



PARALLEL D REGISTER WITH ENABLE

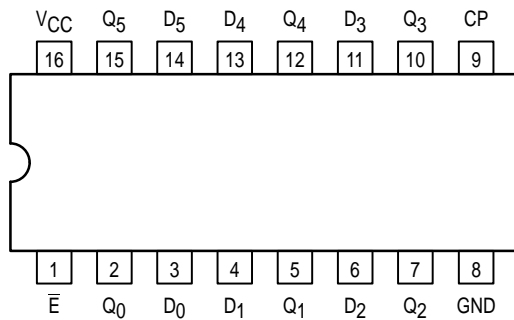
The MC54/74F378 is a 6-bit register with a buffered common enable. This device is similar to the F174 but with common Enable rather than common Master Reset.

The F378 consists of six edge-triggered D-type flip-flops with individual D inputs and Q outputs. The Clock (CP) and Enable (\bar{E}) inputs are common to all flip-flops.

When the \bar{E} input is LOW, new data is entered into the register on the LOW-to-HIGH transition of the CP input. When the \bar{E} input is HIGH the register will retain the present data independent of the CP input. This circuit is designed to prevent false clocking by transitions on the \bar{E} input..

- 6-Bit High-Speed Parallel Register
- Positive Edge-Triggered D-Type Inputs
- Fully Buffered Common Clock and Enable Inputs
- Input Clamp Diodes Limit High-Speed Termination Effects

CONNECTION DIAGRAM (TOP VIEW)



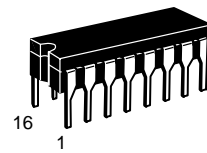
FUNCTION TABLE

| Inputs | | | Output |
|-----------|----|-------|-----------|
| \bar{E} | CP | D_n | Q_n |
| H | | X | No Change |
| L | | H | H |
| L | | L | L |

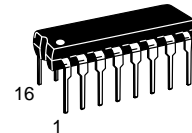
H = HIGH Voltage Level
 L = LOW Voltage Level
 X = Don't Care
 Z = High Impedance

MC54/74F378

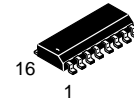
PARALLEL D REGISTER WITH ENABLE
 FAST™ SCHOTTKY TTL



J SUFFIX
 CERAMIC
 CASE 620-09



N SUFFIX
 PLASTIC
 CASE 648-08

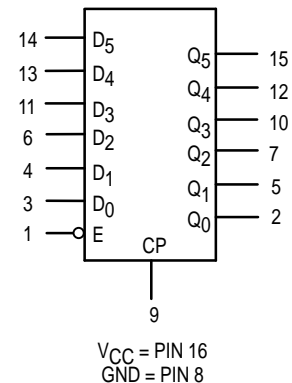


D SUFFIX
 SOIC
 CASE 751B-03

ORDERING INFORMATION

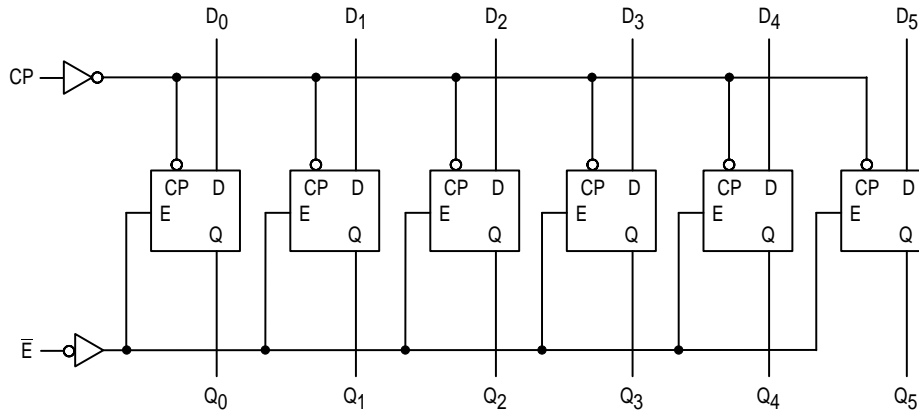
MC54FXXXJ Ceramic
 MC74FXXXN Plastic
 MC74FXXXD SOIC

