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

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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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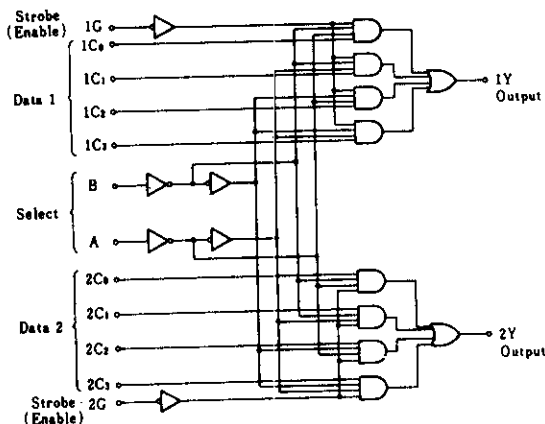
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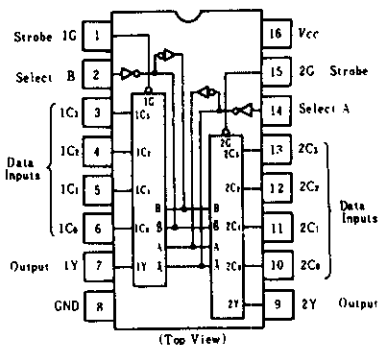
HD74LS153 • Dual 4-Line to 1-Line Data Selectors/Multiplexers

This data selector/multiplexer contains inverters and drivers to supply fully complementary, on-chip, binary decoding data selection to the AND-OR-INVERT gates. Separate strobe inputs are provided for each of the two four-line sections.

■ BLOCK DIAGRAM



■ PIN ARRANGEMENT



■ FUNCTION TABLE

Inputs							Outputs
Select		Data				Strobe	
B	A	C ₀	C ₁	C ₂	C ₃		G
×	×	×	×	×	×	H	L
L	L	L	×	×	×	L	L
L	L	H	×	×	×	L	H
L	H	×	L	×	×	L	L
L	H	×	H	×	×	L	H
H	L	×	×	L	×	L	L
H	L	×	×	H	×	L	H
H	H	×	×	×	L	L	L
H	H	×	×	×	H	L	H

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	V
Output voltage	V _{OH}	V _{CC} =4.75V, V _{IH} =2V, V _{IL} =0.8V, I _{OH} =-400μA	2.7	—	—	V
	V _{OL}	V _{CC} =4.75V, V _{IH} =2V, I _{OL} =4mA	—	—	0.4	V
		V _{IL} =0.8V, I _{OL} =8mA	—	—	0.5	
Input current	I _{IH}	V _{CC} =5.25V, V _I =2.7V	—	—	20	μA
	I _{IL}	V _{CC} =5.25V, V _I =0.4V	—	—	-0.4	mA
	I _I	V _{CC} =5.25V, V _I =7V	—	—	0.1	mA
Short-circuit output current	I _{OS}	V _{CC} =5.25V	-20	—	-100	mA
Supply current**	I _{CC}	V _{CC} =5.25V	—	6.2	10	mA
Input clamp voltage	V _{IK}	V _{CC} =4.75V, I _{IN} =-18mA	—	—	-1.5	V

* V_{CC}=5V, Ta=25°C

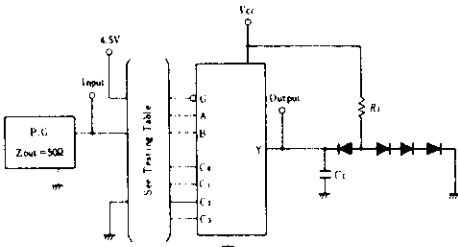
** I_{CC} is measured with all outputs open and all inputs grounded.

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

Item	Symbol	Inputs	Outputs	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	Data	Y	$C_L=15pF$, $R_L=2k\Omega$	—	10	15	ns
	t_{PHL}	Data	Y		—	17	26	ns
	t_{PLH}	Select	Y		—	19	29	ns
	t_{PHL}	Select	Y		—	25	38	ns
	t_{PLH}	Strobe	Y		—	16	24	ns
	t_{PHL}	Strobe	Y		—	21	32	ns

