# 54F/74F378

Parallel D Register
With Enable

Description

The 'F378 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.
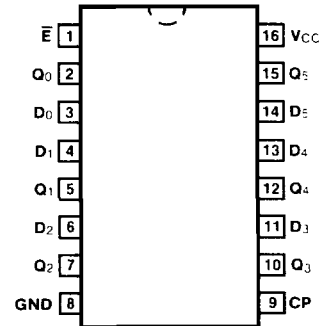
- **6-Bit High-Speed Parallel Register**
- **Positive Edge-Triggered D-Type Inputs**
- **Fully Buffered Common Clock and Enable Inputs**
- **Input Clamp Diodes Limit High-Speed Termination Effects**
- **Full TTL and CMOS Compatible**

Ordering Code: See Section 5
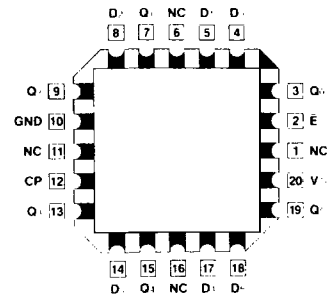
Logic Symbol
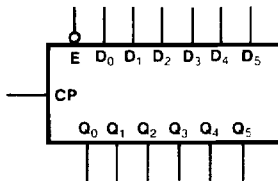
Connection Diagrams

**Pin Assignment
for DIP and SOIC**

**Pin Assignment
for LCC and PCC**

Input Loading/Fan-Out: See Section 3 for U.L. definitions

Pin Names	Description	54F/74F(U.L.) HIGH/LOW
$\overline{E}$	Enable Input (Active LOW)	0.5/0.375
D_0-D_5	Data Inputs	0.5/0.375
CP	Clock Pulse Input (Active Rising Edge)	0.5/0.375
Q_0-Q_5	Outputs	25/12.5

Functional Description

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

When the $\overline{E}$ input is LOW, new data is entered into the register on the LOW-to-HIGH transition of the CP input. When the $\overline{E}$ input is HIGH the register will retain the present data independent of the CP input.
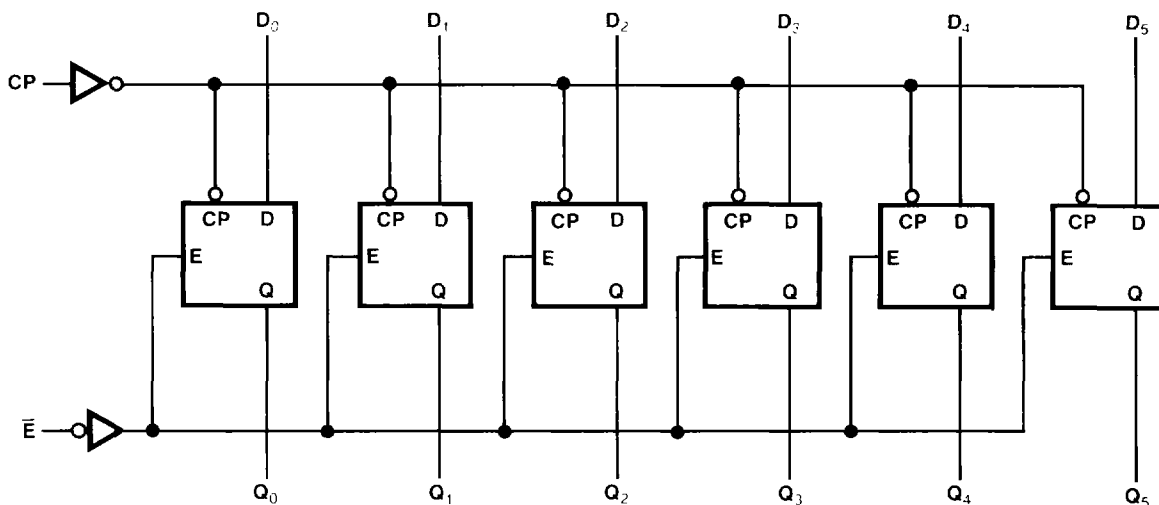
Truth Table

Inputs			Output
$\overline{E}$	CP	D_n	Q_n
H	⌐	X	No Change
L	⌐	H	H
L	⌐	L	L

H = HIGH Voltage Level
L = LOW Voltage Level
X = Immaterial

Logic Diagram

Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

DC Characteristics over Operating Temperature Range (unless otherwise specified)

Symbol	Parameter	54F/74F			Units	Conditions
		Min	Typ	Max		
I_{CC}	Power Supply Current		30	45	mA	V_{CC} = Max, V_{CP} = 0

AC Characteristics: See Section 3 for waveforms and load configurations

Symbol	Parameter	54F/74F $T_A = +25\,^\circ C$ $V_{CC} = +5.0$ V $C_L = 50$ pF			54F $T_A, V_{CC} =$ Mil $C_L = 50$ pF		74F $T_A, V_{CC} =$ Com $C_L = 50$ pF		Units	Fig. No.
		Min	Typ	Max	Min	Max	Min	Max		
f_{max}	Maximum Input Frequency	80	100		70		80		MHz	3-1
t_{PLH}	Propagation Delay	3.0	5.5	7.5	3.0	10.0	3.0	8.5	ns	3-1
t_{PHL}	CP to Q_n	3.5	6.0	8.5	3.5	10.5	3.5	9.5		3-7

AC Operating Requirements: See Section 3 for waveforms

Symbol	Parameter	54F/74F $T_A = +25\,^\circ C$ $V_{CC} = +5.0$ V			54F $T_A, V_{CC} =$ Mil		74F $T_A, V_{CC} =$ Com		Units	Fig. No.
		Min	Typ	Max	Min	Max	Min	Max		
$t_s(H)$	Setup Time, HIGH or LOW	4.0			5.0		4.0		ns	3-5
$t_s(L)$	D_n to CP	4.0			5.0		4.0			
$t_h(H)$	Hold Time, HIGH or LOW	0			2.0		0		ns	3-5
$t_h(L)$	D_n to CP	0			2.0		0			
$t_s(H)$	Setup Time, HIGH or LOW	4.0			4.5		4.0		ns	3-5
$t_s(L)$	$\overline{E}$ to CP	10.0			13.0		10.0			
$t_h(H)$	Hold Time, HIGH or LOW	0			0		0		ns	3-5
$t_h(L)$	$\overline{E}$ to CP	0			0		0			
$t_w(H)$	CP Pulse Width	4.0			5.0		4.0		ns	3-7
$t_w(L)$	HIGH or LOW	6.0			7.5		6.0			