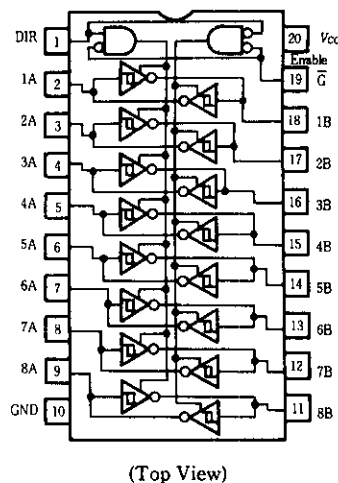


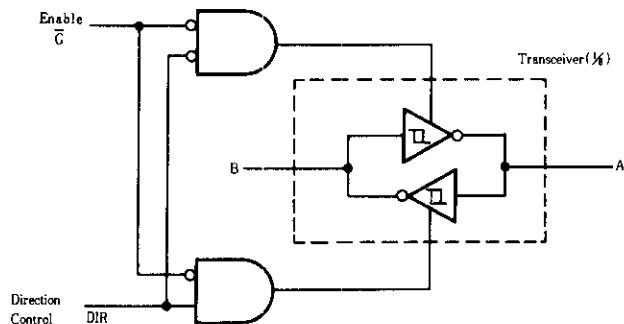
HD74LS640 ● Octal Bus Transceivers (inverted 3-state outputs)

This octal bus transceivers is designed for asynchronous two-way communication between data buses. The device 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 Current	I_{OH}	—	—	-15	mA
Output Current	I_{OL}	—	—	24	mA
Operating temperature range	T_{opr}	-20	25	75	°C

FUNCTION TABLE

Enable	Direction Control	Operation
$\bar{G}$	DIR	
L	L	$\bar{B}$ data to A bus
L	H	$\bar{A}$ 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}			2.0			V
	V_{IL}					0.8	V
Hysteresis	$V_T^+ - V_T^-$	$V_{CC} = 4.75\text{V}$		0.2	---	---	V
Output voltage	V_{OH}	$V_{CC} = 4.75\text{V}$, $V_{IH} = 2\text{V}$, $V_{IL} = 0.8\text{V}$	$I_{OH} = 3\text{mA}$	2.4			V
			$I_{OH} = -15\text{mA}$	2			V
	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
Output current	I_{OZH}	$V_{CC} = 5.25\text{V}$, $\bar{G}$ INPUT = 2V	$V_O = 2.7\text{V}$	---		20	μA
	I_{OZL}		$V_O = 0.4\text{V}$	---		-400	μA
Input current	I_{IH}	$V_{CC} = 5.25\text{V}$, $V_I = 2.7\text{V}$		---		20	μA
		$V_{CC} = 5.25\text{V}$, $V_I = 0.4\text{V}$		---		-400	μA
	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
Short-circuit output current	I_{OS**}	$V_{CC} = 5.25\text{V}$		-40		-225	mA
Supply current	I_{CCH}	$V_{CC} = 5.25\text{V}$, OUTPUT OPEN		---	48	70	mA
	I_{CCL}			---	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

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

** Not more than one output shall be shorted at a time.

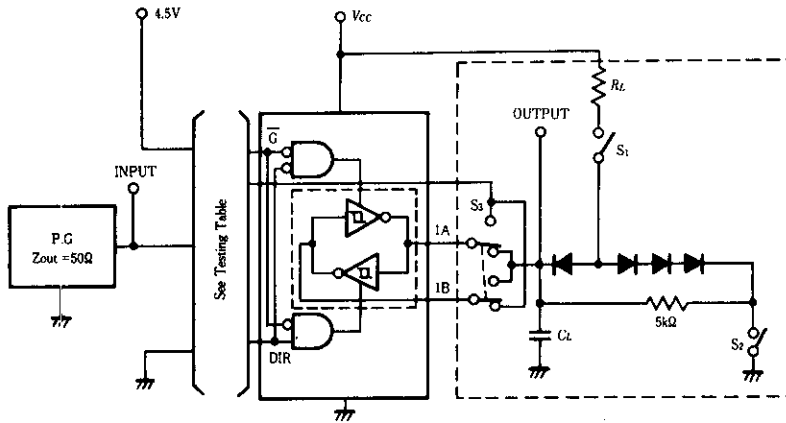
The duration of the short circuit shall not exceed one second.

