

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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Not recommended  
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To all our customers

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

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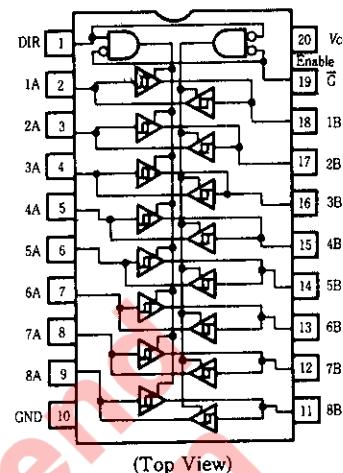
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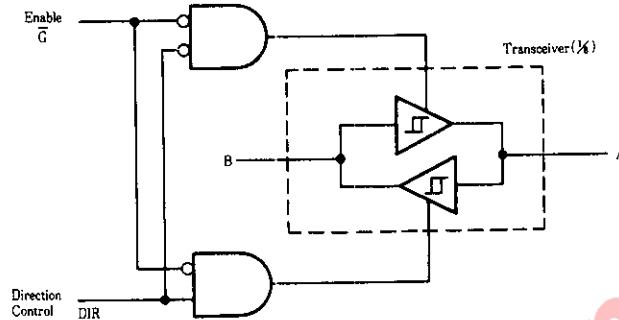
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This octal bus transceiver is designed for asynchronous two-way communication between data buses. The devices transmit data, from the A bus to the B bus or from the B bus to the A bus depending upon the level at the direction control (DIR) input. The 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
Supply voltage	$V_{cc}$	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	Direction Control	Operation
$\bar{G}$	DIR	
L	L	B data to A bus
L	H	A data to B bus
H	X	Isolation

Notes) 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	$V_{IH}$	$V_{CC} = 4.75\text{V}$	$V_{IH} = 2\text{V}$ , $V_{IL} = 0.8\text{V}$ , $V_{OH} = 5.5\text{V}$	2.0	—	—	V	
	$V_{IL}$			—	—	0.8	V	
Hysteresis	$V_T^+ - V_T^-$	$V_{CC} = 4.75\text{V}$		0.2	—	—	V	
Output current	$I_{OH}$	$V_{CC} = 4.75\text{V}$ , $V_{IH} = 2\text{V}$ , $V_{IL} = 0.8\text{V}$ , $V_{OH} = 5.5\text{V}$		—	—	100	$\mu\text{A}$	
Output voltage	$V_{OL}$	$V_{CC} = 4.75\text{V}$ , $V_{IH} = 2\text{V}$ , $V_{IL} = 0.8\text{V}$	$I_{OL} = 12\text{mA}$	—	—	0.4	V	
			$I_{OL} = 24\text{mA}$	—	—	0.5	V	
			$I_{OL} = 48\text{mA}$	—	—	0.5	V	
Input current	$I_{IH}$	$V_{CC} = 5.25\text{V}$ , $V_I = 2.7\text{V}$		—	—	20	$\mu\text{A}$	
	$I_{IL}$	$V_{CC} = 5.25\text{V}$ , $V_I = 0.4\text{V}$		—	—	—400	$\mu\text{A}$	
A or B DIR or $\bar{G}$	$I_I$	$V_{CC} = 5.25\text{V}$	$V_I = 5.5\text{V}$	—	—	0.1	mA	
			$V_I = 7\text{V}$	—	—	0.1	mA	
Supply current	$I_{CCB}$	$V_{CC} = 5.25\text{V}$ , output open		—	48	70	mA	
	$I_{CCI}$			—	62	90	mA	
	$I_{CCZ}$			—	64	95	mA	
Input clamp voltage	$V_{IK}$	$V_{CC} = 4.75\text{V}$ , $I_{IN} = -18\text{mA}$		—	—	-1.5	V	

