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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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HD74HC157/HD74HC158

Quad. 2-to-1-line Data Selectors/Multiplexers
(with noninverted outputs)

Quad. 2-to-1-line Data Selectors/Multiplexers
(with inverted outputs)



ADE-205-454 (Z)

1st. Edition

Sep. 2000

Description

These devices each consist of four 2-input digital multiplexers with common select and strobe inputs. On the HD74HC157, when the strobe input is at logical "L" the four outputs assume the values as selected from the inputs. When the strobe input is at a logical "H" the outputs assume logical "L". The HD74HC158 operates in the same manner, except that its outputs are inverted. Select decoding is done internally resulting in a single select input only. If enabled, the select input determines whether the A or B inputs get routed to their corresponding Y outputs.

Features

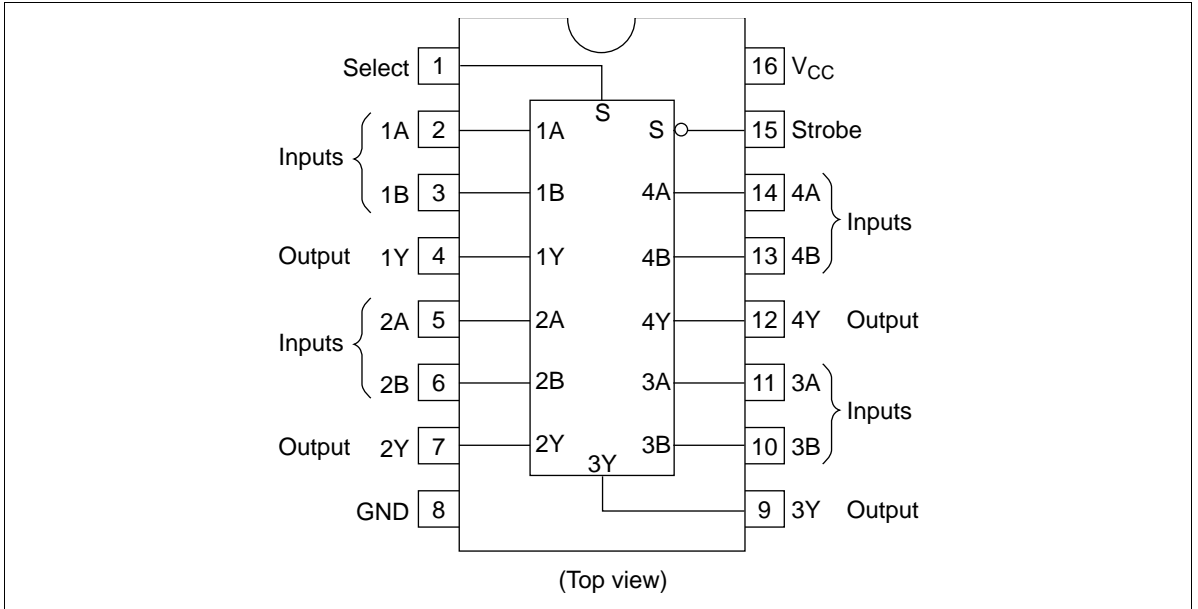
- High Speed Operation: t_{pd} (Data to Output) = 12 ns typ ($C_L = 50$ pF)
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2$ to 6 V
- Low Input Current: 1 μ A max
- Low Quiescent Supply Current: I_{CC} (static) = 4 μ A max ($T_a = 25^\circ\text{C}$)

Function Table

Inputs				Output Y	
Strobe	Select	A	B	HC157	HC158
H	X	X	X	L	H
L	L	L	X	L	H
L	L	H	X	H	L
L	H	X	L	L	H
L	H	X	H	H	L

