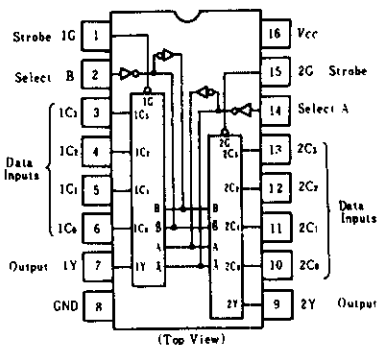
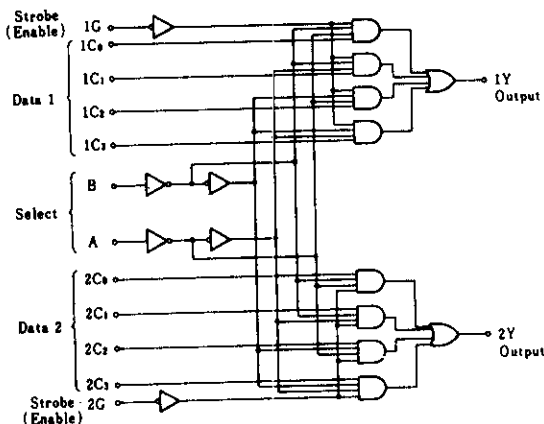


# HD74LS153 • Dual 4-Line to 1-Line Data Selectors/Multiplexers

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.

## ■ PIN ARRANGEMENT

## ■ BLOCK DIAGRAM



## ■ FUNCTION TABLE

		Inputs					Strobe	Outputs	
		Select		Data					
		B	A	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	G	Y
		X	X	X	X	X	X	H	L
		L	L	L	X	X	X	L	L
		L	L	H	X	X	X	L	H
		L	H	X	L	X	X	L	L
		L	H	X	H	X	X	L	H
		H	L	X	X	L	X	L	L
		H	L	X	X	H	X	L	H
		H	H	X	X	X	L	L	L
		H	H	X	X	X	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 <sub>IH</sub>		2.0	—	—	V
	V <sub>IL</sub>		—	—	0.8	V
Output voltage	V <sub>OH</sub>	V <sub>CC</sub> =4.75V, V <sub>IH</sub> =2V, V <sub>IL</sub> =0.8V, I <sub>OH</sub> =-400μA	2.7	—	—	V
	V <sub>OL</sub>	V <sub>CC</sub> =4.75V, V <sub>IH</sub> =2V, V <sub>IL</sub> =0.8V	—	—	0.4	V
		I <sub>OL</sub> =4mA	—	—	0.5	
Input current	I <sub>IH</sub>	V <sub>CC</sub> =5.25V, V <sub>I</sub> =2.7V	—	—	20	μA
	I <sub>IL</sub>	V <sub>CC</sub> =5.25V, V <sub>I</sub> =0.4V	—	—	-0.4	mA
	I <sub>I</sub>	V <sub>CC</sub> =5.25V, V <sub>I</sub> =7V	—	—	0.1	mA
Short-circuit output current	I <sub>OS</sub>	V <sub>CC</sub> =5.25V	-20	—	-100	mA
Supply current**	I <sub>CC1</sub>	V <sub>CC</sub> =5.25V	—	6.2	10	mA
Input clamp voltage	V <sub>IK</sub>	V <sub>CC</sub> =4.75V, I <sub>IN</sub> =-18mA	—	—	-1.5	V

\* V<sub>CC</sub>=5V, Ta=25°C

\*\* I<sub>CC</sub> is measured with all outputs open and all inputs grounded.

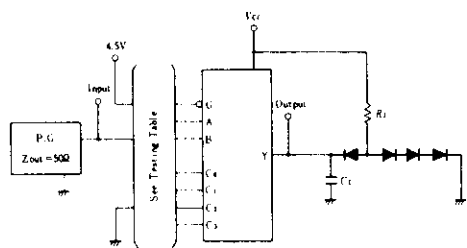
# HD74LS153

## 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



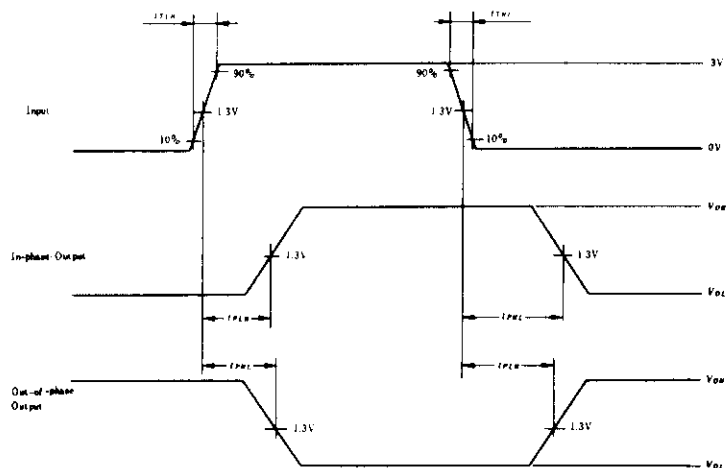
- Notes) 1.  $C_L$  includes probe and jig capacitance.  
2. All diodes are 1S2074 (H).

### 2) Testing Table

Item	Inputs							Output	
	B	A	$C_0$	$C_1$	$C_2$	$C_3$	G	Y	
$t_{PLH}$	GND	GND	IN	X	X	X	GND	OUT	
	GND	4.5V	X	IN	X	X	GND	OUT	
	4.5V	GND	X	X	IN	X	GND	OUT	
	4.5V	4.5V	X	X	X	IN	GND	OUT	
$t_{PHL}$	GND	IN	GND	4.5V	X	X	GND	OUT	
			4.5V	GND					
$t_{PLH}$	IN	GND	GND	X	4.5V	X	GND	OUT	
			4.5V	GND					
$t_{PHL}$	GND	GND	4.5V	X	X	X	IN	OUT	

X: "4.5V" or "GND"

### Waveform



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

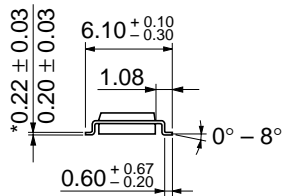
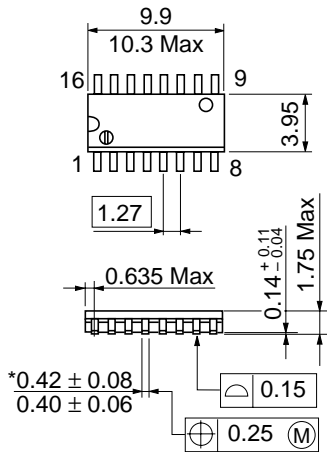


Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g



\*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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