

HD74AC298/HD74ACT298

Quad 2-Input Multiplexer with Storage

HITACHI

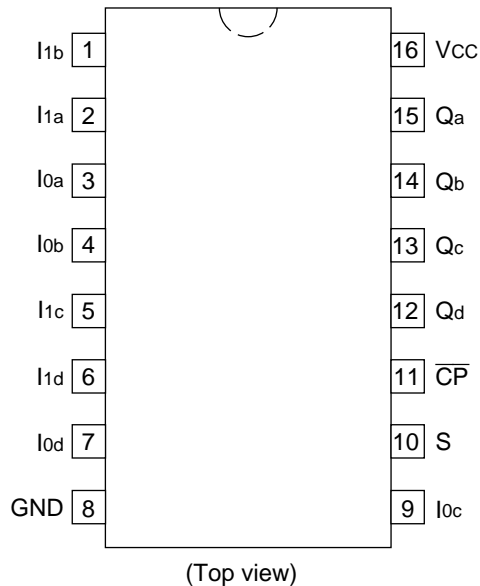
Description

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.

Features

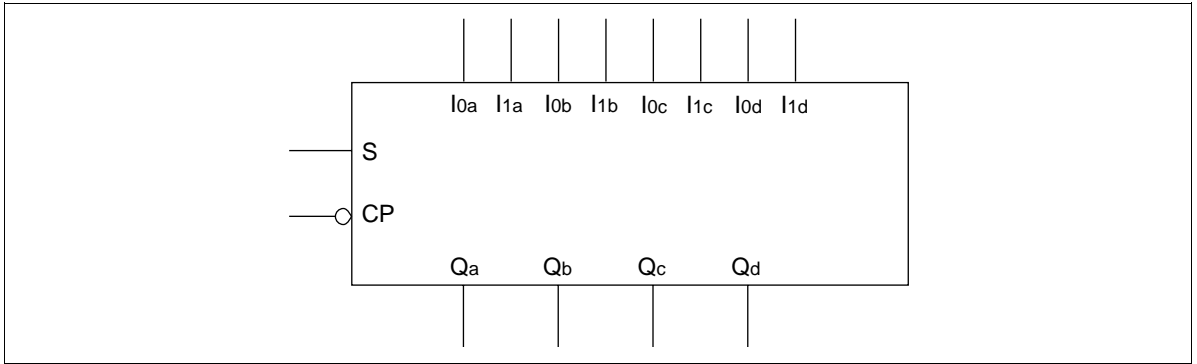
- Outputs Source/Sink 24 mA
- HD74ACT298 has TTL-Compatible Inputs

