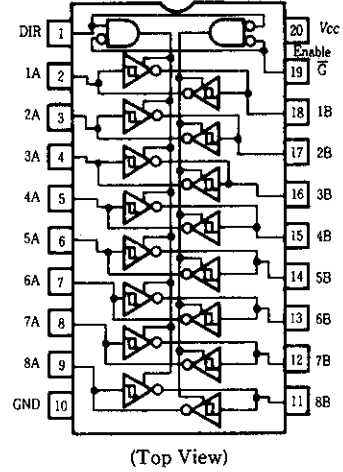


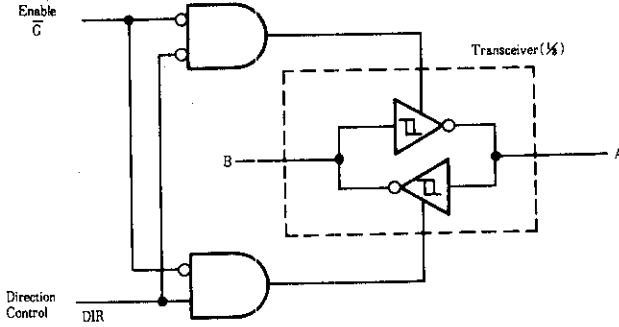
HD74LS642-1 ● Octal Bus Transceivers (inverted open-collector outputs)

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 ($T_a = -20 \sim +75^\circ\text{C}$)

Item	Symbol	Test Conditions	min	typ*	max	Unit	
Input voltage	V_{IH}		2.0	—	—	V	
	V_{IL}		—	—	0.8	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	μA	
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	
			$I_{OL} = 48\text{mA}$	—	—	0.5	
Input current	I_{IH}	$V_{CC} = 5.25\text{V}, V_i = 2.7\text{V}$	—	—	20	μA	
	I_{IL}	$V_{CC} = 5.25\text{V}, V_i = 0.4\text{V}$	—	—	-400	μA	
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	
Supply current**	I_{CCH}	$V_{CC} = 5.25\text{V}$	—	48	70	mA	
	I_{CCL}		—	62	90		
	I_{CCZ}		—	64	95		
Input clamp voltage	V_{IK}	$V_{CC} = 4.75\text{V}, I_{IN} = -18\text{mA}$	—	—	-1.5	V	

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

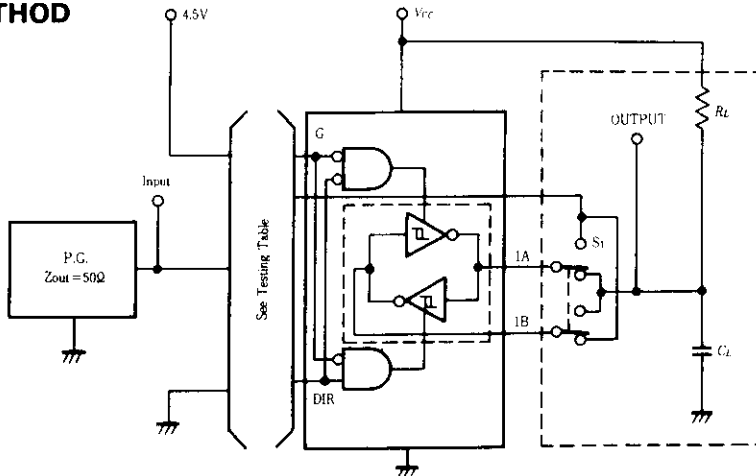
** I_{CC} is measured with all outputs open.

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

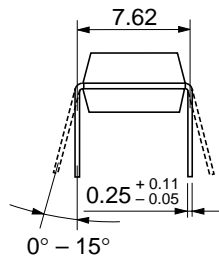
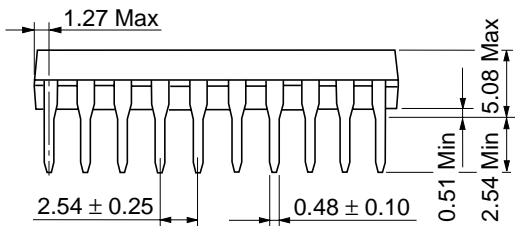
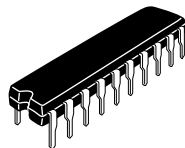
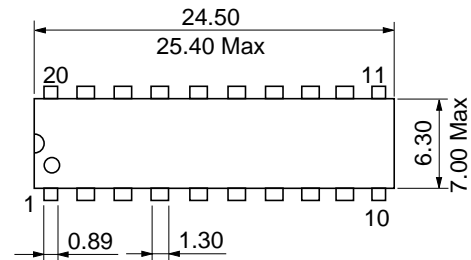
Item	Symbol	Input	Output	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	A	B	$C_L = 45\text{pF}$ $R_L = 667\ \Omega$	—	19	25	ns
		B	A		—	19	25	ns
	t_{PHL}	A	B		—	14	25	ns
		B	A		—	14	25	ns
Output enable time	t_{PLH}	\bar{G}	A		—	26	40	ns
		\bar{G}	B		—	28	40	ns
	t_{PHL}	\bar{G}	A		—	43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