

# 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.

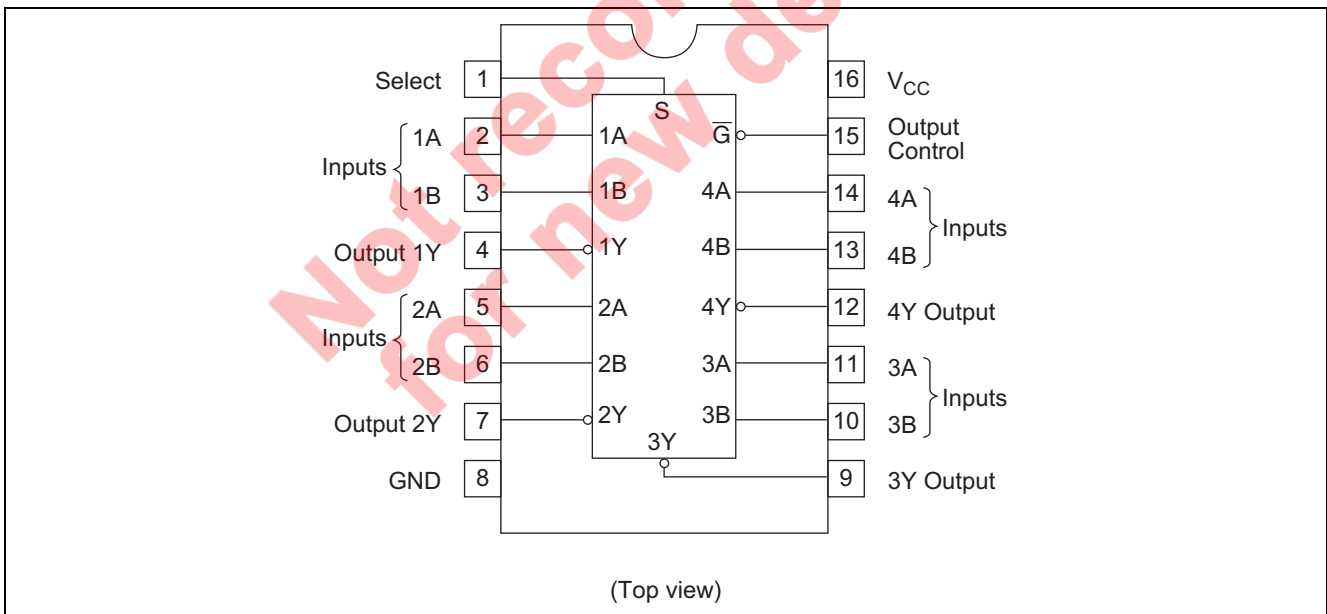
To minimize the possibility that two outputs will attempt to take a common bus to opposite logic levels, the output-enable circuitry is designed such that the output disable times are shorter than the output enable times.

