

HD74HC242/HD74HC243

Quad. Bus Transceivers (with 3-state outputs)
Quad. Bus Transceivers (with noninverted 3-state outputs)

HITACHI

ADE-205-473 (Z)
1st. Edition
Sep. 2000

Description

The HD74HC242 is an inverting buffer and the HD74HC243 is a noninverting buffer. Each device has one active high enable (GBA), and one active low enable ($\overline{\text{GAB}}$). GBA enables the A output and $\overline{\text{GAB}}$ enables the B outputs. The device does not have schmitt trigger inputs.

Features

- High Speed Operation: $t_{pd} = 10 \text{ ns typ (} C_L = 50 \text{ pF)}$
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2 \text{ to } 6 \text{ V}$
- Low Input Current: $1 \mu\text{A max}$
- Low Quiescent Supply Current: $I_{CC} \text{ (static)} = 4 \mu\text{A max (} T_a = 25^\circ\text{C)}$

Function Table

Control inputs		HD74HC242		HC74HC243	
		Data Port Status		Data Port Status	
$\overline{\text{GAB}}$	GBA	A	B	A	B
H	H	$\overline{\text{O}}$	I	O	I
L	H	Z	Z	Z	Z
H	L	Z	Z	Z	Z
L	L	I	$\overline{\text{O}}$	I	O

I : Input

O : Output

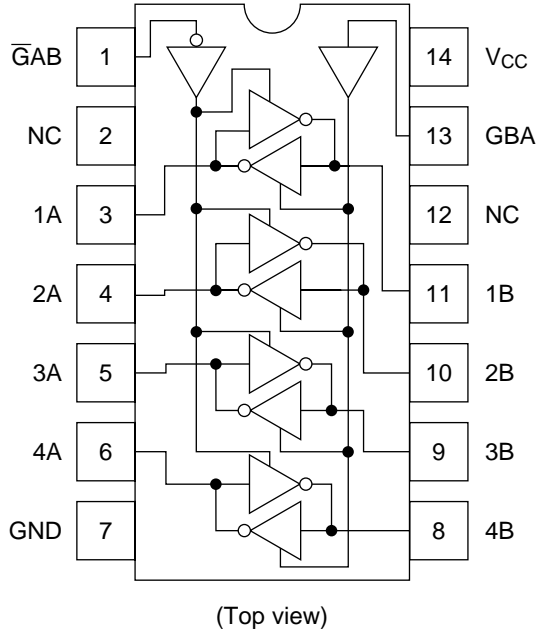
$\overline{\text{O}}$: Inverting Output

Z : High Impedance

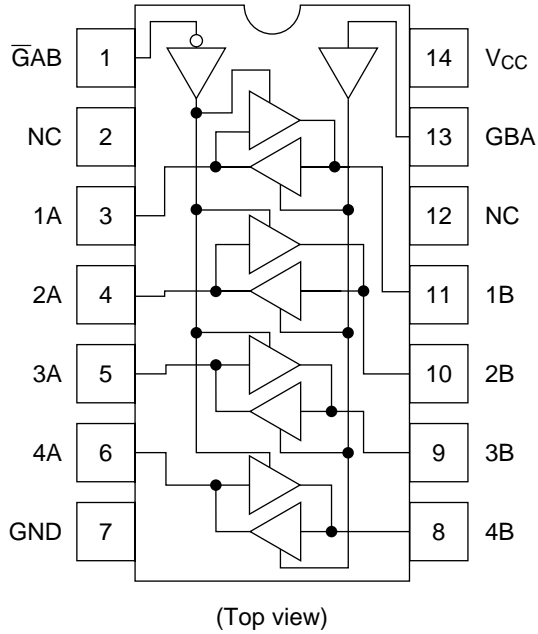
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Pin Arrangement

HD74HC242



HD74HC243



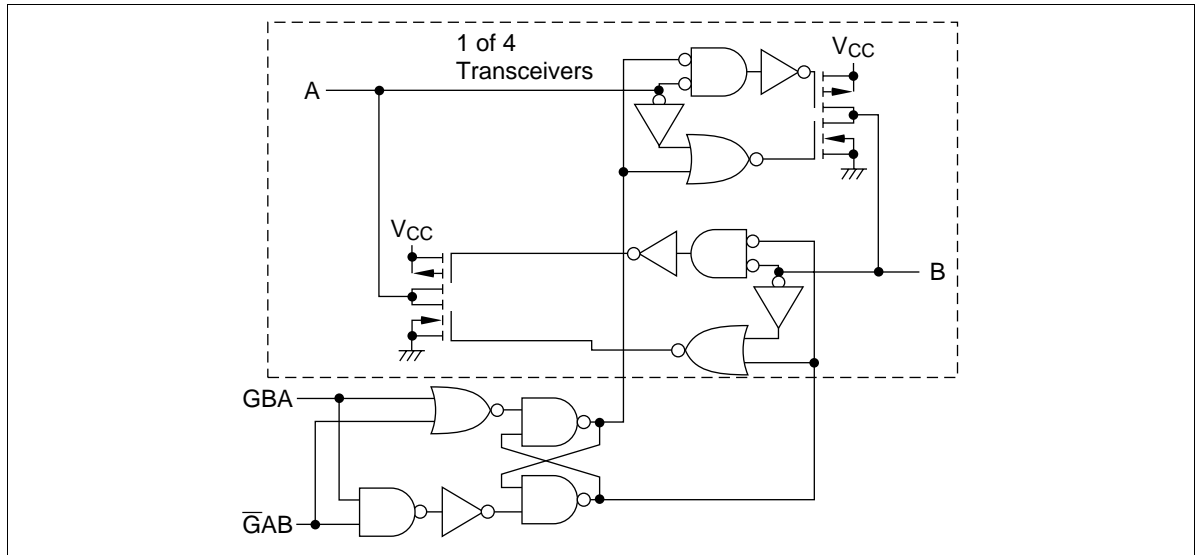
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Absolute Maximum Ratings