■TESTING METHOD

1) Test Circuit



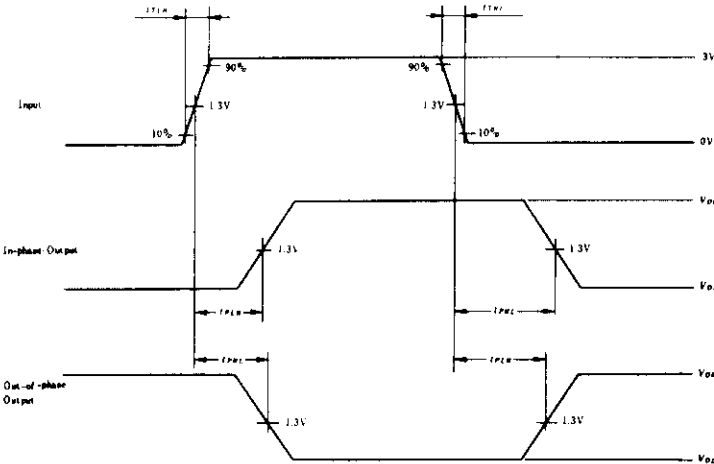
- Notes) 1. C_L includes probe and jig capacitance.
2. All diodes are 1S2074 (H).

2) Testing Table

Item	Inputs							Output	
	B	A	C ₀	C ₁	C ₂	C ₃	G	Y	
t_{PLH} t_{PHL}	GND	GND	IN	×	×	×	GND	OUT	
	GND	4.5V	×	IN	×	×	GND	OUT	
	4.5V	GND	×	×	IN	×	GND	OUT	
	4.5V	4.5V	×	×	×	IN	GND	OUT	
	GND	IN	GND	4.5V	×	×	GND	OUT	
	GND	IN	4.5V	GND	×	×	GND	OUT	
	IN	GND	GND	×	4.5V	×	GND	OUT	
	GND	GND	4.5V	×	×	×	IN	OUT	

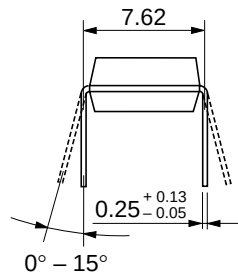
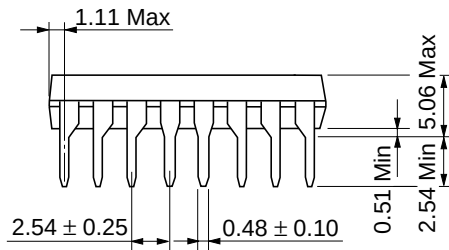
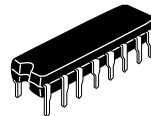
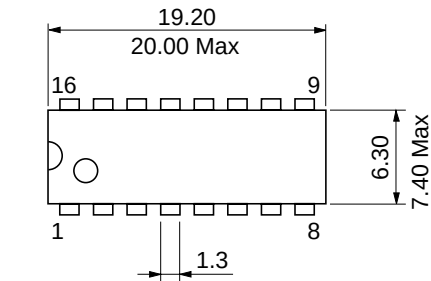
X: "4.5V" or "GND"

Waveform

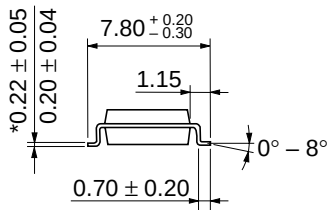
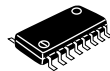
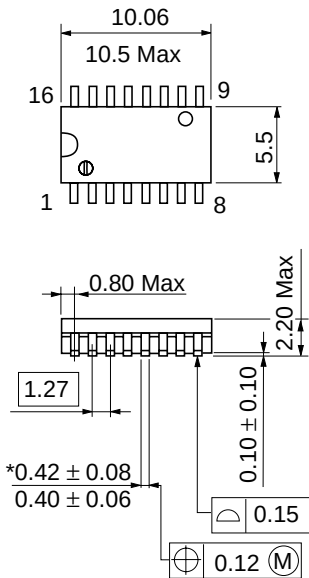


Input pulse; $t_{TLH} \leq 15ns$, $t_{THL} \leq 6ns$,
 $PRR=1MHz$, duty cycle 50%.

Unit: mm

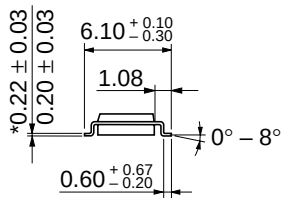
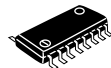
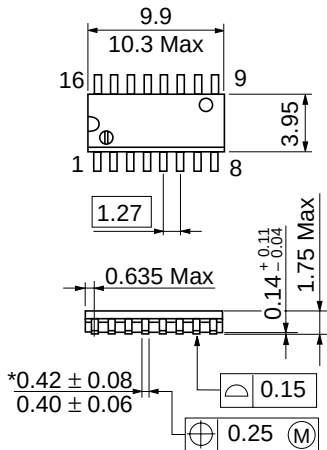


Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g



*Dimension including the plating thickness
Base material dimension

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



*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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