

To all our customers

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

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Keep safety first in your circuit designs!

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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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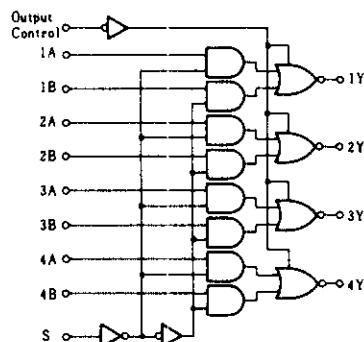
HD74LS258

● Quadruple 2-line-to-1-line Data Selectors/Multiplexers
(with three-state outputs)

This multiplexer features three-state outputs that can interface directly with and drive data lines of bus-organized systems. With all but one of the common outputs disabled (at a high-impedance state) the low impedance of the single enabled output will drive the bus line to a high or low logic level.

To minimize the possibility that two outputs will attempt to take a common bus to opposite logic levels, the output-enable circuitry is designed such that the output disable times are shorter than the output enable times.

■ BLOCK DIAGRAM



■ RECOMMENDED OPERATING CONDITIONS

Item	Symbol	min	typ	max	Unit
Output current	I_{OH}	—	—	-2.6	mA
	I_{OL}	—	—	8	mA

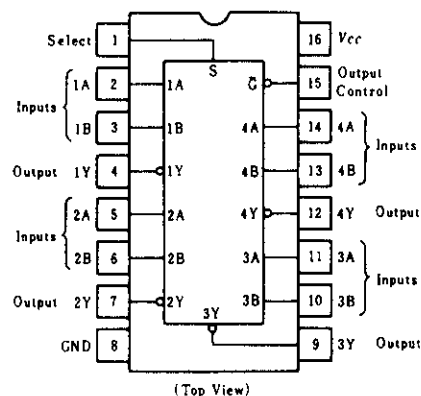
■ ELECTRICAL CHARACTERISTICS ($T_a = -20 \sim +75^\circ\text{C}$)

Item		Symbol	Test Conditions	min	typ*	max	Unit
Input voltage		V_{IH}		2.0	—	—	V
		V_{IL}		—	—	0.8	V
Output voltage		V_{OH}	$V_{CC} = 4.75\text{V}, V_{IH} = 2\text{V}, V_{IL} = 0.8\text{V}, I_{OH} = -2.6\text{mA}$	2.4	—	—	V
		V_{OL}	$V_{CC} = 4.75\text{V}, V_{IH} = 2\text{V}, V_{IL} = 0.8\text{V}$	$I_{OL} = 4\text{mA}$	—	0.4	V
				$I_{OL} = 8\text{mA}$	—	0.5	V
Output current		I_{OZH}	$V_{CC} = 5.25\text{V}, V_{IH} = 2\text{V}, V_O = 2.4\text{V}$	—	—	20	μA
		I_{OZL}	$V_{CC} = 5.25\text{V}, V_{IH} = 2\text{V}, V_O = 0.4\text{V}$	—	—	-20	μA
Input current	S	I_{IH}	$V_{CC} = 5.25\text{V}, V_i = 2.7\text{V}$	—	—	40	μA
	except S			—	—	20	μA
	S	I_{IL}	$V_{CC} = 5.25\text{V}, V_i = 0.4\text{V}$	—	—	-0.8	mA
	except S			—	—	-0.4	mA
	S	I_i	$V_{CC} = 5.25\text{V}, V_i = 7\text{V}$	—	—	0.2	mA
	except S			—	—	0.1	mA
Short-circuit output current		I_{OS}	$V_{CC} = 5.25\text{V}$	-30	—	-130	mA
Supply current	All outputs high	I_{CC}	$V_{CC} = 5.25\text{V}$	—	—	7	mA
	All outputs low			—	—	11	mA
	All outputs off			—	—	12	mA
Input clamp voltage		V_{IK}	$V_{CC} = 4.75\text{V}, I_{IK} = -18\text{mA}$	—	—	-1.5	V

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

** I_{CC} is measured with all outputs open and all possible inputs grounded while achieving the stated output conditions.

■ PIN ARRANGEMENT



■ FUNCTION TABLE

Input				Output
OC	S	A	B	Y
H	X	X	X	Z
L	L	L	X	H
L	L	H	X	L
L	H	X	L	H
L	H	X	H	L

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

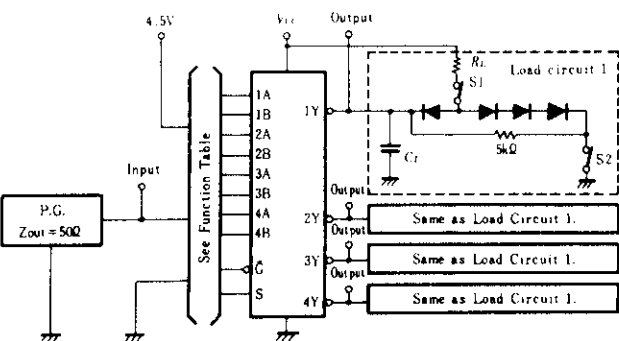
HD74LS258

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

Item	Symbol	Input	Output	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	A, B	Y	$R_L=2k\Omega$ $C_L=15pF$	—	12	18	ns
	t_{PHL}				—	12	18	ns
	t_{PLH}	S	Y		—	14	21	ns
	t_{PHL}				—	14	21	ns
Output enable time	t_{ZN}	OUTPUT	Y		—	20	30	ns
	t_{ZL}	CONTROL			—	20	30	ns
Output disable time	t_{NZ}	OUTPUT	Y	$R_L=2k\Omega$	—	18	30	ns
	t_{LZ}	CONTROL		$C_L=5pF$	—	16	25	ns

