
HD74HC257

Quad. 2-to-1-line Data Selectors/Multiplexers
(with noninverted 3-state outputs)

HITACHI

Description

The large output drive capability coupled with the 3-state feature make this device ideal for interfacing with bus lines in a bus organized system. When the output control input line is taken high, the outputs of all four multiplexers are sent into a high impedance state. When the output control line is low, the select input chooses whether the A or B input is used.

Features

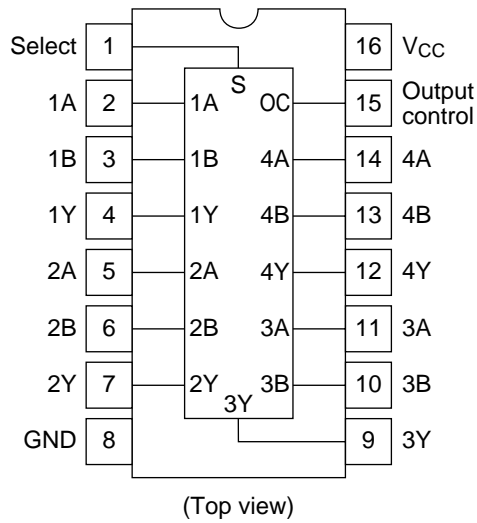
- High Speed Operation: t_{pd} (Data to Y) = 10.5 ns typ ($C_L = 50$ pF)
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2$ to 6 V
- Low Input Current: 1 μ A max
- Low Quiescent Supply Current: I_{CC} (static) = 4 μ A max ($T_a = 25^\circ\text{C}$)

Function Table

Inputs		Outputs		
Output Control	Select	A	B	Y
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H
H	X	X	X	High impedance

