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

Cautions

Keep safety first in your circuit designs!

1. Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.

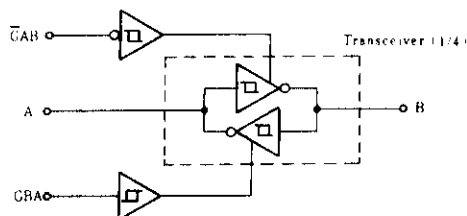
Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

Notes regarding these materials

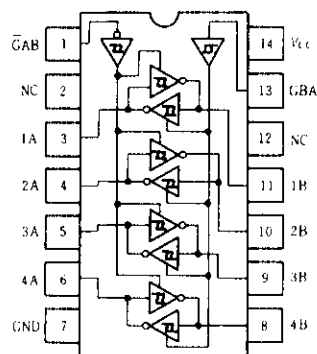
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HD74LS242 • Quadruple Bus Transceivers (with three-state outputs)

■ BLOCK DIAGRAM



■ PIN ARRANGEMENT



■ FUNCTION TABLE

Control input		Data port status	
$\bar{G}AB$	GBA	A	B
H	H	Inverting output	Input
L	H	*	
H	L	Isolated	Isolated
L	L	Input	Inverting 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	
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_{OL}	$V_{CC} = 4.75\text{V}, V_{IH} = 2\text{V}, V_{IL} = 0.8\text{V}$				V
Output current	I_{OZH}	$V_{CC} = 5.25\text{V}, V_{IH} = 2\text{V}, V_{IL} = 0.8\text{V}$	$I_{OL} = 12\text{mA}$	-	-	0.4
	I_{OZL}		$I_{OL} = 24\text{mA}$	-	-	0.5
Output current	I_{OZH}	$V_{CC} = 5.25\text{V}, V_{IH} = 2\text{V}, V_{IL} = 0.8\text{V}$	$V_O = 2.7\text{V}$	-	-	40
	I_{OZL}		$V_O = 0.4\text{V}$	-	-	200
Input current	I_{IH}	$V_{CC} = 5.25\text{V}, V_I = 2.7\text{V}$	-	-	20	μA
	A Input	$V_{CC} = 5.25\text{V}, V_I = 0.4\text{V}, \bar{G}AB \text{ and } GBA \text{ at } GND$	-	-	0.2	mA
	B Input		I_{IL}	$V_{CC} = 5.25\text{V}, V_I = 0.4\text{V}, \bar{G}AB \text{ and } GBA \text{ at } 4.5\text{V}$	-	
	$\bar{G}AB$ or GBA	$V_{CC} = 5.25\text{V}, V_I = 0.4\text{V}$	-	-	-0.2	
	A or B	$V_{CC} = 5.25\text{V}, V_I = 7\text{V}$	I_I	$V_{CC} = 5.25\text{V}, V_I = 5.5\text{V}$	-	-
$\bar{G}AB$ 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}		-	29	50	
Input clamp voltage	V_{IK}	$V_{CC} = 4.75\text{V}, I_{IK} = -18\text{mA}$	-	-	-1.5	V

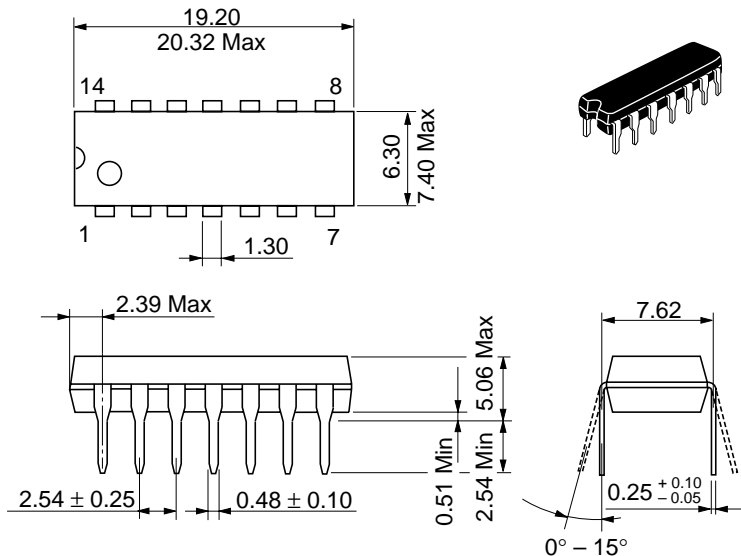
* $V_{CC} = 5\text{V}, T_a = 25^\circ\text{C}$

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

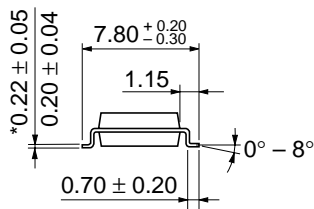
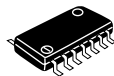
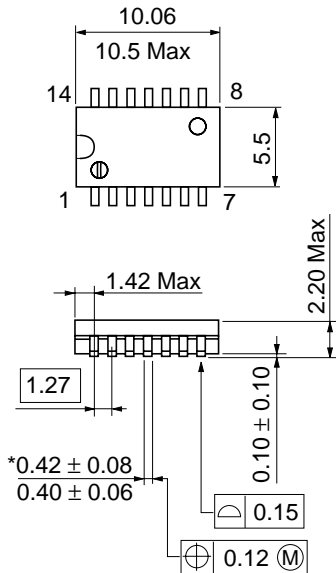
■ SWITCHING CHARACTERISTICS ($V_{CC}=5V$, $T_a=25^{\circ}C$)

Item	Symbol	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	$C_L = 45pF$ $R_L = 667\Omega$	—	9	14	ns
	t_{PHL}		—	12	18	
Output enable time	t_{ZL}		—	20	30	
	t_{ZH}		—	15	23	
Output disable time	t_{LZ}	$C_L = 5pF$	—	15	25	
	t_{HZ}	$R_L = 667\Omega$	—	10	18	

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

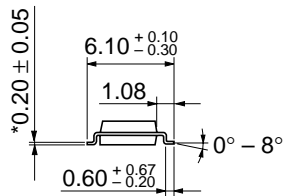
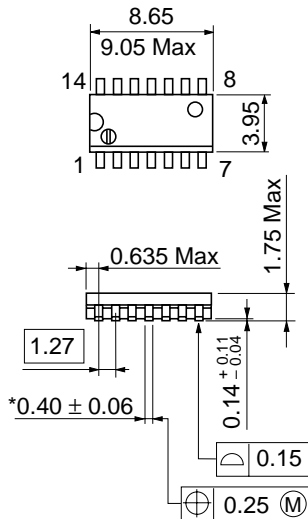


Hitachi Code	DP-14
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.97 g



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

*Dimension including the plating thickness
Base material dimension



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

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