

# 54AC/74AC379 • 54ACT/74ACT379

## Quad Parallel Register With Enable

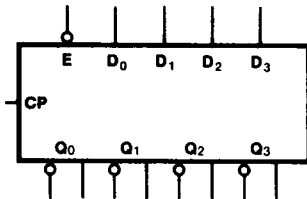
### Description

The 'AC/'ACT379 is a 4-bit register with a buffered common Enable. This device is similar to the 'AC/'ACT175 but features the common Enable rather than common Master Reset.

- Edge-Triggered D-Type Inputs
- Buffered Positive Edge-Triggered Clock
- Buffered Common Enable Input
- True and Complement Outputs
- Outputs Source/Sink 24 mA
- 'ACT379 has TTL-Compatible Inputs

Ordering Code: See Section 6

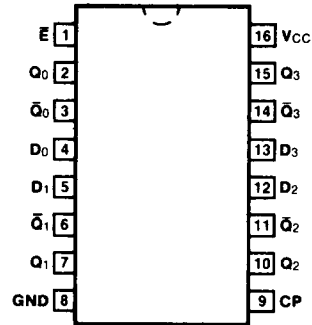
### Logic Symbol



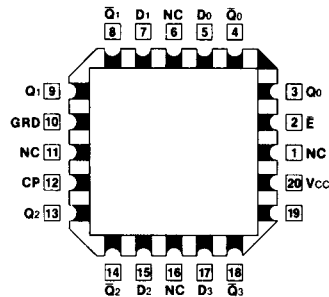
### Pin Names

- E Enable Input
- D<sub>0</sub> - D<sub>3</sub> Data Inputs
- CP Clock Pulse Input
- Q<sub>0</sub> - Q<sub>3</sub> Flip-Flop Outputs
- $\bar{Q}_0$  -  $\bar{Q}_3$  Complement Outputs

### Connection Diagrams



Pin Assignment for DIP, Flatpak and SOIC



Pin Assignment for LCC and PCC

# AC379 • ACT379

## Functional Description

The 'AC'/ACT379 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 the  $\bar{E}$  input is HIGH, the register will retain the present data

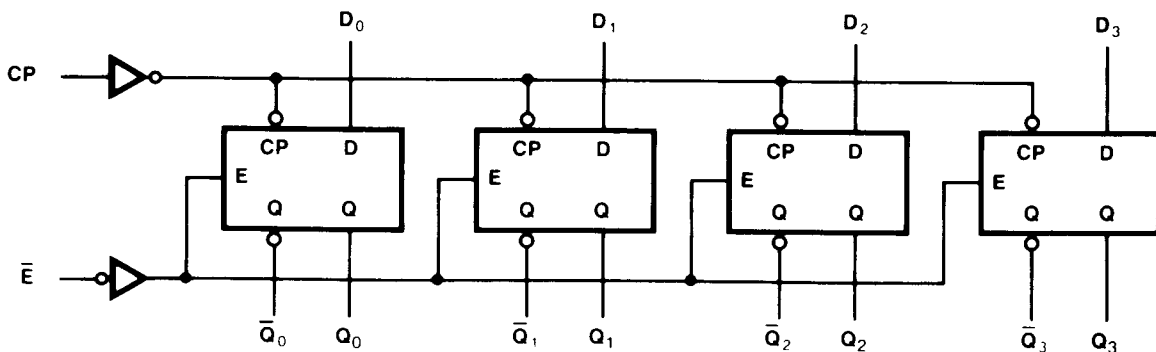
independent of the CP input. When the  $\bar{E}$  is LOW, new data is entered into the register on the LOW-to-HIGH transition of the CP input.

## Truth Table

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

H = HIGH Voltage Level  
 L = LOW Voltage Level  
 X = Immaterial  
 ┐ = LOW-to-HIGH Transition  
 NC = No Change

## 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 (unless otherwise specified)

Symbol	Parameter	54AC/ACT	74AC/ACT	Units	Conditions
I <sub>CC</sub>	Maximum Quiescent Supply Current	160	80	μA	V <sub>IN</sub> = V <sub>CC</sub> or Ground, V <sub>CC</sub> = 5.5 V, T <sub>A</sub> = Worst Case
I <sub>CC</sub>	Maximum Quiescent Supply Current	8.0	8.0	μA	V <sub>IN</sub> = V <sub>CC</sub> or Ground, V <sub>CC</sub> = 5.5 V, T <sub>A</sub> = 25°C
I <sub>CC(T)</sub>	Maximum Additional I <sub>CC</sub> /Input ('ACT379)	1.6	1.5	mA	V <sub>IN</sub> = V <sub>CC</sub> - 2.1 V, V <sub>CC</sub> = 5.5 V, T <sub>A</sub> = Worst Case

