HD74HC251

1 of 8 Data Selectors/Multiplexers (with 3-state outputs)

HITACHI

Description

This multiplexer features both true (Y) and complement (W) outputs as well as a strobe input. The strobe must be at a low logic level to enable this device. When the strobe input is high, both outputs are in the high impedance state. When enabled, address information on the data select inputs determines which data input is routed to the Y and W outputs.

Features

- High Speed Operation: t_{pd} (A, B, C to Y) = 20 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 µA max
- Low Quiescent Supply Current: I_{CC} (static) = 4 µA max (Ta = 25°C)

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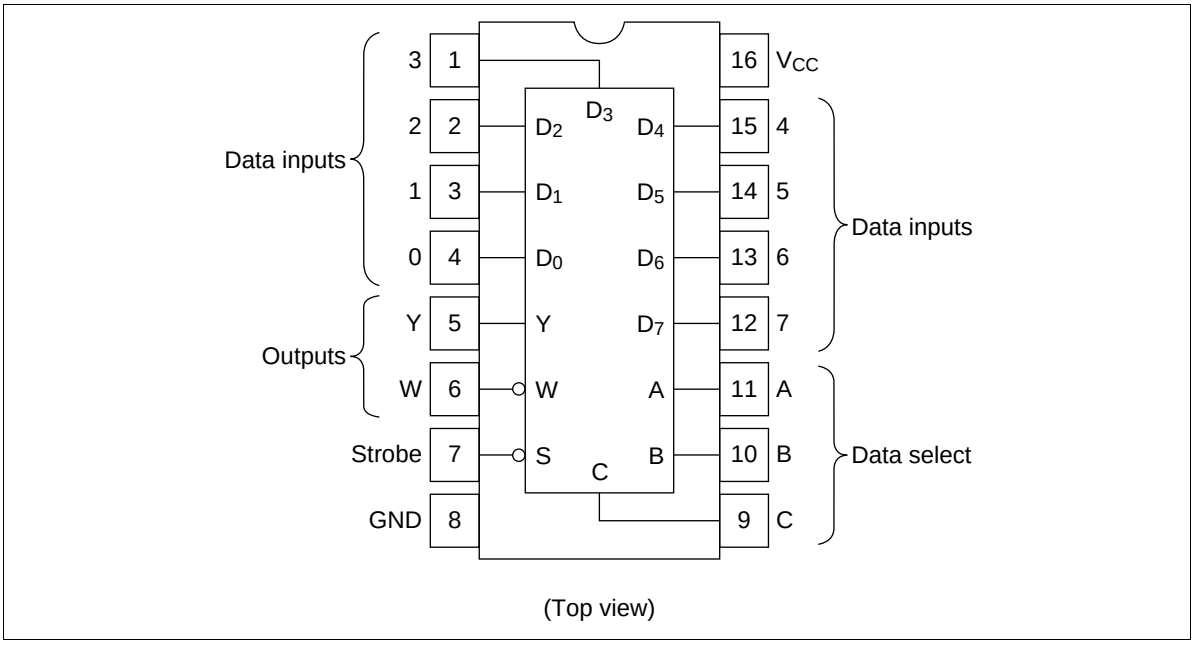
Function Table