LOGIC SYMBOL



MC54/74F378

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} = MIN, I _{IN} = -18 mA |
| V _{OH} | Output HIGH Voltage | 54, 74 | 2.5 | | V | I _{OL} = -1.0 mA, V _{CC} = 4.50 V |
| | | 74 | 2.7 | | V | I _{OL} = -1.0 mA, V _{CC} = 4.75 V |
| V _{OL} | Output LOW Voltage | | | 0.5 | V | I _{OL} = 20 mA, V _{CC} = MIN |
| I _{IH} | Input HIGH Current | | | 20 | μA | V _{CC} = MAX, V _{IN} = 2.7 V |
| | | | | 0.1 | mA | V _{CC} = MAX, V _{IN} = 7.0 V |
| I _{IL} | Input LOW Current | | | -0.6 | mA | V _{CC} = MAX, V _{IN} = 0.5 V |
| I _{OS} | Output Short Circuit Current (Note 2) | -60 | | -150 | mA | V _{CC} = MAX, V _{OUT} = 0 V |
| I _{CC} | Power Supply Current | | 30 | 45 | mA | V _{CC} = MAX, V _{CP} = 0 V |

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.

MC54/74F378

AC CHARACTERISTICS

| Symbol | Parameter | 54/74F | | | 54F | | 74F | | Unit |
|------------------|-------------------------|--|-----|-----|--|------|---|-----|------|
| | | $T_A = +25^\circ\text{C}$ $V_{CC} = 5.0\text{ V}$ $C_L = 50\text{ pF}$ | | | $T_A = -55^\circ\text{C to } +125^\circ\text{C}$ $V_{CC} = 5.0\text{ V} \pm 10\%$ $C_L = 50\text{ pF}$ | | $T_A = 0^\circ\text{C to } +70^\circ\text{C}$ $V_{CC} = 5.0\text{ V} \pm 10\%$ $C_L = 50\text{ pF}$ | | |
| | | Min | Typ | Max | Min | Max | Min | Max | |
| f_{max} | Maximum Input Frequency | 80 | 140 | | 80 | | 80 | | MHz |
| t_{PLH} | Propagation Delay | 3.0 | 5.5 | 7.5 | 3.0 | 9.5 | 3.0 | 8.5 | ns |
| t_{PHL} | CP to Q_n | 3.5 | 6.0 | 8.5 | 3.5 | 10.5 | 3.5 | 9.5 | |

AC OPERATING REQUIREMENTS

| Symbol | Parameter | 54/74F | | | 54F | | 74F | | Unit |
|--------------------------|--------------------------------|--|-----|-----|--|-----|---|-----|------|
| | | $T_A = +25^\circ\text{C}$ $V_{CC} = 5.0\text{ V}$ | | | $T_A = -55^\circ\text{C to } +125^\circ\text{C}$ $V_{CC} = 5.0\text{ V} \pm 10\%$ | | $T_A = 0^\circ\text{C to } +70^\circ\text{C}$ $V_{CC} = 5.0\text{ V} \pm 10\%$ | | |
| | | Min | Typ | Max | Min | max | Min | Max | |
| $t_{\text{S}}(\text{H})$ | Setup Time, HIGH or LOW | 4.0 | | | 4.0 | | 4.0 | | ns |
| $t_{\text{S}}(\text{L})$ | D_n to CP | 4.0 | | | 4.0 | | 4.0 | | |
| $t_{\text{H}}(\text{H})$ | Hold Time, HIGH or LOW | 0 | | | 0 | | 0 | | |
| $t_{\text{H}}(\text{L})$ | D_n to CP | 0 | | | 0 | | 0 | | ns |
| $t_{\text{S}}(\text{H})$ | Setup Time, HIGH or LOW | 6.0 | | | 6.0 | | 6.0 | | |
| $t_{\text{S}}(\text{L})$ | E to CP | 6.0 | | | 6.0 | | 6.0 | | |
| $t_{\text{H}}(\text{H})$ | Hold Time, HIGH or LOW | 2.0 | | | 2.0 | | 2.0 | | ns |
| $t_{\text{H}}(\text{L})$ | E to CP | 2.0 | | | 2.0 | | 2.0 | | |
| $t_{\text{W}}(\text{H})$ | CP Pulse Width, HIGH or LOW | 4.0 | | | 4.0 | | 4.0 | | ns |
| $t_{\text{W}}(\text{L})$ | | 6.0 | | | 6.0 | | 6.0 | | |