

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.

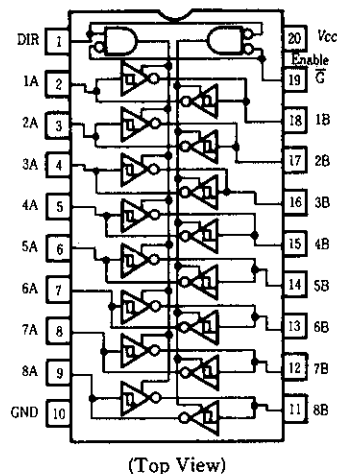
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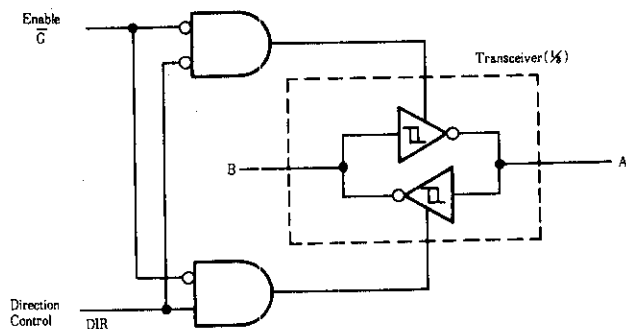
HD74LS642-1 ● Octal Bus Transceivers (inverted open-collector outputs)

This octal bus transceiver is designed for asynchronous two-way communication between data buses. The devices transmit data from the A bus to the B bus or from the B bus to the A bus depending upon the level at the direction control (DIR) input. The enable input ($\bar{G}$) can be used to disable the device so that the buses are effectively isolated.

PIN ARRANGEMENT



BLOCK DIAGRAM



RECOMMENDED OPERATING CONDITIONS

Item	Symbol	min	typ	max	unit
Output current	V_{CC}	4.75	5.00	5.25	V
Output voltage	V_{OH}	—	—	5.5	V
Output current	I_{OL}	—	—	48	mA
Operating temperature range	T_{opr}	-20	25	75	°C

FUNCTION TABLE

Enable $\bar{G}$	Direction Control DIR	Operation
L	L	$\bar{B}$ data to A bus
L	H	$\bar{A}$ data to B bus
H	X	Isolation

H; high level,
L; low level,
X; irrelevant

■ELECTRICAL CHARACTERISTICS (Ta= -20 ~ +75°C)

Item	Symbol	Test Conditions	min	typ*	max	Unit
Input voltage	V_{IH}		2.0	—	—	V
	V_{IL}		—	—	0.8	V
Hysteresis	$V_{T+} - V_{T-}$	$V_{CC}=4.75V$	0.2	—	—	V
Output current	I_{OH}	$V_{CC}=4.75V, V_{IH}=2V, V_{IL}=0.8V, V_{OH}=5.5V$	—	—	100	μA
Output voltage	V_{OL}	$V_{CC}=4.75V, V_{IH}=2V, V_{IL}=0.8V$	$I_{OL}=12mA$	—	0.4	V
			$I_{OL}=24mA$	—	0.5	V
			$I_{OL}=48mA$	—	0.5	V
Input current	I_{IH}	$V_{CC}=5.25V, V_i=2.7V$	—	—	20	μA
	I_{IL}	$V_{CC}=5.25V, V_i=0.4V$	—	—	-400	μA
	A or B DIR or $\overline{G}$	I_I	$V_{CC}=5.25V$	$V_i=5.5V$ $V_i=7V$	0.1 0.1	mA
Supply current**	I_{CCH}	$V_{CC}=5.25V$	—	48	70	mA
	I_{CCL}		—	62	90	
	I_{CCZ}		—	64	95	
Input clamp voltage	V_{IK}	$V_{CC}=4.75V, I_{IK}=-18mA$	—	—	-1.5	V

