

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.

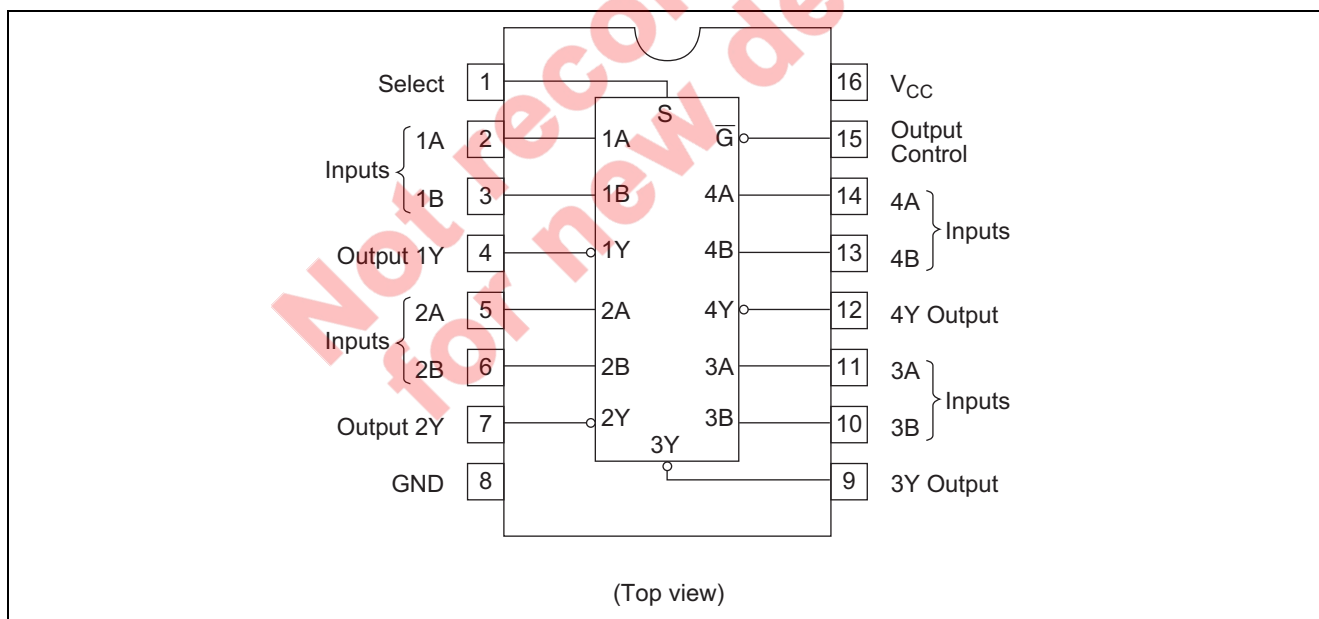
To minimize the possibility that two outputs will attempt to take a common bus to opposite logic levels, the output-enable circuitry is designed such that the output disable times are shorter than the output enable times.

