# XC74WL04AASR

TOREX

ETR1313_001

CMOS Logic

## ■GENERAL DESCRIPTION

XC74WL04AASR is triple inverter 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.

## ■APPLICATIONS

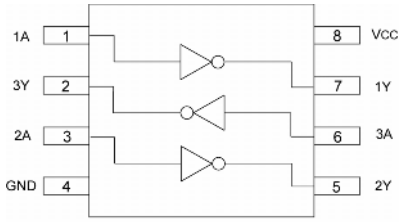
●Palmtops

●Digital equipment

## ■FEATURES

**High Speed Operations** : tpd = 2.05ns (TYP.) (VCC=5V)
**Operating Voltage Range** : 2V ~ 5.5V
**Low Power Consumption**: 1μA (MAX.)
**CMOS Logic Triple Inverter**
**Small Package** : MSOP-8B

## ■PIN CONFIGURATION




MSOP-8B
(TOP VIEW)

## ■FUNCTIONS

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

H=High level
L=Low level

## ■ABSOLUTE MAXIMUM RATINGS

Ta=-40℃~85℃

| 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℃) | Pd | 300 | mW |
| Storage Temperature Range | Tstg | -65~+150 | ℃ |

Note : Voltage is all ground standardized.

## ■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 | Topr | -40~+85 | ℃ |
| Input Rise and Fall Time | tr,tf | 0～200（$V_{CC}$=3.3V） | ns |
| | | 0～100（$V_{CC}$=5V） | |

## ■DC ELECTRICAL CHARACTERISTICS

| PARAMETER | SYMBOL | CONDITIONS | | Ta=25℃ | | | Ta=-40℃~85℃ | | UNITS |
|---|---|---|---|---|---|---|---|---|---|
| | | $V_{CC}$(V) | | MIN. | TYP. | MAX. | MIN. | MAX. | |
| Input Voltage | $V_{IH}$ | 2.0 | | 1.5 | – | – | 1.5 | – | V |
| | | 3.0 | | 2.1 | – | – | 2.1 | – | |
| | | 5.5 | | 3.85 | – | – | 3.85 | – | |
| | $V_{IL}$ | 2.0 | | – | – | 0.5 | – | 0.5 | V |
| | | 3.0 | | – | – | 0.9 | – | 0.9 | |
| | | 5.5 | | – | – | 1.65 | – | 1.65 | |
| Output Voltage | $V_{OH}$ | 2.0 | $V_{IN}$=$V_{IL}$ | 1.9 | 2.0 | – | 1.9 | – | V |
| | | 3.0 | $I_{OH}$=-50μA | 2.9 | 3.0 | – | 2.9 | – | |
| | | 4.5 | | 4.4 | 4.5 | – | 4.4 | – | |
| | | 3.0 | $I_{OH}$=-4mA | 2.58 | – | – | 2.48 | – | |
| | | 4.5 | $I_{OH}$=-8mA | 3.94 | – | – | 3.80 | – | |
| | $V_{OL}$ | 2.0 | $V_{IN}$=$V_{IH}$ | – | – | 0.1 | – | 0.1 | V |
| | | 3.0 | $I_{OL}$=50μA | – | – | 0.1 | – | 0.1 | |
| | | 4.5 | | – | – | 0.1 | – | 0.1 | |
| | | 3.0 | $I_{OL}$=4mA | – | – | 0.36 | – | 0.44 | |
| | | 4.5 | $I_{OL}$=8mA | – | – | 0.36 | – | 0.44 | |
| Input Current | $I_{IN}$ | 0～5.5 | $V_{IN}$=$V_{CC}$ or GND | -0.1 | – | 0.1 | -1.0 | 1.0 | μA |
| Static Ground Current | $I_{CC}$ | 5.5 | $V_{IN}$=$V_{CC}$ or GND,$I_{OUT}$=0μA | – | – | 1.0 | – | 10.0 | μA |

## ■SWITCHING ELECTRICAL CHARACTERISTICS

(tr=tf=3ns)