Notes H: high level, L: low level, X: irrelevant

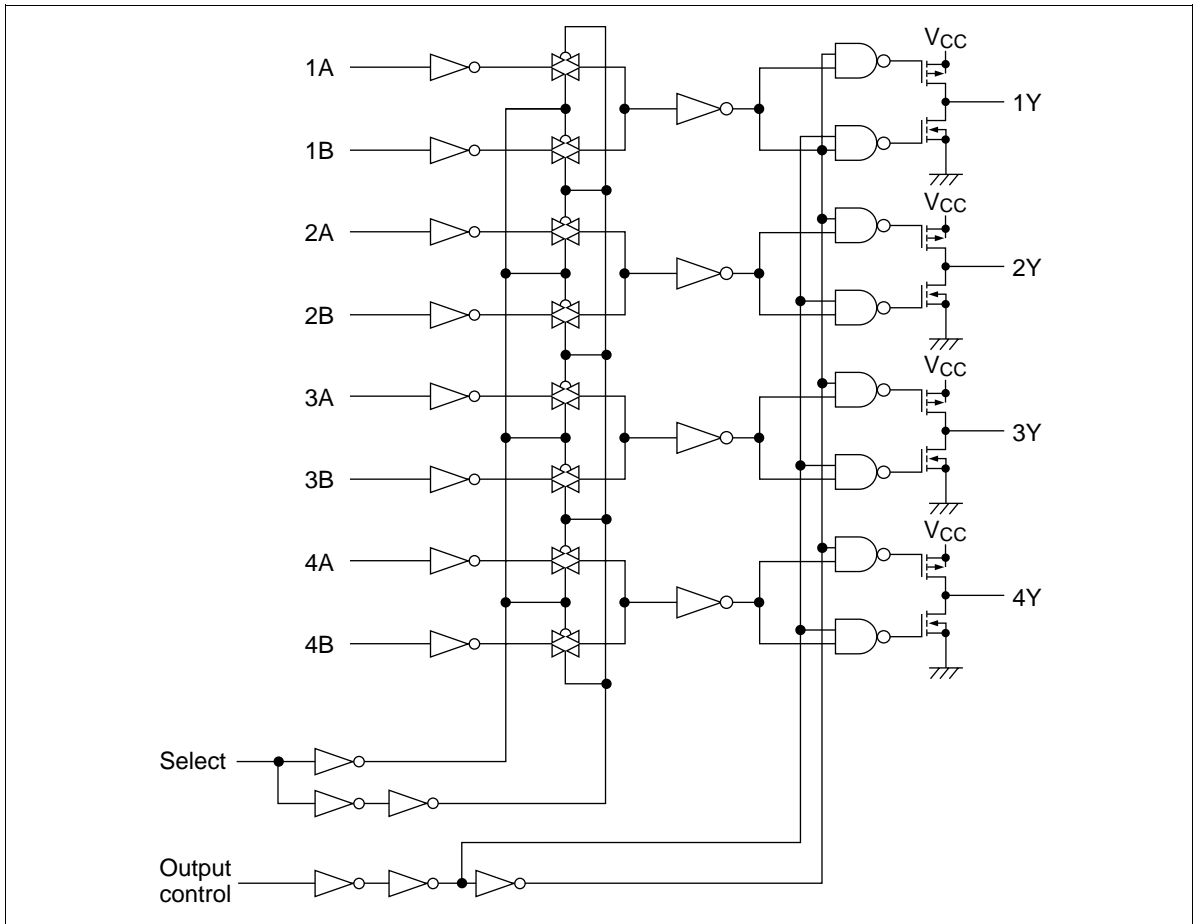
Pin Arrangement



Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Supply voltage range	V_{CC}	-0.5 to +7.0	V
Input voltage	V_{IN}	-0.5 to $V_{CC} + 0.5$	V
Output voltage	V_{OUT}	-0.5 to $V_{CC} + 0.5$	V
DC current drain per pin	I_{OUT}	± 35	mA
DC current drain per V_{CC} , GND	I_{CC} , I_{GND}	± 75	mA
DC input diode current	I_{IK}	± 20	mA
DC output diode current	I_{OK}	± 20	mA
Power dissipation per package	P_T	500	mW
Storage temperature	T_{stg}	-65 to +150	$^{\circ}C$

Logic Diagram

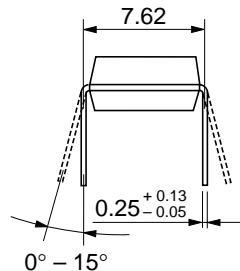
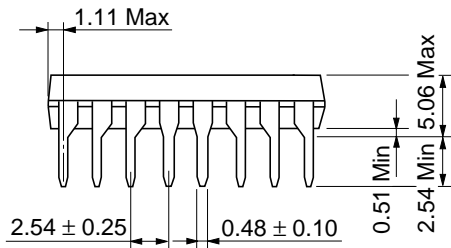
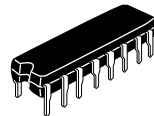
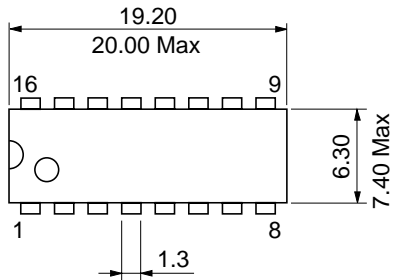


DC Characteristics

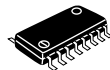
Item	Symbol	V _{CC} (V)	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions	
			Min	Typ	Max	Min			Max
Input voltage	V _{IH}	2.0	1.5	—	—	1.5	—	V	
		4.5	3.15	—	—	3.15	—		
		6.0	4.2	—	—	4.2	—		
	V _{IL}	2.0	—	—	0.5	—	0.5		V
		4.5	—	—	1.35	—	1.35		
		6.0	—	—	1.8	—	1.8		
Output voltage	V _{OH}	2.0	1.9	2.0	—	1.9	—	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} = -6 mA
		6.0	5.68	—	—	5.63	—		I _{OH} = -7.8 mA
	V _{OL}	2.0	—	0.0	0.1	—	0.1	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} = 6 mA
		6.0	—	—	0.26	—	0.33		I _{OL} = 7.8 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	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, Iout = 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_{PHL}	2.0	—	—	115	—	145	ns	Data to Y		
		4.5	—	11	23	—	29				
		6.0	—	—	20	—	25				
		t_{PLH}	2.0	—	—	115	—			145	ns
			4.5	—	10	23	—			29	
			6.0	—	—	20	—			25	
	t_{PHL}	2.0	—	—	115	—	145	ns	Select to Y		
			4.5	—	14	23	—			29	
			6.0	—	—	20	—			25	
		t_{PLH}	2.0	—	—	115	—	145		ns	
			4.5	—	14	23	—	29			
			6.0	—	—	20	—	25			
Output enable time	t_{ZL}	2.0	—	—	150	—	190	ns	Output control to Y		
		4.5	—	11	30	—	38				
		6.0	—	—	26	—	33				
	t_{ZH}	2.0	—	—	150	—	190			ns	
		4.5	—	13	30	—	38				
		6.0	—	—	26	—	33				
Output disable time	t_{LZ}	2.0	—	—	150	—	190	ns	Output control to Y		
		4.5	—	14	30	—	38				
		6.0	—	—	26	—	33				
	t_{HZ}	2.0	—	—	150	—	190			ns	
		4.5	—	18	30	—	38				
		6.0	—	—	26	—	33				
Output rise/fall time	t_{TLH}	2.0	—	—	60	—	75	ns			
	t_{THL}	4.5	—	4	12	—	15				
		6.0	—	—	10	—	13				
Input capacitance	C_{in}	—	—	5	10	—	10	pF			



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

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