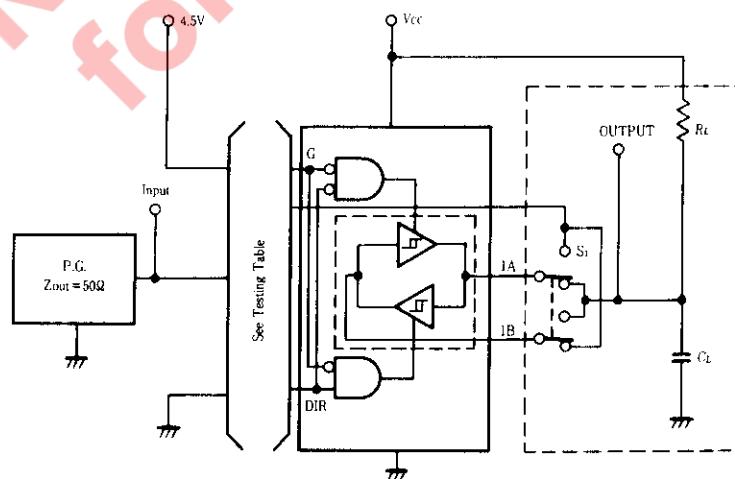
\*  $V_{CC} = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$

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

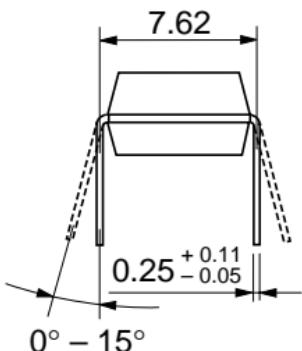
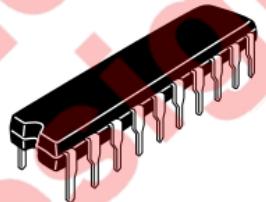
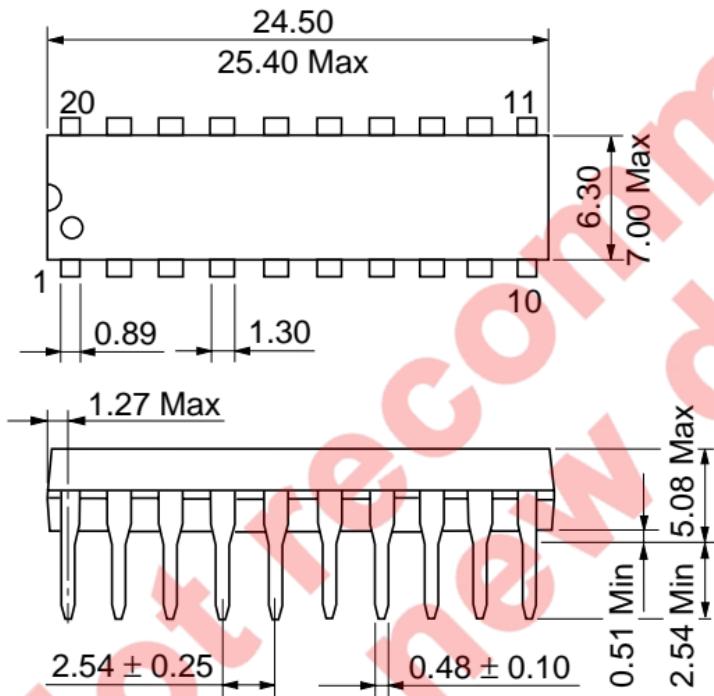
Item	Symbol	INPUT	OUTPUT	Test Conditions	min	typ	max	Unit
Propagation delay time	$t_{PLH}$	A	B	$C_L = 45\text{pF}$ , $R_L = 667\Omega$	—	17	25	ns
		B	A		—	17	25	ns
	$t_{PHL}$	A	B		—	16	25	ns
		B	A		—	16	25	ns
Output enable time	$t_{PLH}$	$\bar{G}$	A		—	23	40	ns
		$\bar{G}$	B		—	25	40	ns
	$t_{PHL}$	$\bar{G}$	A		—	34	50	ns
		$\bar{G}$	B		—	37	50	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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