

HD74LS258

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

REJ03D0470-0300

Rev.3.00

Jul.15.2005

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.

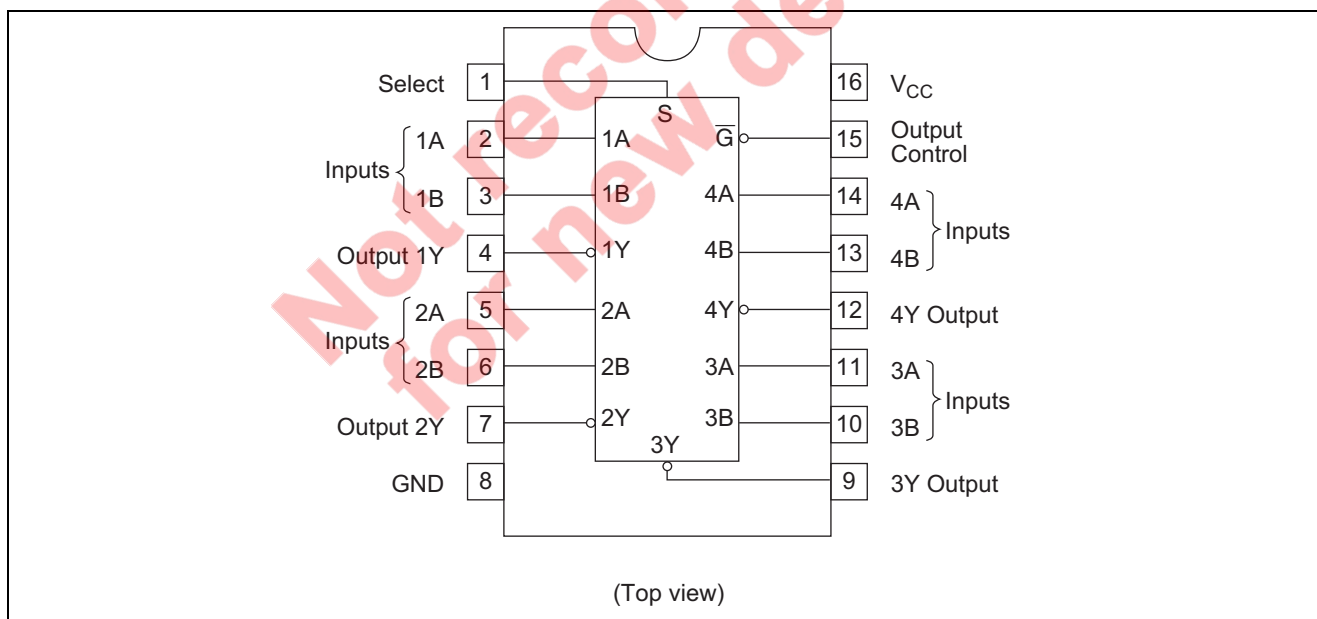
To minimize the possibility that two outputs will attempt to take a common bus to opposite logic levels, the output-enable circuitry is designed such that the output disable times are shorter than the output enable times.

Features

- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS258FPEL	SOP-16 pin (JEITA)	PRSP0016DH-B (FP-16DAV)	FP	EL (2,000 pcs/reel)

