To all our customers

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

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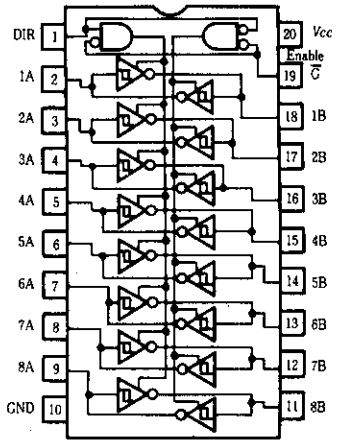
HD74LS642 ●Octal Bus Transceivers (inverted open-collector outputs)

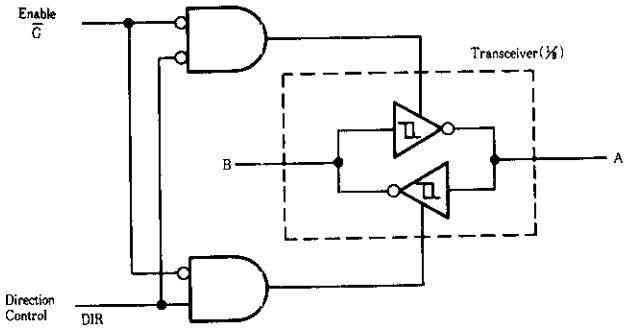
This octal bus transceiver is designed for asynchronous two-way communication between data buses. The devices transmit data from the A bus to the B bus or from the B bus to the A bus depending upon the level at the direction control (DIR) input. The enable input ($\overline{G}$) can be used to disable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

■PIN ARRANGEMENT



(Top View)

■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}	—	—	24	mA
Operating temperature range	T_{opr}	−20	25	75	℃

■FUNCTION TABLE

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

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

■ELECTRICAL CHARACTERISTICS ($Ta = -20 \sim +75°C$)

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 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	
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	I_I	V_{CC}=5.25V	V_I=5.5V			0.1	mA
DIR or $\overline{G}$			V_I=7V			0.1	
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_{IN}=−18mA				−1.5	V

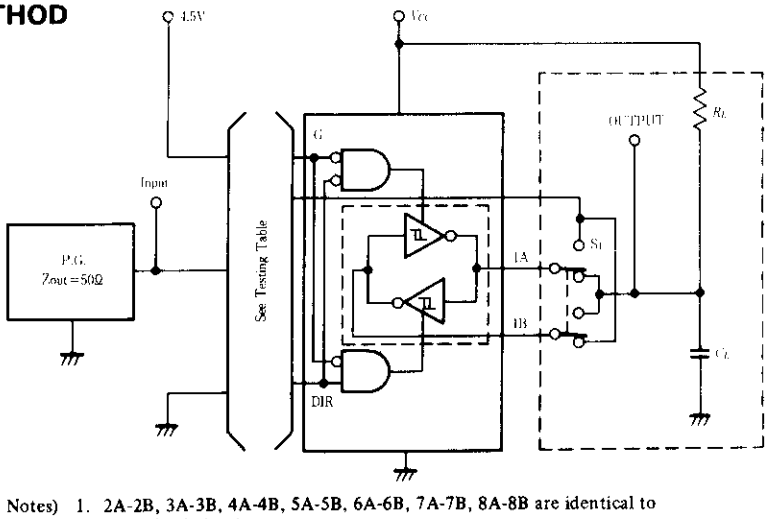
* V_{CC} = 5V, Ta = 25°C
** I_{CC} is measured with all outputs open.

■SWITCHING CHARACTERISTICS (V_{CC}=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=667Ω		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

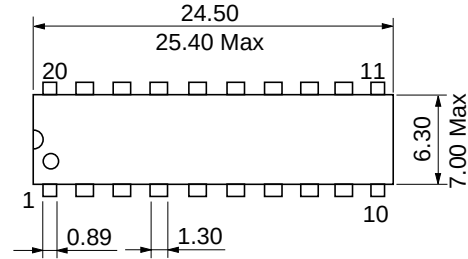
■TESTING METHOD

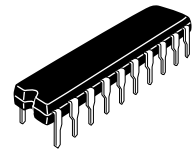
Test Circuit



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.

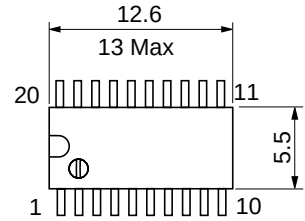
Unit: mm

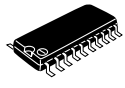


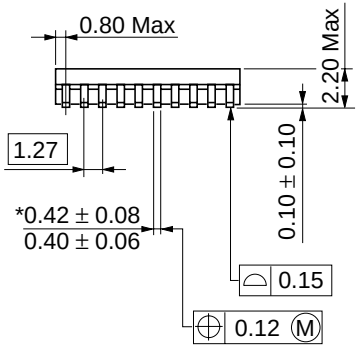


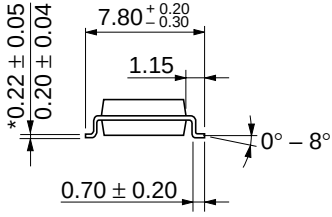
Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Weight (reference value)	1.26 g

Unit: mm





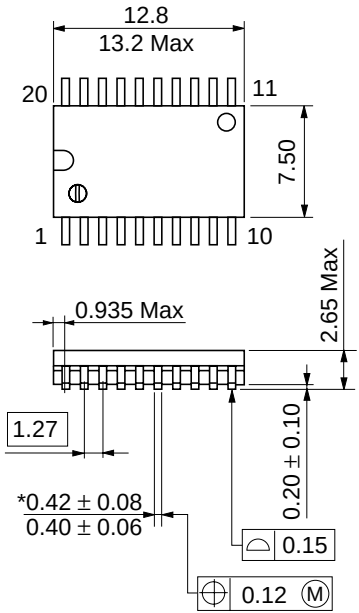


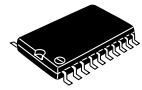


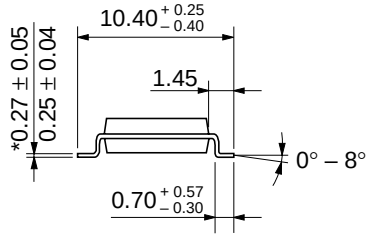
*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-20DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.31 g

Unit: mm







Hitachi Code	FP-20DB
JEDEC	Conforms
EIAJ	—
Weight (reference value)	0.52 g

*Dimension including the plating thickness
Base material dimension

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