

HD74HC153

Dual 4-to-1-line Data Selectors/Multiplexers

HITACHI

ADE-205-451 (Z)
1st. Edition
Sep. 2000

Description

Information on the data inputs of each multiplexer is selected by the address on the A and B inputs, and is presented on the Y outputs. Each multiplexer possesses a strobe input which enables it when taken to a low logic level. When a high logic level is applied to a strobe input, the output of its associated multiplexer is taken low.

Features

- High Speed Operation: t_{pd} (D to Y) = 13 ns typ ($C_L = 50$ pF)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2$ to 6 V
- Low Input Current: 1 μ A max
- Low Quiescent Supply Current: I_{CC} (static) = 4 μ A max ($T_a = 25^\circ\text{C}$)

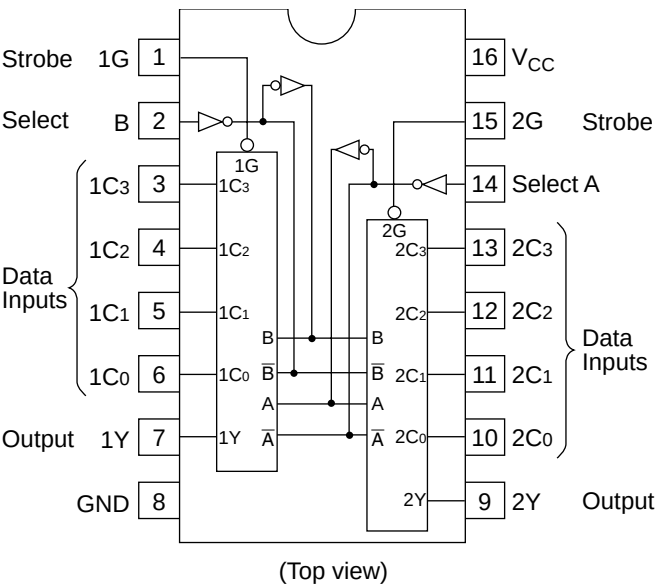
Function Table

Inputs

Select		Data				Strobe G	Outputs Y
B	A	C ₀	C ₁	C ₂	C ₃		
X	X	X	X	X	X	H	L
L	L	L	X	X	X	L	L
L	L	H	X	X	X	L	H
L	H	X	L	X	X	L	L
L	H	X	H	X	X	L	H
H	L	X	X	L	X	L	L
H	L	X	X	H	X	L	H
H	H	X	X	X	L	L	L
H	H	X	X	X	H	L	H

X : Irrelevant

Pin Arrangement



DC Characteristics

Item	Symbol	V _{CC} (V)	Ta = 25°C			Ta = -40 to +85°C		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Input voltage	V _{IH}	2.0	1.5	—	—	1.5	—	V		
		4.5	3.15	—	—	3.15	—			
		6.0	4.2	—	—	4.2	—			
	V _{IL}	2.0	—	—	0.5	—	0.5	V		
		4.5	—	—	1.35	—	1.35			
		6.0	—	—	1.8	—	1.8			
Output voltage	V _{OH}	2.0	1.9	2.0	—	1.9	—	V	Vin = V _{IH} or V _{IL} I _{OH} = -20 μA	
		4.5	4.4	4.5	—	4.4	—			
		6.0	5.9	6.0	—	5.9	—			
		4.5	4.18	—	—	4.13	—			I _{OH} = -4 mA
		6.0	5.68	—	—	5.63	—			I _{OH} = -5.2 mA
	V _{OL}	2.0	—	0.0	0.1	—	0.1	V	Vin = V _{IH} or V _{IL} I _{OL} = 20 μA	
		4.5	—	0.0	0.1	—	0.1			
		6.0	—	0.0	0.1	—	0.1			
		4.5	—	—	0.26	—	0.33			I _{OL} = 4 mA
		6.0	—	—	0.26	—	0.33			I _{OL} = 5.2 mA
Input current	I _{in}	6.0	—	—	±0.1	—	±1.0	μA	Vin = V _{CC} or GND	
Quiescent supply current	I _{CC}	6.0	—	—	4.0	—	40	μA	Vin = V _{CC} or GND, I _{out} = 0 μA	

