

54AC/74AC520 • 54ACT/74ACT520
54AC/74AC521 • 54ACT/74ACT521

8-Bit Identity Comparator

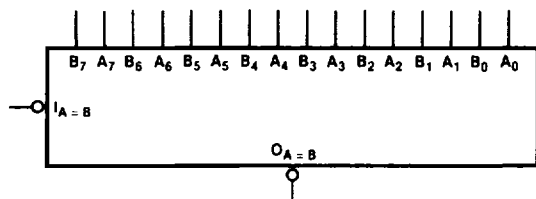
Description

The 'AC/'ACT520/521 are expandable 8-bit comparators. They compare two words of up to eight bits each and provide a LOW output when the two words match bit for bit. The expansion input $\bar{I}_{A=B}$ also serves as an active LOW enable input. The '521 features a pull-up resistor on each input.

- Compares Two 8-Bit Words in 6.5 ns Typ
- Expandable to Any Word Length
- 20-Pin Package
- Outputs Source/Sink 24 mA
- '521 has Input Pull-Up Resistors
- 'ACT520 and 'ACT521 have TTL-Compatible Inputs

Ordering Code: See Section 6

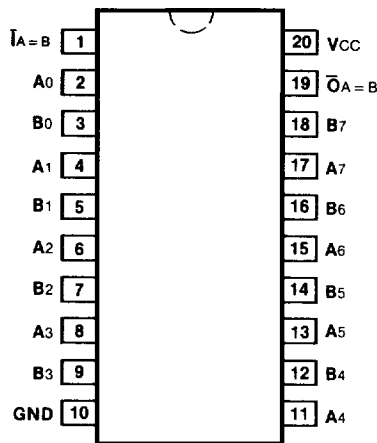
Logic Symbol



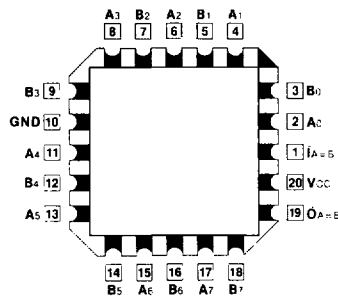
Pin Names

- A₀ - A₇ Word A Inputs
- B₀ - B₇ Word B Inputs
- $\bar{I}_{A=B}$ Expansion or Enable Input
- $\bar{O}_{A=B}$ Identity Output

Connection Diagrams



Pin Assignment for DIP, Flatpak and SOIC



Pin Assignment for LCC

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Truth Table

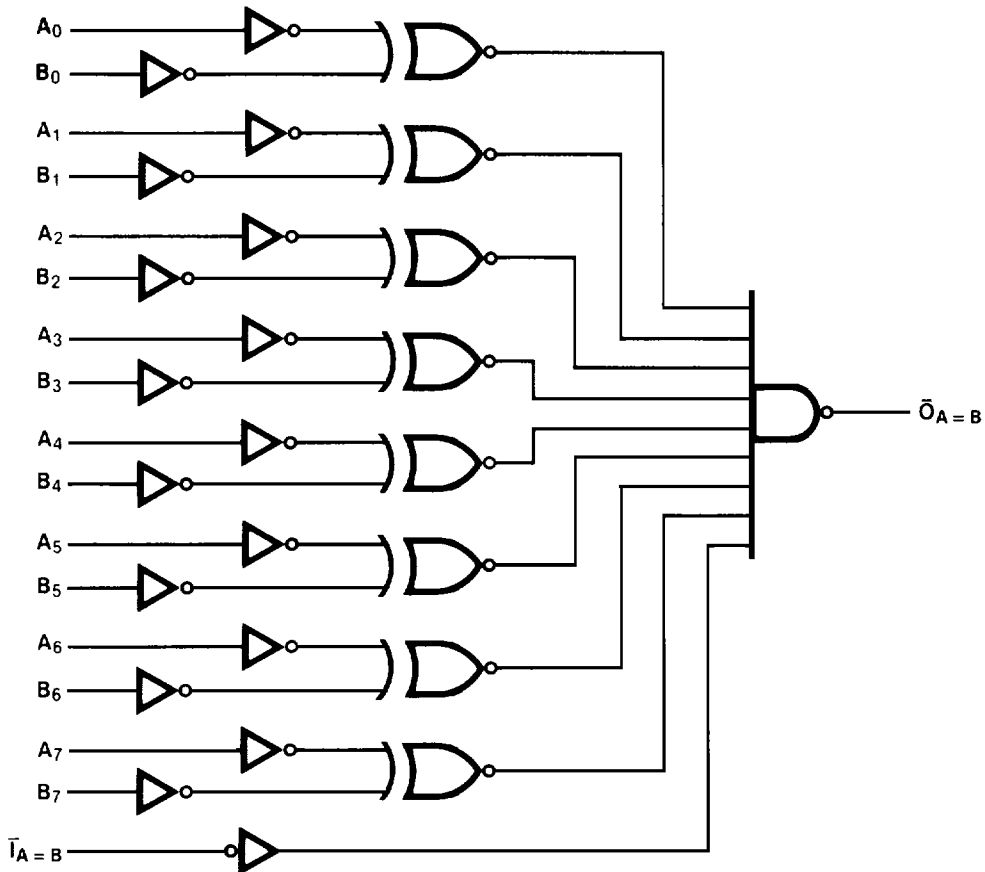
Inputs		Outputs
$\bar{A}=B$	A, B	$\bar{O}_{A=B}$
L	$A=B^*$	L
L	$A \neq B$	H
H	$A=B^*$	H
H	$A \neq B$	H

