

HD74AC298/HD74ACT298

Quad 2-Input Multiplexer with Storage

HITACHI

ADE-205-389 (Z)
1st. Edition
Sep. 2000

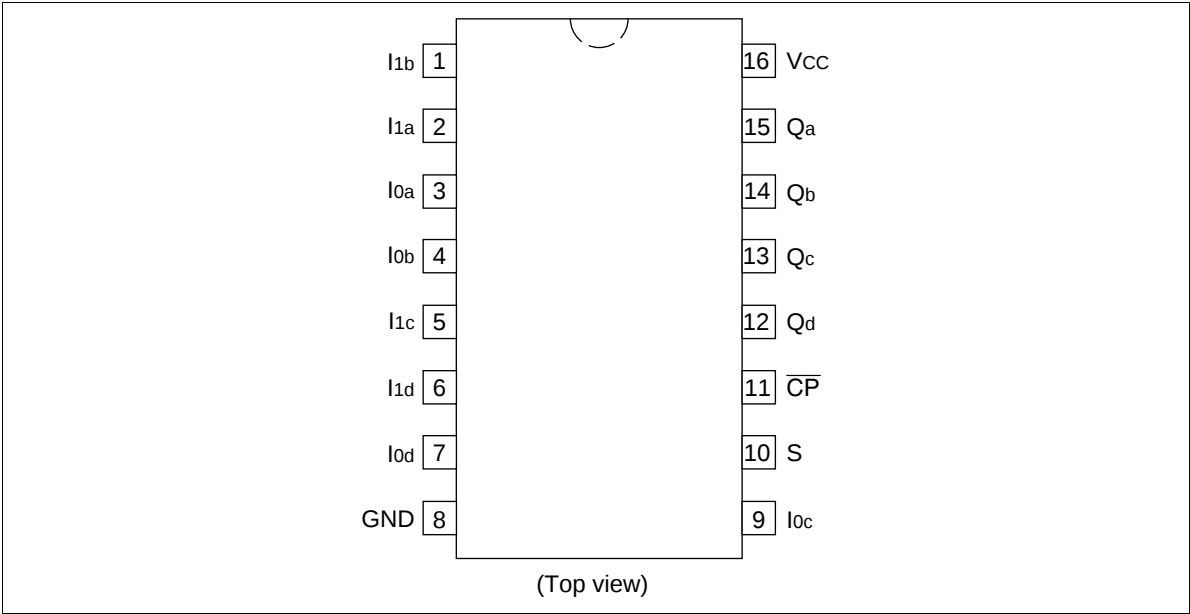
Description

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 (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.

