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[XC74WL240ASR](#)

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XC74WL240ASR



CMOS Logic

CMOS Logic Dual Bus Buffer

(Inverted 3-state outputs)

Operating Voltage Range : 2V ~ 5.5V

High Speed Operations : tpd = 3.8ns (TYP.)

Low Power Consumption : 2 μA(MAX.)

MSOP-8B Package

APPLICATIONS

Palmtops

Digital equipment

GENERAL DESCRIPTION

XC74WL240ASR is dual bus buffer manufactured using silicon gate CMOS processes. The small supply 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

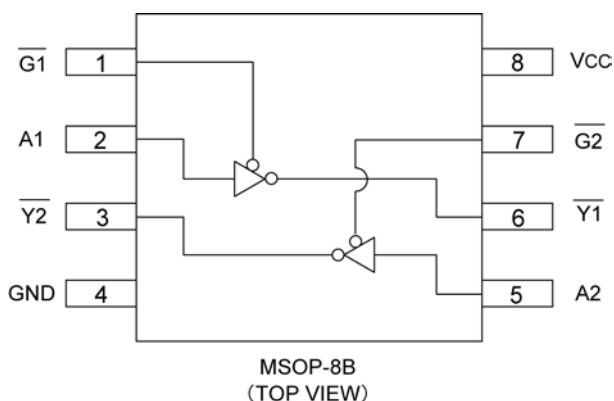
High Speed Operations : tpd = 3.8ns (TYP.) (VCC=5V)

Operating Voltage Range : 2V ~ 5.5V

Low Power Consumption: 2 μA (MAX.)

Small Package : MSOP-8B

PIN CONFIGURATION



FUNCTIONS

| INPUT | | OUTPUT |
|----------------|---|----------------|
| \overline{G} | A | \overline{Y} |
| H | X | Z |
| L | H | L |
| L | L | H |

H=High level

L=Low level

X=Don't care

Z=High impedance

ABSOLUTE MAXIMUM RATINGS

Ta=-40 ~85

| PARAMETER | SYMBOL | RATINGS | UNITS |
|------------------------------|-----------------------------------|--------------|-------|
| 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 _{IK} | -20 | mA |
| Output Diode Current | I _{OK} | ± 20 | mA |
| Switch Output Current | I _{OUT} | ± 25 | mA |
| VCC,GND Current | I _{CC} ,I _{GND} | ± 50 | mA |
| Power Dissipation (Ta = 25) | P _d | 300 | mW |
| Storage Temperature Range | T _{stg} | -65~+150 | |

Note : Voltage is all ground standardized.

XC74WL240ASR

RECOMMENDED OPERATING CONDITIONS

| PARAMETER | SYMBOL | CONDITIONS | UNITS |
|-----------------------------|-------------------|---------------------------------|-------|
| Supply Voltage | V _{CC} | 2~5.5 | V |
| Input Voltage | V _{IN} | 0~5.5 | V |
| Output Voltage | V _{OUT} | 0~V _{CC} | V |
| Operating Temperature Range | T _{opr} | -40~+85 | |
| Input Rise and Fall Time | t _{r,tf} | 0~200 (V _{CC} =3.3V) | ns |
| | | 0~100 (V _{CC} =5V) | |

DC ELECTRICAL CHARACTERISTICS

| PARAMETER | SYMBOL | V _{CC} (V) | CONDITIONS | T _a =25 | | | T _a =-40 ~85 | | UNITS | |
|--------------------------|-----------------|---------------------|--|-------------------------|------|------|-------------------------|------|-------|---|
| | | | | MIN. | TYP. | MAX. | MIN. | MAX. | | |
| Input Voltage | V _{IH} | 2.0 | | 1.50 | - | - | 1.50 | - | V | |
| | | 3.0 | | 2.10 | - | - | 2.10 | - | | |
| | | 5.5 | | 3.85 | - | - | 3.85 | - | | |
| | V _{IL} | 2.0 | | - | - | 0.50 | - | 0.50 | V | |
| | | 3.0 | | - | - | 0.90 | - | 0.90 | | |
| | | 5.5 | | - | - | 1.65 | - | 1.65 | | |
| Output Voltage | V _{OH} | 2.0 | V _{IN} =V _{IL} | I _{OH} =-50 μA | 1.90 | 2.00 | - | 1.90 | - | V |
| | | 3.0 | | | 2.90 | 3.00 | - | 2.90 | - | |
| | | 4.5 | | | 4.40 | 4.50 | - | 4.40 | - | |
| | | 3.0 | | I _{OH} =-4mA | 2.58 | - | - | 2.48 | - | |
| | | 4.5 | | I _{OH} =-8mA | 3.94 | - | - | 3.80 | - | |
| | V _{OL} | 2.0 | V _{IN} =V _{IH} | I _{OL} =50 μA | - | - | 0.10 | - | 0.10 | V |
| | | 3.0 | | | - | - | 0.10 | - | 0.10 | |
| | | 4.5 | | | - | - | 0.10 | - | 0.10 | |
| | | 3.0 | | I _{OL} =4mA | - | - | 0.36 | - | 0.44 | |
| | | 4.5 | | I _{OL} =8mA | - | - | 0.36 | - | 0.44 | |
| 3 State Off-Leak Current | I _{oz} | 5.0 | V _{IN} =V _{IL} or V _{IH} , V _{OUT} =V _{CC} or GND | -0.25 | - | 0.25 | -2.50 | 2.50 | μA | |
| Input Current | I _{IN} | 0~5.5 | V _{IN} =V _{CC} or GND | -0.10 | - | 0.1 | -1.00 | 1.00 | μA | |
| Static Supply Current | I _{CC} | 5.5 | V _{IN} =V _{CC} or GND | - | - | 2.0 | - | 20.0 | μA | |