Pin Arrangement

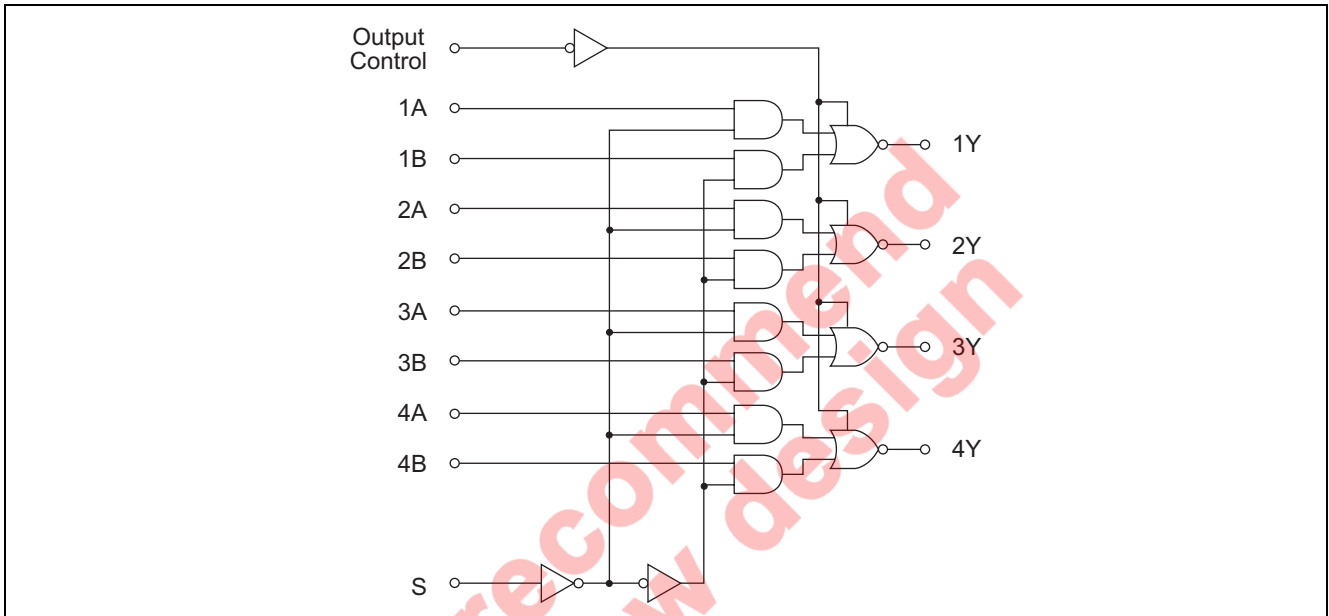


Function Table

Inputs				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

Block Diagram



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC}	7	V
Input voltage	V_{IN}	7	V
Power dissipation	P_T	400	mW
Storage temperature	T_{stg}	-65 to +150	°C

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

Recommended Operating Conditions

Item	Symbol	Min	Typ	Max	Unit
Supply voltage	V_{CC}	4.75	5.00	5.25	V
Output current	I_{OH}	—	—	-2.6	mA
	I_{OL}	—	—	8	mA
Operating temperature	T_{opr}	-20	25	75	°C

Electrical Characteristics

(Ta = -20 to +75 °C)

Item	Symbol	min.	typ.*	max.	Unit	Condition	
Input voltage	V _{IH}	2.0	—	—	V		
	V _{IL}	—	—	0.8	V		
Output voltage	V _{OH}	2.4	—	—	V	V _{CC} = 4.75 V, V _{IH} = 2 V, V _{IL} = 0.8 V, I _{OH} = -2.6 mA	
	V _{OL}	—	—	0.4	V	I _{OL} = 4 mA	V _{CC} = 4.75 V, V _{IH} = 2 V, V _{IL} = 0.8 V
—		—	0.5	V	I _{OL} = 8 mA		
Output Current	I _{OZH}	—	—	20	μA	V _{CC} = 5.25 V, V _{IH} = 2 V, V _O = 2.4 V	
	I _{OZL}	—	—	-20	μA	V _{CC} = 5.25 V, V _{IH} = 2 V, V _O = 0.4 V	
Input current	S	I _{IH}	—	—	40	μA	V _{CC} = 5.25 V, V _I = 2.7 V
	except S		—	—	20	μA	
	S	I _{IL}	—	—	-0.8	mA	V _{CC} = 5.25 V, V _I = 0.4 V
	except S		—	—	-0.4	mA	
S	I _I	—	—	0.2	mA	V _{CC} = 5.25 V, V _I = 7 V	
except S		—	—	0.1	mA		
Short-circuit output current	I _{OS}	-30	—	-130	mA	V _{CC} = 5.25 V	
Supply current**	All outputs high	I _{CC}	—	—	7	mA	V _{CC} = 5.25 V
	All outputs low		—	—	11	mA	
	All outputs off		—	—	12	mA	
Input clamp voltage	V _{IK}	—	—	-1.5	V	V _{CC} = 4.75 V, I _{IN} = -18 mA	

