

DN74LS258A 74LS258A

Quad 2-line to 1-line Data Selectors/Multiplexers (with 3-state Outputs)

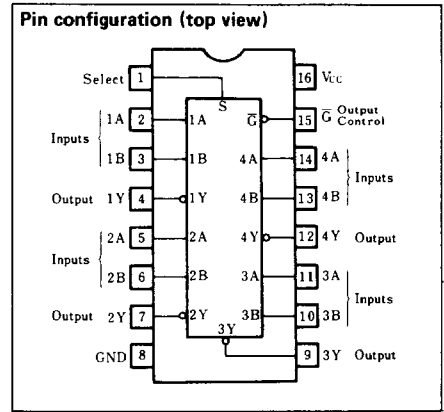
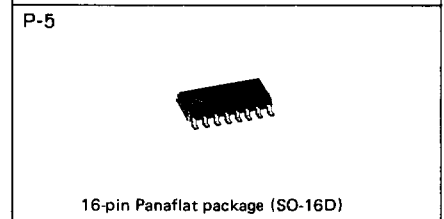
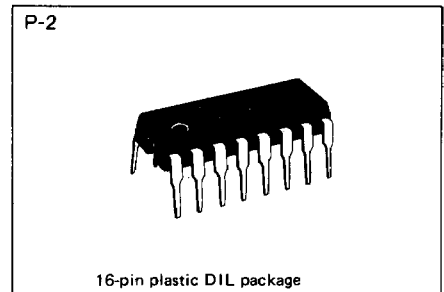
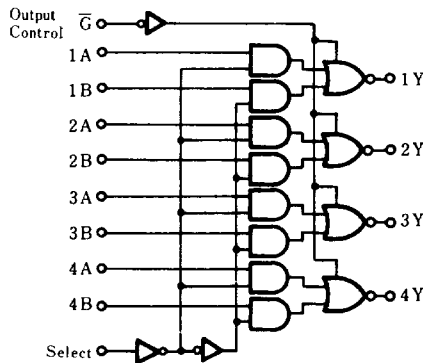
■ Description

DN74LS258A contains four 2-line to 1-line data selector/multiplexer circuits with 3-state outputs.

■ Features

- Inverted output
- Common output-control input for all four circuits
- Common select input for all four circuits
- 3-state outputs
- Wide operating temperature range ($T_a = -20$ to $+75^\circ\text{C}$)

■ Logic diagram



■ Recommended operating conditions

Parameter	Sym	Min	Typ	Max	Unit
Supply voltage	V_{CC}	4.75	5.00	5.25	V
Output current	I_{OH}			-2.6	mA
	I_{OL}			24	mA
Operating temperature range	T_{opr}	-20	25	75	$^\circ\text{C}$

■ DC characteristics (Ta = -20 ~ +75 °C)

Parameter		Sym	Test conditions	Min	Typ*	Max	Unit
Input voltage		V _{IH}		2.0			V
		V _{IL}				0.8	V
Output voltage		V _{OH}	V _{CC} = 4.75 V, V _{IH} = 2 V V _{IL} = 0.8 V, I _{OH} = -2.6 mA	2.4	3.1		V
		V _{OL1}	V _{CC} = 4.75 V V _{IH} = 2 V		0.25	0.4	V
		V _{OL2}	V _{IL} = 0.8 V		0.35	0.5	V
Input current	S	I _{IH}	V _{CC} = 5.25 V V _i = 2.7 V			40	μA
	Inputs other than S					20	μA
	S	I _{IL}	V _{CC} = 5.25 V V _i = 0.4 V			-0.8	mA
	Inputs other than S					-0.4	mA
	S	I _I	V _{CC} = 5.25 V V _i = 7 V			0.2	mA
	Inputs other than S					0.1	mA
Output current**		I _{OZH}	V _{CC} = 5.25 V V _{IH} = 2 V			20	μA
		I _{OZL}				-20	μA
Output short circuit current***		I _{OS}	V _{CC} = 5.25 V, V _O = 0 V	-15		-130	mA
Input clamp voltage		V _{IK}	V _{CC} = 4.75 V, I _i = -18 mA			-1.5	V
**** Supply current	All outputs HIGH	I _{CC}	V _{CC} = 5.25 V		4	7	mA
	All outputs LOW				8.8	14	mA
	All outputs OFF				12	19	mA

* When constant at V_{CC} = 5V, Ta = 25°C.

