

To all our customers

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

Cautions

Keep safety first in your circuit designs!

1. Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.

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.

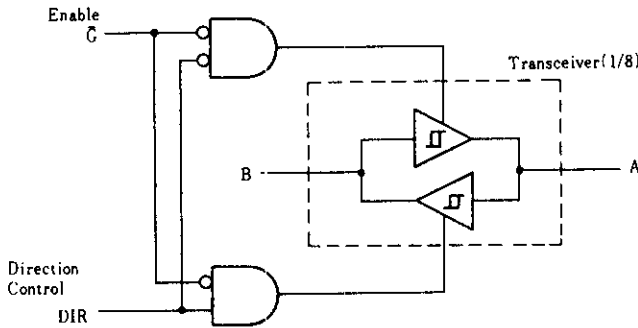
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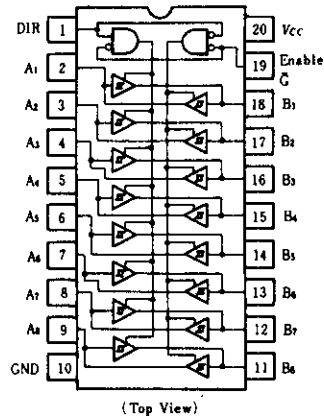
HD74LS245 ● Octal Bus Transceivers (with three-state outputs)

This octal bus transceiver is designed for synchronous two-way communication between data buses. The control function implementation minimizes external timing requirements. The device allows data transmission from the A bus to the B bus or from the B bus to the A bus depending upon the logic 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.

■ BLOCK DIAGRAM



■ PIN ARRANGEMENT



■ FUNCTION TABLE

ENABLE \bar{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

■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Rated	Unit
Supply voltage	V_{CC}	7.0	V
Input voltage	DIR, \bar{G} A, B	7.0	V
		5.5	
Operating temperature range	T_{opr}	-20 ~ +75	°C
Storage temperature range	T_{stg}	-65 ~ +150	°C

■ RECOMMENDED OPERATING CONDITIONS

Item	Symbol	min	typ	max	Unit
Output current	I_{OH}	-	-	-15	mA
	I_{OL}	-	-	24	mA

HD74LS245

■ 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			
Hysteresis	$V_T^+ - V_T^-$	$V_{CC} = 4.75\text{V}$	0.2	0.4	—	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_{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		
Output current	I_{OZH}	$V_{CC} = 5.25\text{V}$			10	μA		
	I_{OZL}	$\bar{G} = 2\text{V}$			-200			
Input current	I_{IH}	$V_{CC} = 5.25\text{V}$, $V_I = 2.7\text{V}$	—	—	20	μA		
	I_{IL}	$V_{CC} = 5.25\text{V}$, $V_I = 0.4\text{V}$	—	—	-0.2	mA		
	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	
Short-circuit output current	I_{OS}	$V_{CC} = 5.25\text{V}$	-40	—	-225	mA		
Supply current**	I_{CCH}		—	48	70	mA		
	I_{CCL}	$V_{CC} = 5.25\text{V}$	—	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		

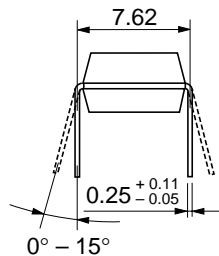
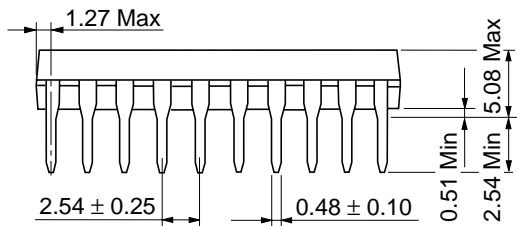
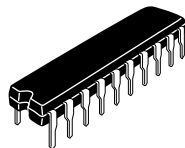
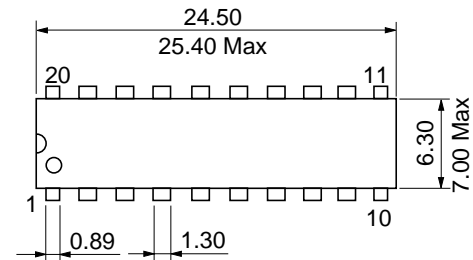
* $V_{CC} = 5\text{V}$, $T_a = 25^\circ\text{C}$

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

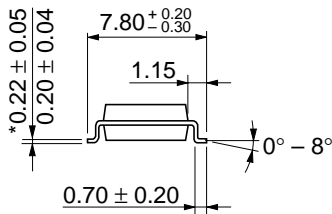
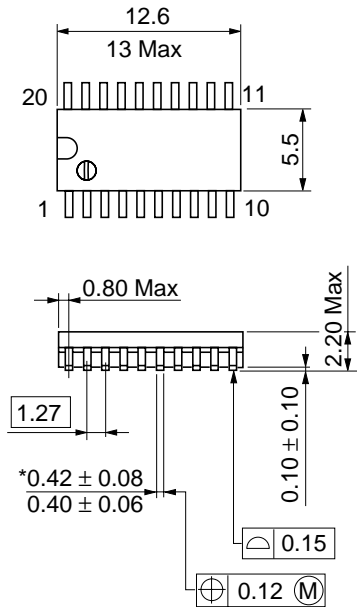
■ SWITCHING CHARACTERISTICS ($V_{CC} = 5\text{V}$, $T_a = 25^\circ\text{C}$)

Item	Symbol	Test Conditions	min	typ	max	Unit	
Propagation delay time	t_{PLH}	$C_L = 45\text{pF}$ $R_L = 667\ \Omega$	—	8	15	ns	
	t_{PHL}		—	8	15		
Output enable time	t_{ZL}			—	27		40
	t_{ZH}			—	25		40
Output disable time	t_{LZ}		$C_L = 5\text{pF}$	—	15		25
	t_{HZ}		$R_L = 667\ \Omega$	—	15		25

Note) Refer to Test Circuit and Waveform of the Common Item

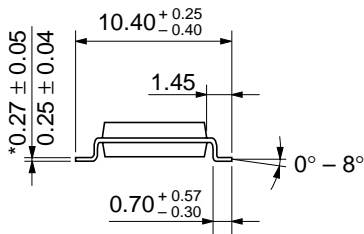
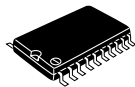
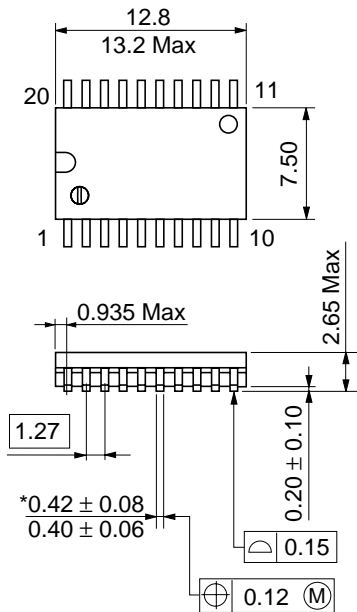


Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Weight (reference value)	1.26 g



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

*Dimension including the plating thickness
Base material dimension



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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