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

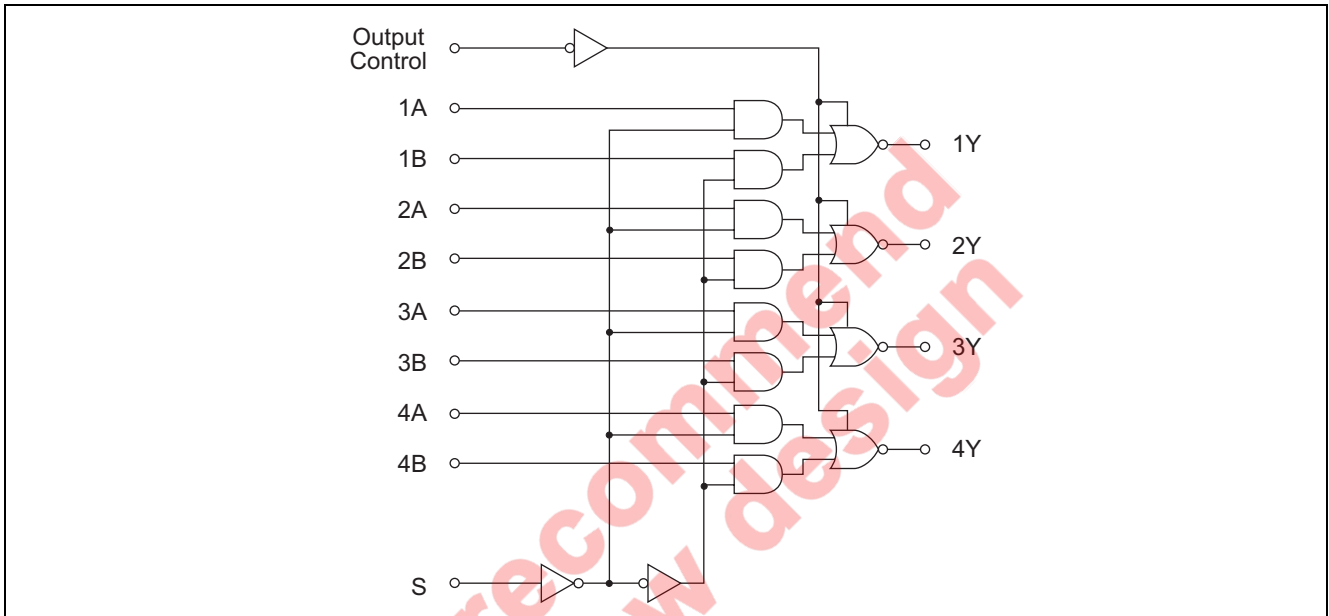


Function Table

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
			—	—	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.