Pin Arrangement



HD74AC298/HD74ACT298



Logic Symbol



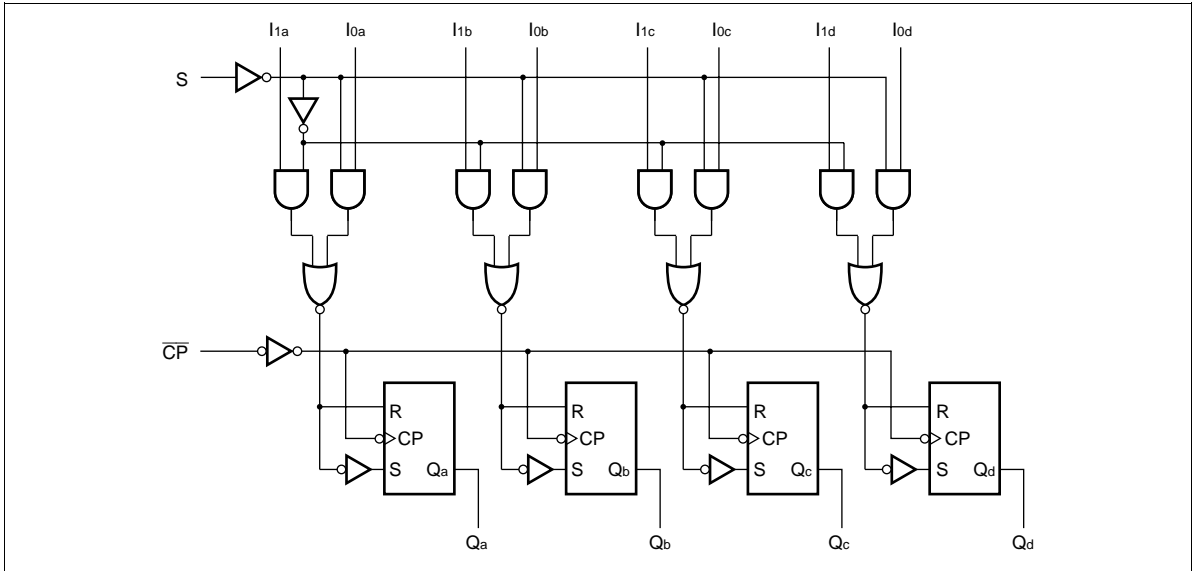
Pin Names

- $I_{1a} - I_{1d}$ 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	Cp	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)

Item	Symbol	Max	Unit	Condition
Maximum quiescent supply current	I_{CC}	80	μA	$V_{IN} = V_{CC}$ or ground, $V_{CC} = 5.5\text{ V}$, $T_a = \text{Worst case}$
Maximum quiescent supply current	I_{CC}	8.0	μA	$V_{IN} = V_{CC}$ or ground, $V_{CC} = 5.5\text{ V}$, $T_a = 25^\circ\text{C}$
Maximum I_{CC}/input (HD74ACT298)	I_{CCT}	1.5	mA	$V_{IN} = V_{CC} - 2.1\text{ V}$, $V_{CC} = 5.5\text{ V}$, $T_a = \text{Worst case}$

AC Characteristics: HD74AC298

Item	Symbol	$V_{CC} (\text{V})^{*1}$	$T_a = +25^\circ\text{C}$ $C_L = 50\text{ pF}$			$T_a = -40^\circ\text{C to } +85^\circ\text{C}$ $C_L = 50\text{ pF}$		Unit
			Min	Typ	Max	Min	Max	
Maximum count frequency	f_{max}	3.3	90	—	—	70	—	MHz
		5.0	110	—	—	100	—	
Propagation delay CP to Q	t_{PLH}	3.3	1.0	7.0	10.0	1.0	11.5	ns
Propagation delay CP to Q	t_{PHL}	5.0	1.0	5.0	7.5	1.0	8.5	
Propagation delay CP to Q	t_{PHL}	3.3	1.0	7.5	10.0	1.0	11.5	
Propagation delay CP to Q	t_{PHL}	5.0	1.0	5.5	7.5	1.0	8.5	

Note: 1. Voltage Range 3.3 is $3.3\text{ V} \pm 0.3\text{ V}$
Voltage Range 5.0 is $5.0\text{ V} \pm 0.5\text{ V}$

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AC Operating Requirements: HD74AC298

Item	Symbol	V _{CC} (V)* ¹	Ta = +25°C C _L = 50 pF		Ta = -40°C to +85°C C _L = 50 pF		Unit
			Typ	Guaranteed Minimum	Typ	Guaranteed Minimum	
Setup time, HIGH or LOW	t _{su}	3.3	4.5	5.5	7.0	ns	
D or S to CP		5.0	2.5	4.5	5.5		
Hold time, HIGH or LOW	t _h	3.3	-2.0	0.0	0.0	ns	
D _n to CP _n		5.0	-1.0	0.0	0.0		
Hold time, HIGH or LOW	t _h	3.3	-3.0	0.5	0.5	ns	
S to CP		5.0	-1.5	0.5	0.5		
Pulse width	t _w	3.3	3.0	5.5	7.0	ns	
		5.0	3.0	4.5	5.0		

Note: 1. Voltage Range 3.3 is 3.3 V ± 0.3 V
Voltage Range 5.0 is 5.0 V ± 0.5 V

AC Characteristics: HD74ACT298

Item	Symbol	V _{CC} (V)* ¹	Ta = +25°C C _L = 50 pF			Ta = -40°C to +85°C C _L = 50 pF		Unit
			Min	Typ	Max	Min	Max	
Maximum count frequency	f _{max}	5.0	70	—	—	60	—	MHz
Propagation delay CP to Q	t _{PLH}	5.0	1.0	6.0	10.0	1.0	11.0	ns
Propagation delay CP to Q	t _{PHL}	5.0	1.0	6.5	10.0	1.0	11.0	