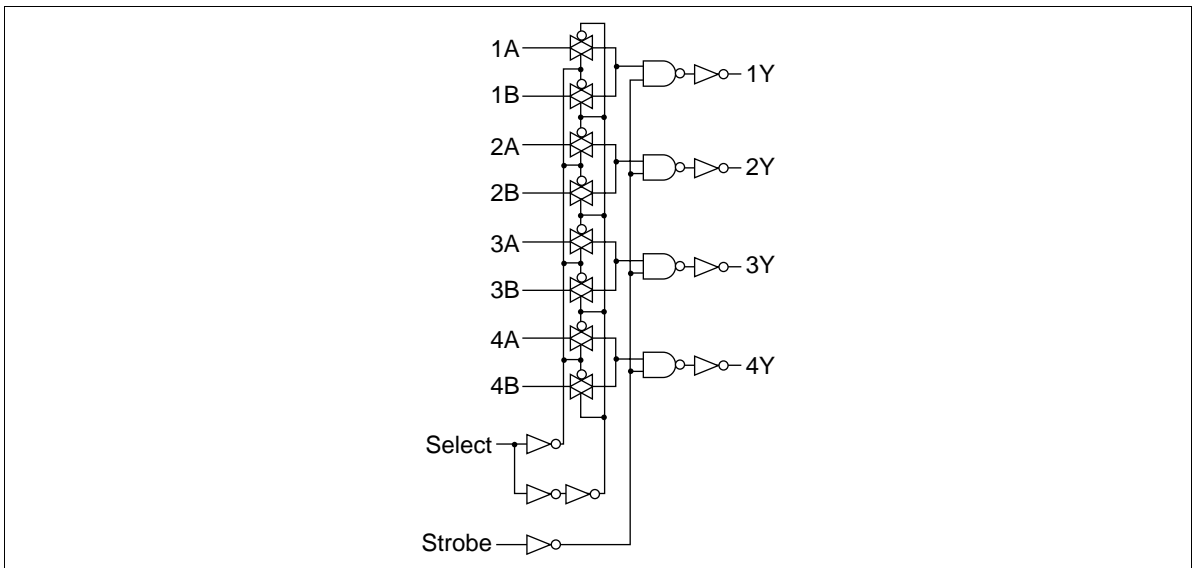
HD74HC157/HD74HC158

Pin Arrangement

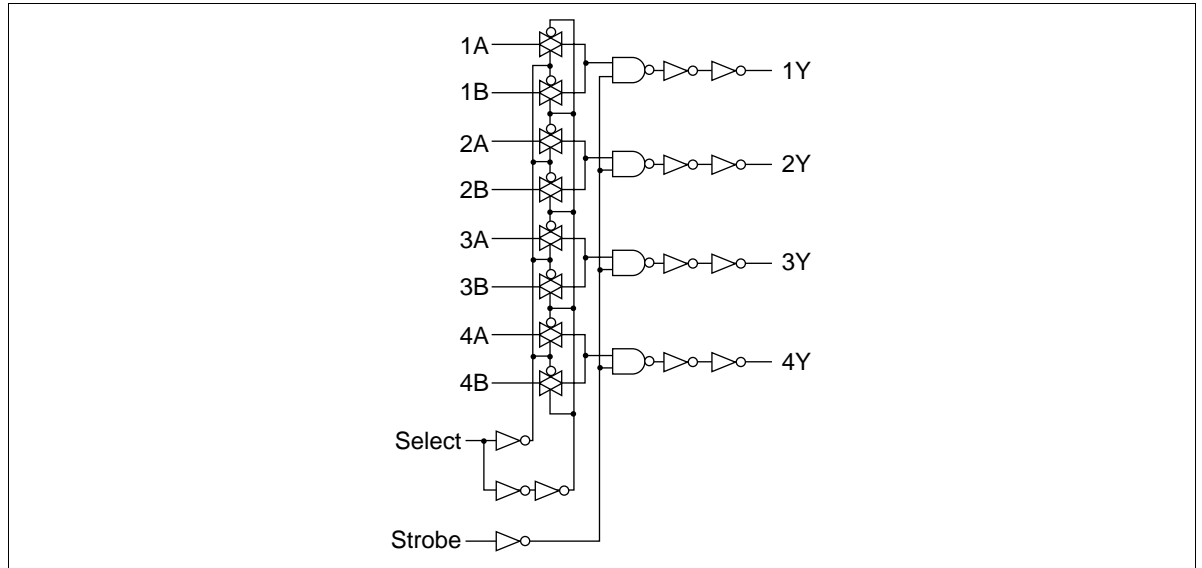


Logic Diagram

HD74HC157



HD74HC158



DC Characteristics

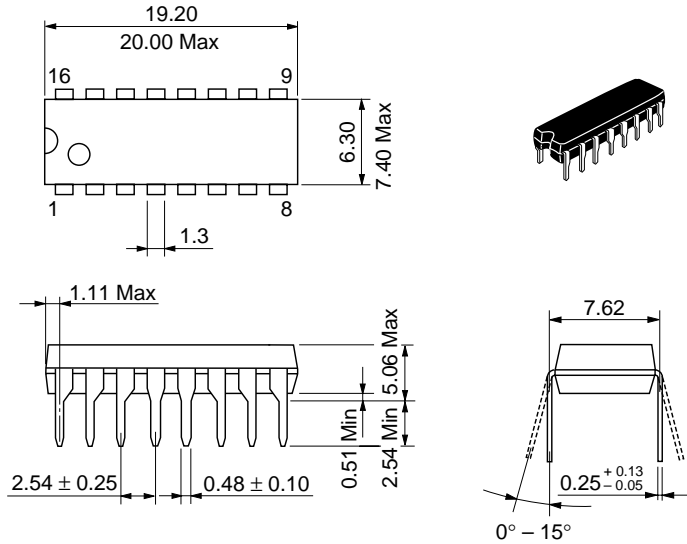
Item	Symbol	V _{CC} (V)	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions		
			Min	Typ	Max	Min			Max	
Input voltage	V _{IH}	2.0	1.5	—	—	1.5	—	V		
		4.5	3.15	—	—	3.15	—			
		6.0	4.2	—	—	4.2	—			
	V _{IL}	2.0	—	—	0.5	—	0.5		V	
		4.5	—	—	1.35	—	1.35			
		6.0	—	—	1.8	—	1.8			
Output voltage	V _{OH}	2.0	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	

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

Item	Symbol	V_{CC} (V)	$T_a = 25^\circ\text{C}$			$T_a = -40$ to $+85^\circ\text{C}$		Unit	Test Conditions			