## AC Characteristics

Symbol	Parameter	V <sub>CC</sub> * (V)	74AC			54AC		74AC		Units	Fig. No.
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF			T <sub>A</sub> = -55°C to +125°C C <sub>L</sub> = 50 pF		T <sub>A</sub> = -40°C to +85°C C <sub>L</sub> = 50 pF			
			Min	Typ	Max	Min	Max	Min	Max		
f <sub>max</sub>	Maximum Clock Frequency	3.3 5.0		118 160					MHz	3-3	
t <sub>PLH</sub>	Propagation Delay CP to Q <sub>n</sub> , $\bar{Q}_n$	3.3 5.0		8.5 7.0					ns	3-6	
t <sub>PHL</sub>	Propagation Delay CP to Q <sub>n</sub> , Q <sub>n</sub>	3.3 5.0		8.5 6.0					ns	3-6	

\*Voltage Range 3.3 is 3.3 V ± 0.3 V

Voltage Range 5.0 is 5.0 V ± 0.5 V

## AC Operating Requirements

Symbol	Parameter	V <sub>CC</sub> * (V)	74AC		54AC		74AC		Units	Fig. No.
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF		T <sub>A</sub> = -55°C to +125°C C <sub>L</sub> = 50 pF		T <sub>A</sub> = -40°C to +85°C C <sub>L</sub> = 50 pF			
			Typ	Guaranteed Minimum						
t <sub>s</sub>	Setup Time, HIGH or LOW D <sub>n</sub> to CP	3.3 5.0	4.5 3.0						ns	3-9
t <sub>h</sub>	Hold Time, HIGH or LOW D <sub>n</sub> to CP	3.3 5.0	0 0						ns	3-9
t <sub>s</sub>	Setup Time, HIGH or LOW $\bar{E}$ to CP	3.3 5.0	4.5 3.0						ns	3-9
t <sub>h</sub>	Hold Time, HIGH or LOW $\bar{E}$ to CP	3.3 5.0	3.0 2.0						ns	3-9
t <sub>w</sub>	CP Pulse Width, HIGH or LOW	3.3 5.0	5.5 4.0						ns	3-6

\*Voltage Range 3.3 is 3.3 V ± 0.3 V

Voltage Range 5.0 is 5.0 V ± 0.5 V

Military parameters given herein are for general references only. For current military specifications and subgroup testing information please request Fairchild's Table I data sheet from your Fairchild sales engineer or account representative.

## AC Characteristics

Symbol	Parameter	Vcc* (V)	74ACT			54ACT		74ACT		Units	Fig. No.
			TA = +25°C CL = 50 pF			TA = -55°C to +125°C CL = 50 pF		TA = -40°C to +85°C CL = 50 pF			
			Min	Typ	Max	Min	Max	Min	Max		
f <sub>max</sub>	Maximum Clock Frequency	5.0	160						MHz	3-3	
t <sub>PLH</sub>	Propagation Delay CP to Q <sub>n</sub> , $\bar{Q}_n$	5.0	7.0						ns	3-6	
t <sub>PHL</sub>	Propagation Delay CP to Q <sub>n</sub> , $\bar{Q}_n$	5.0	6.0						ns	3-6	

\*Voltage Range 5.0 is 5.0 V ± 0.5 V

## AC Operating Requirements

Symbol	Parameter	Vcc* (V)	74ACT		54ACT		74ACT		Units	Fig. No.
			TA = +25°C CL = 50 pF		TA = -55°C to +125°C CL = 50 pF		TA = -40°C to +85°C CL = 50 pF			
			Typ	Guaranteed Minimum						
t <sub>s</sub>	Setup Time, HIGH or LOW D <sub>n</sub> to CP	5.0	3.0						ns	3-9
t <sub>h</sub>	Hold Time, HIGH or LOW D <sub>n</sub> to CP	5.0	0						ns	3-9
t <sub>s</sub>	Setup Time, HIGH or LOW E to CP	5.0	3.0						ns	3-9
t <sub>h</sub>	Hold Time, HIGH or LOW E to CP	5.0	2.0						ns	3-9
t <sub>w</sub>	CP Pulse Width, HIGH or LOW	5.0	4.0						ns	3-6

\*Voltage Range 5.0 is 5.0 V ± 0.5 V

Military parameters given herein are for general references only. For current military specifications and subgroup testing information please request Fairchild's Table I data sheet from your Fairchild sales engineer or account representative.

**Capacitance**

Symbol	Parameter	54/74AC/ACT	Units	Conditions
		Typ		
C <sub>IN</sub>	Input Capacitance	4.5	pF	V <sub>CC</sub> = 5.5 V
C <sub>PD</sub>	Power Dissipation Capacitance		pF	V <sub>CC</sub> = 5.5 V