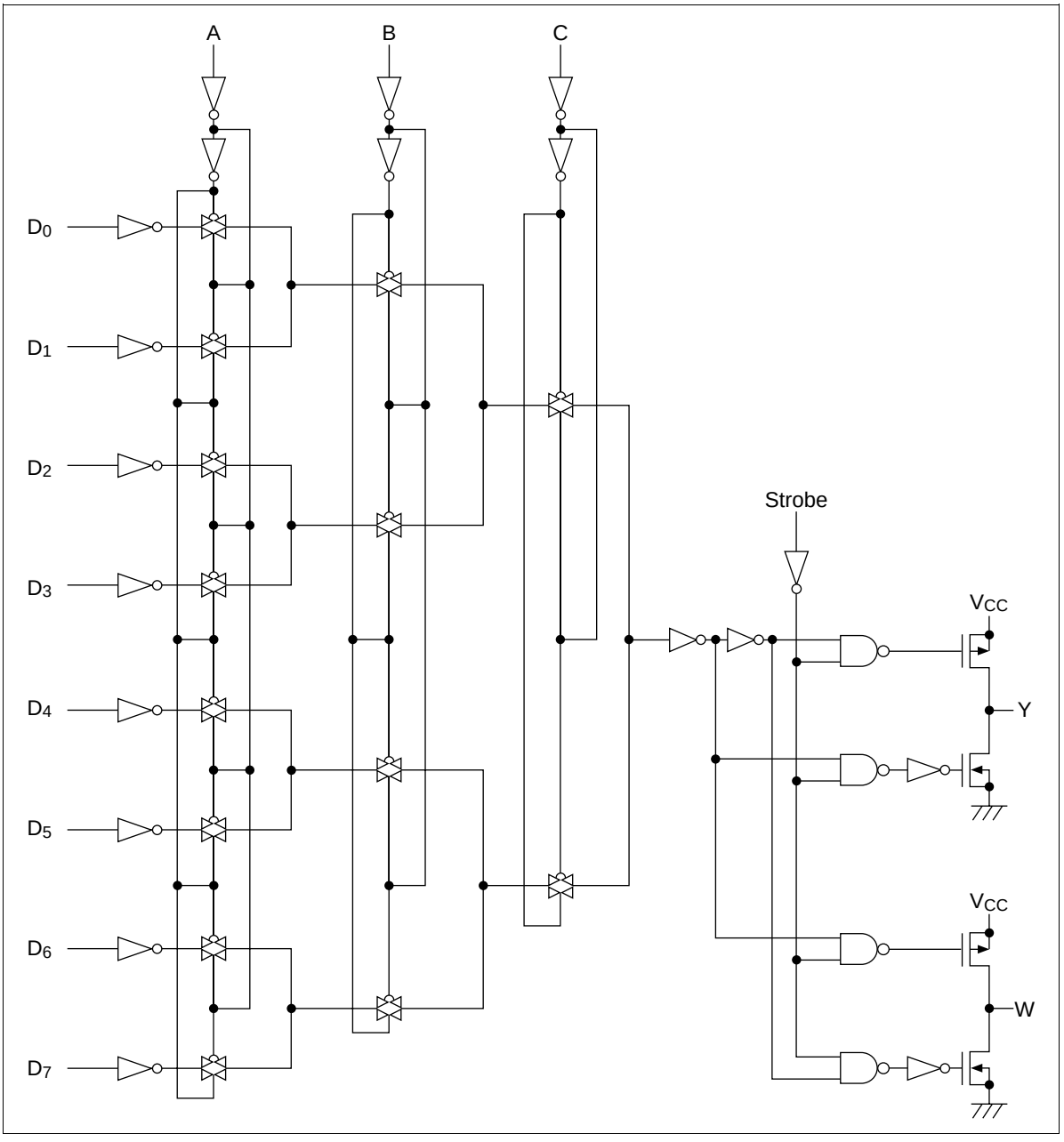
Inputs					
Select			**Strobe**	**Outputs**	
C	**B**	**A**	**S**	**Y**	**W**
X	X	X	H	Z	Z
L	L	L	L	D_0	$\overline{D}_0$
L	L	H	L	D_1	$\overline{D}_1$
L	H	L	L	D_2	$\overline{D}_2$
L	H	H	L	D_3	$\overline{D}_3$
H	L	L	L	D_4	$\overline{D}_4$
H	L	H	L	D_5	$\overline{D}_5$
H	H	L	L	D_6	$\overline{D}_6$
H	H	H	L	D_7	$\overline{D}_7$

Notes 1. H: high level, L: low level, X: irrelevant
2. Z; high impedcance (off-state)
3. D_0 through D_7; the level of the respective D input.

Pin Arrangement



Block Diagram



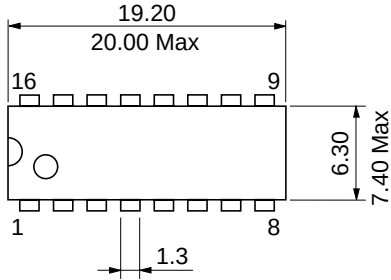
DC Characteristics

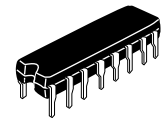
Item	Symbol	V_{CC} (V)	Ta = 25°C Min	Typ	Max	Ta = –40 to +85°C Min	Max	Unit	Test Conditions	
Input voltage	V_{IH}	2.0	1.5	—	—	1.5	—	V		
		4.5	3.15	—	—	3.15	—			
		6.0	4.2	—	—	4.2	—			
	V_{IL}	2.0	—	—	0.5	—	0.5	V		
		4.5	—	—	1.35	—	1.35			
		6.0	—	—	1.8	—	1.8			
Output voltage	V_{OH}	2.0	1.9	2.0	—	1.9	—	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
Off-state output current	I_{OZ}	6.0	—	—	±0.5	—	±5.0	µA	Vin = V_{IH} or V_{IL}, Vout = V_{CC} or GND	
Input current	Iin	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, Iout = 0 µA	

