

To all our customers

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

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Keep safety first in your circuit designs!

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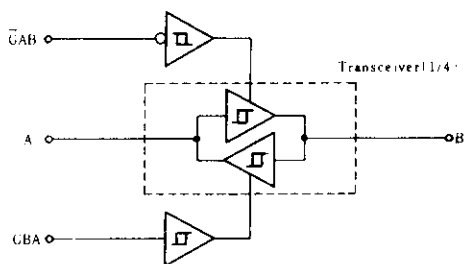
Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

Notes regarding these materials

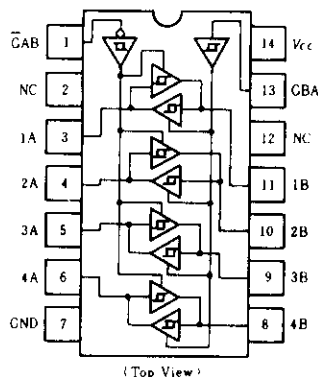
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# HD74LS243 • Quadruple Bus Transceivers (with three-state outputs)

## ■ BLOCK DIAGRAM



## ■ PIN ARRANGEMENT



## ■ FUNCTION TABLE

Control input		Data port status	
$\bar{G}AB$	GBA	A	B
H	H	Output	Input
L	H	*	
H	L	Isolated	Isolated
L	L	Input	Output

- Notes) 1. H; high level, L; low level  
2. \*: Possibly destructive oscillation may occur if the transceivers are enabled in both directions at once.

## ■ RECOMMENDED OPERATING CONDITIONS

Item	Symbol	min	typ	max	Unit
Output current	$I_{OH}$	-	-	-15	mA
	$I_{OL}$	-	-	24	mA

## ■ ELECTRICAL CHARACTERISTICS ( $T_a = -20 \sim +75^\circ\text{C}$ )

Item	Symbol	Test Conditions	min	typ*	max	Unit
Input voltage	$V_{IH}$		2.0	-	-	V
	$V_{IL}$		-	-	0.8	V
Hysteresis	$V_T^+ - V_T^-$	$V_{CC} = 4.75\text{V}$	0.2	0.4	-	V
Output voltage	$V_{OH}$	$V_{CC} = 4.75\text{V}, V_{IH} = 2\text{V}, V_{IL} = 0.8\text{V}, I_{OH} = -3\text{mA}$	2.4	-	-	V
		$V_{CC} = 4.75\text{V}, V_{IH} = 2\text{V}, V_{IL} = 0.5\text{V}, I_{OH} = -15\text{mA}$	2	-	-	V
	$V_{OL}$	$V_{CC} = 4.75\text{V}, V_{IH} = 2\text{V}, V_{IL} = 0.8\text{V}$	-	-	0.4	V
		$I_{OL} = 12\text{mA}$ $I_{OL} = 24\text{mA}$	-	-	0.5	V
Output current	$I_{ozH}$	$V_{CC} = 5.25\text{V}, V_{IH} = 2\text{V}, V_{IL} = 0.8\text{V}$	-	-	40	$\mu\text{A}$
	$I_{ozL}$	$V_{CC} = 5.25\text{V}, V_{IH} = 2\text{V}, V_{IL} = 0.8\text{V}$	-	-	-200	$\mu\text{A}$
	$I_{IH}$	$V_{CC} = 5.25\text{V}, V_I = 2.7\text{V}$	-	-	20	$\mu\text{A}$
Input current	A input	$V_{CC} = 5.25\text{V}, V_I = 0.4\text{V}, \bar{G}AB$ and $GBA$ at GND	-	-	-0.2	mA
	B input	$V_{CC} = 5.25\text{V}, V_I = 0.4\text{V}, \bar{G}AB$ and $GBA$ at 4.5V	-	-	-0.2	
	$\bar{G}AB$ or $GBA$	$V_{CC} = 5.25\text{V}, V_I = 0.4\text{V}$	-	-	-0.2	
	A or B	$V_{CC} = 5.25\text{V}, V_I = 5.5\text{V}$	-	-	0.1	mA
	$\bar{G}AB$ or $GBA$	$V_{CC} = 5.25\text{V}, V_I = 7\text{V}$	-	-	0.1	
Short-circuit output current	$I_{OS}$	$V_{CC} = 5.25\text{V}$	-40	-	-225	mA
Supply current**	$I_{CCH}$	$V_{CC} = 5.25\text{V}$	-	22	38	mA
	$I_{CCL}$		-	29	50	
	$I_{CCZ}$		-	32	54	
Input clamp voltage	$V_{IK}$	$V_{CC} = 4.75\text{V}, I_{IN} = -18\text{mA}$	-	-	-1.5	V

