

# SN54S260, SN74S260 DUAL 5-INPUT POSITIVE-NOR GATES

SDLS208

DECEMBER 1983 — REVISED MARCH 1988

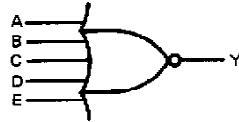
- Package Options Include Ceramic Chip Carriers and Flat Packages in Addition to Plastic and Ceramic DIPs
- Dependable Texas Instruments Quality and Reliability

## description

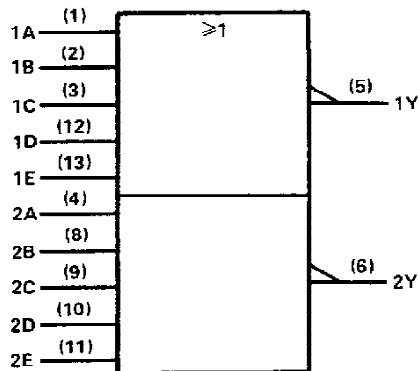
These devices contain two independent 5-input positive -NOR gates. They perform the Boolean function  $Y = \overline{A + B + C + D + E}$  in positive logic.

The SN54S260 is characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74S260 is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

## logic diagram (each gate)

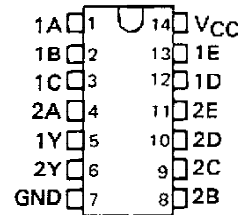


## logic symbol†

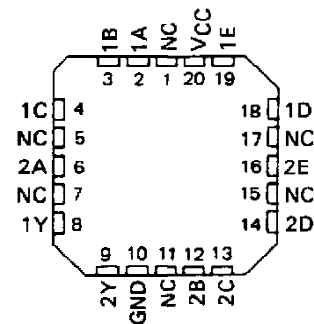


†This symbol is in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12.  
Pin numbers shown are for D, J, N, and W packages.

SN54S260 . . . J OR W PACKAGE  
SN74S260 . . . D OR N PACKAGE  
(TOP VIEW)



SN54S260 . . . FK PACKAGE  
(TOP VIEW)



NC - No internal connection

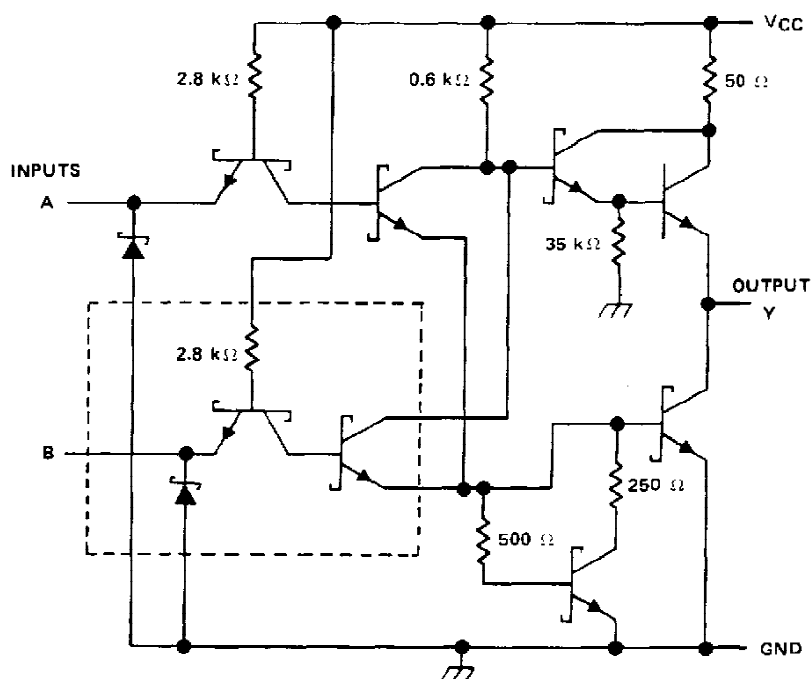
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# **SN54S260, SN74S260** **DUAL 5-INPUT POSITIVE-NOR GATES**

schematic (each gate)



Resistor values shown are nominal.

The portion of the schematic within the dashed-line is repeated for each additional input.