Notes: * V_{CC} = 5 V, Ta = 25°C

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

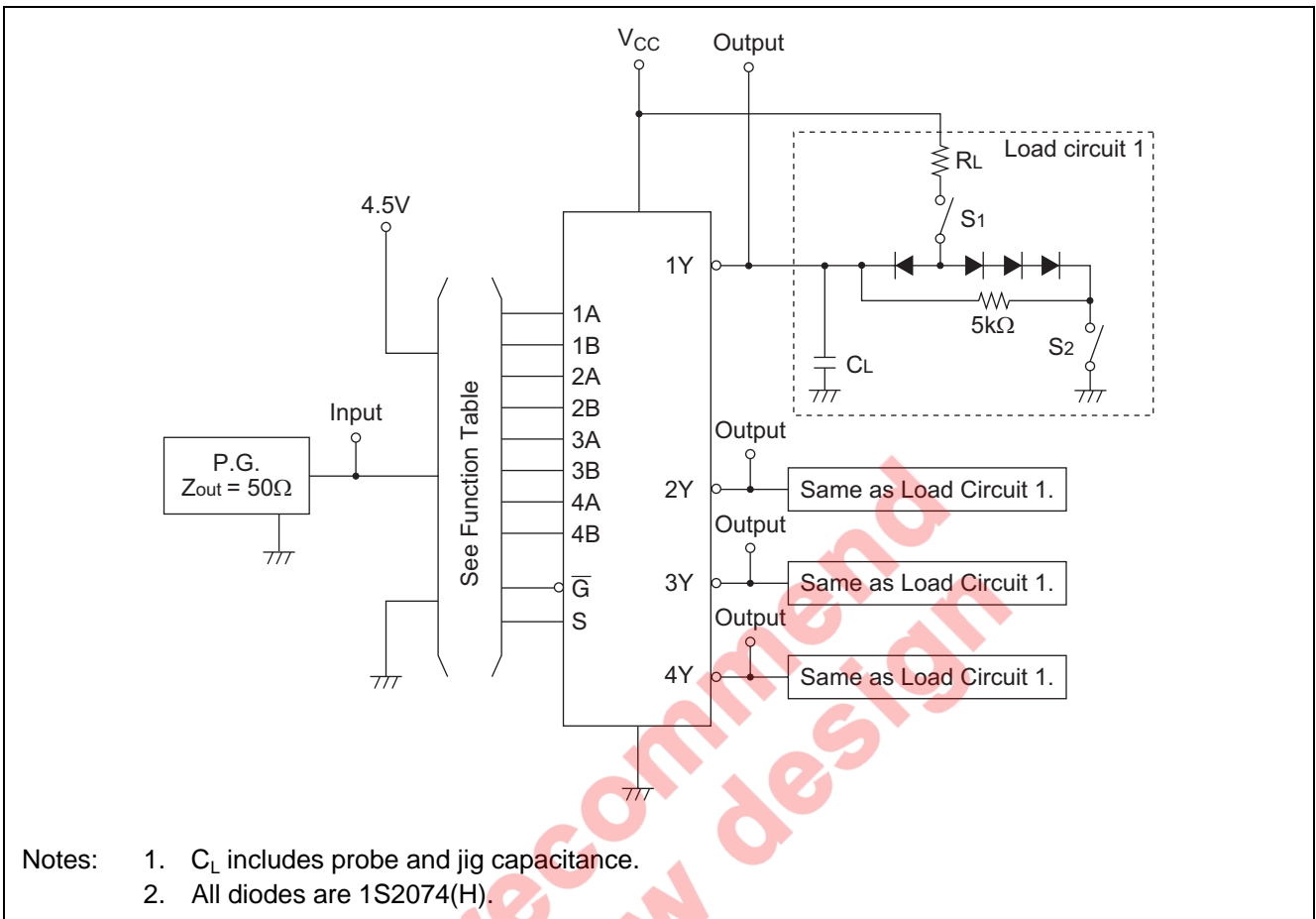
Switching Characteristics

(V_{CC} = 5 V, Ta = 25°C)