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

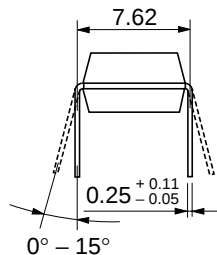
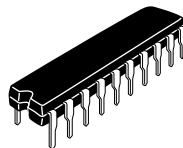
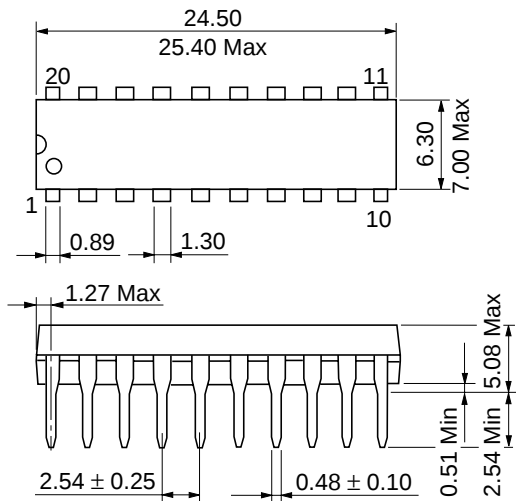
Item	Symbol	INPUT	OUTPUT	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	A	B	$C_L = 45\text{pF}$, $R_L = 667\ \Omega$	---	6	10	ns
		B	A		---	6	10	ns
	t_{PHL}	A	B		---	8	15	ns
		B	A		---	8	15	ns
Output enable time	t_{ZL}	$\bar{G}$	A		---	31	40	ns
		$\bar{G}$	B		---	31	40	ns
	t_{ZH}	$\bar{G}$	A		---	23	40	ns
		$\bar{G}$	B		---	23	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

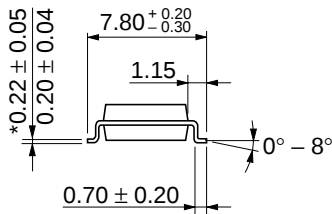
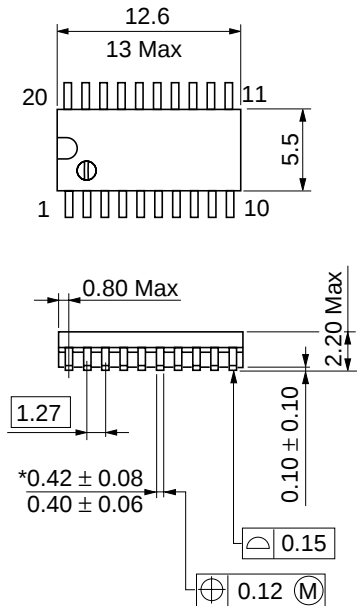
Test Circuit



- Notes)
1. C_L includes probe and jig capacitance.
 2. All diodes are 1S2074 $\oplus$.
 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.

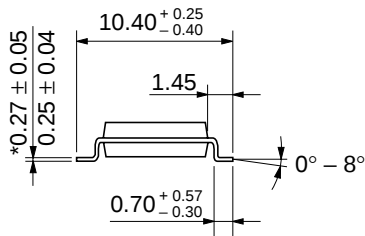
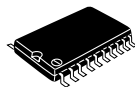
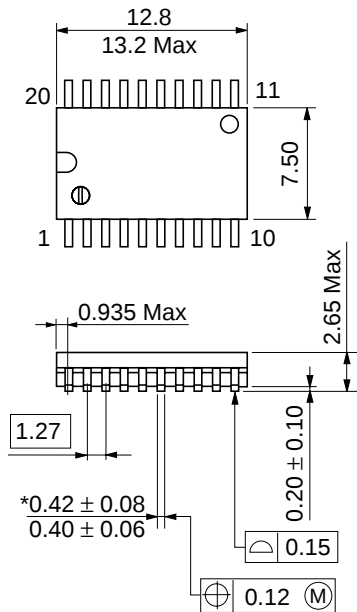


Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Weight (reference value)	1.26 g



*Dimension including the plating thickness
Base material dimension

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



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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