

XC74WL02AASR



CMOS Logic

- ◆ CMOS Logic Dual 2-input NOR Gate
- ◆ Operating Voltage Range : 2V ~ 5.5V
- ◆ High Speed Operations : tpd = 2.65ns TYP
- ◆ Low Power Consumption : 1μA (max)
- ◆ MSOP-8B Package

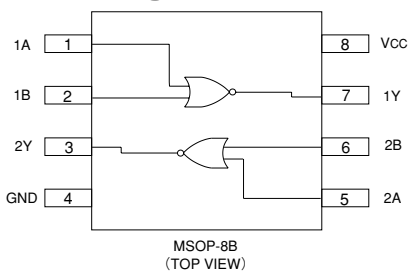
■ Description

XC74WL02AASR is Dual 2-input NOR Gate 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.

■ Pin Configuration



■ Applications

- Palmtops
- Digital Equipment

■ Features

- High Speed Operations : tpd = 2.65ns TYP (Vcc=5V)
- Operating Voltage Range : 2V ~ 5.5V
- Low Power Consumption : 1μA (max)
- Small Package : MSOP-8B

■ Functions

| INPUT | | OUTPUT |
|-------|---|--------|
| A | B | Y |
| H | H | L |
| H | L | L |
| L | H | L |
| L | L | H |

H = High Level
L = Low Level

■ 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 | IiK | -20 | mA |
| Output Diode Current | IoK | ±20 | mA |
| Switch Output Current | IOUT | ±25 | mA |
| VCC, GND Current | ICC, IGND | ±50 | mA |
| Power Dissipation (Ta=25°C) | Pd | 300 | mW |
| Storage Temperature | Tstg | -65~+150 | °C |

Note: Voltage is all Ground standardized.

XC74WLO2AASR

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 | Topr | -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 | VIH | 2.0 | | 1.5 | — | — | 1.5 | — | V | |
| | | 3.0 | | 2.1 | — | — | 2.1 | — | | |
| | | 5.5 | | 3.85 | — | — | 3.85 | — | | |
| | VIL | 2.0 | | — | — | 0.5 | — | 0.5 | V | |
| | | 3.0 | | — | — | 0.9 | — | 0.9 | | |
| | | 5.5 | | — | — | 1.65 | — | 1.65 | | |
| Output Voltage | VOH | VIN=VIL | IOH=-50 μA | 2.0 | 2.0 | — | 1.9 | — | V | |
| | | | | 3.0 | 2.9 | 3.0 | — | 2.9 | | — |
| | | | | 4.5 | 4.4 | 4.5 | — | 4.4 | | — |
| | | | | 3.0 | 2.58 | — | — | 2.48 | | — |
| | | | | 4.5 | 3.94 | — | — | 3.80 | | — |
| | VOL | VIN=VIL or VIH | IOL=50 μA | 2.0 | — | — | 0.1 | — | 0.1 | V |
| | | | | 3.0 | — | — | 0.1 | — | 0.1 | |
| | | | | 4.5 | — | — | 0.1 | — | 0.1 | |
| | | | | 3.0 | — | — | 0.36 | — | 0.44 | |
| | | | | 4.5 | — | — | 0.36 | — | 0.44 | |
| Input Current | IIN | 0~5.5 | VIN=VCC or GND | -0.1 | — | 0.1 | -1.0 | 1.0 | μA | |
| Quiescent Supply Current | ICC | 5.5 | VIN=VCC or GND, IOUT=0 μA | — | — | 1.0 | — | 10.0 | μA | |

Switching Electrical Characteristics

(tr=tf=3ns)

| PARAMETER | SYMBOL | CL | VCC (V) | CONDITIONS | Ta=25°C | | | Ta=-40~85°C | | UNITS |
|-------------------------------|--------|-----------------|---------|----------------|---------|-----|------|-------------|-----|-------|
| | | | | | MIN | TYP | MAX | MIN | MAX | |
| Propagation Delay Time | tPLH | 15pF | 3.3 | | — | 3.9 | 7.9 | 1 | 9.5 | ns |
| | | | 5.0 | | — | 2.7 | 5.5 | 1 | 6.5 | |
| | | 50pF | 3.3 | | — | 5.5 | 11.4 | 1 | 13 | ns |
| | | | 5.0 | | — | 3.9 | 7.5 | 1 | 8.5 | |
| | tPHL | 15pF | 3.3 | | — | 3.5 | 7.9 | 1 | 9.5 | ns |
| | | | 5.0 | | — | 2.6 | 5.5 | 1 | 6.5 | |
| | | 50pF | 3.3 | | — | 4.9 | 11.4 | 1 | 13 | ns |
| | | | 5.0 | | — | 3.6 | 7.5 | 1 | 8.5 | |
| Input Capacitance | CIN | — | 5.0 | VIN=VCC or GND | — | 4 | 10 | — | 10 | pF |
| Power Dissipation Capacitance | Cpd | No Load, f=1MHz | | | — | 9.7 | — | — | — | pF |

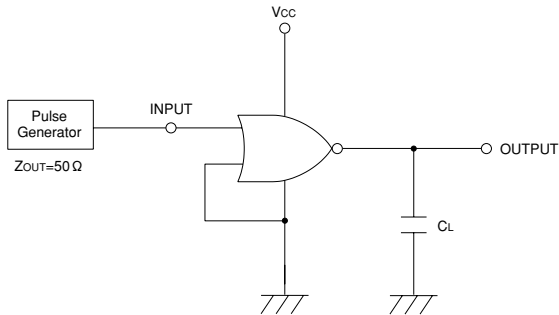
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Noise Characteristics

($t_r=t_f=3\text{ns}$)

| PARAMETER | SYMBOL | | | CONDITIONS | Ta=25°C | | | UNITS |
|--|--------|------|--------|------------|---------|------|-----|-------|
| | | CL | Vcc(V) | | 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



Waveforms

