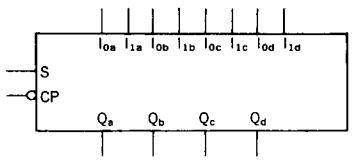
HD74AC298/HD74ACT298 • Quad 2-Input Multiplexer with Storage

Description

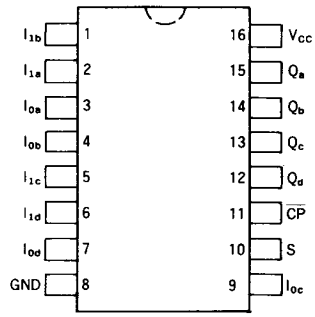
This device is a high-speed multiplexer with storage. It selects four bits of data from two sources (Ports) under the control of a common Select input (S). The selected data is transferred to the 4-bit output register synchronous with the HIGH-to-LOW transition of the Clock input ($\overline{CP}$). The 4-bit register is fully edge triggered. The Data inputs (I_0 and I_1) and Select input (S) must be stable only one setup time prior to the HIGH-to-LOW transition of the clock for predictable operation.

- Output source/sink 24mA
- HD74ACT298 has TTL compatible Inputs

Logic Symbol



Pin Assignment



(Top View)

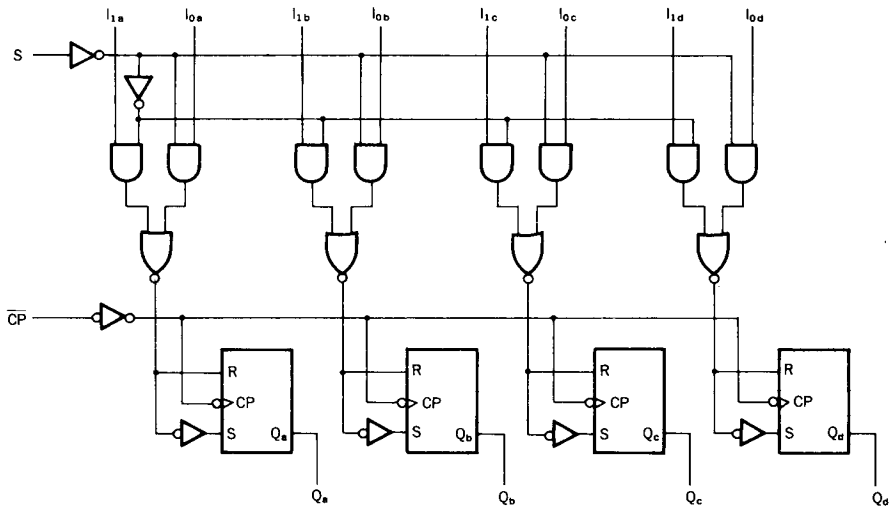
Pin Names

I_{1a}–I_{1d}	Source 1 Data Inputs
I_{0a}–I_{0d}	Source 0 Data Inputs
S	Select Input
$\overline{CP}$	Clock Pulse Input (Active Falling Edge)
Q_a–Q_d	Outputs

Function Table

Inputs		Outputs			
S	C	Q_A	Q_B	Q_C	Q_D
L		a_1	b_1	c_1	d_1
H		a_2	b_2	c_2	d_2
X	H	Q_{A0}	Q_{B0}	Q_{C0}	Q_{D0}

Logic Diagram



DC Characteristics (unless otherwise specified)

Symbol	Parameter	Max	Unit	Condition
I_{CC}	Maximum Quiescent Supply Current	80	μA	$V_{IN}=V_{CC}$ or Ground, $V_{CC}=5.5V$, Ta=Worst Case
I_{CC}	Maximum Quiescent Supply Current	8.0	μA	$V_{IN}=V_{CC}$ or Ground, $V_{CC}=5.5V$, Ta=25℃
I_{CCT}	Maximum I_{CC}/Input (HD74ACT298)	1.5	mA	$V_{IN}=V_{CC}-2.1V$, $V_{CC}=5.5V$, Ta=Worst Case

AC Characteristics : HD74AC298

Symbol	Parameter	Vcc* (V)	Ta=+25℃ C_L=50pF			Ta=−40℃ to +85℃ C_L=50pF		Unit
			Min	Typ	Max	Min	Max	
f_{max}	Maximum Count Frequency	3.3 5.0	90 110			70 100		MHz
t_{PLH}	Propagation Delay CP_2 to Q	3.3 5.0	1.0 1.0	7.0 5.0	10.0 7.5	1.0 1.0	11.5 8.5	ns
t_{PHL}	Propagation Delay CP to Q	3.3 5.0	1.0 1.0	7.5 5.5	10.0 7.5	1.0 1.0	11.5 8.5	ns

* Voltage Range 3.3 is 3.3V ± 0.3V
Voltage Range 5.0 is 5.0V ± 0.5V

AC Operating Requirements : HD74AC298

Symbol	Parameter	Vcc* (V)	Ta+25℃ C_L=50pF		Ta=-40℃ to +85℃ C_L=50pF	Unit
			Typ	Guaranteed Minimum		
t_{su}	Setup Time, HIGH or LOW D or S to CP	3.3 5.0	4.5 2.5	5.5 4.5	7.0 5.5	ns
t_h	Hold Time, HIGH or LOW Dn to CPn	3.3 5.0	−2.0 −1.0	0 0	0 0	ns
t_h	Hold Time, HIGH or LOW S to CP	3.3 5.0	−3.0 −1.5	0.5 0.5	0.5 0.5	ns
t_w	Pulse with	3.3 5.0	3.0 3.0	5.5 4.5	7.0 5.0	ns

* Voltage Range 3.3 is 3.3V±0.3V
Voltage Range 5.0 is 5.0V±0.5V

AC Characteristics : HD74ACT298

Symbol	Parameter	Vcc* (V)	Ta=+25℃ C_L=50pF			Ta=−40℃ to +85℃ C_L=50pF		Unit
			Min	Typ	Max	Min	Max	
f_{max}	Maximum Clock Frequency	5.0	70			60		MHz
t_{PLH}	Propagation Delay CP to Q	5.0	1.0	6.0	10.0	1.0	11.0	ns
t_{PHL}	Propagation Delay CP to Q	5.0	1.0	6.5	10.0	1.0	11.0	ns

* Voltage Range 5.0 is 5.0V ± 0.5V

AC Operating Requirements: HD74ACT298

Symbol	Parameter	Vcc* (V)	Ta+25°C C_L=50pF		Ta=−40°C to +85°C C_L=50pF	Unit
			Typ	Guaranteed Minimum		
t_{su}	Setup Time, HIGH or LOW $\overline{Dn}$ or S to CP	5.0	3.5	5.5	6.5	ns
t_h	Hold Time, HIGH or LOW Dn to CP	5.0	−5.0	1.0	1.0	ns
t_h	Hold Time, HIGH or LOW S to CP	5.0	−0.5	1.0	1.0	ns
t_w	Pulse Width	5.0	3.0	7.0	8.0	ns

* Voltage Range 5.0 is 5.0V±0.5V

Capacitance

Symbol	Parameter	Typ	Unit	Condition
C_{IN}	Input Capacitance	4.5	pF	V_{CC}=5.5V
C_{PD}	Power Dissipation Capacitance	30	pF	V_{CC}=5.0V