## **absolute maximum ratings over operating free-air temperature range (unless otherwise noted)**

|                                             |                                                |
|---------------------------------------------|------------------------------------------------|
| Supply voltage, $V_{CC}$ (see Note 1)       | 7 V                                            |
| Input voltage                               | 5.5 V                                          |
| Operating free-air temperature range: SN54' | $-55^{\circ}\text{C}$ to $125^{\circ}\text{C}$ |
| SN74'                                       | $0^{\circ}\text{C}$ to $70^{\circ}\text{C}$    |
| Storage temperature range                   | $-65^{\circ}\text{C}$ to $150^{\circ}\text{C}$ |

NOTE 1: Voltage values are with respect to network ground terminal.

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# SN54S260, SN74S260

## DUAL 5-INPUT POSITIVE-NOR GATES

### recommended operating conditions

|                                      | SN54S260 |     |     | SN74S260 |     |      | UNIT |
|--------------------------------------|----------|-----|-----|----------|-----|------|------|
|                                      | MIN      | TYP | MAX | MIN      | TYP | MAX  |      |
| $V_{CC}$ Supply voltage              | 4.5      | 5   | 5.5 | 4.75     | 5   | 5.25 | V    |
| $V_{IH}$ High-level input voltage    | 2        |     |     | 2        |     |      | V    |
| $V_{IL}$ Low-level input voltage     |          |     | 0.8 |          |     | 0.8  | V    |
| $I_{OH}$ High-level output current   |          |     | -1  |          |     | -1   | mA   |
| $I_{OL}$ Low-level output current    |          |     | 20  |          |     | 20   | mA   |
| $T_A$ Operating free-air temperature | -55      |     | 125 | 0        |     | 70   | °C   |

### electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

| PARAMETER | TEST CONDITIONS †                                                      | SN54S260 |      |      | SN74S260 |      |      | UNIT |
|-----------|------------------------------------------------------------------------|----------|------|------|----------|------|------|------|
|           |                                                                        | MIN      | TYP‡ | MAX  | MIN      | TYP‡ | MAX  |      |
| $V_{IK}$  | $V_{CC} = \text{MIN.}, I_I = -18 \text{ mA}$                           |          | -1.2 |      |          | -1.2 |      | V    |
| $V_{OH}$  | $V_{CC} = \text{MIN.}, V_{IL} = 0.8 \text{ V}, I_{OH} = -1 \text{ mA}$ | 2.5      | 3.4  |      | 2.7      | 3.4  |      | V    |
| $V_{OL}$  | $V_{CC} = \text{MIN.}, V_{IH} = 2 \text{ V}, I_{OL} = 20 \text{ mA}$   |          |      | 0.5  |          |      | 0.5  | V    |
| $I_I$     | $V_{CC} = \text{MAX.}, V_I = 5.5 \text{ V}$                            |          |      | 1    |          |      | 1    | mA   |
| $I_{IH}$  | $V_{CC} = \text{MAX.}, V_{IH} = 2.7 \text{ V}$                         |          |      | 50   |          |      | 50   | µA   |
| $I_{IL}$  | $V_{CC} = \text{MAX.}, V_{IL} = 0.8 \text{ V}$                         |          |      | -2   |          |      | -2   | mA   |
| $I_{OS}§$ | $V_{CC} = \text{MAX.}$                                                 | -40      |      | -100 | -40      |      | -100 | mA   |
| $I_{CCH}$ | $V_{CC} = \text{MAX.}, V_I = 0 \text{ V}$                              |          | 17   | 29   |          | 17   | 29   | mA   |
| $I_{CCL}$ | $V_{CC} = \text{MAX.}, \text{ See Note 2}$                             |          | 26   | 45   |          | 26   | 45   | mA   |

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

‡ All typical values are at  $V_{CC} = 5 \text{ V}, T_A = 25^\circ\text{C}$ .

§ Not more than one output should be shorted at a time, and the duration of the short-circuit should not exceed one second.

NOTE 2: One input at 4.5 V, all others at GND.

### switching characteristics, $V_{CC} = 5 \text{ V}, T_A = 25^\circ\text{C}$ (see note 3)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS                         | MIN | TYP | MAX | UNIT |
|-----------|--------------|-------------|-----------------------------------------|-----|-----|-----|------|
| $t_{PLH}$ | Any          | Y           | $R_L = 280 \Omega, C_L = 15 \text{ pF}$ |     | 4   | 5.5 | ns   |
| $t_{PHL}$ |              |             |                                         |     | 4   | 6   | ns   |

NOTE 3: See General Information Section for load circuits and voltage waveforms.

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