

**BRITISH STANDARDS INSTITUTION**

2 PARK STREET, LONDON. W1A 2BS

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

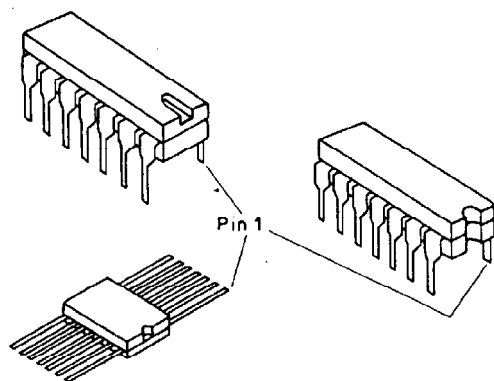
BS CECC 90103 - 007

ISSUE 1

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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**54LS08  
64LS08  
74LS08  
84LS08Outline not to scale: Isometric projection  
Marking information see clause 1Refer 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**QUAD 2-INPUT POSITIVE AND  
GATES**TYPICAL CONSTRUCTION  
SILICON MONOLITHIC  
BIPOLAR TTL-LOW-POWER  
SCHOTTKYASSESSMENT LEVELS  
R, S, T AND V1. Type description

## 1.1 Truth table (each gate)

| INPUTS |   | OUTPUT |
|--------|---|--------|
| A      | B | Y      |
| L      | L | L      |
| H      | L | L      |
| L      | H | L      |
| H      | H | H      |

H = High level  
L = Low level

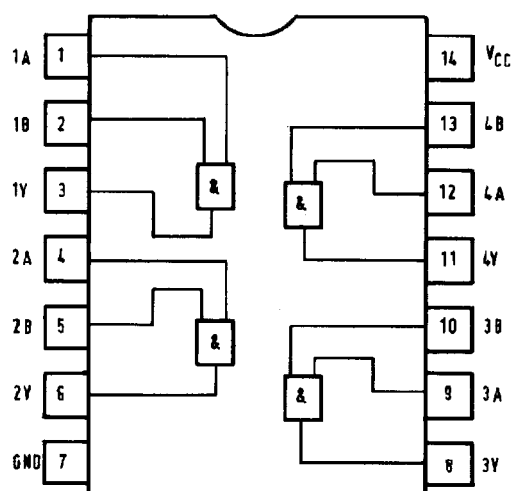
## 1.1.1 Boolean equation

$$Y = A.B$$

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



Four 2-input positive And gates

### 1.2.2 Type designation

| TEMPERATURE<br>RANGE | PACKAGE                 |                         |                     |
|----------------------|-------------------------|-------------------------|---------------------|
|                      | Ceramic<br>Dual-in-line | Plastic<br>Dual-in-Line | Ceramic<br>Flatpack |
| 0 +70                | 74LS08J                 | N                       | W                   |
| -25 +85              | 84LS08J                 |                         |                     |
| -40 +85              | 64LS08J                 |                         |                     |
| -55 +125             | 54LS08J                 |                         |                     |

### 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<br>+7,0V |
| 2.2   | Maximum input voltages                                           |          |                |
| 2.2.1 | Maximum input voltage                                            | $V_I$    | -0,5V<br>+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<br>max. +125 | -40<br>+85  | 0<br>+70 | -25<br>+85 |
| 2.4 | Minimum and maximum storage ambient temperatures   | $T_{stg}(^{\circ}C)$ | min. -65<br>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                               | $V_{CC}$  | 54LS<br>64/74/84LS | 4,5 - 5,5<br>4,75 - 5,25 | V<br>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<br>64/74/84LS | 0,7<br>0,8               | V<br>V   |
| Maximum value of Low level output current for each output   | $I_{OLA}$ | 54LS<br>64/74/84LS | 0,4<br>0,5               | mA<br>mA |
| Maximum value of output current for each output at $V_{OH}$ | $I_{OHA}$ | All types          | -400,0                   | $\mu A$  |



### 3.2 Associated characteristics

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

|                       | 54LS | 64LS | 74LS | 84LS |    |
|-----------------------|------|------|------|------|----|
| T <sub>amb</sub> min. | -55  | -40  | 0    | -25  | °C |
| T <sub>amb</sub> max. | +125 | +85  | +70  | +85  |    |
| V <sub>CC</sub> min.  | 4,5  | 4,75 |      |      | V  |
| V <sub>CC</sub> max.  | 5,5  | 5,25 |      |      |    |