SWITCHING ELECTRICAL CHARACTERISTICS

(tr=tf=3ns)

| PARAMETER | SYMBOL | CONDITIONS | | Ta=25 | | | Ta=-40 ~85 | | UNITS | | |
|-------------------------------|--------|------------|--------|-------|------|------|------------|------|-------|------|----|
| | | CL | Vcc(V) | MIN. | TYP. | MAX. | MIN. | MAX. | | | |
| Delay Time | tPLH | 15pF | 3.3 | | - | 5.6 | 8.0 | 1.0 | 9.5 | ns | |
| | | | 5.0 | | - | 3.8 | 5.5 | 1.0 | 6.5 | | |
| | | 50pF | 3.3 | | - | 8.1 | 11.5 | 1.0 | 13.0 | ns | |
| | | | 5.0 | | - | 5.3 | 7.5 | 1.0 | 8.5 | | |
| | tPHL | 15pF | 3.3 | | - | 5.6 | 8.0 | 1.0 | 9.5 | ns | |
| | | | 5.0 | | - | 3.8 | 5.5 | 1.0 | 6.5 | | |
| | | 50pF | 3.3 | | - | 8.1 | 11.5 | 1.0 | 13.0 | ns | |
| | | | 5.0 | | - | 5.3 | 7.5 | 1.0 | 8.5 | | |
| Output Enable Time | tzL | 15pF | 3.3 | RL=1k | - | 5.4 | 8.0 | 1.0 | 9.5 | ns | |
| | | | 5.0 | | - | 3.6 | 5.1 | 1.0 | 6.0 | | |
| | | 50pF | 3.3 | | | - | 7.9 | 11.5 | 1.0 | 13.0 | ns |
| | | | 5.0 | | | - | 5.1 | 7.1 | 1.0 | 8.0 | |
| | tzH | 15pF | 3.3 | RL=1k | - | 5.4 | 8.0 | 1.0 | 9.5 | ns | |
| | | | 5.0 | | - | 3.6 | 5.1 | 1.0 | 6.0 | | |
| | | 50pF | 3.3 | | | - | 7.9 | 11.5 | 1.0 | 13.0 | ns |
| | | | 5.0 | | | - | 5.1 | 7.1 | 1.0 | 8.0 | |
| Output Disable Time | tlZ | 50pF | 3.3 | RL=1k | - | 9.5 | 13.2 | 1.0 | 15.0 | ns | |
| | | | 5.0 | | - | 6.1 | 8.8 | 1.0 | 10.0 | | |
| | thZ | 50pF | 3.3 | RL=1k | - | 9.5 | 13.2 | 1.0 | 15.0 | ns | |
| | | | 5.0 | | - | 6.1 | 8.8 | 1.0 | 10.0 | | |
| Output Pin Skew (Note) | tosLH | 50pF | 3.3 | | - | - | 1.5 | - | 1.5 | ns | |
| | | | 5.0 | | - | - | 1.0 | - | 1.0 | | |
| | tosHL | 50pF | 3.3 | | - | - | 1.5 | - | 1.5 | ns | |
| | | | 5.0 | | - | - | 1.0 | - | 1.0 | | |
| Input Capacitance | CIN | - | - | | - | 4 | 10 | - | 10 | pF | |
| Output Capacitance | COUT | - | - | | - | 6 | - | - | - | pF | |
| Power Dissipation Capacitance | Cpd | - | - | | - | 17 | - | - | - | pF | |

Note: tosLH and tosHL are the guaranteed parameters.

$$\text{tosLH} = |t_{\text{PLHm}} - t_{\text{PHLn}}|, \text{tosHL} = |t_{\text{PHLm}} - t_{\text{PLLn}}|$$

