



# PARALLEL D REGISTER WITH ENABLE

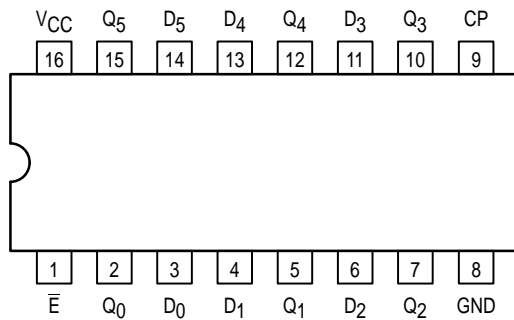
The MC54/74F378 is a 6-bit register with a buffered common enable. This device is similar to the F174 but with common Enable rather than common Master Reset.

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)



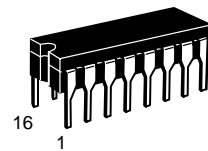
### FUNCTION TABLE

Inputs			Output
$\bar{E}$	CP	D <sub>n</sub>	Q <sub>n</sub>
H		X	No Change
L		H	H
L		L	L

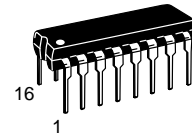
H = HIGH Voltage Level  
 L = LOW Voltage Level  
 X = Don't Care  
 Z = High Impedance

## MC54/74F378

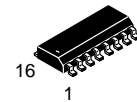
### PARALLEL D REGISTER WITH ENABLE FAST™ SCHOTTKY TTL



**J SUFFIX**  
 CERAMIC  
 CASE 620-09



**N SUFFIX**  
 PLASTIC  
 CASE 648-08

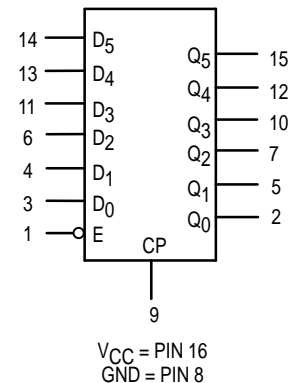


**D SUFFIX**  
 SOIC  
 CASE 751B-03

### ORDERING INFORMATION

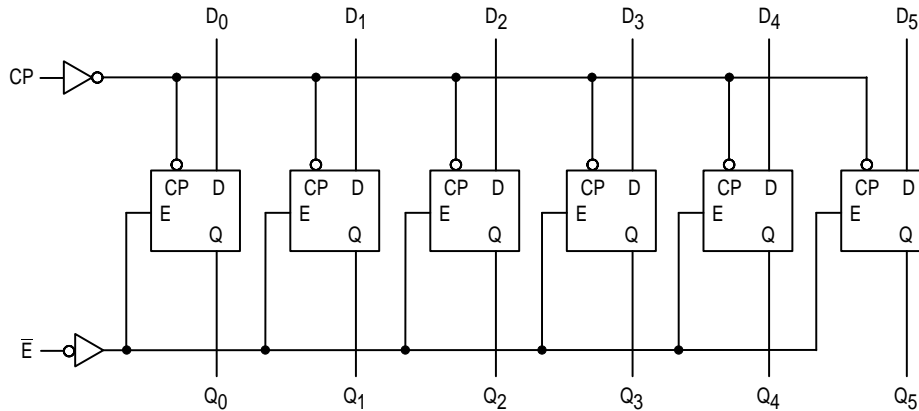
MC54FXXXJ Ceramic  
 MC74FXXXN Plastic  
 MC74FXXXD SOIC

### LOGIC SYMBOL



# MC54/74F378

## LOGIC DIAGRAM



### GUARANTEED OPERATING RANGES

Symbol	Parameter		Min	Typ	Max	Unit
V <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

### DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter	Limits			Unit	Test Conditions
		Min	Typ	Max		
V <sub>IH</sub>	Input HIGH Voltage	2.0			V	Guaranteed Input HIGH Voltage
V <sub>IL</sub>	Input LOW Voltage			0.8	V	Guaranteed Input LOW Voltage
V <sub>IK</sub>	Input Clamp Diode Voltage			-1.2	V	V <sub>CC</sub> = MIN, I <sub>IN</sub> = -18 mA
V <sub>OH</sub>	Output HIGH Voltage	54, 74	2.5		V	I <sub>OL</sub> = -1.0 mA, V <sub>CC</sub> = 4.50 V
		74	2.7		V	I <sub>OL</sub> = -1.0 mA, V <sub>CC</sub> = 4.75 V
V <sub>OL</sub>	Output LOW Voltage			0.5	V	I <sub>OL</sub> = 20 mA, V <sub>CC</sub> = MIN
I <sub>IH</sub>	Input HIGH Current			20	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 2.7 V
				0.1	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 7.0 V
I <sub>IL</sub>	Input LOW Current			-0.6	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.5 V
I <sub>OS</sub>	Output Short Circuit Current (Note 2)	-60		-150	mA	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 0 V
I <sub>CC</sub>	Power Supply Current		30	45	mA	V <sub>CC</sub> = MAX, V <sub>CP</sub> = 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	
$f_{\text{max}}$	Maximum Input Frequency	80	140		80		80		MHz
$t_{\text{PLH}}$	Propagation Delay	3.0	5.5	7.5	3.0	9.5	3.0	8.5	ns
$t_{\text{PHL}}$	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		