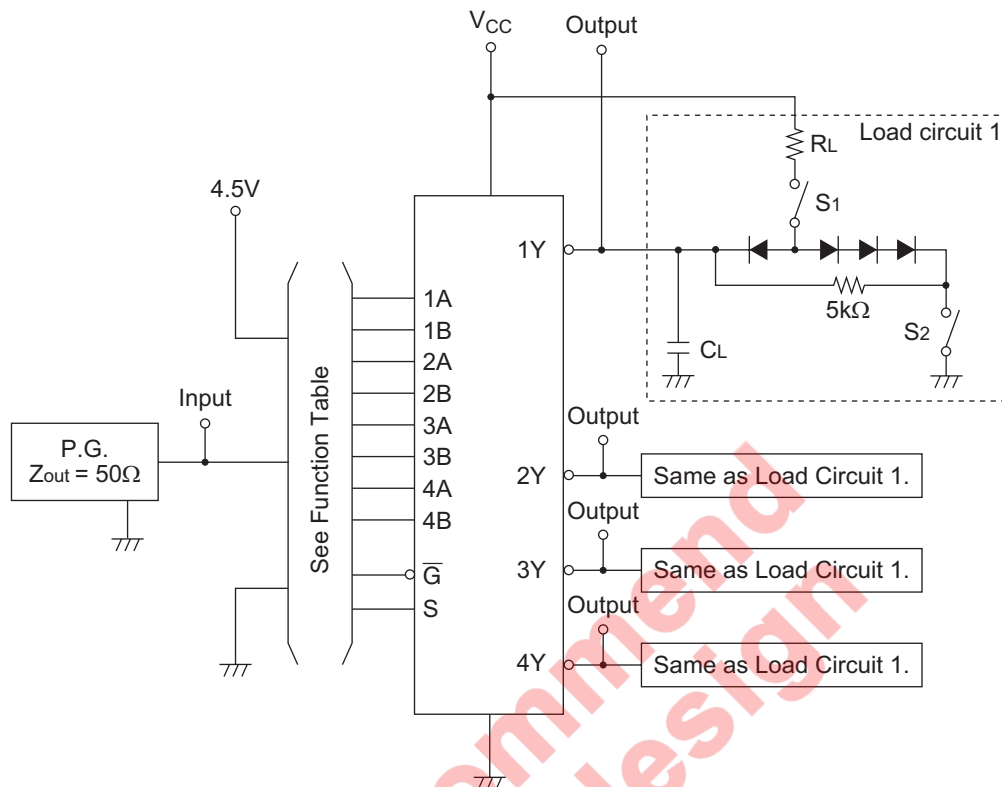
Switching Characteristics

(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		

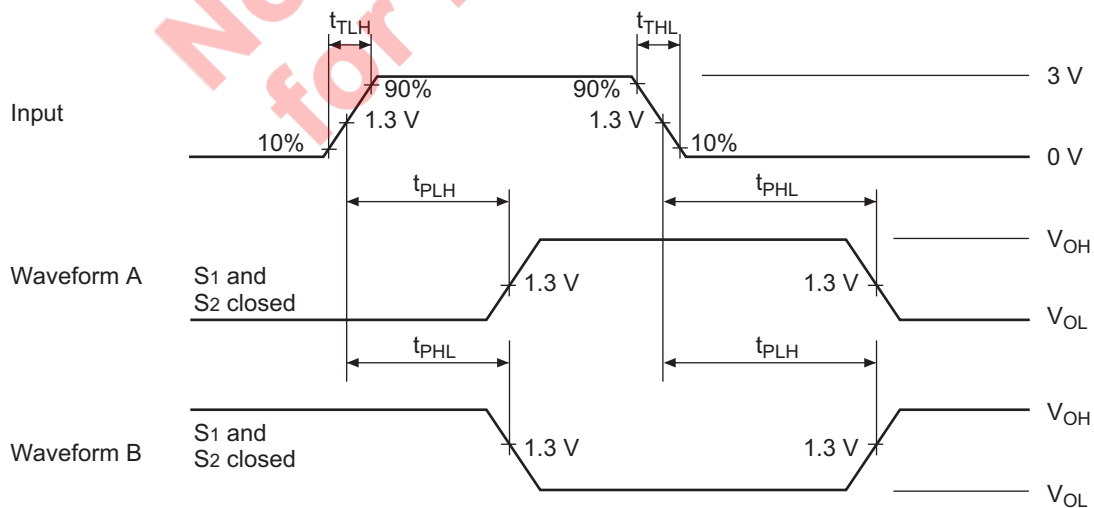
Testing Method

Test Circuit



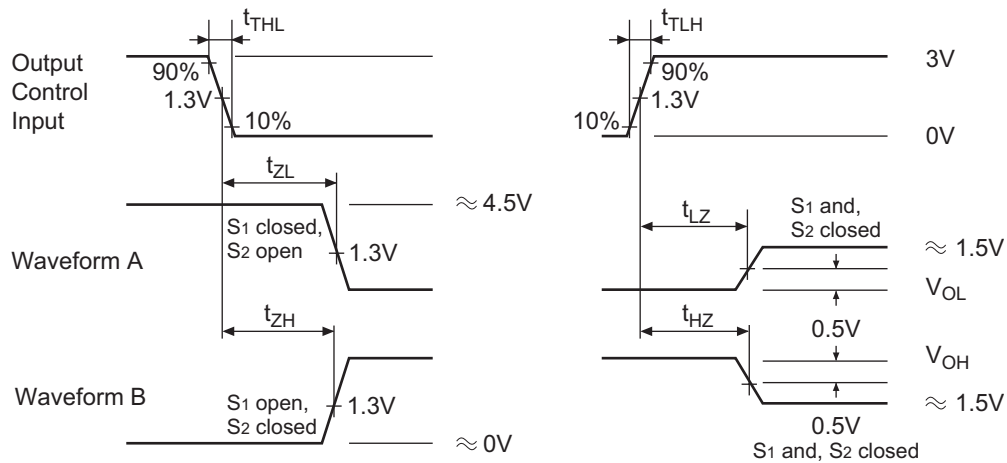
- Notes:
1. C_L includes probe and jig capacitance.
 2. All diodes are 1S2074(H).

