

To all our customers

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

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# HD74HC242/HD74HC243

Quad. Bus Transceivers (with 3-state outputs)

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



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:  $t_{pd} = 10$  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  $\mu\text{A}$  max
- Low Quiescent Supply Current:  $I_{CC}$  (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	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

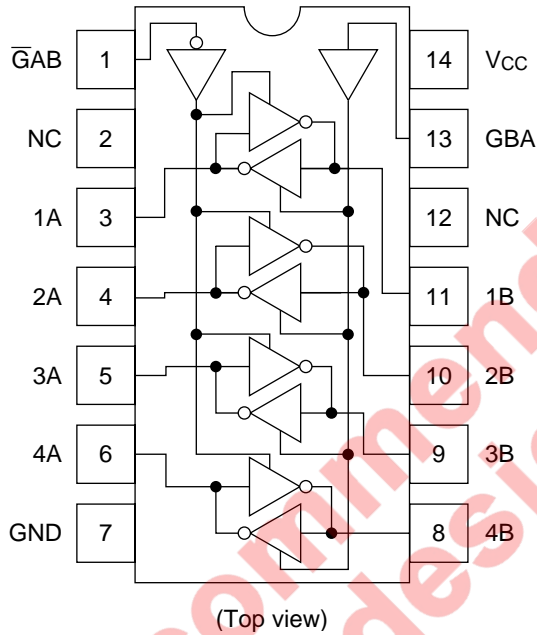
$\overline{\text{O}}$  : Inverting Output