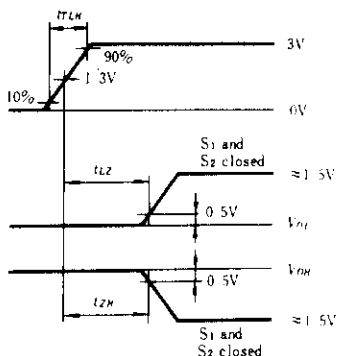
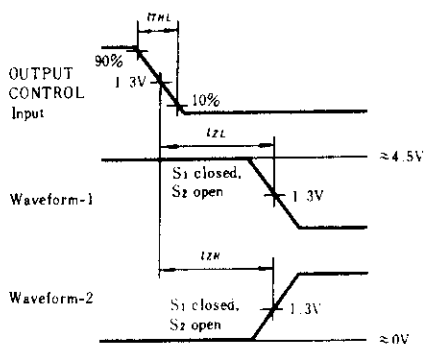
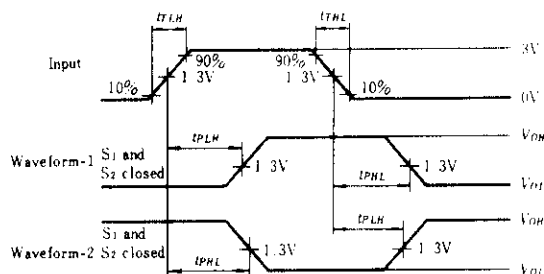
■ TESTING METHOD

1) Test Circuit



Notes) 1. C_L includes probe and jig capacitance.
2. All diodes are 1S2074 (H).

Waveform

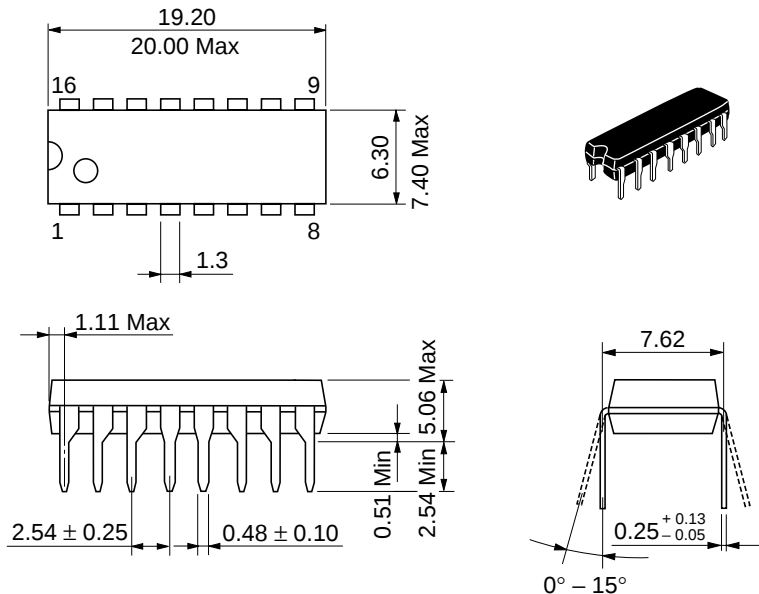


Notes) 1. Input pulse: $t_{TLH} \leq 15\text{ns}$, $t_{THL} \leq 6\text{ns}$, $PRR = 1\text{MHz}$, duty cycle=50%

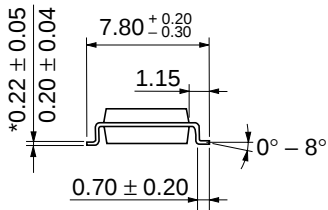
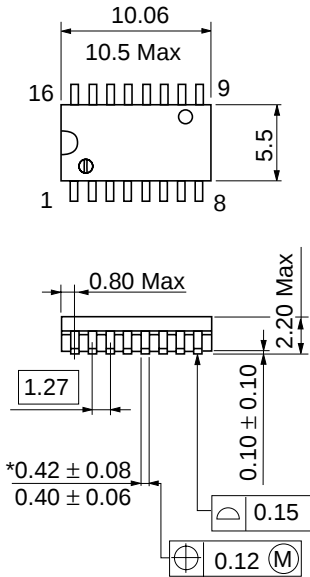
2. Waveform-1 is for an output with internal conditions such that the output is low except when disabled by the output control.

3. Waveform-2 is for an output with internal conditions such that the output is high except when disabled by the output control.

Unit: mm

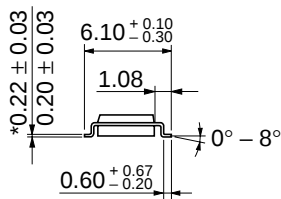
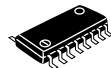
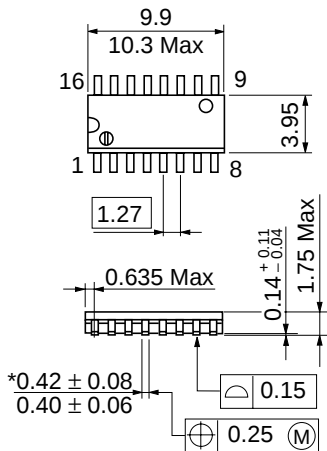


Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g



Hitachi Code	FP-16DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.24 g

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



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DN
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.15 g

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