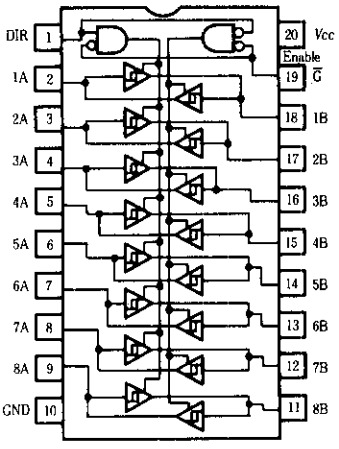
HD74LS645 ●Octal Bus Transceivers (non-inverted 3-state outputs)

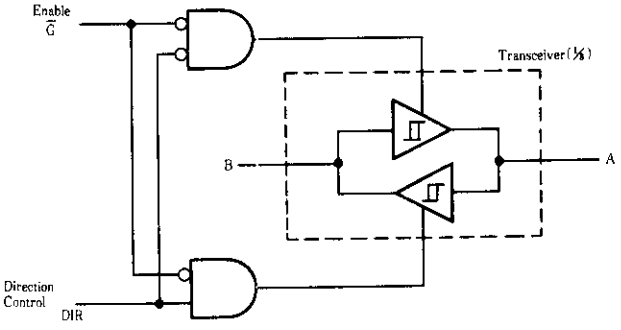
This octal bus transceiver is designed for asynchronous two-way communication between data buses. The devices transmit data from the A bus to the B bus or from the B bus to the A bus depending upon the level at the direction control (DIR) input. The enable input ($\overline{G}$) can be used to disable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

■PIN ARRANGEMENT



(Top View)

■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	℃

■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 (Ta= −20 ~ +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 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	
Output current		I_{OZH}	V_{CC}=5.25V, $\overline{G}$ input =2V	V_O=2.7V	—	—	20	μA
		I_{OZL}		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	I_I	V_{CC}=5.25V	V_I=5.5V	—	—	0.1	mA
	DIR or $\overline{G}$			V_I=7V	—	—	0.1	
Short-circuit output current		I_{OS}***	V_{CC}=5.25V		−40	—	−225	mA
Supply current**		I_{CCH}	V_{CC}=5.25V, OUTPUT OPEN		—	48	70	mA
		I_{CCL}			—	62	90	
		I_{CC2}			—	64	95	
Input clamp voltage		V_{IK}	V_{CC}=4.75V, I_{IN}=−18mA		—	—	−1.5	V

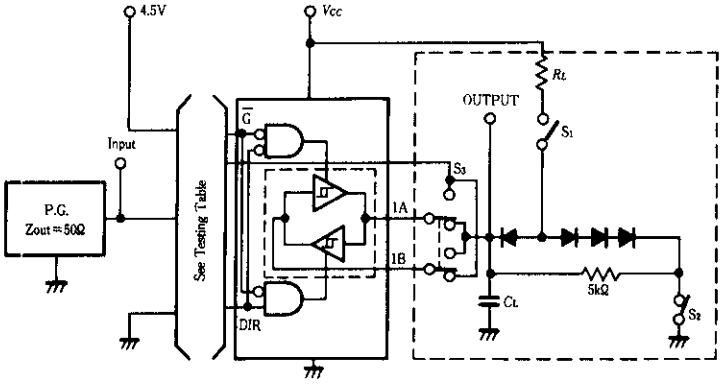
* V_{CC} = 5V, Ta = 25°C
** I_{CC} is measured with all outputs open.
*** Not more than one output should be shorted at a time, duration of short-circuit should not exceed one second.

■SWITCHING CHARACTERISTICS (V_{CC}=5V, Ta=25°C)

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

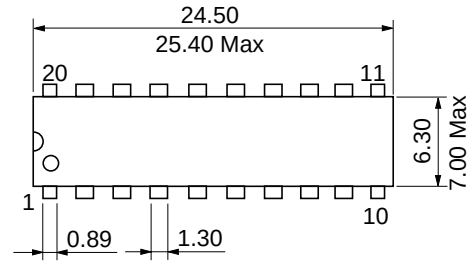
■TESTING METHOD

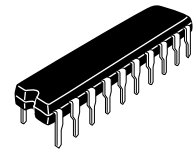
Test Circuit

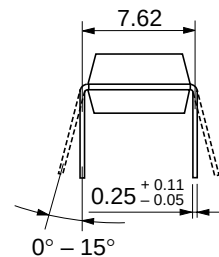


Notes) 1. C_L includes probe and jig capacitance.
2. All diodes are 1S2074 (H).
3. 2A-2B, 3A-3B, 4A-4B, 5A-5B, 6A-6B, 7A-7B, 8A-8B are identical to above load circuit.
4. S_3 is a input-output switch.

Unit: mm

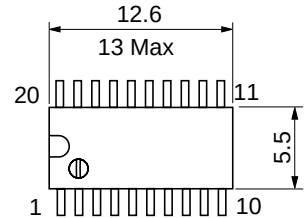


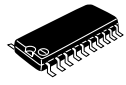


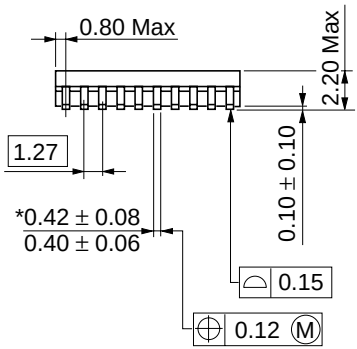


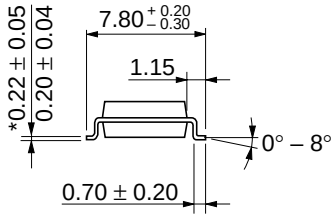
Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Weight (reference value)	1.26 g

Unit: mm





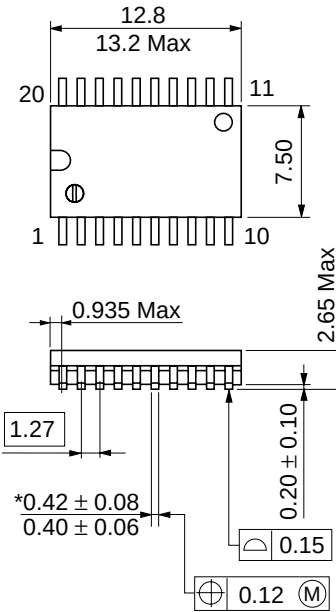


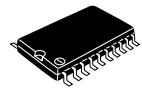


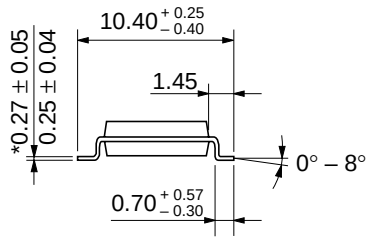
*Dimension including the plating thickness
Base material dimension

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

Unit: mm







*Dimension including the plating thickness
Base material dimension

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

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