### 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

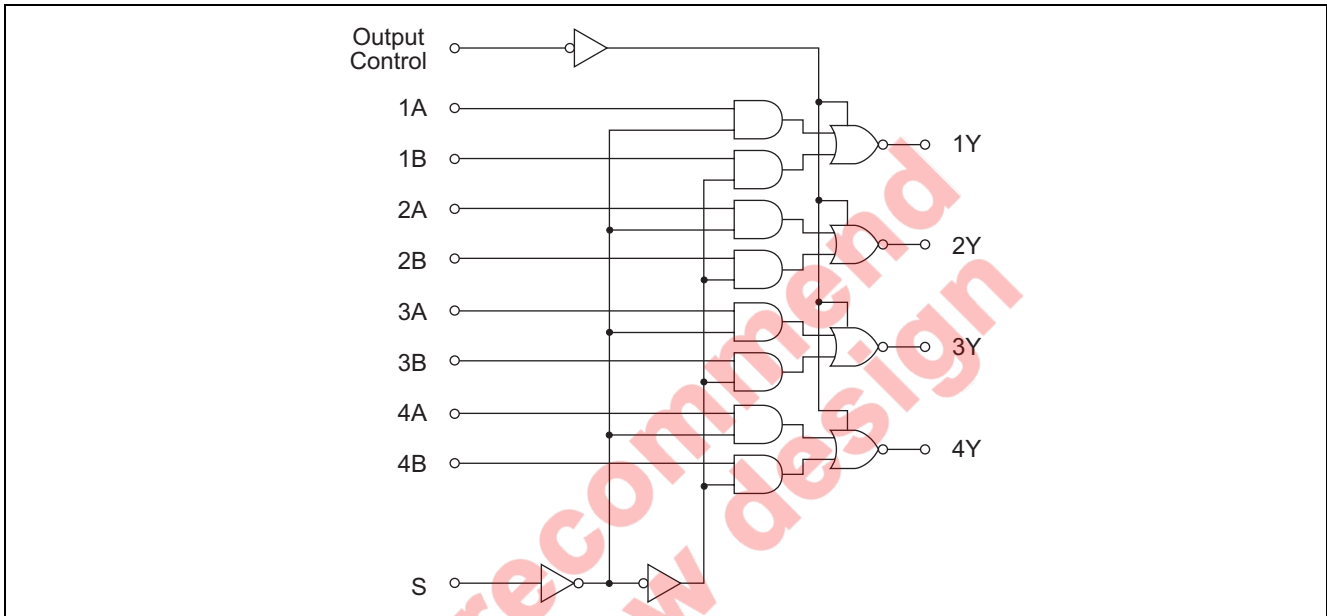


**Function Table**

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 <sub>IH</sub>	2.0	—	—	V		
	V <sub>IL</sub>	—	—	0.8	V		
Output voltage	V <sub>OH</sub>	2.4	—	—	V	V <sub>CC</sub> = 4.75 V, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = 0.8 V, I <sub>OH</sub> = -2.6 mA	
	V <sub>OL</sub>	—	—	0.4	V	I <sub>OL</sub> = 4 mA V <sub>CC</sub> = 4.75 V, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = 0.8 V	
—		—	0.5	V	I <sub>OL</sub> = 8 mA		
Output Current	I <sub>OZH</sub>	—	—	20	μA	V <sub>CC</sub> = 5.25 V, V <sub>IH</sub> = 2 V, V <sub>O</sub> = 2.4 V	
	I <sub>OZL</sub>	—	—	-20	μA	V <sub>CC</sub> = 5.25 V, V <sub>IH</sub> = 2 V, V <sub>O</sub> = 0.4 V	
Input current	S	I <sub>IH</sub>	—	—	40	μA	V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 2.7 V
	except S		—	—	20	μA	
	S	I <sub>IL</sub>	—	—	-0.8	mA	V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 0.4 V
	except S		—	—	-0.4	mA	
S	I <sub>I</sub>	—	—	0.2	mA	V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 7 V	
except S		—	—	0.1	mA		
Short-circuit output current	I <sub>OS</sub>	-30	—	-130	mA	V <sub>CC</sub> = 5.25 V	
Supply current**	All outputs high	I <sub>CC</sub>	—	—	7	mA	V <sub>CC</sub> = 5.25 V
	All outputs low		—	—	11	mA	
	All outputs off		—	—	12	mA	
Input clamp voltage	V <sub>IK</sub>	—	—	-1.5	V	V <sub>CC</sub> = 4.75 V, I <sub>IN</sub> = -18 mA	

Notes: \* V<sub>CC</sub> = 5 V, Ta = 25°C

\*\* I<sub>CC</sub> is measured with all outputs open and all possible inputs grounded while achieving the stated output conditions.