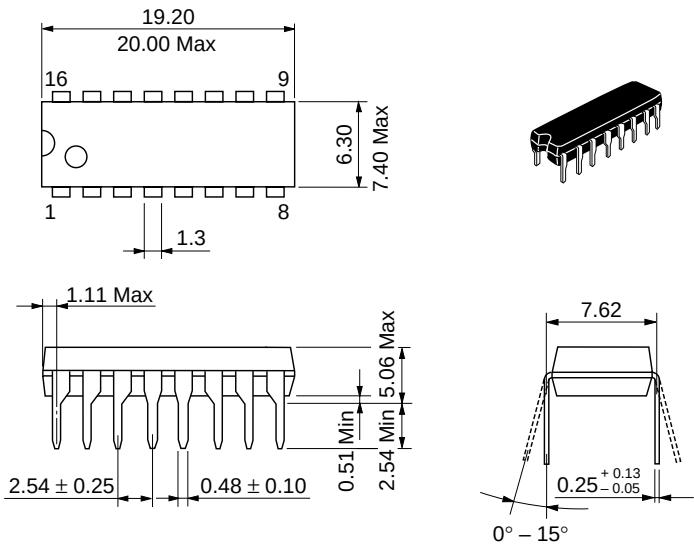
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AC Characteristics (C_L = 50 pF, Input t_r = t_f = 6 ns)

Item	Symbol	V _{cc} (V)	Ta = 25°C			Ta = -40 to +85°C		Unit	Test Conditions
			Min	Typ	Max	Min	Max		
Propagation delay time	t _{PLH}	2.0	—	—	115	—	145	ns	Data to Output Y
		4.5	—	13	23	—	29		
		6.0	—	—	20	—	25		
	t _{PHL}	2.0	—	—	160	—	200	ns	Select to Output Y
		4.5	—	17	32	—	40		
		6.0	—	—	27	—	34		
		2.0	—	—	95	—	120		Strobe to Output Y
		4.5	—	10	19	—	24		
		6.0	—	—	16	—	20		
Output rise/fall time	t _{TLH}	2.0	—	—	75	—	95	ns	
	t _{THL}	4.5	—	5	15	—	19		
		6.0	—	—	13	—	16		
Input capacitance	Cin	—	—	5	10	—	10	pF	

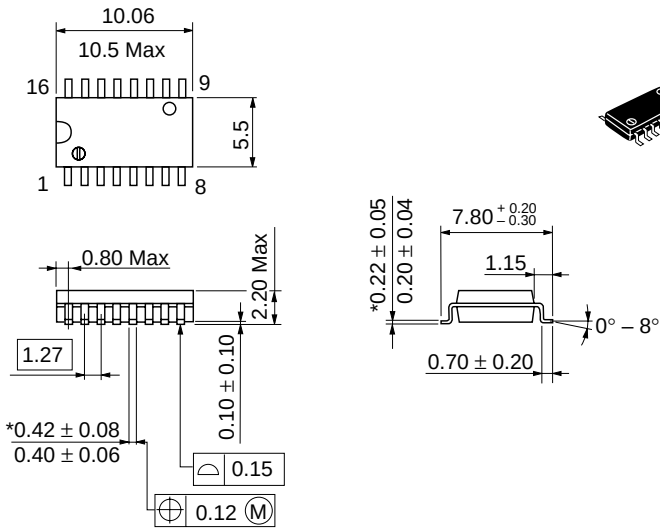
Package Dimensions

Unit: mm



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

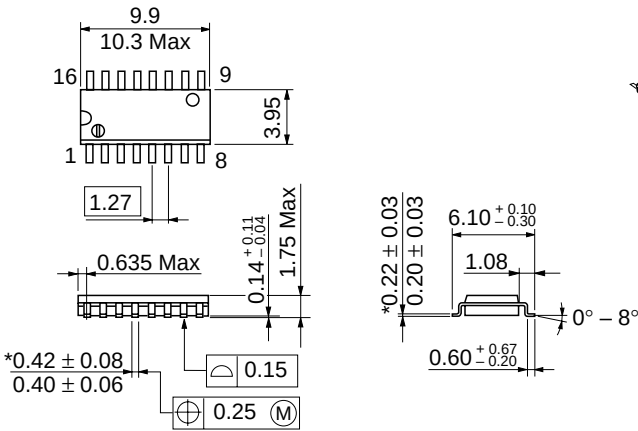
Unit: mm



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

*Dimension including the plating thickness
Base material dimension

Unit: mm



*Dimension including the plating thickness
Base material dimension

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

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