Z : High Impedance

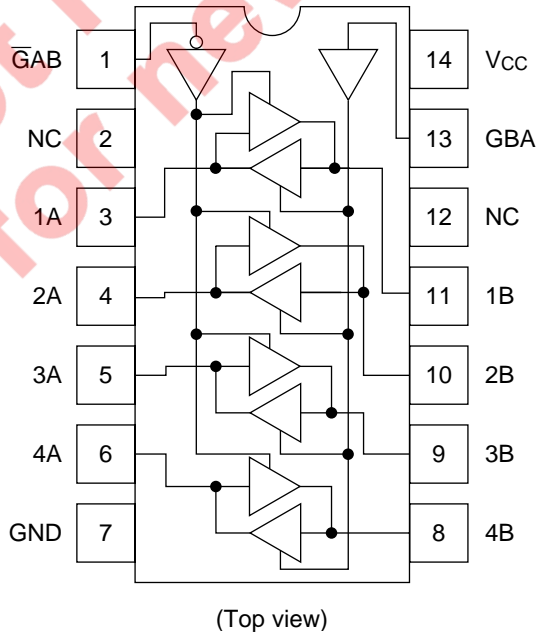
# HD74HC242/HD74HC243

## Pin Arrangement

### HD74HC242



### HD74HC243

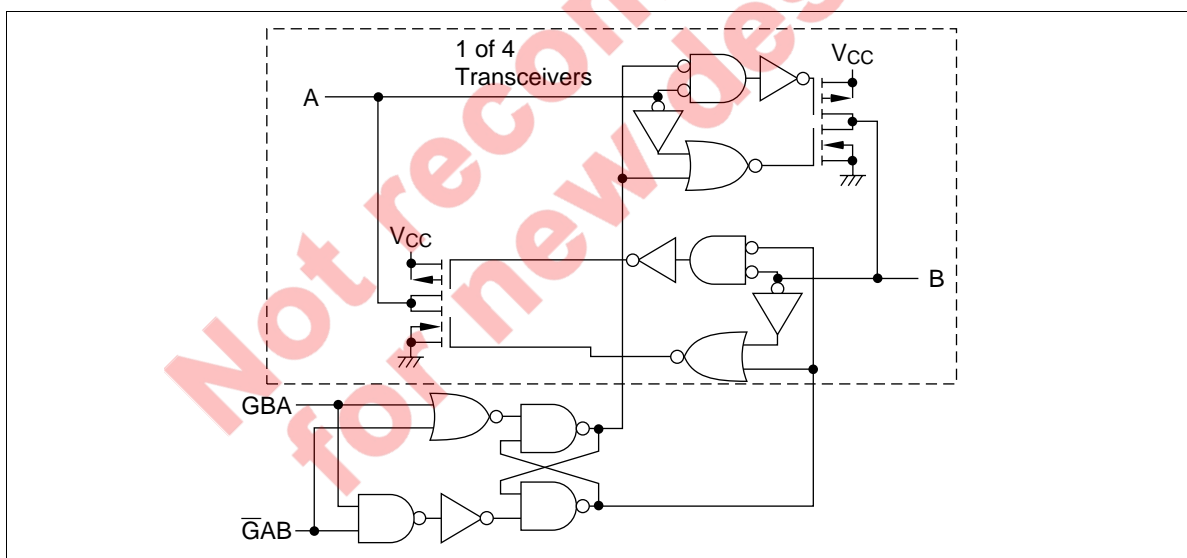


**Absolute Maximum Ratings**

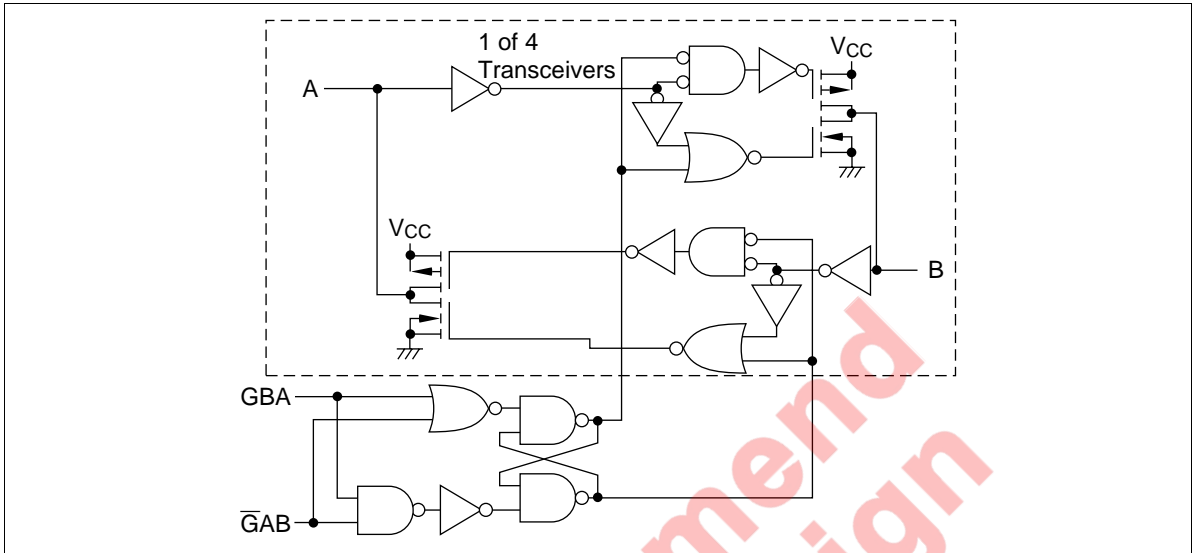
Item	Symbol	Rating	Unit
Supply voltage range	$V_{CC}$	-0.5 to +7.0	V
Input voltage	$V_{IN}$	-0.5 to $V_{CC} + 0.5$	V
Output voltage	$V_{OUT}$	-0.5 to $V_{CC} + 0.5$	V
DC current drain per pin	$I_{OUT}$	$\pm 35$	mA
DC current drain per VCC, GND	$I_{CC}, I_{GND}$	$\pm 75$	mA
DC input diode current	$I_{IK}$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

**Logic Diagram**

**HD74HC242**



## HD74HC243



Not recommended  
for new design

DC Characteristics

Item	Symbol	V <sub>CC</sub> (V)	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions		
			Min	Typ	Max	Min			Max	
Input voltage	V <sub>IH</sub>	2.0	1.5	—	—	1.5	—	V		
		4.5	3.15	—	—	3.15	—			
		6.0	4.2	—	—	4.2	—			
	V <sub>IL</sub>	2.0	—	—	0.5	—	0.5		V	
		4.5	—	—	1.35	—	1.35			
		6.0	—	—	1.8	—	1.8			
Output voltage	V <sub>OH</sub>	2.0	1.9	2.0	—	1.9	—	V		Vin = V <sub>IH</sub> or V <sub>IL</sub> I <sub>OH</sub> = -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 <sub>OH</sub> = -6 mA	
		6.0	5.68	—	—	5.63	—		I <sub>OH</sub> = -7.8 mA	
		6.0	—	0.0	0.1	—	0.1		V	
	V <sub>OL</sub>	4.5	—	0.0	0.1	—	0.1			
		6.0	—	0.0	0.1	—	0.1			
		4.5	—	—	0.26	—	0.33		I <sub>OL</sub> = 6 mA	
		6.0	—	—	0.26	—	0.33		I <sub>OL</sub> = 7.8 mA	
		6.0	—	—	±0.5	—	±5.0	μA	Vin = V <sub>IH</sub> or V <sub>IL</sub> , Vout = V <sub>CC</sub> or GND	
		6.0	—	—	±0.1	—	±1.0	μA		
Input current	I <sub>in</sub>	6.0	—	—	±0.1	—	±1.0	μA	Vin = V <sub>CC</sub> or GND	
Quiescent supply current	I <sub>CC</sub>	6.0	—	—	4.0	—	40	μA	Vin = V <sub>CC</sub> or GND, Iout = 0 μA	

