

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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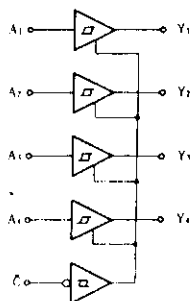
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HD74LS244 • Octal Buffers/Line Drivers/Line Receivers (non inverted three-state outputs)

■ BLOCK DIAGRAM (1/2)

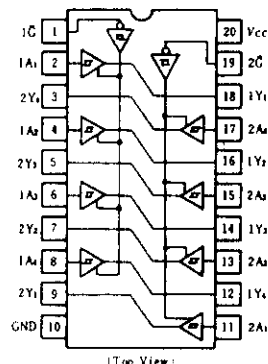


■ FUNCTION TABLE

Input		Output
$\bar{G}$	A	Y
H	X	Z
L	H	H
L	L	L

Note) H; high level,
L; low level,
X; irrelevant
Z; off (high-impedance) state
of a 3-state output

■ PIN ARRANGEMENT



■ 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	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
		$V_{IL} = 0.5\text{V}$, $I_{OH} = -15\text{mA}$	2.0	—	—	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}	$V_{CC} = 5.25\text{V}$, $V_{IH} = 2\text{V}$, $V_{OL} = 2.7\text{V}$	—	—	20	μA
	I_{OZL}	$V_{IL} = 0.8\text{V}$, $V_{OL} = 0.4\text{V}$	—	—	-20	μA
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
	I_i	$V_{CC} = 5.25\text{V}$, $V_i = 7\text{V}$	—	—	0.1	mA
Short-circuit output current	I_{OS}	$V_{CC} = 5.25\text{V}$	-40	—	-225	mA
Supply current	Output "H"	I_{CC} $V_{CC} = 5.25\text{V}$	—	13	23	mA
	Output "L"		—	27	46	
	All outputs disabled		—	32	54	
Input clamp voltage	V_{IK}	$V_{CC} = 4.75\text{V}$, $I_{IN} = -18\text{mA}$	—	—	-1.5	V

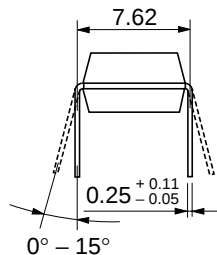
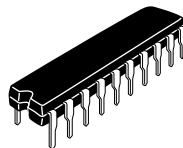
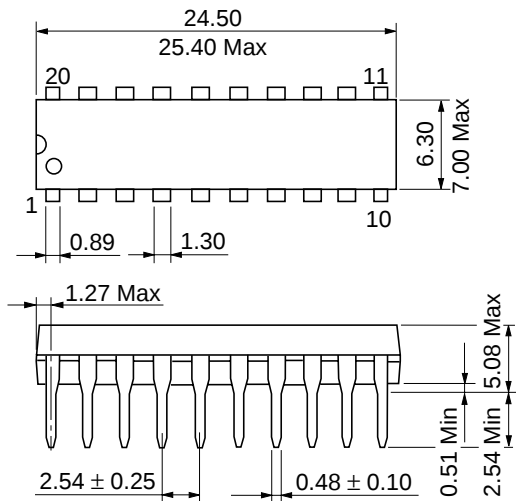
* $V_{CC} = 5\text{V}$, $T_a = 25^\circ\text{C}$

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

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

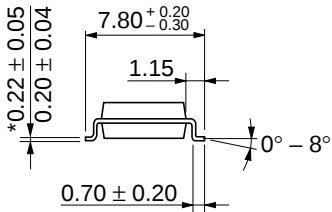
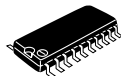
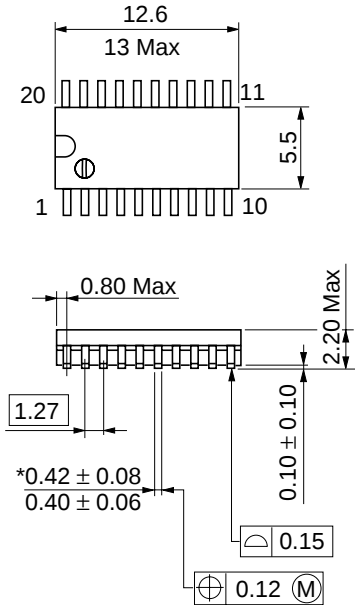
Item	Symbol	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	$C_L = 45\text{pF}$, $R_L = 667\Omega$	—	12	18	ns
	t_{PHL}		—	12	18	
Output enable time	t_{ZL}		—	20	30	ns
	t_{ZH}		—	15	23	ns
Output disable time	t_{LZ}	$C_L = 5\text{pF}$, $R_L = 667\Omega$	—	15	25	ns
	t_{HZ}		—	10	18	ns

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



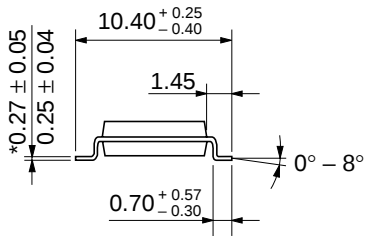
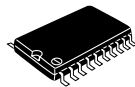
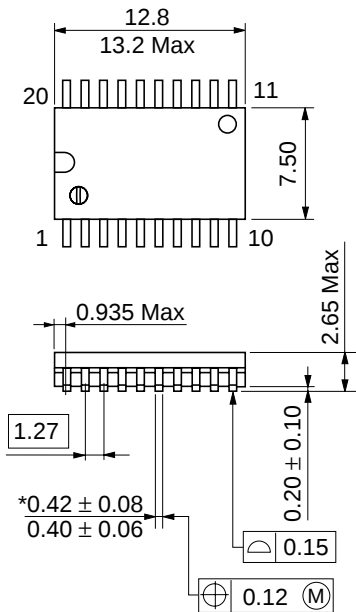
Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Weight (reference value)	1.26 g

Unit: mm


$$\frac{\text{*Dimension including the plating thickness}}{\text{Base material dimension}}$$

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

$$\frac{\text{*Dimension including the plating thickness}}{\text{Base material dimension}}$$

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