

# 54AC/74AC14 • 54ACT/74ACT14

## Hex Inverter Schmitt Trigger

### Description

The 'AC/'ACT14 contains six logic inverters which accept standard CMOS input signals (TTL levels for 'ACT14) and provide standard CMOS output levels. They are capable of transforming slowly changing input signals into sharply defined, jitter-free output signals. In addition, they have a greater noise margin than conventional inverters.

The 'AC/'ACT14 has hysteresis between the positive-going and negative-going input thresholds (typically 1.0 V) which is determined internally by transistor ratios and is essentially insensitive to temperature and supply voltage variations.

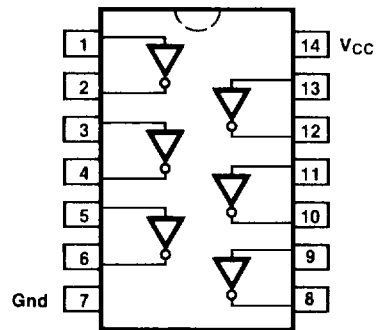
- Outputs Source/Sink 24 mA
- 'ACT14 has TTL-Compatible Inputs

**Ordering Code:** See Section 6

### Function Table

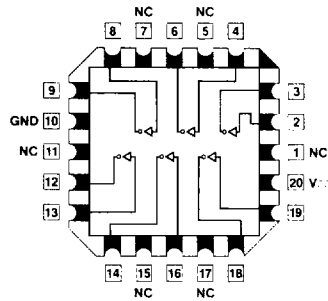
Input	Output
A	O
L	H
H	L

### Connection Diagrams



**Pin Assignment for DIP, Flatpak and SOIC**

5



**Pin Assignment for LCC**

# AC14 • ACT14

## DC Characteristics (unless otherwise specified)

Symbol	Parameter	V <sub>CC</sub> (V)	54AC	54ACT	74AC	74ACT	Units	Conditions
I <sub>CC</sub>	Maximum Quiescent Supply Current		80	80	40	40	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		4.0	4.0	4.0	4.0	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 ('ACT14)			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
V <sub>t+</sub>	Maximum Positive Threshold	3.0 4.5 5.5	2.2 3.2 3.9	2.0	2.2 3.2 3.9	2.0	V	T <sub>A</sub> = Worst Case
V <sub>t-</sub>	Minimum Negative Threshold	3.0 4.5 5.5	0.5 0.9 1.1	0.8	0.5 0.9 1.1	0.8	V	T <sub>A</sub> = Worst Case
V <sub>h(max)</sub>	Maximum Hysteresis	3.0 4.5 5.5	1.2 1.4 1.6	1.2	1.2 1.4 1.6	1.2	V	T <sub>A</sub> = Worst Case
V <sub>h(min)</sub>	Minimum Hysteresis	3.0 4.5 5.5	0.3 0.4 0.5	0.4	0.3 0.4 0.5	0.4	V	T <sub>A</sub> = Worst Case

## AC Characteristics

Symbol	Parameter	V <sub>CC</sub> <sup>+</sup> (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		
t <sub>PLH</sub>	Propagation Delay	3.3 5.0	1.0 1.0	9.5 7.0	13.5 10.0	1.0 1.0	16.0 12.0	1.0 1.0	15.0 11.0	ns	3-5
t <sub>PHL</sub>	Propagation Delay	3.3 5.0	1.0 1.0	7.5 6.0	11.5 8.5	1.0 1.0	14.0 10.0	1.0 1.0	13.0 9.5	ns	3-5

\*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	V <sub>CC</sub> * (V)	74ACT			54ACT		74ACT		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		
t <sub>PLH</sub>	Propagation Delay	5.0		7.4					ns	3-5	
t <sub>PHL</sub>	Propagation Delay	5.0		8.6					ns	3-5	

\*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	25.0	pF	V <sub>CC</sub> = 5.5 V