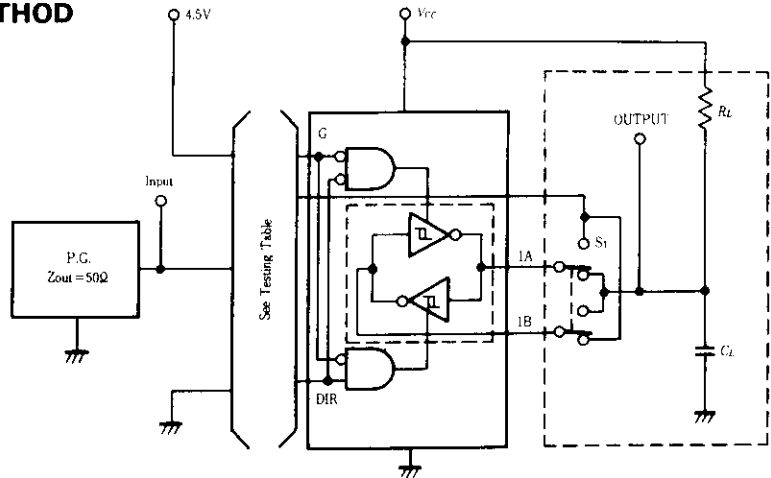
* $V_{CC}=5V, T_a=25^{\circ}C$
** I_{CC} is measured with all outputs open.

■SWITCHING CHARACTERISTICS (VCC=5V, Ta=25°C)

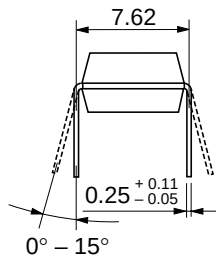
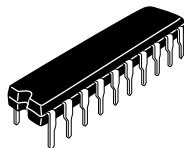
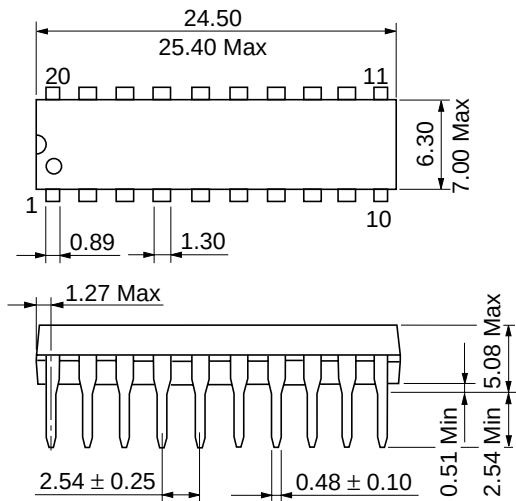
Item	Symbol	Input	Output	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	A	B	$C_L=45pF$ $R_L=667\Omega$	—	19	25	ns
		B	A		—	19	25	ns
	t_{PHL}	A	B		—	14	25	ns
		B	A		—	14	25	ns
Output enable time	t_{PLH}	$\overline{G}$	A		—	26	40	ns
		$\overline{G}$	B		—	28	40	ns
	t_{PHL}	$\overline{G}$	A		—	43	60	ns
		$\overline{G}$	B		—	39	60	ns

■TESTING METHOD

Test Circuit



- Notes) 1. 2A-2B, 3A-3B, 4A-4B, 5A-5B, 6A-6B, 7A-7B, 8A-8B are identical to above load circuit.
2. C_L includes probe and jig capacitance.
3. S_1 is a input-output switch.



Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Weight (reference value)	1.26 g

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HITACHI

Hitachi, Ltd.

Semiconductor & 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/
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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) 778322
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Hitachi Asia Pte. Ltd. 16 Collyer Quay #20-00 Hitachi Tower Singapore 049318 Tel: 535-2100 Fax: 535-1533 Hitachi Asia Ltd. Taipei Branch Office 3F, Hung Kuo Building, No.167, Tun-Hwa North Road, Taipei (105) Tel: <886> (2) 2718-3666 Fax: <886> (2) 2718-8180
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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
Telex: 40815 HITEC HX

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