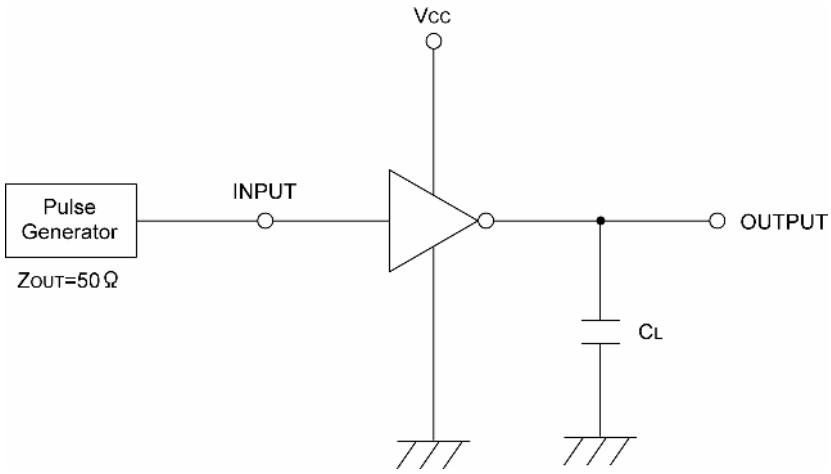
| PARAMETER | SYMBOL | | | CONDITIONS | Ta=25℃ | | | Ta=-40℃~85℃ | | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $C_L$ | $V_{CC}$(V) | | MIN. | TYP. | MAX. | MIN. | MAX. | |
| Delay Time | tPLH | 15pF | 3.3 | | – | 2.7 | 7.1 | 1.0 | 8.5 | ns |
| | | | 5.0 | | – | 2.1 | 5.5 | 1.0 | 6.5 | |
| | | 50pF | 3.3 | | – | 4.1 | 10.6 | 1.0 | 12 | ns |
| | | | 5.0 | | – | 3.2 | 7.5 | 1.0 | 8.5 | |
| | tPHL | 15pF | 3.3 | | – | 2.5 | 7.1 | 1.0 | 8.5 | ns |
| | | | 5.0 | | – | 2.0 | 5.5 | 1.0 | 6.5 | |
| | | 50pF | 3.3 | | – | 3.9 | 10.6 | 1.0 | 12 | ns |
| | | | 5.0 | | – | 3.0 | 7.5 | 1.0 | 8.5 | |
| Input Capacitance | $C_{IN}$ | – | 5.0 | $V_{IN}$=$V_{CC}$ or GND | – | 2 | 10 | – | 10 | pF |
| Power Dissipation Capacitance | Cpd | No Load, F=1MHz | | | – | 8.9 | – | – | – | pF |

## ■NOISE CHARACTERISTICS

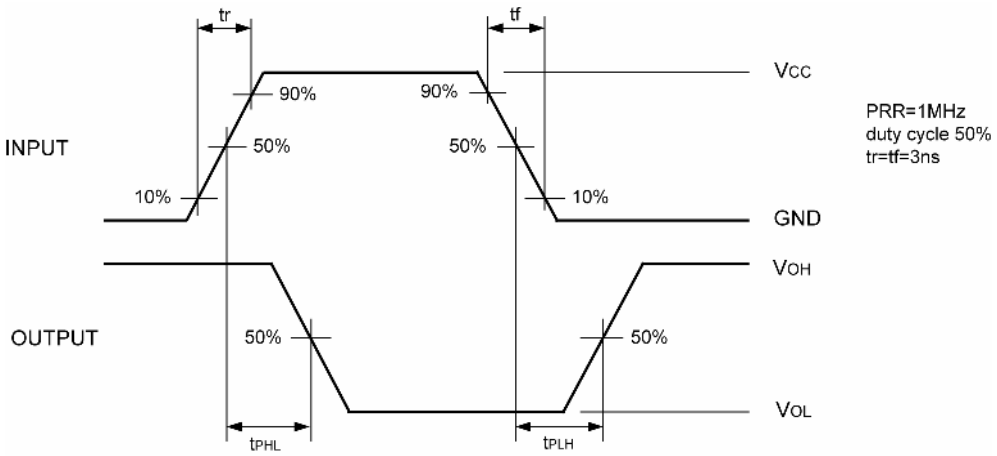
(tr=tf=3ns)

| PARAMETER | SYMBOL | | | CONDITIONS | Ta=25℃ | | | UNITS |
|---|---|---|---|---|---|---|---|---|
| | | $C_L$ | $V_{CC}$(V) | | MIN. | TYP. | MAX. | |
| Non Functional Output Maximum Dynamic $V_{OL}$ | $V_{OLP}$ | 50pF | 5.0 | | — | 0.3 | 0.8 | V |
| Non Functional Output Minimum Dynamic $V_{OL}$ | $V_{OLV}$ | 50pF | 5.0 | | -0.8 | -0.3 | — | V |
| Minimum Dynamic $V_{IH}$ | $V_{IHD}$ | 50pF | 5.0 | | — | — | 3.5 | V |
| Maximum Dynamic $V_{IL}$ | $V_{ILD}$ | 50pF | 5.0 | | — | — | 1.5 | V |

## ■TEST CIRCUIT




## ■WAVEFORM




PRR=1MHz
duty cycle 50%
tr=tf=3ns

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