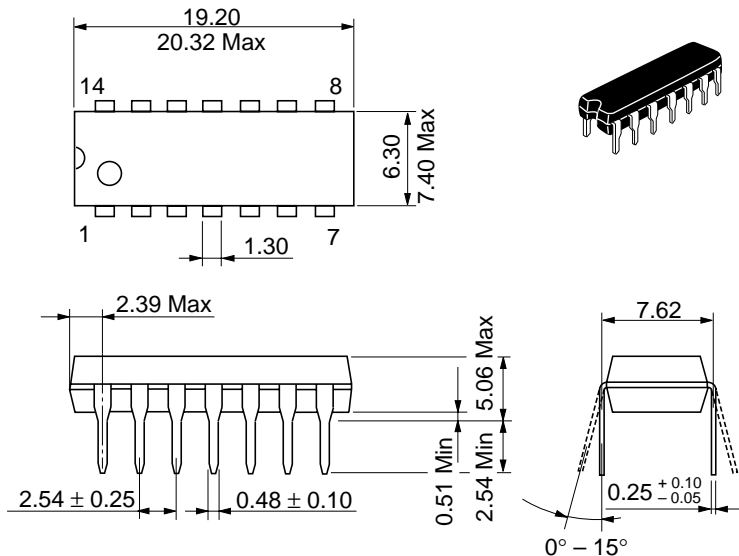
\*  $V_{CC} = 5\text{V}, T_a = 25^\circ\text{C}$

\*\* With all outputs open,  $I_{CC}$  is measured with transceivers enabled in one direction only, or with all transceivers disabled.

## ■ SWITCHING CHARACTERISTICS ( $V_{CC}=5V$ , $T_a=25^{\circ}C$ )

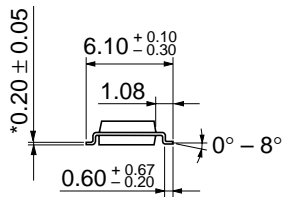
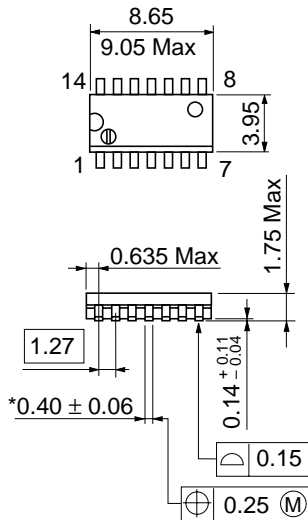
Item	Symbol	Test Conditions	min	typ	max	Unit	
Propagation delay time	$t_{PLH}$	$C_L=45pF$ $R_L=667\Omega$	—	12	18	ns	
	$t_{PHL}$		—	12	18		
Output enable time	$t_{ZL}$		$C_L=5pF$ $R_L=667\Omega$	—	20		30
	$t_{ZH}$			—	15		23
Output disable time	$t_{LZ}$	$C_L=5pF$ $R_L=667\Omega$	—	15	25		
	$t_{HZ}$		—	10	18		

Note) Refer to Test Circuit and Waveform of the Common Item



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





Hitachi Code	FP-14DN
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.13 g

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