

- ◆ CMOS Logic Dual 2-input AND Gate
- ◆ Operating Voltage Range : 2V ~ 5.5V
- ◆ High Speed Operation : tpd = 2.6ns TYP
- ◆ Low Power Consumption : 1 $\mu$ A (max)
- ◆ MSOP-8A Package

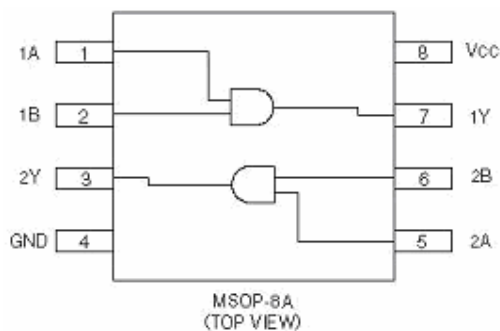
## ■ Description

ML74WL08SRG is Dual 2-input AND Gate manufactured using silicon 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-8A package, high density mounting is possible.

## ■ Pin Configuration



## ■ 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>GND</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.

## ■ Applications

- Palmtops
- Digital Equipment

## ■ Features

**High Speed Operation** : tpd = 2.6ns TYP (Vcc=5V)

**Operating Voltage Range:** 2V ~ 5.5V

**Low Power Consumption:** 1 $\mu$ A (max)

**Small Package** : MSOP-8A

## ■ Function

INPUT		OUTPUT
A	B	Y
H	H	H
H	L	L
L	H	L
L	L	L

H=High level

L=Low level

## ■ Recommended Operating Conditions

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

## ■ DC Electrical Characteristics

PARAMETER	SYMBOL	V <sub>cc</sub> (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> =-50μA	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> or V <sub>IH</sub>	I <sub>OL</sub> =50μA	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	-	0.44	
Input Current	I <sub>IN</sub>	0~5.5	V <sub>IN</sub> =V <sub>cc</sub> or GND	-0.1	-	0.1	-1.0	1.0	μA	
Quiescent Supply Current	I <sub>cc</sub>	5.5	V <sub>IN</sub> =V <sub>cc</sub> or GND, I <sub>OUT</sub> =0μA	-	-	1.0	-	10.0	μA	

## ■ Switching Electrical Characteristics

PARAMETER	SYMBOL	CL	V <sub>cc</sub> (V)	CONDITIONS	Ta=25°C			Ta=-40~85°C		UNITS
					MIN	TYP	MAX	MIN	MAX	
Propagation Delay Time	t <sub>PLH</sub>	15pF	3.3		-	3.7	8.8	1	10.5	ns
			5.0		-	2.8	5.9	1	7	
		50pF	3.3		-	5.2	12.3	1	14	ns
			5.0		-	3.7	7.9	1	9	
	t <sub>PHL</sub>	15pF	3.3		-	3.2	8.8	1	10.5	ns
			5.0		-	2.4	5.9	1	7	
		50pF	3.3		-	4.5	12.3	1	14	ns
			5.0		-	3.4	7.9	1	9	
Input Capacitance	C <sub>IN</sub>	-	5.0	V <sub>IN</sub> =V <sub>cc</sub> or GND	-	4	10	-	10	pF
Power Dissipation Capacitance	C <sub>pd</sub>	No Load, f=1MHz			-	9.3	-	-	-	pF

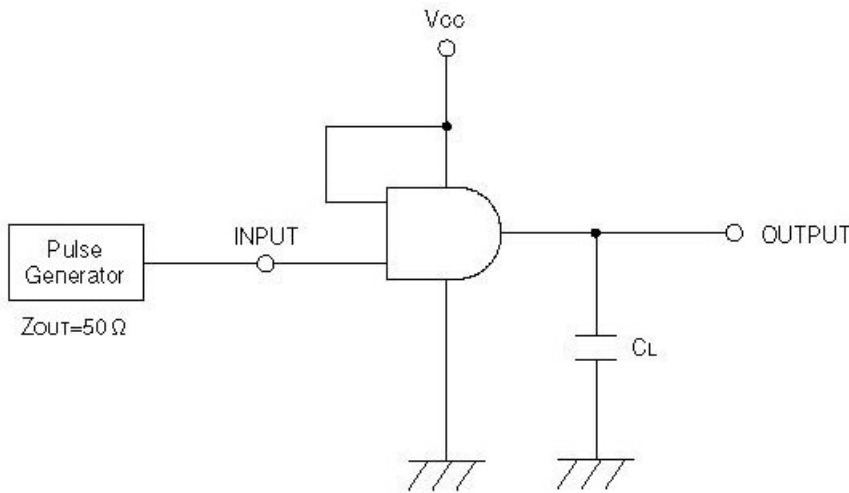
Tr=tf=3ns

## ■ Noise Characteristics

(tr=tf=3ns)

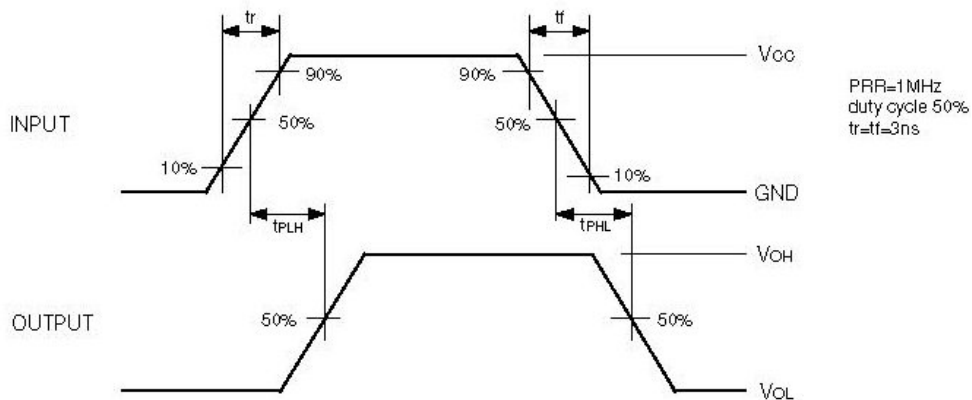
PARAMETER	SYMBOL	CL	Vcc(V)	CONDITIONS	Ta=25°C			UNITS
					MIN	TYP	MAX	
Not functioning output maximum dynamic VOL	VOLP	50pF	5.0		--	0.3	0.8	V
Not functioning output minimum dynamic VOL	VOLV	50pF	5.0		-0.8	-0.3	--	V
Minimum dynamic VIH	VIHD	50pF	5.0		--	--	3.5	V
Maximum dynamic VIL	VILD	50pF	5.0		--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

## ■ Typical Application Circuit



Note: Open output when measuring supply current

## ■ Waveforms



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