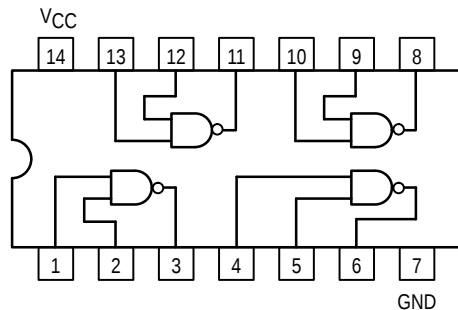


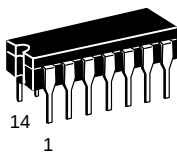


# QUAD 2-INPUT NAND GATE

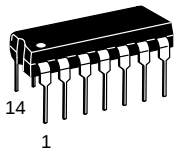


MC54/74F00

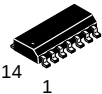
QUAD 2-INPUT NAND GATE  
FAST™ SCHOTTKY TTL



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   |

# MC54/74F00

## 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 |        |        |     | 2.8  | mA            | $V_{CC} = \text{MAX}$ , $V_{IN} = \text{GND}$     |                           |
|          | Total, Output LOW                          |        |        |     | 10.2 | mA            | $V_{CC} = \text{MAX}$ , $V_{IN} = \text{Open}$    |                           |

### 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.

## AC CHARACTERISTICS

| Symbol           | Parameter         | 54/74F                                                                       |     | 54F                                                                                         |     | 74F                                                                                     |     | Unit |
|------------------|-------------------|------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------|-----|------|
|                  |                   | T <sub>A</sub> = +25°C<br>V <sub>CC</sub> = +5.0 V<br>C <sub>L</sub> = 50 pF |     | T <sub>A</sub> = −55°C to +125°C<br>V <sub>CC</sub> = 5.0 V ± 10%<br>C <sub>L</sub> = 50 pF |     | T <sub>A</sub> = 0°C to 70°C<br>V <sub>CC</sub> = 5.0 V ± 10%<br>C <sub>L</sub> = 50 pF |     |      |
|                  |                   | Min                                                                          | Max | Min                                                                                         | Max | Min                                                                                     | Max |      |
|                  |                   |                                                                              |     |                                                                                             |     |                                                                                         |     |      |
| t <sub>PLH</sub> | Propagation Delay | 2.4                                                                          | 5.0 | 2.0                                                                                         | 7.0 | 2.4                                                                                     | 6.0 | ns   |
| t <sub>PHL</sub> | Propagation Delay | 1.5                                                                          | 4.3 | 1.5                                                                                         | 6.5 | 1.5                                                                                     | 5.3 | ns   |