



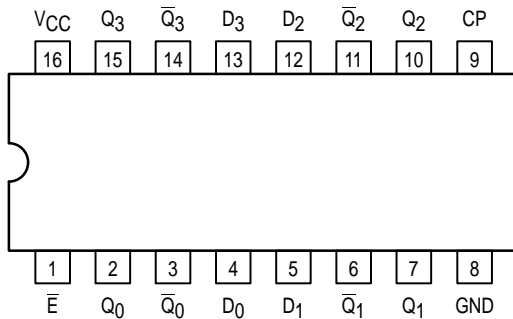
# QUAD PARALLEL REGISTER

The MC54/74F379 is a 4-bit register with a buffered common enable. This device is similar to the F175 but features the common Enable rather than common Master Reset.

The F379 consists of four edge-triggered D-type flip-flops with individual D inputs and Q and  $\bar{Q}$  outputs. The Clock (CP) and Enable ( $\bar{E}$ ) inputs are common to all flip-flops. When  $\bar{E}$  is HIGH, the register will retain the present data independent of the CP input. The Dn and  $\bar{E}$  inputs can change when the clock is in either state, provided that the recommended setup and hold times are observed. This circuit is designed to prevent false clocking by transitions on the  $\bar{E}$  input.

- Edge-Triggered D-Type Inputs
- Buffered Positive Edge-Triggered Clock
- Buffered Common Enable Input
- True and Complement Outputs

### CONNECTION DIAGRAM (TOP VIEW)



### FUNCTION TABLE

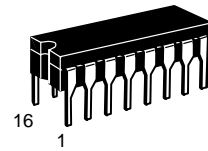
| Inputs    |    | Outputs        |                |             |
|-----------|----|----------------|----------------|-------------|
| $\bar{E}$ | CP | D <sub>n</sub> | Q <sub>n</sub> | $\bar{Q}_n$ |
| H         |    | X              | NC             | NC          |
| L         |    | H              | H              | L           |
| L         |    | L              | L              | H           |

H = HIGH Voltage Level  
 L = LOW Voltage Level  
 X = Don't Care  
 NC = No Change

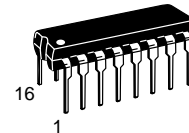
## MC54/74F379

### QUAD PARALLEL REGISTER WITH ENABLE

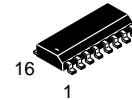
FAST™ SCHOTTKY TTL



**J SUFFIX**  
 CERAMIC  
 CASE 620-09



**N SUFFIX**  
 PLASTIC  
 CASE 648-08

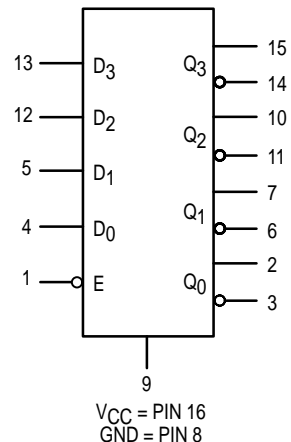


**D SUFFIX**  
 SOIC  
 CASE 751B-03

### ORDERING INFORMATION

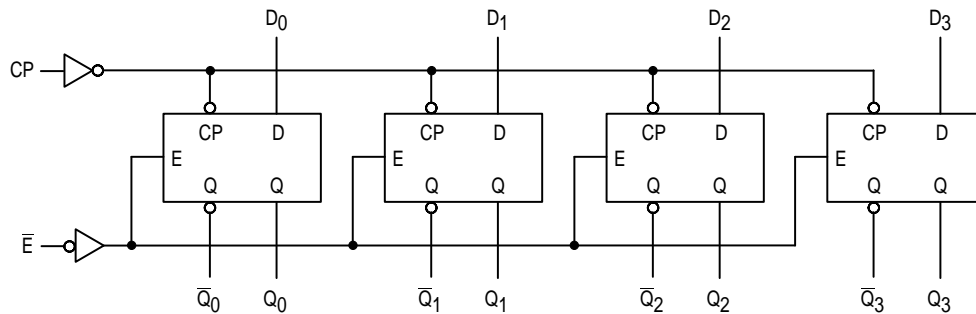
MC54FXXXJ Ceramic  
 MC74FXXXN Plastic  
 MC74FXXXD SOIC