			Min	Typ	Max	Min	Max					
Propagation delay time	t_{PLH}	2.0	—	—	125	—	155	ns	Data to output	HD74HC157 only		
	t_{PHL}	4.5	—	12	25	—	31					
		6.0	—	—	21	—	26					
	t_{PLH}	2.0	—	—	110	—	140				ns	HD74HC158 only
	t_{PHL}	4.5	—	12	22	—	28					
		6.0	—	—	19	—	24					
	t_{PHL}	2.0	—	—	125	—	155	ns	Select to output			
		4.5	—	13	25	—	31					
		6.0	—	—	21	—	26					
	t_{PLH}	2.0	—	—	160	—	200	ns				
		4.5	—	17	32	—	40					
		6.0	—	—	27	—	34					
	t_{PHL}	2.0	—	—	160	—	200	ns	Strobe to output			
		4.5	—	12	32	—	40					
		6.0	—	—	27	—	34					
	t_{PLH}	2.0	—	—	160	—	200	ns				
		4.5	—	12	32	—	40					
		6.0	—	—	27	—	34					
Output rise/fall time	t_{TLH}	2.0	—	—	75	—	95	ns				
	t_{THL}	4.5	—	5	15	—	19					
		6.0	—	—	13	—	16					
Input capacitance	C_{in}	—	—	5	10	—	10	pF				