Note: 1. Voltage Range 5.0 is 5.0 V ± 0.5 V

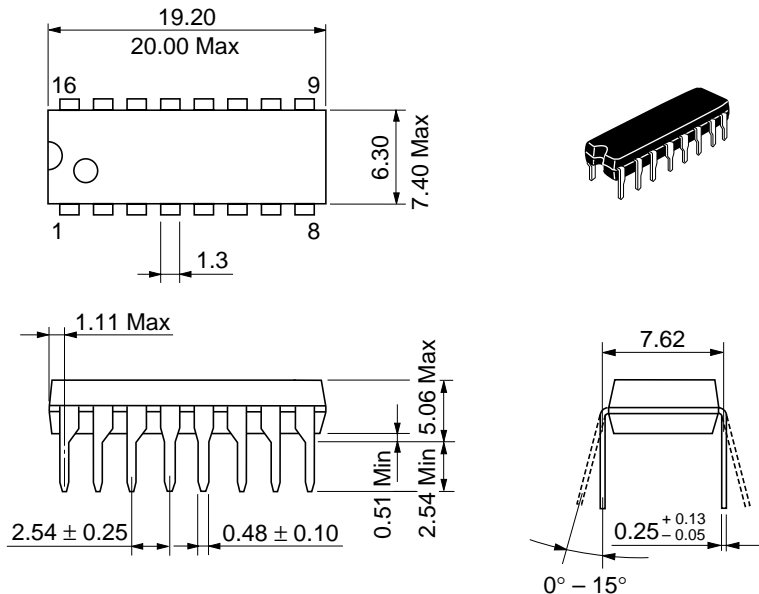
AC Operating Requirements: HD74ACT298

Item	Symbol	V _{CC} (V)*1	Ta = +25°C	Ta = -40°C		Unit
			C _L = 50 pF	to +85°C	C _L = 50 pF	
			Typ	Guaranteed Minimum		
Setup time, HIGH or LOW D _n or S to CP	t _{su}	5.0	3.5	5.5	6.5	ns
Hold time, HIGH or LOW D _n to CP	t _h	5.0	-5.0	1.0	1.0	ns
Hold time, HIGH or LOW S to CP	t _h	5.0	-0.5	1.0	1.0	ns
Pulse width	t _w	5.0	3.0	7.0	8.0	ns

Note: 1. Voltage Range 5.0 is 5.0 V ± 0.5 V

Capacitance

Item	Symbol	Typ	Unit	Condition
Input capacitance	C _{IN}	4.5	pF	V _{CC} = 5.5 V
Power dissipation capacitance	C _{PD}	30	pF	V _{CC} = 5.0 V



Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g



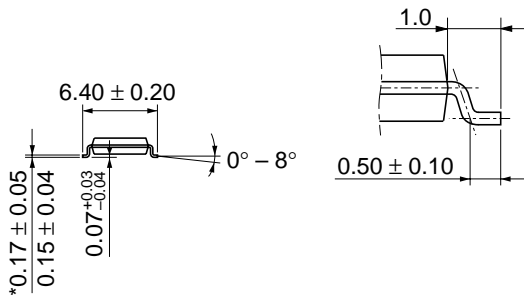
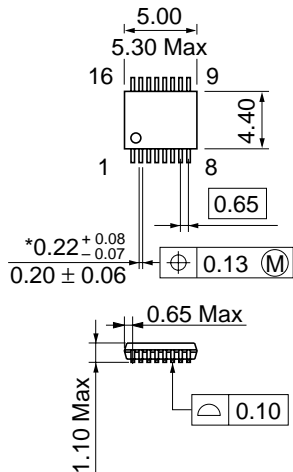
*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.24 g



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DN
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.15 g



*Dimension including the plating thickness
 Base material dimension

Hitachi Code	TTP-16DA
JEDEC	—
EIAJ	—
Weight (reference value)	0.05 g

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