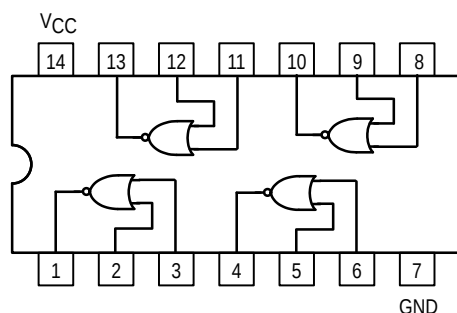




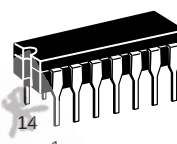
# QUAD 2-INPUT NOR GATE



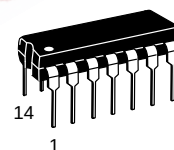
MC54/74F02

QUAD 2-INPUT NOR GATE

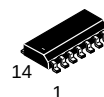
FAST™ SCHOTTKY TTL



J SUFFIX  
CERAMIC  
CASE 632-08



N SUFFIX  
PLASTIC  
CASE 646-06



D SUFFIX  
SOIC  
CASE 751A-02

## ORDERING INFORMATION

|          |         |
|----------|---------|
| MC54FXXJ | Ceramic |
| MC74FXXN | Plastic |
| MC74FXXD | SOIC    |

## GUARANTEED OPERATING RANGES

| Symbol          | Parameter                           |        | Min | Typ | Max  | Unit |
|-----------------|-------------------------------------|--------|-----|-----|------|------|
| V <sub>CC</sub> | Supply Voltage                      | 54, 74 | 4.5 | 5.0 | 5.5  | V    |
| 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 |     |     | -1.0 | mA   |
| I <sub>OL</sub> | Output Current — Low                | 54, 74 |     |     | 20   | mA   |

# MC54/74F02

## 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                          |
| $V_{IL}$ | Input LOW Voltage                          |        |     | 0.8  | V             | Guaranteed Input LOW Voltage                           |
| $V_{IK}$ | Input Clamp Diode Voltage                  |        |     | -1.2 | V             | $V_{CC} = \text{MIN}$ , $I_{IN} = -18 \text{ mA}$      |
| $V_{OH}$ | Output HIGH Voltage                        | 54, 74 | 2.5 |      | V             | $I_{OH} = -1.0 \text{ mA}$ , $V_{CC} = 4.50 \text{ V}$ |
|          |                                            | 74     | 2.7 |      | V             | $I_{OH} = -1.0 \text{ mA}$ , $V_{CC} = 4.75 \text{ V}$ |
| $V_{OL}$ | Output LOW Voltage                         |        |     | 0.5  | V             | $I_{OL} = 20 \text{ mA}$ , $V_{CC} = \text{MIN}$       |
| $I_{IH}$ | Input HIGH Current                         |        |     | 20   | $\mu\text{A}$ | $V_{CC} = \text{MAX}$ , $V_{IN} = 2.7 \text{ V}$       |
|          |                                            |        |     | 0.1  | mA            | $V_{CC} = \text{MAX}$ , $V_{IN} = 7.0 \text{ V}$       |
| $I_{IL}$ | Input LOW Current                          |        |     | -0.6 | mA            | $V_{CC} = \text{MAX}$ , $V_{IN} = 0.5 \text{ V}$       |
| $I_{OS}$ | Output Short Circuit Current (Note 2)      | -60    |     | -150 | mA            | $V_{CC} = \text{MAX}$ , $V_{OUT} = 0 \text{ V}$        |
| $I_{CC}$ | Power Supply Current<br>Total, Output HIGH |        |     | 5.6  | mA            | $V_{CC} = \text{MAX}$ , $V_{IN} = \text{GND}$          |
|          | Total, Output LOW                          |        |     | 13   | mA            | $V_{CC} = \text{MAX}$ , $V_{IN} = \text{Note 3}$       |

### NOTES:

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.
- Not more than one output should be shorted at a time, nor for more than 1 second.
- Measured with one input high, one input low for each gate.

## AC CHARACTERISTICS

| Symbol | Parameter         | 54/74F                                                                          |     | 54F                                                                                                              |     | 74F                                                                                                          |     | Unit |
|--------|-------------------|---------------------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------|-----|------|
|        |                   | $T_A = +25^{\circ}\text{C}$<br>$V_{CC} = +5.0\text{ V}$<br>$C_L = 50\text{ pF}$ |     | $T_A = -55^{\circ}\text{C to } +125^{\circ}\text{C}$<br>$V_{CC} = 5.0\text{ V} \pm 10\%$<br>$C_L = 50\text{ pF}$ |     | $T_A = 0^{\circ}\text{C to } 70^{\circ}\text{C}$<br>$V_{CC} = 5.0\text{ V} \pm 10\%$<br>$C_L = 50\text{ pF}$ |     |      |
|        |                   | Min                                                                             | Max | Min                                                                                                              | Max | Min                                                                                                          | Max |      |
|        |                   |                                                                                 |     |                                                                                                                  |     |                                                                                                              |     |      |
| tPLH   | Propagation Delay | 2.5                                                                             | 5.5 | 2.5                                                                                                              | 7.5 | 2.5                                                                                                          | 6.5 | ns   |
| tPHL   | Propagation Delay | 1.5                                                                             | 4.3 | 1.5                                                                                                              | 6.5 | 1.5                                                                                                          | 5.3 | ns   |