### LOGIC SYMBOL



# MC54/74F379

## LOGIC DIAGRAM



### GUARANTEED OPERATING RANGES

| Symbol   | Parameter                           |        | Min | Typ | Max  | Unit |
|----------|-------------------------------------|--------|-----|-----|------|------|
| $V_{CC}$ | Supply Voltage                      | 54, 74 | 4.5 | 5.0 | 5.5  | V    |
| $T_A$    | Operating Ambient Temperature Range | 54     | -55 | 25  | 125  | °C   |
|          |                                     | 74     | 0   | 25  | 70   |      |
| $I_{OH}$ | Output Current — HIGH               | 54, 74 |     |     | -1.0 | mA   |
| $I_{OL}$ | Output Current — LOW                | 54, 74 |     |     | 20   | mA   |

### 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             | $I_{OL} = -1.0 \text{ mA}$ , $V_{CC} = 4.5 \text{ V}$                     |
|          |                                       | 74     | 2.7 |      | V             | $I_{OL} = -1.0 \text{ mA}$ , $V_{CC} = 4.75 \text{ V}$                    |
| $V_{OL}$ | 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                  |        | 28  | 40   | mA            | $V_{CC} = \text{MAX}$ , $D = \bar{E} = \text{GND}$ , $CP = \text{ } \int$ |

#### 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.

# MC54/74F379

## 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   | Typ | Max | Min   | Max  | Min  | Max |      |
| f <sub>max</sub> | Maximum Clock Frequency            | 100   | 140 |     | 90  |      | 100  |     | MHz  |
| t <sub>PLH</sub> | Propagation Delay                  | 3.5   | 5.0 | 6.5 | 3.5   | 8.5  | 3.5  | 7.5 | ns   |
| t <sub>PHL</sub> | CP to Q <sub>n</sub> , $\bar{Q}_n$ | 5.0   | 6.5 | 8.5 | 5.0   | 10.5 | 5.0  | 9.5 |      |

## AC OPERATING REQUIREMENTS

| Symbol             | Parameter                      | 54/74F  |     |     | 54F   |     | 74F  |     | Unit |
|--------------------|--------------------------------|---|-----|-----|---|-----|--|-----|------|
|                    |                                | T <sub>A</sub> = +25°C<br>V <sub>CC</sub> = 5.0 V |     |     | T <sub>A</sub> = -55°C to +125°C<br>V <sub>CC</sub> = 5.0 V ± 10% |     | T <sub>A</sub> = 0°C to +70°C<br>V <sub>CC</sub> = 5.0 V ± 10% |     |      |
|                    |                                | Min   | Typ | Max | Min   | max | Min  | Max |      |
| t <sub>S</sub> (H) | Setup Time, HIGH or LOW        | 3.0   |     |     | 3.0   |     | 3.0  |     | ns   |
| t <sub>S</sub> (L) | D <sub>n</sub> to CP           | 3.0   |     |     | 3.0   |     | 3.0  |     |      |
| t <sub>h</sub> (H) | Hold Time, HIGH or LOW         | 1.0   |     |     | 1.0   |     | 1.0  |     | ns   |
| t <sub>h</sub> (L) | D <sub>n</sub> to CP           | 1.0   |     |     | 1.0   |     | 1.0  |     |      |
| t <sub>S</sub> (H) | Setup Time, HIGH or LOW        | 6.0   |     |     | 6.0   |     | 6.0  |     | ns   |
| t <sub>S</sub> (L) | $\bar{E}$ to CP                | 6.0   |     |     | 6.0   |     | 6.0  |     |      |
| t <sub>h</sub> (H) | Hold Time, HIGH or LOW         | 2.0   |     |     | 2.0   |     | 2.0  |     | ns   |
| t <sub>h</sub> (L) | $\bar{E}$ to CP                | 2.0   |     |     | 2.0   |     | 2.0  |     |      |
| t <sub>w</sub> (H) | CP Pulse Width,<br>HIGH or LOW | 4.0   |     |     | 4.0   |     | 4.0  |     | ns   |
| t <sub>w</sub> (L) |                                | 5.0   |     |     | 5.0   |     | 5.0  |     |      |