H = HIGH Voltage Level

L = LOW Voltage level

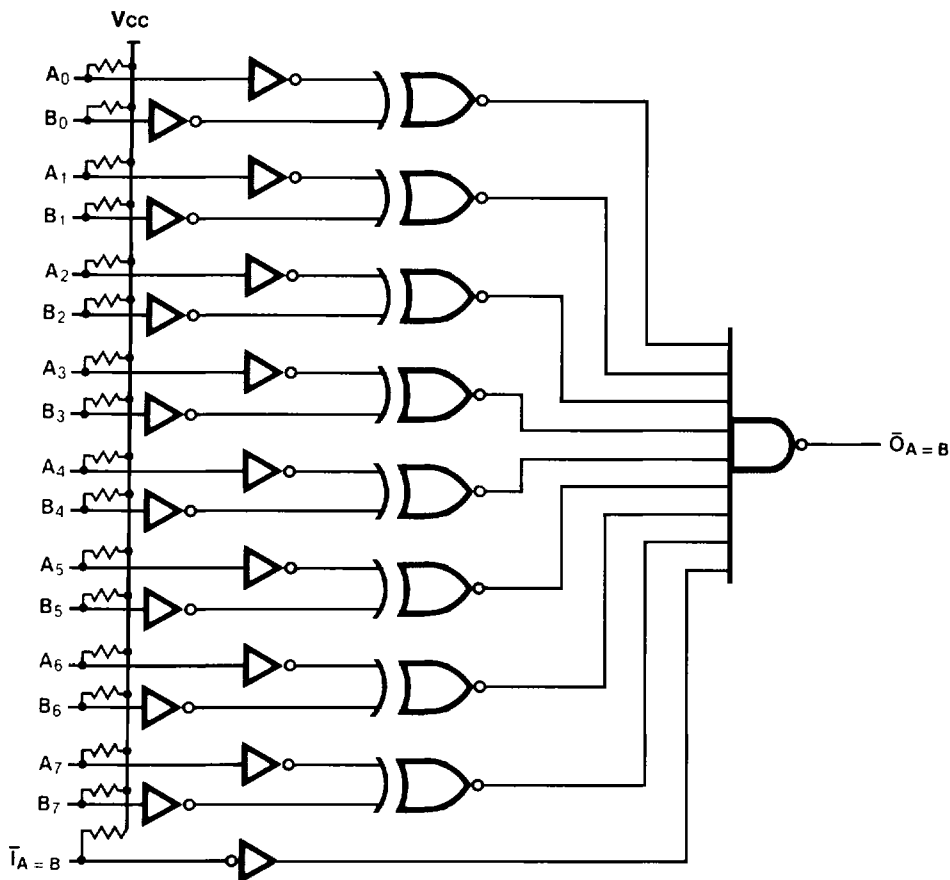
* $A_0 = B_0, A_1 = B_1, A_2 = B_2, \text{ etc.}$

Logic Diagram ('AC/ACT520)



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

Logic Diagram (AC/ACT521)



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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 _{CC}	Maximum Quiescent Supply Current	160	80	μA	V _{IN} = V _{CC} or Ground, V _{CC} = 5.5 V, T _A = Worst Case
I _{CC}	Maximum Quiescent Supply Current	8.0	8.0	μA	V _{IN} = V _{CC} or Ground, V _{CC} = 5.5 V, T _A = 25°C
I _{CC(T)}	Maximum Additional Icc/Input ('ACT520/521)	1.6	1.5	mA	V _{IN} = V _{CC} - 2.1 V, V _{CC} = 5.5 V, T _A = Worst Case

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AC Characteristics

Symbol	Parameter	Vcc* (V)	74AC			54AC		74AC		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		
tPLH	Propagation Delay An or Bn to $\bar{O}_{A=B}$	3.3 5.0		13.0 9.5					ns	3-6	
tPHL	Propagation Delay An or Bn to $\bar{O}_{A=B}$	3.3 5.0		13.0 9.5					ns	3-6	
tPLH	Propagation Delay $\bar{I}_{A=B}$ to $\bar{O}_{A=B}$	3.3 5.0		9.0 6.5					ns	3-6	
tPHL	Propagation Delay $\bar{I}_{A=B}$ to $\bar{O}_{A=B}$	3.3 5.0		9.5 7.0					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 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		
tPLH	Propagation Delay An or Bn to $\bar{O}_{A=B}$	5.0		9.5					ns	3-6	
tPHL	Propagation Delay An or Bn to $\bar{O}_{A=B}$	5.0		9.5					ns	3-6	
tPLH	Propagation Delay $\bar{I}_{A=B}$ to $\bar{O}_{A=B}$	5.0		6.5					ns	3-6	
tPHL	Propagation Delay $\bar{I}_{A=B}$ to $\bar{O}_{A=B}$	5.0		7.0					ns	3-6	

*Voltage Range 5.0 is 5.0 V ± 0.5 V

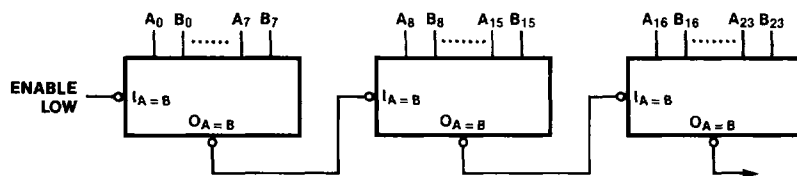
Military parameters given herein are for general references only. For current military specifications and subgroup testing information please request Fairchild's Table I data sheet from your Fairchild sales engineer or account representative.

Capacitance

Symbol	Parameter	54/74AC/ACT	Units	Conditions
		Typ		
C _{IN}	Input Capacitance	4.5	pF	V _{CC} = 5.5 V
C _{PD}	Power Dissipation Capacitance		pF	V _{CC} = 5.5 V

Applications

Ripple Expansion



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Parallel Expansion