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 VCC, 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

HD74HC242



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} = -6 mA
		6.0	5.68	—	—	5.63	—			I _{OH} = -7.8 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} = 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, I _{out} = 0 μA	

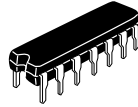
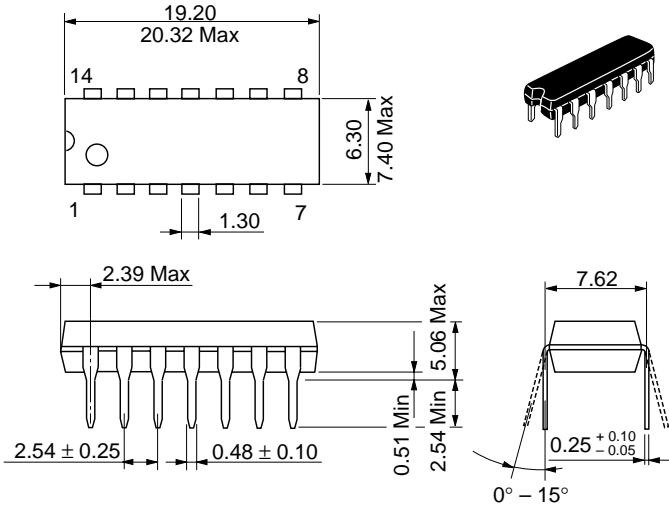
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AC Characteristics ($C_L = 50$ pF, Input $t_r = t_f = 6$ ns)

Item	Symbol	V_{CC} (V)	$T_a = 25^\circ\text{C}$			$T_a = -40$ to $+85^\circ\text{C}$		Unit	Test Conditions
			Min	Typ	Max	Min	Max		
Propagation delay time	t_{PHL}	2.0	—	—	90	—	115	ns	
		4.5	—	10	18	—	23		
		6.0	—	—	15	—	20		
	t_{PLH}	2.0	—	—	90	—	115		
		4.5	—	10	18	—	23		
		6.0	—	—	15	—	20		
Output enable time	t_{ZL}	2.0	—	—	150	—	190	ns	
		4.5	—	14	30	—	38		
		6.0	—	—	26	—	33		
	t_{ZH}	2.0	—	—	150	—	190		
		4.5	—	15	30	—	38		
		6.0	—	—	26	—	33		
Output disable time	t_{LZ}	2.0	—	—	150	—	190	ns	
		4.5	—	18	30	—	38		
		6.0	—	—	26	—	33		
	t_{HZ}	2.0	—	—	150	—	190		
		4.5	—	20	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	

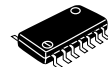
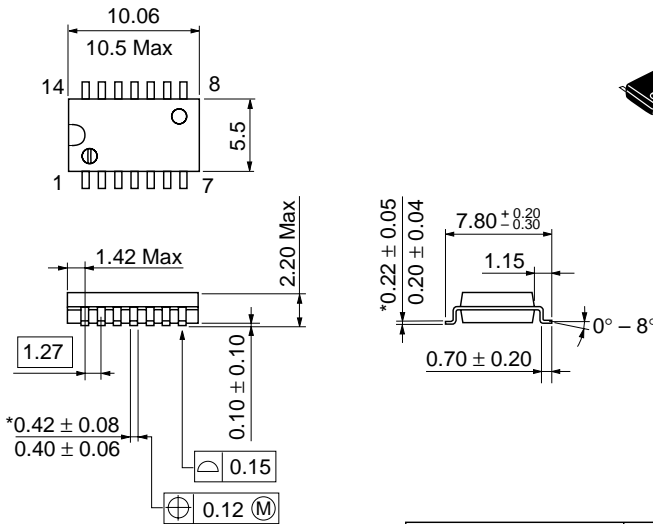
Package Dimensions

Unit: mm



Hitachi Code	DP-14
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.97 g

Unit: mm



Hitachi Code	FP-14DA
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.23 g

*Dimension including the plating thickness
Base material dimension

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