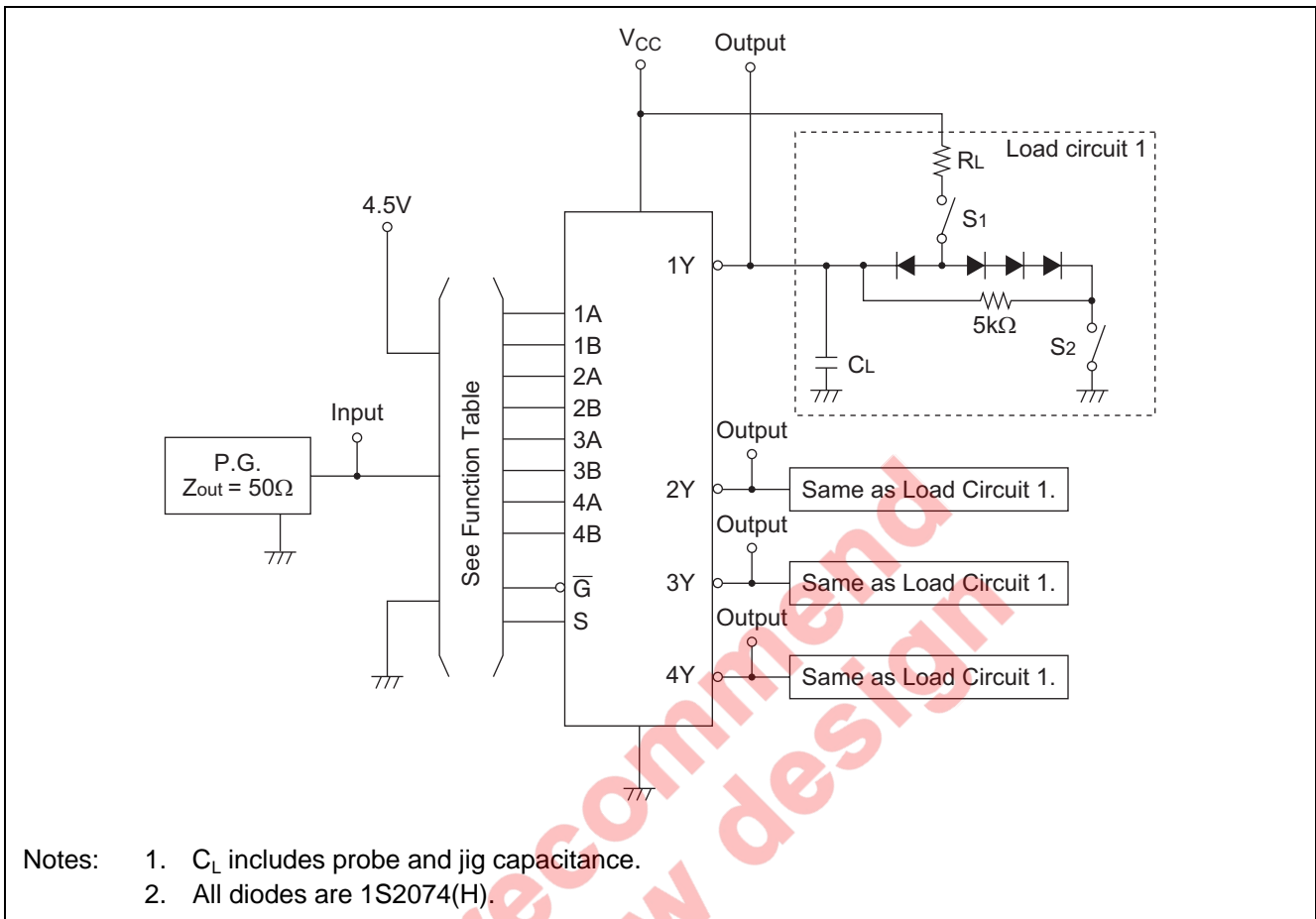
**Switching Characteristics**

(V<sub>CC</sub> = 5 V, Ta = 25°C)

