

# XC74WL157ASR



CMOS Logic

- ◆ CMOS Logic 2-Channel Multiplexer
- ◆ Operating Voltage Range : 2V ~ 5.5V
- ◆ High Speed Operations :  $t_{pd} = 4.1\text{ns TYP}$
- ◆ Low Power Consumption :  $2\mu\text{A (max)}$
- ◆ MSOP-8B Package

## Applications

- Palmtops
- Digital Equipment

## Description

XC74WL157ASR is 2-channel Multiplexer manufactured using silicon gate CMOS processes. The small quiescent current, which is one of the features of the CMOS logic, gives way to high speed operations which enables LS-TTL.

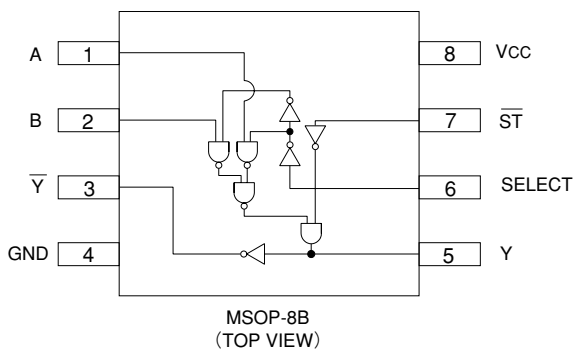
With wave forming buffers connected internally, stabilized output can be achieved as the series offers high noise immunity.

As the series is integrated into a mini molded, MSOP-8B package, high density mounting is possible.

## Features

- High Speed Operations** :  $t_{pd} = 4.1\text{ns TYP (}V_{CC}=5\text{V)}$
- Operating Voltage Range** : 2V ~ 5.5V
- Low Power Consumption** :  $2\mu\text{A (max)}$
- Small Package** : MSOP-8B

## Pin Configuration



## Functions

INPUT		OUTPUT			
ST	SELECT	A	B	Y	Y
H	X	X	X	L	H
L	L	L	X	L	H
L	L	H	X	H	L
L	H	X	L	L	H
L	H	X	H	H	L

H = High Level

L = Low Level

X = Don't care

## Absolute Maximum Ratings

Ta=-40°C~85°C

PARAMETER	SYMBOL	RATINGS	UNITS
Power Supply Voltage	VCC	-0.5~+6.0	V
Input Voltage	VIN	-0.5~+6.0	V
Output Voltage	VOUT	-0.5~VCC+0.5	V
Input Diode Current	I <sub>IK</sub>	-20	mA
Output Diode Current	I <sub>OK</sub>	±20	mA
Switch Output Current	I <sub>OUT</sub>	±25	mA
VCC, GND Current	I <sub>CC</sub> , I <sub>IGND</sub>	±50	mA
Power Dissipation (Ta = 25°C)	P <sub>d</sub>	300	mW
Storage Temperature	T <sub>stg</sub>	-65~+150	°C

Note : Voltage is all Ground standardized.

## Recommended Operating Conditions

PARAMETER	SYMBOL	CONDITIONS	UNITS
Supply Voltage	VCC	2~5.5	V
Input Voltage	VIN	0~5.5	V
Output Voltage	VOUT	0~VCC	V
Operating Temperature	T <sub>opr</sub>	-40~+85	°C
Input Rise and Fall Time	tr, tf	0~200 (VCC=3.3V)	ns
		0~100 (VCC=5V)	

## DC Electrical Characteristics

PARAMETER	SYMBOL	VCC (V)	CONDITIONS	Ta=25°C			Ta=-40~85°C		UNITS	
				MIN	TYP	MAX	MIN	MAX		
Input Voltage	V <sub>IH</sub>	2.0		1.5	—	—	1.5	—	V	
		3.0		2.1	—	—	2.1	—		
		5.5		3.85	—	—	3.85	—		
	V <sub>IL</sub>	2.0		—	—	0.5	—	0.5	V	
		3.0		—	—	0.9	—	0.9		
		5.5		—	—	1.65	—	1.65		
Output Voltage	V <sub>OH</sub>	2.0	V <sub>IN</sub> =V <sub>IH</sub>	I <sub>OH</sub> =-50 μA	1.9	2.0	—	1.9	—	V
		3.0			2.9	3.0	—	2.9	—	
		4.5			4.4	4.5	—	4.4	—	
		3.0		I <sub>OH</sub> =-4mA	2.58	—	—	2.48	—	
		4.5			I <sub>OH</sub> =-8mA	3.94	—	—	3.80	
	V <sub>OL</sub>	V <sub>IN</sub> =V <sub>IL</sub>	I <sub>OL</sub> =50 μA	2.0	—	—	0.1	—	0.1	V
				3.0	—	—	0.1	—	0.1	
				4.5	—	—	0.1	—	0.1	
			3.0	I <sub>OL</sub> =4mA	—	—	0.36	—	0.44	
			4.5		I <sub>OL</sub> =8mA	—	—	0.36	—	
Input Current	I <sub>IN</sub>	0~5.5	V <sub>IN</sub> =VCC or GND	-0.1	—	0.1	-1.0	1.0	μA	
Quiescent Supply Current	I <sub>CC</sub>	5.5	V <sub>IN</sub> =VCC or GND	—	—	2.0	—	20.0	μA	