Waveforms 1



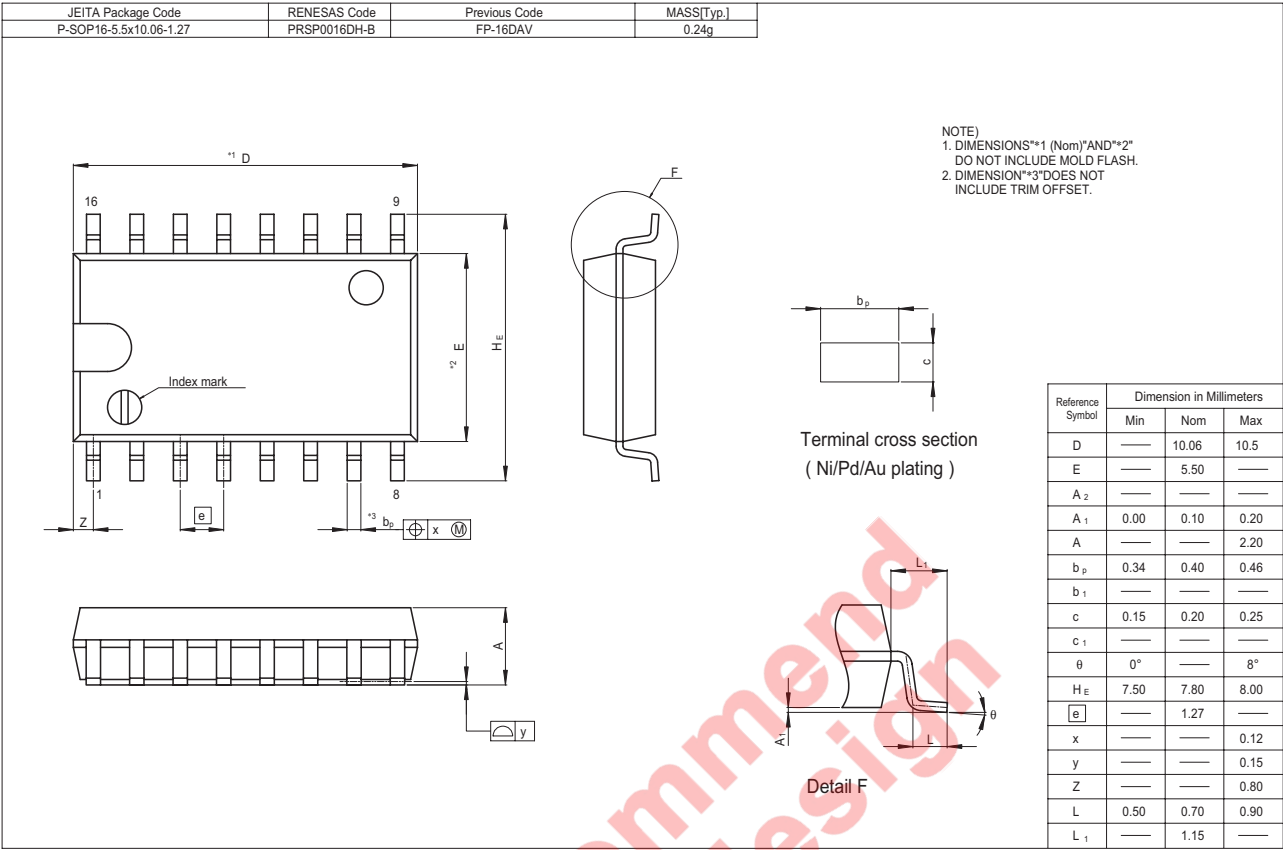
Note: Input pulse; $t_{TLH} \leq 15 \text{ ns}$, $t_{THL} \leq 6 \text{ ns}$, $\text{PRR} = 1 \text{ MHz}$, duty cycle = 50%

Waveforms 2



- Notes:
1. Input pulse; $t_{TLH} \leq 15$ ns, $t_{THL} \leq 6$ 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.

Package Dimensions



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