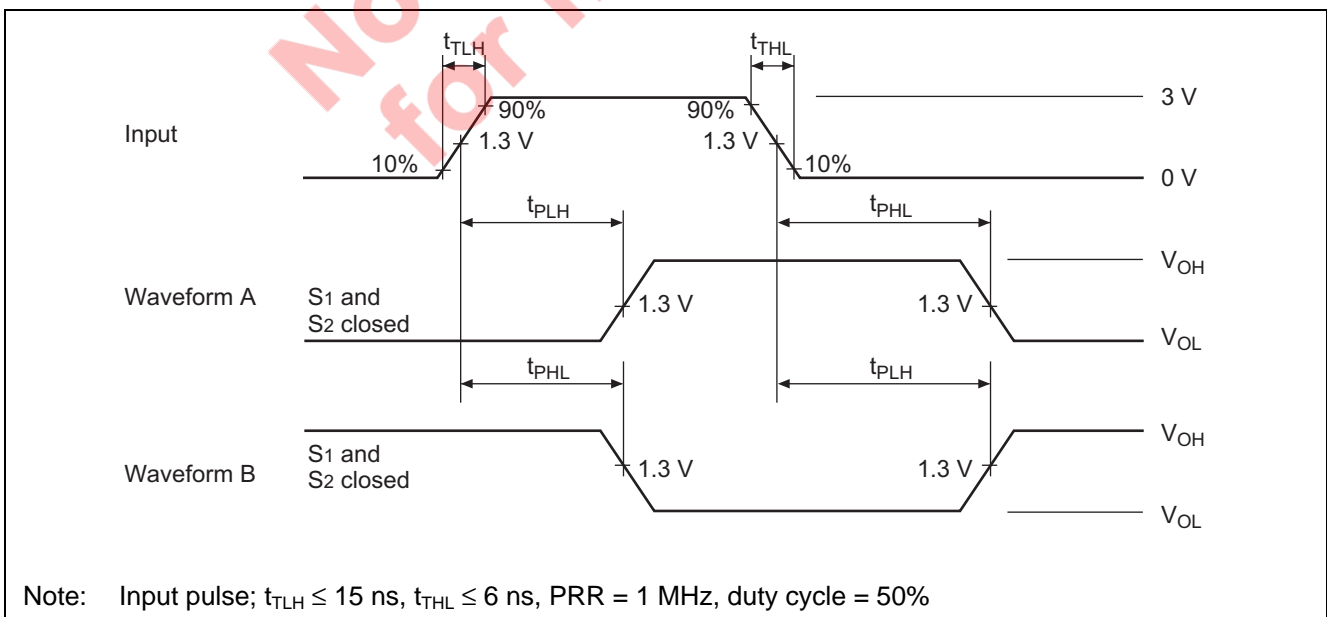
Item	Symbol	Inputs	Output	min.	typ.	max.	Unit	Condition
Propagation delay time	t <sub>PLH</sub>	A, B	Y	—	12	18	ns	C <sub>L</sub> = 15 pF, R <sub>L</sub> = 2 kΩ
	t <sub>PHL</sub>			—	12	18		
	t <sub>PLH</sub>	S	Y	—	14	21	ns	
	t <sub>PHL</sub>			—	14	21		
Output enable time	t <sub>ZH</sub>	OC	Y	—	20	30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

