

HD74LS253

Dual 4-line-to-1-line Data Selectors / Multiplexers (with three-state outputs)

REJ03D0468-0300 Rev.3.00 Jul.15.2005

This data selector / multiplexer contains inverters and drivers to supply fully complementary, on-ship, binary decoding data selection to AND-OR gates.

Separate output control inputs are provided for each of the two four-line sections. The three-state outputs can interface with and drive data lines of bus-organized systems. With all but one of the common outputs disabled (at high-impedance state) the low-impedance of the single enabled output will drive the bus line to a high or low logic level.

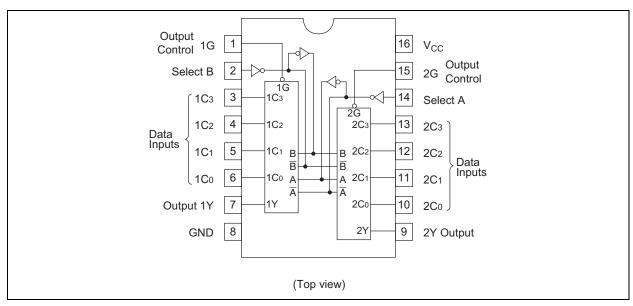
Features

Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS253P	DILP-16 pin	PRDP0016AE-B (DP-16FV)	Р	_
HD74LS253FPEL	SOP-16 pin (JEITA)	PRSP0016DH-B (FP-16DAV)	FP	EL (2,000 pcs/reel)

Note: Please consult the sales office for the above package availability.

Pin Arrangement



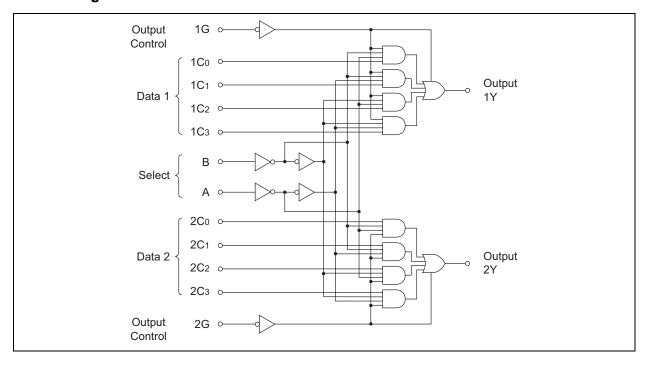
Function Table

Select	inputs		Data i	Output control	Output		
В	Α	C ₀	C ₁	C ₂	C ₃	G	Y
Х	X	X	X	X	X	Н	Z
L	L	L	X	Х	Х	L	L
L	L	Н	X	Х	Х	L	Н
L	Н	X	L	Х	Х	L	L
L	Н	X	Н	Х	Х	L	Н
Н	L	X	X	L	X	L	L
Н	L	X	X	Н	X	L	Н
Н	Н	Х	Х	Х	L	L	L
Н	Н	Х	Х	Х	Н	L	Н

Notes: 1. H; high level, L; low level, X; irrelevant

2. Address inputs A and B are common to both sections.

Block Diagram



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	V _{CC}	7	V
Input voltage	V_{IN}	7	V
Output voltage (off-state)	V _{O (off)}	5.5	V
Operating temperature	Topr	-20 to +75	°C
Power dissipation	P_{T}	400	mW
Storage temperature	Tstg	-65 to +150	°C

Note: Voltage value, unless otherwise noted, are with respect to network ground terminal.

Recommended Operating Conditions

Item	Symbol	Min	Тур	Max	Unit
Supply voltage	V _{CC}	4.75	5.00	5.25	V
Output current	I _{OH}	_	_	-2.6	mA
Output current	I _{OL}	_	_	8	mA
Operating temperature	Topr	-20	25	75	°C

Electrical Characteristics

 $(Ta = -20 \text{ to } +75 \text{ }^{\circ}\text{C})$

Item	Symbol	min.	typ.*	max.	Unit	Condition
Input voltage	V _{IH}	2.0	_	_	V	
Input voltage	V _{IL}	_	_	0.8	V	
Outrot valtage	V _{OH}	2.4	_	_	V	$V_{CC} = 4.75 \text{ V}, V_{IH} = 2 \text{ V}, V_{IL} = 0.8 \text{ V},$ $I_{OH} = -2.6 \text{ mA}$
Output voltage	V _{OL}	_	_	0.4	\/	$I_{OL} = 4 \text{ mA}$ $V_{CC} = 4.75 \text{ V}, V_{IH} = 2 \text{ V},$
	VOL	_	_	0.5	$V = V_{CC} = 4.75 \text{ V}, V_{IH} = 2 \text{ V}, V_{IL} = 0.8 \text{ V}, V_{IDH} = -2.6 \text{ mA}$ $V = V_{IOL} = 4 \text{ mA} \qquad V_{CC} = 4.75 \text{ V}, V_{IH} = 2 \text{ V}, V_{IL} = 0.8 $	
	I _{IH}	_	_	20	μΑ	$V_{CC} = 5.25 \text{ V}, V_{I} = 2.7 \text{ V}$
Input current	I₁∟	_	_	-0.4	mA	$V_{CC} = 5.25 \text{ V}, V_{I} = 0.4 \text{ V}$
	l _l	_	_	0.1	mA	V _{CC} = 5.25 V, V _I = 7 V
0 10 10 000	,	_	_	20	^	V ₀ = 2.7 V
Output current	l _{oz}	 	-20	μΑ	$V_{\rm O} = 0.4 \text{ V}$ $V_{\rm CC} = 5.25 \text{ V}, \text{ V}_{\rm H} = 2 \text{ V}$	
Short-circuit output current	los	-30	_	-130	mA	V _{CC} = 5.25 V
Supply current**	1	_	7	12	mΛ	Condition A
Зирріу сипепі	ICC	$\frac{1}{1}$ $\frac{1}$	Condition B			
Input clamp voltage	V _{IK}	_	_	-1.5	V	$V_{CC} = 4.75 \text{ V}, I_{IN} = -18 \text{ mA}$