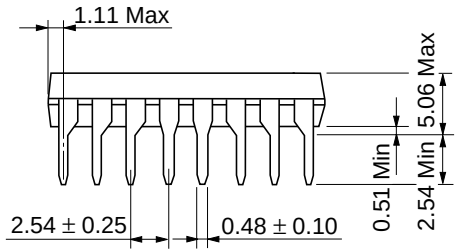
AC Characteristics (C_L = 50 pF, Input $t_r = t_f$ = 6 ns)

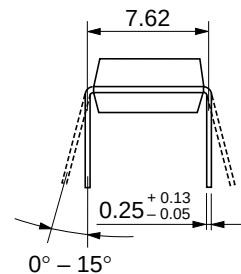
			Ta = 25°C			Ta = –40 to +85°C			
Item	**Symbol**	**V_{cc} (V)**	**Min**	**Typ**	**Max**	**Min**	**Max**	**Unit**	**Test Conditions**
Propagation delay time	t_{PLH}	2.0	—	—	205	—	255	ns	A, B or C to Y
	t_{PHL}	4.5	—	20	41	—	51		
		6.0	—	—	35	—	43		
	t_{PLH}	2.0	—	—	205	—	255	ns	A, B or C to W
	t_{PHL}	4.5	—	20	41	—	51		
		6.0	—	—	35	—	43		
	t_{PLH}	2.0	—	—	195	—	245	ns	Data to Y
	t_{PHL}	4.5	—	17	39	—	49		
		6.0	—	—	33	—	42		
	t_{PLH}	2.0	—	—	185	—	230	ns	Data to W
	t_{PHL}	4.5	—	17	37	—	46		
		6.0	—	—	31	—	39		
Output enable time	t_{ZH}	2.0	—	—	150	—	190	ns	strobe to W R_L = 1 kΩ
	t_{ZL}	4.5	—	11	30	—	38		
		6.0	—	—	26	—	33		
	t_{ZH}	2.0	—	—	145	—	180	ns	strobe to Y R_L = 1 kΩ
	t_{ZL}	4.5	—	11	29	—	36		
		6.0	—	—	25	—	31		
Output disable time	t_{HZ}	2.0	—	—	220	—	275	ns	strobe to W R_L = 1 kΩ
	t_{LZ}	4.5	—	12	44	—	55		
		6.0	—	—	37	—	47		
	t_{HZ}	2.0	—	—	195	—	245	ns	strobe to Y R_L = 1 kΩ
	t_{LZ}	4.5	—	12	39	—	49		
		6.0	—	—	33	—	42		
Output rise/fall time	t_{TLH}	2.0	—	—	75	—	90	ns	
	t_{THL}	4.5	—	5	15	—	19		
		6.0	—	—	13	—	16		
Input capacitance	Cin	—	—	5	10	—	10	pF	

Unit: mm



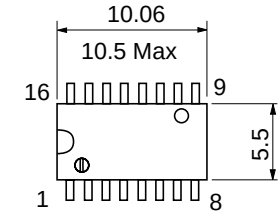


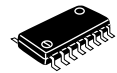


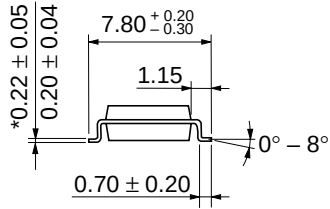


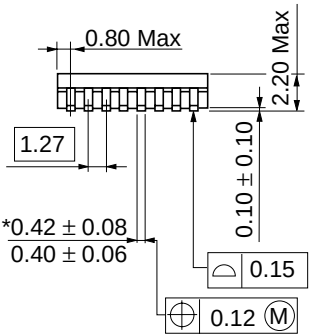
Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g

Unit: mm





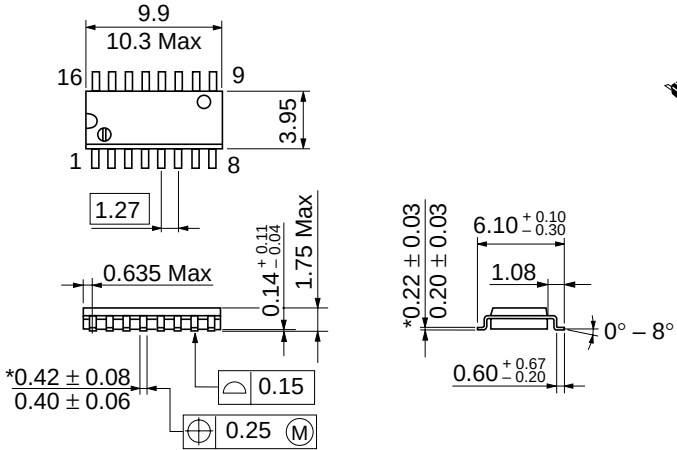




*Dimension including the plating thickness
Base material dimension

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

Unit: mm



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

*Dimension including the plating thickness
Base material dimension

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