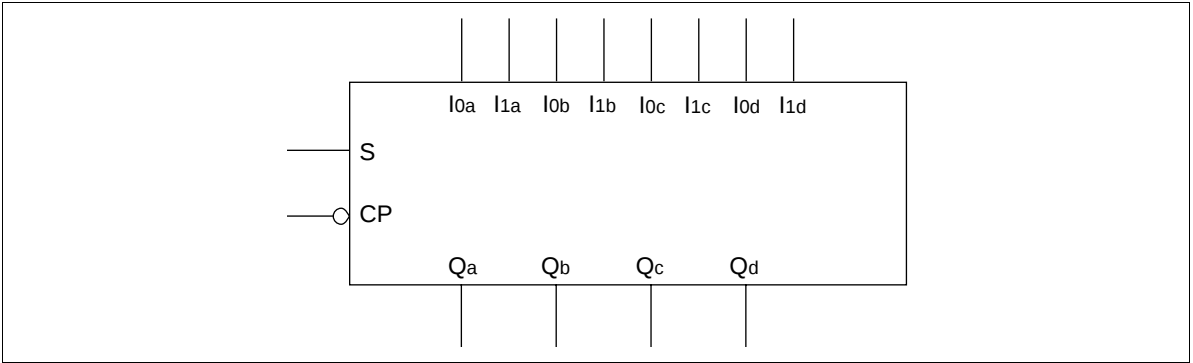
Features

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

Pin Arrangement



Logic Symbol



Pin Names

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

Source 1 Data Inputs
- $I_{0a} - I_{0d}$

Source 0 Data Inputs
- S

Select Input
- $\overline{CP}$

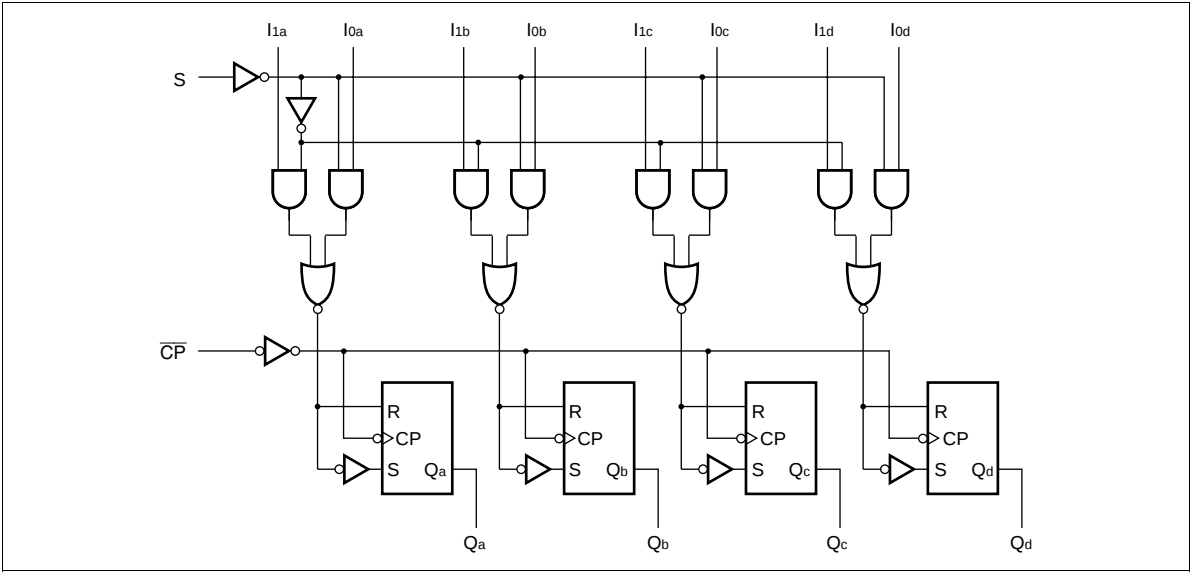
Clock Pulse Input (Active Falling Edge)
- $Q_a - Q_d$

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

AC Characteristics: HD74AC298

Item	Symbol	$V_{CC} (V)^{*1}$	$T_a = +25^{\circ}C$ $C_L = 50 pF$			$T_a = -40^{\circ}C \text{ to } +85^{\circ}C$ $C_L = 50 pF$		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
		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	
		5.0	1.0	5.5	7.5	1.0	8.5	

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

HD74AC298/HD74ACT298

AC Operating Requirements: HD74AC298

			Ta = +25°C C _L = 50 pF	Ta = −40°C to +85°C C _L = 50 pF		
Item	Symbol	V _{CC} (V) ^{*1}	Typ	Guaranteed Minimum		Unit
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 C _L = 50 pF	Ta = −40°C to +85°C C _L = 50 pF		Unit
			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 with	t _w	5.0	3.0	7.0	8.0	ns

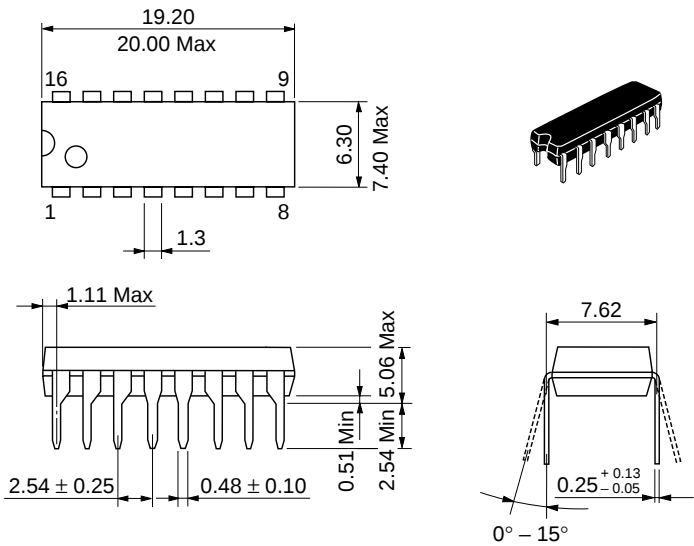
Note: 1. Voltage Range 5.0 is 5.0 V ± 0.5 V

