)	V_{CC} max.	$I_{IH(1)}$ $I_{IH(2)}$	- - - -	0,2 0,1 40,0 20,0	mA mA μA μA
Low level input current	$V_{IL} = 0,4V$ to each input in turn, other inputs at 4,5V Any A or B CO	V_{CC} max.	$-I_{IL}$	- -	0,8 0,4	mA mA
Input clamping voltage	$-I_{IC} = 18,0mA$	V_{CC} min.	$-V_{ICA}$	-	1,5	V
Output voltage	$V_{IL} = V_{ILA}^*$ $V_{IH} = 2,0V$ 54LS $I_{OH} = -400,0\mu A$ 64/74/84LS $I_{OH} = -400,0\mu A$ All types $I_{OL(1)} = 4,0mA^{(1)}$ 64/74/84LS $I_{OL(2)} = 8,0mA^{(2)}$	V_{CC} min.	V_{OH} V_{OH} $V_{OL(1)}$ $V_{OL(2)}$	2,5 2,7 - -	- - 0,4 0,5	V V V V
Output short circuit current	V_{IN} to give High level output. $V_{OUT} = 0V$ applied to one output at a time maximum duration = 1 sec	V_{CC} max.	$-I_{OS}$	15,0	130,0	mA

(1) Fan out = 10, (2) Fan out = 20