NOISE CHARACTERISTICS

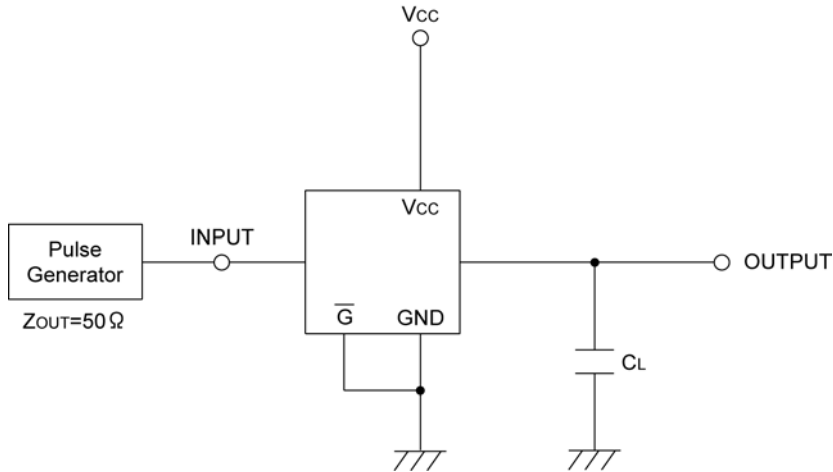
(tr=tf=3ns)

| PARAMETER | SYMBOL | CONDITIONS | | Ta=25 | | | UNITS | |
|---|--------|------------|--------|-------|------|------|-------|---|
| | | CL | Vcc(V) | MIN. | TYP. | MAX. | | |
| Non Functional Output Maximum Dynamic VOL | VOLP | 50pF | 5.0 | | - | 0.3 | 0.8 | V |
| Non Functional Output Minimum Dynamic VOL | VOLV | 50pF | 5.0 | | -0.8 | -0.3 | - | V |
| Minimum Dnamic VIH | VIHD | 50pF | 5.0 | | - | - | 3.5 | V |
| Maximum Dnamic VIL | VILD | 50pF | 5.0 | | - | - | 1.5 | V |

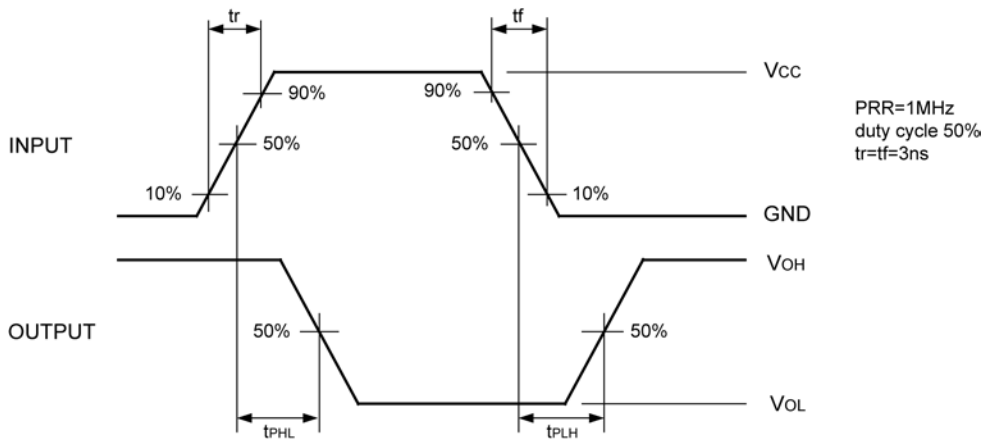
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DELAY TIME

Test Circuit

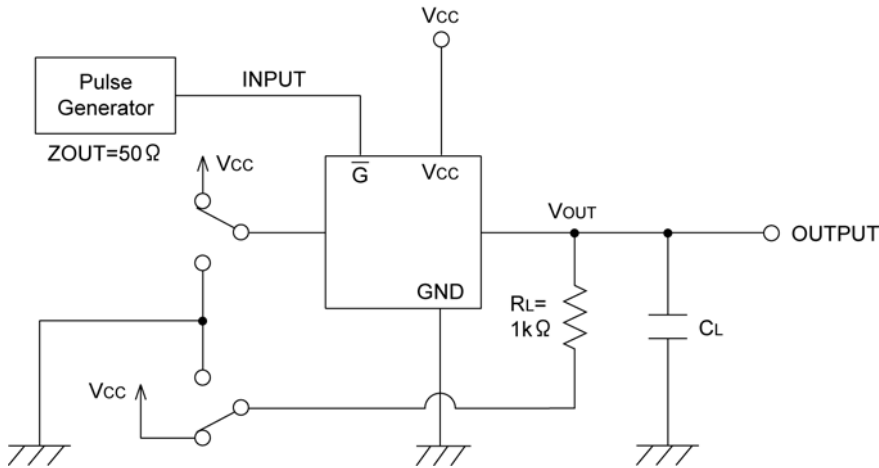


Waveform



OUTPUT ENABLE TIME, OUTPUT DISABLE TIME

Test Circuit



Waveform

