



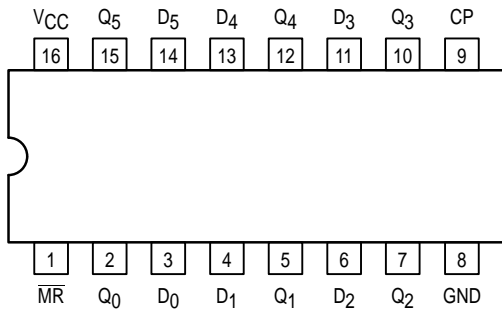
# HEX D FLIP-FLOP WITH MASTER RESET

The MC54/74F174 is a high-speed hex D flip-flop. The device is used primarily as a 6-bit edge-triggered storage register. The device has a Master Reset to simultaneously clear all flip-flops.

The F174 consists of six edge-triggered D flip-flops with individual D inputs and Q outputs. The Clock (CP) and Master Reset ( $\overline{MR}$ ) are common to all flip-flops. The state of each D input, one setup time before low-to-high clock transition, is transferred to the corresponding flip-flop's Q output. A LOW input to the Master Reset ( $\overline{MR}$ ) will force all outputs LOW independent of Clock or Data inputs. The F174 is useful for applications where only the true output is required and the Clock and Master Reset are common to all storage elements.

- Six Edge-triggered D-type Inputs
- Buffered Positive Edge-triggered Common Clock
- Buffered, Asynchronous Common Reset

## CONNECTION DIAGRAM DIP (TOP VIEW)



## FUNCTION TABLE

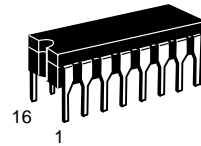
| Inputs                             | Outputs          |
|------------------------------------|------------------|
| @ $t_{\eta}$ , $\overline{MR} = H$ | @ $t_{\eta} + 1$ |
| $D_n$                              | $Q_n$            |
| H                                  | H                |
| L                                  | L                |

$t_{\eta}$  = Bit time before clock pulse  
 $t_{\eta} + 1$  = Bit time after clock pulse  
 H = HIGH Voltage Level  
 L = LOW Voltage Level

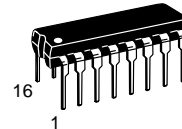
# MC54/74F174

## HEX D FLIP-FLOP WITH MASTER RESET

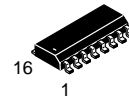
FAST™ SCHOTTKY TTL



**J SUFFIX**  
 CERAMIC  
 CASE 620-09



**N SUFFIX**  
 PLASTIC  
 CASE 648-08

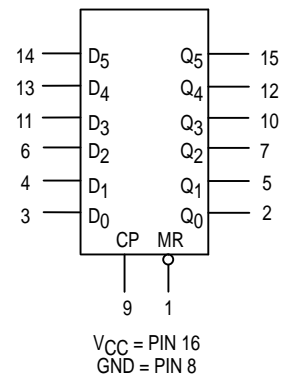


**D SUFFIX**  
 SOIC  
 CASE 751B-03

## ORDERING INFORMATION

MC54FXXXJ Ceramic  
 MC74FXXXN Plastic  
 MC74FXXXD SOIC

## LOGIC SYMBOL





## MC54/74F174

### 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 |     | 80  |      | 80   |      | MHz  |
| t <sub>PLH</sub> | Propagation Delay                         | 3.5  | 5.5 | 8.0 | 3.5   | 10.0 | 3.5  | 9.0  | ns   |
| t <sub>PHL</sub> | CP to Q <sub>n</sub>                      | 4.5  | 7.0 | 10  | 4.5   | 12.0 | 4.5  | 11.0 |      |
| t <sub>PHL</sub> | Propagation Delay<br>MR to Q <sub>n</sub> | 5.0  | 10  | 14  | 5.0   | 16.0 | 5.0  | 15.0 | ns   |

### 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                    | 4.0  |     |     | 4.0   |     | 4.0  |     | ns   |
| t <sub>S</sub> (L) | D <sub>n</sub> to CP                       | 4.0  |     |     | 4.0   |     | 4.0  |     |      |
| t <sub>H</sub> (H) | Hold Time, HIGH or LOW                     | 0  |     |     | 1.0   |     | 0  |     |      |
| t <sub>H</sub> (L) | D <sub>n</sub> to CP                       | 0  |     |     | 1.0   |     | 0  |     |      |
| t <sub>W</sub> (H) | CP Pulse Width, HIGH                       | 4.0  |     |     | 4.0   |     | 4.0  |     | ns   |
| t <sub>W</sub> (L) | or LOW                                     | 6.0  |     |     | 6.0   |     | 6.0  |     |      |
| t <sub>W</sub> (L) | $\overline{\text{MR}}$ Pulse Width LOW     | 5.0  |     |     | 5.0   |     | 5.0  |     | ns   |
| t <sub>rec</sub>   | Recovery Time $\overline{\text{MR}}$ to CP | 5.0  |     |     | 5.0   |     | 5.0  |     | ns   |