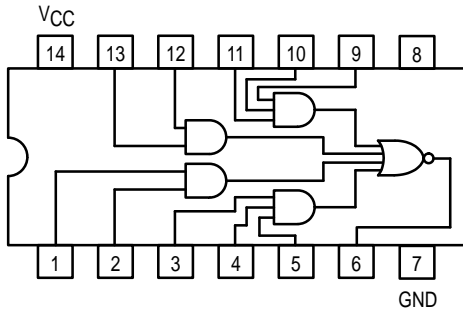


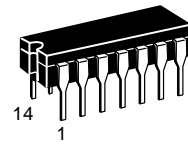


# 3-2-2-3-INPUT AND-OR-INVERT GATE

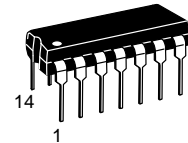


## SN54/74LS54

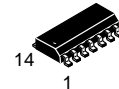
**3-2-2-3-INPUT  
AND-OR-INVERT GATE  
LOW POWER SCHOTTKY**



**J SUFFIX  
CERAMIC  
CASE 632-08**



**N SUFFIX  
PLASTIC  
CASE 646-06**



**D SUFFIX  
SOIC  
CASE 751A-02**

### ORDERING INFORMATION

SN54LSXXJ Ceramic  
SN74LSXXN Plastic  
SN74LSXXD SOIC

### GUARANTEED OPERATING RANGES

| Symbol          | Parameter                           |        | Min  | Typ | Max  | Unit |
|-----------------|-------------------------------------|--------|------|-----|------|------|
| V <sub>CC</sub> | Supply Voltage                      | 54     | 4.5  | 5.0 | 5.5  | V    |
|                 |                                     | 74     | 4.75 | 5.0 | 5.25 |      |
| T <sub>A</sub>  | Operating Ambient Temperature Range | 54     | -55  | 25  | 125  | °C   |
|                 |                                     | 74     | 0    | 25  | 70   |      |
| I <sub>OH</sub> | Output Current — High               | 54, 74 |      |     | -0.4 | mA   |
| I <sub>OL</sub> | Output Current — Low                | 54     |      |     | 4.0  | mA   |
|                 |                                     | 74     |      |     | 8.0  |      |

# SN54/74LS54

## DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

| Symbol          | Parameter   |        | Limits |       |      | Unit | Test Conditions  |   |
|-----------------|---|--------|--------|-------|------|------|--|---|
|                 |   |        | Min    | Typ   | Max  |      |  |   |
| V <sub>IH</sub> | Input HIGH Voltage  |        | 2.0    |       |      | V    | Guaranteed Input HIGH Voltage for All Inputs   |   |
| V <sub>IL</sub> | Input LOW Voltage   | 54     |        |       | 0.7  | V    | Guaranteed Input LOW Voltage for All Inputs  |   |
|                 |   | 74     |        |       | 0.8  |      |  |   |
| V <sub>IK</sub> | Input Clamp Diode Voltage                                       |        |        | -0.65 | -1.5 | V    | V <sub>CC</sub> = MIN, I <sub>IN</sub> = -18 mA  |   |
| V <sub>OH</sub> | Output HIGH Voltage   | 54     | 2.5    | 3.5   |      | V    | V <sub>CC</sub> = MIN, I <sub>OH</sub> = MAX, V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub> per Truth Table |   |
|                 |   | 74     | 2.7    | 3.5   |      | V    |  |   |
| V <sub>OL</sub> | Output LOW Voltage  | 54, 74 |        | 0.25  | 0.4  | V    | I <sub>OL</sub> = 4.0 mA   | V <sub>CC</sub> = V <sub>CC</sub> MIN, V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub> per Truth Table |
|                 |   | 74     |        | 0.35  | 0.5  | V    | I <sub>OL</sub> = 8.0 mA   |   |
| I <sub>IH</sub> | Input HIGH Current  |        |        |       | 20   | μA   | V <sub>CC</sub> = MAX, V <sub>IN</sub> = 2.7 V   |   |
|                 |   |        |        |       | 0.1  | mA   | V <sub>CC</sub> = MAX, V <sub>IN</sub> = 7.0 V   |   |
| I <sub>IL</sub> | Input LOW Current   |        |        |       | -0.4 | mA   | V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.4 V   |   |
| I <sub>OS</sub> | Short Circuit Current (Note 1)                                  |        | -20    |       | -100 | mA   | V <sub>CC</sub> = MAX  |   |
| I <sub>CC</sub> | Power Supply Current<br>Total, Output HIGH<br>Total, Output LOW |        |        |       | 1.6  | mA   | V <sub>CC</sub> = MAX  |   |
|                 |   |        |        |       | 2.0  |      |  |   |

Note 1: Not more than one output should be shorted at a time, nor for more than 1 second.

## AC CHARACTERISTICS (T<sub>A</sub> = 25°C)

| Symbol           | Parameter                       |  | Limits |      |     | Unit | Test Conditions                                   |  |
|------------------|---------------------------------|--|--------|------|-----|------|---|--|
|                  |                                 |  | Min    | Typ  | Max |      |   |  |
| t <sub>PLH</sub> | Turn-Off Delay, Input to Output |  |        | 12   | 20  | ns   | V <sub>CC</sub> = 5.0 V<br>C <sub>L</sub> = 15 pF |  |
| t <sub>PHL</sub> | Turn-On Delay, Input to Output  |  |        | 12.5 | 20  | ns   |   |  |

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