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

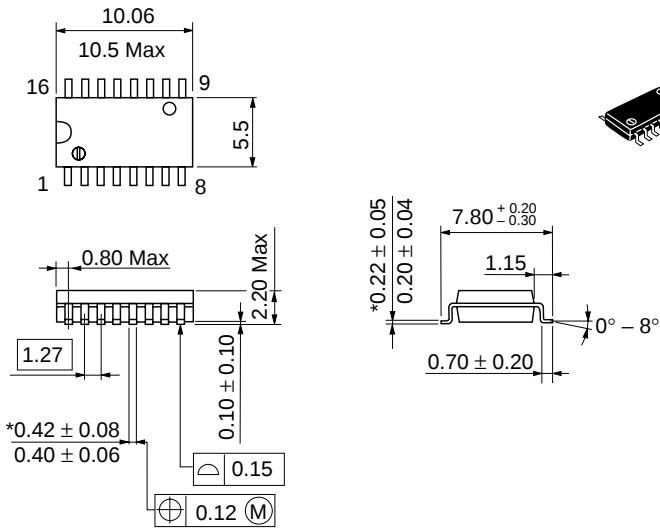
Package Dimensions

Unit: mm



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

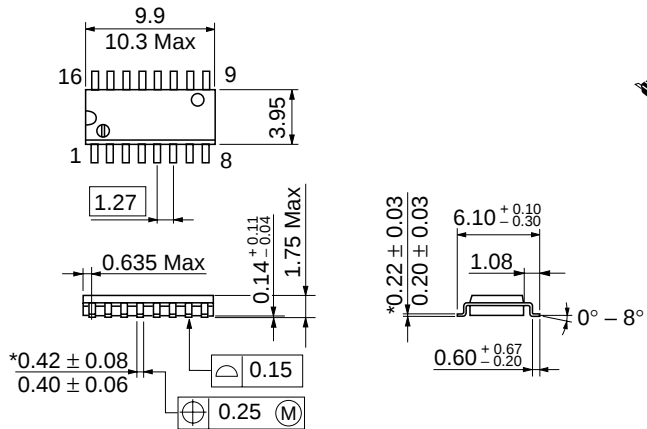
Unit: mm



*Dimension including the plating thickness
Base material dimension

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

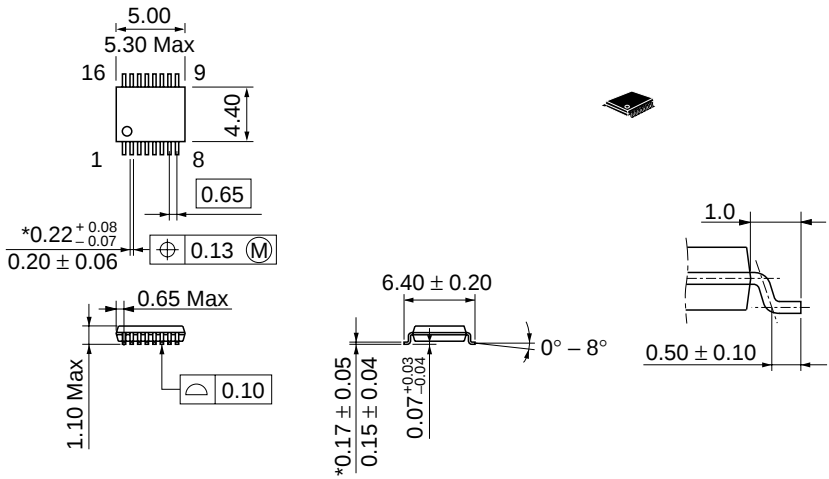
Unit: mm



*Dimension including the plating thickness
Base material dimension

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

Unit: mm



*Dimension including the plating thickness
Base material dimension

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

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