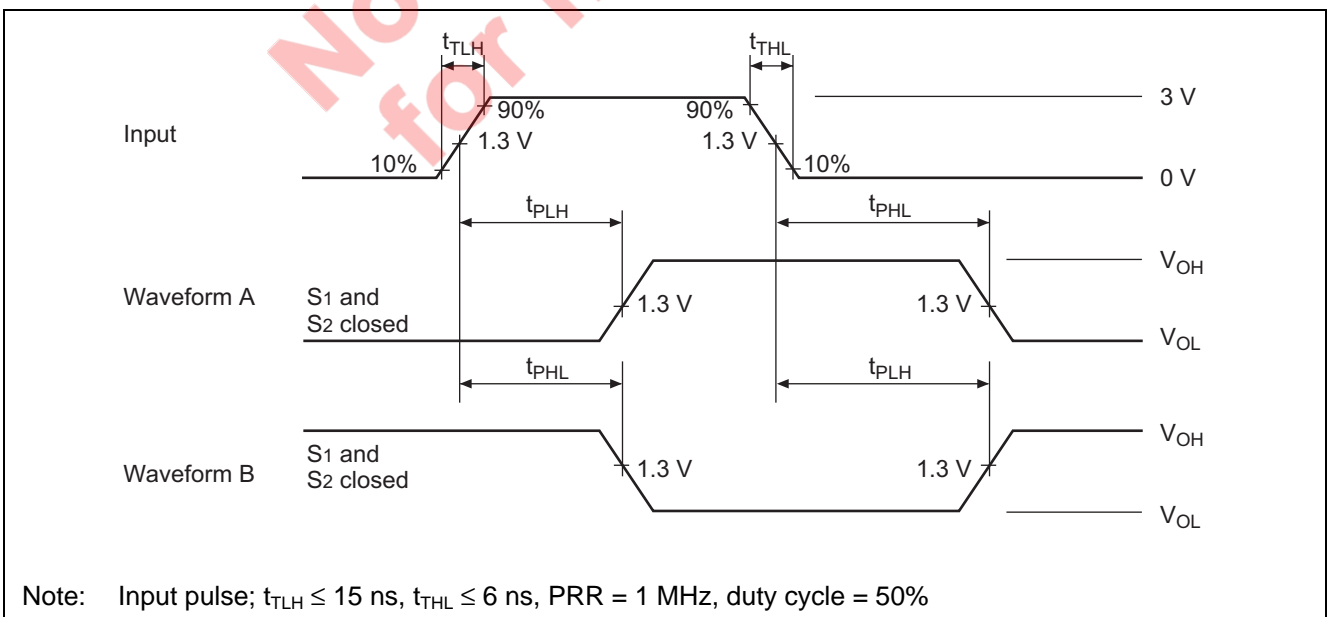
Item	Symbol	Inputs	Output	min.	typ.	max.	Unit	Condition
Propagation delay time	t _{PLH}	A, B	Y	—	12	18	ns	C _L = 15 pF, R _L = 2 kΩ
	t _{PHL}			—	12	18		
	t _{PLH}	S	Y	—	14	21	ns	
	t _{PHL}			—	14	21		
Output enable time	t _{ZH}	OC	Y	—	20	30	ns	
	t _{ZL}			—	20	30		
Output disable time	t _{HZ}	OC	Y	—	18	30	ns	C _L = 5 pF, R _L = 2 kΩ
	t _{LZ}			—	16	25		