** OFF condition (high impedance condition).

*** Only one output at a time short circuited to GND. Also, short circuit time to GND within 7 seconds.

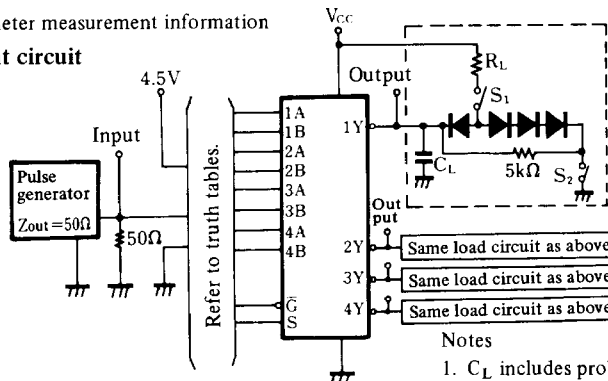
**** Measured with all outputs open and all possible inputs grounded in the range that fulfills the desired output condition.

■ Switching characteristics (V_{CC} = 5V, Ta = 25°C)

Parameter	Sym	Inputs	Outputs	Test conditions	Min	Typ	Max	Unit
Propagation delay time	t _{PLH}	A, B	Y	R _L = 667 Ω C _L = 45 pF		12	18	ns
	t _{PHL}					12	18	ns
	t _{PLH}	S	Y			14	21	ns
	t _{PHL}					14	21	ns
Output enable time	t _{PZH}	G	Y	R _L = 667 Ω C _L = 5 pF		20	30	ns
	t _{PZL}					20	30	ns
Output disable time	t _{PHZ}	G	Y			18	30	ns
	t _{PLZ}					18	25	ns

※ Switching parameter measurement information

1. Measurement circuit

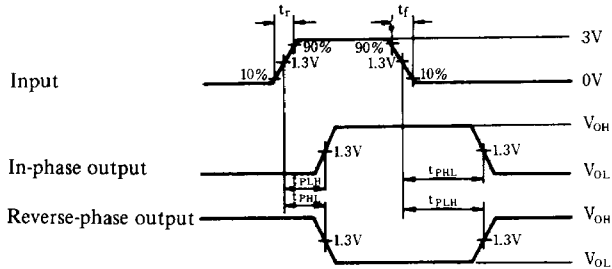


Notes

1. C_L includes probe and tool floating capacitance.
2. Diodes are all MA161 or equivalent.

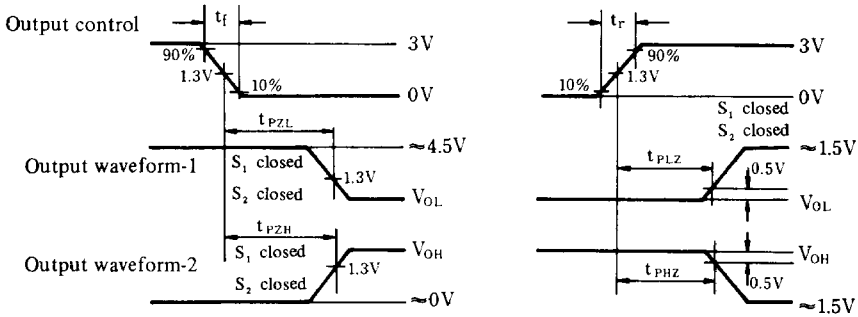
2. Waveforms

Waveforms-1



Notes

1. Input waveform: $t_r \leq 15\text{ns}$, $t_f \leq 6\text{ns}$, $\text{PRR} = 1\text{MHz}$, duty cycle = 50%.



Notes

1. Input waveform: $t_r \leq 15\text{ns}$, $t_f \leq 6\text{ns}$, $\text{PRR} = 1\text{MHz}$, duty cycle = 50%.
2. Except when the output is disabled by the output control, output waveform-1 occurs as a result of internal conditions such as a LOW voltage level.
3. Except when the output is disabled by the output control, output waveform-2 occurs as a result of internal conditions such as a HIGH voltage level.
4. When measuring t_{PLH} and t_{PHL} , S_1 and S_2 are closed.

■ Truth tables

Inputs				Outputs
G	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

Notes

1. H: HIGH voltage level.
2. L: LOW voltage level.
3. X: Either HIGH or LOW; doesn't matter.
4. Z: High impedance.