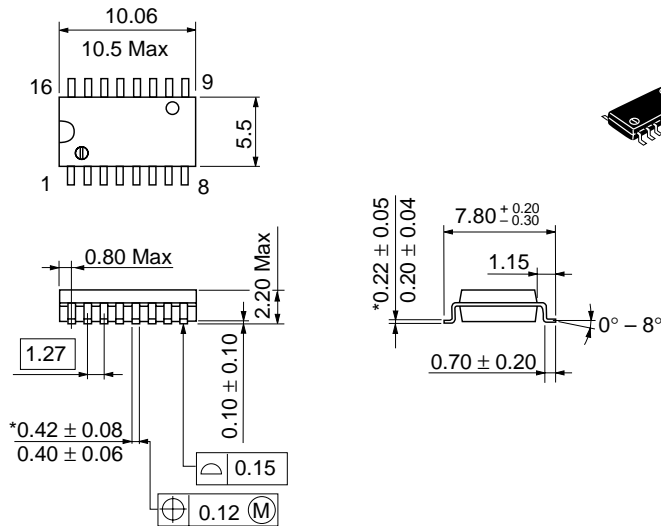
Package Dimensions

Unit: mm



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

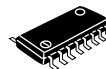
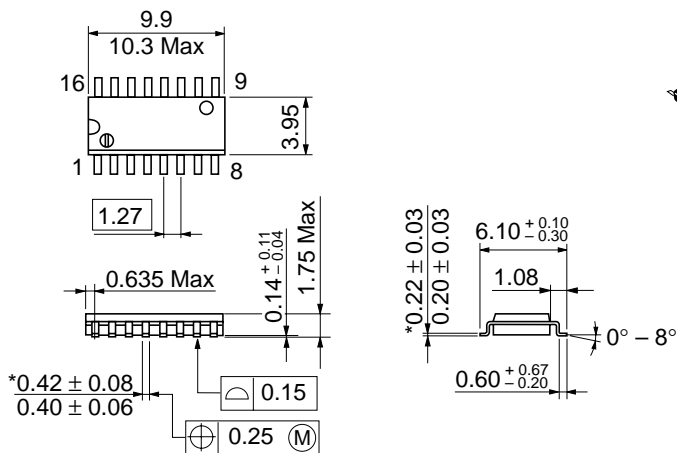
Unit: mm



*Dimension including the plating thickness
Base material dimension

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

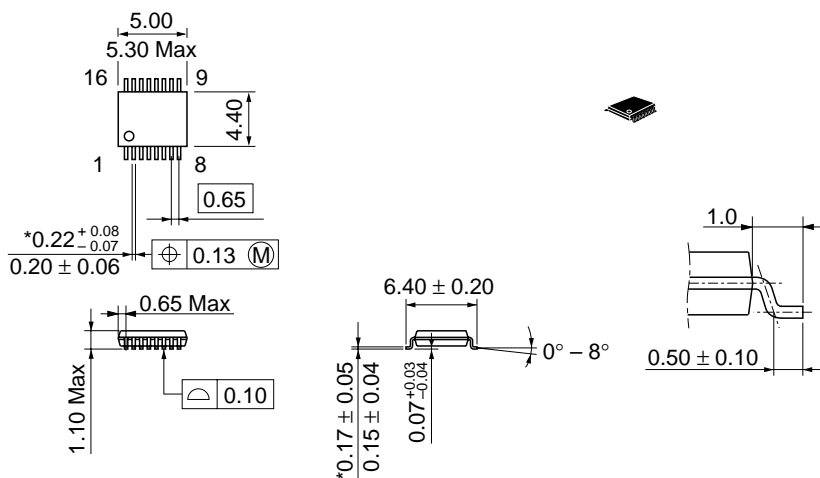
Unit: mm



*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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