# HD74HC242/HD74HC243

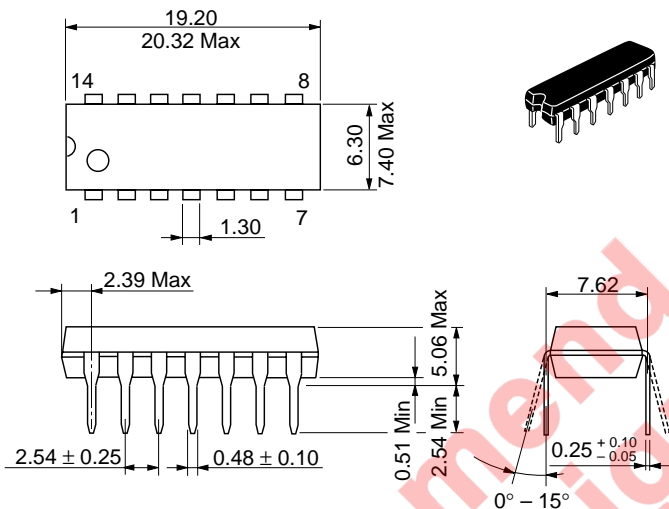
AC Characteristics ( $C_L = 50$  pF, Input  $t_r = t_f = 6$  ns)

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		
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	ns
		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	ns
		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	ns
		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



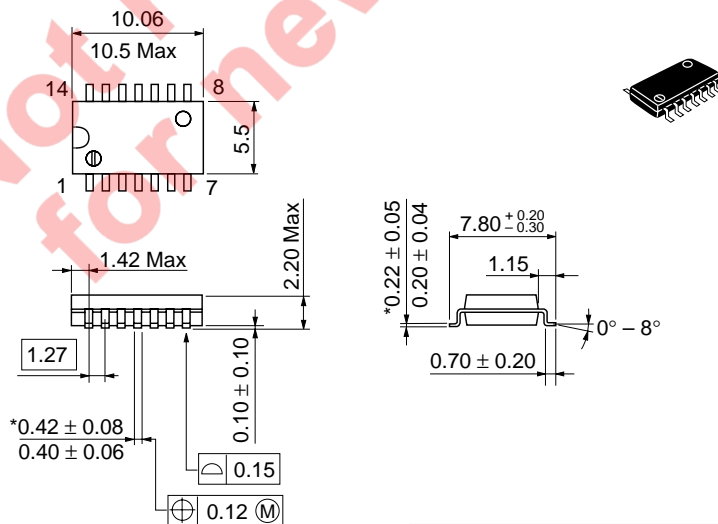
Package Dimensions

Unit: mm



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

Unit: mm



\*Dimension including the plating thickness  
Base material dimension

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

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# HITACHI

**Hitachi, Ltd.**

Semiconductor &amp; Integrated Circuits.

Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

URL        NorthAmerica        : <http://semiconductor.hitachi.com/>  
              Europe                : <http://www.hitachi-eu.com/hel/ecg>  
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**For further information write to:**

Hitachi Semiconductor  
(America) Inc.  
179 East Tasman Drive,  
San Jose, CA 95134  
Tel: <1> (408) 433-1990  
Fax: <1> (408) 433-0223

Hitachi Europe GmbH  
Electronic Components Group  
Dornacher Straße 3  
D-85622 Feldkirchen, Munich  
Germany  
Tel: <49> (89) 9 9180-0  
Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.  
Electronic Components Group.  
Whitebrook Park  
Lower Cookham Road  
Maidenhead  
Berkshire SL6 8YA, United Kingdom  
Tel: <44> (1628) 585000  
Fax: <44> (1628) 585160

Hitachi Asia Ltd.  
Hitachi Tower  
16 Collyer Quay #20-00,  
Singapore 049318  
Tel : <65>-538-6533/538-8577  
Fax : <65>-538-6933/538-3877  
URL : <http://www.hitachi.com.sg>

Hitachi Asia Ltd.  
(Taipei Branch Office)  
4/F, No. 167, Tun Hwa North Road,  
Hung-Kuo Building,  
Taipei (105), Taiwan  
Tel : <886>-(2)-2718-3666  
Fax : <886>-(2)-2718-8180  
Telex : 23222 HAS-TP  
URL : <http://www.hitachi.com.tw>

Hitachi Asia (Hong Kong) Ltd.  
Group III (Electronic Components)  
7/F., North Tower,  
World Finance Centre,  
Harbour City, Canton Road  
Tsim Sha Tsui, Kowloon,  
Hong Kong  
Tel : <852>-(2)-735-9218  
Fax : <852>-(2)-730-0281  
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