Testing Method

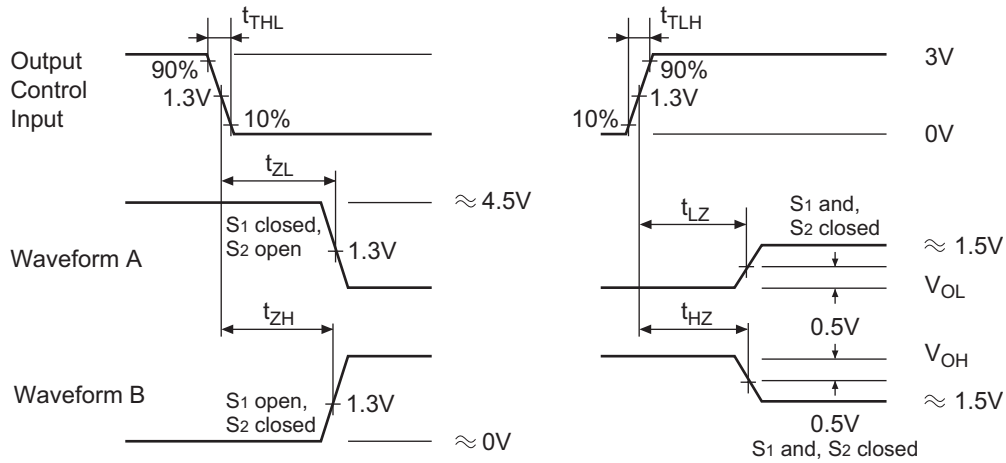
Test Circuit



Waveforms 1



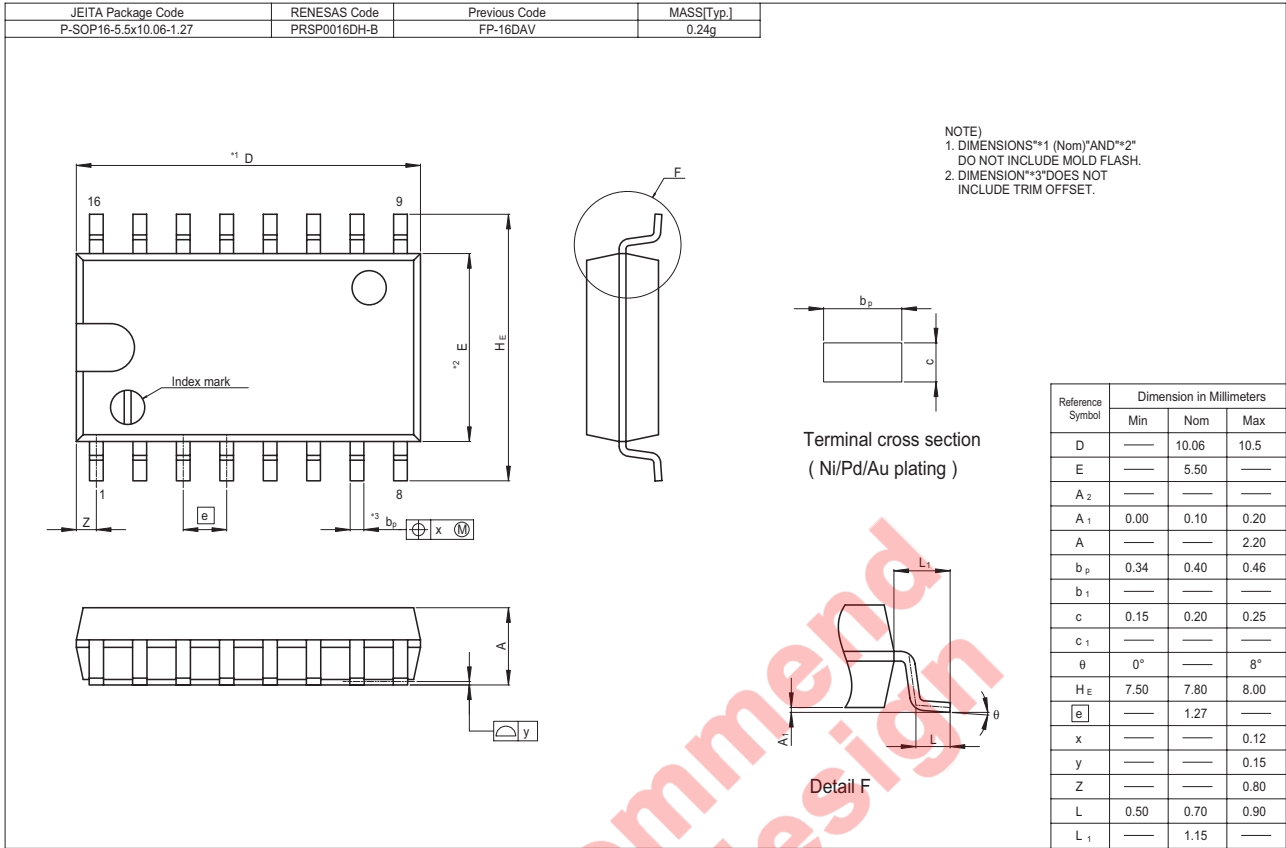
Waveforms 2



- Notes:
1. Input pulse; $t_{TLH} \leq 15$ ns, $t_{TLL} \leq 6$ ns, PRR = 1 MHz, duty cycle = 50%
 2. Waveform A is for an output with internal conditions such that the output is low except when disabled by the output control.
 3. Waveform B is for an output with internal conditions such that the output is high except when disabled by the output control.

Not recommended for new design

Package Dimensions



Not recommended
 for new design

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