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

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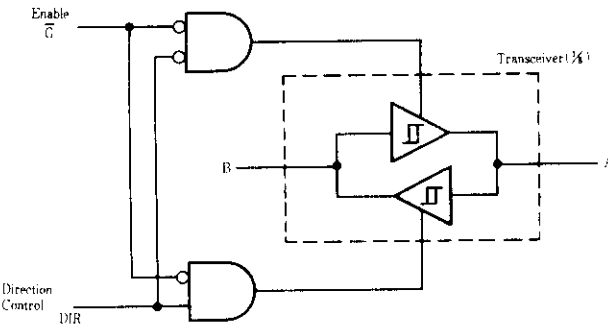
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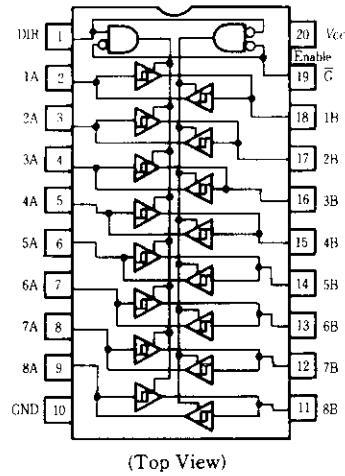
HD74LS645-1 ● Octal Bus Transceivers (non-inverted 3-state outputs)

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 ($\overline{G}$) can be used to disable the device so that the buses are effectively isolated.

■ BLOCK DIAGRAM



■ PIN ARRANGEMENT



■ RECOMMENDED OPERATING CONDITIONS

Item	Symbol	min	typ	max	unit
Supply voltage	V_{CC}	4.75	5.00	5.25	V
Output current	I_{OH}	—	—	—15	mA
Output current	I_{OL}	—	—	48	mA
Operating temperature range	T_{opr}	—20	25	75	°C

■ FUNCTIONAL TABLE

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

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

■ 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	$V_{T^+}-V_{T^-}$	$V_{CC}=4.75V$		0.2	—	—	V
Output voltage	V_{OH}	$V_{CC}=4.75V, V_{IH}=2V,$ $V_{IL}=0.8V$	$I_{OH}=-3mA$	2.4	—	—	V
			$I_{OH}=-15mA$	2	—	—	
	V_{OL}	$V_{CC}=4.75V, V_{IH}=2V,$ $V_{IL}=0.8V$	$I_{OL}=12mA$	—	—	0.4	V
			$I_{OL}=24mA$	—	—	0.5	
			$I_{OL}=48mA$	—	—	0.5	
Output current	I_{OZH}	$V_{CC}=5.25V$	$V_O=2.7V$	—	—	20	μA
	I_{OZL}	$\bar{G}$ input = 2V	$V_O=0.4V$	—	—	-400	
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 $\bar{G}$	I_I	$V_{CC}=5.25V$	$V_I=5.5V$ $V_I=7V$	— —	0.1 0.1	mA
Short-circuit output current	I_{OS}^{***}	$V_{CC}=5.25V$		-40	—	-225	mA
Supply current**	I_{CCH}	$V_{CC}=5.25V, \text{OUTPUT OPEN}$		—	48	70	mA
	I_{CCL}			—	62	90	
	I_{CCZ}			—	64	95	
Input clamp voltage	V_{IK}	$V_{CC}=4.75V, I_{IN}=-18mA$		—	—	-1.5	V

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

** I_{CC} is measured with all outputs open.

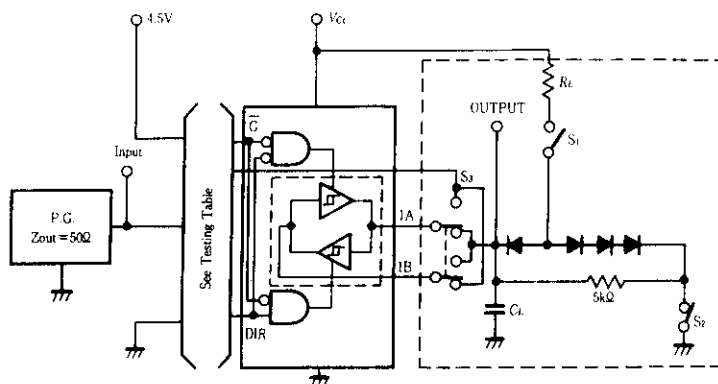
*** Not more than one output should be shorted at a time, duration of short-circuit should not exceed one second.

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

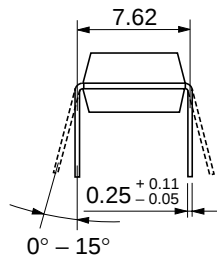
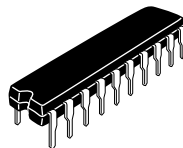
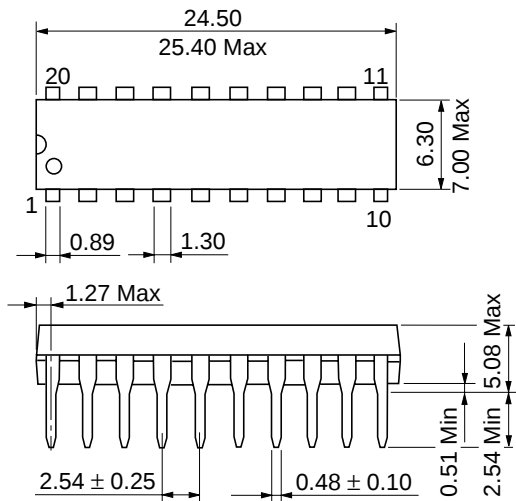
Item	Symbol	Input	Output	Test Condition	min	typ	max	Unit
Propagation delay time	t_{PLH}	A	B	$C_L = 45\text{pF}$, $R_L = 667\Omega$	—	8	15	ns
		B	A		—	8	15	ns
	t_{PHL}	A	B		—	11	15	ns
		B	A		—	11	15	ns
Output enable time	t_{ZL}	$\bar{G}$	A		—	31	40	ns
		$\bar{G}$	B		—	31	40	ns
	t_{ZH}	$\bar{G}$	A		—	26	40	ns
		$\bar{G}$	B		—	26	40	ns
Output disable time	t_{LZ}	$\bar{G}$	A	$C_L = 5\text{pF}$, $R_L = 667\Omega$	—	15	25	ns
		$\bar{G}$	B		—	15	25	ns
	t_{HZ}	$\bar{G}$	A		—	15	25	ns
		$\bar{G}$	B		—	15	25	ns

■ TESTING METHOD

Test Circuit



- Notes)
1. C_L includes probe and jig capacitance.
 2. All diodes are 1S2074 Φ .
 3. 2A-2B, 3A-3B, 4A-4B, 5A-5B, 6A-6B, 7A-7B, 8A-8B are identical to above load circuit.
 4. S_1 is a input-output switch.



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

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