Notes: $^*V_{CC} = 5 \text{ V}$, Ta = 25°C

Switching Characteristics

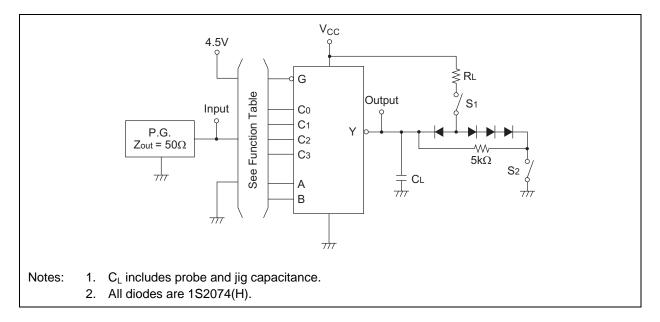
 $(V_{CC} = 5 \text{ V}, \text{ Ta} = 25^{\circ}\text{C})$

Item	Symbol	Inputs	Output	min.	typ.	max.	Unit	Condition
	t _{PLH}	Data	Y		17	25		
Propagation delay time	t _{PHL}	Dala	1	_	13	20	no	
Propagation delay time	t _{PLH}	Select Y	_	30	45	115	$C_L = 15 pF$,	
	t _{PHL}		T 1	_	21	32		$R_L = 2 k\Omega$
Output enable time	t _{ZH}	Output	V	_	15	28	ns ns ns	
Output enable time	t _{ZL}	Control	1	_	15	23		
Output disable time	t _{HZ}	Output	V	_	27	41	no	$C_L = 5 pF,$ $R_L = 2 k\Omega$
Output disable time	t_{LZ}	Control	Control — 15 23 Output — 27 41	115	$R_L = 2 k\Omega$			

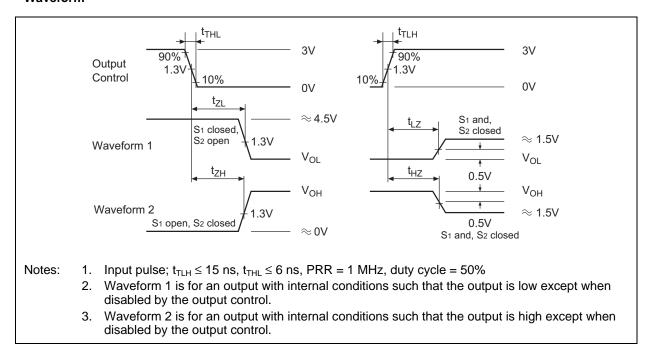
^{**} I_{CC} is measured with the outputs open under the following conditions. A; All inputs grounded, B; Output control at 4.5 V, all inputs grounded.

Testing Method

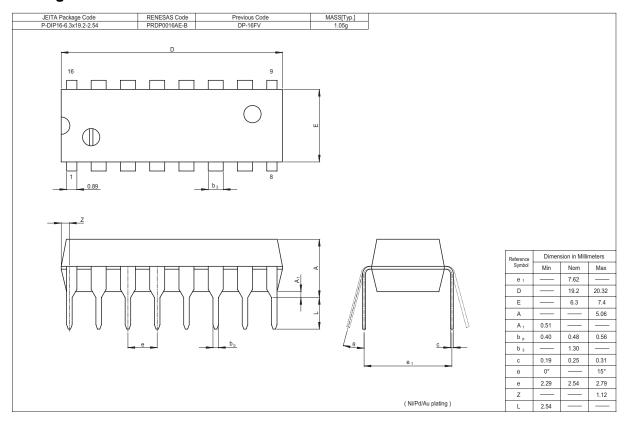
Test Circuit

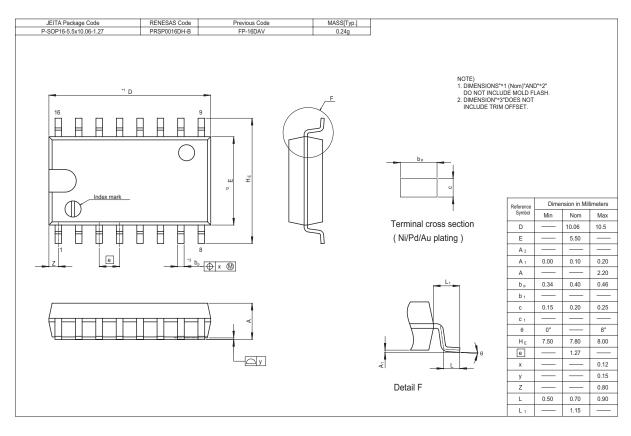


Waveform



Package Dimensions





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