#### 3.2.2

| Characteristics                              | Conditions                                                             | $V_{CC}(\text{V})$    | Symbol      | Min. | Max.  | Unit          |
|----------------------------------------------|------------------------------------------------------------------------|-----------------------|-------------|------|-------|---------------|
| Total supply current with High level outputs | $V_{IL} = 0\text{V}^{(1)}$                                             | $V_{CC} \text{ max.}$ | $I_{CCH}$   | -    | 4,8   | mA            |
| Total supply current with Low level outputs  | $V_{IH} = 4,5\text{V}$                                                 | $V_{CC} \text{ max.}$ | $I_{CCL}$   | -    | 8,8   | mA            |
| High level input current                     | $V_{IH(1)} = 7,0\text{V}$                                              | $V_{CC} \text{ max.}$ | $I_{IH(1)}$ | -    | 100,0 | $\mu\text{A}$ |
|                                              | $V_{IH(2)} = 2,7\text{V}$                                              | $V_{CC} \text{ max.}$ | $I_{IH(2)}$ | -    | 20,0  | $\mu\text{A}$ |
| Low level input current                      | $V_{IL} = 0,4\text{V}$                                                 | $V_{CC} \text{ max.}$ | $-I_{IL}$   | -    | 0,4   | mA            |
| Input clamping voltage                       | $-I_{IC} = 18,0\text{mA}$                                              | $V_{CC} \text{ min.}$ | $-V_{ICA}$  | -    | 1,5   | V             |
| Output voltage                               | 54LS<br>$I_{OH} = -400,0\mu\text{A}$                                   | $V_{CC} \text{ min.}$ | $V_{OH}$    | 2,5  | -     | V             |
|                                              | 64/74/84LS<br>$I_{OH} = -400,0\mu\text{A}$                             |                       | $V_{OH}$    | 2,7  | -     | V             |
|                                              | All types<br>$I_{OL(1)} = 4,0\text{mA}^{(2)}$                          |                       | $V_{OL(1)}$ | -    | 0,4   | V             |
|                                              | 64/74/84LS<br>$I_{OL(2)} = 8,0\text{mA}^{(3)}$                         |                       | $V_{OL(2)}$ | -    | 0,5   | V             |
| Output short circuit current                 | $V_O = 0\text{V}^{(4)}$                                                | $V_{CC} \text{ max.}$ | $-I_{OS}$   | 15,0 | 130,0 | mA            |
| Propagation times                            | $T_{amb} = 25^{\circ}\text{C}^*$<br>test conditions as in Sub-group A5 | 5,0V                  | $t_{PLH}$   | -    | 15,0  | ns            |
|                                              |                                                                        |                       | $t_{PHL}$   | -    | 20,0  | ns            |

### 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 (\*)

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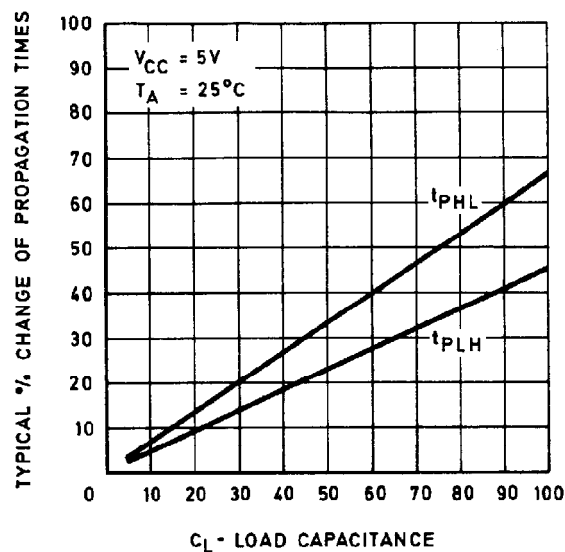


Documents

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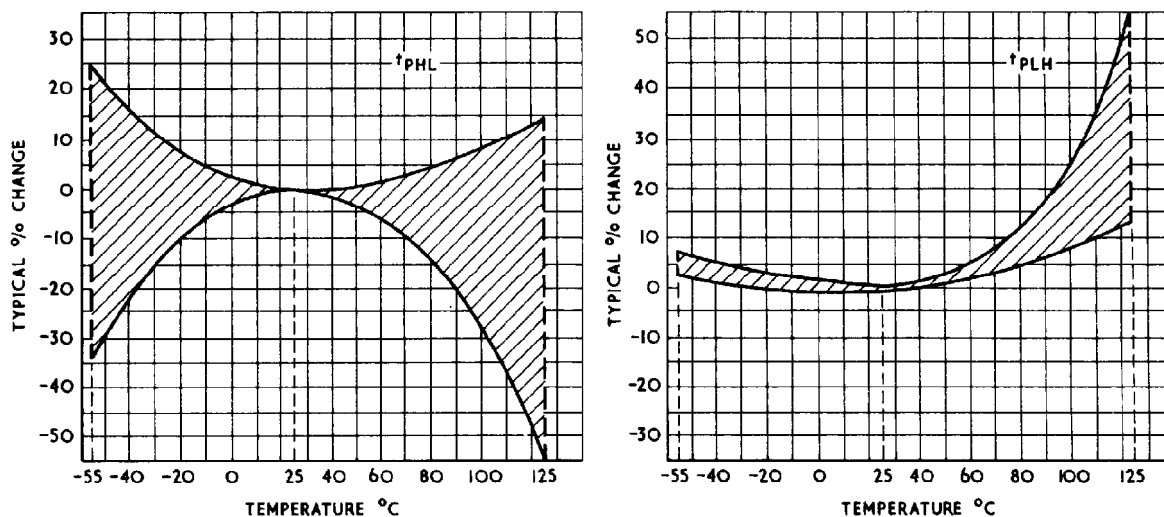
### 3.3 Supplementary information

#### 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.



#### 3.3.3 D.C. noise margin

$$\text{Low level } V_{ILA} - V_{OLA} = V_{NL}$$

$$\text{High level } V_{OHB} - V_{IHB} = V_{NH}$$

