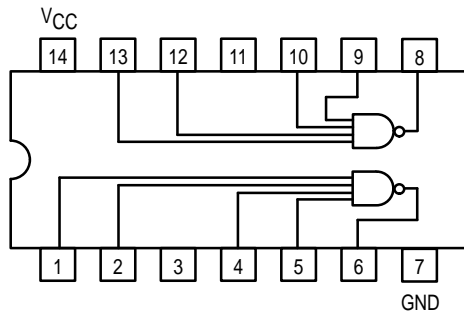


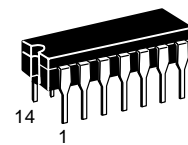


DUAL 4-INPUT NAND GATE

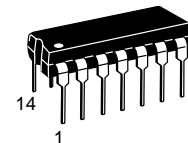


SN54/74LS20

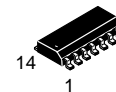
DUAL 4-INPUT NAND GATE
LOW POWER SCHOTTKY



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 _{CC} | Supply Voltage | 54 74 | 4.5 4.75 | 5.0 5.0 | 5.5 5.25 | V |
| T _A | Operating Ambient Temperature Range | 54 74 | -55 0 | 25 25 | 125 70 | °C |
| I _{OH} | Output Current — High | 54, 74 | | | -0.4 | mA |
| I _{OL} | Output Current — Low | 54 74 | | | 4.0 8.0 | mA |

SN54/74LS20

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

| Symbol | Parameter | Limits | | | Unit | Test Conditions | |
|----------|---|--------|-------|------|---------------|---|--|
| | | Min | Typ | Max | | | |
| V_{IH} | Input HIGH Voltage | 2.0 | | | V | Guaranteed Input HIGH Voltage for All Inputs | |
| V_{IL} | Input LOW Voltage | 54 | | 0.7 | V | Guaranteed Input LOW Voltage for All Inputs | |
| | | 74 | | 0.8 | | | |
| V_{IK} | Input Clamp Diode Voltage | | -0.65 | -1.5 | V | $V_{CC} = \text{MIN}$, $I_{IN} = -18 \text{ mA}$ | |
| V_{OH} | Output HIGH Voltage | 54 | 2.5 | 3.5 | V | $V_{CC} = \text{MIN}$, $I_{OH} = \text{MAX}$, $V_{IN} = V_{IH}$ or V_{IL} per Truth Table | |
| | | 74 | 2.7 | 3.5 | V | | |
| V_{OL} | Output LOW Voltage | 54, 74 | | 0.25 | 0.4 | V | $I_{OL} = 4.0 \text{ mA}$ $V_{CC} = V_{CC} \text{ MIN}$, $V_{IN} = V_{IL}$ or V_{IH} per Truth Table |
| | | 74 | | 0.35 | 0.5 | V | |
| I_{IH} | Input HIGH Current | | | 20 | μA | $V_{CC} = \text{MAX}$, $V_{IN} = 2.7 \text{ V}$ | |
| | | | | 0.1 | mA | $V_{CC} = \text{MAX}$, $V_{IN} = 7.0 \text{ V}$ | |
| I_{IL} | Input LOW Current | | | -0.4 | mA | $V_{CC} = \text{MAX}$, $V_{IN} = 0.4 \text{ V}$ | |
| I_{OS} | Short Circuit Current (Note 1) | -20 | | -100 | mA | $V_{CC} = \text{MAX}$ | |
| I_{CC} | Power Supply Current Total, Output HIGH Total, Output LOW | | | 0.8 | mA | $V_{CC} = \text{MAX}$ | |
| | | | | 2.2 | | | |

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

AC CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

| Symbol | Parameter | Limits | | | Unit | Test Conditions |
|-----------|---------------------------------|--------|-----|-----|------|---|
| | | Min | Typ | Max | | |
| t_{PLH} | Turn-Off Delay, Input to Output | | 9.0 | 15 | ns | $V_{CC} = 5.0 \text{ V}$ $C_L = 15 \text{ pF}$ |
| t_{PHL} | Turn-On Delay, Input to Output | | 10 | 15 | ns | |