## Testing Method

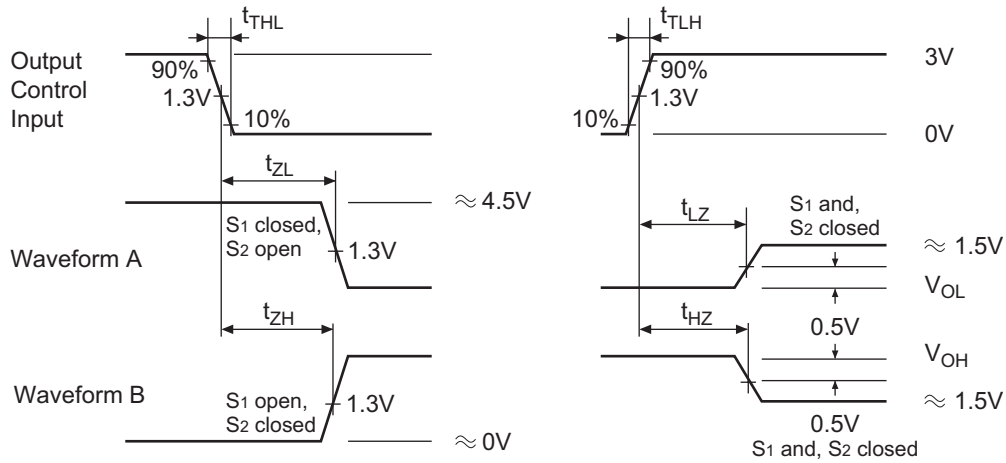
### Test Circuit



### Waveforms 1



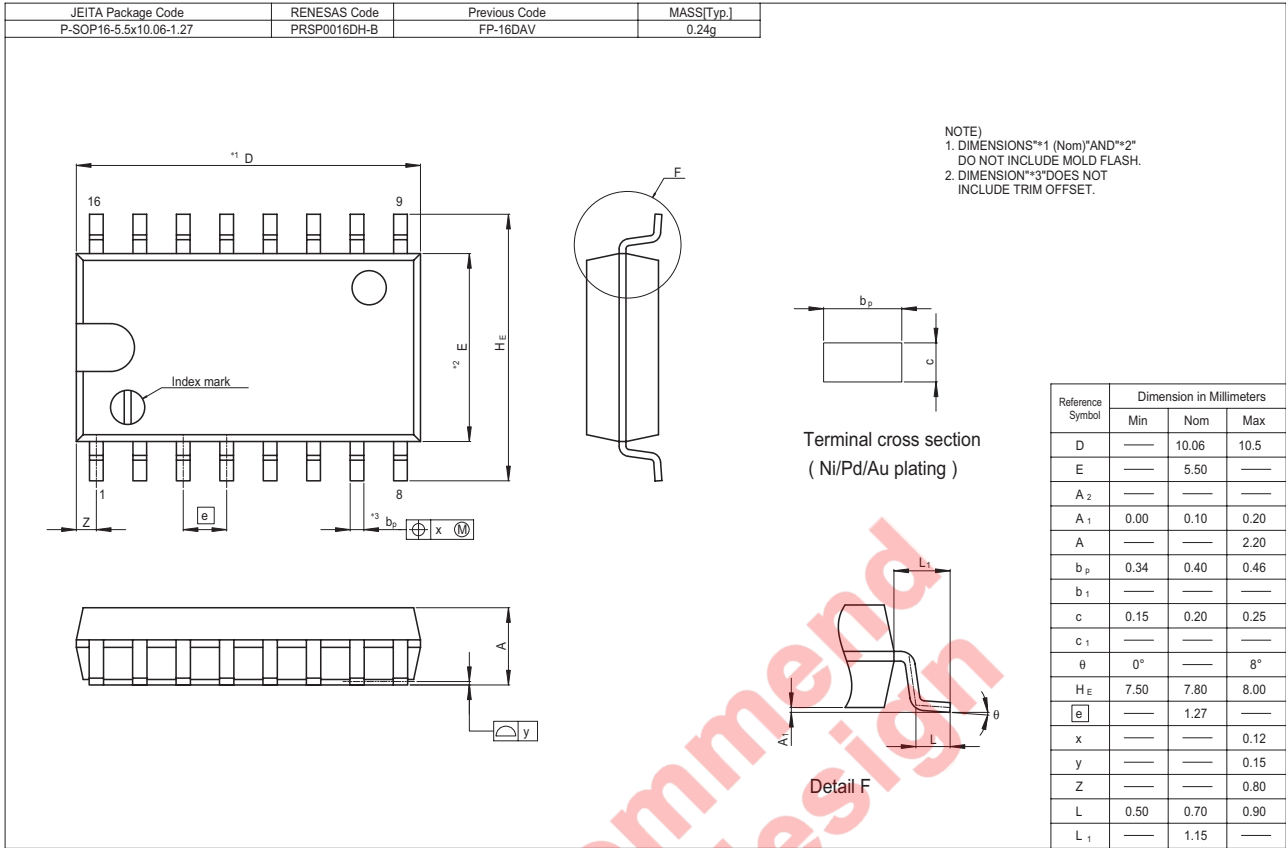
Waveforms 2



- 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.

Not recommended for new design

Package Dimensions



Not recommended  
 for new design

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#### **Renesas Technology (Shanghai) Co., Ltd.**

Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China  
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

#### **Renesas Technology Singapore Pte. Ltd.**

1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632  
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#### **Renesas Technology Korea Co., Ltd.**

Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea  
Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

#### **Renesas Technology Malaysia Sdn. Bhd.**

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
Tel: <603> 7955-9390, Fax: <603> 7955-9510