## Switching Electrical Characteristics

(tr=tf=3ns)

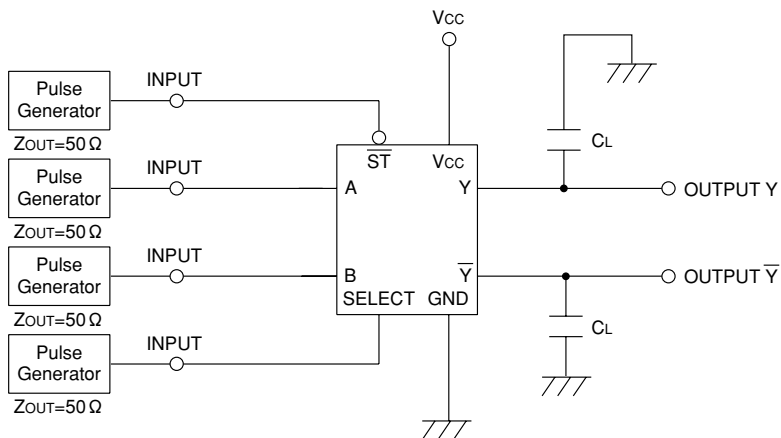
PARAMETER	SYMBOL	CONDITIONS		Ta=25°C			Ta=-40~85°C		UNITS
				CL	VCC (V)	MIN	TYP	MAX	
Propagation Delay Time (A, B-Y, $\bar{Y}$ )	tPLH	15pF	3.3	—	6.2	9.7	1	11.5	ns
			5.0	—	4.1	6.4	1	7.5	
		50pF	3.3	—	8.7	13.2	1	15	ns
			5.0	—	5.6	8.4	1	9.5	
	tPHL	15pF	3.3	—	6.2	9.7	1	11.5	ns
			5.0	—	4.1	6.4	1	7.5	
		50pF	3.3	—	8.7	13.2	1	15	ns
			5.0	—	5.6	8.4	1	9.5	
Propagation Delay Time (SELECT-Y, $\bar{Y}$ )	tPLH	15pF	3.3	—	8.4	13.2	1	15.5	ns
			5.0	—	5.3	8.1	1	9.5	
		50pF	3.3	—	10.9	16.7	1	19	ns
			5.0	—	6.8	10.1	1	11.5	
	tPHL	15pF	3.3	—	8.4	13.2	1	15.5	ns
			5.0	—	5.3	8.1	1	9.5	
		50pF	3.3	—	10.9	16.7	1	19	ns
			5.0	—	6.8	10.1	1	11.5	
Propagation Delay Time ( $\overline{ST}$ -Y, $\bar{Y}$ )	tPLH	15pF	3.3	—	8.7	13.6	1	16	ns
			5.0	—	5.6	8.6	1	10	
		50pF	3.3	—	11.2	17.1	1	19.5	ns
			5.0	—	7.1	10.6	1	12	
	tPHL	15pF	3.3	—	8.7	13.6	1	16	ns
			5.0	—	5.6	8.6	1	10	
		50pF	3.3	—	11.2	17.1	1	19.5	ns
			5.0	—	7.1	10.6	1	12	
Input Capacitance	CIN	—	—	—	4	10	—	10	pF
Power Dissipation Capacitance	Cpd	—	—	—	20	—	—	—	pF

## Noise Characteristics

(tr=tf=3ns)

PARAMETER	SYMBOL	CONDITIONS		Ta=25°C			UNITS
				CL	VCC(V)	MIN	
Not functioning output maximum dynamic VOL	VOLP	50pF	5.0	—	0.3	0.8	V
Not functioning output minimum dynamic VOL	VOLV	50pF	5.0	-0.8	-0.3	—	V
Minimum dynamic VIH	VIHD	50pF	5.0	—	—	3.5	V
Maximum dynamic VIL	VILD	50pF	5.0	—	—	1.5	V

### Typical Application Circuit



### Waveforms

